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**SUMMARY AND PROPOSAL FOR APT REP 79 “APT REPORT ON FREQUENCY ARRANGEMENTS FOR IMT IN THE BAND 470-703 MHZ”**

**1. Background**

At the 29<sup>th</sup> Meeting of AWG, SWG SA&H agreed option B1 for the “APT 600 MHz band” and WG HAR agreed [AWG-29/OUT-02](#): Reply liaison statement to 3GPP RAN 3GPP RAN4. It was also agreed to continued development of the working document report 79 during AWG 30.

**2. Method of Working**

To aid in the develop of the report the members of the informal correspondence group were invited to participate in a review of report 79 as updated in AWG29/TMP04. The initial meeting was held on the 15<sup>th</sup> July and the group meet weekly to prepare a proposed draft for AWG 30.

The updated proposed report is based AWG29/TMP04 with the decision of AWG29 incorporated into the document.

**3. Proposals**

The proposed update is attached in Annex 1 and it is suggested it be approved at this AWG 30 meeting.

**4. Enclosures**

Annex 1 : Draft updated **WORKING DOCUMENT TOWARDS A DRAFT REVISION OF APT REPORT ON FREQUENCY ARRANGEMENTS FOR IMT IN THE BAND 470-703 MHZ**



Sub-Working Group on Spectrum Arrangements and Harmonization

**WORKING DOCUMENT TOWARDS A DRAFT REVISION OF APT REPORT ON  
FREQUENCY ARRANGEMENTS FOR IMT IN THE BAND 470-703 MHz**

## 1 Introduction

The 470-694 MHz frequency range is allocated to the broadcasting service and mobile service on a co-primary basis in Region 3. The frequency band 470-698 MHz, or parts thereof, was identified by WRC-15 in 7 countries in Region 3 through new footnote No. **5.296A** for use by those administrations as listed wishing to implement terrestrial IMT systems. In addition, there is interest from other significant markets to do the same. Elsewhere, USA, Mexico and several other countries in Region 2 also identified this band for IMT through footnotes **5.295** and **5.308A**. It is noted that *resolves 2* of revised Resolution **224 (Rev.WRC-19)** to encourage administrations to take into account results of the existing relevant ITU Radiocommunication Sector studies, when implementing IMT applications/systems in the frequency bands 694-862 MHz in Region 1, in the frequency band 470-806 MHz in Region 2, in the frequency band 790-862 MHz in Region 3, in the frequency band 470-698 MHz, or portions thereof, for those administrations mentioned in No. **5.296A**, and in the frequency band 698-790 MHz, or portions thereof, for those administrations mentioned in No. **5.313A**;

Spectrum below 1 GHz is exceptionally well suited for mobile broadband applications. In particular, the unique propagation characteristics of the bands below 1 GHz allow for wider area coverage, which in turn requires fewer infrastructures and facilitates service delivery to rural or sparsely populated areas. In this regard, the 700 MHz ecosystem is growing swiftly: there are over 100 commercial networks deployments.<sup>1</sup> The APT700 band plan coming out from region 3 played a huge role in its success globally. Outside of APAC, **some** countries in Region 2 have adopted or plan to adopt the APT 700 MHz band plan (3GPP **Band 28**) for both LTE and NR (5G) system deployments. The lower duplexer of APT 700 MHz plan has also been adopted **in some countries of** Region 1 since the conclusion of WRC-15.

As the utilisation the 700MHz spectrum increases over time, it is desirable to look at additional spectrum that could be considered as a companion to 3GPP Band 28. Therefore the use of parts of the 600MHz band for the mobile broadband service would provide a vital means of delivering high quality, wide area broadband services including in rural areas and deep inside buildings. The timely availability of frequency arrangements is essential for the development of IMT specifications and standards and the early consideration by Administrations in the footnotes referred to above of suitable frequency arrangements.

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<sup>1</sup> <https://data.gsmaintelligence.com/data/network-list>

## 2 Scope

This Report covers aspects related to the harmonized frequency arrangement for the band 470-703 MHz. The objective is to develop possible harmonized frequency arrangements on 470-703 MHz in Asia Pacific Region based on the frequency allocation and arrangement in ITU and other Regions, for those countries in the APT region that wish to implement IMT in the existing primary mobile allocation in Region 3.

## 3 Vocabulary of terms

APT Asia Pacific Telecommunity

IMT International Mobile Telecommunications

WRC World Radiocommunication Conference

3GPP Band 28 UL 703-748 MHz DL 758-803 MHz

3GPP Band 71 UL 663 – 698 MHz DL 617-652 MHz

3GPP Band 105 UL 663–703 MHz DL 612-652 MHz

## 4 References

Final Acts of the World Radiocommunication Conference (WRC-15)

Recommendation ITU-R M.1036-5, “Frequency arrangements for implementation of the terrestrial component of International Mobile Telecommunications (IMT) in the bands identified for IMT in the Radio Regulations (RR)”.

APT Report APT/AWG/REP50, “APT survey report on frequency bands in relation to study on WRC-15 Agenda Item 1.1”.

APT Liaison Statement “AWG-29-OUT-02 “ Reply liaison statement to 3GPP RAN 3GPP RAN4”

## 5 Key Considerations for Frequency Arrangements

To maximize the benefits for APT countries, the frequency arrangements for IMT should be harmonized to the maximum practical extent to facilitate interoperability, for economies of scale and to enable seamless roaming by users. As far as practical, these arrangements should also reflect the importance of efficient usage of the spectrum.

In the ITU-R WP5D New Zealand, Mexico and Pacific Islands nations submitted a joint input (Document 162), proposing a band plan for the 600 MHz band. The proposed frequency arrangement is based on a reverse FDD configuration, where the frequency range 617-652 MHz is for base-station transmitter and the frequency range 663-698 MHz is for mobile-station transmitter.

The US arrangement for 614-698 MHz after the FCC incentive auction is **very similar, and** includes 7 blocks of 2 x 5 MHz of licensed spectrum in a FDD arrangement. hence it does not include channel 37 (608 - 614 MHz plus guard bands).

The 3GPP band 71 plan for implementation of IMT in the band 470-698 MHz is provided in Fig. 1 and the 617-698 MHz band specification has been included in Release 15 of 3GPP and approved in its RAN#77 meeting. The related document 3GPP TR 36.755 is attached in the appendix. It is

noted that it has been developed with the consideration of a sharing/coexistence study with the Broadcasting and Radio astronomy services and other applications in the Mobile service.

This arrangement is implemented in some countries in the world and already has a well-developed eco-system.

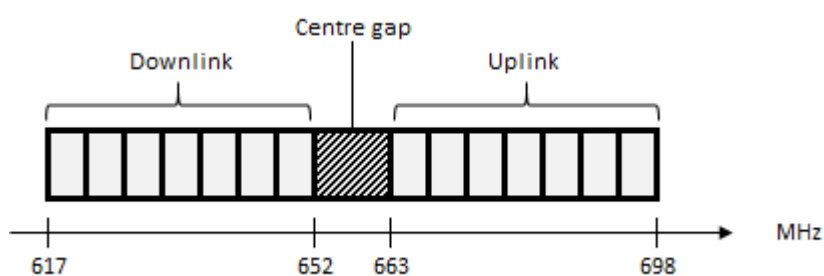


Figure 1: 3GPP band 71 band plan for 470-698 MHz band

APT – AWG meeting 29 agreed on the band plan for the frequency range 612-703 MHz, based on a reverse-duplex FDD configuration, to be called the “APT 600 MHz” band and invited 3GPP to develop the technical specifications for a band.

In April 2022 the Telecom Regulatory Authority of India (TRAI) adopted the “APT 600 MHz” band plan and recommended it for auction for IMT/5G. Both the APT 700 MHz and APT 600 MHz bands are among the bands auctioned in July 2022. <sup>2</sup>

The interest from many other countries using the same provides for a harmonization and possible healthy ecosystem.

The preference towards reverse FDD configuration is to ensure compatibility with existing frequency arrangements in the band above 703 MHz and the flexibility in implementing measures to protect lower adjacent services in the band below 612 MHz.

The 612-703 MHz band specification has been prioritised for inclusion in Release 18 of 3GPP. The band is defined as Band 105 and the related 3GPP specification is TR38.892

## 6 APT Harmonized Band Plan for IMT (APT 600 MHz)

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 was 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.

<sup>2</sup> [https://www.trai.gov.in/sites/default/files/Recommendations\\_11042022.pdf](https://www.trai.gov.in/sites/default/files/Recommendations_11042022.pdf)

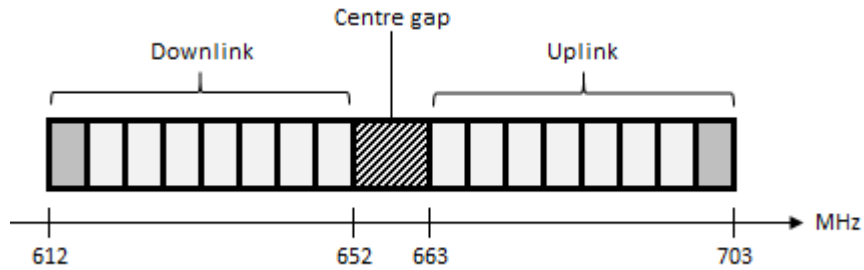


Figure 2: APT 600 MHz band plan for 470-703 MHz band

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APPENDIX

3GPP SPECIFICATION ON  
600 MHz BAND FOR LTE (Band 71)



RP-171631\_TR 36

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3GPP TR38.860: Study on Extended 600 MHz NR band



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**Annex**

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AWG-29-INP-

36Rev.1\_Summary\_and\_proposals\_from\_the\_informal\_correspondence\_activity\_towards\_APT  
\_Report\_on\_frequency\_arrangements\_for\_IMT\_in\_the\_band\_470\_to\_698\_MHz.docx

**Technical Considerations for new band options (B1 and B2)**



Technical  
Considerations fo

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