IEEE P802.18
Radio Regulatory Technical Advisory Group (RR-TAG)

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| Proposed Response to IFT Public Consultation re the 64 GHz - 71 GHz Frequency Band |
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This document drafts a proposed response to Mexico IFT “Public Consultation re the 64 GHz - 71 GHz Frequency Band”.

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Re: Public Consultation re the 64 GHz - 71 GHz Frequency Band

Dear Regulatory Standards Directorate,

IEEE 802 LAN/MAN Standards Committee (IEEE 802 LMSC) thanks the Instituto Federal de Telecomunicaciones (IFT) for providing an opportunity to comment on the IFT’s Public Consultation re the 64 GHz - 71 GHz Frequency Band.

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 whole[[1]](#footnote-1).

**IEEE 802.11 Support for 60GHz Band**

Wi-Fi Technology currently uses the 66-71 GHz band as licensed exempt spectrum. Wi-Fi Alliance started certification of Wi-Fi CERTIFIED WiGig devices in October of 2016. The WiGig technology is based on IEEE 802.11ad supporting 60GHz range 57-66 GHz that is later extended, by IEEE 802.11ay, to cover the entire 57-71GHz band. In addition to 60GHz frequency range extension, IEEE 802.11ay introduced channel bonding allowing up to four of 2.16GHz channels to be bounded together. IEEE 802.11ay support for channel bonding along with other features such as higher number of spatial streams and higher QAM modulation results in an increase in the peak data rate from 7 Gbps to 176 Gbps. Authorization of 64-71GHz band as Free spectrum make it possible that the full four channel bonding to be utilized in Mexico.



The pick data rate from Wi-Fi CERTIFIED WiGig™ expands the Wi-Fi® experience for virtual reality, multimedia streaming, gaming, wireless docking, and enterprise applications requiring high speed, data-intensive connections.

Since 2016, different category of products from various device manufacturers, including the following, have been certified and introduced to market:

* Connectivity,
* Computers and Accessories,
* Televisions and Set Top Boxes,
* Gaming,
* Media and Music

Some popular uses for WiGig products include:

* Wireless docking between devices like smartphones, laptops, projectors, and tablets
* Simultaneous streaming of multiple, ultra-high definition videos and movies
* More immersive gaming, augmented reality and virtual reality experiences
* Fast download of HD movies
* Convenient public kiosk services
* Easier handling of bandwidth intensive applications in the enterprise

To further advance the connectivity technology in the 60GHz band, IEEE 802.11 is currently working on new standard titled “Enhancements for Integrated mmWave (IMMW) WLAN”. The scope of this standard is to define one medium access control (MAC) and one physical layer (PHY) specifications for wireless connectivity for fixed, portable, and moving stations (STAs) within a local area. This standard also offers regulatory bodies a means of standardizing access to the 42 GHz and 71 GHz frequency bands for the purpose of local area communication.

This amendment defines standardized modifications to both the IEEE Std 802.11 physical layer (PHY) and the IEEE Std 802.11 Medium Access Control (MAC) that allows Wireless Local Area Network (WLAN) non-standalone operation in unlicensed bands between 42 GHz and 71 GHz using single-user (SU) OFDM based transmissions. The amendment leverages or reuses existing PHY and MAC specifications defined for the operation in sub-7 GHz bands and requires that an 802.11 device supporting this amendment also supports at least one of the 2.4 GHz to 7.25 GHz (sub-7 GHz) unlicensed bands. The amendment expands the multi-link operation defined in the sub-7 GHz band specifications to support non-standalone operation in the unlicensed bands between 42 GHz and 71 GHz.

Use of WLANs based on IEEE 802.11 technology continues to grow and diversify over many market segments including residential, enterprise, industrial. More stringent requirements are emerging to meet the demands of new applications (e.g. augmented and virtual reality, proximity ranging and sensing) both in terms of throughput, latency bounds and accuracy. The very large bandwidth available in the unlicensed bands between 42 GHz and 71 GHz, combined with the widely used 2.4, 5 and 6 GHz bands, is a great opportunity to help meet these requirements even in the densest environments. Enabling non-standalone operation in the unlicensed bands between 42 GHz and 71 GHz in a cost-effective manner is required so that as many devices can benefit from it.

This amendment provides coexistence mechanisms with legacy IEEE 802.11 devices operating in the unlicensed bands between 42 GHz and 71 GHz.

Another current IEEE 802.11 project is IEEE P802.11bf “Enhancements for Wireless Local Area Network (WLAN) Sensing”. This standard defines modifications to the IEEE 802.11 medium access control layer (MAC) and to the Directional Multi Gigabit (DMG. i.e. 802.11ad) and enhanced DMG (EDMG, i.e. 802.11ay) PHYs to enhance Wireless Local Area Network (WLAN) sensing (SENS) operation in license-exempt frequency bands between 1 GHz and 7.125 GHz and above 45 GHz including 57-71 GHz. This standard is intended to enhance WLAN sensing and augments PHY and MAC capabilities defined in the IEEE P802.11ax, IEEE P802.11ay, IEEE P802.11az and IEEE P802.11be amendments and the IEEE P802.11 revision standard.

Sensing applications are in personal computers, enterprise networking devices, consumer electronic devices, home networking equipment, mobile devices, wireless sensing equipment including for behavior recognition, vehicular, smart homes, and security applications. Measurements obtained with WLAN sensing are used to enable applications such as presence detection and gesture classification, among others.

**IEEE 802 LMSC Support for Designation of 64-71 GHz as Free Spectrum**

IEEE 802 LMSC recognizes and applauds IFT to classify the frequency band 64-71 GHz as free spectrum. This decision enables critical growing applications relying on mmWave spectrum networks and better accommodates sharing of the frequency band and co-existence amongst various unlicensed technologies including technologies based on the family of IEEE 802 standards.

IEEE 802 LMSC also supports IFT proposal in Annex 1 “TECHNICAL OPERATING CONDITIONS FOR THE USE OF THE FREQUENCY BAND 64-71 GHz” in alignment with other regulatory bodies.

**Conclusion**

IEEE 802 LMSC thanks the IFT for the opportunity to provide this submission and supports IFT proposal to classify the frequency band 64-71 GHz as free spectrum.

Respectfully submitted

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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 or the IEEE Technical Activities. [↑](#footnote-ref-1)