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| **The 5th Meeting of the APT Conference Preparatory****Group for WRC-19 (APG19-5)** | **APG19-5/OUT-29**  |
| 31 July – 6 August 2019, Tokyo, Japan | 5 August 2019 |

Working Party 1

**APT VIEW AND Draft PRELIMINARY APT COMMON PROPOSAL**

**on WRC-19 agenda item 1.15**

**Agenda Item 1.15:** *to consider identification of frequency bands for use by administrations for the land-mobile and fixed services applications operating in the frequency range 275-450 GHz, in accordance with Resolution* ***767 (WRC-15)****;*

1. **Background**

In accordance with **Resolution 767 (WRC-15)**, WRC-19 was invited:

taking into account the results of ITU-R studies on sharing and compatibility between passive and active services as well as spectrum needs for those services, to consider identification for use by administrations for the land-mobile and fixed service applications operating in the frequency range 275-450 GHz, while maintaining protection of the passive services identified in RR No. **5.565**, and take appropriate action.

ITU-R and APT studies are as follows:

* Report ITU-R SM.2450-0 “Sharing and compatibility studies between land-mobile, fixed and passive services in the frequency range 275-450 GHz”
* Report ITU-R [F.2416](https://www.itu.int/pub/R-REP-F.2416)-0 “Technical and operational characteristics and applications of the point-to-point fixed service applications operating in the frequency band 275-450 GHz”
* Report ITU-R [M.2417](https://www.itu.int/pub/R-REP-M.2417)-0 “Technical and operational characteristics of land-mobile service applications in the frequency range 275-450 GHz”
* Report ITU-R RA.2189-1 “Sharing between the radio astronomy service and active services in the frequency range 275-3 000 GHz”
* APT Report on "Short Range Radiocommunication Systems and Application Scenarios Operating in the Frequency Range 275-1000GHz"’ (APT/AWG/REP-66)
* CPM Report on technical, operational and regulatory/procedural matters to be considered by the World Radiocommunication Conference 2019

Summary of Methods:

**Method A**: No change to the Radio Regulations.
**Method B**: Modifying the existing footnote RR No. **5.565** is proposed for FS/LMS applications in portions of the 275-450 GHz frequency range.
**Method C**: This method suggests adding a new footnote to identify the 275-450 GHz frequency range for use by FS/LMS applications, while protecting EESS (passive) and RAS using the evolving guidance of ITU-R Recommendations and Reports, taking into account that there are no service allocations above 275 GHz.
**Method D**: Adding a new footnote RR No. **5.B115** is proposed for land mobile and fixed service applications: 275-296 GHz, 306-313 GHz, 320-330 GHz and 356-450 GHz.
**Method E**: Adding a new footnote RR No. **5.C115** and modifying the existing footnote RR No. **5.565** are proposed for FS/LMS applications in portions of the 275-450 GHz band.
**Method F**: Adding a new footnote RR No. **5.D115** is proposed for FS applications in portions of the 275‑450 GHz band and for LMS applications in the entire 275-450 GHz frequency band.
**Method G**: Adding a new footnote RR No. **5.E115** is proposed for FS/LMS applications in portions of the 275‑450 GHz band.

1. **Documents**
	1. **Input Documents**

APG19-5/INP-16 (NZL), INP-42 (AUS), INP-65 (CHN), INP-74 (JPN), INP-102 (THA)

* 1. **Information Documents**

APG19-5/INF-01 (WMO), INF-02 (ICAO), INF-03 (IARU), INF-18 (CEPT), INF-19 (ATU), INF-20 (CITEL), INF-22 (RCC)

1. **Summary of Discussions**
	1. **Summary of Members’ view**

This section summarizes the views of each Member’s input contribution and respective proposals. Views from Members were quoted in this summary.

* + 1. **New Zealand (APG19-5/INP-16)**

“New Zealand supports the allocation of fixed and land mobile services in portions of the 275-450 GHz band to facilitate the development of innovative radiocommunication technologies utilising frequency range above 275 GHz by active services, such as fixed and land-mobile services, as long as such active service applications would not cause harmful interference to those passive service applications as indicated in RR No. **5.565**. New Zealand could support Methods C or F as outlined in the CPM Report.”

* + 1. **Australia (APG19-5/INP-42)**

“Australia supports Method G for this agenda item. That is, identify frequency bands that are compatible with both EESS (passive) and RAS with respect to the land-mobile and fixed services applications in a new footnote in the Radio Regulations.

Preliminary studies show compatibility between EESS (passive) and RAS in all bands in the range 275-450 GHz except 296-306 GHz, 313-320 GHz and 331-356 GHz. The bands proposed by Method G avoid these ranges and provide for 58 GHz of spectrum, which is more than the 50 GHz estimated by Study Group 5 needed to support active services.”

* + 1. **China (APG19-5/INP-65)**

 (1) Relevant ITU-R studies which evaluated the entire 275-450 GHz range show that sharing is feasible between fixed service/land mobile service applications and the EESS (passive)/RAS in the frequency bands 275-296 GHz, 306-313 GHz, 320-330 GHz and 356 450 GHz. For the other frequency bands, current studies have shown that sharing between FS/LMS applications and EESS (passive)/RAS applications is not feasible.

(2) Administrations wishing to make these above-mentioned frequency bands available for land mobile and/or fixed service applications are urged to take all practicable steps to protect passive services operating according to **No. 5.565** until the date when the Table of Frequency Allocations is established in the 275-1 000 GHz frequency range.

(3) In the frequency bands 275-323 GHz, 327-371 GHz, 388-424 GHz and 426-442 GHz, some specific conditions (e.g. minimum separation distances and/or avoidance angles) may be necessary to ensure protection of radio astronomy sites from land mobile and/or fixed service applications, on a case-by-case basis.

(4) Taking into account that the Terahertz technology is evolving continuously and new applications are foreseen to use some parts of 275-450 GHz in the future, therefore the identification for the FS/LMS in this frequency range should not cause constrains to the use of these new applications in the future. Accordingly, the use of the range 275-450 GHz by land mobile and fixed services application does not establish priority in the Radio Regulations.

China also provides proposals for the PACP on Agenda Item 1.15 (a revised Method E is supported)

* + 1. **Japan (APG19-5/INP-74)**

“Japan supports the ITU-R studies to consider identification of frequency bands for use by the land-mobile and fixed service applications operating in the frequency range 275-450 GHz, taking into account the study results conducted by the relevant Working Parties, provided that the protection of passive services identified in No.5.565 is ensured. Japan is of the view that a new footnote to the relevant part of the Radio Regulations is added to identify those frequency bands for use by the land-mobile and fixed service application.

* + 1. **Thailand (APG19-5/INP-102)**

“Thailand supports the identification of the following frequency bands for fixed and mobile service applications in the range 275-450 GHz while maintaining the protection of the passive services identified in RR No. 5.565:

* 275-296 GHz
* 306-313 GHz
* 318-333 GHz
* 356-450 GHz

Thailand therefore supports Method E in the CPM report.”

* 1. **Summary of issues raised during the meeting**

APT Members discussed and achieved consensus on several topics including the protection of EESS (passive)/RAS in their respective identified bands, and the flexibility to accommodate potential applications in the future.

APT members agreed on NOC to **RR No. 5.565**, and to add a new footnote with identification of frequency bands for use for the land mobile and fixed service applications in the range of 275-450 GHz.

1. **APT Views**

APT Members support to consider identification of frequency bands for use by the land mobile and fixed service applications operating in the frequency range 275-450 GHz, taking into account the study results conducted by the relevant ITU-R WPs, provided that the protection of passive services identified in No. **5.565** is ensured. APT Members support adding a new footnote to the relevant part of the Radio Regulations.

APT Members are also of the view that, in the bands identified for RAS in RR No. **5.565** (275-323 GHz, 327-371 GHz, 388-424 GHz and 426‑442 GHz), separation distances and/or avoidance angles between RAS stations and FS stations should be considered depending on the deployment environment of FS stations.

1. **Preliminary APT Common Proposal(s)**



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