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VIA ELECTRONIC FILING

The Manager
Spectrum Management Outlook and Strategy Section
Spectrum Allocations Branch
Australian Communications and Media Authority
PO Box Q500
Queen Victoria Building NSW 1230

Re: FIVE YEAR SPECTRUM OUTLOOK 2022-27 AND 2022-23 WORK PROGRAM— DRAFT FOR CONSULTATION

Dear Sir or Madam,

Wi-Fi Alliance commends the Australian Communications and Media Authority (the “ACMA”) on its ongoing work in the area of spectrum management. The Five Year Spectrum Outlook for 2022-2027 and 2022-23 Work Program (“*Spectrum Outlook*”)^{1/} remains a critical tool to inform the public of the areas in which the ACMA expects to focus and to solicit feedback that will provide the ACMA with the information necessary to proceed. Wi-Fi Alliance applauds the ACMA for recognizing essential role Wi-Fi devices play in delivering wireless connectivity to consumers and enterprises in Australia.^{2/} Wi-Fi Alliance urges the ACMA to ensure future Wi-Fi functionality by making much needed spectrum access available for the Low Interference Potential Devices (LIPD) class licence in the 6425–7125 MHz band.

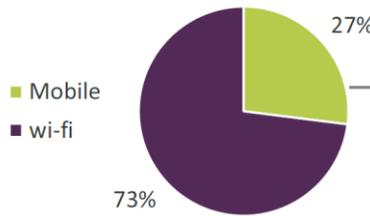
Hundreds of millions of people rely on Wi-Fi to connect billions of devices every day, and studies show this is increasing rapidly. Recent projections indicate that Wi-Fi demand will grow between six and ten times over ten years.³ Wi-Fi has become increasingly important in connecting people and devices everywhere and access to the 6 GHz spectrum is critical for futureproofing of Wi-Fi connectivity. For example, the key findings of UK Ofcom’s [2021 Mobile Matters Report](#) indicate that:

- “Seventy-three per cent of data connections were made over wi-fi rather than a cellular network, with no significant differences by rurality or nation.” and “Nearly three-quarters of data connections were made over wi-fi rather than a mobile network (2G, 3G, 4G or 5G) during the research period.”

^{1/} *Five Year Spectrum Outlook 2022-27 and 2022-23 Work Program, Draft for Consultation*, March 2022 (“*Spectrum Outlook*”).

^{2/} *Spectrum Outlook* at 19.

³ See UK Ofcom [Improving Spectrum Access for Wi-Fi](#), July 2020, at ¶ 3.24, available at https://www.ofcom.org.uk/data/assets/pdf_file/0036/198927/6ghz-statement.pdf



Average network share by technology, Jan – March 2021

(See report Ofcom’s [2021 Mobile Matters Report](#), Fig. 1)

- Over 2/3 of the time, mobile devices were connected to Wi-Fi rather than to a cellular network.” (page 5)
- Wi-Fi Response times were half of 4G connections with no significant difference by rurality (page 16) (lower is better)



Average response time by network technology in milliseconds: Jan – March 2021 (lower is better)

(See report Ofcom’s [2021 Mobile Matters Report](#), Fig. 16)

Wi-Fi devices are now the primary means by which consumers and business connect to the Internet. This central role will only increase in the future since Wi-Fi technology will be an essential complement to Fifth Generation wireless (“5G”) networks. It is also important to recognize that connectivity provided by Wi-Fi through low-cost, LIPDs delivers billions of dollars in value to the Australia’s economy. Indeed, a recent study by Telecom Advisory Services found that class-licensed networks like Wi-Fi generated over 35 billion dollars in value to the Australia’s economy in 2021, a number expected to grow to 42 billion dollars by 2025.^{4/}

Ever increasing data traffic volumes combined with expanding performance requirements and growing number of devices continue to drive Wi-Fi spectrum needs. Wi-Fi Alliance commends the ACMA for the recent decision that partially mitigated Wi-Fi spectrum shortfall by allowing LIPD access to the 5925-6425 MHz band (lower 6 GHz band),⁵ but Wi-Fi also needs access to the

^{4/} *Economic Value of Wi-Fi* available at <http://valueofwifi.com>

⁵ Radiocommunications (Low Interference Potential Devices) Class Licence Variation 2022 (No. 1), available at: <https://www.legislation.gov.au/Details/F2022L00249/Explanatory%20Statement/Text>

remaining portion of the 6 GHz (6425-7125 MHz band (i.e., upper 6 GHz band)) to meet advanced connectivity requirement. The *Spectrum Outlook* comes at a pivotal time in the development Wi-Fi ecosystem. Last year, Wi-Fi Alliance introduced new [Wi-Fi 6E terminology](#) to distinguish the latest generation Wi-Fi 6 devices that are capable of 6 GHz operation. Wi-Fi 6E brings a common industry name for Wi-Fi users to identify devices that offer the features and capabilities of Wi-Fi 6 – including higher performance, lower latency, and faster data rates – extended into the 5925–7125 MHz band. Wi-Fi 6E devices are quickly becoming available, following regulatory approvals in several [countries](#). As the 6 GHz regulatory landscape evolves, Wi-Fi Alliance member companies continue to expand the Wi-Fi 6E ecosystem even further. Initial deployments in the band include Wi-Fi 6E consumer access points and smartphones, followed by enterprise-grade access points. Industrial environments are also expected to see strong adoption of Wi-Fi 6E to deliver applications including machine analytics, remote maintenance, or virtual employee training (see [Wi-Fi Alliance 2022 Wi-Fi trends](#)). Wi-Fi 6E will utilize 6 GHz to deliver much anticipated AR/VR use cases for consumer, enterprise, and industrial environments. The list of [Wi-Fi 6E certified products](#) is already growing. In 2021, over 300 million Wi-Fi 6E devices entered the market and over 350 million devices are expected in 2022. Regulatory harmonization in the 5925–7125 MHz band will create economies of scope and scale and produce a robust equipment market, benefitting Australian businesses, consumers, and the economy. But these benefits cannot be realized in the absence of access to adequate spectrum capacity. Access to less than the entire 5925-7125 MHz band (1200 MHz) for license-exempt use would substantively reduce Wi-Fi 6E performance in terms of latency and data throughput. The 5925-6425 MHz band (i.e., 500 MHz) does not provide sufficient spectrum to support future Wi-Fi connectivity. And there are no alternative frequency bands that may address expanding Wi-Fi spectrum requirements in the future. In fact, the next generation of Wi-Fi ([Wi-Fi 7](#)) will be designed to support VR/AR/XR, Industrial IoT, automotive, telepresence, immersive 3-D and other applications. Wi-Fi Alliance asks the ACMA to note that Wi-Fi 7 is designed to deliver unprecedented quality of service (QoS) benefits at higher data rates and lower latencies. But Wi-Fi 7 optimal performance will depend on access to multiple wider (e.g., 320 MHz) channels – without spectrum access, Australian consumers will not realize full benefits of Wi-Fi 6E, Wi-Fi 7 and future generations of Wi-Fi technologies.

Regarding the “next steps” on the upper-6 GHz band,⁶ Wi-Fi Alliance urges the ACMA to consider that extensive technical studies along with the subsequent ACMA’s decision to allow LIPD operations in the lower-6 GHz band confirmed the regulatory conditions that are necessary for the mobile networks coexistence with the 6 GHz incumbents. These conditions are acceptable for license-exempt networks (e.g., LIPD RLANs) but are not feasible for commercially viable licensed 5G deployments because, to maintain the necessary quality of service, licensed networks require priority access to spectrum. With priority spectrum access, licensed 5G networks cannot avoid interfering with or tolerate interference from the incumbent operations in the 6425-7125 MHz band. Conversely, Wi-Fi, built on IEEE 802.11 standards, has demonstrated ability to coexist with and protect other spectrum users. These protections are inherent to Wi-Fi technology and are critical to its efficient operations on license-exempt basis worldwide. And Wi-Fi industry is committed to implementing technical, operational, and regulatory solutions that ensure coexistence

⁶ *Spectrum Outlook* at 38.

with other operations in the band. Wi-Fi Alliance respectfully asks the ACMA to take into account that even if the next World Radiocommunication Conference (WRC-23) were to designate the 6425-7125 MHz band for IMT in some countries, significant time (i.e., years) and investments (i.e., billions of dollars) will be required to develop, implement, and deploy 5G (IMT) networks in the upper-6 GHz band. Moreover, it is far from certain that such IMT networks can be economically sustainable given limited market scale and harmonization. In the meantime, the latest Wi-Fi technology, operating in the 5925-7125 MHz band, is already on the market, empowering tremendous connectivity benefits. That is why Wi-Fi Alliance calls on the ACMA to recognize that IMT operations in the upper 6 GHz band are not feasible, while delaying sufficient spectrum capacity for Wi-Fi undermines the benefits this technology can deliver to the Australian consumers and businesses. Wi-Fi Alliance respectfully asks the ACMA to revise the *Spectrum Outlook* by advancing consideration of RLAN operations in the 6425-7125 MHz frequency band to the implementation stage.

Respectfully submitted,

/s/ Alex Roytblat

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