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| **The 4th Meeting of the APT Conference Preparatory Group for WRC-15 (APG15-4)** | | **Document**  **APG15-4/OUT-15** | |
| 09 – 14 February 2015, Bangkok, Thailand | | **13 February 2015** | |

**Working Party 3**

**preliminary views on WRC-15 agenda item 1.18**

**Agenda Item 1.18:**

*to consider a primary allocation to the radiolocation service for automotive applications in the 77.5-78.0 GHz frequency band in accordance with Resolution* ***654 (WRC‑12)***

**1. Background:**

There has been significant growth in the use of automobile radar systems, and these systems are expected to become relatively commonplace within a few years because of consumer demand for increased vehicle safety. Studies have shown that the use of collision avoidance technology can prevent or lessen the severity of a significant number of traffic accidents. In certain parts of the world, automotive radars have successfully operated in this portion of the spectrum, particularly the 76-77 GHz band, for many years without mitigation methods or deactivation methods and without increased reports of interference to licensed services.

The development of a globally harmonised band for automotive radar applications has primarily been driven by the European Conference of Postal and Telecommunications Administrations (CEPT) member states as a means to encourage the development of safety related radiocommunications technologies.

CEPT identified 77-81 GHz as the only option for a globally harmonised band for automotive radar, and was adopted by the Electronic Communications Committee (ECC) (ECC/DEC/(04)03). This decision has been implemented by 36 ECC administrations. The European Telecommunications Standards Institute (ETSI) has specified the technical requirements for short range radar systems operating in 77-81 GHz in ETSI EN 302 264-1.

In accordance with Resolution **654 (WRC-12)**, a primary allocation to the radiolocation service for automotive applications in the 77.5-78.0 GHz frequency band will be considered under WRC-15 Agenda item 1.18. In this regard, ITU-R Working Parties (WP) 5A and WP 5B have completed technical, operational and regulatory studies as responsible groups for WRC-15 Agenda item 1.18 with the help of other concerned groups.

CPM15-1 decided that WP 5B is responsible for *invites* i) & ii) and WP 5A is responsible for *invites* iii) in the Resolution **654 (WRC-12)**.

RESOLUTION 654 (WRC-12)

**Allocation of the band 77.5-78 GHz to the radiolocation service to support**

**automotive short-range high-resolution radar operations**

The World Radiocommunication Conference (Geneva 2012),

…

invites ITU‑R

to conduct, as a matter of urgency, and in time for consideration by WRC‑15, the appropriate technical, operational and regulatory studies, including:

1. sharing studies and regulatory solutions to consider a primary allocation to the   
    radiolocation service in the band 77.5-78 GHz, taking into account incumbent   
    services and existing uses of the band;
2. compatibility studies in the band 77.5-78 GHz with services operating in the   
    adjacent bands 76-77.5 GHz and 78-81 GHz;
3. spectrum requirements, operational characteristics and evaluation of ITS safety-  
    related applications that would benefit from global or regional harmonization

After completion of studies in WP 5A, Recommendation ITU-R M.2057 “Systems characteristics of automotive radars operating in the frequency band 76-81 GHz for intelligent transport systems applications” was published in February 2014.

WP 5B has completed new Report ITU-R M. 2322 titled “Systems characteristics and compatibility of automotive radars operating in the frequency band 77.5-78 GHz for sharing studies” and approved by SG 5 meeting in December 2014.

The draft CPM text was developed during the WP 5B meeting in May 2014. The draft CPM text included Method A with Option 1 and 2, and Method B as follows:

Method A:

Add a primary allocation to the RLS on a worldwide basis, limited to automotive radar applications, between 77.5 GHz and 78 GHz.

Option 1:

The use of the 77.5-78 GHz frequency band by the radiolocation service is limited to automotive applications. The characteristics of the automotive radars are given in Recommendation ITU-R M.2057.

Option 2:

The use of the 77.5-78 GHz frequency band by the radiolocation service is limited to automotive applications.

Method B:

Add a primary allocation to the RLS on a worldwide basis, supporting automotive radar operations between 77.5 GHz and 78 GHz.

Portions of the 76-81 GHz frequency band are allocated to the radio astronomy service, amateur and amateur-satellite and radiolocation services on a primary or secondary basis and to the space research (space-to-Earth) service on a secondary basis. At frequencies above 30 GHz, radio propagation decreases more rapidly with distance than at lower frequencies and antennas that can narrowly focus transmitted energy are practical and of modest size. While the limited range of such transmissions might appear to be a major disadvantage for many applications, it does allow the reuse of frequencies over very short distances and, thereby enables a higher concentration of transmitters to be located in a geographical area than is possible at lower frequencies.

In recent years, RAS in China has rapidly developed. The largest radio telescope in Asia, the 65 meter radio telescope at Shanghai has been planned to observe at frequency band 65‑95 GHz. Moreover, the proposed Qi Tai 110 meter radio telescope in Xinjiang province also plans to work at the frequency band 76-81 GHz. The observation at these bands will provide important information to study the properties of the cosmic molecules, the stellar evolution and astrochemistry.

**2. Documents**

***2.1 Input Documents:***

APG15-4/INP[-12 (THA)](http://www.apt.int/sites/default/files/2014/05/APG15-3-INP-33_CHN-WP3_AI1.5_1.15_1.16_1.17and_1.18.docx), -18 (KOR), [-25 (NZL)](http://www.apt.int/sites/default/files/2014/06/APG15-3-INP-51_NZL3-WP3.docx), -25 (NZL), -33 (INS) , [-71 (IRN)](http://www.apt.int/sites/default/files/2014/06/APG15-3-INP-71_IRNAPG15-3-WP3.docx),   
[-43 (CHN)](http://www.apt.int/sites/default/files/2014/06/APG15-3-INP-44_INS-WP3.docx), [-57 (AUS)](http://www.apt.int/sites/default/files/2014/06/APG15-3-INP-66_AUS3-WP3.docx), [-71 (MLA)](http://www.apt.int/sites/default/files/2014/06/APG15-3-INP-76_MLA-WP3.docx), [-79 (J)](http://www.apt.int/sites/default/files/2014/06/APG15-3-INP-54_J-3.docx), [-93 (VTN)](http://www.apt.int/sites/default/files/2014/06/APG15-3-INP-81Rev.1_VTN-WP3_updated.docx)

***2.2 Information Documents:***

APG15-3/INF[-14 (RCC), 15 (IARU R3), -18 (BR ITU), -19 (CEPT)](http://www.apt.int/sites/default/files/2014/06/APG15-3-INF-09_CEPT.pdf), -20 (CITEL)

**3. Summary of Discussion:**

The worldwide automotive industry is developing vehicular radar systems that would operate in portions of the 76-81 GHz band for safety and operational purposes. Currently, the radiolocation service is allocated globally on primary basis in the 76-77.5 GHz, and 78‑81 GHz frequency bands. A globally possible option of primary radiolocation allocation in the 77.5-78 GHz frequency band provides for a harmonized, contiguous band in order to ensure collision avoidance related automotive radar applications in the 76-81 GHz frequency band.

Some APT Member countries would support Method A and/or Method B.

**4. APT Preliminary Views:**

APT Members support a primary allocation to the radiolocation service for automotive applications in the 77.5-78.0 GHz frequency band, provided that it does not place any additional constraint on the services to which the frequency band is allocated. Some APT Members are still considering their final views.

**5. Issues for Consideration at APG15-5 Meeting:**

APT Members are encouraged to contribute further to this Agenda item, taking into account the preliminary views and submit contributions to the final APG15 meeting (APG15-5).

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