

Re: Consultation “Draft Circular amending and supplementing a number of articles of Circular No. 08/2021/TT-BTTTT dated October 14, 2021 of the Minister of Information and Communications stipulating the List of radio equipment exempted from radio frequency use licenses, technical conditions and accompanying exploitation”

Dear Respected Officer,

IEEE 802 LAN/MAN Standards Committee (LMSC) thanks Ministry of Information and Communications (MIC) for providing an opportunity to comment on the consultation “Draft Circular amending and supplementing a number of articles of Circular No. 08/2021/TT-BTTTT dated October 14, 2021 of the Minister of Information and Communications stipulating the List of radio equipment exempted from radio frequency use licenses, technical conditions and accompanying exploitation”.

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 over 460,000 members in more than 190 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 that other components of IEEE Organizational Units may have perspectives that differ from, or compete with, those of IEEE 802 LMSC¹.

Please find below the responses of IEEE 802 LMSC to this consultation.

It is the right time to authorize Wi-Fi devices to operate in 5925 MHz to 6425 MHz in Vietnam

IEEE 802 LMSC commends MIC’s effort in expanding the operation of Wi-Fi devices, based on IEEE 802.11 technologies, to the 5925 MHz to 6425 MHz frequency band (a.k.a., the lower 6 GHz band). As recognized in this proceeding, many countries in Asia Pacific region have authorized the lower 6 GHz band for licence exempt operation at the proposed or similar transmit power limits. Adopting similar spectrum access rules will create economies of scale and produce a robust equipment market, benefitting Vietnam’s businesses, consumers, as well as increasing the societal benefits.

In the proceedings, MIC proposes to allow Wi-Fi devices to operate between 5925 MHz and 6425 MHz using no greater than 25 mW outdoors (a.k.a., very low power (VLP) mode) or no greater than 200 mW indoors (a.k.a., low power indoor (LPI) mode) without causing harmful interference to existing authorized communications and without protection from any interference caused by

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

existing authorized communications. IEEE 802 LMSC supports the authorization of Wi-Fi devices operating at the proposed power limits between 5925 MHz and 6425 MHz both indoors and outdoors.

In addition, we would like to respectfully ask MIC to clarify on the condition for the outdoor operation, specifically on the whether the Wi-Fi devices are required to operate in a fixed location. In other geographies, there is no such requirement for the Wi-Fi devices to be operated in a fixed location².

Initiate authorization proceedings for standard power RLAN under supervision of AFC

IEEE 802 LMSC recommends MIC 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 MIC plans to authorize VLP and LPI modes in the 6 GHz band, IEEE 802 LMSC kindly requests MIC to consider initiating the process to authorize SP mode and certification of AFC controlled devices (SP access points or fixed clients) and AFC systems.

AFC technology is used to protect incumbent services during outdoor and indoor operation at SP level for Wi-Fi operation. IEEE 802 LMSC believes that an AFC system can provide effective automated spectrum sharing to enable essential Wi-Fi technology applications and use cases not only for outdoor operation but also indoor operation for the SP level in the 6 GHz band.

The USA³ and Canada⁴ have already authorized SP operating mode and started certification of AFC systems. The certification process for AFC systems and devices is based on industry developed recommended compliance specifications^{5,6}. Many AFC devices and fixed client devices are already certified.

IEEE 802 LMSC notes the presence of different types of incumbent services operating in 6 GHz band in Vietnam. Our understanding is that existing AFC systems are designed with flexibility built-in specifically to enable an AFC system to be customized based on local spectrum regulatory requirements. Therefore, with proper consideration of protection criteria for the existing incumbent services, we believe that AFC systems can properly implement the frequency coordination and maximum allowable power settings for AFC-enabled devices. 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. AFC systems already take into account neighboring country incumbent services at the country border.

² See 47 CFR §§ 15.407 (d)(8), the Code of Federal Regulations, Office of the Federal Register, United States of America, <https://www.ecfr.gov/current/title-47/chapter-I/subchapter-A/part-15/subpart-E/section-15.407> [accessed: 25 November 2024]. “Very low power devices may not employ a fixed outdoor infrastructure. Such devices may not be mounted on outdoor structures, such as buildings or poles.”

³ 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: 25 November 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: 25 November 2024].

⁵ 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: 25 November 2024].

⁶ See Wireless Innovation Forum: Specifications, <https://6ghz.wirelessinnovation.org/baseline-standards> [accessed: 25 November 2024].

AFC systems are designed to automatically calculate and make available, to AFC devices, available frequencies and corresponding permissible transmit power levels. AFC systems are required to use the updated incumbent system database to keep the calculations and frequency availability up to date as 6 GHz incumbent links are changed. This means that incumbent services are protected from harmful interference by AFC systems, and that any expansion of such incumbent services over time can be achieved without a need to redesign the AFC systems.

Initiate authorization proceedings for expanding the frequency allocation for Wi-Fi devices to operate in the 6425 MHz to 7125 MHz band

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

A growing number of countries, including Argentina, Brazil, Canada, Saudi Arabia, South Korea, and the USA have already allocated the entire 6 GHz band (i.e., 5925 MHz to 7125 MHz) for licence exempt operation.

In January 2024, Wi-Fi Alliance introduced⁷ Wi-Fi CERTIFIED 7™ based on the IEEE Std 802.11be-2024⁸. IEEE 802.11be 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 improve coexistence with incumbents 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 globally⁹. Of particular relevance is the multi-link operation feature which when used in the 6 GHz band, achieves and exceeds the performance expectations of Wi-Fi 7. IEEE 802.11be's global 6 GHz channelization is designed to accommodate multiple 160 MHz and 320 MHz channels throughout the 5925 MHz to 7125 MHz frequency band, where available. MIC's proposed designation of 500 MHz of the 6 GHz band from 5925 MHz to 6425 MHz for Wi-Fi operation provides for only one contiguous 320 MHz channel, while the 5925 MHz to 7125 MHz frequency band would allow three such channels to support Gigabit connectivity in Vietnam.

Conclusion

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

- providing clarification on the use of Wi-Fi devices outdoor in the 5925 MHz to 6425 MHz frequency band;
- initiating authorization proceedings for standard power RLAN under supervision of AFC;

⁷ 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: 25 November 2024].

⁸ See IEEE Approved 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), <https://standards.ieee.org/ieee/802.11be/7516> [accessed: 25 November 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.

⁹ See Wi-Fi Alliance: Wi-Fi 7 market momentum: Wi-Fi 7 is here – is your network ready?, <https://www.wi-fi.org/beamon/chris-hinsz/wi-fi-7-market-momentum-wi-fi-7-is-here-is-your-network-ready> [accessed: 25 November 2024].

- initiating authorization proceedings to authorize expanded use of Wi-Fi devices operation in the 6425 MHz to 7125 MHz frequency band.

Respectfully submitted,

By: /s/.

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