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| **The 3rd Meeting of the APT Conference Preparatory Group for WRC-19 (APG19-3)** | **APG19-3/OUT-07** |
| 12 – 16 March 2018, Perth, Australia | **16 March 2018** |

Working Party 1

**PRELIMINARY VIEWs 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**

**Resolution 767**, WRC-15 invites WRC-19:

* 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 275-450GHz, while maintaining protection of the passive services identified in No. **5.565**, and take appropriate action.

Recent ITU-R and APT reports and studies are as follows:

* WP1A – Working Doc.: Draft CPM Text WRC-19 AI 1.15 (Doc.[1A/260](https://www.itu.int/md/R15-WP1A-C-0260/en) Annex 1)
* WP1A – Working Doc.: Report ITU-R SM.[275-450GHZ\_SHARING] (Doc. [1A/260](https://www.itu.int/md/R15-WP1A-C-0260/en) Annex 3)
* WP7C – Report ITU-R RS. [275-450 GHZ CHARS] (Doc.[7C/200](https://www.itu.int/md/R15-WP7C-C-0200/en) Annex 16)
* Report ITU-R F.2416 “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 “Technical and operational characteristics of land-mobile service applications in the frequency range 275-450 GHz”
* AWG – APT Report on "Short Range Radiocommunication Systems and Application Scenarios Operating in the Frequency Range 275-1000GHz"’, Doc. APT/AWG/REP-66

WP 1A developed a single method in working document towards draft CPM text WRC-19 AI 1.15 (Doc.[1A/260](https://www.itu.int/md/R15-WP1A-C-0260/en) Annex 1):

“Method A – New footnote No. **5.A115** to the relevant part of the Radio Regulations is proposed.

Reason: Studies have shown compatibility between EESS (passive) and RAS in all band except [296-306 GHz, 313-320 GHz and 331-356 GHz]. The remaining spectrum can be identified for LMS/FS applications [pending the results of further studies].”

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

APG19-3/INP-21 (KOR), INP-34 (NZL), INP-41 (AUS), INP-49 (JPN), INP-59 (THA), INP-78 (INS), INP-86 (CHN)

* 1. **Information Documents**

APG19-3/ INF-06 (CEPT), INF-09 (IARU), INF-08Rev1 (CITEL)

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

* + 1. **Republic of Korea (APG19-3/INP-21)**

The administration of Korea supports the APT preliminary view adopted as at the APG19-2 meeting:

“APT Members support 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, provided that the protection on passive services identified in No.**5.565** is ensured.”

* + 1. **New Zealand (APG19-3/INP-34)**

New Zealand supports the studies undertaken by WP 1A, which would 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**.

* + 1. **Australia (APG19-3/INP-41)**

Australia supports a possible 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)** noting the need to maintain protection of the passive services identified in Radio Regulations No. **5.565**.  
Australia presently supports the single Method identified in the draft CPM Report text 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 by 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 remaining spectrum can be identified for land-mobile and fixed services applications subject to results of further studies supporting compatibility.

* + 1. **Japan (APG19-3/INP-49)**

Japan supports ITU-R studies to identify candidate frequency bands for use by systems in the land-mobile and fixed services conducted by WP1A. Taking into account the results of studies, Japan also supports identification of land-mobile and fixed services. Japan is of the view that the passive services identified in No.**5.565** should be protected from interference caused by LMS and FS applications planned to be operated.

* + 1. **Thailand (APG19-3/INP-59)**

Thailand supports ITU-R studies to identify frequency bands for the land-mobile and fixed services operating in the frequency range 275-450 GHz given the condition that the use of existing EESS (passive) and RAS applications shall be protected as identified in RR No. 5.565.

* + 1. **Indonesia (APG19-3/INP-78)**

Indonesia is of the view to follow the progress of ITU-R WP 1A and waiting to the relevant study is finished. Indonesia support the identification of frequency bands for land-mobile and fixed service in the frequency range 275-450 GHz under the condition that protection of passive services identified in No. **5.565** is ensured.

* + 1. **People’s Republic of China (APG19-3/INP-86)**

China is of the view that sufficient protection for RAS and EESS (passive) should be provided due to the sensitivity of passive services, and the compatibility study should be fully conducted before any frequency bands would be identified for the land‑mobile and fixed services applications in the frequency range 275-450GHz.   
China also provides the following information on the passive service usage:

1. Fengyun-4 MWR has been launched for Cloud ice and water vapour detection, which are two components of the hydrological cycle in the upper troposphere, and both are currently poorly measured. A number of missions have been proposed that focus on this technique to measure cloud ice water path, ice particle size and cloud altitude to US and European Space Agencies. Currently, these measurements focus on the 118 GHz, 183 GHz, 380 GHz, 425 GHz bands.
2. Passive remote sensing applications have been designed in the working frequencies as 325 GHz, 448 GHz, 640 GHz, 664 GHz, 874 GHz for ice cloud detection.
   1. **Summary of issues raised during the meeting**

The meeting reviewed the on-going sharing and compatibility studies in WP 1A.

Some APT members pointed out that the current outcome provided by WP 1A can be applied only to FS applications. The studies on LMS applications are still in progress. APT members recognized that WP 1A is yet to conclude on sharing and compatibility studies.

The meeting also reviewed draft CPM text currently developed by WP 1A, and it was recognized that the identification of the frequency bands that are compatible with both EESS (passive) and RAS with respect to the LMS/FS applications can be achieved by introduction of a new footnote.

While some APT Members suggested to reflect the WP 1A on-going study outcome for possible frequency bands to be identified for FS (except LMS) applications in the Preliminary View section in this meeting, other APT members are of the view that it is premature to agree on any frequency bands to be identified before WP 1A concludes the sharing and compatibility studies.

1. **APT Preliminary View(s)**

APT Members support 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, provided that the protection of passive services identified in No.**5.565** is ensured. If such identification is made, APT Members support a method of adding a new footnote to the relevant part of the Radio Regulations.

1. **Other Views from APT Members**

Some APT Members support possible identification of FS applications in all bands in the frequency range 275-450 GHz, except 296-306 GHz, 313-320 GHz and 331-356 GHz. Their view may change pending further studies in WP 1A.

Some APT Members do not support the identification of 296-306 GHz, 313-320 GHz and 331-356 GHz for the FS applications because the current outcomes of sharing and compatibility studies in ITU-R WP1A shows infeasibility between FS application and EESS (passive). Some APT Members consider that it is premature to support identification of the rest of the bands in the frequency range 275-450GHz for FS application before ITU-R WP1A finalizes sharing and compatibility studies requested by Resolution 767 (WRC-15).

Some APT Members support possible identification of LMS applications in all bands in the frequency range 275-450 GHz. Their view may change pending further studies in WP 1A.

Some APT Members do not support any identification of LMS applications in the frequency range 275-450GHz without sharing and compatibility studies between LMS application and passive services identified in No.5.565.

1. **Issues for Consideration at next APG Meeting**

* Based on the studies in WP 1A, to consider possible frequency bands to be identified for FS/LMS applications.
* To consider draft CPM text developed by WP 1A.

1. **Views from Other Organisations**
   1. **Regional Groups**
      1. **ASMG (APG19-2/INF-01)**

Follow up and support the current studies 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, while ensuring the protection of passive services identified in No **5.565**, and not adding any additional constraints on these services.

* + 1. **ATU**

None.

* + 1. **CITEL (APG19-3/INF-08Rev.1)**

Land-mobile and fixed services identification in the 275-450 GHz range, some are of the view that it may be possible to develop a similar footnote to that in no. 5.565 for land-mobile and fixed services identifying bands for terrestrial active service use.

* + 1. **CEPT (APG19-3/INF-06)**

CEPT supports the identification of frequency bands for land-mobile and fixed services applications in this frequency range notwithstanding the continued protection of the passive services in the frequency range of 275-450 GHz as identified in No. **5.565**.

* + 1. **RCC (APG19-2/INF-05)**

The RCC Administrations consider it reasonable that identification of frequency bands for land-mobile and fixed service applications in 275-450 GHz band in the RR No. 5.565 will facilitate global harmonization of radio frequencies for development and introduction of land mobile and fixed service applications above 275 GHz.

The RCC Administrations consider that when identifying frequency bands for active services in 275-450 GHz range, a balance of interests has to be observed in the use of this frequency range by both active and passive services, ensuring possibility for future development of new active service applications while excluding interferences to the passive services in the frequency bands already identified in No. **5.565** of the Radio Regulations.

The RCC Administrations consider that to provide a balanced use of 275-450 GHz range, frequency bands could be identified for sharing between active and passive services, and also frequency bands for exclusive use by active and passive applications taking into account the frequency bands identified in No. 5.565 for passive services and effect of active applications in the main and adjacent frequency bands.

* 1. **International Organisations**
     1. **IARU (APG19-3/INF-09)**

Resolution **767** (WRC-15) recognizes that the amateur service is developing and demonstrating applications above 275 GHz. As studies proceed to identify candidate frequency bands for the land-mobile and fixed services in the frequency range 275-450 GHz, the IARU supports maintaining access for non-commercial experimentation by stations in the amateur service to as much of the frequency range as possible, consistent with the protection of the passive and other active services.

**7.2.2 ICAO**

None.

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