

Re: Public Consultation on the updated Version of the Class License for Short Range Devices

Dear President,

IEEE 802 LAN/MAN Standards Committee (LMSC) thanks the Communications Regulatory Authority (CRA) for issuing the consultation on the updated version of the class license for short range devices (SRDs).

IEEE 802 LAN/MAN Standards Committee (IEEE 802 LMSC) is a leading consensus-based open standards development committee for networking standards that are used by industry globally. It produces standards for networking devices, including wired and wireless local area networks (“LANs” and “WLANs”), wireless specialty networks (“WSNs”), wireless metropolitan area networks (“Wireless MANs”), and wireless regional area networks (“WRANs”). Technologies produced by implementers of our standards are a critical element for all networked applications today.

IEEE 802 LMSC is a committee of the IEEE Standards Association and of Technical Activities, two of the Major Organizational Units of the IEEE. IEEE has about 400,000 members in over 160 countries and its core purpose is to foster technological innovation and excellence for the benefit of humanity. IEEE is also a major accredited standards development organization whose standards are recognized worldwide. 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 this consultation.

IEEE 802 LMSC endorses expanding use of the WAS/RLAN applications into 5925 MHz to 6425 MHz

IEEE 802 LMSC commends Qatar for adopting EN 303 687 as the basis for operation of wireless access systems including Radio Local Area Networks (WAS/RLANs) applications. As recognized in this proceeding, many countries have already authorized parts of or the entire 5925 MHz to 7125 MHz band for licence exempt operations. Adopting similar access will create economies of scale and produce a robust equipment market, benefitting Qatar’s businesses, consumers, as well as increasing the societal benefits.

In the proceedings, CRA proposes to allow WAS/RLAN devices to operate between 5925 MHz and 6425 MHz using no greater than 14 dBm for very low power (VLP) mode and no greater than 23 dBm for low power indoor (LPI) mode without causing harmful interference to existing authorized communications and without protection from any interference caused by existing authorized communications. IEEE 802 LMSC supports this proposal and respectively asks CRA to consider the following two items, i.e., initiate authorization proceedings for standard power RLAN under supervision of AFC, and expanding the frequency allocation of WAS/RLAN devices to operate in the 6425 MHz to 7125 MHz band.

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.

a. Initiate authorization proceedings for standard power RLAN under supervision of AFC

IEEE 802 LMSC recommends CRA to consider initiating proceedings to authorize Standard Power (SP) mode under supervision of an Automated Frequency Coordination (AFC) System in the 6 GHz band. SP mode enables Wi-Fi operation at higher power than both the VLP and the LPI modes to optimally utilize the 6 GHz spectrum. As CRA plans to authorize VLP and LPI modes in the 6 GHz band, IEEE 802 LMSC kindly requests CRA to consider initiating the process to authorize SP mode and certification of AFC Devices (SP access points or fixed clients) and AFC Systems.

AFC technology is widely adopted as a mitigation technique to protect incumbent licensed services for outdoor and indoor operation at the SP level. With proper consideration of protection criteria for the fixed point-to-point links, we believe that AFC Systems development for additional regions can be implemented to provide the frequency coordination and maximum allowable power settings for AFC Devices to provide protection of these fixed links. As an example, in the USA, AFC Systems determine frequency and channel availability and maximum permissible power levels for AFC Devices considering incumbent Fixed Services and Radio Astronomy Services as well as neighboring countries incumbent services at the borders.

The USA and Canada have authorized SP mode and have certified seven AFC systems, with more in process of approval. The certification process for AFC systems and devices is based on the industry developed recommended compliance specifications^{2,3}. On 21 August 2023, Innovation, Science and Economic Development Canada (ISED) approved⁴ an AFC System for operation in Canada. On 23 February 2024, FCC announced⁵ approval of seven AFC systems for commercial operation in the USA. A number of AFC controlled devices and Fixed Client devices are already certified. A growing number of countries, including Japan, Saudi Arabia, South Korea, and Brazil, are also studying enablement of SP mode.

As AFC devices are being certified and introduced in the market, the Wi-Fi industry expects the first significant deployments of SP mode to be indoor through upgrading of LPI access points to indoor SP access points, i.e., SP/LPI converged access points. These converged access points are targeting simultaneous support of LPI-only clients, SP clients, and dual LPI/SP clients in the same indoor network to improve overall system efficiency and spectrum utilization while protecting incumbent services.

b. Initiate authorization proceedings for expanding the frequency allocation of WAS/RLAN devices to operate in the 6425 MHz to 7125 MHz band

In considering further allocation in the 6425 MHz to 7125 MHz frequency band, IEEE 802 LMSC respectfully asks CRA to consider the following points.

² See: Wi-Fi Alliance: 6 GHz AFC resources, Specifications, test plans, and training modules to enable implementation of the 6 GHz standard power devices under AFC system control. <https://www.wi-fi.org/discover-wi-fi/6-ghz-afc-resources> [accessed: 29 June 2024].

³ See Wireless Innovation Forum: Specifications, <https://6ghz.wirelessinnovation.org/baseline-standards> [accessed: 29 June 2024].

⁴ See Innovation, Science and Economic Development Canada: List of designated Dynamic Spectrum Access System Administrators (DSASAs), Automated Frequency Coordination System Administrators (AFCSAs), issue 1 of DBS-06, <https://ised-isde.canada.ca/site/certification-engineering-bureau/en/node/116> [accessed: 29 June 2024].

⁵ See Federal Communications Commission: OET announces approval of seven 6 GHz band automated frequency coordination systems for commercial operation and seeks comment on C3 Spectra's proposed AFC system, <https://docs.fcc.gov/public/attachments/DA-24-166A1.pdf> [accessed: 29 June 2024].

A growing number of countries, including the USA, Canada, Brazil, South Korea, and Saudi Arabia, have already allocated the entire 6 GHz band for licence exempt operation. Availability of the entire 6 GHz band for licence exempt use will create economies of scale and produce a robust equipment market in Qatar.

In January 2024, Wi-Fi Alliance introduced⁶ Wi-Fi CERTIFIED 7™ based on the IEEE P802.11be draft standard⁷, IEEE P802.11be introduces advanced features including channel bandwidths of up to 320 MHz, multiple resource units to a single station, multi-link operation that utilizes multiple links across frequency bands, enhanced quality of service (QoS), improved Target Wake Time, and improved spectrum management using spectrum puncturing to accommodate co-existence with incumbents more effectively and efficiently. With Wi-Fi 7 products already in the market, Wi-Fi deployments are going through a second-generation upgrade in the entire 6 GHz band globally⁸. IEEE P802.11be's global 6 GHz channelization is designed to accommodate multiple 160 MHz and 320 MHz channels throughout the 5925 MHz to 7125 MHz band, where available. CRA's current designation of 500 MHz of the 6 GHz band from 5925 MHz to 6425 MHz for licence exempt operation provides for only one contiguous 320 MHz channel, while the 5925 MHz to 7125 MHz band would allow three such channels to support Gigabit connectivity in Qatar.

Consider adopting additional uses of UWB applications

Ultra-Wide Band (UWB) devices are being used worldwide for a wide range of applications in communication, measurement, location, imaging, surveillance, and medical systems⁹, often in conjunction with other short range device technologies. UWB enhances the operation of such technologies and is an efficient means to share spectrum.

IEEE 802 LMSC commends CRA for recognizing the rapidly growing value of UWB. Use of extremely low power UWB devices in accordance with ECC Decision (06)04¹⁰ and the ETSI EN 302 065 series of standards harmonizes with worldwide regions, creates further economies of scale, and supports a robust equipment market, benefitting Qatar's businesses, consumers, as well as increasing the societal benefits. We encourage CRA to consider adopting additional updates reflected in the 2022 update of ECC Decision (06)04, including the fixed outdoor and enhanced

⁶ See Wi-Fi Alliance: Wi-Fi Alliance® introduces Wi-Fi CERTIFIED 7™, <https://www.wi-fi.org/news-events/newsroom/wi-fi-alliance-introduces-wi-fi-certified-7> [accessed: 29 June 2024].

⁷ See "IEEE Draft 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: Enhancements for Extremely High Throughput (EHT)," in IEEE P802.11be/D5.0, November 2023, vol., no., pp.1-1045, 3 Jan. 2024. With introduction of 320 MHz channel bandwidth, Wi-Fi 7 doubles throughputs relative to Wi-Fi 6E and significantly improves latency for Extended Reality (XR), bringing determinism through enablement of Multi-Link Operation (MLO) over multiple bands in 2.4 GHz, 5 GHz, and 6 GHz bands. Wi-Fi 7 also provides higher efficiency, relative to Wi-Fi 6E, through offering of 4096 QAM. In addition, spectrum puncturing improves flexibility in utilizing spectrally efficient wide channel bandwidth, e.g., 160 MHz and 320 MHz, while protecting incumbent operation in the band.

⁸ See Wi-Fi Alliance: Wi-Fi 7 market momentum: Wi-Fi 7 is here – is your network ready?, <https://www.wi-fi.org/beacon/chris-hinsz/wi-fi-7-market-momentum-wi-fi-7-is-here-is-your-network-ready> [accessed: 29 June 2024].

⁹ See FiRa Consortium: Unleashing the Potential of UWB: Regulatory considerations, August 2022, <https://www.firaconsortium.org/sites/default/files/2022-08/Unleashing-the-Potential-of-UWB-Regulatory-Considerations.pdf> [accessed: 29 June 2024]. The introduction of IEEE 802.15 UWB-enabled devices in smartphones and laptops puts forecasts at more than 1 billion devices shipped annually worldwide by 2025

¹⁰ ECC Decision (06)04, The harmonised use, exemption from individual licensing and free circulation of devices using Ultra-Wideband (UWB) technology in bands below 10.6 GHz, approved 24 March 2006, as amended 18 November 2022, <https://docdb.cept.org/download/4215> [accessed: 29 June 2024].

indoor scenarios as detailed in Annex 1.3.1 and 1.3.2, which have been studied and analyzed^{11,12} in preparation of the updated regulations and adoption by both the ECC and the European Commission¹³ based on updated assumptions consistent with real world experience.

Conclusion

IEEE 802 LMSC thanks Qatar for the opportunity to provide this submission and respectfully requests to consider:

- initiating authorization proceedings for standard power RLAN under supervision of AFC;
- initiating proceedings to authorize expanded use of WAS/RLAN devices operation in the 6425 MHz to 7125 MHz band;
- adopting additional uses of UWB applications as reflected in the 2022 update of ECC Decision (06)04.

Respectfully submitted,

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¹¹ ECC Report 327, Technical studies for the update of the Ultra Wide Band (UWB) regulatory framework in the band 6.0 GHz to 8.5 GHz, approved 1 October 2021, <https://docdb.cept.org/download/3511> [accessed: 29 June 2024].

¹² CEPT Report 84, Report from CEPT to the European Commission in response to the Permanent Mandate on UWB “Ultra-Wideband technology review in view of a potential update of Commission Implementing Decision (EU) 2019/785,” approved 7 July 2023, <https://docdb.cept.org/download/4378> [accessed: 29 June 2024].

¹³ Commission Implementing Decision (EU) 2024/1467 of 27 May 2024 amending Implementing Decision (EU) 2019/785 on the harmonisation of radio spectrum for equipment using ultra-wideband technology in the Union, https://eur-lex.europa.eu/eli/dec_impl/2024/1467/oj [accessed: 29 June 2024]