APM23-4
Yaoundé Cameroun, 7 to 11 August 2023

Outcome

11 August 2023

4th ATU Preparatory Meeting for WRC-23

Agenda Item 1.2

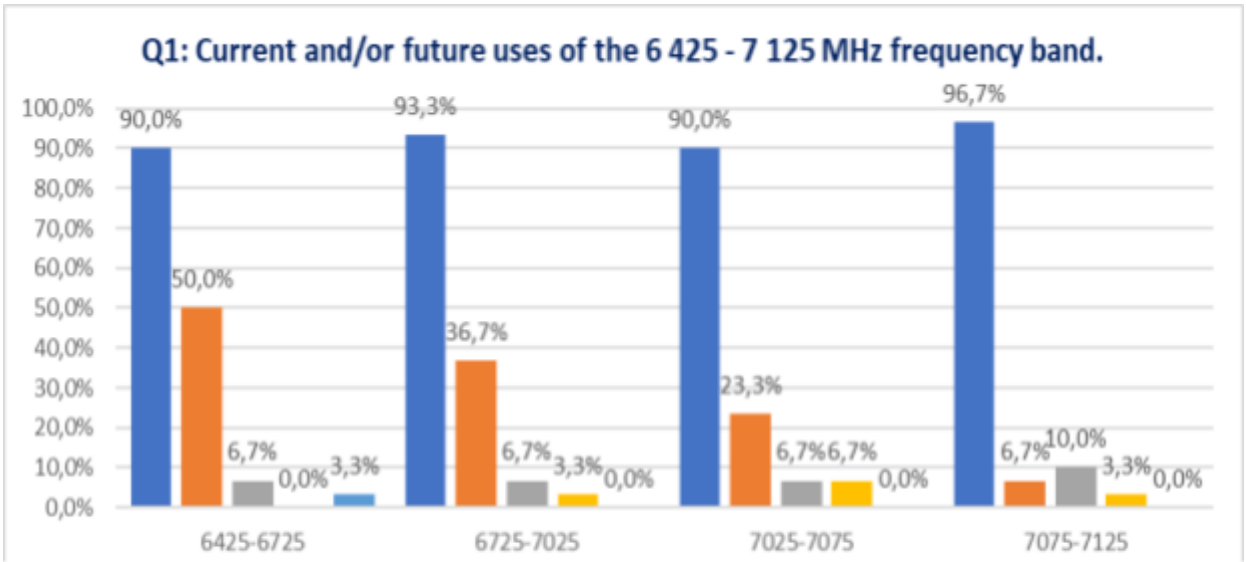
Part A: Description
1.2 to consider identification of the frequency bands 3 300-3 400 MHz, 3 600-3 800 MHz, 6 425-7 025 MHz, 7 025-7 125 MHz and 10.0-10.5 GHz for International Mobile Telecommunications (IMT), including possible additional allocations to the mobile service on a primary basis, in accordance with **Resolution 245**; **Resolution 245 (WRC-19):** Studies on frequency-related matters for the terrestrial component of International Mobile Telecommunications identification in 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
Part B: Key Elements – the notables
Resolution 245 invites ITU-R to conduct and complete in time for WRC 23, the appropriate studies of technical, operational and regulatory issues, as well as sharing and compatibility studies, including studies with respect to services in adjacent bands, as appropriate, for the frequency bands: 1. 3 600-3 800 MHz and 3 300-3 400 MHz (Region 2); 2. **3 300-3 400 MHz (amend footnote in Region 1);** 3. **6 425-7 025 MHz (Region 1);** 4. **7 025-7 125 MHz (globally);** *5.* 10.0-10.5 GHz (Region 2). **Resolution 245** also indicates that these studies need to **ensure the protection of services** to which the frequency bands are allocated on a primary basis, **without imposing additional regulatory or technical** constraints on those services, and also, as appropriate, on services in adjacent bands. **Key elements for frequency band 3 300-3 400 MHz**

This frequency band is already identified for IMT in **33 African countries** through RR **n°5.429B**. However, this footnote contains **stringent conditions** including:

1. A geographical limitation "*limited to administrations south of 30° parallel north…*"
2. A secondary status for IMT with regard to Radiolocation service, "*IMT shall not cause harmful interference to, or claim protection from, systems in the radiolocation service…*"
3. Explicit agreement is needed for the implementation of IMT "*administrations shall obtain the agreement of neighbouring countries…*"

<u>Key elements for frequency band 6 425-7 125 MHz</u>

1. The 6 425 – 7 125 MHz frequency band was initially proposed **by African countries** at WRC-19.
2. The 6 425 – 7 025 MHz is for identification in **Region 1 only**, whereas 7 025 – 7 125 MHz is for **global harmonization**.
3. The **6 725 – 7 025 MHz** is a planned frequency band for GSO FSS uplinks which is subject to the provisions of **Appendix 30B**.
4. The survey conducted by WG1A show that the frequency band 6 425 – 7 125 MHz, or parts thereof, is used for the Fixed Service in all of the responding ATU member states (**30 administration**), for the deployment of **Fixed microwave links (86.7%).** These FS stations are mainly deployed on a nationwide basis (40 %), as well as in urban (16.7%) and rural areas (30%).
5. The band 6 425 – 7 125 MHz, or parts thereof, is also used for **Fixed-Satellite service** in **73.3 %** of the responding administrations for the deployment of VSATs and ES (63.3%).



** Data based on the responses to the Questionnaire on the Current Use of the Frequency Band 6 425 – 7 125 MHz in ATU Member States (Question 1).*

APM23-3 Agreed to:

1. **For the frequency band 3 300 – 3 400 MHz**:
   a) **Support** removal of stringent conditions through amendment of footnotes 5.429A and 5.429B, or adopting a new footnote, as appropriate.

b) **Encourage** African countries not yet listed in footnote 5.429B to consider adding their names to the footnote at WRC-23, in order to achieve harmonization;

c) **Not support** any method that will result in maintaining the current regulatory situation.

2. **For the frequency band 6 425-7 125 MHz**:

a) **Preliminarily support** identification of the frequency band 6 425-7 125 MHz for IMT;

b) **Support** consideration of appropriate measures to ensure the protection of the existing services, taking into account the result of the coexistence studies in ITU-R.

Part C: Current Status of the Band(s) or Issue(s)

Part A: Radio Regulations

Table below shows the allocation status of the bands 3 300-3 400 MHz and 6 425-7 125 MHz as found in RR Article 5:

Region 1	Region 2	Region 3
3 300-3 400 RADIOLOCATION 5.149 5.429 5.429A **5.429B** 5.430	**3 300-3 400** RADIOLOCATION Amateur Fixed Mobile 5.149 5.429C 5.429D	**3 300-3 400** RADIOLOCATION Amateur 5.149 5.429 5.429E 5.429F

....

5 925-6 700 FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B MOBILE 5.457C 5.149 5.440 5.458	FIXED 5.457
6 700-7 075	FIXED FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.441 MOBILE 5.458 5.458A 5.458B
7 075-7 145	FIXED MOBILE 5.458 5.459

5.429A Additional allocation: in **Angola, Benin, Botswana, Burkina Faso, Burundi, Djibouti, Eswatini**, **Ghana, Guinea, Guinea-Bissau, Lesotho, Liberia, Malawi, Mauritania, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sudan, South Sudan, South Africa, Tanzania, Chad, Togo, Zambia and Zimbabwe**, the frequency band 3 300 3 400 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis. Stations in the mobile service operating in the frequency band 3 300-3 400 MHz shall not cause harmful interference to, or claim protection from, stations operating in the radiolocation service. (WRC 19)

5.429B In the following countries of Region 1 **south of 30° parallel north**: **Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Congo (Rep. of the), Côte d'Ivoire, Egypt, Eswatini, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Malawi, Mauritania, Mozambique, Namibia, Niger, Nigeria, Uganda, the Dem. Rep. of the Congo, Rwanda, Sudan, South Sudan, South Africa, Tanzania, Chad, Togo, Zambia and Zimbabwe**, the frequency band 3 300-3 400 MHz is identified for the implementation of IMT. The use of this frequency band shall be in accordance with Resolution **223 (Rev.WRC-19)**. The use of the frequency band 3 300-3 400 MHz by IMT stations in the mobile service shall not cause harmful interference to, or claim protection from, systems in the radiolocation service, and administrations wishing to implement IMT shall obtain the agreement of neighbouring countries to protect operations within the radiolocation service. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC-19)

Part B: AfriSAP (1st Edition, August 2021)

Africa Common Allocation(s) and footnotes	Typical Applications	Additional information
3 300-3 400 MHz RADIOLOCATION MOBILE except aeronautical mobile 5.149 5.429[AddA10] 5.429A[AddA27] 5.429B[IMT33]	IMT	Res. 223 (Rev.WRC-19) applies. IMT Radio Frequency Channel arrangement according to Recommendation ITU-R M.1036 Report ITU-R M.2481 may be consulted In making assignments to stations in the frequency band 3300-3400 MHz, administrations are urged to give consideration to Radio Astronomy applications as per RR N° 5.149
5 925-6 700 MHz FIXED 5.457[SpNt4] FIXED-SATELLITE (E-s) 5.457A 5.457B[UseC9] MOBILE 5.149 5.440 5.458	Fixed links - Lower 6 GHz (5925-6425 MHz) and Upper 6 GHz (6425-7110 MHz) Fixed-satellite service uplinks (PTP/VSAT/SNG) (5850-6425 MHz) UWB SRD application (6000 - 9000 MHz) Licence-exempt WAS/RLAS in the range 5925 – 6425 MHz	Channelling plan for L6 GHz band in accordance with ITU-R Rec. F.383 Channelling plan for U6 GHz band in accordance with ITU-R Rec. F.384 ATU-R Recommendation 005-0 applies in the range (5925 – 6425 MHz) Earth Station on-board vessels (ESV) also allowed under FSS. Ultra-wideband applications (UWB): see ITU-R Rec.SM.1896-1, Rec SM.1755, Rec SM.1756, Rec SM 1757 and Rep SM. 2153-7 In making assignments to stations in the frequency band 6650 – 6675.2 MHz, administrations are

		urged to give consideration to Radio Astronomy applications as per RR n° 5.149
6 700-7 075 MHz FIXED FIXED-SATELLITE (E-s) (s-E) 5.441 MOBILE 5.458 5.458A 5.458B	Fixed links - Upper 6 GHz (6425-7110 MHz)	ITU-R Rec. F.384 applies The band 6 725-7 025 MHz is part of the APP30B Plan (FSS Earth-to-space); refer to Annex C.
7 075-7 145 MHz FIXED MOBILE 5.458	Fixed links - Upper 6 GHz (6425-7110 MHz) and Lower 7 GHz (7110-7425 MHz)	ITU-R Rec. F.384 applies ITU-R Rec. F.385 applies.

Part D: Conclusion of the results of studies, or Summary of the ongoing study work

Editor's Note: Detailed Sharing and compatibility studies results, proposed methods as well as associated regulatory and procedural considerations are contained in the Report of the CPM to WRC-23.

Frequency band 3 300 – 3 400 MHz:

The frequency range 3 300-3 400 MHz is allocated to the RLS on a primary basis. During this study cycle, four new studies were performed to evaluate the potential interference caused by IMT into RLS. Results indicate that separation distances will be required to ensure coexistence between IMT networks and radiolocation radars. These distances are in the range of **50 to 150 km** for the **land and ship-based radars**, whereas for airborne radars, the distances are between 310 km and 548 km.

Report ITU-R M.2481 contains in-band and adjacent band coexistence studies between IMT systems in the frequency band 3 300-3 400 MHz and land and maritime radiolocation systems in the frequency band 3 100-3 400 MHz.

Frequency band 6 425 – 7 125 MHz:

Results of coexistence studies between IMT and existing services within the frequency band 6 425 – 7 125 MHz and its adjacent bands are summarized as follows:

A. FSS uplink (6 425-7 075 MHz).

The FSS uplink studies is one of the key coexistence scenarios under this agenda. This is a global service and coexistence cannot be addressed at national level or with arrangements between neighbours. Moreover, the frequency band **6 725-7 025 MHz** is subject to the provisions of RR **Appendix 30B** (RR No. **5.441**), who's objective is to guarantee equitable access to the geostationary-satellite orbit for all countries.

In total, 20 studies have assessed the potential aggregate interference from IMT stations into FSS space stations at various positions in a geostationary orbit for global, hemi, zone and spot beams, results are as follows:

Scenario	Studies showing sharing feasible	Studies showing sharing feasible
Global beam	**11** Studies **A, B, D, H, I, J, K, L, M, Q, R** found that the long-term protection criterion is met.	**05** Studies **E, F, G, S, T** found that the long-term protection criterion is **not** met
Hemi beam	**05** Studies **B, H, M, Q, R** found that the long-term protection criterion is met	**03** Studies **E, F, G** found that the long-term protection criterion is **not** met
Zone beam	**05** Studies **A, B, H, J, M** found that the long-term protection criterion is met	**/**
Spot beam	**03** Studies **M, Q, L** found that the long-term protection criterion is met	**03** Studies **C, F, G** found that the long-term protection criterion is **not** met
Appendix 30B	**07** Studies **A, J, M, N, P, Q, R** found that the long-term protection criterion is met	**03** Studies **E, F, T** found that the long-term protection criterion is **not** met

An additional study (Study **U**) that was submitted to CPM23-2 concluded that, for the **Global beam** Carrier #12, the **long-term protection criterion is met** when IMT network density is based on **Ra1Rb1**, and **not met otherwise.** For **Hemi beam** Carrier #2 and for Spot beam Carriers #4 and #12, it found that the long-term protection criterion **is not met**.

Coexistence studies between FSS uplink and IMT, considered different scenarios/ methodologies and have used different assumptions/parameters, leading to divergent conclusions. The key assumptions identified as influencing the results:

- The choice of *Ra* and *Rb* options, which determines the number of IMT base stations for different deployment environments on the landmass of the Earth;
- Modelling of the FSS receiver antenna pattern and efficiency
- Modelling of clutter losses in the propagation mechanism.
- Apportionment of the interference criterion that apply to other co-primary services.
- The area covered on the surface of the Earth by the satellite footprint, and whether IMT BS stations are considered in the full visibility area or within the 3 dB contour, with or without maximum antenna gain;
- Boresight direction of the satellite space station antenna towards the surface of the Earth.

B. FSS downlink (6 700-7 075 MHz)

All studies carried out indicated that separation distances are required in order to protect the operation of non-GSO FSS earth stations. These separation distances range between a few kilometres to tens of kilometres. These protection distances are site specific and depend on several elements such as the propagation parameters, local terrain topography, surrounding clutter (including vegetation losses as appropriate e.g. during the seasonal changes) station and orbital parameters of the non-GSO system, and satellite selection strategy.

The minimum elevation angle should be treated with care to distinguish between the acquisition phase and communication phase taking into account the FSS DL receiver characteristics for each phase.

C. FS (6 425-7 125 MHz)

Sharing and compatibility studies showed that separation distances will be required to ensure coexistence between the stations of the two services.

- Studies based on Monte-Carlo approach and using the typical parameters showed that distances vary from **10 to 68 km** for the main lobe interference scenario, and from **1 to 10 km** for the side lobe scenario.
- Another deterministic calculation and found that separation distance is **59 km** when the IMT BS is placed inside the clutter, but increasing to **122 km** for the worst-case scenario when IMT BS is located above clutter and could be up to **200 km** for cases without clutter.

Separation distances above mainly depended on the coexistence scenario, ways to account for clutter losses and propagation losses. Therefore, coexistence between IMT and the fixed service could be achieved but would require site-by-site coordination if IMT and FS are deployed in the same or in adjacent geographical areas, in order to assess the required separation distances. However, for areas where the density of deployed Fixed links is high, coexistence may be difficult to achieve.

D. SOS (7 100-7 155 MHz) "RR No. **5.459"**

Three studies carried out aggregate interference calculations into NGSO SOS satellite network (System C) from IMT network; one concluded that the SOS protection criteria is not satisfied whereas the other two indicated that that there is no coexistence problem. Another study indicated that the interference protection criteria is always met for the case of GSO SOS satellite system (System D).

E. SRS (7 145-7 190 MHz)

Two studies evaluated the interference caused by IMT into SRS space station receiver, results show that no interference is expected to be caused by IMT to SRS service. A third study evaluated the potential interference caused by SRS (deep space) earth stations into IMT Base Station (BS), results show that coordination distances, ranging from tens of kilometers up to 400 km, may be required to ensure the protection of IMT BS.

Part E: Possible Options and Associated Implications

Methods proposed to satisfy AI 1.2:

Band 1: 3 300 – 3 400 MHz (in Region 1)

Method 1A	This method proposes **No change** to the allocations in the frequency band 3 300-3 400 MHz in Region 1, and suppression of Resolution 245 (WRC-19)
Method 1B	This method proposes to **Modify existing footnotes RR No. 5.429A and RR No. 5.429B** to **add interested** Region 1 **countries which are** in the area defined in RR No. 5.429B (**south of 30° parallel north**) to allocate the band 3 300-3 400 MHz to the mobile service (except aeronautical mobile) on a primary basis and to identify it for IMT in those countries
Method 1C	This method proposes to **Modify existing footnotes RR No. 5.429A and RR No. 5.429B including the revision of given conditions and to add interested** Region 1 countries to allocate the band 3 300-3 400 MHz to the mobile service (except aeronautical mobile) on a primary basis (RR No. 5.429A) and to identify it for IMT in those countries (RR No. 5.429B).
Method 1D	This method proposes a **Primary allocation to the mobile service** (except aeronautical mobile) in the band 3 300-3 400 MHz in interested Region 1 countries and identification of IMT **through a new footnote.**

Method 1E	This method proposes a **Primary allocation to the mobile service** (except aeronautical mobile) in the band 3 300-3 400 MHz by adding the band **in the Table of Allocations for Region 1** and identification to IMT by modification of RR No. 5.429B to apply to Region 1, and any consequent modifications to RR No. 5429A.
Method 1F	This method proposes to a **Primary allocation to the mobile service** in the frequency band 3 300-3 400 MHz by adding the band **in the Table of Frequency Allocations** for Region 1 and **identification** to IMT without any condition by **adding a new footnote**

Bands 4 & 5: 6 425 – 7 025 MHz and 7 025 – 7 125 MHz

Band 4 – 6 425-7 025 MHz (Region 1)	
Method 4A	This method proposes **no change** to the Radio Regulations, except for suppression of Resolution **245 (WRC-19)**.
Method 4B	This method proposes to **identify** the frequency band 6 425-7 025 MHz in Region 1 for IMT by creating a new RR footnote associated with a new Resolution **without any additional conditions** or constraints to the IMT deployment other than those existing in the Radio Regulations.
Method 4C	This method proposes to **identify** the frequency band 6 425-7 025 MHz in Region 1 for IMT by creating a new RR footnote **with conditions** which are contained in a draft new WRC Resolution. Concerning the **protection of FSS uplink**, there are several **alternatives** for regulatory conditions under this method. ● Alt 1: **Pointing restrictions** and **power/TRP restriction** (**13 dBW** as per RR **21.5).** ● Alt 2: Limit on the **expected e.i.r.p.** ● Alt 3: **Maximum e.i.r.p. mask** and base station **density limit.**
Method 4D	This method proposes to **identify** the frequency band 6 425-7 025 MHz in Region 1 for IMT by creating a new RR footnote **with conditions** which are contained in a draft new WRC Resolution and which are **applied only** within the band **6 425-6 525 MHz**. Concerning the protection of FSS uplink, see the various alternatives under Method 4C and related views.
Method 4E	This method proposes to **identify the frequency** band 6 425-7 025 MHz in Region 1 for IMT by creating a new RR footnote, specifying **the use is expected from 2030*** onwards, in due time for launching IMT-2030 and **in order to provide time** for **identifying solutions for users of the spectrum which may be affected** (e.g. **fixed links** and **EESS**, with sea surface temperature measurements), with conditions which are contained in a new WRC Resolution Concerning the **protection of FSS uplink**, see the various **alternatives under Method 4C** and related views.
Band 5 – 7 025-7 125 MHz (globally)	

Method 5A	This method proposes **no change** to the Radio Regulations, except for suppression of Resolution **245 (WRC-19)**.
Method 5B	This method proposes to **identify the frequency** band 7 025-7 125 MHz for IMT by creating a **new RR footnote** associated with a new Resolution **without any additional conditions** or constraints to the IMT deployment other than those existing in the RRs.
Method 5C	This method proposes to **identify the frequency** band 7 025-7 125 MHz for IMT by creating a new RR footnote **with conditions** which are contained in a draft new WRC Resolution. Concerning the **protection of FSS uplink**, see the **various alternatives under Method 4C** and related views.
Method 5D	This method proposes **to identify the frequency** band 7 025-7 100 MHz for IMT by creating a **new RR footnote** with a requirement to implement **technical and regulatory measures** to protect and not impose constraints on existing services in the band above 7 100 MHz. Concerning the **protection of FSS uplink**, see the various alternatives under **Method 4C** and related views.
Method 5E	This method proposes to **identify the frequency band** 7 025-7 125 MHz for IMT by creating a new RR footnote, clarifying that **the use is expected from 2030*** onwards, in due time for launching IMT-2030 and in order to **provide time for identifying solutions** for users of the spectrum which may be affected (e.g. **fixed links** at a national level and **EESS**, with sea-surface temperature measurements), with conditions which are contained in a draft new WRC Resolution. Concerning the **protection of FSS uplink**, see the various **alternatives under Method 4C** and related views.

For **frequency band 1: 3 300 – 3 400 MHz**

Considering that:

- the 3300-3400 MHz frequency band is identified for IMT in the Radio Regulations in 33 African countries through footnote 5.429B. However, the band is not yet in use for IMT in any African country.
- IMT take up in the continent would be facilitated if the conditions for use in footnote 5.429B, such as geographical limitation, explicit agreement from neighbouring countries, and if IMT use was not subject to no interference no protection from radiolocation.
- Methods 1C, 1D and 1E do not fully satisfy the objectives set by the ATU preliminary position as of APM23-3, meaning to identify the band for IMT, achieve harmonization, and removal of stringent conditions; contrary to Method F;
- Method F may comply with the objectives set by the ATU preliminary position taken by APM23-3.

- WG1A recommended to APM23-4 to consider Method 1F for developing an AfCP under this agenda item.
- Details of the sub-regional groups and administrations supporting the different methods expressed during the APM23-4 are captured in Annexure attached hereto.

For **Frequency band 4: 6 425 – 7 025 MHz and Band 5: 7 025 – 7 125 MHz**

Considering that:

- Results of the survey conducted among ATU member states, as agreed by APM23-2, indicated that the frequency band **6 425 – 7125 MHz** is **heavily used** within Africa for **Fixed and Fixed Satellite services**, and highlighting **the need to ensure their protection**;
- Studies have concluded that coexistence is feasible for co-channel scenario between IMT and the fixed service by means of site-by-site coordination, if the two systems are deployed in the same or in adjacent geographical areas;
- **Several studies** showed that **coexistence is feasible** between IMT and FSS (uplink), including AP30B allotment, when considering certain assumptions. Nevertheless, **some other studies**, using different assumptions, concluded that the **protection criteria** for FSS uplink is **not met;**
- Methods 4B/5B and 4C/5C are consistent with the ATU preliminary position as of APM23-3, meaning to support identification of the frequency band 6 425-7 125 MHz for IMT, while considering appropriate measures to ensure the protection of the existing services, in accordance with the results of coexistence studies carried out by ITU-R.
- WG1A could not reach to a single recommendation with regards to the divergence views expressed by ATU Sub-Regions/Administrations on the preferred method to satisfy this agenda item.
- WG1A recommended to APM23-4 to consider Methods 4C and 5C (Alternative 2) and Method 4A and Method 5A for developing an AfCP under this agenda item.
- Details of the sub-regional groups and administrations supporting the different methods expressed during the APM23-4 are captured in Annexure attached hereto.

Part F: African Common Position (AfCP)

APM23-4 agreed to:

For **frequency band 1: 3 300 – 3 400 MHz**

1. **Support Method 1F**
2. **Not support methods 1A and 1B,** which will result in maintaining the current regulatory situation.

For **frequency band 4: 6 425 – 7 025 MHz; band 5: 7 025 – 7 125 MHz**

Support Methods 4C and 5C (alternative 2), to identify the frequency band **6 425 – 7 125 MHz** to IMT with the following set of conditions to protect incumbent services:

1. For the protection of FSS (earth-to-space) in the frequency band 6 425-7 075 MHz – Mask for the expected equivalent isotropically radiated power (e.i.r.p.) emitted by an IMT base station: **Example 3** of the draft resolution associated with method 4C/5C;
2. For the protection of FSS (space-to-Earth) in the frequency band 6 700-7 075 MHz: through the adoption of site-specific coordination.

For **frequency band 2: 3 300-3 400 MHz; frequency band 3: 3 600-3 800 MHz** and **frequency band 6: 10 – 10.5 GHz (Region 2)**

1. **For frequency band 2 and frequency band 3, support** allocation to mobile service, and possible IMT identification in these frequency bands under consideration in Region 2, considering that this would foster global harmonization for the implementation of IMT;
2. **For frequency band 6, support** that IMT identification of this frequency band or part thereof under consideration in Region 2, shall not affect services to which this frequency band is allocated to in Region 1.

Part G: Recommendations and Way Forward

APM23-4 agreed to request ATU Administrations to:

Support the AfCP under this agenda item.

ANNEX

Inputs received from ATU Sub-Regions / Administrations to APM23-4 on the frequency band 3 300 – 3 400 MHz

Sub-Regions / Administrations	Band 1: 3300–3400 MHz					
	1A	1B	1C	1D	1E	1F
ECCAS						X
ECOWAS						X
SADC						X
EACO						X
Tunisia, Egypt						X
Morocco, Mali	X					
Gabon		X				

X: Supported Method

Inputs received from ATU Sub-Regions / Administrations to APM23-4 on the frequency band 6 425 – 7 125 MHz

Sub-Regions / Administrations	Band 4: 6 425 - 7 025 MHz					Band 5: 7 025 - 7 125 MHz				
	4A	4B	4C	4D	4E	5A	5B	5C	5D	5E
ECCAS			X (alt2)					X (alt2)		
ECOWAS			X (alt2)					X (alt2)		
Burundi, Comoros, Democratic Republic of Congo, Eswatini, Kenya, Lesotho, Madagascar, Namibia, Nigeria, South Africa, Zimbabwe, Uganda, Zambia			X (alt2)					X (alt2)		
Angola, Malawi, South Sudan, Rwanda,	X					X				
Morrocco, Mauritius					X					X
Egypt			X (limited to AP30B)				X			
Tunisia	No position yet defined					No position yet defined				

X: Supported Method