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

Proposed Response to Cayman Islands OfReg’s consultation on proposed short range device consultation				
Date: 2024-06-13				
Author(s):				
Name	Company	Address	Phone	email
Gaurav Patwardhan	Hewlett Packard Enterprise			<a href="mailto:gauravpatwardhan1@gmail.com">gauravpatwardhan1@gmail.com</a>
Hassan Yaghoobi	Intel			<a href="mailto:hassan.yaghoobi@intel.com">hassan.yaghoobi@intel.com</a>
Edward Au	Self			<a href="mailto:edward.ks.au@gmail.com">edward.ks.au@gmail.com</a>
Benjamin Rolfe	BCA			<a href="mailto:Ben.rolfe@ieee.org">Ben.rolfe@ieee.org</a>
Dorothy Stanley	Hewlett Packard Enterprise			<a href="mailto:dstanley1389@gmail.com">dstanley1389@gmail.com</a>

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This document drafts a proposed response to the Cayman Islands OfReg’s consultation “ICT 2024 – 1 – Consultation Short Range Licence Exempt Devices”.

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5 Electronic filing June 13, 2024

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7 Re: Consultation “ICT 2024 – 1 – Consultation Short Range Licence Exempt Devices”

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9 Dear Utility Regulation and Competition Office,

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11 IEEE 802 LAN/MAN Standards Committee (LMSC) thanks the Utility Regulation and  
12 Competition Office of the Cayman Islands (OfReg) for issuing the consultation “ICT 2024 – 1 –  
13 Consultation Short Range Licence Exempt Devices”.

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

22  
23 IEEE 802 LMSC is a committee of the IEEE Standards Association and of Technical Activities,  
24 two of the Major Organizational Units of the IEEE. IEEE has about 400,000 members in over 160  
25 countries and its core purpose is to foster technological innovation and excellence for the benefit  
26 of humanity. IEEE is also a major accredited standards development organization whose standards  
27 are recognized worldwide. In submitting this document, IEEE 802 LMSC acknowledges and  
28 respects that other components of IEEE Organizational Units may have perspectives that differ  
29 from, or compete with, those of IEEE 802 LMSC. Therefore, this submission should not be  
30 construed as representing the views of IEEE as a whole<sup>1</sup>.

31  
32 Please find below the responses of IEEE 802 LMSC to this consultation.

33  
34 ***It is the right time to authorize short range licence exempt devices to operate in 5925 MHz to***  
35 ***6425 MHz and 57 GHz to 71 GHz bands in Cayman Islands***

36  
37 IEEE 802 LMSC commends OfReg’s effort in creating a framework for expanding the operation  
38 of short range licence exempt devices. As recognized in this proceeding, many countries have  
39 authorized all or part of the 5925 MHz to 7125 MHz band and the 57 GHz to 71 GHz band for  
40 licence exempt operation at the proposed power limits. Adopting similar access will create  
41 economies of scale and produce a robust equipment market, benefitting Cayman Islands’  
42 businesses, consumers, as well as increasing the societal benefits.

43  
44 In the proceedings, OfReg proposes to allow short range licence exempt devices to operate be-  
45 tween 5925 MHz and 6425 MHz using no greater than 25mW outdoors (a.k.a. very low power  
46 (VLP) mode) or no greater than 250mW indoors (a.k.a. low power indoor (LPI) mode) without  
47 causing harmful interference to existing authorized communications and without protection from  
48 any interference caused by existing authorized communications. IEEE 802 LMSC supports the  
49 authorization of short range licence exempt devices operating at the proposed power limits be-  
50 tween 5925 MHz and 6425 MHz both indoors and outdoors.

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<sup>1</sup> 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.

51 IEEE 802 LMSC kindly requests OfReg to consider the following changes to the proposed technical requirements for LPI, which are adopted by national regulatory authorities in other countries, 52 such as the United States of America and Canada: 53

- 54 • Authorize max EIRP of 1W for access points under LPI mode and max EIRP of 250mW 55 for clients under LPI mode, which are aligned with the USA FCC’s requirements<sup>2</sup> to enable 56 licence exempt operation at large channel bandwidth of 160 MHz and 320 MHz in the 57 downlink.

58  
59 In addition, IEEE 802 LMSC recommends OfReg to authorize max EIRP of 50mW for VLP mode 60 with channel bandwidth of 320 MHz, to enable that the performance of a device under VLP mode 61 to scale with the operational bandwidth.

### 62 *Initiate authorization proceedings for standard power RLAN under supervision of AFC*

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64  
65 IEEE 802 LMSC recommends OfReg to consider initiating proceedings to authorize Standard 66 Power (SP) mode under supervision of an Automated Frequency Coordination (AFC) System in 67 the 6 GHz band. SP mode enables Wi-Fi operation at higher power than both the VLP and the LPI 68 modes to optimally utilize the 6 GHz spectrum. As OfReg plans to authorize VLP and LPI modes 69 in the 6 GHz band, IEEE 802 LMSC kindly requests OfReg to consider initiating the process to 70 authorize SP mode and certification of AFC controlled devices (SP access points or fixed clients) 71 and AFC Systems.

72  
73 AFC technology is widely adopted as a mitigation technique to protect incumbent licenced services 74 for outdoor and indoor operation at the SP level. In this proceedings, OfReg refers to AFC “as the 75 database assesses applications and only permits licensing in areas sufficiently removed from fixed 76 links (and other users of the band) that no interference would be caused. Such a system would be 77 overkill where only a few fixed links are licensed”. With proper consideration of protection criteria 78 for the fixed point-to-point links, we believe that AFC Systems already developed for other regions 79 can be readily adapted to provide the frequency coordination and maximum allowable power 80 settings for AFC controlled devices to provide protection for these fixed links. As an example, in 81 the USA, AFC Systems determine frequency and channel availability and maximum permissible 82 power levels for AFC controlled devices considering incumbent Fixed Services (FS) and Radio 83 Astronomy Services as well as neighboring countries incumbent services at the borders. While 84 we understand OfReg’s comment on the number of FS links, an AFC System based mechanism 85 for at SP operation will have the advantage of providing automated maintenance when FS links 86 are changed (e.g., added or removed). An additional advantage is that the AFC system calculations 87 can consider variable maximum allowable transmit power based on the location of access points, 88 improving overall spectrum usage efficiency.

89  
90 Authorizing SP mode at a maximum EIRP of 4W for access points and 1W for client devices for 91 indoor and outdoor operation enables many key applications including metaverse, multigigabit per 92 second outdoor coverage (e.g., parks, stadiums), multi-gigabit point-to-multipoint connectivity, 93 and low-latency applications including industrial IoT and Voice over IP (Wi-Fi calling). SP 94 operation also improves indoor Wi-Fi performance to match coverage performance already 95 available in the 5 GHz band<sup>3</sup>.

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<sup>2</sup> See FCC: 15.407 General technical requirements.

<sup>3</sup> The improvement is based on an assumption on the FCC: 15.407 General technical requirements.

97 The USA and Canada have authorized SP mode and have certified seven AFC systems. The  
98 certification process for AFC systems and devices is based on the industry developed  
99 recommended compliance specifications<sup>4,5</sup>. On 21 August 2023, Innovation, Science and  
100 Economic Development Canada (ISED) approved<sup>6</sup> an AFC System for operation in Canada. On  
101 23 February 2024, FCC announced<sup>7</sup> approval of seven AFC systems for commercial operation in  
102 the USA. A number of AFC devices and Fixed Client devices are already certified. A growing  
103 number of countries, including Japan, Saudi Arabia, South Korea, and Brazil, are also studying  
104 the enablement of SP mode.

105  
106 As AFC devices are being certified and introduced in the market, the Wi-Fi industry expects the  
107 first significant deployments of SP mode to be indoor through upgrading of LPI access points to  
108 indoor SP access points, i.e., SP/LPI converged access points. These converged access points are  
109 targeting simultaneous support of LPI-only clients, SP clients, and dual LPI/SP clients in the same  
110 indoor network to improve overall system efficiency and spectrum utilization while protecting  
111 incumbent services.

112  
113 ***Initiate authorization proceedings for expanding the frequency allocation for short range***  
114 ***licence exempt devices to operate in the 6425 MHz to 7125 MHz band***

115  
116 In considering further allocation in the 6425 MHz to 7125 MHz frequency band, IEEE 802 LMSC  
117 respectfully asks OfReg to consider the following points.

118  
119 As of today, countries in ITU Region 2 that contribute about 90% of the GDP allocated the entire  
120 1200 MHz bandwidth of the 6 GHz band for licence exempt operation<sup>8</sup>.

121  
122 A growing number of countries, including the USA, Canada, Brazil, South Korea, and Saudi Ara-  
123 bia, have already allocated the entire 6 GHz band for licence exempt operation. Availability of  
124 the entire 6 GHz band for licence exempt use will create economies of scale and produce a robust  
125 equipment market in the Cayman Islands.

126 In January 2024, Wi-Fi Alliance introduced<sup>9</sup> Wi-Fi CERTIFIED 7™ based on the IEEE P802.11be  
127 draft standard<sup>10</sup>. IEEE P802.11be introduces advanced features including channel bandwidths of

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<sup>4</sup> 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: 13 June 2024].

<sup>5</sup> See Wireless Innovation Forum: Specifications, <https://6ghz.wirelessinnovation.org/baseline-standards> [accessed: 13 June 2024].

<sup>6</sup> 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: 13 June 2024].

<sup>7</sup> 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: 13 June 2024].

<sup>8</sup> These countries include Argentina, Brazil, Canada, Colombia, Costa Rica, Dominican Republic El Salvador, Guatemala, Honduras, Peru, and the United States of America.

<sup>9</sup> 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: 13 June 2024].

<sup>10</sup> 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.

128 up to 320 MHz, multiple resource units to a single station, multi-link operation that utilizes multi-  
129 ple links across frequency bands, enhanced quality of service (QoS), improved Target Wake Time,  
130 and improved spectrum management using spectrum puncturing to improve coexistence with in-  
131 incumbents effectively and efficiently. With Wi-Fi 7 products already in the market, Wi-Fi deploy-  
132 ments are going through a second-generation upgrade in the entire 6 GHz band globally<sup>11</sup>. Of  
133 particular relevance is the multi-link operation feature which when used in the 6 GHz band,  
134 achieves and exceeds the performance expectations of Wi-Fi 7. IEEE P802.11be's global 6 GHz  
135 channelization is designed to accommodate multiple 160 MHz and 320 MHz channels throughout  
136 the 5925 MHz to 7125 MHz band, where available. OfReg's current designation of 500 MHz of  
137 the 6 GHz band from 5925 MHz to 6425 MHz for licence exempt operation provides for only one  
138 contiguous 320 MHz channel, while the 5925 MHz to 7125 MHz band would allow three such  
139 channels to support Gigabit connectivity in Cayman Islands.

## 140 Conclusion

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142 IEEE 802 LMSC thanks OfReg for the opportunity to provide this submission and respectfully  
143 requests to consider our responses to consider:

- 144 • updating the technical requirements for both the very low power and low power short range  
145 licence exempt devices operating in the 5925 MHz to 6425 MHz band;
- 146 • initiating authorization proceedings for standard power RLAN under supervision of AFC,  
147 and authorize standard power mode at a maximum EIRP of 4W for access points and 1W  
148 for client devices;
- 149 • initiating authorization proceedings to authorize expanded use of short range licence ex-  
150 empt devices operation in the 6425 MHz to 7125 MHz band.

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152 Respectfully submitted,

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154 By: /ss/.

155 James Gilb

156 IEEE 802 LAN/MAN Standards Committee Chairman

157 em: gilb\_ieee@tuta.com

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<sup>11</sup> 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: 13 June 2024].