



IAFI<sup>1</sup>

**DRAFT REVISION OF APT RECOMMENDATION APT/AWG/REC-08 ON  
'FREQUENCY ARRANGEMENTS FOR THE IMPLEMENTATION OF IMT IN THE  
FREQUENCY BANDS 612-703 MHZ AND 698-806 MHZ'**

## 1. Introduction

The 33<sup>rd</sup> meeting of AWG started a revision of [APT/AWG/REC-08](#) to reflect the APT 600MHz frequency arrangement. The APT 600 MHz band plan was agreed within APT as a harmonized. During AWG-34, one input contributions (INP-41) proposed additional edits and updates in the working document on revision of REC-08 to reflect the APT 600MHz frequency arrangement. Based on the contribution, the meeting finalized the revised working document. The AWG-34 meeting decided to finalize and approve REC-08. However, one APT member objected, and the meeting could not approve REC-08. In this input, we share additional background information that could help the discussions in 35<sup>th</sup> AWG Meeting.

## 2. Background

AWG has been working for 600 MHz frequency arrangements that is optimal for APT countries since 2020 (AWG-26). There has been a significant amount of work that has been already completed within APT and 3GPP on this topic in the last more than 8 years. A quick recap of most important and prominent milestones in this work is listed below:

1. 2017 September: 3GPP completed its work on TR 36.755 on “US 600 MHz Band for LTE”, which eventually was called band 71 (35+35 MHz)
2. 2017 September: APT/AWG published the APT/AWG/REP-79 “APT Report on Frequency Arrangements for IMT in the Band 470-698 MHz”<sup>2</sup> in Sep. 2017, in which the

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<sup>1</sup> [IAFI](#) (ITU-APT Foundation of India) is an Affiliate Member of APT

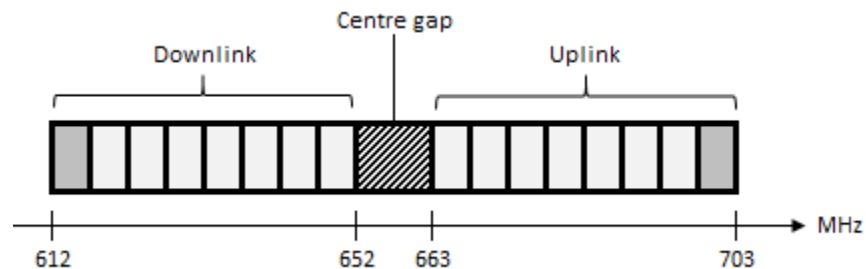
<sup>2</sup>

[https://www.apr.int/sites/default/files/Upload-files/AWG/APT-AWG-REP-79\\_APT\\_Report\\_Arrangement\\_470-698\\_MHz.docx](https://www.apr.int/sites/default/files/Upload-files/AWG/APT-AWG-REP-79_APT_Report_Arrangement_470-698_MHz.docx)

recommended harmonised band plan for 470-698 MHz band aligns with that of 3GPP Band 71 (35+35 MHz) which was the “US 600 MHz band for LTE”.

3. 2020 September: AWG-26 meeting (14-18<sup>th</sup> of September 2020) considered proposals for additional frequency arrangements of IMT on 600 MHz frequency band and informed 3GPP that AWG will undertake a study for 600 MHz frequency arrangements that is optimal for APT countries. This included an arrangement that was presented as Option B1 to 3GPP (for 40 + 40 MHz) provided in a LS to 3GPP RAN Plenary and 3GPP RAN4 ([AWG-26/OUT-22](#)).
4. 2021 September: Further, the AWG-28 meeting invited 3GPP to start a work item to include giving a band number and appropriate modifications of relevant 3GPP specifications for the APT option of 600 MHz band plans. Also, AWG informed of a preference to call this band as: “APT 600 MHz band”. This was provided in an LS to 3GPP ([AWG-28/OUT-17](#)).
5. 2022 September: AWG-30 approved the revision to APT/AWG/REP-79 for REV.1<sup>3</sup> that included APT Harmonized Band Plan for IMT (APT 600 MHz) that included the information reproduced below:

*“The APT 600 MHz band plan for implementation of IMT in the band 470-703 MHz is provided in Figure 2. It is noted it has been developed with the consideration of a sharing/coexistence studies with the Broadcasting and Radio astronomy services and other applications in the Mobile service The APT 600 MHz band plan is a reverse duplex arrangement of 2 x 40 MHz that fits well with the APT 700 MHz band plan (with ordinary duplex) starting at 703 MHz.*



*Figure 2: APT 600 MHz band plan for 470-703 MHz band”*

In the same AWG-30 meeting, AWG developed a LS to 3GPP RAN4 thanking them of the progress ([AWG-30/OUT-19](#)).

6. 2023 May: At the AWG-31 Meeting, 3GPP informed APT about completion of the normative standardization work for “APT 600 MHz band plan” with the assigned band

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<https://new.apr.int/sites/default/files/2022/09/APT-AWG-REP-79Rev.1 - APT Report on frequency arrangements for IMT in the band 470-703 MHz.docx>

number n105. AWG-31 also developed a LS to 3GPP thanking 3GPP for completing the standardization activity for “APT 600 MHz band plan” ([AWG-31/OUT-03](#)).

7. 2023 December: Radio Assembly 2023 (RA-23) approved the revision to ITU-R Recommendation M.1036 (ITU-R M.1036-7)<sup>4</sup> that incorporated this new frequency arrangement as A13 reproduced below:

**TABLE 2**  
**Frequency arrangements in the 610-960 MHz frequency range**

Frequency arrangements	Paired arrangements (FDD)				Un-paired arrangements (TDD) (MHz)
	Mobile station transmitter (MHz)	Centre gap (MHz)	Base station transmitter (MHz)	Duplex separation (MHz)	
A1	824-849	20	869-894	45	None
A2	880-915	10	925-960	45	None
A3	832-862	11	791-821	41	None
A4	698-716 776-793	12 13	728-746 746-763	30 30	716-728
A5	703-748	10	758-803	55	None
A6					698-806
A7	703-733	25	758-788	55	None
A8	698-703	50	753-758	55	None
A9	733-736	52	788-791	55	None
A10	External		738-758		None
A11 (harmonized with A7 and A10)	703-733 External	25	758-788 738-758	55	None
A12	663-698	11	617-652	46	None
A13	663-703	11	612-652	51	None

8. 2024 September: AWG-33, incorporated all the completed 3GPP references and information in the Report 79 and approved the APT/AWG/REP-79 Rev.2<sup>5</sup> which is the latest version of the AWG Report. The same AWG-33 meeting, based on input contributions, considered revision of APT/AWG/REC-08.

In summary, the work on APT 600 MHz band plan (3GPP band number n105) with the reverse duplex frequency arrangement (2 x 40 MHz) involving downlink from 612-652 MHz and uplink from 663-703 MHz has considered all the technical aspects in detail within APT and 3GPP. This

<sup>4</sup> [https://www.itu.int/dms\\_pubrec/itu-r/rec/m/R-REC-M.1036-7-202312-I!!PDF-E.pdf](https://www.itu.int/dms_pubrec/itu-r/rec/m/R-REC-M.1036-7-202312-I!!PDF-E.pdf)

<sup>5</sup>

[https://apt.int/sites/default/files/report/2024/09/APT\\_AWG\\_REP-79\\_Rev\\_2\\_APT-AWG-REP-79%28Rev.2%29.docx](https://apt.int/sites/default/files/report/2024/09/APT_AWG_REP-79_Rev_2_APT-AWG-REP-79%28Rev.2%29.docx)

band was developed to further extend the US 600 MHz Band for LTE (3GPP band 71) which is reverse duplex frequency arrangement (2 x 35 MHz) that was defined in 3GPP for the US market situation.

Furthermore, while APT/AWG/REC-08 provides a recommendation for APT members to consider adopting a particular frequency arrangement providing greater scale and harmonization of IMT in the sub-GHz band within the APT region, it is understood that there may be countries where a specific situation may require them to not do IMT in this band, or utilize a different sub-optimal IMT frequency arrangement that does not allow full 2x40 MHz of spectrum utilization.

### **3. Proposal**

IAFI though this contribution proposes some further updates to the working document on revision of REC-08 to reflect the APT 600MHz frequency arrangement in line with the work done by AWG on APT600 MHz band plan and the technical work done by 3GPP in creating band n105 while ensuring protection to DTV and other services below 612 MHz. Our proposed changes are highlighted in **turquoise**.

**Attachment:** As above



SWG-SA&H

**DRAFT REVISION OF APT RECOMMENDATION APT/AWG/REC-08 ON  
'FREQUENCY ARRANGEMENTS FOR THE IMPLEMENTATION OF IMT IN THE  
BAND 698-806 MHz'**

The Asia-Pacific Telecommunity (APT),

*considering*

- a) that the frequency band 698 - 806 MHz is allocated for mobile services on a primary basis in the Region 3 for long time;
- b) that the harmonized frequency arrangements in the band of 698 - 806 MHz for mobile services will facilitate global roaming, economies of scale and availability of low-cost user equipment;
- c) that the harmonized frequency arrangements included in APT Report APT/AWF/REP-14 are globally being considered and adopted;
- d) that during WRC-15, 26 countries in Region 3 have identified this band or portions of this band for IMT;
- e) that the 700 MHz has low loss propagation properties enabling good coverage performance;
- f) that 3GPP has developed radio interface specifications using a band plan for FDD (Band 28), 703 - 748 / 758 - 803 MHz (UL/DL) , and TDD (Band 44), 698 - 806 MHz, based on the APT studies;
- g) that there is a need ensure a common deployment strategy between neighbouring countries to reduce the risk of interference between Broadcasting and Mobile services if migrating is not done at same time.

*recognising*

the needs of countries for low-cost mobile user equipment.

*recommends* that APT administrations:

- 1 adopt the harmonized frequency arrangements given in Annex 1 for the deployment of IMT systems in the band 698 - 806 MHz;

- 2 take into account the implementation aspects detailed in Annex 2 when implementing the frequency arrangements given in Annex 1;
- 3 coordinate with neighbouring countries to avoid risk of interference between Broadcasting and IMT use in this band;
- 4 coordinate the use of duplex schemes (FDD and TDD) to minimize interference between neighbouring countries;
- 5 avoid use of both duplex schemes (FDD and TDD) in the same country.

## ANNEX 1

### Harmonized frequency arrangements for the band 698 - 806 MHz

This Annex describes two harmonized frequency arrangements for IMT systems in the 698 - 806 MHz frequency band.

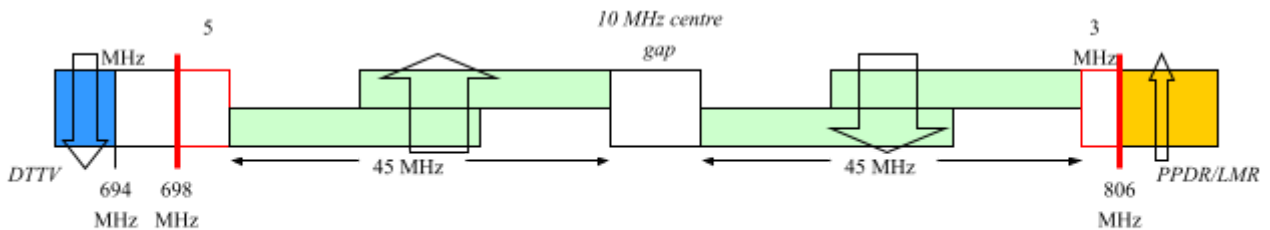


Figure 1: Harmonized FDD Arrangement of 698-806 MHz band

Taking into consideration the capabilities of state-of-the-art filter technology, and to maximize the size of upper/lower protective guard-bands, it was agreed that the 2 x 45 MHz FDD arrangement should include a 10 MHz centre-band gap.

The dual-duplexer arrangement is needed to facilitate the mobile terminal implementation while the overlap affords flexibility to administrations in their national spectrum planning.

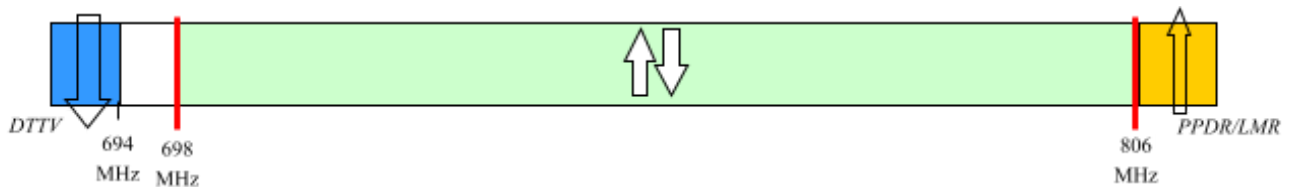


Figure 2: Harmonized TDD Arrangement of 698-806 MHz band

## ANNEX 2

### Implementation aspects applicable to the frequency arrangements of 698-806 MHz

#### 1. Channel bandwidth

Use of a 5 MHz block approach which is similar to the recognized mobile systems to be used in the band 698 - 806 MHz. Channel bandwidth should be multiple of 5 MHz.

#### 2. Out of band emissions limit

It is noted that the specification of appropriate UE out of band emission limits to ensure the coexistence of mobile services with adjacent broadcasting services below the 698 MHz spectral boundary is an important aspect of the conventional duplex arrangement in the band 698 - 806 MHz.

Refer to the APT/AWG/REP-24 “Implementation issues associated with use of the band 698 - 806 MHz by mobile services” or some other documents if it is feasible.

## **ATTACHMENT**

### **Related Reports**

[Report APT/AWG/REP-24:](#)

Implementation issues associated with use of the band 698 - 806 MHz by mobile services.

[Report APT/AWG/REP-44:](#)

Coexistence between services at the boundary of the 700 MHz and 800 MHz bands

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