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|  | ASIA-PACIFIC TELECOMMUNITY | **Document No:** |
| **The 5th Meeting of the APT Conference Preparatory**  **Group for WRC-19 (APG19-5)** | **APG19-5/OUT-36** |
| 31 July – 6 August 2019, Tokyo, Japan | 5 August 2019 |

Working Party 2

**APT VIEW AND PRELIMINARY APT COMMON PROPOSAL**

**on WRC-19 agenda item 1.13**

**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[[1]](#footnote-1), 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 CPM Report for agenda item 1.13 considered the following:

– a description of the estimated spectrum needs for the terrestrial component of IMT in the frequency range between 24.25 GHz and 86 GHz;

– the sharing and compatibility studies carried out by ITU-R for each frequency band under study;

– the methods to satisfy agenda item 1.13;

– regulatory and procedural considerations for each frequency band under study.

A simplified version of the proposed methods to satisfy agenda item 1.13 can be found in the embedded summary table below. For full details, please refer to the precise text as contained in the CPM Report (Document [CPM19-2/R/1](https://www.itu.int/md/R15-CPM19.02-R-0001/en)).



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)).

# 2. Documents

* Input Documents APG19-5/[INP-07](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-07_LS_from_AWG.docx) (AWG), [09](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-09-TRP_WG-Report.docx) (TG TRP), [10](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-10_Cambodia_Contribution_AI_1.13_for_APG19-5.docx) (CBG), [12(Rev.1)](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-12-Samoa-AI_1.13.docx) (SMO, VUT), [17](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-17-NZ2-WP2.docx), [22](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-22-NZ7-Proposals_for_AI_1.13.docx) (NZL), [25](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-25-BGD-WP2.docx) (BGD), [37](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-37-IRN_WP2-FF.docx) (IRN), [43(Rev.1)](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-43Rev.1-AUS_Contribution_to_APG19-5_Chapter_2.docx) (AUS), [50](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-50-INS_Views-WP2.docx) (INS), [57](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-57-SNG_1.13.docx) (SNG), [66](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-66-CHN-WG2_PACP_1.13_1.16_9.1_ISSUE_9.1.1_9.1.5rev3.doc) (CHN), [76](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-76-J-5_WP2_PACP_and_Viewsui1.13-FSS_Sharing_in_26GHzuj.docx), [77](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-77-J-6_WP2_PACP_and_Viewsui1.13uj.docx) (J), [94](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-94-LAO-Pleriminary_view_on_WRC-19_Aenda_item_1.13_9.1.1_Rev_1.docx) (LAO), [99](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-99-THA_WP2__AI__1.13_and_9.1.1.docx) (THA), [112](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-112-MLA_WP2__AI_1.13_and_9.1.1_0.docx) (MLA), [118](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-118-WP2_AI_1.13_1.16_9.1.1_0.docx) (VTN), [124](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-124-KOR_SGP_WP2_AI_1.13.docx) (KOR, SNG), [128](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-128-WP2_kor.docx) (KOR)
* Information Documents APG19-5/[INF-01](https://www.apt.int/sites/default/files/2019/07/APG19-5-INF-01-WMO-Position.docx) (WMO), [02](https://www.apt.int/sites/default/files/2019/07/APG19-5-INF-02-ICAO-Position.docx) (ICAO), [03(Rev.1)](https://www.apt.int/sites/default/files/2019/07/APG19-5-INF-03-R1_IARU.docx) (IARU), [13](https://www.apt.int/sites/default/files/2019/07/APG19-5_INF-13-GSMA_AI1.13.docx) (GSMA), [14](https://www.apt.int/sites/default/files/2019/07/APG19-5-INF-14_1.13_GSA.docx) (GSA), [18](https://www.apt.int/sites/default/files/2019/07/APG19-5_INF-18-CEPT.docx) (CEPT), [19](https://www.apt.int/sites/default/files/2019/07/APG19-5_INF-19-ATU.docx) (ATU), [20](https://www.apt.int/sites/default/files/2019/07/APG19-5-INF-20-CITEL.docx) (CITEL), [22](https://www.apt.int/sites/default/files/2019/07/APG19-5-INF-22-RCC.docx) (RCC)

# 3. Summary of discussions

## **3.1 Summary of APT Members’ views**

### **3.1.1 Cambodia - Document APG19-5/**[**INP-10**](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-10_Cambodia_Contribution_AI_1.13_for_APG19-5.docx)

Cambodia has frequency 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.

In order to facilitate the use of IMT-2020 on the global level, Cambodia Administration supports identification of the following frequency bands as listed in Resolution **238 (WRC-15)** for IMT, under the following methods as mentioned in the CPM Report:

* 24.25 – 27.5 GHz Method A2: Alternative: 2 Condition: A2a
* 37 – 40.5 GHz Method C2 Alternative: 2
* 40.5 – 42.5 GHz Method D2 Alternative: 2
* 42.5 – 43.5 GHz Method E2 Alternative: 2

NOTE: The text above was provided during the APG19-5 meeting to update the views in Document APG19-5/INP-10.

### **3.1.2 Samoa and Vanuatu - Document APG19-5/**[**INP-12(Rev.1)**](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-12Rev.1-Samoa-Vanuatu-AI_1.13.docx)

The Administrations of Samoa and Vanuatu respectfully submit the following proposals for Agenda Item 1.13. The APG is invited to consider developing an APT preliminary view or preliminary common proposal, whichever relevant, for WRC-19 agenda item 1.13 based on the proposals as summarised below.

**Summary of Proposals for Agenda Item 1.13**

| **Band** | **IMT-2020** | **Draft CPM Text** |
| --- | --- | --- |
| 24.25-27.5 GHz | Yes | Method A2 (Alternative 1 or 2), subject to:  Condition A2d Option1  Condition A2e Option 3 (with 37 dBm/200 MHz)  Condition A2g Option 3 or 4 Draft Resolution [A113-IMT 26 GHZ] (WRC-19) |
| 37.0-40.5 GHz | No | Region 3: Method C1 (No Change)  Draft new Resolution [B113-IMT 40/50GHZ] (WRC-19) |
| 40.5-42.5 GHz | Yes | Region 3: Method D2, Alternative 2, subject to:  Condition D2a, Option 1  Draft new Resolution [B113-IMT 40/50GHZ] (WRC-19) |
| 42.5-43.5 GHz | Yes | Region 3: Method E2, subject to:  Condition E2a Option 2 (with 37 dBm/200 MHz)  Condition E2c Option 3 or 4  Condition E2d Option 1  Draft new Resolution [B113-IMT 40/50GHZ] (WRC-19) |
| 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 (alternative 1 or 2) with the conditions of Draft new Resolution [C113-IMT 66/71GHZ-J2] (WRC-19) |
| 71-76 GHz | Yes | Method K2 (alternative 1 or 2) with the conditions of Draft new Resolution [E113-IMT 70/80GHZ] (WRC-19) |
| 81-86 GHz | Yes | Method L2 (alternative 1 or 2) with the conditions of Draft new Resolution [E113-IMT 70/80GHZ] (WRC-19) |

NOTE: The text above was provided during the APG19-5 meeting to update the views in Document APG19-5/INP-12 (Rev.1).

### **3.1.3 New Zealand - Documents APG19-5/**[**INP-17**](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-17-NZ2-WP2.docx) **and** [**INP-22**](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-22-NZ7-Proposals_for_AI_1.13.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 of -37 dBW/200 MHz 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 2 - recognising that the spurious emission limit of Recommendation ITU-R SM.329 would be sufficient to protect EESS (passive) in second harmonic of IMT emission
* Condition A2c: Option 5 - no condition is necessary for earth stations in SRS/EESS as it is largely a national matter since results of sharing studies indicated that coexistence is feasible with separation distance of several kilometres
* Condition A2d: Option 4 - no condition is necessary as coexistence measures related to transmitting FSS earth stations at known locations interfering into IMT is a national matter
* Condition A2e: Option 5 or 6 - outdoor base stations shall have antenna main beam pointing below horizon except when the base station is only receiving
* Condition A2f: Option 3 - no condition is necessary as dimensions of the coordination zones for coexistence with RAS stations could be established on a national level
* Condition A2g: Option 5 - no other condition is required

For frequency band 31.8-33.4 GHz, New Zealand supports the single method, i.e. Method B1 (no change).

For frequency band 37-40.5 GHz, New Zealand opposes to Method C3 as the additional identification of 37.5-39.5 GHz to high-density applications in FSS for Region 1 through modifications of RR No. **5.516B** is outside the scope of WRC-19 Agenda item 1.13.

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 6 - 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 as dimensions of the coordination zones for coexistence with RAS stations could be established on a national level
* 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 5 or 6 - outdoor base stations shall have antenna main beam pointing below horizon except when the base station is only receiving
* Condition E2b: Option 3 - no condition is necessary as dimensions of the coordination zones for coexistence with RAS stations could be established on a national level
* Condition E2c: Option 5 - no other condition is required
* Condition E2d: Option 3 - no condition is necessary as coexistence measures related to transmitting FSS earth stations at known locations interfering into IMT is a national matter

For frequency band 66-71 GHz, New Zealand supports Method J1 (no change).

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.

### **3.1.4 Bangladesh (People’s Republic of) - Document APG19-5/**[**INP-25**](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-25-BGD-WP2.docx)

Bangladesh 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)**. For some spectrum bands, Bangladesh 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)**. Bangladesh has the following preliminary views for the frequency bands listed below.

**Item A: Frequency band 24.25-27.5 GHz**

Bangladesh supports identification of the frequency band 24.25-27.5 GHz for implementing IMT through Method A2 in the CPM Report under condition A2a (Option-1)

**Item B: Frequency Band 31.8-33.4 GHz**

Method B1: No change to the Radio Regulations due to sharing and compatibility study results between IMT systems and radionavigation systems showing their incompatibility.

**Frequency band 37- 40.5 GHz**

Method C2 (Alternative 2): Identification of the frequency band 37- 40.5 GHz for IMT in regions or globally.

**Item D: Frequency band 40.5-42.5 GHz**

Method D2 (Alternative 2): Identification of the frequency band 40.5-42.5 GHz for IMT in Regions or globally.

**Item E: Frequency band 42.5-43.5 GHz**

Method E2 (Alternative 2): Identification of the frequency band 42.5-43.5 GHz for IMT in Regions or globally.

**Item F: Frequency band 45.5-47 GHz**

Method F2: No change to the Radio Regulations in WRC-19 and request for further ITU-R studies for submission to a future competent of WRC/WRC-23.

**Item G: Frequency band 47-47.2 GHz**

Method G2:No change to the Radio Regulations in WRC-19 and request for further ITU-R studies for submission to a future competent of WRC/WRC-23.

**Item H: Frequency band 47.2-50.2 GHz**

Method H2 (Alternative 2): Identification of the frequency band 47.2-50.2 GHz for IMT in Regions or globally.

**Item I: Frequency band 50.4-52.6 GHz**

Method I2 (Alternative 2): Identification of the frequency band 50.4-52.6 GHz for IMT in Regions or globally.

**Item J: Frequency band 66-71 GHz**

Method J2: Identification of the frequency band 66-71 GHz for IMT in accordance with the alternative 2 and removal of the frequency band from RR No. **5.553**.

**Item K: Frequency band 71-76 GHz:**

Method K2 (Alternative 2): Identification of the frequency band 71-76 GHz for IMT in globally or regionally.

**Item L: Frequency band 81-86 GHz**

Method L2 (Alternative 2): Identification of the frequency band 81-86 GHz for IMT in globally or regionally.

### **3.1.5 Iran (Islamic Republic of) - Document APG19-5/**[**INP-37**](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-37-IRN_WP2-FF.docx)

Section 2.1 in Document APG19-5/INP-37 provides the general views of the Islamic Republic of Iran on agenda items 1.13 for discussion at the 5th meeting of the APT Preparatory Group for WRC-2019 (APG19-5), 31 July – 6 August 2019,Tokyo, Japan.

General views

* Due to land border of Region 3 and Region 1, this administration prefers those regulatory changes that proposed for Methods of Items having similar alternatives (among alternatives 1&2) for both regions, especially to the Items A to E.
* This administration wishes 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 in the corresponding footnote pointing towards a WRC Resolution and not WRC or ITU-R Recommendation. 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 not be subject to ITU-R Recommendations either in force or 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.

Therefore, whenever in the current Radio Regulation a given service is protected through the application of the a WRC Resolution, this administrations does not agree that such application of a WRC Resolution be changed to a WRC Recommendation or an ITU-R Recommendation. There may be cases that the conference in the corresponding footnote points to a Reference in WRC Resolution referencing an ITU-R Recommendation incorporated by reference which automatically becomes part of the RR.

* This administration does not support non-implementable measures to protect existing services/applications from in-band or out-of-band interference of IMT base stations and mobile stations that are proposed under several Options of Methods of this agenda item in CPM Report.
* This administration is not in favor of identification of frequency bands without acceptable ITU-R sharing and compatibility studies.
* This administration does in no way agree to use IMT in a band allocated on primary service to mobile without identification by WRC-19

The embedded document below provides the further views and proposals by the Islamic Republic of Iran.



### **3.1.6 Australia - Document APG19-5/**[**INP-43(Rev.1)**](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-43Rev.1-AUS_Contribution_to_APG19-5_Chapter_2.docx)

Australia’s position for each of the bands under consideration is summarised in the table below with reference to the Methods and Conditions in the CPM Report.

| **Band** | **Australian Preliminary View** | | | |
| --- | --- | --- | --- | --- |
| **Method** | **Condition** | **Option** | **Comments** |
| 24.25-27.5 GHz | Method A2  Alternative 2 | A2a | Option 1 | Australia supports limits on IMT unwanted emissions to protect EESS(passive). Limits of -37 dBW/200 MHz and -33 dBW/200 MHz for BS and UE respectively are considered to be sufficient for expected deployments within Australia. Australia believes less stringent levels can be applied, and still provide adequate protection to EESS(passive), if additional restrictions are placed on outdoor IMT such as BS deployment density limits, or if devices are located indoors. Australia supports unwanted emission limits applying to IMT operating across the entire 24.25-27.5 GHz band. |
| A2b | Option 2 | A *considering* in a new WRC Resolution that states spurious emission limits of Recommendation ITU-R SM.329 Category B are sufficient to protect the EESS (passive) from the second harmonic |
| A2c | Option 5 | No condition necessary, interference can be managed via domestic regulation |
| A2d | Option 4 |
| A2e | Option 9 |
| A2f | Option 3 |
| A2g | Option 5 |
| 31.8-33.4 GHz | Method B1 | N/A | N/A | NOC is the only method proposed |
| 37-40.5 GHz | - | N/A | N/A | Australia would not oppose a global or regional IMT identification in the band |
| 40.5-42.5 GHz | Method D2  Alternative 2 | D2a | Option 6 | No condition necessary, interference can be managed via domestic regulation |
| D2b | Option 3 |
| D2c | Option 3 |
| 42.5-43.5 GHz | Method E2  Alternative 2 | E2a | Option 7 | No condition necessary, interference can be managed via domestic regulation |
| E2b | Option 3 |
| E2c | Option 5 |
| 45.5-47 GHz | - | N/A | N/A | Australia would not oppose a global or regional IMT identification in the band |
| 47-47.2 GHz | - | N/A | N/A | Australia would not oppose a global or regional IMT identification in the 47-47.2 GHz bands if suitable studies are performed before WRC-19 that show sharing is possible with incumbent primary services and appropriate regulatory measures are developed as a result. |
| 47.2-50.2 GHz | Method H2  Alternative 2  In all or part of the band | H2a | Option 2 | Australia is still considering what limits on IMT unwanted emissions should apply. If only part of the band is identified (e.g. 47.2-48.2 GHz), Australia is still considering whether any emission limits on IMT in Res **750** are required |
| H2b | Option 7 | No condition necessary, interference can be managed via domestic regulation |
| H2c | Option 5 |
| H2d | Option 5 |
| 50.4-52.6 GHz | - | N/A | N/A | Australia would not oppose a global or regional IMT identification in the band provided adjacent band EESS(passive) are adequately protected, taking into account RR No. **340.1** |
| 66-71 GHz | Method J4  Alternative 2 | J4a | Option 4 | No condition necessary, interference can be managed via domestic regulation |
| J4b | N/A | Australia believes no regulatory measures are required to protect the MSS in this band |
| 71-76 GHz | Method K2  Alternative 2 | K2a | N/A | Australian support for an IMT identification is on the basis that suitable unwanted emission limits are defined for the protection of automotive radars in the 76-81 GHz |
| K2b | Option 3 | No condition necessary, interference can be managed via domestic regulation |
| K2c | Option 3 |
| 81-86 GHz | - | N/A | N/A | Australia would not oppose a global or regional IMT identification in the band provided adequate limits on IMT unwanted emissions are applied to ensure coexistence with adjacent band automotive radar services and EESS(passive) |

Australia proposes a Preliminary APT Common Proposal to WRC-19 that aligns with the views listed above, and including the following regulatory change:

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### **3.1.7 Indonesia (Republic of) - Document APG19-5/**[**INP-50**](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-50-INS_Views-WP2.docx)

Indonesia is of the view that:

1. **Method D2 Alternative 2** is supported to satisfy Agenda Item 1.13 of WRC-19 for the frequency band 40.5-42.5 GHz;
2. **Method E2 Alternative 2** is supported to satisfy Agenda Item 1.13 of WRC-19 for the frequency band 42.5-43.5 GHz;
3. **Method J2 Alternative 2** is supported to satisfy Agenda Item 1.13 of WRC-19 for the frequency band 66-71 GHz;
4. in 31.8–33.4 GHz frequency band, Indonesia supports the only **Method B1**, due to study result showing its incompatibility and Indonesia massively use this band for Fixed Service;
5. in 45.5–47 GHz and 47–47.2 GHz frequency bands, since no sharing studies have been conducted, Indonesia supports NOC and propose further ITU studies in **Method F2** and **Method G2** respectively.

### **3.1.8 Singapore - Documents APG19-5/**[**INP-57**](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-57-SNG_1.13.docx) **and** [**INP-124**](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-124-KOR_SGP_WP2_AI_1.13.docx)

**(i) 24.25-27.5 GHz**

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

* Method A2, Alternative 2
* Condition A2a: Option 1 as shown in the Attachment below



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

* Condition A2b: Option 3 (No condition is necessary)
* Condition A2c: Option 5 (No condition is necessary)
* Condition A2d: Option 4 (No condition is necessary)
* Condition A2e: Option 9 (No condition is necessary)
* Condition A2f: Option 3 (No condition is necessary)
* Condition A2g: Option 5 (No condition is necessary)

**(ii) 31.8-33.4 GHz**

There is only the NOC Method in CPM text and Singapore agrees with the Method B1 (NOC) for the band 31.8-33.4 GHz.

**(iii) 37.0 – 40.5GHz, 40.5 – 42.5GHz and 42.5 – 43.5 GHz frequency bands**

For the above bands, Singapore supports Method C2/D2/E2, Alternative 2. For the conditions associated with this band, no action is necessary due to results of sharing and compatibility studies. In detail, the following is applied:

* Condition C2a: Option 2 (No condition is necessary)
* Condition C2b: Option 6 (No condition is necessary)
* Condition C2c: Option 3 (No condition is necessary)
* Condition C2d: Option 2 (No condition is necessary)
* Condition C2e: Option 3 (No condition is necessary)
* Condition D2a: Option 6 (No condition is necessary)
* Condition D2b: Option 3 (No condition is necessary)
* Condition D2c: Option 3 (No condition is necessary)
* Condition E2a: Option 7 (No condition is necessary)
* Condition E2b: Option 3 (No condition is necessary)
* Condition E2c: Option 5 (No condition is necessary)
* Condition E2d: Option 3 (No condition is necessary)

**(iv) 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.

### **3.1.9 China (People’s Republic of) - Document APG19-5/**[**INP-66**](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-66-CHN-WG2_PACP_1.13_1.16_9.1_ISSUE_9.1.1_9.1.5rev3.doc)

China propose the views for preliminary APT common proposals as shown in the embedded document below.



### **3.1.10 Japan - Documents APG19-5/**[**INP-76**](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-76-J-5_WP2_PACP_and_Viewsui1.13-FSS_Sharing_in_26GHzuj.docx) **and** [**INP-77**](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-77-J-6_WP2_PACP_and_Viewsui1.13uj.docx)

Japan provided the views and proposals to develop PACPs at the APG19-5 meeting as shown in the embedded documents below.

 

### **3.1.11 Lao PDR - Document APG19-5/**[**INP-94**](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-94-LAO-Pleriminary_view_on_WRC-19_Aenda_item_1.13_9.1.1_Rev_1.docx)

According to the result of sharing and compatibility studies between IMT and other services, and the methods to satisfy agenda item of the report of the CPM to WRC-19. Lao PDR is of the view that:

**Item A: Frequency band 24.25 – 27.5 GHz**

Lao PDR supports method A2, alternative 2 with conditions and options as follows:

| Conditions | options | Reason |
| --- | --- | --- |
| A2a | 1 | to ensure adjacent band compatibility with the EESS (passive) in the frequency band 23.6-24.0 GHz |
| A2b | 2 or 3 | Recommendation ITU-R SM.329 could be consider as sufficient to protect the EESS second harmonic. Furthermore, footnote RR No. **5.340.1** provides that “*The allocation to the Earth exploration satellite service (passive) and the space research service (passive) in the band 50.2-50.4 GHz should not impose undue constraints on the use of the adjacent bands by the primary allocated services in those bands*” |
| A2c | 5 | The protection of EESS/SRS earth station could be considered as a national matter because of small separation distance |
| A2d | 4 | And the separation distance is about 100m up to 10 km. therefore it could be considered as a national matter. |
| A2e | No proposal | - |
| A2f | 3 | Separation distance is small. therefore, it could be considered as a national matter |
| A2g | 5 | No condition is necessary |

**Item B: 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 system and radio navigation system showing their incompatibility.

**Item C: Frequency band 37 – 40.5 GHz**

Lao PDR supports method C2, alternative 2

**Item D: Frequency band 40.5 – 42.5 GHz**

Lao PDR supports method D2, alternative 2

**Item E: Frequency band 42.5 – 43.5 GHz**

Lao PDR supports method E2, alternative 2

### **3.1.12 Thailand - Document APG19-5/**[**INP-99**](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-99-THA_WP2__AI__1.13_and_9.1.1.docx)

Taking into account current ITU-R sharing and compatibility studies and methods to satisfy the agenda item as reflected in the CPM Report, Thailand’s views and proposals are as follows:

**Band A: 24.25-27.5 GHz**

Thailand supports 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 Alternative 2 in the CPM Report.

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 CPM Report.

**Band B: 31.8-33.4 GHz**

Thailand supports Method B1 which proposes NOC to the Radio Regulations as the only Method in the CPM Report, for the frequency band 31.8-33.4 GHz due to difficulty of sharing and compatibility between IMT and the incumbent services.

**Bands C/D/E: 37-40.5 GHz, 40.5-42.5 GHz and 42.5-43.5 GHz**

Thailand supports 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 Alternative 2 in the CPM Report.

Protection of the incumbent services in these and adjacent frequency bands should be ensured by selecting an appropriate Option for each Condition under Method C2/D2/E2 in the CPM Report.

Thailand also supports APT Views reached at APG19-4 recognizing 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.

**Bands F/G/H/I: 45.5-47 GHz, 47-47.2 GHz, 47.2-50.2 GHz and 50.4-52.6 GHz**

Thailand supports Methods F1/G1/H1/I1 which propose NOC to the Radio Regulations for the frequency bands 45.5-47 GHz, 47-47.2 GHz, 47.2-50.2 GHz and 50.4-52.6 GHz partly due to insufficient sharing and compatibility studies in some of the frequency bands as mentioned in the CPM Report and also due to divergent views and lack of strong interest from industry.

Nevertheless, Thailand is not against continuation of further studies for possible identification of these frequency bands for IMT in the future if there is still such a strong interest to do so.

**Band J: 66-71 GHz**

Thailand supports Method J3 which proposes continuation of studies in this frequency band for possible IMT identification through a WRC Resolution. While there is a strong interest from the industry for this frequency band but divergent views still exist, and further studies may warrant such an action.

A revision to Resolution **238 (WRC-15)** or a new WRC Resolution may be required.

**Bands K/L: 71-76 GHz and 81-86 GHz**

Thailand supports Methods K1/L1 which propose NOC to the Radio Regulations for the frequency bands 71-76 GHz and 81-86 GHz due to divergent views and lack of strong interest from industry.

### **3.1.13 Malaysia - Document APG19-5/**[**INP-112**](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-112-MLA_WP2__AI_1.13_and_9.1.1_0.docx)

Malaysia’s views for WRC-19 agenda item 1.13 are as follows:

1. **24.25-27.5 GHz frequency band**

Malaysia supports identification of the 24.25-27.5 GHz frequency band for the terrestrial component of IMT (**Method A2, Alternative 2 of the CPM report**).

Under Condition A2a (Protection measures for the Earth exploration-satellite service (passive) in the 23.6-24 GHz frequency band), Malaysia supports Option 1 in the CPM Report i.e. to revise Table 1-1 of Resolution **750 (Rev.WRC-15)**).

1. **31.8-33.4 GHz frequency band**

Malaysia supports no change to the Radio Regulations in the 31.8-33.4 GHz frequency band (**Method B1 of the CPM Report**).

1. **37-40.5 GHz, 40.5-42.5 GHz and 42.5-43.5 GHz frequency bands**

Malaysia supports upgrading the existing secondary allocation to the mobile service in the frequency band 40.5-42.5 GHz to a primary allocation in the Table of Frequency Allocations and identification of the 37-43.5 GHz frequency bands for the terrestrial component of IMT (**Methods C2, D2 and E2 (Alternatives 2) of the CPM Report**).

1. **47.2-50.2 GHz and 50.4-52.6 GHz frequency bands**

Malaysia supports identification of the 47.2-50.2 GHz and 50.4-52.6 GHz frequency bands for the terrestrial component of IMT (**Methods H2 and I2 (Alternatives 2) of the CPM Report**).

1. **66-71 GHz frequency band**

Malaysia supports identification of the 66-71 GHz frequency band for the terrestrial component of IMT. Malaysia prefers modification of No. **5.553** to remove the frequency band 66-71 GHz from this footnote. (**Method J2 (Alternative 2) of the CPM Report**).

### **3.1.14 Viet Nam (Socialist Republic of) - Document APG19-5/**[**INP-118**](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-118-WP2_AI_1.13_1.16_9.1.1_0.docx)

Viet Nam supports the results of the ITU-R studies on IMT spectrum needs as well as sharing and compatibility for the range 24.25-86 GHz, with more attention on the frequency bands (A) 24.25-27.5 GHz, (C) 37-40.5 GHz, (D) 40.5-42.5 GHz and (E) 42.5-43.5 GHz. Viet Nam 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.

Viet Nam strongly supports the identification of global bands for IMT in the band 24.25-27.5 GHz within primary Mobile Service. Viet Nam also supports IMT identification in the bands 37-40.5 GHz, 40.5-42.5 GHz and 42.5-43.5 GHz within primary Mobile Service.

Viet Nam supports method A2-alternative 2-condition A2a-option 1 with the unwanted emission limits of −33.5 dBW/200 MHz Total Radiated Power (TRP) for base stations and −29.7 dBW/200 MHz TRP for mobile terminals, into the 23.6-24 GHz band, to be included as mandatory limits in Resolution **750**.

Viet Nam supports method 2 alternative 2 for bands C, D and E (C2-Alt.2, D2-Alt.2, E2-Alt.2).

### **3.1.15 Republic of Korea - Documents APG19-5/**[**INP-124**](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-124-KOR_SGP_WP2_AI_1.13.docx) **and** [**INP-128**](https://www.apt.int/sites/default/files/2019/07/APG19-5-INP-128-WP2_kor.docx)

Taking into account above, the Republic of Korea strongly supports IMT identifications of the frequency bands 24.25 GHz to 27.5 GHz and 37 GHz to 43.5 GHz, or portions thereof, without unnecessary conditions and limitations.

With regard to Alternatives 1 and 2, the 26 GHz frequency ranges are allocated to Mobile Service on a primary basis in Region 3. Therefore, Alternative 1 is out of scope of Region 3.

With regard to methods, the Republic of Korea supports followings:

– For item A (band 24.25-27.5 GHz), Method A2, Alternative 2

* Condition A2a: Option 1 as shown in the Attachment below



* Condition A2b: Option 3 (No condition is necessary)
* Condition A2c: Option 5 (No condition is necessary)
* Condition A2d: Option 4 (No condition is necessary)
* Condition A2e: Option 9 (No condition is necessary)
* Condition A2f: Option 3 (No condition is necessary)
* Condition A2g: Option 5 (No condition is necessary)

– For item B (band 31.8-33.4 GHz), Method B1, NOC

– For item C (band 37-40.5 GHz), Method C2, Alternative 2

* Condition C2a: Option 2 (No condition is necessary)
* Condition C2b: Option 6 (No condition is necessary)
* Condition C2c: Option 3 (No condition is necessary)
* Condition C2d: Option 2 (No condition is necessary)
* Condition C2e: Option 3 (No condition is necessary)

– For item D (band 40.5-42.5 GHz), Method D2, Alternative 2

* Condition D2a: Option 6 (No condition is necessary)
* Condition D2b: Option 3 (No condition is necessary)
* Condition D2c: Option 3 (No condition is necessary)

– For item E (band 42.5-43.5 GHz), Method E2, Alternative 2

* Condition E2a: Option 7 (No condition is necessary)
* Condition E2b: Option 3 (No condition is necessary)
* Condition E2c: Option 5 (No condition is necessary)
* Condition E2d: Option 3 (No condition is necessary)

### **3.1.16 Brunei Darussalam**

Brunei Darussalam supports the following methods and conditions for the band 24.25-27.5 GHz:

* Method A2, Alternative 2
* Condition A2a: Option 1 as shown in the Attachment below



## **3.2 Summary of issues raised during the meeting**

### **3.2.1 24.25-27.5 GHz**

APG19-5 received a number of proposals which support Method A2 for the frequency band 24.25-27.5 GHz together with different combinations of Alternative and Options under the various Conditions in the CPM Report.

Regarding Alternative 1 and 2 under Method A2, while some APT Members support Alternative 2, some other APT Members support Alternative 1 based on the view that ITU-R sharing and compatibility studies in this frequency band did not fully address the operation of IMT-2020 stations within the maritime and aeronautical mobile service.

Regarding Condition A2a, APT Members agreed to support Option 1. However, the values to be specified in the active service band and limits of unwanted emission power from IMT base and mobile stations within the EESS (passive) band need to be further investigated. During the APG19-5 meeting, the following options were summarized for further investigation.

Frequency band for the active service band being considered by APT Members

|  |  |
| --- | --- |
| **Option** | **Frequency band for the active service band** |
| 1 | 24.25-24.75 GHz |
| 2 | 24.25-25.25 GHz |
| 3 | 24.25-26.5 GHz |
| 4 | 24.25-27.5 GHz |

Limits of unwanted emission power from IMT base and mobile stations within the EESS (passive) band being considered by APT Members

|  |  |
| --- | --- |
| **Option** | **Limits of unwanted emission power from IMT base and mobile stations** |
| 1 | * To choose a single value for the unwanted emission limit of IMT base stations from the range −28 to −37 dB(W/200 MHz); and * To choose a single value for the unwanted emission limit of IMT mobile stations from the range −24 to −33 dB(W/200 MHz) |
| 2 | * To choose a single value for the unwanted emission limit of IMT base stations from the range −35 to −42 dB(W/200 MHz); and * To choose a single value for the unwanted emission limit of IMT mobile stations from the range −31 to −38 dB(W/200 MHz) |

Regarding Condition A2b, APG19-5 received proposals by some APT Members which support either Option 2 or 3. After the discussion, APT Members agreed to support Option 2.

Regarding Conditions A2c, A2d, A2e, A2f and A2g, APT Members decided not to create corresponding elements for PACPs to be included in a new WRC Resolution in this frequency band due to a number of various proposals. Therefore, APT Members need to further investigate Options to be taken for the respective Conditions towards WRC-19.

Based on the discussion above, APT Views and PACPs were developed as shown in Sections 4 and 5 below, respectively.

### **3.2.2 31.8-33.4 GHz**

APG19-5 received a number of proposals which support Method B1 (NOC) for the frequency band 31.8-33.4 GHz. APT Views and PACPs which support Method B1 were developed, accordingly.

### **3.2.3 37-40.5 GHz, 40.5-42.5 GHz and 42.5-43.5 GHz**

Based on the proposals to APG19-5, APT Members agreed to support identifying the 37-43.5 GHz frequency band, or portions thereof, for IMT globally through Methods C2, D2 and E2 with Alternative 2 together with a new WRC Resolution.

However, these proposals were not necessarily harmonized in terms of the section of Options under the various Conditions in the CPM Report. Therefore, APT Members decided not to create corresponding elements for PACPs to be included in the new WRC Resolution for the frequency band 37-43.5 GHz. APT Members need to further investigate Options to be taken for the respective Conditions towards WRC-19.

Regarding the frequency band 37-40.5 GHz, APT Members also do not support Method C3 in the CPM Report as it is outside the scope of this agenda item since it seeks to consider the additional identification of 37.5-39.5 GHz to high-density applications in FSS for Region 1 through modifications of RR No. **5.516B**.

Based on the discussion above, APT Views and PACPs were developed as shown in Sections 4 and 5 below, respectively.

### **3.2.4 45.5-47 GHz**

APG19-5 received proposals by some APT Members which support either Method F1 (NOC) or Method F2 (NOC, Proposal for further ITU-R study) for the frequency band 45.5-47 GHz. After the discussion, APT Members agreed not to support IMT identification in this frequency band at WRC-19. APT Views and PACPs which support NOC were developed, accordingly.

### **3.2.5 47-47.2 GHz**

APG19-5 received proposals by some APT Members which support either Method G1 (NOC) or Method G2 (NOC, Proposal for further ITU-R study) for the frequency band 47-47.2 GHz. After the discussion, APT Members agreed not to support IMT identification in this frequency band at WRC-19. APT Views and PACPs which support NOC were developed, accordingly.

### **3.2.6 47.2-50.2 GHz**

At APG19-5, some APT Members provided proposals which support Method H1 (NOC) while some other APT Members provided proposals which support Method H2, Alternative 2 (Identification of all or part of the 47.2-50.2 GHz frequency band for the terrestrial component of IMT in Regions or globally). After the discussion, APT Members agreed to further investigate whether this frequency band could be considered for IMT identification at WRC-19.

### **3.2.7 50.4-52.6 GHz**

At APG19-5, some APT Members provided proposals which support Method I1 (NOC) while some other APT Members provided proposals which support Method I2, Alternative 2 (Identification of the 50.4-52.6 GHz frequency band for the terrestrial component of IMT in Regions or globally). After the discussion, APT Members agreed to further investigate whether this frequency band could be considered for IMT identification at WRC-19.

### **3.2.8 66-71 GHz**

At APG19-5, some APT Members provided proposals which support either

* Method J1 (NOC);
* Method J2 (Identification of the frequency band for IMT in accordance with either Alternative 1 or 2, and removal of the frequency band from RR No. **5.553**);
* Method J3 (To continue studies on the possibility of identification in the frequency band 66-71 GHz for IMT with a WRC Resolution); or
* Method J4 (Identification of the frequency band for IMT in accordance with either Alternative 1 or 2, and retention of the frequency band from RR No. **5.553**).

After the discussion, in principle, APT Members agreed to support identification of the frequency band 66-71 GHz for IMT. However, APT Members are still investigating Method and condition(s) to be adopted when identifying this band for IMT.

### **3.2.9 71-76 GHz**

At APG19-5, some APT Members provided proposals which support either

* Method K1 (NOC);
* NOC at WRC-19 and request to continue the studies on the possibility of the identification of the frequency band for consideration at WRC-23; or
* Method K2 (Identification of the frequency band for IMT in accordance with ether Alternative 1 or 2).

After the discussion, APT Members agreed to further investigate whether this frequency band could be considered for IMT identification at WRC-19.

### **3.2.10 81-86 GHz**

At APG19-5, some APT Members provided proposals which support either

* Method L1 (NOC);
* NOC at WRC-19 and request to continue the studies on the possibility of the identification of the frequency band for consideration at WRC-23; or
* Method L2 (Identification of the frequency band for IMT in accordance with ether Alternative 1 or 2).

After the discussion, APT Members agreed to further investigate whether this frequency band could be considered for IMT identification at WRC-19.

# 4. APT View(s)

* **24.25-27.5 GHz**

APT Members support identifying the 24.25-27.5 GHz frequency band for IMT globally through Method A2 together with a new WRC Resolution.

In principle, APT Members support Alternative 2 under Method A2. However, it may be subject to the regulatory provisions to be specified in the new WRC Resolution associated with Condition A2e.

In addition, APT Members have the following views on Options under the respective Conditions for Method A2 contained in the CPM Report. It should be noted that APT Members are still investigating the Options to be selected for some of the Conditions.

APT Views on Options under the respective Conditions for Method A2

| **Option** | | **Supported Option** |
| --- | --- | --- |
| A2a | Protection measures for the EESS (passive) in the 23.6-24 GHz frequency band | 1 |
| A2b | Protection measures for the EESS (passive) in the 50.2-50.4 GHz and 52.6-54.25 GHz frequency bands | 2 |
| A2c | Protection measures for earth stations in the SRS/EESS (25.5-27 GHz (space-to-Earth)) | To be developed |
| A2d | Measures related to transmitting earth stations in the FSS (Earth-to-space) at known locations | To be developed |
| A2e | Protection measures for the ISS and FSS (Earth-to-space) receiving space stations | To be developed |
| A2f | Protection measures for the RAS (23.6-24 GHz) | To be developed |
| A2g | Protection measures for multiple services | To be developed |

* **31.8-33.4 GHz**

APT Members support Method B1 (NOC), which is the only Method in the 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 identifying the 37-43.5 GHz frequency band, or portions thereof, for IMT globally through Methods C2, D2 and E2 with Alternative 2 together with a new WRC Resolution.

In addition, APT Members have the following views on the Options under respective Conditions for Methods C2, D2 and E2 contained in the CPM Report. It should be noted APT Members are still investigating the Options to be selected for these Conditions.

APT Views on Options under the respective Conditions for Methods C2, D2 and E2

| **Option** | | **Supported Option** |
| --- | --- | --- |
| C2a | Protection measures for the EESS (passive) in the 36-37 GHz frequency band | To be developed |
| C2b | Protection measures for the FSS (space-to-Earth) | To be developed |
| C2c | Protection measures for the SRS (space-to-Earth) | To be developed |
| C2d | Measures for the SRS (Earth-to-space) and EESS (Earth-to-space) | To be developed |
| C2e | Protection measures for multiple services | To be developed |
|  |  |  |
| D2a | Protection measures for the FSS (space-to-Earth) | To be developed |
| D2b | Protection measures for the RAS | To be developed |
| D2c | Protection measures for multiple services | To be developed |
|  |  |  |
| E2a | Protection measures for the FSS (Earth-to-space) | To be developed |
| E2b | Protection measures for the RAS | To be developed |
| E2c | Protection measures for multiple services | To be developed |
| E2d | Measures related to transmitting earth stations in the FSS (Earth-to-space) at known locations | To be developed |

Regarding the frequency band 37-40.5 GHz, APT Members do not support Method C3 in the CPM Report.

* **45.5-47 GHz**

APT Members agreed not to support IMT identification in the frequency band 45.5-47 GHz at WRC-19.

* **47-47.2 GHz**

APT Members agreed not to support IMT identification in the frequency band 47-47.2 GHz at WRC-19.

* **47.2-50.2 GHz**

APT Members agreed to further investigate whether the frequency band 47.2-50.2 GHz or portions thereof could be considered for IMT identification at WRC-19.

* **50.4-52.6 GHz**

APT Members agreed to further investigate whether the frequency band 50.4-52.6 GHz could be considered for IMT identification at WRC-19.

* **66-71 GHz**

In principle, APT Members support identification of the frequency band 66-71 GHz for IMT. However, APT Members are still investigating Method and condition(s) to be adopted when identifying this band for IMT.

* **71-76 GHz**

APT Members agreed to further investigate whether the frequency band 71-76 GHz could be considered for IMT identification at WRC-19.

* **81-86 GHz**

APT Members agreed to further investigate whether the frequency band 81-86 GHz could be considered for IMT identification at WRC-19.

* **Total Radiated Power (TRP)**

In order to avoid any unintended consequences on the regulatory provisions for other services and applications, APT Members are of the view that in the context of WRC-19 agenda item 1.13 outcomes, description of TRP should be solely limited to the regulatory implementation for this agenda item. Therefore, any changes made as a result of agenda item 1.13 should limit use of the term TRP to IMT.

# 5. Preliminary APT Common Proposal(s)

PACPs for the frequency band 24.25-27.5 GHz



PACPs for the frequency band 31.8-33.4 GHz



PACPs for the frequency bands 37-40.5, 40.5-42.5 and 42.5-43.5 GHz



PACPs for the frequency band 45.5-47 GHz



PACPs for the frequency band 47-47.2 GHz



PACPs for the frequency band 66-71 GHz



PACPs for TRP treatment



\_\_\_\_\_\_\_\_\_\_\_\_

1. 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-1)