

Re: Consultation “Frequency Realignment Action Plan (2023 Edition)”

Dear Radio Department, Radio Policy Division, Telecommunications Infrastructure Bureau,

IEEE 802 LAN/MAN Standards Committee (LMSC) thanks Japan’s Ministry of Internal Affairs and Communications (MIC) for issuing the consultation that call for comments on “Frequency Realignment Action Plan (2023 Edition)” and for the opportunity to provide feedback.

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 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.

IEEE 802 LMSC follows Japan’s regulatory activities regarding radio local area networks (RLANs) and supports MIC proceedings on enabling Standard Power (SP) using Automatic Frequency Control (AFC) for spectrum sharing with fixed communication systems operating in 5925 MHz to 7125 MHz and authorizing 6425 MHz to 7125 MHz for Very Low Power (VLP) and Low Power Indoor (LPI) modes of operation.

IEEE 802 LMSC applauds and appreciates MIC’s progress in finalizing technical conditions on Client-to-Client (C2C) communications as well as the coverage for 320 MHz channel bandwidth in the 6 GHz band published in September 2023. In particular, IEEE 802 LMSC recognizes MIC for its global leadership in finalizing detailed technical specifications for C2C. As we stated in our filing in August 2023, C2C is critical to efficient spectrum utilization and enabling a diverse set of different Wi-Fi applications, use cases, industry segments and business models in the 6 GHz band (i.e., 5925 MHz to 7125 MHz) across the globe.

Please find below IEEE 802 LMSC’s specific comments on this consultation focusing on the aspect of the consultation related to the 6 GHz band.

Target for Securing over 1 GHz of License Exempt Spectrum for Wi-Fi by the End of 2025

IEEE 802 LMSC applauds MIC’s progressive approach in committing to allocation of over 1 GHz of license exempt spectrum for Wi-Fi to enable 10 Gbps services by utilizing Wi-Fi 6 and Wi-Fi

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.

7 technologies, which are developed by IEEE 802 standards, in the 6 GHz band. MIC's commitment makes Japan along with the United States of America the global champions for low cost wireless connectivity.

6 GHz as a Priority Initiative

IEEE 802 LMSC appreciates MIC's identification of 6 GHz regulatory expansion as a priority initiative for the action plan and recognizes MIC's determination in the introduction and enablement of Wi-Fi 7 technology based on IEEE P802.11be [1] and spectrum sharing for SP operation using sharing mechanisms such as AFC to improve system coverage and system throughput performance.

Both the Wi-Fi 7 technology and the SP operation using AFC heavily rely on the availability of sufficient spectrum (e.g., of over 1 GHz) to accommodate multiple 160 MHz and 320 MHz channels. In the case of Wi-Fi 7, enterprise deployments and scaled deployment of advanced applications such as augmented reality (AR)/virtual reality (VR), for example in education and health industries require multiple 320 MHz channels to fully utilize the advantages of the technology. In the case of SP operation with an AFC system, without extending the band to upper 6 GHz band (i.e., 6425 MHz to 7125 MHz) and considering limited spectrum availability from an AFC system, the channel bandwidth may be limited to 20 MHz for enterprise indoor and outdoor deployments. Please note that even with additional shared spectrum in the upper 6 GHz authorized for license exempt operation, only a part of the license exempt spectrum will be accessible at each location because of the AFC system frequency availability calculation.

Today, AFC technology is mature. AFC systems are going through detailed certification processes in the United States of America and Canada and SP deployments are imminent. Various chipset vendors and original equipment manufacturers (OEMs) have been demonstrating and promoting their Wi-Fi 7 products, some of which have already emerged in the market. IEEE 802 LMSC respectfully encourages MIC to finalize expansion of the 6 GHz band to the upper 6 GHz band, including the authorization of outdoor use for Wi-Fi operation.

7025 MHz to 7125 MHz Band

With regards to MIC's consideration of 7025 MHz to 7125 MHz band as related to the World Radiocommunications Conference 2023 (WRC 2023), IEEE 802 LMSC recommends allocation of the band to license exempt operation.

Full allocation of the 6 GHz band will enable Wi-Fi utilization of 7 x 160 MHz channels for indoor enterprise deployment with reuse pattern 7. In the case that the last 100 MHz is not available to Wi-Fi, such reuse pattern is not feasible in deployments.

With MIC's continued sharing studies for outdoor operation at 6425 MHz to 6570 MHz and 6870 MHz to 7125 MHz (to accommodate presence of Field Pick-up Units (FPUs) and broadcast mobile services incumbent operation in the band), we understand that outdoor IMT operation will be even more challenging than that of Wi-Fi due to higher power transmission.

Conclusion

IEEE 802 LMSC supports MIC's renewed commitment to allocation of over 1 GHz of license exempt spectrum and prioritization of the expansion of 6 GHz regulations enabling SP using AFC for spectrum sharing with fixed communication systems operated in 5925 MHz to 7125 MHz and authorizing 6425 MHz to 7125 MHz for VLP and LPI modes of operation. We respectfully request MIC to consider our comments listed in this response and hope that the new regulation will be enacted in a timely manner.

Respectfully submitted

By: /ss/.

Paul Nikolich

IEEE 802 LAN/MAN Standards Committee Chairman

em: p.nikolich@ieee.org

References:

- [1] "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)," IEEE P802.11be/D4.1, September 2023.