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

Proposed Response to IFT Public Consultation re the 64 GHz - 71
GHz Frequency Band

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

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5 Electronic filing

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7 Re: Public Consultation re the 64 GHz to 71 GHz Frequency Band

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9 Dear Commissioner President,

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

14
15 IEEE 802 LMSC is a leading consensus-based open standards development committee for
16 networking standards that are used by industry globally. It produces standards for networking
17 devices, including wired and wireless local area networks ("LANs" and "WLANs"), wireless
18 specialty networks ("WSNs"), wireless metropolitan area networks ("Wireless MANs"), and
19 wireless regional area networks ("WRANs"). Technologies produced by implementers of our
20 standards are a critical element for all networked applications today.

21
22 IEEE 802 LMSC is a committee of the IEEE Standards Association and of Technical Activities,
23 two of the Major Organizational Units of the IEEE. IEEE has about 400,000 members in over 160
24 countries and its core purpose is to foster technological innovation and excellence for the benefit
25 of humanity. IEEE is also a major accredited standards development organization whose standards
26 are recognized worldwide. In submitting this document, IEEE 802 LMSC acknowledges and
27 respects that other components of IEEE Organizational Units may have perspectives that differ
28 from, or compete with, those of IEEE 802 LMSC. Therefore, this submission should not be
29 construed as representing the views of IEEE as a whole¹.

30 31 **IEEE 802.11 Support for 60 GHz Band**

32 The draft [IEEE P802.11](#) standard, ~~IEEE Std 802.11-2024~~², defines operation in the 57 GHz to 71
33 GHz band (a.k.a. the 60 GHz band) as licensed exempt spectrum. Wi-Fi Alliance started
34 certification of Wi-Fi CERTIFIED WiGig devices³ in October 2016. WiGig technology is based
35 on IEEE 802.11ad-2012 standard, supporting the operation from 57 GHz to 66 GHz that was later
36 extended by IEEE 802.11ay-2021 standard to cover the entire 57 GHz to 71 GHz band.
37 Additionally, the IEEE 802.11ay-2021 standard includes mechanisms for channel bonding and
38 MU-MIMO technologies which results in higher transmission rates and range. Channel bonding
39 allows up to four 2.16 GHz channels to be bonded together which would result in much higher
40 throughput. IEEE 802.11ay supports channel bonding combined with other features such as higher
41 number of spatial streams and higher QAM modulation provided an increase in the peak data rate
42 from 7 Gb/s to 176 Gb/s. Figure 1 shows IEEE 802.11 channel plan from the 57 GHz to 71 GHz
43 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 or the IEEE Technical Activities.

² "IEEE Draft Standard for Information Technology -- Telecommunications and Information Exchange Between Systems Local and Metropolitan Area Networks -- Specific Requirements - Part 11: Wireless Local Area Network (LAN) Medium Access Control (MAC) and Physical Layer (PHY) Specifications," in IEEE P802.11-REVme/D7.0, August 2024, vol., no., pp.1-6213, 30 July 2024. (Of note is that IEEE Std 802.11ad-2012 and IEEE Std 802.11ay-2021 are now incorporated into the draft IEEE 802.11-2024 standard.)

³ See Wi-Fi Alliance: Discover Wi-Fi CERTIFIED WiGig, <https://www.wi-fi.org/discover-wi-fi/wi-fi-certified-wigig> [accessed: 24 September 2024].

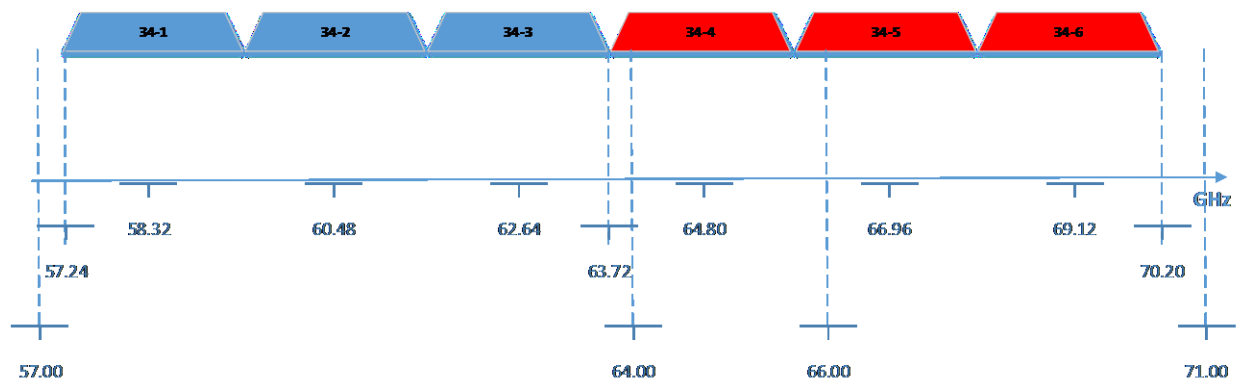


Figure 1. IEEE 802.11 channel plan from 57 GHz to 71 GHz

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49 Authorization of the 64 GHz to 71GHz band as license exempt spectrum enables four channel
50 bonding to be utilized in Mexico.

51
52 The resulting peak data rate in Wi-Fi CERTIFIED WiGig™ devices expands and enhances the
53 Wi-Fi® experience in applications including virtual reality, multimedia streaming, gaming,
54 wireless docking, and enterprise applications that require high speed, data-intensive connections.

55
56 Since the introduction of technology in 2016, the primary application for WiGig technology has
57 been for wireless backhaul and connectivity in Internet Service Provider (ISP) and enterprise class
58 backhaul deployments⁴.

59
60 To further advance use of the 60 GHz band, the IEEE 802.11 Working Group is currently ~~working~~
61 ~~on a new standard~~ studying the possibility of developing a new standard titled “Enhancements for
62 Integrated mmWave (IMMW) WLAN”⁵. The scope of this proposed standard is to define one
63 medium access control (MAC) and one physical layer (PHY) specifications for wireless
64 connectivity for fixed, portable, and moving stations (STAs) within a local area. This proposed
65 standard would also offer regulatory bodies a means to standardize access to the frequency bands
66 between 42 GHz and 71 GHz frequency range for the purpose of local area communication.

67
68 In particular, this ~~new-proposed~~ standard defines modifications to both the IEEE Std 802.11 PHY
69 and MAC that allows Wireless Local Area Network (WLAN) non-standalone operation in the
70 license exempt bands between 42 GHz and 71 GHz using single-user (SU) OFDM based
71 transmissions. ~~The new standard~~ It leverages or reuses existing PHY and MAC specifications
72 defined for operation in the 2.4 GHz to 7.25 GHz (sub-7 GHz) license exempt bands, and requires
73 that an IEEE 802.11 device supporting this ~~new-standards~~ proposed standard also supports at least
74 one of the sub-7 GHz license exempt bands. ~~The amendment~~ It expands the multi-link operation
75 defined in the draft IEEE ~~Std P802.11be-2024 standard~~⁶ to support non-standalone operation in
76 the license exempt bands between 42 GHz and 71 GHz.

⁴ Some examples of the existing applications can be found at <https://wifinowglobal.com/news-blog/marine-network-services-for-ships-and-yachts-airvine-could-be-key-to-next-generation-networking/>, https://www.arubanetworks.com/assets/ds/DS_AP387.pdf, <https://www.ispsupplies.com/brands/cambium-networks/cambium-cnwave> [accessed: 24 September 2024].

⁵ See IEEE 802.11 Working Group: Status of IEEE 802.11 Integrated Millimeter Wave (IMMW) Study Group (SG), https://www.ieee802.org/11/Reports/immw_update.htm [accessed: 24 September 2024].

⁶ “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/D7.0, August 2024, vol., no., pp.1-1089, 1 August 2024.

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

87
88 Another current IEEE 802.11 project is IEEE P802.11bf “Enhancements for Wireless Local Area
89 Network (WLAN) Sensing”. This standard defines modifications to the IEEE 802.11 medium
90 access control layer (MAC) and to the Directional Multi Gigabit (DMG, i.e., IEEE 802.11ad) and
91 enhanced DMG (EDMG, i.e. IEEE 802.11ay) PHYs to enhance Wireless Local Area Network
92 (WLAN) sensing (SENS) operation in license exempt frequency bands between 1 GHz and 7.125
93 GHz and above 45 GHz including 57 GHz to 71 GHz. This standard is intended to enhance WLAN
94 sensing and augments PHY and MAC capabilities defined in the draft [IEEE P802.11](#) standard;
95 ~~IEEE Std 802.11-2024~~.

96
97 Sensing applications are applicable to personal computers, enterprise networking devices,
98 consumer electronic devices, home networking equipment, mobile devices, wireless sensing
99 equipment including for behavior recognition, vehicular, smart homes, and security applications.
100 Measurements obtained with WLAN sensing can be used to enable applications such as presence
101 detection and gesture classification, among others.

102
103 **IEEE 802 LMSC Support for Designation of 64 GHz to 71 GHz as License Exempt Spectrum**
104 IEEE 802 LMSC recognizes and applauds IFT’s [effort](#) to classify the frequency band 64 GHz to
105 71 GHz as license exempt spectrum. This decision would enable growing applications that rely
106 on the mmWave spectrum based networks and would also advance frequency sharing and co-
107 existence between various license exempt technologies based on the family of IEEE 802 standards.

108
109 IEEE 802 LMSC also supports [the](#) IFT proposal in Annex 1 “TECHNICAL OPERATING
110 CONDITIONS FOR THE USE OF THE FREQUENCY BAND 64-71 GHz” in alignment with
111 the technical requirements of other regulatory bodies, such as the FCC 15.255 of Part 15⁷.

112 113 Conclusion

114
115 IEEE 802 LMSC thanks the IFT for the opportunity to provide this submission and supports the
116 IFT proposal to classify the frequency band 64 GHz to 71 GHz as license exempt spectrum.

117
118 Respectfully submitted,

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120 By: /s/.

121 James Gilb

122 IEEE 802 LAN/MAN Standards Committee Chairman

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⁷ See Code of Federal Regulations: §15.255 Operation within the band 57-71 GHz, <https://www.ecfr.gov/current/title-47/chapter-1/subchapter-A/part-15/subpart-C/subject-group-ECFR2f2e5828339709e/section-15.255> [accessed: 24 September 2024].