

WRC 2023
Agenda Items 1.1, 1.2 and 1.4



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NPC for WRC-23



National Preparatory Committee for WRC 2023 (NPC)- Chair Sh. V.J. Christopher, WA

NPC WGs	Chairmen (Name, Designation, Email)	Topics (WRC 2023 Agenda Items)
WG-1	Sh. MPS Alawa, Sr. DWA ms.alawa@nic.in	Fixed, Mobile and Broadcasting issues (1.1, 1.2, 1.3, 1.4, 1.5, 9.1 (c), Article 21.5)
WG-2	Smt. M. Revathi, Sr. DWA m.revathi@nic.in	Aeronautical and maritime issues (1.6, 1.7, 1.8, 1.9, 1.10, 1.11)
WG-3	Sh. Ajay Singhal, Sr.DD singhal.ajay@nic.in	Science issues (1.12, 1.13, 1.14, 9.1(a) and 9.1 (d))
WG-4	Sh. M.K. Pattanaik, Sr. DWA pattanaik.mr@gov.in	Satellite issues (1.15, 1.16, 1.17, 1.18, 1.19, 7)
WG-5	Sh. Anil K. Soni, Sr. DD anilk.soni@nic.in	General issues (2, 4, 8, 9.1 (b) and 10)

Agenda Item 1.1



*to consider, based on the results of the ITU R studies, possible measures to address, in the frequency band **4 800-4 990 MHz**, protection of stations of the aeronautical and maritime mobile services located in international airspace and waters from other stations located within national territories, and to review the pfd criteria in No. 5.441B in accordance with Resolution 223 (Rev.WRC-19);*

5.441B In Angola, Armenia, Azerbaijan, Benin, Botswana, Brazil, Burkina Faso, Burundi, Cambodia, Cameroon, China, Côte d'Ivoire, Djibouti, Eswatini, Russian Federation, Gambia, Guinea, Iran (Islamic Republic of), Kazakhstan, Kenya, Lao P.D.R., Lesotho, Liberia, Malawi, Mauritius, Mongolia, Mozambique, Nigeria, Uganda, Uzbekistan, the Dem. Rep. of the Congo, Kyrgyzstan, the Dem. People's Rep. of Korea, Sudan, South Africa, Tanzania, Togo, Viet Nam, Zambia and Zimbabwe, the frequency band 4 800-4 990 MHz, or portions thereof, is identified for use by administrations wishing to implement **International Mobile Telecommunications (IMT)**. 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. The use of IMT stations is subject to agreement obtained under No. 9.21 with concerned administrations, and IMT stations shall not claim protection from stations of other applications of the mobile service. In addition, before an administration brings into use an IMT station in the mobile service, it shall ensure that the **power flux-density (pfd) produced by this station does not exceed $-155 \text{ dB(W/(m}^2 \cdot 1 \text{ MHz))}$ produced up to **19 km above sea level at 20 km from the coast, defined as the low-water mark, as officially recognized by the coastal State. This pfd criterion is subject to review at WRC-23.** Resolution 223 (Rev.WRC-19) applies. This identification shall be effective after WRC-19. (WRC-19)**

Methods as in CPM report



Method A	NOC to RR except for consequential changes
Method B	NOC to RR except for modification of Resolution 223 to apply the existing pfd value to all countries listed in RR No. 5.441B , as well as other consequential changes <i>resolves</i> 5 of Resolution 223 (Rev.WRC19) is deleted
Method C	Modification of the existing pfd criterion in RR No. 5.441B , as well as other consequential changes The current pfd value of $-155 \text{ dB (W/(m}^2 \cdot 1 \text{ MHz))}$ is replaced with alternatives for the pfd value and the coastal boundary for the application thereof. 5 alternative options: pfd limits ranging from $-115 \text{ dB(W/(m}^2 \cdot 1 \text{ MHz))}$ to $-140 \text{ dB(W/(m}^2 \cdot 1 \text{ MHz))}$ attached to varying coastal boundaries from 22 km to EEZ. Administrations currently exempt from the pfd criterion would continue to remain exempt.
Method D	Modification of the existing pfd criterion in RR No. 5.441B and applying it to all countries listed in RR No. 5.441B , as well as other consequential changes The current pfd value of $-155 \text{ dB (W/(m}^2 \cdot 1 \text{ MHz))}$ is replaced with a new pfd value and coastal boundary in line with the alternatives of Method C. <i>resolves</i> 5 of Resolution 223 (Rev.WRC19) is deleted
Method E	Applying a pfd criterion and extension of list of countries where it is not applied through separate regulatory measures either regulatory protection mechanisms of i) a pfd criterion imposed on IMT stations together with RR No. 9.21 or, ii) only the application of No. 9.21 can be considered Two footnotes will be created where existing RR No. 5.441B will apply a new (lower) pfd limit on IMT based on the study outcomes and a new RR No. 5.A11 will be established that only applies RR No. 9.21 . Countries wishing to identify the band for IMT will be free to elect which footnote it prefers to join. <i>resolves</i> 5 of Resolution 223 (Rev.WRC19) is deleted
Method F	Application of RR No. 9.21 and bilateral/multilateral coordination agreements with coastal States for the protection of AMS/MMS stations in international airspace and international waters the pfd criterion of RR No. 5.441B is deleted development of Rec. and/or Rep. in Resolution 223 (Rev. WRC-19) is added <i>resolves</i> 5 of Resolution 223 (Rev.WRC19) is deleted



- In the 44th WP 5D meeting after the CPM23-2, additional analysis information (see Document 5D/TEMP/941) based on the contributions was discussed with no full consideration by WP 5D.
- In the APG23-5, several issues such as the use of spectrum in international airspace and international waters, the pfd issues and “resolves 5” of Resolution 223 (Rev. WRC-19) were raised during the meeting. (see Document APG23-5/OUT-04)
- There are diverse positions among regional groups (ATU, RCC: Method F, CEPT: Method D)
- Key issues to be solved during APG23-6 and WRC-23 (as of June 2023)

1. Modification of the pfd limits

- There were various pfd limits in the CPM Report and some technical studies with aggregation factors were submitted in CPM23-2 and WP5D.

2. Application of RR 9.21 and bi/multilateral coordination

- The CPM23-2 consolidated Methods E/G/H to a single Method F.

3. Deletion of resolves 5 of Resolution 223

- Methods B, D, E, and F of the CPM Report are indicated.



- No views were submitted at APG 23-4 and APG 23-5
- Contribution to WP-5D October 2022 5D/1505
 - Modifications suggested in draft CPM text document
- National deliberations
 - Protections of AMS and MMS
 - Existing uses

Some regional positions for AI 1.1



CEPT Position (July 2023)	RCC (May 2023)	CITEL (Feb 2023)
<ul style="list-style-type: none">• In 4800-4825 MHz and 4835-4950 MHz, $-140 \text{ dB(W/(m}^2 \cdot 1 \text{ MHz))}$ produced up to 19 km above sea level at 22 km from the coast, defined as the low-water mark, as officially recognized by the coastal State.• In 4800-4990 MHz, $-134 \text{ dB(W/(m}^2 \cdot 1 \text{ MHz))}$ produced up to 30 m above sea level at 22 km from the coast, defined as the low-water mark, as officially recognized by the coastal State.	<ul style="list-style-type: none">• applications of AMS and MMS in the international space are not prioritized over the applications of terrestrial services in the 4800-4990 MHz frequency band• The administrations of the RCC oppose the implementation of additional pfd limits• Method F «Application of RR No. 9.21 and bilateral/ multilateral coordination agreements with coastal States for the protection of AMS/MMS stations in international airspace and international waters	<p>Prelim View: One admin proposes Review of 5.441 B</p> <p>USA: 9.21 is not sufficient, New pfd value as per studies for AMS and MSS protection, edited Method C and D in 5D/1395</p>

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);*

IMT identification in Bands

1. 3300-3400 MHz (amend footnote in Region 1)

2. 3300-3400 MHz (Region 2)

3. 3600-3800 MHz (Region 2)

4. 6425-7 025 MHz (Region 1)

5. 7025-7125 MHz (Globally)

6. 10.0-10.5 GHz (Region 2)

India Position (APG 23-5)



- IMT identification- global harmonization of band, bringing in economies of scale; subject to ensuring protection to services in adjacent band based upon studies.
- Considering above India supports following methods, protection of existing primary services operating in Region 3

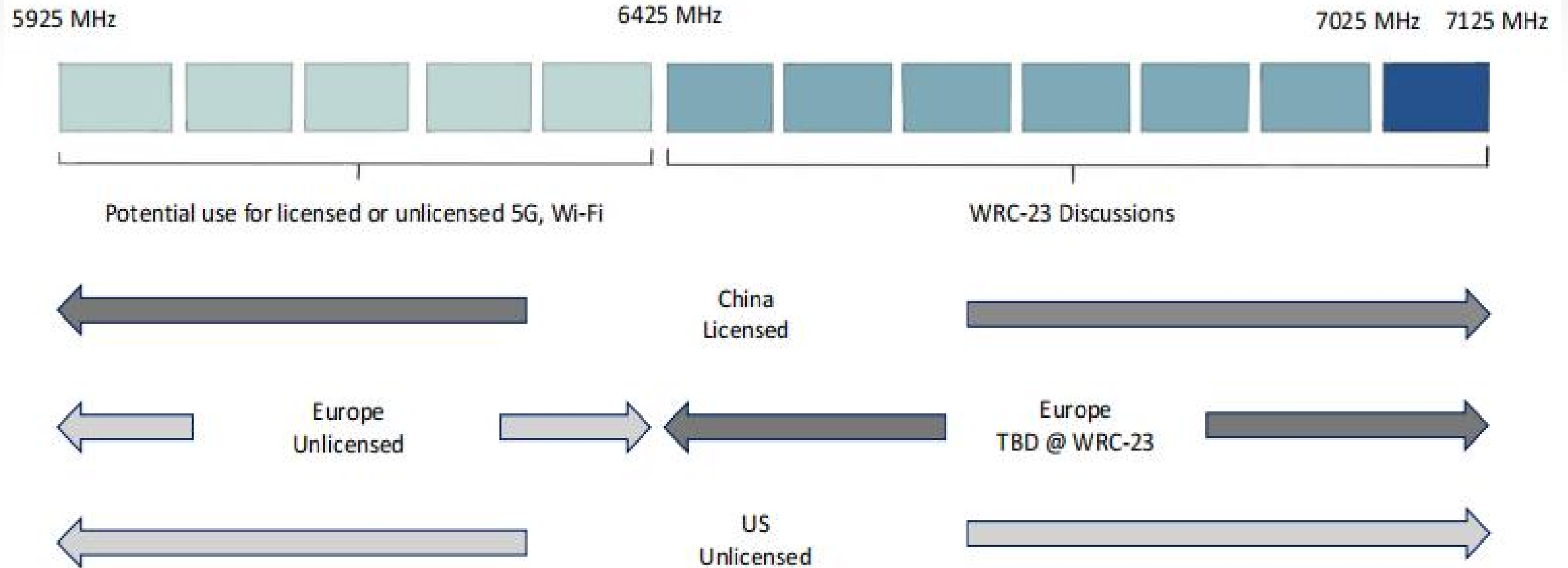
- Band 1 – 3 300-3 400 MHz (amend footnote in Region 1):

Method 1D: Primary allocation to the mobile (except aeronautical mobile) service in the frequency band 3 300-3 400 MHz in interested Region 1 countries and identification of IMT through a new footnote.

- Band 2 – 3 300-3 400 MHz (Region 2):

Method 2C: Allocation of the frequency band 3 300-3 400 MHz to the mobile (except aeronautical) service on a primary basis and identification of IMT in Region 2.

6GHz (1200 MHz)



India Position (APG 23-5)



- Band 4- 6425- 7025 (Region 1)
 - This band is **being discussed nationally** keeping protection of incumbent services and demand of new applications WiFi and IMT. Studies are being carried out to determine the **best possible use**.
 - Some administrations have announced to propose footnotes and new agenda item w.r.t. Region 3 for Band 4.
- Band 5 - 7 025-7 125 MHz (globally):
Method 5B: Identification of 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.

Some regional positions for AI 1.2 (3300-3400 MHz R1 &R2)



CEPT Position (July 2023)	CITEL (Feb 2023)	RCC (May 2023)
<ul style="list-style-type: none"> 3300-3400MHz (Amend Footnote in Region 1): CEPT does not support amendments to footnotes 5.429A and 5.429B. CEPT does not support an IMT identification for the entire Region 1. Furthermore, CEPT opposes amending the footnote to change the regulatory provisions applicable to IMT. 3300-3400 MHz (Region 2): CEPT supports maintaining the regulatory provisions in the footnotes. In particular, IMT stations shall not cause harmful interference to, nor claim protection from radiolocation service 	<ul style="list-style-type: none"> 3300-3400MHz: Inter- American Proposal Identification of the mid-band frequency spectrum for IMT in Region 2 in the band 3 300-3 400 MHz by modification of 5.429C, 5.429D and the addition of 5.12AI 5.12AI Stations in the mobile service operating in the frequency band 3 300-3 400 MHz in Region 2 shall not cause harmful interference to, or claim protection from, stations operating in the radiolocation service. 	<p>3300–3400MHz : Region 1 No objection for the extension of country name list but advocate for the protection of FSS in 3400-4200 MHz. Method 1A or 1B</p> <p>3300–3400MHz : Region 2 No objection for identification but advocate for the protection of radiolocation. Method 2A or 2C</p>

Some regional positions for AI 1.2 (3600-3800 MHz R2)



CEPT Position (July 2023)	CITEL (Feb 2023)	RCC (May 2023)
<ul style="list-style-type: none">CEPT would not oppose an IMT Identification in Region 2, noting that administrations of Region 2 are expected to define relevant provisions to protect FSS earth stations	<ul style="list-style-type: none">Draft Inter-American ProposalsSome Administrations propose the modification of 5.434 to extend the existing IMT footnote(s) to the entire Region 2 for the identification of 3 600-3 800 MHz for IMT, removing existing conditions.Other Administrations propose the modification of 5.434 to add new countries in the identification of 3 600-3 700 MHz for IMT while maintaining all existing conditions.	<ul style="list-style-type: none">if identified for IMT in Region2, it is necessary to adopt relevant provisions to the RR ensuring protection of FSS and FS. <p>Method 3A or 3D from the CPM Report</p>

Some regional positions for AI 1.2 (6425- 7025 MHz R1 and 7025-7125 Global)



CEPT Position (July 2023)	CITEL (Feb 2023)	RCC (May 2023)
<ul style="list-style-type: none">• considering IMT or WAS/RLAN or a shared framework.• considering the conditions for potentially accepting an IMT identification.• emphasises that any potential IMT identification does not preclude the use of this frequency band. Additional provisions should clearly outline opportunities for other broadband applications.• discussing further conditions including in relation to potential candidate IMT bands for WRC-27.	<ul style="list-style-type: none">• Draft Inter-American Proposal• Some Administrations propose NOC for the identification of the frequency band 6 425-7 125 MHz for IMT	<p>Support identification under conditions:</p> <ul style="list-style-type: none">• non-GSO MSS (s-E) feeder links in the band 6700-7075 MHz;• FSS (E-s) stations on GSO and HEO in the band 6725-7025 MHz;• SOS / SRS stations in the band 7100-7250 MHz;• not imposing regulatory or technical constrains for SOS / SRS and keep possibility for the further use of the EESS (passive).• 7100–7125 MHz (Global):• Protect existing radio services (including space stations of SOS, SRS and EESS (passive)).• Methods 4D and 5D



- *to consider, in accordance with Resolution 247 (WRC-19), the use of high-altitude platform stations as IMT base stations (HIBS) in the mobile service in certain frequency bands below 2.7 GHz already identified for IMT, on a global or regional level;*

Resolves 2 of Resolution 247

- *694-960 MHz;*
- *– 1 710-1 885 MHz (1 710-1 815 MHz to be used for uplink only in Region 3);*
- *– 2 500-2 690 MHz (2 500-2 535 MHz to be used for uplink only in Region 3, except*
- *2 655-2 690 MHz in Region 3);*

India Position (APG 23-5)



- While considering the feasibility of HIBS in the IMT bands below 2.7 GHz, India supports technical and regulatory provision for the protection of existing and planned satellite services in the band 2500-2690 MHz and in the adjacent band 2483.5 -2500 MHz.
- The frequency band 2483.5-2500 MHz is used in NavIC user receivers; and frequency bands 2500-2535 MHz, 2555-2635 MHz and 2655-2690 MHz used in S-band MSS satellites of India and currently experiencing interference into the satellite receivers.
- In addition, India supports technical and regulatory provisions required for protection of existing and planned IMT services in the proposed bands below 2.7 GHz

India Position (APG 23-5)



India may support following Method

- Band A - 694-960 MHz

Method A3: Use by HIBS in single footnote not claiming protection

- Band B - 1 710-1 885 MHz

Method B3: Use by HIBS in single footnote not claiming protection

- Band C - 1 885-1 980 MHz, 2 010-2 025 MHz, and 2 110-2 170 MHz

Method C3: Use by HIBS in single footnote not claiming protection

- Band D - 2 500-2 690 MHz

Method D1: No change to the Radio Regulations (RR)

Some regional positions for AI 1.4



CEPT Position (July 2023)	CITEL (Feb 2023)	RCC (May 2023)
<ul style="list-style-type: none">• three different protection applying as appropriate:• specific geographical coordination, in-band or adjacent band pfd masks and limitation of the HIBS emissions to a specific direction.• non-protection basis: since studies have not addressed the risk that HIBS may require more protection than conventional IMT base stations• >18 kms and 20 kms• pfd limit for the protection of broadcasting	<ul style="list-style-type: none">• Preliminary Proposal- An Administration propose NOC• Draft Inter-American Proposals:• An administration proposed additions of resolution for use of HIBS in proposed bands	<ul style="list-style-type: none">• to protect terrestrial IMT systems in the territory of other administrations from HIBS emissions, a restriction as a maximum permissible level of power flux-density at the surface of the Earth in the territory of another administration shall be applied.• protection of ARNS, MSS, Meteorological, SOS, SRS, EESS, FS services in various bands• Methods A1 or A3• B3, C3 and D3



Overview of the ITU-R Calendar towards WRC-23

Year	January – March	April – June	July – September	October – December
2019	CPM19-2	Last meetings of the Responsible Groups	WS on WRC-19	RA-19 WRC-19 CPM23-1
2020	WP 5D (1 st)	WPs 7B & 7C (1 st) WP 4C+WP 4A (1 st) WP 5D (2 nd)	WPs 5A, 5B & 5C (1 st) WPs 7B & 7C (2 nd) CPM-23 Steering	WP 5D (3 rd) TG 6/1 (1 st) WP 4C+WP 4A (2 nd) WPs 5A, 5B & 5C (2 nd) WP 5D (4 th) WRS-20
2021	WP 4C+WP 4A (3 rd) WP 5D (5 th)	WPs 7B & 7C (3 rd) WPs 5A, 5B & 5C (3 rd) WP 5D (6 th)	TG 6/1 (2 nd) WP 4C+WP 4A (4 th) WPs 7B & 7C (4 th)	WP 5D (7 th) WP 4C+WP 4A (5 th) TG 6/1 (3 rd) WPs 5A & 5C (4 th) WP 5B (4 th) 1 st WS on WRC-23
2022	WP 5D (8 th) TG 6/1 (4 th) [WP 5B (5 th)]	[WPs 7B & 7C (5 th)] [WP 4C+WP 4A (6 th)] [WPs 5A & 5C (5 th)] [WP 5D (9 th)] [5D-WG Spectrum]	[WP 5B (6 th)] [TG 6/1 (5 th)] [WP 4C+WP 4A (7 th)] [WPs 7B & 7C (6 th)] [WP 5D (10 th)] we are here	[WPs 5A, 5C (6 rd) & 5B (7 th)] [CPM-23 Manag ^{nt} Team] [2 nd WS on WRC-23]
2023	[Meetings of the Responsible Groups] [CPM23-2]	[Last meetings of the Responsible Groups]	[3 rd WS on WRC-23]	RA-23 WRC-23

[...] = planned meetings

WS on WRC-23 = ITU Inter-regional Workshop on WRC-23 Preparation



THANK YOU

Important Events

APG 23-6
Brisbane
Australia
13-18 Aug
2023

[APG webpage](#)

ITU Inter-
regional
Workshop on
WRC-23
Preparation
27-29 Sep 2023

[Calendar of Events](#)

RA-23

Dubai
UAE
13 - 17 Nov
2023

WRC-23 and
CPM 27-1

Dubai
UAE
20 Nov – 19 Dec
2023

[WRC-23 webpage](#)

