

Re: Consultation “Public consultation on proposed Malaysia’s positions for World Radiocommunication Conference 2023 (WRC-23) agenda items”

Dear Chairman,

IEEE 802 LAN/MAN Standards Committee (LMSC) thanks Malaysian Communications and Multimedia Commission (MCMC) for issuing the consultation “Public consultation on proposed Malaysia’s positions for World Radiocommunication Conference 2023 (WRC-23) agenda items” and for the opportunity to provide feedback on this topic.

IEEE is a leading consensus-based standards development organization, 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 also produce standards for wired Ethernet networks, and technologies produced by implementers of our standards are critical for all networked applications today.

IEEE 802 LMSC 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 400,000 members in over 160 countries. IEEE’s core purpose is to foster technological innovation and excellence for the benefit of humanity. In submitting this document, IEEE 802 LMSC acknowledges and respects that other components of IEEE Organizational Units may have perspectives that differ from, or compete with, those of IEEE 802 LMSC. Therefore, this submission should not be construed as representing the views of IEEE as a whole¹.

Please find below the responses of IEEE 802 LMSC to WRC-23 agenda item 1.2.

WRC-23 agenda item 1.2 on 6425 MHz to 7025 MHz and 7025 MHz to 7125 MHz:

IEEE 802 LMSC believes that the Radio Regulations should retain the current status (“No Change”) of the 6425 MHz to 7025 MHz and 7025 MHz to 7125 MHz bands, and not adopt an IMT identification in these bands.

While operation of Radio Local Area Network (RLAN) devices such as those based upon IEEE Std 802.11 are not currently permitted in the 6425 MHz to 7025 MHz and 7025 MHz to 7125 MHz bands in Malaysia, such use is permitted in many other regions of the world including the USA, Canada, Brazil, Argentina, Colombia, the Kingdom of Saudi Arabia, and the Republic of Korea. In addition, there are currently IEEE 802 LMSC technologies based upon IEEE Std 802.15.4 Ultra-Wideband (UWB) used in these bands that are widely deployed in high value applications (see “Ultra-Wideband (UWB) communication device (Generic and road/rail vehicles)” in [13] and Standard Radio System Plan 549 [14]).

The “No Change” position provides a flexibility for MCMC to consider the bands for licensed 5G use in future, should this be deemed necessary, as well as for use by RLAN like devices as is

¹ This document solely represents the views of IEEE 802 LMSC and does not necessarily represent a position of either the IEEE or the IEEE Standards Association.

already permitted in many regions of the world. However, identifying the bands for IMT prematurely limits the options for these bands. This is because an IMT identification would pre-determine the future use of the band to be presumed licensed, as was the case for the many other bands that have been identified for IMT in the last 20 years.

IEEE 802.11-based devices operating in the 6 GHz band

The IEEE Std 802.11ax-2021 [1] standard supports operation in the 6425 MHz to 7025 MHz and 7025 MHz to 7125 MHz bands, and products based on this standard are seeing significant adoption where regulatory rules permit deployment [2]. IEEE 802 technologies are designed to not cause interference with other users in these bands. The Wi-Fi industry is taking the lead in specifying a number of coexistence strategies for bands with incumbent users, such as automated frequency coordination [3][12] and other coexistence mechanisms supported by different regulatory methods in the 6 GHz band (i.e., 5925 MHz to 7125 MHz) [6]. A new generation of IEEE 802.11 technologies, currently under development in the IEEE P802.11be amendment, will continue to enhance coexistence strategies and provide even more effective spectrum sharing in these bands. Prior research from the ECC [4] indicates that access to larger, contiguous bandwidths in the 6 GHz band reduces the potential for harmful interference.

Significant economic value is provided by IEEE 802.11 based systems today [5]. Availability of the full 6 GHz band for unlicensed use enables deployment of new applications and services in the coming years, further increasing the societal benefits. The very recent analysis from the UK Ofcom highlights such benefits arising from a “No Change” position [6].

IEEE 802.15-based devices operating in the 6 GHz band

IEEE 802.15 standards specify UWB technology operation, which is widely adopted for numerous short range sensing, ranging, and communications applications. Adoption of UWB is growing rapidly, providing both economic growth and valuable new applications. IEEE Std 802.15.4-2020 [7] and IEEE Std 802.15.4z-2020 [8] are standards for communication and precision ranging that are already capable of using both the 6425 MHz to 7025 MHz and 7025 MHz to 7125 MHz bands and are increasingly used in many high value applications. IEEE Std 802.15.6-2012 [9], a standard for short range, wireless communication in the vicinity of, or inside, a human body (but not limited to humans) uses the same bands and channels and is approved by national medical and/or regulatory authorities for applications including medical wireless body area network (BAN).

It is expected that an increasing number of IEEE Std 802.15.4-2020, IEEE Std 802.15.4z-2020, and IEEE Std 802.15.6-2012 devices will continue to be operated in these bands. Notably, with the increasing use of IEEE 802.15 devices in the smartphone and consumer automotive spaces, it is forecasted that more than 1 billion UWB-enabled devices will be shipped annually worldwide by 2025 [10].

It is worth noting that operation of UWB devices based on IEEE 802 standards is currently permitted in Malaysia and worldwide, and it has proven to be compatible with existing licensed operations in the subject bands. Introduction of new, much higher-powered services such as IMT may be considerably more disruptive.

Conclusion

IEEE 802 LMSC thanks MCMC for the opportunity to provide this submission and kindly requests to MCMC to take into account our opinions to retain the current status (“No Change”) of the 6425 MHz to 7025 MHz and 7025 MHz to 7125 MHz bands, and not adopt an IMT identification in these bands in its decision towards WRC-23.

Respectfully submitted

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References:

- [1] “IEEE Standard for Information Technology - Telecommunications and Information Exchange between Systems Local and Metropolitan Area Networks - Specific Requirements Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications Amendment 1: Enhancements for High-Efficiency WLAN,” in *IEEE Std 802.11ax-2021 (Amendment to IEEE Std 802.11-2020)*, vol., no., pp.1-767, 19 May 2021, doi: 10.1109/IEEESTD.2021.9442429.
- [2] Wi-Fi Alliance: Wi-Fi 6E momentum underscores need for entire 6 GHz band, November 2022. [Available online](#), [accessed: 4 August 2023].
- [3] Dynamic frequency coalition: Automated frequency coordination - an established tool for modern spectrum management, March 2019. [Available online](#) [accessed: 4 August 2023].
- [4] CEPT: Section 6.2.6, ECC Report 302 - Sharing and compatibility studies related to Wireless Access Systems including Radio Local Area Networks (WAS/RLAN) in the frequency band 5925-6425 MHz, May 2019. [Available online](#) [accessed: 4 August 2023]
- [5] Wi-Fi Alliance: Value of Wi-Fi. [Available online](#) [accessed: 4 August 2023]
- [6] UK Ofcom: Update on the upper 6 GHz band. [Available online](#) [accessed: 4 August 2023]
- [7] “IEEE Standard for Low-Rate Wireless Networks,” in *IEEE Std 802.15.4-2020 (Revision of IEEE Std 802.15.4-2015)*, vol., no., pp.1-800, 23 July 2020, doi: 10.1109/IEEESTD.2020.9144691.
- [8] “IEEE Standard for Low-Rate Wireless Networks--Amendment 1: Enhanced Ultra Wideband (UWB) Physical Layers (PHYs) and Associated Ranging Techniques,” in *IEEE Std 802.15.4z-2020 (Amendment to IEEE Std 802.15.4-2020)*, vol., no., pp.1-174, 25 Aug. 2020, doi: 10.1109/IEEESTD.2020.9179124.
- [9] “IEEE Standard for Local and metropolitan area networks - Part 15.6: Wireless Body Area Networks,” in *IEEE Std 802.15.6-2012*, vol., no., pp.1-271, 29 Feb. 2012, doi: 10.1109/IEEESTD.2012.6161600.
- [10] FiRa Consortium: Unleashing the Potential of UWB: Regulatory considerations, August 2022. [Available online](#) [accessed: 4 August 2023]
- [11] “IEEE Standard for High Data Rate Wireless Multi-Media Networks,” in *IEEE Std 802.15.3-2016*, vol., no., pp.1-510, 25 July 2016, doi: 10.1109/IEEESTD.2016.7524656.
- [12] Intel: Spectrum Sharing Using Automated Frequency Coordination, [Available online](#) [4 August 2023]

- [13] MCMC: Class assignment no. 1 of 2022.
- [14] MCMC: Requirements for Devices using Ultra-Wideband (UWB) Technology Operating in the Frequency Bands of 30 MHz to 960 MHz, 2.17 GHz to 10.6 GHz, 21.65 GHz to 29.5 GHz and 77 GHz to 81 GHz.