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

IEEE 802 LAN/MAN Standards Committee (LMSC)

**IEEE 802 LMSC Views on WRC-19 Agenda Items**

For consideration in APG-19 Working Party 6

**Introduction**

IEEE 802 LMSC is a leading consensus-based industry standards body, producing standards for wireless networking devices, including wireless local area networks (“WLANs”), wireless specialty networks (“WSNs”), wireless metropolitan area networks (“Wireless MANs”), and wireless regional area networks (“WRANs”). We appreciate the opportunity to provide these comments to ACMA.

IEEE 802 is a committee of the IEEE Standards Association and Technical Activities, two of the Major Organizational Units of the Institute of Electrical and Electronics Engineers (IEEE). IEEE has about 420,000 members in about 190 countries and supports the needs and interests of engineers and scientists broadly. In submitting this document, IEEE 802 acknowledges and respects that other components of IEEE Organizational Units may have perspectives that differ from, or compete with, those of IEEE 802. Therefore, this submission should not be construed as representing the views of IEEE as a whole.

IEEE 802 LAN/MAN Standards Committee (LMSC) respectfully submits its views for consideration of WRC-19 Agenda Items 1.12 (5.8GHz), 1.13 (66-71GHz), 1.15 (275-450GHz) 1.16 (5150-5925 MHz), 9.1.5 (5150-5250MHz, 5250-5350MHz & 5470-5725MHz) and 10 with regards to proposal(s) seeking IMT identification in parts of the 5925-7125 MHz frequency range.

**Agenda Items 1.12 (5.8GHz)**

IEEE 802.11 has provided the wireless standard (IEEE Std 802.11p-2010) that is the basis for much of the Intelligent Transport Systems (ITS) Vehicle-to-Vehicle (V2V) and Vehicle-to-Infrastructure (V2I) technologies. And now IEEE 802.11 is specifying an IEEE Next Generation V2X (NGV) amendment the P802.11bd project. We believe that these technologies are capable of sharing the 5850-5925 MHz band with other unlicensed applications. We also understand that global harmonization of the technology is a notable effort that would enable technology improvements and cost reductions to better address rapid adoption to meet the ITS safety goals, an effort we would support.

**Agenda Item 1.13 (66-71GHz)**

* Due to the following developments, IEEE 802 recommends that WRC-19 not consider 66-76 GHz for IMT identification.
	+ On July 14, 2016, FCC published a Report and Order and Further Notice of Proposed Rulemaking (FCC 16-89) [<https://apps.fcc.gov/edocs_public/attachmatch/FCC-16-89A1.pdf> ] to adopt 64-71 GHz band for License Exempt operation.
	+ In January 2018, the ITU-R published Recommendation M.2003-2 [<https://www.itu.int/rec/R-REC-M.2003-2-201801-I/en>] wherein this band was indicated for Multigigabit Wireless Systems. This facilitates the introduction of IEEE 802 technologies that are capable of supporting 5G use cases under the existing Mobile Allocation.
	+ In February 2018, the Radio Spectrum Policy Group of the European Union (RSPG) published their Second Opinion on 5G [<http://rspg-spectrum.eu/2018/02/>] in which they recommended making this band available on a general authorized access basis.
* Given these facts, we believe that a wide variety of 5G services and use-cases will be deployed in this band globally without the need for an IMT identification. In fact, IMT identification could bar some key 5G technologies from operating in this band.

**Agenda Item 1.15 (275-450GHz)**

The recently published Std. IEEE 802.15.3d-2017 targets point-to-point links in the frequency range of 252 to 325 GHz with data rates ranging from 1 to 100 Gb/s. The application scenarios comprise wireless backhaul and fronthaul links, kiosk downloading, reconfigurable wireless links for data centers in addition to fibers and intra-device communications. IEEE 802 especially supports the identification of the frequency bands 275 GHz to 325 GHz for license-exempt active services such as THz communications.

Higher frequency bands beyond 325 GHz, e. g. up to 450 GHz, are highly appreciated for future wireless communication applications. No activity toward a new standard at these higher frequencies has been formed yet, because the technology at 300 GHz seemed most promising in 2014 when the project for the first standard in the THz range was initiated. However this may change in the future.

**Agenda Item 1.16** (**5150-5925 MHz)**

Since the 1990s, IEEE 802 has been actively developing standards for Wireless LAN technologies that operate in the 5 GHz bands. Among these is IEEE 802.11, which is the basis for Wi-Fi, the most successful, most used and most demanded 5 GHz wireless technology. IEEE 802.11 is carrying the vast majority of wireless internet traffic and is essential for commercial services, education, communications and social interactions, creating industries and providing jobs and economic growth around the world.

IEEE 802 recommends that any regulatory action should not disadvantage any IEEE 802 standard or add any additional regulatory burdens for its use of the 5 GHz bands.

**Agenda Item 9.1.5 (5150-5250MHz, 5250-5350MHz & 5470-5725MHz)**

In preparation for WRC-15 and WRC-19, ITU-R carried out a significant amount of work to study coexistence between RLANs and new radar systems, such as bi-static and fast frequency-hopping radars. These studies confirm that the technical and regulatory impacts of requiring the mobile service to protect new radars types would impose undue constraints on RLAN operation in the 5250-5350 MHz and 5470-5725 MHz frequency ranges.  The reference to ITU-R M.1638-0 should not be updated to ITU-R M.1638-1 in footnotes RR Nos. 5447F and 5.450A. Given that both ITU-R M.1638-0 and M.1849-1 Recommendations require essentially the same protection requirements, adding a new reference to ITU R M.1849-1 is redundant and unnecessary.

**Agenda Item 10 Re Proposal Seeking IMT Identification in 6GHz Band**

Mobile Service, Fixed Services and Fixed-Satellite Services have co-primary status in the 6GHz band (5925-7125MHz). In many regions, including Region 3 (APT), Fixed-Satellite Service (FSS) earth stations (Earth-to-space direction) in conjunction with commercial Fixed Services are already operational in the band.

As the band already enjoys Mobile allocation by ITU, cellular mobile operation is provisioned and can be administered flexibly regionally or nationally in APT without a need for IMT designation. Any IMT designation may require costly re-farming of the band and relocation of incumbent to other bands. Relocation would also require availability of suitable sub 10 GHz spectrum. Alternatively, sharing mechanisms, such as Automated Frequency Coordination (AFC) being proposed by U.S. Federal Communication Commission, and evaluated by administrations in other regions, to facilitate RLAN co-existence with incumbent Fixed Services.

Extensive effort is underway in Regions 1 and 2 to designate 6GHz band (5925-7125MHz) for licensed exempt operation. More specifically, the European Commission has issued directives in form of [EC Mandate](https://cept.org/Documents/fm-57/41902/fm57-18-info002_european-commission-mandate-on-rlan-in-5925-6425-mhz) to CEPT to conduct the studies for co-existence and harmonized technical conditions for RLAN operation in the band. Please see recently published [ECC Report 302](https://www.ecodocdb.dk/download/cc03c766-35f8/ECC%20Report%20302.pdf). Similarly, U.S. Federal Communication Commission has issued a Notice of Proposed Rule Making for [unlicensed use of the 6 GHz Band (NPRM](https://www.fcc.gov/document/fcc-proposes-more-spectrum-unlicensed-use-0)). The 6GHz Report and Order is expected to be issued by the end of 2019.

Flexible sharing of the band facilitates growth and innovation globally and across APT region.

Consideration of an agenda item WRC-23 for 6GHz IMT designation, would be counterproductive as it may disrupt advancing growth and innovation globally and across Region 3 and cause unnecessary regulatory burden both at ITU and regionally in APT.

**Conclusion**

IEEE 802 LMSC asks APG19-5 to [TBD]