



# Hewlett Packard Enterprise

8 May 2023

The Manager  
Spectrum Licensing Policy Section  
Australian Communications and Media Authority  
PO Box 13112  
Law Courts  
Melbourne VIC 8010

Re: Five Year Spectrum Outlook 2023-2028 and 2023-24 work program draft for consultation

Hewlett Packard Enterprise (HPE) appreciates the opportunity to provide comments in response to the Australian Communications and Media Authority (ACMA) consultation on the Five Year Spectrum Outlook 2023-28 and 2023-24 annual work program.

HPE is the global edge-to-cloud company that brings together cellular and Wi-Fi for private networking in enterprise, industrial and public sector use cases. As a global leader in enterprise connectivity, HPE's Aruba business unit ships millions of indoor and outdoor Wi-Fi access points (APs) every year, representing approximately 15% of the global market revenue for such devices. We have been a significant provider of WLAN equipment to Australian enterprises and service providers for nearly two decades.

In addition to being a global leader in the Wi-Fi equipment marketplace, HPE also provides enterprise cellular solutions for the United States' 3.5 GHz CBRS band with plans to expand into international markets as the demand for private and neutral-host cellular systems continues to increase around the globe. We recently acquired private cellular technology provider Athonet to expand our overall private 5G offerings to both enterprises and communication service providers<sup>1</sup>. The combination of portfolios from Aruba and Athonet will provide our customers with the most complete private 5G and Wi-Fi solution in the market.

Please find on the following pages HPE's comments on ACMA's consultation. Should you have any questions, please do not hesitate to contact any of the HPE signatories below.

Sincerely,

Xin Tang  
Manager, APJ Wireless Policy

Carlos Gómez Gallego  
VP, Aruba CTO for APJ

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<sup>1</sup> <https://www.hpe.com/us/en/newsroom/press-release/2023/02/hewlett-packard-enterprise-doubles-down-on-private-5g-extends-leadership-in-wireless-connectivity-with-acquisition-of-athonet.html>



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HPE acknowledges the clear policy objectives set by ACMA in the Five Year Spectrum Outlook and annual work plan. We would like to provide input on the following key points:

## Part 1 Five-year spectrum outlook 2023–28

### Unlicensed 6GHz spectrum will help to improve regional connectivity and digital inclusion.

HPE endorses ACMA's policy objectives of improving regional connectivity and closing the digital gap by allocating mid-band spectrum in the 3.4 – 4.0 GHz for WBB use and implementing policy actions on satellite broadband systems. However, we want to emphasize the importance of Wi-Fi, which uses unlicensed spectrum, in supporting these policy objectives.

Broadband technologies such as FWA, satellite use Wi-Fi to close their last meters connectivity. Almost all tablets, laptops, smart phones, TVs, and streaming devices have Wi-Fi chipsets built in. This ubiquity means Wi-Fi has greater cost advantage in providing internet connections.

Furthermore, Wi-Fi is being used in Australia not only as the last meters connection but also to extend connectivity. The use of higher EIRP Wi-Fi equipment to establish point-to-point and multi-point links is a very affordable solution to extend connectivity from fibre points of presence to remote areas, effectively bridging the connectivity gap and bringing internet access to underserved regions.

Therefore, it is imperative for ACMA to adopt a holistic approach in addressing the challenge of regional connectivity and closing the digital divide. Firstly, it is essential to plan for more unlicensed Wi-Fi spectrum to match the speed of existing broadband technologies such as Fiber, DOCSIS, FWA, and satellite. Secondly, expanding spectrum access and permitting higher EIRP for outdoor Wi-Fi can significantly improve connectivity. These measures would involve policy actions such as opening up the entire 1.2 GHz spectrum for Wi-Fi 6E, allowing Standard Power Wi-Fi usage in the 6 GHz band, and enabling higher EIRP and outdoor use in the 5.15 – 5.25 GHz frequency range.

### Wi-Fi technology will help government to achieve net zero emissions.

HPE enthusiastically supports the ACMA's efforts to leverage spectrum policy towards the goal of achieving net zero carbon emissions. It is important for spectrum policy to take into account the energy consumption associated with the manufacturing of devices, installation of infrastructure, operation of networks, and spectrum efficiency.

Enterprise and modern residential Wi-Fi deployments use Ethernet to provide both data backhaul and power. The deployment requires minimal installation or infrastructure construction, which results in very little carbon footprint from the supply chains.

Efficient use of spectrum can also contribute to emissions reduction in a variety of ways. Low-Power and self-coordinated Wi-Fi networks access spectrum using spectrum sensing, spectrum sharing, and adaptive transmission schemes. These techniques ensure equitable spectrum access by different services and by different network operators. For example, permitting Wi-Fi to operate in the 6 GHz band allows incumbent fixed services to continue their operations, this eliminates efforts of services migration which often requires seeking new spectrum arrangement and installing new equipment.

As evidenced during the pandemic, high performance broadband has facilitated the shift of physical jobs into virtual mode, resulting in reduced carbon emissions in daily social economic activities. The



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multi-gigabit speeds and low latency of Wi-Fi operating in the 6 GHz spectrum can also accelerate digital transformation in various industries across Australia, further supporting the goal of achieving net zero carbon emissions.

## **Private cellular will complement enterprises' connectivity requirement.**

HPE shares the view with ACMA that there will be increasing industry interest in deploying private networks using 5G technology to take advantage of new market opportunities and potential applications.

HPE acknowledges the unique connectivity challenges faced by enterprises, especially those with large and remote sites, and understands the demand for customized network experiences that provide low-latency, segregated resources, extended range, and high security across diverse environments such as campuses and industrial sites. Private 5G networks have the potential to address these requirements by offering high levels of coverage, reliability, mobility, and security, making them suitable for specialized applications such as robotics, industrial IoT, data networks, and security systems.

HPE believes that private 5G, in combination with existing cost-effective, high-capacity Wi-Fi, can be a promising solution for enterprise connectivity in the future. Private 5G networks can provide enterprises with dedicated and seamless connectivity, while Wi-Fi can offer flexibility, cost-effectiveness for various use cases requiring large bandwidth. This hybrid approach can enable enterprises to leverage the advantages of both technologies to meet their unique connectivity requirements.

As private cellular network deployments are still in the early stages, HPE emphasizes the importance of inclusive spectrum policies that incentivize innovation from all interested parties, including vertical industries and telecommunication operators. Policymakers should design a spectrum policy that can lower the financial and technical hurdles for pilot users, making it easier for them to explore and test new ideas. Implementation and technical requirements should be flexible, and license fees should be kept low to encourage industries to adopt private cellular networks and leverage their potential for improved connectivity.

## **Part 2: 2023-24 annual work program**

### **6 GHz (5925–7125 MHz)**

There are currently divided views from industries and ITU member states on the appropriate use of the upper 6 GHz band, primarily the question of unlicensed RLAN or exclusively licensed IMT use of the band. HPE has an interest in both the unlicensed Wi-Fi and the licensed 5G businesses. We believe that to maximize the value of broadband infrastructure investment over the years in Australia, ACMA should take a comprehensive view of the needs for both licensed and unlicensed (i.e. LIPD class licence) spectrum.

As all aspects of society (e.g. work, home, education, entertainment, etc.) become increasingly wireless, it is critical that the policymaking processes keep pace with technological developments and business investments. The ongoing planning activities in the 700/800 MHz, 1800 MHz, 3.4 - 4.2 GHz and 26/28 GHz bands will provide the IMT with enough spectrum to deploy their networks. Focusing specifically on mid-band licensed IMT allocation, Australia has more access to spectrum



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than almost any other comparable countries. In the near term, the challenge is for the mobile operators to deploy services on the recently acquired spectrum such as 3.4GHz, 3.7GHz, and 26/28GHz, as well as use the spectrum more efficiently by densifying their networks.

On the other hand, a primary challenge faced by class licensed RLAN is the limited access to sufficient spectrum for delivering gigabit services and supporting next-generation user experiences, such as augmented reality and virtual reality. While the release of the lower 6 GHz band for Wi-Fi may address certain use scenarios, it falls short in meeting the requirements of advanced use cases or even routine consumer and enterprise network needs in the near future. As customers increasingly plan to migrate to 80 MHz or 160 MHz Wi-Fi channels, they will soon realize that, despite the addition of the lower 6 GHz band, there are still inadequate channels to support dense deployments.

HPE does not think the outcome of WRC-23 is a dependence for ACMA to action on the upper portion of the 6 GHz band as there is only 100MHz spectrum being considered in Region 3, and most Region 3 administrations have already opposed any proposal of IMT identification for 6425 – 7025 MHz. The small incremental benefit from an additional 100 MHz of IMT spectrum in Region 3 is insignificant when compared with the benefits to be derived from using the entire 6 GHz band harmonized globally for license-exempt RLAN devices. By contrast, there is a large and growing ecosystem of Wi-Fi 6E equipment available today that could make good use of the upper 6 GHz band under a LIPD class licence. Australia should promptly follow the other leading economies that have made the full 6 GHz band available for unlicensed RLAN.

### Spectrum-sharing

Recent innovations in dynamic spectrum access (DSA) systems are expected to have a profound impact on spectrum management. These newer DSA systems significantly reduce coordination effort and make more efficient use of spectrum resources. For example, through more intelligent and dynamic spectrum allocation, DSA systems can minimize interference and increase overall spectrum utilization. These advancements in DSA have the potential to transform traditional spectrum management practices, allowing for more effective and dynamic use of available spectrum resources.

The modern DSA systems involve tunable/configurable radio access networks, spectrum sensing systems, and centralized databases that dynamically coordinate the spectrum access request. In the U.S., the DSA approach was successfully utilized by the Federal Communications Commission (FCC) to facilitate 3-tiered sharing in the 3.5 GHz Citizen's Broadband Radio Service (CBRS) and is the foundation for 6 GHz standard power via Automated Frequency Coordination (AFC) systems, which are now approved in several leading administrations.

Since the FCC adopted rules for unlicensed use of the 6 GHz Band in 2020, industry has been hard at work standardizing and developing the AFC systems that will enable Wi-Fi standard power use. In November 2022, FCC has conditionally approved 13 proposed AFC systems to manage spectrum access for unlicensed devices in the 6GHz band<sup>2</sup>. Following FCC's conditional approval, the regulators in Brazil and Canada also published their regulations on AFC.

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<sup>2</sup> <https://www.fcc.gov/document/oet-announces-conditional-approval-6-ghz-band-afc-systems>



## **Hewlett Packard Enterprise**

HPE has played a significant role in the development of AFC technical standards and prototypes, in collaboration with our strategic partner Federated Wireless since our partnership in 2019. In August 2022, together with Federated Wireless, we successfully performed the world's first end-to-end demonstration of 6 GHz Standard Power for Communications and Information Technology Commission (CITC) Saudi Arabia<sup>3</sup>, showcasing our capabilities in Standard Power AP and AFC. We are keen to engage with ACMA on a trial of 6 GHz Standard Power and the AFC system in Australia.

HPE recommends that ACMA adopts a forward-looking approach to spectrum planning, recognizing the needs of all spectrum users and promoting innovative spectrum sharing methods for more efficient and dynamic use of the spectrum.

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<sup>3</sup> <https://www.arubanetworks.com/resource/automated-frequency-coordination-afc-for-wi-fi-6e-in-action/>