

# “Key Issues for the Satellite Industry @ WRC-23 Agenda”

12 November 2020

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## **CHAPTER 1**                      **Fixed, Mobile and Broadcasting issues**

**Agenda items:**                      **1.1, 1.2, 1.3, 1.4, 1.5**

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Co-Rapporteur Mr. Usman Aliyu MAHMUD (NIG), for agenda items 1.3 and 1.5, email: ualiyu@ncc.gov.ng

## **CHAPTER 2**                      **Aeronautical and maritime issues**

**Agenda items:**                      **1.6, 1.7, 1.8, 1.9, 1.10, 1.11**

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## **CHAPTER 3**                      **Science issues**

**Agenda items:**                      **1.12, 1.13, 1.14**

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## **CHAPTER 4**                      **Satellite issues**

**Agenda items:**                      **1.15, 1.16, 1.17, 1.18, 1.19, 7**

Co-Rapporteur     Ms. Florence Magnier (F) for agenda items 1.15, 1.16, 1.17, 1.18, 1.19, email: fmagnier@eutelsat.fr  
Co-Rapporteur                                      Mr. Georges KWIZERA (RRW) for agenda item 7, email: george.kwizera@rura.rw

## **CHAPTER 5**                      **General issues**

**Agenda items:**                      **2, 4 and 9.1 topics a) Res. 657 (Rev.WRC-19), b) Res. 744 (WRC-19), c) Res. 175 (WRC-19), and d) WRC-19 Doc. 535**

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## **ANNEX 1**     **Information on WRC-23 Agenda Item 10**

### Protect satellite bands from other services

- 1.2 IMT in 3/6/7/10 GHz - Res. 245 (WRC-19)
- 1.3 Mobile Service in 3600-3800 MHz in Region 1 - Res. 246 (WRC-19)
- 9.1 c) IMT in bands of the Fixed Service (FS) - Res. 175 (WRC-19)
- RR21.5 RR21.5 and IMT stations (WRC-19 doc. 550)

### Enhance use of existing satellite bands

- 1.15 GSO FSS earth stations on aircraft and vessels in 12.75-13.25 GHz - Res. 172 (WRC-19)
- 1.16 NGSO ESIMs in Ka-band - Res. 173 (WRC-19)
- 1.17 Satellite-to-satellite links in Ku and Ka-bands - Res. 773 (WRC-19)
- 7 Improvements to satellite procedures - Res. 86 (WRC-07)
- 9.1 d) EESS (passive) in 36-37 GHz vs FSS NGSO in 37.5-38 GHz (WRC-19 doc. 535)

### Develop new satellite bands

- 1.18 New MSS allocations for narrow-band mobile satellite systems - Res. 248 (WRC-19)
- 1.19 New primary FSS allocation in 17.3-17.7 GHz in R2 - Res. 174 (WRC-19)

### 10 **WRC-27 Agenda**

## WRC-23 Agenda Item 1.2

**Agenda Item 1.2:** *to consider identification of the frequency bands 3 300-3 400 MHz, 3 600-3 800 MHz, 6 425-7 025 MHz, 7 025-7 125 MHz and 10.0-10.5 GHz for International Mobile Telecommunications (IMT), including possible additional allocations to the mobile service on a primary basis, in accordance with Resolution 245 (WRC-19);*

**Responsible Group:** Working Party 5D

**Contributing Group for FSS:** Working Party 4A

**Resolution 245 (WRC-19)** calls for studies for the terrestrial component of IMT in the bands:

- 3 300-3 400 MHz and 3 600-3 800 MHz (Region 2);
- 3 300-3 400 MHz (amend footnote in Region 1);
- 6 425-7 025 MHz (Region 1);
- 7 025-7 125 MHz (globally);
- 10 000-10 500 MHz (Region 2).

### **ESOA position on the band 6425-7125 MHz:**

Considering that many countries rely heavily on C-band satellite services offering vital services which in many cases cannot be reliably provided or provided at all by other means, and that existing studies between FSS and IMT have demonstrated that sharing is not feasible: in the bands 6 425-7 025 MHz in Region 1 and 7 025-7 075 MHz globally.

## WRC-23 Agenda Item 1.2

### Background:

#### C-band downlink

Existing studies between IMT and FSS in the band 3 600-3 800 MHz 6425 MHz and studies to be done under A11.2.

	IMT-Advanced (4G)	IMT-2020 (5G)
ITU	Report ITU-R S.2368	To be done under A11.2
CEPT	ECC Report 100	ECC Reports 254 and 281

In the range 6425-7125 MHz, one should differentiate the following sub-bands:

- 6425-6725 MHz: this band is allocated to the FSS globally (earth-to-space) and is not subject to a Plan. The band is used for uplinks by large numbers of GSO FSS networks covering all Regions. Use includes feeder links for MSS systems.
- 6725-7025 MHz: this band is subject to the FSS plan (AP30B), there are no existing studies with IMT/5G.
- 6 700-7 025 MHz: this band is allocated to the FSS globally (space-to-earth), limited to feeder links for non-geostationary satellite systems of the mobile-satellite service and is subject to coordination under No. **9.11A**.
- 7025-7075 MHz: this band is allocated to the FSS globally (earth-to-space) and is not subject to a Plan.
- 7075-7125 MHz: there is no FSS allocation, so no direct impact.

Existing studies related to IMT-Advanced (Report ITU-R S.2367) show very little potential for IMT operations while protecting FSS uplinks (indoor use only, EIRP limit necessary).

Studies conducted so far at CEPT level have demonstrated that sharing with unlicensed WiFi indoor could be more feasible than IMT.

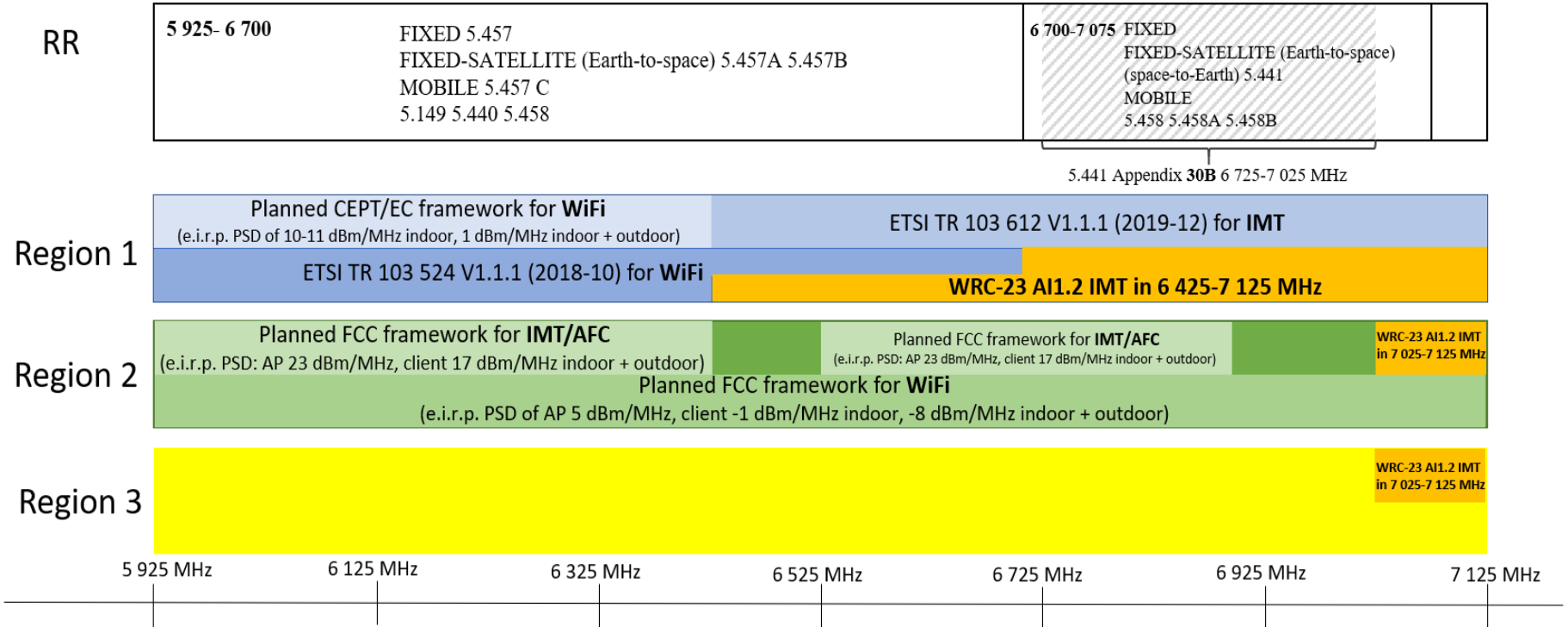
#### C-band uplink

Existing studies between IMT and FSS in the band 5925- and studies to be done under A11.2:

	IMT-Advanced (4G)	IMT-2020 (5G)	WiFi in 6 GHz
ITU	Report ITU-R S.2367	To be done under A11.2	No studies
CEPT	No studies	No studies	ECC Report 302

# WRC-23 Agenda Item 1.2

## Background (cont'd):



## WRC-23 Agenda Item 1.3

**Agenda Item 1.3** *to consider primary allocation of the band 3 600-3 800 MHz to mobile service within Region 1 and take appropriate regulatory actions, in accordance with Resolution 246 (WRC-19)*

**Responsible Group:** Working Party 5A

**Contributing Group for FSS:** Working Party 4A

### **Resolution 246 (WRC-19)**

Resolves to invite ITU-R

*“to conduct sharing and compatibility studies in time for WRC-23 between the mobile service and other services allocated on a primary basis within the frequency band 3 600-3 800 MHz and adjacent bands in Region 1, as appropriate, to ensure protection of those services to which the frequency band is allocated on a primary basis, and not impose undue constraints on the existing services and their future development,”*

Resolves to invite WRC-23

*“based on the results of studies in resolves to invite ITU-R, to consider possible upgrade of the allocation of the frequency band 3 600-3 800 MHz to the mobile, except aeronautical mobile, service on a primary basis within Region 1, and to take appropriate regulatory actions,”*

## WRC-23 Agenda Item 1.3

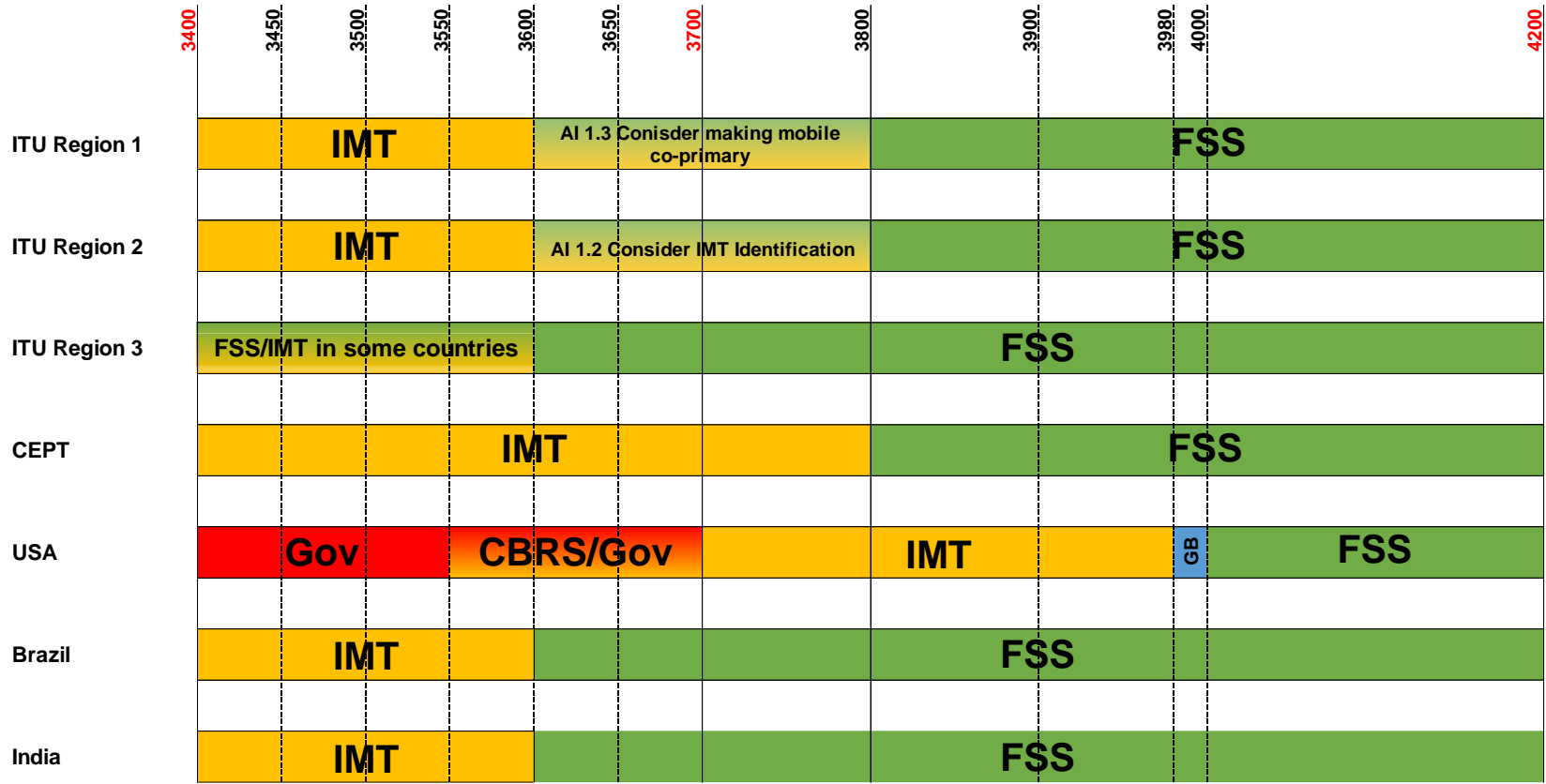
### Background

- Based on the results made satellite operators, in order for any FSS earth station to co-exist with IMT 2020 (5G) base station, a separation distance of at least +70 km is needed
- These results are based on interference caused by a single 5G BS and impact of other services or the full 5G deployment have not been considered. In reality, the required separation distance would be even much larger.
- Due to sensitivity of FSS receivers resulting in large separation distances, a regulatory framework is required to protect Earth stations in areas close to borders from potential interference arising from 5G deployment in neighboring countries.

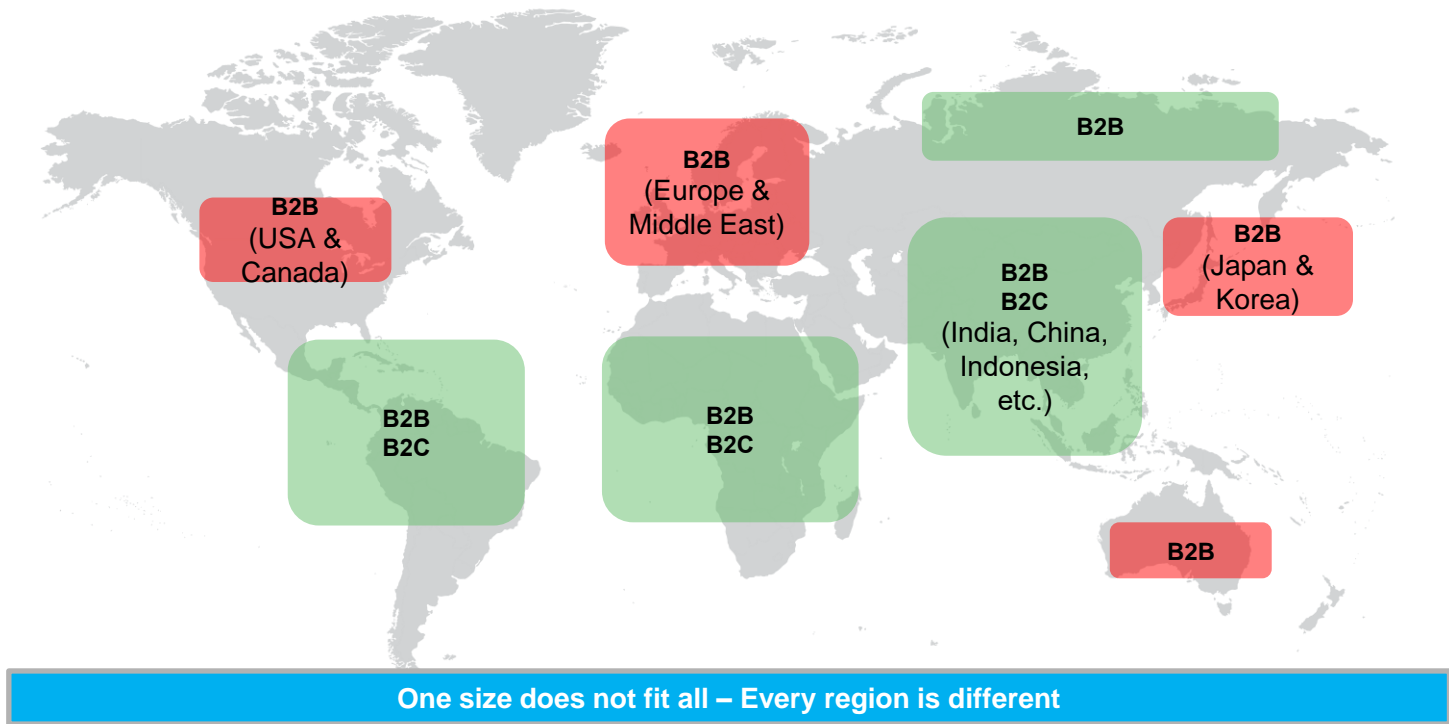
### ESOA position:

Considering that many countries rely heavily on C-band satellite services offering vital services which in many cases cannot be reliably provided, or provided at all, by other means, and that existing studies between FSS and IMT have demonstrated that sharing is not feasible in the same geographical area.





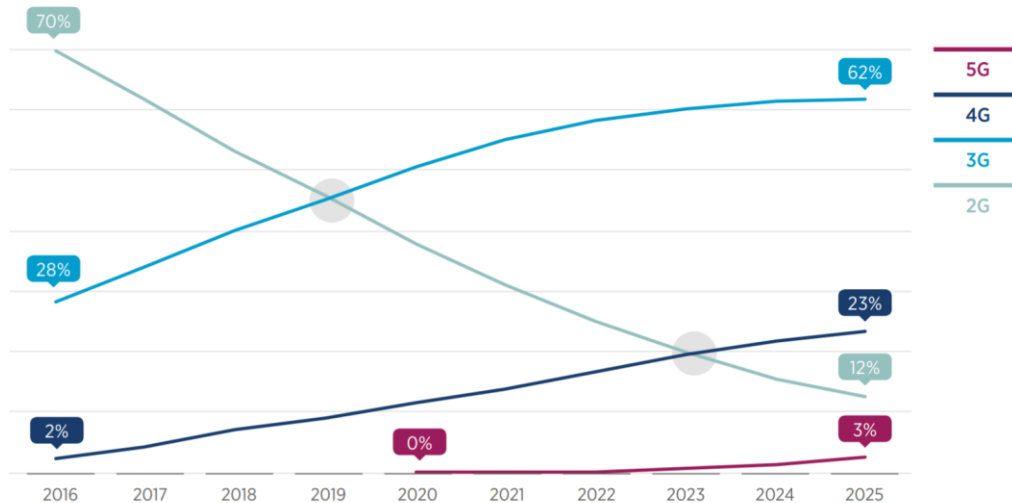
## How FSS C-band is used around the world



## 2G / 3G dominate the scene in SSA

### 3G takes the lead in 2019; 4G overtakes 2G by 2023

Percentage of connections (excluding licensed cellular IoT)



Source: The Mobile Economy: Sub-saharan Africa, GSMA 2018

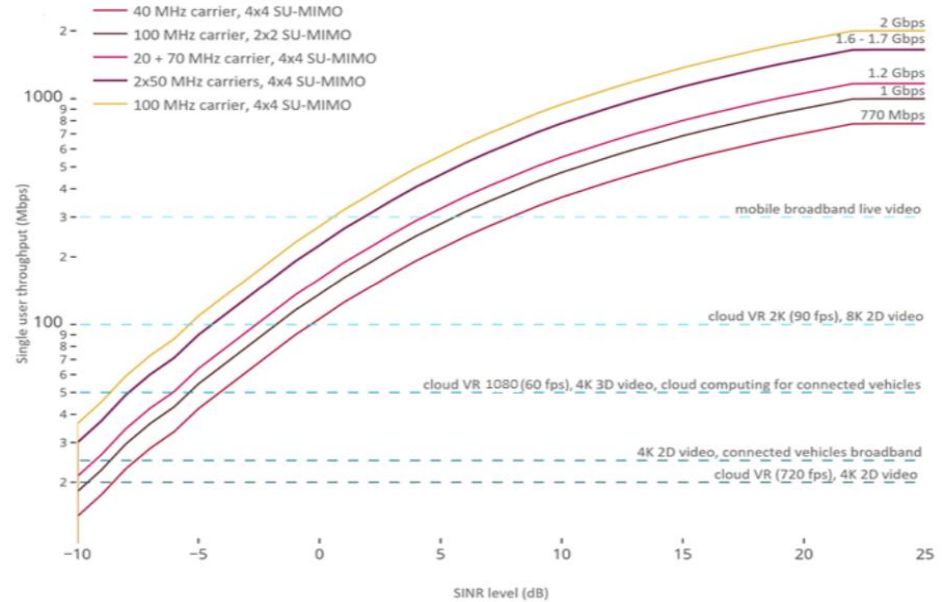
- **2G / 3G** will still account for **85% of all connection** in SSA (by 2025)
- Over **800 million** people in SSA don't use mobile broadband:
  - Coverage
  - Affordability
- *Meanwhile, satellite remains a key enabler for coverage and connectivity in SSA*

**3400-3600 MHz is the right amount of spectrum for 5G now in SSA**

## Is more spectrum needed?

- Most countries have typically 3 to 4 national MNOs so making 200 to 300 MHz available should allow every MNO to have 60 to 100 MHz
- Majority of benefits to the economy and consumers will be realized through MNOs each deploying the first 40 MHz of C-band spectrum
- In response to claims by some MNOs that they needed access to at least 80 MHz of contiguous spectrum, Ofcom researched the ability of mobile operators to launch 5G services with 40 MHz of spectrum. It found that:

***“(…) there was no evidence that 5G could not be delivered with smaller [e.g. 40 MHz blocks] or non-contiguous carriers in other frequency bands [i.e. spectrum other than C-band].”***



Downlink Single User Throughput (SUT) across Different Signal Strengths in a Cell Compared with the Minimum Data Rate Requirements for some 5G Services\*

**80 to 100 MHz per MNO is a MYTH**

See, Ofcom, §A7.39, Award of the 700 MHz and 3.6-3.8 GHz spectrum bands: Annexes (13 March 2020), available online at [https://www.ofcom.org.uk/\\_data/assets/pdf\\_file/0017/192410/annexes-award-700mhz-3.6-3.8ghz-spectrum.pdf](https://www.ofcom.org.uk/_data/assets/pdf_file/0017/192410/annexes-award-700mhz-3.6-3.8ghz-spectrum.pdf)

**Topic 9.1 c)** *Study the use of International Mobile Telecommunication system for fixed wireless broadband in the frequency bands allocated to the fixed services on primary basis, in accordance with Resolution 175 (WRC-19);*

**Responsible Groups:** Working Parties 5A and 5C

### **Resolution 175 (WRC-19)**

“c) that the ITU-R Handbook on “Fixed Wireless Access” addressed the use of International Mobile Telecommunication (IMT) systems for Fixed Wireless Access, and **Recommendation ITU-R M.819** contains specific requirements pertaining to fixed wireless access,”

resolves to invite ITU-R

“to conduct any necessary studies on the use of International Mobile Telecommunication systems for fixed wireless broadband in the frequency bands allocated to the fixed service on primary basis, taking into account the relevant ITU-R studies, Handbooks, Recommendations and Reports,”

### **Background**

This Topic arose at the last minute of WRC-19 and is part of a move by some parties in the Mobile industry to envisage “mobile/IMT like systems” in Fixed Service bands.

**Preliminary Objectives/Position:**

- Ensure that the results of studies under this Topic will only be reflected in the Report of the Director of the Radiocommunication Bureau and lead to possible updates of existing ITU-R publications, e.g. Handbook on Land Mobile, Volume 1: Fixed Wireless Access and relevant Recommendations of ITU-R F-Series.
- Note that in line with guidelines of CPM23-1 (CA/251), only a short summary of the results for Chapter 5 of the CPM Report should be developed under this topic, there should be no related Methods and Regulatory or Procedural considerations
- Limit the scope of the studies to technologies used for FWA, there should be no opportunity for ITU-R WP5D, and consequently 3GPP, to develop IMT technology characteristics for Fixed Service bands.
- Avoid any bands to be raised as clear targets by the studies conducted under this Topic. Avoid a new Agenda Item at WRC-27 that could open the door to IMT identifications via the FS in bands allocated to satellite services.

## FSS/BSS/ISS<sup>1</sup> shared with primary FS allocations between 3 and 30 GHz

Band	FS	MS	IMT in RR
3400-3600 MHz	✓	✓ except 3400-3500 MHz R3, except aeronautical Mobile in R1/R2	✓ except most R3
3600-4200 MHz	✓	✓ except Region 1. Except aeronautical Mobile in R2/R3	✓ up to 3700 MHz in some countries
4500-4800 MHz	✓	✓	
5850-7075 MHz	✓	✓	
7250-7750 MHz 7900- 8400 MHz	✓	✓ except aeronautical Mobile in some sub-bands	
10.7-11.7 GHz	✓	✓ except aeronautical Mobile	
11.7-12.75 GHz	✓	✓ except Region 2 11.7-12.2 GHz, except Region 1 12.5-12.75 GHz, Except aeronautical Mobile else.	
12.75-13.75 GHz	✓	✓	
14.3-14.8 GHz	✓	✓ except Region 2 14.3-14.4 GHz. Except aeronautical Mobile else	
17.7-18.6 GHz	✓	✓ except Region 2 17.7-17.8 GHz	
18.6-18.8 GHz	✓	✓ except aeronautical Mobile	
18.8-19.7 GHz	✓	✓	
21.4-22 GHz	✓	✓ (no BSS in Region 2)	
22.55-23.55 GHz	✓	✓	
24.45-25.25 GHz	✓ except R2	✓ except Regions 1 and 2	✓
25.25-27.5 GHz	✓	✓	✓ up to 27.5 GHz
27.5-29.5 GHz	✓	✓	

<sup>1</sup> No MSS allocation shared with primary FS.

Example of bands with FS and MS, and no FSS/BSS/ISS: 4400-4500 MHz, 7075-7145 MHz, 14.8-15.35 GHz, 22.55-23.6 GHz ...

**RR21.5 and IMT stations** *“ITU-R is invited to study, as a matter of urgency, the applicability of the limit specified in No. 21.5 of the Radio Regulations to IMT stations, that use an antenna that consists of an array of active elements, with a view to recommend ways for its possible replacement or revision for such stations, as well as any necessary updates to Table 21-2 related to terrestrial and space services sharing frequency bands. Furthermore, the ITU-R is invited to study, as a matter of urgency, verification of No. 21.5 regarding the notification of IMT stations that use an antenna that consists of an array of active elements, as appropriate.” (WRC-19 doc. 550);*

**Responsible Group:** Working Party 5D

### Background

The matter which was raised in the context of WRC-19 AI1.13 is whether RR21.5 applies to IMT stations and/or which power limits (e.g. Table 21-2) apply to IMT stations. Some may interpret the application of these limits to array type IMT stations in such a way that it would allow a significant increase in the power radiated towards the GSO arc.

Some of the RR provisions relevant to this issue are **21.5, 21.5A, 21.6**. These limits use the parameter “power delivered by a transmitter to the antenna”, which leads to some ambiguity when applying the limits to antennas that use an array of active antennas. If not resolved, this could lead to power radiated towards a satellite receiver significantly in excess of that resulting from other antennas, which could lead to harmful interference to satellite receivers.



### **Preliminary Objective/Position**

RR21.5 power limits should apply to all IMT stations consistently with the intention of the provision, which is to protect satellite reception.

ESOA supports the necessary modifications to Article 21 to enable the RR 21.5 limits to be correctly applied to IMT antennas that use an array of active elements. In particular, ESOA supports the application of a correction factor on RR21.5 limits (limit on power delivered to the antenna) to take account of IMT antenna gain, efficiency and bandwidth. Some clarification of “antenna of a station” may also be needed for application to active array antennas.

ESOA also supports an update of Table 21-2 to include bands identified for IMT by WRC-19 which are allocated to satellite services in the Earth-to-space direction and not yet included in Table 21-2.

**Working Party 5A** AI 1.3, Topics 9.1 c)

**Working Party 5B** AIs 1.1, 1.6, 1.7, 1.8, 1.9, 1.10, 1.11

**Working Party 5C** Topic 9.1 c)

**Working Party 5D** AIs 1.2, 1.4, RR21.5

**Study Group 5**

**Agenda Item 1.15** *to harmonize the use of the frequency band 12.75-13.25 GHz (Earth-to-space) by earth stations on aircraft and vessels communicating with geostationary space stations in the fixed-satellite service globally, in accordance with Resolution 172 (WRC-19);*

**Responsible Group:** Working Party 4A

**Resolution 172 (WRC-19)**

Operation of earth stations on aircraft and vessels communicating with geostationary space stations in the fixed-satellite service in the frequency band 12.75-13.25 GHz (Earth-to-space)

**Preliminary position:**

ESOA supports this agenda item to double the amount of uplink spectrum available for Ku-band in-flight and maritime services in a globally harmonized manner. Technical studies required to ensure protection of existing FS links and FSS use in accordance to Appendix **30B**. European harmonized framework ECC Decision (19)04 for earth stations on aircraft already exists.

**Agenda Item 1.16** *to study and develop technical, operational and regulatory measures, as appropriate, to facilitate the use of the frequency bands 17.7-18.6 GHz and 18.8-19.3 GHz and 19.7-20.2 GHz (space-to-Earth) and 27.5-29.1 GHz and 29.5-30 GHz (Earth-to-space) by non-GSO FSS earth stations in motion, while ensuring due protection of existing services in those frequency bands, in accordance with Resolution 173 (WRC-19);*

**Responsible Group:** Working Party 4A

**Resolution 173 (WRC-19)**

Use of the frequency bands 17.7-18.6 GHz and 18.8-19.3 GHz and 19.7-20.2 GHz (space-to-Earth) and 27.5-29.1 GHz and 29.5-30 GHz (Earth-to-space) by earth stations in motion communicating with non-geostationary space stations in the fixed-satellite service

**Background:**

TBD

**Agenda Item 1.17** *to determine and carry out, on the basis of the ITU-R studies, the appropriate regulatory actions for the provision of inter-satellite links in the 11.7-12.7 GHz, 18.1-18.6 GHz, 18.8-20.2 GHz and 27.5-30 GHz bands or portions thereof, by adding an inter-satellite service allocation where appropriate*

**Responsible Group: Working Party 4A**

**Resolution 773 (WRC-19)**

- To develop the technical and operational characteristics of different types of space stations that plan satellite-to-satellite transmissions in the frequency bands 11.7-12.7 GHz, 18.1-18.6 GHz, 18.8-20.2 GHz and 27.5-30 GHz;
- To study the technical and operational characteristics, including spectrum requirements, off-axis e.i.r.p. values and out-of-band emission limits, for transmissions between space stations in the frequency bands 11.7-12.7 GHz, 18.1-18.6 GHz, 18.8-20.2 GHz and 27.5-30 GHz;
- To study sharing and compatibility between satellite-to-satellite links, intending to operate between space stations in the frequency bands 11.7-12.7 GHz, 18.1-18.6 GHz, 18.8-20.2 GHz and 27.5-30 GHz, and current and planned stations of the FSS and other existing services allocated in same frequency bands and adjacent bands, including passive services;
- To develop, for different types of space stations, the technical conditions and regulatory provisions for satellite-to-satellite operations in the frequency bands 11.7-12.7 GHz, 18.1-18.6 GHz, 18.8-20.2 GHz and 27.5-30 GHz, or portions thereof, including new ISS allocations, as appropriate, taking into account the results of the studies above;

**Background:**

For most Earth observation and space science missions, data-download to the ground is a bottleneck as well as a key design driver. The payloads that these missions carry on-board can normally generate more data than it is possible to download to the ground stations. As most of these missions are in LEO, the download bottleneck is mostly related to the short-duration access they have to their respective ground stations, normally 10 minutes per orbit. This limits the observing/measuring capacity of the on-board instruments below their capability. To make matters worse, earth observation data generation is only increasing, with higher resolution instruments being deployed along with a growing set of applications being developed that consume the data collected. Higher resolution and greater consumer demand mean more capacity needed. The possibility of relaying data to the ground via satellite-to-satellite links is without any doubt appealing for these missions.

Moreover, recent trends show the explosion of the Small Satellite (<500 kg) market, part of which will be Earth observation and space science. Both Small and Large satellite missions would benefit for satellite-to-satellite transmission services. Even nano-satellites (1-25 kg) may carry a satellite-to-satellite transmission payload.

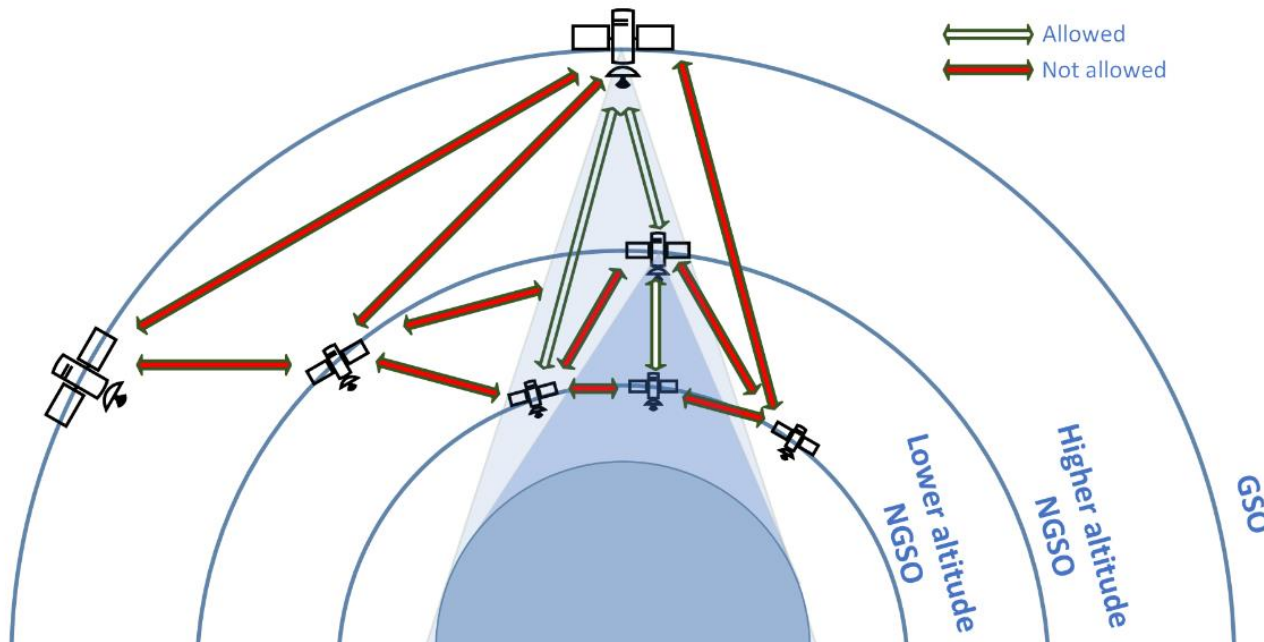
**Preliminary objective/position:**

- Support the Agenda Item
- Support the ESOA-agreed guiding principles
  - Regulatory recognition through a new application under current FSS allocations in accordance with the FSS directionality indicators (i.e. Earth-to-space or space-to-Earth)
  - The work needs to stay narrowly focused on satellite-to-satellite links as an application of the existing FSS allocation (without a new ISL allocation). Oppose adding a new inter-satellite service (ISL) allocation to the bands studied under this agenda item. These are core FSS bands, so the types of satellite-to-satellite links that can be supported in these bands need to be consistent with existing uses to avoid constraints on existing services (e.g. remove satellite-to-satellite links between space stations that are orbiting on the same or similar altitude)
  - Ensure the same level of protection for GSO and NGSO satellite networks or systems as currently provided in the RR and do not impose new constraints on GSO and NGSO satellites and earth stations to protect satellite-to-satellite links from interference
- Support the key assumptions contained in the ESOA position paper

**Scope and concept of operations:**

The satellite-to-satellite links being considered are:

- NGSO-to-GSO and GSO-to-NGSO (e.g. MEO-to-GEO or LEO-to-GEO).
- Lower-altitude NGSO to higher-altitude NGSO and higher-altitude NGSO to lower-altitude NGSO (e.g. LEO-to-MEO or LEO-to-LEO) provided that the same envelope of operation is maintained (e.g. operations within cone of coverage).





**Agenda Item 1.18** *to consider studies relating to spectrum needs and potential new allocations to the mobile-satellite service for future development of narrowband mobile-satellite systems, in accordance with Resolution 248 (WRC-19);*

**Responsible Group:** Working Party 4C

**Resolution 248 (WRC-19)**

Studies relating to spectrum needs and potential new allocations to the mobile-satellite service in the frequency bands 1 695-1 710 MHz, 2 010-2 025 MHz, 3 300-3 315 MHz and 3 385-3 400 MHz for future development of narrowband mobile-satellite systems

**Background:**

There is an increasing demand for narrowband MSS spectrum to support needs including M2M, IoT and others.

The Agenda Item asks to limit the spectrum to low power use and also to the collection of data from, and management of, terrestrial devices in the MSS.

**Preliminary position:**

ESOA supports the allocation of at least 5X5 MHz of additional MSS spectrum globally and regionally because of the growing need of MSS operators.

ESOA does not support limiting the allocations to low power uses and data collection uses, since that would unnecessarily limit the use of this MSS spectrum. ESOA does not support limiting the agenda item to NGSOs either for the same reason.

**Agenda Item 1.19** *to consider a new primary allocation to the fixed-satellite service in the space-to-Earth direction in the frequency band 17.3-17.7 GHz in Region 2, while protecting existing primary services in the band, in accordance with Resolution 174 (WRC-19);*

**Responsible Group:** Working Party 4A

**Resolution 174 (WRC-19)**

Primary allocation to the fixed-satellite service in the space-to-Earth direction in the frequency band 17.3-17.7 GHz in Region 2

**Background:**

TBD

**Agenda Item 7** to consider possible changes, 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 the rational, efficient and economical use of radio frequencies and any associated orbits, including the geostationary-satellite orbit;

**Responsible Group:** Working Party 4A

**Resolution 86 (rev. WRC-07)**

*resolves to invite future world radiocommunication conferences*

- 1 to consider any proposals which deal with deficiencies and improvements in the advance publication, coordination, notification and recording procedures of the Radio Regulations for frequency assignments pertaining to space services which have either been identified by the Board and included in the Rules of Procedure or which have been identified by administrations or by the Radiocommunication Bureau, as appropriate;
- 2 to ensure that these procedures, and the related appendices of the Radio Regulations reflect the latest technologies, as far as possible,

**Background:**

TBD

**Topic 9.1 d)** *EESS (passive) in 36-37 GHz vs FSS NGSO in 37.5-38 GHz (WRC-19 doc. 535). “WRC-19 invites ITU-R to conduct further study of this topic and develop Recommendations and/or Reports, as appropriate, and report back to WRC-23 to take action, if necessary. Furthermore, WRC-19 agreed that modifications to Resolution 750 (Rev. WRC-19) should not be considered under these studies since the frequency band 36-37 GHz is not referenced in No. 5.340”;*

**Responsible Group:** Working Party 7C

**Background:**

Adjacent band compatibility between NGSO satellite systems operating above 37.5 GHz and EESS (passive) operating below 37 GHz.

<b>Working Party 4A</b>	<b>Als 1.15, 1.16, 1.17, 1.19, 7.</b>	<b>CEPT: CPG PTB</b>
<b>Working Party 4B</b>	<b>None</b>	
<b>Working Party 4C</b>	<b>AI 1.18</b>	<b>CEPT: CPG PTB</b>
<b>Study Group 4</b>		
<b>Working Party 7C</b>	<b>Topic 9.1.d)</b>	<b>CEPT: CPG PTC</b>

In assigning agenda items 1.6, 1.7 and 1.8 to WP 5B, CPM23-1 noted that these agenda items have satellite components that require the expertise of SG 4 participants. WP 5B is therefore invited to establish a new working group (WG) with responsibility for agenda items 1.6, 1.7 and 1.8 chaired by a satellite expert. WP 5B is also invited to organize its meetings to facilitate contributions from experts in WPs 4A and 4C in regards to the above WG and to agenda item 1.11. WPs 4A and 4C are invited to designate rapporteurs to facilitate interaction between the Working Parties and satellite experts are encouraged to participate in the work in WP 5B.

It was noted that several agenda items have overlapping frequency bands, as shown in Table 1 below. The responsible groups are invited to exchange the necessary characteristics, parameters and protection criteria to complete studies addressing mutual compatibility and sharing feasibility among the applicable services/applications. They should coordinate their work and review, as appropriate, the progress of studies so that any potential difficulties can be addressed.

<b>1.2 (IMT) - WP 5D</b>	<b>1.16 (non-GSO FSS ESIMs) - WP 4A</b>	<b>1.17 (ISL) - WP 4A</b>	<b>1.18 (narrowband MSS) - WP 4C</b>
3 300-3 400 MHz (Regions 1 & 2)			3 300-3 400 MHz (Region 2)
	29.5-30 GHz (E-s)	27.5-30 GHz (s-s)	