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|  | ASIA-PACIFIC TELECOMMUNITY | **Document No:** |
| **The 4th Meeting of the APT Conference Preparatory**  **Group for WRC-19 (APG19-4)** | **APG19-4/OUT-28** |
| 7 – 12 January 2019, Busan, Republic of Korea | 11 January 2019 |

Working Party 2

**PRELIMINARY VIEWs on WRC-19 agenda item 1.13 [[1]](#footnote-1)**

**Agenda Item 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 (WRC‑15)****;*

# 1. Background

IMT-2020 supports several new applications. Resolution **238 (WRC-15)** calls for studies to determine the spectrum needs for the terrestrial component of IMT in the frequency range between 24.25 GHz and 86 GHz, as well as sharing and compatibility studies, taking into account the protection of services to which the band is allocated on a primary basis, for the frequency bands:

– 24.25-27.5 GHz[[2]](#footnote-2), 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 and 81-86 GHz, which have allocations to the mobile service on a primary basis; and

– 31.8-33.4 GHz, 40.5-42.5 GHz and 47-47.2 GHz, which may require additional allocations to the mobile service on a primary basis.

The draft CPM Report for agenda item 1.13 developed by ITU-R Task Group 5/1 (TG 5/1) includes:

– The results of the studies of estimated spectrum needs for the terrestrial component of IMT in the frequency range between 24.25 GHz and 86 GHz;

– The results of sharing and compatibility studies carried out by ITU-R for each of the frequency bands under study; and

– The methods to satisfy agenda item 1.13 and regulatory and procedural considerations for each of the frequency bands under study.

A no-change method (NOC) to the Radio Regulations (RR) is included in each of the frequency bands. Some other methods are accompanied by a series of alternatives for allocation and/or identification for IMT as appropriate. Furthermore, conditions for protection measures of different services are also included, as appropriate.

It should be noted that detailed results of the sharing and compatibility studies by ITU-R are available in the Chairman’s Report for the sixth meeting of TG 5/1 (Annexes 3-13 to Document [5-1/478](https://www.itu.int/md/R15-TG5.1-C-0478/en)).

Within APT, APT Wireless Group (AWG) is collaborating with APG in certain aspects relating to this agenda item (See Documents APG19-2/[INP-07](http://www.apt.int/sites/default/files/2017/05/APG19-2-INP-07_LS_from_AWG.docx), APG19-3/[INP-08](https://www.apt.int/sites/default/files/2018/01/APG19-3-INP-08_LS_from_AWG.docx) and APG19-4/[INP-06](https://www.apt.int/sites/default/files/2018/10/APG19-4-INP-06_LS_from_AWG.docx)).

# 2. Documents

– **Input Documents:** APG19-4/[INP-06](https://www.apt.int/sites/default/files/2018/10/APG19-4-INP-06_LS_from_AWG.docx) (AWG), [INP-09 (Rev.1)](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-09Rev.1_Report-second_Inter-regional_Workshop_on_preparations_for_WRC-19.docx) (Chairman, APG-19), [INP-16](https://www.apt.int/sites/default/files/2019/01/APG19-4-INP-16__AUS2_-_Australian_Contribution_to_APG19-4_Chapter_2.docx) (AUS), [INP-23](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-23_NZ2_WP2.docx) (NZL), [INP-30](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-30_THA2_WP2_AI_1.13_1.16_and_9.1.5.doc) (THA), [INP-38](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-38_Vietnam_WP2_1.13_1.16.docx) (VTN), [INP-54](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-54_Malaysia_WP2_1_13_1_16_Final.docx) (MLA), [INP-58](https://www.apt.int/sites/default/files/2019/01/APG19-4-INP-58_Preliminary_views_on_WRC-19_WP-2_MNG.docx) (MNG), [INP-60](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-60_2_J_WP2.docx), [INP-67](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-67_9_J_WP2_AI1.13CPMmod.DOCX) (J), [INP-74 (Rev.1)](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-74_WP2_CPM_report_kor_Rev.1.docx), [INP-75 (Rev.1)](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-75_WP2_kor_Rev.1.docx) (KOR), [INP-84](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-84_IRN_Chapter_2.docx), [INP-8](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-85_IRN_Chapter_2_CPM.docx)5 (IRN), [INP-89](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-89_PNG_Preliminary_Views_on_AI1.13.docx) (PNG), [INP-91](https://www.apt.int/sites/default/files/2018/12/WP2_APG19-4-INP-91_Singapore_1.13_1.16_9.1.1.docx) (SNG), [INP-96](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-96_Laos_Contribution_AI_1.13_for_APG19-4.docx) (LAO), [INP-101](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-101_China5_Preliminary_views_on_WRC-19_AI_1.13_1.16_9.1_issues_9.1.1_9.1.5_9.1.8_rev_3.docx) (CHN), [INP-109](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-109_BGD_WP2.docx) (BGD), [INP-114](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-114_Preliminary_India_Views_on_Agenda_1.13_1.16_9.1_Issue_9.1.8.docx) (IND), [INP-119](https://www.apt.int/sites/default/files/2019/01/APG19-4-INP-119_INS2_Preliminary_View_-_WP2.docx) (INS)

– **Information Documents**: APG19-4/[INF-02](https://www.apt.int/sites/default/files/2018/12/APG19-4-INF-02_WMO-Position_20181109.docx) (WMO), [INF-03](https://www.apt.int/sites/default/files/2018/12/APG19-4-INF-03_IARU.DOCX) (IARU R3), [INF-04](https://www.apt.int/sites/default/files/2018/12/APG19-4-INF-04_ICAO_01_WRC-19_ICAO-Pos_for_APG-4_for_WP5.docx) (ICAO), [INF-07](https://www.apt.int/sites/default/files/2018/12/APG19-4-INF-07_GSA_APG19-4_AI1.13_margin.docx), [INF-08](https://www.apt.int/sites/default/files/2018/12/APG19-4-INF-08_GSA_APG19-4_AI1.13.docx) (Ericsson, Intel Microelectronics, Nokia, Qualcomm International and Samsung Electronics), [INF-10](https://www.apt.int/sites/default/files/2018/12/APG19-4-INF-10_THAICOM_INMARSAT_Paper_AI_1.13_APG19-4.docx) (Inmarsat Singapore and THAICOM), [INF-11](https://www.apt.int/sites/default/files/2018/12/APG19-4-INF-11_WFA_Info_Doc_to_APG19-4_-_R2.docx) (Wireless Industry Collaboration Co., Ltd), [INF-13](https://www.apt.int/sites/default/files/2018/12/APG19-4-INF-13_BOSCH_APG19-4_AI1.13.docx) (Robert Bosch (South East Asia) PTE LTD), [INF-14](https://www.apt.int/sites/default/files/2018/12/APG19-4-INF-14_WMO-AI_1.13.docx) (WMO), [INF-15](https://www.apt.int/sites/default/files/2018/12/APG19-4-INF-15_Viasat.docx) (VIASAT, INC), [INF-17](https://www.apt.int/sites/default/files/2018/12/APG19-4-INF-17_INFO_GSMA_AI_1.13_final.docx) (GSMA (Hong Kong) and Telstra Corporation Limited), [INF-22](https://www.apt.int/sites/default/files/2019/01/APG19-4-INF-22_CITEL_PPT.pdf) (CITEL), [INF-23](https://www.apt.int/sites/default/files/2019/01/APG19-4-INF-23_CEPT_PPT.pdf) (CEPT), [INF-24](https://www.apt.int/sites/default/files/2019/01/APG19-4-INF-24_RCC.pdf) (RCC), [INF-26](https://www.apt.int/sites/default/files/2019/01/APG19-4-INF-26_NPL_AI_1.13_1.16_AND_9.1.1.docx) (NPL)

# 3. Summary of discussions

## 3.1 Summary of APT Members’ views

### **3.1.1 Australia - Document APG19-4/**[**INP-16**](https://www.apt.int/sites/default/files/2019/01/APG19-4-INP-16__AUS2_-_Australian_Contribution_to_APG19-4_Chapter_2.docx)

Australia supports identifying the 24.25-27.5 GHz, 66-71 GHz and 71-76 GHz frequency bands for IMT. Australian support for the 71-76 GHz band is on the basis that suitable unwanted emission limits are applied to IMT to protect automotive radar operating in the 76-81 GHz band.

Australia is also considering the possibility of an IMT identification in some or all of the 37-43.5 GHz, and 47.2-50.2 GHz frequency bands.

Australia supports ‘no change’ for the 31.8-33.4 GHz band.

Australia only supports an IMT identification of the 45.5-47 GHz and 47-47.2 GHz bands if suitable studies are performed before WRC-19 that show sharing is possible and appropriate regulatory measures are developed as a result.

Australia is still considering its view on the 50.4-52.6 GHz and 81-86 GHz bands.

Australia supports the APT Preliminary View on WRC-19 agenda item 1.13 from the APG19-3 meeting.

### **3.1.2 New Zealand - Document APG19-4/**[**INP-23**](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-23_NZ2_WP2.docx)

New Zealand has a preference toward identifying the frequency bands 24.25-27.5 GHz and 37-43.5 GHz, or portions thereof, as possible candidate bands to satisfy this agenda item.

For frequency band 24.25-27.5 GHz, New Zealand supports Method A2, Alternative 2, with the following options for the associated conditions:

* Condition A2a: Option 1 - mandatory limit to protect EESS (passive) in the band 23.6-24 GHz, but only applicable to the portion of 24.25-25.25 GHz as active band
* Condition A2b: Option 3 - no condition is necessary to protect EESS in second harmonic
* Condition A2c: Option 4 - no condition is necessary for stations in SRS/EESS as it is a national matter
* Condition A2d: Option 4 - no condition is necessary for transmitting earth stations in FSS as it is a national matter
* Condition A2e: Option 9 - no condition is necessary for receiving space stations in ISS/FSS as studies show that sharing is feasible when using the baseline parameters
* Condition A2f: Option 3 - no condition is necessary for stations in RAS as it is a national matter
* Condition A2g: Option 4 - no other condition is required

For frequency band 40.5-42.5 GHz, New Zealand supports Method D2, Alternative 2, with the following options for the associated conditions:

* Condition D2a: Option 5 - no condition is necessary for receiving earth stations in FSS as studies show that sharing is feasible when the required separation distance can be maintained between a FSS earth station with a known position and a deployment area of IMT stations
* Condition D2b: Option 3 - no condition is necessary for stations in RAS as it is a national matter
* Condition D2c: Option 3 - no other condition is required

For frequency band 42.5-43.5 GHz, New Zealand supports Method E2, Alternative 2, with the following options for the associated conditions:

* Condition E2a: Option 7 - no condition is necessary for receiving space stations in FSS as studies show that sharing is feasible when using the baseline parameters
* Condition E2b: Option 3 - no condition is necessary for stations in RAS as it is a national matter
* Condition E2c: Option 4 - no other condition is required

New Zealand is also open to consider other feasible candidate bands if there are other suitable frequency ranges being supported more broadly on a global, regional or sub-regional basis.

### **3.1.3 Thailand - Document APG19-4/**[**INP-30**](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-30_THA2_WP2_AI_1.13_1.16_and_9.1.5.doc)

1.Taking into account current ITU-R sharing and compatibility studies as reflected in draft CPM Report, Thailand is of the view that the following bands, or portions thereof, can be considered for identification for IMT:

24.25 – 27.5 GHz

37.0 – 40.5 / 40.5 – 42.5 / 42.5 – 43.5 GHz

Protection of the incumbent services in these frequency bands should be established appropriately based in the results of sharing and compatibility studies.

2. Thailand is of the view that the entire tuning range of 37.0 – 43.5 GHz could be identified to IMT to benefit global harmonization while allowing administrations the flexibility to assign all or portions of the band according to domestic spectrum requirements.

3. Thailand agrees to Method B1 (NOC) for the band 31.8 – 33.4 GHz as it is the only method proposed in draft CPM Report.

4. Currently Thailand is investigating the possibility of IMT identification in frequency bands above 43.5 GHz.

5. Thailand is of the view that, with regard to the Alternatives associated with Method A2/C2/D2/E2/F2/G2/H2/I2/J2/K2/L2 specified in the draft CPM Report, identification of the frequency band for IMT should be made by allocation, or upgrading, of that band to the mobile service (except aeronautical mobile) on a primary basis and identifying such frequency band for terrestrial component of IMT in appropriate Regions. This course of action is consistent with past practices for IMT identification.

A sample of text for new IMT identification footnote may be as follows:

“The frequency band [xx – xx GHz] is identified for use by administrations wishing to implement the terrestrial components of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. Resolution [YY] applies. (WRC-19)”

6. Noting that some of the frequency bands being considered under this agenda item are overlapping with the frequency bands also under consideration in other WRC-19 agenda items, namely agenda items 1.6, 1.14 and 9.1 (Issue 9.1.9),

Thailand is of the view that discussion and decision made on these related agenda items should be carefully reviewed and aligned in order to avoid inconsistencies in regulatory and procedural considerations.

### **3.1.4 Socialist Republic of Viet Nam - Document APG19-4/**[**INP-38**](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-38_Vietnam_WP2_1.13_1.16.docx)

The development of new mobile generation has taken up most of the below 6 GHz planned bands for IMT. It is necessary to seek new higher bands to identify for IMT, especially, for systems requiring large bandwidth.

Viet Nam Administration supports studies being undertaken by ITU-R on this issue and support the band 24.25-27.5 GHz and 37-43.5 GHz listed in Resolution 238 (WRC-15).

### **3.1.5 Malaysia - Document APG19-4/**[**INP-54**](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-54_Malaysia_WP2_1_13_1_16_Final.docx)

Malaysia supports the following methods as proposed in the draft CPM Report:

|  |  |
| --- | --- |
| **Frequency Bands** | **Malaysia’s Preliminary Views** |
| 24.25-27.5 GHz | Method A2 |
| 31.8-33.4 GHz | Method B1 |

Malaysia is currently evaluating other potential candidate frequency bands for IMT identification in the frequency bands above 37 GHz.

### **3.1.6 Mongolia - Document APG19-4/**[**INP-58**](https://www.apt.int/sites/default/files/2019/01/APG19-4-INP-58_Preliminary_views_on_WRC-19_WP-2_MNG.docx)

Mongolia has 24.5 GHz to 40.5 GHz bands planned for Fixed services such as Microwave transmission but so far no usage in the spectrum 24.5 GHz to 86 GHz bands.

Mongolia supports studies being undertaking by ITU-R on this issue and support the bands 24.5 GHz to 86 GHz listed in **Resolution 238 (WRC-15).**

### **3.1.7 Japan - Document APG19-4/**[**INP-60**](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-60_2_J_WP2.docx)

Japan supports globally or regionally harmonized identification of frequency bands for IMT among those bands listed in *resolves to invite ITU-R* 2 of Resolution **238 (WRC-15)** taking into account:

* the results of ITU-R studies on spectrum needs for the terrestrial component of IMT in the frequency range 24.25-86 GHz, and;
* the results of ITU-R sharing and compatibility studies to protect the incumbent services to which the band is allocated on a primary basis.

In particular, taking into account the results of ITU-R studies, Japan supports identification of IMT in the frequency bands below 43.5 GHz together with adoption of appropriate Condition(s)/Option(s) for these frequency bands, which are listed in the methods to satisfy the agenda item.

### **3.1.8 Korea (Rep. of) - Documents APG19-4/**[**INP-74 (Rev.1)**](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-74_WP2_CPM_report_kor_Rev.1.docx)**,** [**INP-75 (Rev.1)**](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-75_WP2_kor_Rev.1.docx)**,**

**Positions for APT Preliminary Views**

The Republic of Korea supports following bands or portions thereof for IMT identification.

– 24.25-27.5 GHz and 37-[40.5/43.5] GHz

The Republic of Korea supports to revise Resolution **750 (Rev.WRC-15)** as an option of Condition A2a for the band 24.25-27.5 GHz in order to establish limits on unwanted emissions from IMT stations using the 24.25-27.5 GHz to EESS passive service using the 23.6-24 GHz band.

– –20 dB(W/200 MHz) for BS and UE in band 26.5-27.5 GHz

– –32 dB(W/200 MHz) for BS and –28 dB(W/200 MHz) for UE in band 24.25-26.5 GHz.

– And this limit of unwanted emission shall be applied from [YYYY] in the case of countries where IMT systems using the band 24.25-27.5 GHz or portions thereof are introduced before WRC-19, as appropriate.

The Republic of Korea is of the view that the 26.5-27.5 GHz within the 24.25-27.5 GHz would not cause any interferences to the EESS passive service in the 23.6-24 GHz due to sufficient guard band from the 24 GHz band. This was reason why the Republic of Korea supports –20 dB(W/200 MHz) as unwanted emission level as defined Category A in Recommendation ITU-R SM.329. For 24.25-26.5 GHz band, the Republic of Korea could support –32 dB(W/200 MHz) as one of the study results conducted by ITU-R TG 5/1.

The Republic of Korea supports Option 9 of Condition A2e for protection measures for the ISS and FSS (Earth-to-space) receiving space stations for the band 24.25-27.5 GHz.

– Option 9 is defined as “No condition is necessary”.

– ITU-R TG 5/1 studies show that sharing is feasible without any additional mandatory limits.

The Republic of Korea supports Method C2-Alternative 2 without any conditions.

– Option 9 is defined as “No condition is necessary”.

– ITU-R TG 5/1 studies show that sharing is feasible without any additional mandatory limits. And specific regulatory measures are related to national regulatory matter.

Regarding the overlapping issue of the frequency bands within the scope of agenda item 1.13 associated with Resolution **238 (WRC-15)** and those within the scope of agenda items 1.6, 1.14 and 9.1 (issue 9.1.9), APT Members are of the view that this issue would be handled by WRC-19 based on proposals submitted to the conference, discussion on these agenda items and WRC-19’s decision on use of each frequency band mentioned in the corresponding Resolutions.

**Positions for CPM Report**

With regard to a draft CPM Report, the Republic of Korea is of the view that some parts should be revised as proposed in APG19-4/[INP-74 (Rev.1)](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-74_WP2_CPM_report_kor_Rev.1.docx).

### **3.1.9 Iran (Islamic Republic of) - Document APG19-4/**[**INP-84**](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-84_IRN_Chapter_2.docx)

In line with the outcome of APG19-3 for the agenda item 1.13, this administration continues to support the consideration of additional frequency bands for International Mobile Telecommunications (IMT), including possible additional mobile allocations on a primary basis, in accordance with Resolution **238 (WRC-15)**.

This Administration also support continuation ITU-R studies on remaining items of sharing and compatibility studies in accordance with Resolution **238 (WRC-15)**. It is important for these sharing and compatibility studies to take into account protection of services to which the band is allocated on a primary basis.

This administration has a preference in prioritizing considerations for IMT identification in the 24.25-27.5 GHz frequency band or portions thereof.

As a matter of principal of not constraining existing services, this Administrations take into account potential constraints to IMT in the frequency band, because of the potential deployment of ubiquitous high-density applications in the FSS in the frequency band 39.5-42 GHz (40-40.5 GHz for Region 3) as per RR No. **5.516B.**

This Administration is of the view that Region 3 countries neighboring to Region 1, need to carefully take into account potential constraints that Region 1 countries might impose to Region 3 IMT identification in the frequency bands allocated to exclusive-Region 1 HFDSS (bands C and H), in accordance with RR No. **5.516B.**

This Administration is not in favor of IMT identification in the frequency bands F and G that are not studied within ITU-R.

Moreover, this Administration propose not to support non-implementable conditions for achieving compatibility that are proposed under several Options of Methods of this agenda item in draft CPM19-2 Report, such as imposing condition on elevation angle of the antenna main beam of IMT base stations.

Regarding the overlapping issue of the frequency bands within the scope of agenda item **1.13** associated with Resolution **238 (WRC-15)** and those within the scope of agenda items **1.6**, **1.14** and **9.1** (issue **9.1.9**), this Administration is of the view that the remained studies should be conducted and finalized before **WRC19**.

This Administration wishes also to emphasize that the protection of the services to which the frequency band subject to this agenda item is mandatory and shall be dealt with by the Conference. Consequently, this Administration categorically rejects notion of “No Condition for protection” or option of “non-mandatory/optional” protection of the incumbent services. In addition, it is worth to mention that:

* It has been a long agreed practice in ITU that, whenever, there is not adequate criteria or uncertainty to protect an incumbent service the concept of “use of the incoming service in the frequency band in question is subject to the agreement to be obtained from the concerned administrations” or subject to application of RR No. 9.21.
* The protection of incumbent services shall be subject to ITU-R Recommendations yet to be prepared and agreed upon due to the fact that:

a) ITU-R Recommendations, unless is incorporated by reference, have non mandatory nature and

b) ANY SUCH INTENDED ITU-R Recommendation(s) may never be approved due to the fact that one State Member could object to its adoption.

### **3.1.10 Papua New Guinea - Document APG19-4/**[**INP-89**](https://www.apt.int/sites/default/files/2018/03/APG19-3-INP-15_IND_WP2_0.docx)

Having regard to the considerations detailed in APG19-4/INP-89, Papua New Guinea would propose the following in respect of each of the candidate bands for IMT-2020/5G under consideration in WRC-19 Agenda Item 1.13.

**Summary of Papua New Guinea Proposals for Agenda Item 1.13**

|  |  |  |
| --- | --- | --- |
| **Band** | **IMT-2020** | **Draft CPM Text** |
| 24.25-27.00 GHz | Yes | Method A2 (Alternative 1 or 2), subject to:   * Condition A2d Option1 * Condition A2e Option 2 (with 37 dBm/200 MHz) * Condition A2g Option 3   Draft ITU-R Resolution [A113-IMT 26 GHZ] (WRC-19) |
| 27.0-27.5 GHz | No | Method A1 in 27-27.5 GHz |
| 37.0-40.5 GHz | No | Region 3: Method C1 (No Change)  Draft ITU-R Resolution **[**B113-IMT 40/50GHZ**]** |
| 40.5-42.5 GHz | Yes | Region 3: Method D2, subject to:   * Condition D2a, Option 3   Draft ITU-R Resolution [B113-IMT 40/50GHZ**]** |
| 42.5-43.5 GHz | Yes | Region 3: Method E2, subject to:   * Condition E2a Option 1 or 6 (with 44 dBm/200 MHz) * Condition E2c Option 3 * Condition E2d Option 1 (text currently missing from draft CPM report; text similar to Condition A2d Option 1 (protection of FSS earth stations at known locations) for the 24.65-25.25 GHz band is expected to be included at CPM)   Draft ITU-R Resolution [B113-IMT 40/50GHZ**]** |
| 47.2-50.2 GHz | No | Method H1 (No Change) |
| 50.4-52.6 GHz | No | Method I1 (No Change) |
| 66-71 GHz | Yes | Method J2 (either alternative 1 or 2) with the conditions of draft ITU-R Resolution [C113-IMT 66/71GHZ-J2] (WRC-19) |
| 71-76 GHz | Yes | Method K2 (either alternative 1 or 2) with the conditions of draft ITU-R Resolution [E113-IMT 70/80GHZ] (WRC-19) |
| 81-86 GHz | Yes | Method L2 (either alternative 1 or 2) with the conditions of draft ITU-R Resolution [E113-IMT 70/80GHZ] (WRC-19) |

Furthermore:

1. Regarding the band 24.25 – 27.5 GHz, identification for IMT in the sub-band 24.25-27 GHz is possible with appropriate regulatory measures to protect and enable sustainable, viable access for Fixed Satellite Services (FSS) and other space service operations. In the 27-27.5 GHz sub-band, in which there is an FSS allocation that would allow the deployment of small FSS earth stations at unspecified locations, sharing between IMT and FSS is not feasible as the minimum separation distance cannot be guaranteed.
2. Regarding 37 - 43.5 GHz, IMT identification is proposed in the band 40.5-43.5 GHz in Region 3, preserving current high-density fixed-satellite service (HDFSS) identifications in 40-40.5 GHz. There is a good potential for harmonization with Region 1 for IMT in the band 40.5-43.5 GHz, while Region 2 focuses on 37-40 GHz for IMT. This would provide 3 GHz of spectrum for IMT in all ITU-R Regions and would allow common IMT equipment to be used, provided the RF equipment can tune across the whole 37-43.5 GHz range.
3. Frequency bands outside of **Resolution 238** (**WRC-15**) shall not be considered for Agenda Item 1.13. In particular, as noted above, satellite spectrum bands that are currently in use throughout the world and which are outside the scope of the Resolution and Agenda Item should not be considered for IMT-2020/5G.

### **3.1.11 Singapore - Document APG19-4/**[**INP-91**](https://www.apt.int/sites/default/files/2018/12/WP2_APG19-4-INP-91_Singapore_1.13_1.16_9.1.1.docx)

**(i) 24.25 – 27.5 GHz, 37.0 – 40.5GHz, 40.5 – 42.5GHz and 42.5 – 43.5 GHz frequency bands**

Spectrum within the above frequency bands provides the opportunity for very high data rates with large bandwidths for indoor and outdoor scenarios, especially for Enhanced Mobile Broadband (“eMBB”) and Ultra Reliable Low Latency Connections (“URLLC”) applications. 3GPP has specified several bands from these ranges within Release 15 (“Rel-15”) and as such products supporting different portions of these frequency ranges will be available from 2018.

In view of the above, Singapore supports identification of the frequency bands 24.25 – 27.5 GHz, 37.0 – 40.5GHz, 40.5 – 42.5GHz and 42.5 – 43.5 GHz frequency bands for IMT and therefore supports Method A2/C2/D2/E2, Alternative 2.

In addition, it is noted that some Administrations have or are planning to assign spectrum licenses in different parts of the 37 - 43.5 GHz frequency range for IMT. Therefore, it is recognised that a global IMT identification of 37 - 43.5 GHz would allow each country/region to assign spectrum for IMT consistent with their domestic use and priorities, while still facilitating the benefits of economies of scale for businesses and consumers. In this respect, Singapore will not oppose a global IMT identification for the full 37-43.5 GHz range.

**(ii) 31.8-33.4 GHz frequency band**

It is noted that this band is preferred for general backhaul solutions under the Fixed Service allocation and has challenges from sharing with incumbent and adjacent services. As such, Singapore supports NOC as the only method for 31.8-33.4 GHz as defined in CPM text.

**(iii) Other remaining candidate frequency bands**

It is anticipated that some of the remaining candidate frequency bands will be used for IMT-2020 in some countries and this may stimulate future market demand. As such, Singapore will not oppose IMT identification in the other candidate bands.

### **3.1.12 Lao PDR - Document APG19-4/**[**INP-96**](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-96_Laos_Contribution_AI_1.13_for_APG19-4.docx)

The administration of Lao PDR support the frequency band 24.25 – 27.5 GHz and 37 – 40.5 GHz for IMT identification with priority.

For the frequency band 31.8 -33.4 GHz, Lao PDR support method B1 No change to the Radio Regulations due to sharing and compatibility study results between IMT systems and radionavigation systems showing their incompatibility.

### **3.1.13 China (People’s Republic of) - Document APG19-4/**[**INP-101**](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-101_China5_Preliminary_views_on_WRC-19_AI_1.13_1.16_9.1_issues_9.1.1_9.1.5_9.1.8_rev_3.docx)

China supports the consideration of additional frequency bands for International Mobile Telecommunications (IMT), including possible additional mobile allocations on a primary basis, in accordance with Resolution **238 (WRC-15)**.

China also supports ITU-R studies on spectrum needs for the terrestrial component of IMT and sharing and compatibility studies in accordance with Resolution **238 (WRC-15)**. It is important for these sharing and compatibility studies to ensure the protection of services to which the band is allocated on a primary basis.

China supports the frequency band 24.75-27.5GHz identified to IMT under the following conditions:

* The key parameters of IMT BSs, such as the maximum total radiated power (TRP), the mechanical tilt, the maximum deployment density and the antenna pattern, are included in the RR, in order to fully protect the incumbent services.
* Condition A2a: Option 1 - to revise Resolution **750** **(WRC-15)**.

China is also of the following views:

* For the frequency band 24.65-25.25GHz, it is suggested to ITU-R develop Recommendation to provide the guideline e.g. coordination distance to support the cross- border coordination.
* It is necessary to ensure the protection of other services having allocation in the considered and adjacent frequency bands, including EESS/SRS in 25.5-27GHz, RAS in 23.6-24GHz and also EESS (passive) in 50.2-50.4 GHz and 52.6-54.25 GHz.

China opposes the frequency band 31.8-33.4 GHz identified to IMT.

China supports the identification of parts of the frequency band 37-43.5GHz to IMT in order to ensure the balance between spectrum available for IMT and spectrum available for satellite ubiquitous earth stations (e.g. HDFSS). In addition, protection of the EESS (passive) in 36-37GHz and RAS/FSS (E-s) in 42.5-43.5GHz also should be considered.

China supports the ITU-R studies on sharing and compatibility studies of frequency bands 66-71GHz, 71-76GHz and 81-86GHz. In these frequency bands, China supports the future development of IMT-2020 and other new radio services. It is important for those sharing and compatibility studies to take into account the protection of incumbent services to which the band is allocated on a primary basis.

### **3.1.14 Bangladesh - Document APG19-4/**[**INP-109**](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-109_BGD_WP2.docx)

Bangladesh supports-

* Method A2 Alternative 2 condition A2A (option-1)- IMT Identification for 24.25-27.5 GHz band.
* Method B1 (NOC), the only method in CPM text, for 31.8-33.4 GHz band as coexistence is not possible.
* Method C2 Alternative 2- IMT Identification for 37-40.5 GHz Band.
* Method D2 Alternative 2- IMT Identification for 40.5-42.5 GHz Band.
* Method E2 Alternative 2- IMT Identification for 42.5-43.5 GHz Band.

Bangladesh is also considering 45.5-50.2 GHz, 47.0-47.2 GHz, 50.4-52.6 GHz, 66-76 GHz and 81-86 GHz bands for IMT identification.

### **3.1.15 India - Document APG19-4/**[**INP-114**](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-114_Preliminary_India_Views_on_Agenda_1.13_1.16_9.1_Issue_9.1.8.docx)

**Summary**

After studies carried out by TG5/1 of Study Group 5, India has more clarity of coexistence status of various services with IMT 2020 and is proposing following for IMT identification.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Frequency bands (GHz) mentioned in Resolution 238 (WRC-15) | | | | | | | | | | | |
| 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 |
| IND | I | NOC | I | I | I | X | X | X | X | NOC | NOC | NOC |
|  |  |  |  |  |  |  |  |  |  |  |  |  |

I: Support IMT identification through a new footnote in the Radio regulations based on the results of sharing and compatibility studies undertaken by ITU-R under the framework of agenda item 1.13

X: Support Further studies and potential IMT identification with priority if sharing is feasible under the framework of agenda item 1.13

NOC: Support no changes to the Radio Regulations under this band

**Key Considerations for CPM Text**

**(1) Unwanted emission limit in the 24.25-27.5 GHz band**

The frequency band of 23.6-24.0 GHz is allocated to EESS (passive) globally, and a number of studies have been carried out in ITU-R Task Group 5/1 to determine the technical conditions for protection/compatibility of passive services in 23.6-24.0 GHz, leading to a range of 5G unwanted emission levels that that would be necessary to protect the EESS (passive). While some of the studies were performed on all sensors in Recommendation ITU-R RS.1861 operating in the 23.6-24.0 GHz frequency band, the results summary in draft CPM report (section 2/1.13/3.2.1.2) appears to be based on a sensitive and restrictive Sensor F3.

The results of various studies differ due to differences in the assumptions such as:

1) Antenna patterns

2) Apportionment of interference between services

3) IMT station densities

4) Interpretation of EESS (passive) protection criteria

5) Multi-operator factor

|  |  |  |
| --- | --- | --- |
| TG5/1 Chairman Report   * Passive Sensors (ITU R.RS.1861) * Stringent sensors F3 sensitivity * Limitation on emission from IMT from 24.25 to 27.5 GHz | ATU  BS: -32 to -37 dBW/200MHz  UE: -28 to -30 dBW/200 MHz | 3GPP/GSA  BS: -37 dBW /200 MHz substantial impacts on 5G networks and services  Large separation bandwidth (1-1.5 GHz of lower 26 GHz unusable)  BS: -32dBW/200 MHz  UE: -28 dBW/200 MHz |
| IMT deployment scenarios   * Antenna patterns * Apportionment of interference between services * IMT station densities * Interpretation of EESS (passive) protection criteria * Multi-operator factor | ASMG  BS: -32 to -37 dBW/200 MHz |
| CEPT ECC 18(06) July 2018-12-25  BS: -42dBW/200 MHz |

**India proposes that APT Administrations should have a common specification for the IMT unwanted emission limits for the 23.6 to 24.0 GHz frequency band to protect EESS (passive):**

* **BS: Better than –28 dB(W/200 MHz)**
* **UE: Better than –24 dB(W/200 MHz)**

**(2) IMT and FSS (Earth-to-space)/ISS in the 24.25-27.5 GHz and 42.5-43.5 GHz bands**

In Region 3, the frequency bands 24.65-25.25 GHz and 27-27.5 GHz and 42.5-43.5 GHz are allocated to FSS (Earth-to-space), and the frequency bands 24.45-24.75 GHz and 25.25-27.5 GHz are allocated to ISS.

Sharing studies between IMT and FSS/ISS in the 26 and 40 GHz bands, conducted as part of the work of TG 5/1, give clarity on co-existence between these services. These studies show there is a sufficient protection margin between the level of emissions that would be expected from a 5G network and the level that could potentially cause interference to FSS/ISS space stations, see section 2/1.13/3.2.1.3 and 3.2.1.4 and 3.2.4.1 in draft CPM report.

For the 26 GHz band, for the case of aggregate long-term interference from IMT stations into FSS space stations in a geostationary orbit, results showed that the calculated I/N ranged from -40.62 dB to -19 dB for the baseline case, all below the protection criteria agreed by WP 4A. When considering short term interference, all studies provided results that showed maximum I/N values ranging from -28.3 dB to -15.8 dB for the baseline case, which again satisfy the agreed short-term protection criteria. Similar results are found in study results concerning the 42.5-43.5 GHz band.

Despite this, certain conditions nevertheless being proposed which include an EIRP mask (based on elevation angle), a TRP limit per base station, and/or antenna tilting limits. Any such conditions could have a negative impact on the deployment, operation and performance of 5G networks and services. They are not required given that results of baseline studies show sufficient margins.

It should also be noted that almost all of the sharing studies that have been conducted on the potential interference from 5G networks into satellite space station receivers indicate that there is a significant margin between the level of interference calculated and level that could potentially cause interference at the satellite receiver.

**India is of the view that there is no technical justification for incorporating any regulatory provisions related to technical conditions, i.e. EIRP mask, TRP limits, epfd and/or electrical and mechanical tilting limitations on IMT-2020 base stations, for identification of the bands 24.25-27.5 GHz and 42.5-43.5 GHz in the Radio Regulation.**

In addition, as IMT is the victim of interference from FSS earth stations in these two bands, but no conditions to ensure the co-existence between the FSS transmitting earth stations and IMT receiving base stations and terminals operating within frequency bands of 24.25-27.5 GHz and 42.5-43.5 GHz are needed to be specified in Radio Regulation, including development of any ITU-R Recommendation, as this is a matter for the national authority.

**(3) Unwanted emission level in the 40 GHz band**

The frequency band 36-37 GHz is allocated on a primary basis to both EESS (passive) and the MS and FS with coexistence conditions currently addressed in Resolution 752 (WRC-07). The unwanted emission level of −13 dB(m/MHz), i.e. −43 dB(W/MHz), for an IMT station, which is equivalent to −13 dBW/GHz in the frequency band 36-37 GHz, satisfies the conditions described in Resolution 752 (WRC-07) (where the sharing criteria for stations in the mobile service is −10 dBW) to coexist with the EESS (passive). From this perspective, **there is no need to define additional OOBE limit for IMT systems operating in the frequency band 37-43.5 GHz to ensure coexistence with the EESS (passive) systems operating in the frequency band 36-37 GHz**.

In addition, passive services in the frequency band 36-37 GHz share the band with active MS and FS, so the frequency band 36-37 GHz is not a pure passive band and is not listed in Footnote **5.340**. Thus, EESS (passive) observations in this frequency band already currently have to accept a certain level of interference and that situation would not change through the use of the 37-43.5 GHz band by IMT systems.

**Therefore, India is of the opinion that it is not appropriate to include this frequency band 36-37 GHz in any revision to Resolution 750 (Rev.WRC-15)**.

**(4) Identification of 37-43.5 GHz band to IMT**

The harmonized spectrum for mobile broadband provides economies of scale and benefits to consumers and businesses especially for developing countries besides supporting global roaming. Harmonized spectrum identification also helps standardization bodies (e.g. 3GPP) to develop technology for global deployment with lesser complexities. Therefore, a global IMT identification of 37-43.5 GHz would allow each country/region to assign spectrum for IMT-2020 as per their priorities. Availability of large contiguous block of spectrum in 40 GHz band allows to address the need of higher spectrum needs in spectrum bands above 24.25 GHz.

In light of the ITU-R studies showing feasibility of sharing and the benefits of international harmonization, India proposes the following identification in various spectrum bands between 37-43.5 GHz –

(a) 37 – 40.5 GHz: IMT identification

(b) 40.5 – 42.5 GHz: Upgrade Mobile as Primary Service and IMT identification

(c) 42.5 – 43.5 GHz: IMT identification

**Positions for CPM Text**

**(1) 26 GHz (24.25-27.5 GHz)**

**India supports a new IMT footnote for the 26 GHz range such as:**

**5.A.113b** The frequency band 24.25-27.5 GHz is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. Resolution **750 (Rev.WRC-19)** applies. (WRC‑19)

**India supports the following methods and conditions for the band 24.25-27.5 GHz:**

1. Method A2, Alternative 2: identification to terrestrial component of IMT in 24.25-27.5 GHz (in the mobile service), including allocation of the band 24.25-25.25 GHz to the mobile service (except aeronautical mobile) on a primary basis in Regions 1 and 2.
2. Condition A2a: Option 1 – Resolution 750 (Rev. WRC-19) in Table 1-1.

Resolution 750 (Rev. WRC-15) Table 1-1 to be updated with the unwanted emission levels as below which are adequate to ensure the compatibility with EESS (passive) in the adjacent band at 23.6-24 GHz.

* **BS: Better than –28 dB(W/200 MHz)**
* **UE: Better than –24 dB(W/200 MHz)**

For all other conditions, no action is necessary due to results of sharing and compatibility studies.

**(2) 40 GHz range (37-43.5 GHz)**

While there are three sub-segments to the 40 GHz range, this should be treated in its entirety as a wider tuning range in order to support global harmonisation. In order to create a harmonised global band, a single footnote covering the frequency range should be created which covers the full range at 37-43.5 GHz should thus be supported.

**India supports creation of a new IMT footnote for the 40 GHz range along the following lines:**

**5.B.113X** The frequency band 37-43.5 GHz is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which they are allocated and does not establish priority in the Radio Regulations.   (WRC‑19)

**(3) 37-43.5 GHz**

**(3-1) 37-40.5 GHz**

**India supports:**

* Method C2, Alternative 2: identification to terrestrial component of IMT in 37-40.5 GHz (in the mobile service). For the conditions associated with this band, no action is necessary due to results of sharing and compatibility studies.

**(3-2) 40.5-42.5 GHz**

**India supports:**

* Method D2, Alternative 2: identification to terrestrial component of IMT in 40.5-42.5 GHz (in the mobile service), including upgrade of the existing secondary allocation to the MS in the frequency band 40.5-42.5 GHz to a primary allocation. For the conditions associated with this band, no action is necessary due to results of sharing and compatibility studies.

**(3-3) 42.5-43.5 GHz**

**India supports:**

* Method E2, Alternative 2: identification to terrestrial component of IMT in 42.5-43.5 GHz (in the mobile service). For the conditions associated with this band, no action is necessary due to results of sharing and compatibility studies.

**(4) 50 GHz range (45.5-52.6 GHz)**

**(4-1) 45.5-47 GHz**

**India supports:**

* Method F2, Alternative 2: identification to terrestrial component of IMT in 45.5-47 GHz (in the mobile service).

While no studies were done yet for this band, it is noted that the allocations in this band are same as in the band 66-71 GHz and the results for this should be applicable for the sharing studies with ISS and MSS.

In addition, the following is applied:

* + Condition F2a: TBD as no studies available
  + Condition F2b: Option 3 – no condition necessary

**(4-2) 47-47.2 GHz**

**India supports:**

* Method G2, Alternative 2: identification to terrestrial component of IMT in 47-47.2 GHz (in the mobile service)

The following is applied:

* + Condition G2a: TBD as no studies available
  + Condition G2b: Option 3 – no condition necessary

**(4-3) 47.2-50.2 GHz**

India supports:

* Method H2, Alternative 2: identification to terrestrial component of IMT in 47.2-50.2 GHz (in the mobile service)
  + Condition H2a: Option 3.

For the other conditions associated with this band, no action is necessary due to results of sharing and compatibility studies. In detail, the following is applied:

* + Condition H2b: Option 8 – no condition necessary
  + Condition H2c: Option 3 – no condition necessary
  + Condition H2d: Option 4 – no condition necessary

**(4-4) 50.4-52.6 GHz**

**India supports:**

* Method I2, Alternative 2: identification to terrestrial component of IMT in 50.4-52.6 GHz (in the mobile service)
* Condition I2a: Option 2 Resolution 750 (Rev. WRC-19) in Table 1-1, taking into account RR No. 5.340.1.

For the other conditions associated with this band, no action is necessary due to results of sharing and compatibility studies. In detail, the following is applied:

* + Condition I2a: Option 3 – no condition necessary
  + Condition I2b: Option 7 – no condition necessary
  + Condition I2c: Option 4 – no condition necessary

### **3.1.16 Indonesia (Republic of) - Document APG19-4/**[**INP-119**](https://www.apt.int/sites/default/files/2019/01/APG19-4-INP-119_INS2_Preliminary_View_-_WP2.docx)

Indonesia is of the view that the bands mentioned below can be considered as possible candidate bands for global or regional identification of IMT, including possible additional allocation to the mobile service on a primary basis:

* 24.25-27.5 GHz;
* 37-40.5 GHz;
* 40.5-42.5 GHz and
* 42.5-43.5 GHz.

In Indonesia, the frequency band 31.8-33.4 GHz is currently used for Fixed Service (FS).

### **3.1.17 Nepal - Document APG19-4/**[**INF-26**](https://www.apt.int/sites/default/files/2019/01/APG19-4-INF-26_NPL_AI_1.13_1.16_AND_9.1.1.docx)

Among the frequency bands that have been identified for studies for future IMT development under this agenda item, Nepal has frequency allocations in 37-39.5 GHz, 71-76 GHz and 81-86 GHz Bands for terrestrial point to point microwave links. However, these bands have not been assigned yet. Other remaining bands in this agenda have not been allocated for any other purpose.

In this context, Nepal supports sharing and compatibility studies with priority in frequency bands 24.25-27.5 GHz, 31.8-33.4 GHz, 37-40.5 GHz, 66-76 GHz and 81-86 GHz bands.

## 3.2 Summary of issues raised during the meeting

### **3.2.1 APT Members’ views on each of the frequency bands mentioned in Resolution 238 (WRC-15)**

At the APG19-4 meeting, some APT Members provided their preliminary views on the frequency bands mentioned in Resolution **238 (WRC-15)**. Based on these views, APT Members developed the text for “APT Preliminary View(s)” and “Other View(s) from APT Members” in Sections 4 and 5 below, respectively.

It should be noted that APT Members need to further reconcile their views for the following points in order to develop Preliminary APT Common Proposals at the APG19-5 meeting:

– An appropriate Option of each Condition regarding the protection measures of the incumbent services when identifying the frequency band 24.25-27.5 GHz for IMT;

– An appropriate Option of each Condition regarding the protection measures of the incumbent services when identifying the frequency bands 37-40.5 GHz, 40.5-42.5 GHz and 42.5-43.5 GHz, or portions thereof, for IMT; and

– Views on the frequency bands 45.5-47 GHz, 47-47.2 GHz, 47.2-50.2 GHz, 50.4 52.6 GHz, 66-71 GHz, 71-76 GHz and 81-86 GHz under WRC-19 agenda item 1.13.

### **3.2.2 Protection measures for the EESS (passive) in the 23.6-24 GHz frequency band**

At the APG19-4 meeting, APT Members discussed the protection measures for the EESS (passive) in the 23.6-24 GHz frequency band, and agreed to support revision of Table 1-1 of Resolution **750 (Rev.WRC-15)**. However, for this revision, limits of unwanted emission levels of IMT base and mobile stations for the corresponding frequency range(s) of the active service band are yet to be agreed among APT Members.

During the discussion, views were expressed that it would be essential to consider the following aspects for this revision: who establishes the protection criteria, who measures the unwanted emission levels of IMT equipment and who guarantees the compliance of unwanted emission levels compared to the specified limits.

APT Members were invited to consider the matter with a view to develop Preliminary APT Common Proposals for these measures at the APG19-5 meeting.

### **3.2.3 Development of APT Views on proposed modification(s) to draft CPM Report for submission to CPM19-2**

At the APG19-4 meeting, three INP documents regarding proposed modification(s) to the draft CPM Report were received. APT Members considered these documents, and would invite those APT Members who provided the INP documents to submit the proposals to CPM19-2 individually.

# 4. APT Preliminary View(s)

APT Members support the consideration of additional frequency bands for International Mobile Telecommunications (IMT), including possible additional mobile allocations on a primary basis, in accordance with Resolution **238 (WRC-15)**.

APT Members also support ITU-R studies on spectrum needs for the terrestrial component of IMT and sharing and compatibility studies in accordance with Resolution **238 (WRC-15)**.

Regarding the overlapping issue of the frequency bands within the scope of agenda item 1.13 associated with Resolution **238 (WRC-15)** and those within the scope of agenda items 1.6, 1.14 and 9.1 (issue 9.1.9), APT Members are of the view that this issue would be handled by WRC-19 based on proposals submitted to the conference, discussion on these agenda items and WRC-19’s decision on use of each frequency band mentioned in the corresponding Resolutions.

APT Members have the following preliminary views for the frequency bands listed below.

* **24.25-27.5 GHz**

APT Members support identification of the frequency band 24.25-27.5 GHz, which will provide administrations the flexibility to implement IMT in the entire band or portions thereof, through Method A2 in the draft CPM Report taking into account that protection of the incumbent services in this and adjacent frequency bands should be ensured by selecting an appropriate Option for each Condition under Method A2 in the draft CPM Report.

Under Condition A2a (Protection measures for the EESS (passive) in the 23.6-24 GHz frequency band), APT Members support Option 1 in the Draft CPM Report (to revise Table 1-1 of Resolution **750** **(Rev.WRC-15)**). APT Members are encouraged to study and to provide unwanted emission limits to be included in this revision based on the range of unwanted emission levels applicable to different active service bands as indicated in Section 6.

* **31.8-33.4 GHz**

APT Members support Method B1 (NOC), which is the only Method in the draft CPM Report for the frequency band 31.8-33.4 GHz due to difficulty of sharing and compatibility between IMT and the incumbent services.

* **37-40.5 GHz, 40.5-42.5 GHz and 42.5-43.5 GHz**

APT Members support identification of the frequency bands 37-40.5 GHz, 40.5-42.5 GHz and 42.5-43.5 GHz, or portions thereof, for IMT, through Methods C2/D2/E2 in the draft CPM Report taking into account that protection of the incumbent services in these and adjacent frequency bands should be ensured by selecting an appropriate Option for each Condition under Methods C2/D2/E2 in the draft CPM Report.

APT Members recognize that different administrations would implement IMT in different portions of the 37-43.5 GHz frequency range for IMT, and a global identification for IMT in the 37-43.5 GHz band, or portions thereof, would allow each country/region to implement IMT in different portions of the band in accordance with their national/regional considerations, while still facilitating the benefits of economies of scale.

# 5. Other View(s) from APT Members

Some APT Members have the following views for the frequency bands listed below.

* **24.25-27.5 GHz**

Some APT Members support identification of the frequency band 24.25-27.5 GHz for IMT through Alternative 2 rather than Alternative 1 under Method A2 in the draft CPM Report.

Under Conditions A2b to A2g;

– Some APT Members support the Option “No condition is necessary” taking into account the results of sharing and compatibility studies performed by these APT Members.

– Some other APT Members support other Options that apply mandatory conditions for IMT base stations to protect other services operating in accordance with the Radio Regulations. These mandatory conditions could include, but are not limited to, the maximum total radiated power (TRP), the mechanical tilt, the maximum deployment density and the antenna pattern.

One APT Member is not in favour of an identification for IMT in the frequency band 27.0 – 27.5 GHz, and proposes no change (Method A1) in Region 3.

* **37-40.5 GHz**

One APT Member is not in favour of an identification for IMT in the frequency band 37.0 – 40.5 GHz, and proposes no change (Method C1) in Region 3.

* **45.5-47 GHz and 47-47.2 GHz**

Some APT Members support identification of the frequency bands 45.5-47 GHz and 47-47.2 GHz for IMT, only if suitable studies are performed before WRC-19 that show sharing and compatibility with the incumbent services is feasible and appropriate regulatory measures are developed accordingly.

Some APT Members are investigating the possibility of an identification for IMT in the frequency bands 45.5-47 GHz and 47-47.2 GHz.

One APT Member is not in favour of an identification for IMT in the frequency bands 45.5-47 GHz and 47-47.2 GHz that have not been studied within ITU-R yet.

* **47.2-50.2 GHz**

Some APT Members are investigating the possibility of an identification for IMT in some or all of the frequency band 47.2-50.2 GHz.

One APT Member supports further studies in the frequency band 47.2-50.2 GHz, and a potential identification for IMT with priority if sharing is feasible under the framework of agenda item 1.13.

One APT Member is not in favour of an identification for IMT in the frequency band 47.2-50.2 GHz.

* **50.4-52.6 GHz**

Some APT Members are investigating the possibility of an identification for IMT in some or all of the frequency band 50.4-52.6 GHz.

One APT Member supports further studies in the frequency band 50.4-52.6 GHz, and a potential identification for IMT with priority if sharing is feasible under the framework of agenda item 1.13.

One APT Member is not in favour of an identification for IMT in the frequency band 50.4-52.6 GHz.

* **66-71 GHz**

Some APT Members support identification of the frequency band 66-71 GHz for IMT, and are of the view that protection of the incumbent services in this frequency band should be ensured by selecting an appropriate Option for each Condition under the relevant Method in the draft CPM Report.

Some APT Members are investigating the possibility of an identification for IMT in the frequency band 66-71 GHz.

One APT Member is not in favour of an identification for IMT in the frequency band 66-71 GHz.

* **71-76 GHz**

Some APT Members support identification of the frequency band 71-76 GHz for IMT, and are of the view that protection of the incumbent services in this and adjacent frequency bands should be ensured by selecting an appropriate Option for each Condition under the relevant Method in the draft CPM Report.

Some APT Members are investigating the possibility of an identification for IMT in the frequency band 71-76 GHz.

One APT Member is not in favour of an identification for IMT in the frequency band 71-76 GHz.

* **81-86 GHz**

Some APT Members support identification of the frequency band 81-86 GHz for IMT, and are of the view that protection of the incumbent services in this and adjacent frequency bands should be ensured by selecting an appropriate Option for each Condition under the relevant Method in the draft CPM Report.

Some APT Members are investigating the possibility of an identification for IMT in the frequency band 81-86 GHz.

One APT Member is not in favour of an identification for IMT in the frequency band 81-86 GHz.

# 6. Issues for Consideration at Next APG Meeting

Based on input contributions at APG19-4, the following range was proposed by some APT Members as the possible unwanted emission levels as a limit for IMT base stations and mobile stations for inclusion in Resolution **750 (Rev.WRC-19)**.

|  |  |  |  |
| --- | --- | --- | --- |
| EESS (passive) band | Active service band | Active service | Limits of unwanted emission power from active service stations in a specified bandwidth within the EESS (passive) band |
| 23.6-24.0 GHz | 24.25-25.25/26.5/27.5 GHz | Mobile | −28 to −32 dBW in the 200 MHz of the EESS (passive) band for IMT base stations  −24 to −28 dBW in the 200 MHz of the EESS (passive) band for IMT mobile stations |

Some other APT Members also provided their views to consider further values from other organizations as shown in the table below. Additional information values provided by other organizations are available in Section 2.

|  |  |  |  |
| --- | --- | --- | --- |
| EESS (passive) band | Active service band | Active service | Limits of unwanted emission power from active service stations in a specified bandwidth within the EESS (passive) band |
| 23.6-24.0 GHz | 24.25-25.25/27.5 GHz | Mobile | −32 to −42 dBW in the 200 MHz of the EESS (passive) band for IMT base stations  −28 to −38 dBW in the 200 MHz of the EESS (passive) band for IMT mobile stations |

Toward the APG19-5 meeting, APT Members are encouraged to consider the above information with a view to determine the appropriate unwanted emission levels to protect EESS (passive) in the 23.6-24 GHz frequency band.

Taking into account the outcome of CPM19-2, APT Members are also encouraged to provide input contributions to develop Preliminary APT Common Proposals (PACP) for WRC-19 agenda item 1.13.

# 7. Views from Other Organisations

## 7.1 Regional Groups

### **7.1.1 ASMG - Document APG19-4/**[**INP-09(Rev.1)**](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-09Rev.1_Report-second_Inter-regional_Workshop_on_preparations_for_WRC-19.docx)

Views/positions of ASMG can be found in [Document WRC-19-IRWSP-18/18](https://www.itu.int/md/R15-2NDWRC19PREPWORK-C-0018/en).

### **7.1.2 ATU - Document APG19-4/**[**INP-09(Rev.1)**](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-09Rev.1_Report-second_Inter-regional_Workshop_on_preparations_for_WRC-19.docx)

Views/positions of ATU can be found in [Document WRC-19-IRWSP-18/6](https://www.itu.int/md/R15-2NDWRC19PREPWORK-C-0006/en).

### **7.1.3 CEPT - Document APG19-4/**[**INF-23**](https://www.apt.int/sites/default/files/2019/01/APG19-4-INF-23_CEPT_PPT.pdf)

CEPT supports the results of the ITU-R studies[[3]](#footnote-3) on IMT spectrum needs in the range 24.25-86 GHz. CEPT supports sharing and compatibility studies for the bands listed in Resolves 2 of Resolution **238** (24.25-27.5 GHz, 31.8-33.4 GHz, 37-43.5 GHz, 45.5-50.2 GHz, 50.4-52.6 GHz, 66-76 GHz and 81-86 GHz), with the focus on the frequency bands 24.25-27.5 GHz, 40.5-43.5 GHz and 66-71 GHz.

CEPT supports the identification of global bands for IMT among the bands listed in resolves to invite ITU‑R 2 of Resolution **238**, taking into account the results of sharing and compatibility studies with existing services. Bands outside those listed in resolves to invite ITU-R 2 of Resolution **238** are not supported for consideration under this Agenda item. The following bands are supported for IMT identification and where appropriate, allocation to the Mobile Service on a primary basis:

* 24.25-27.5 GHz

CEPT has confirmed the clear priority for this band through the adoption of a harmonisation decision (ECC Decision (18)06) including relevant conditions for the protection of other services in the band and adjacent bands. The Decision was developed based on studies that assumed an individual authorisation regime.

CEPT supports the unwanted emission limits of −42 dBW/200 MHz Total Radiated Power (TRP) for base stations and −38 dBW/200 MHz TRP for mobile terminals, into the 23.6-24 GHz band, to be included as mandatory limits in Resolution **750**.

CEPT is considering RR N° **5.536A**, **5.536B** and **5.536C** in relation with coexistence with EESS and SRS earth stations

* 40.5 – 43.5 GHz

CEPT proposes an IMT identification for 40.5-43.5 GHz. This is a priority band for CEPT and already identified for future harmonisation in Europe. CEPT considers that the bands 40.5-43.5 GHz has good potential for future harmonisation in Europe. The process for developing harmonisation decisions for additional bands (other than 26 GHz) may be launched immediately after WRC-19, under the assumption of an individual authorisation regime.

* 66 – 71 GHz

CEPT supports that IMT and MGWS/WAS should have equal access to the frequency band 66-71 GHz. An identification should not confer any priority to IMT and this should be emphasized in the footnote identifying the band and associated WRC Resolution. CEPT supports modifying No. **5.553** to remove the frequency band 66-71 GHz from this footnote.

Other candidate bands considered:

* 37-40.5 GHz

Whilst CEPT will not propose identification and has no intention of using 37-40.5 GHz for IMT, CEPT will not oppose a global IMT identification for the full 37-43.5 GHz range.

The following bands are not supported for the IMT identification and CEPT is proposing NOC:

31.8-33.4 GHz

71-76 GHz

81-86 GHz.

Note: CEPT has developed a Roadmap on 5G (<http://cept.org/ecc/topics/spectrum-for-wireless-broadband-5g#roadmap>). In this respect it is noted that “Europe has harmonised the 27.5-29.5 GHz band for broadband satellite and is supportive of the worldwide use of this band for ESIM. This band is therefore not available for 5G”.

### **7.1.4 CITEL - Document APG19-4/**[**INF-22**](https://www.apt.int/sites/default/files/2019/01/APG19-4-INF-22_CITEL_PPT.pdf)

Various proposals are under consideration.

| **Frequency Band (GHz)** | **New identification** | **NOC** |
| --- | --- | --- |
| **Band A: 24.25-27.5** | **DIAP** for entire range; and  **PP** for 24.65-27 GHz only |  |
| **Band B: 31.8-33.4** |  | **DIAP** |
| **Band CDE: 37-40.5/40.5-42.5/42.5-43.5** | **PP** for entire range with new Resolution; and  **PP** excludes 40-42 GHz | **PP** for 40-42 GHz only |
| **Band FGHI: 45.5-47/47-47.2/47.2-50.2/50.4-52.6** | **PP** for 47.2-48.2/50.4-52.6 GHz only | **PP** for 45.5-47.2/48.2-50.2 GHz |
| **Band J: 66-71** | **PP** for entire range |  |
| **Band KL: 71-76/81-86** |  | **PP** for entire range |

* PRELIMINARY PROPOSAL (**PP**): a proposal by a CITEL Member State that has not been supported by another Member State.
* DRAFT INTER-AMERICAN PROPOSAL (**DIAP**): PP that has been supported by at least one other Member State.
* INTER-AMERICAN PROPOSAL (**IAP**): DIAP supported by at least six Members States and not opposed by more than 50% of the number of supports obtained.

### **7.1.5 RCC - Document APG19-4/**[**INF-24**](https://www.apt.int/sites/default/files/2019/01/APG19-4-INF-24_RCC.pdf)

The RCC Administrations consider that when developing technical conditions and regulatory provisions for the allocation of frequency bands to the MS and their identification for IMT it is necessary to ensure protection of other services having allocation in the considered and adjacent frequency bands taking into account the need in their development, first of all for existing systems or those planned to be used by RCC Administrations.

The RCC Administrations do not oppose the allocation of the frequency band 24.25-25.25 GHz to mobile, excluding aeronautical mobile, service on a primary global basis, as well as the identification of the frequency band 24.25-27.5 GHz for IMT, subject to incorporating the conditions in the Radio Regulations for IMT stations to protect:

* space stations in the Earth exploration-satellite service (EESS) (passive) in the frequency bands 23.6-24 GHz, 50.2-50.4 GHz and 52.6-54.25 GHz from unwanted emissions of IMT stations;
* space stations in the fixed-satellite service and inter-satellite service.

The RCC Administrations consider that to ensure this protection it is necessary to limit the emission from IMT base stations in upper hemisphere, as well as to limit unwanted emissions of IMT base and subscriber stations in frequency bands 23.6−24.0 GHz, 50.2−50.4 GHz and 52.6−54.25 GHz allocated to EESS (passive).

The RCC Administrations do not support allocation of the frequency band 31.8-33.4 GHz to mobile service on a primary basis and identification of the frequency bands 31.8-33.4 GHz and 42.5-43.5 GHz, 71−76 GHz and 81−86 GHz, as the results of ITUR studies in these bands have concluded that IMT systems are incompatible with the stations of the incumbent services.

The RCC Administrations do not support the identification of the frequency bands 45.5−47.0 GHz and 66−71 GHz for IMT systems until the compatibility studies with existing primary radio services in ITU-R are completed.

Position of the RCC Administrations on frequency bands 37.0−40.5 GHz, 40.5−42.5 GHz, 47.0−50.2 GHz and 50.4−52.6 GHz included in Resolution 238 (WRC-15), is specified taking into account the need to protect both passive and active services.

The RCC Administrations oppose the consideration of frequency bands not specified in Resolution 238 (WRC-19) for IMT systems in this WRC-19 agenda item.

## 7.2 International Organisations

### **7.2.1 ICAO - Document APG19-4/**[**INF-04**](https://www.apt.int/sites/default/files/2018/12/APG19-4-INF-04_ICAO_01_WRC-19_ICAO-Pos_for_APG-4_for_WP5.docx)

To oppose any identification of a frequency band for IMT that could impact aviation systems, including enhanced flight vision systems (EFVS) operating in the 31.8-33.4 GHz band, within a new or existing allocation to the mobile service in the frequency range 24.25 to 86 GHz, unless agreed ITU-R studies demonstrate no adverse impact to those systems.

### **7.2.2 WMO - Documents APG19-4/**[**INF-02**](https://www.apt.int/sites/default/files/2018/12/APG19-4-INF-02_WMO-Position_20181109.docx)**,** [**INF-14**](https://www.apt.int/sites/default/files/2018/12/APG19-4-INF-14_WMO-AI_1.13.docx)

WMO does not oppose new IMT2020 identification/allocations provided that protection of EESS (Earth-to-space and space-to-Earth) and EESS (passive) is ensured.

WMO requests that the long-term usage and future deployment of receiving EESS Earth stations (in particular in the 25.5-27 GHz band) should not be constrained by the IMT2020 usage. WMO supports establishment of a methodology for administrations to use for the definition of the required separation distance between IMT2020 and EESS stations.

WMO also requests that the necessary IMT2020 unwanted emission limits be established to ensure the protection of all current and future EESS (passive) sensors and included in table 1 of Resolution **750 (rev. WRC-15)**. As far as the 23.6-24 GHz band is concerned WMO further states that:

* The levels agreed within CEPT (-42 dBW/200 MHz for BS and -38 dBW/200 MHz for UE) are already based on very optimistic set of assumptions (in favour of IMT-2020) to facilitate compatibility with passive sensors and already represent a huge back-off (10 to 12 dB) from the required EESS (passive) protection levels;
* A number of factors (antenna pattern and pointing, number of BS) can easily lead to an increase of the interference distributions (IMT-2020 antenna pattern, IMT-2020 BS antenna pointing and number of BS) and their impact cannot be neglected and could lead to a need for a much lower value than -42 dBW/200 MHz for BS or -38 dBW/200 MHz; for UE
* No further compromise can be made and therefore cannot accept any further relaxation of unwanted emission levels of -42 dBW/200 MHz for BS and -38 dBW/200 MHz for UE. These levels indeed constitute the absolute minimum to provide a certain level of protection to passive sensors.

However, without new compelling elements (e.g. antenna pattern measurements), in particular on relevant IMT-2020 antenna model, only the levels -54 dBW/200 MHz (BS) and -50 dBW/200 MHz (UE) would fully ensure protection of all existing and under development EESS (passive) sensors in the band 23.6-24 GHz.

Furthermore, WMO would appreciate the development of a solution to ensure the continued operation of the ground-based radiometers in the 24.25-27.5 GHz and 50.4-51.4 GHz frequency bands.

### **7.2.3 IARU - Document APG19-4/**[**INF-03**](https://www.apt.int/sites/default/files/2018/12/APG19-4-INF-03_IARU.DOCX)

In the band 24.25-27.5 GHz, the IARU supports No change

In the band 47-47.2 GHz, the IARU supports No change

In the band 81-86 GHz, the IARU supports No change

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1. Please note that the term ‘Issues/issues’ should not be confused with Issues in WRC-19 Agenda Items 7 and 9. [↑](#footnote-ref-1)
2. When conducting studies in the band 24.5-27.5 GHz, to take into account the need to ensure the protection of existing earth stations and the deployment of future receiving earth stations under the EESS (space-to-Earth) and SRS (space-to-Earth) allocation in the frequency band 25.5-27 GHz. [↑](#footnote-ref-2)
3. i.e. excluding Annex B from Doc ITU-R TG5/1 Document 5-1/36 Attachment 1: Information on spectrum needs in some countries [↑](#footnote-ref-3)