Hewlett Packard Enterprise

6 May 2024

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

Re: Five Year Spectrum Outlook 2024-2029 and 2024-25 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 2024-29 and 2024-25 annual work program.

HPE is the global edge-to-cloud company that brings together wired, Wi-Fi and cellular technologies for private networking in enterprise, industrial and public sector. As an industry recognized enterprise and wireless LAN infrastructure Leader, HPE Aruba networking is named a leader in the 2024 Gartner Magic Quadrant for Enterprise wired and wireless LAN Infrastructure for the 18th consecutive time. We have been a significant provider of WLAN equipment to Australian enterprises and service providers for nearly two decades. Our customers include sectors from centre government and local councils to education, energy, and hospitality etc.

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

Sincerely,

[redacted]

Xin Tang
APJ Wireless Policy Lead
[redacted]

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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 2024–29

Unlicensed 6GHz spectrum will help to improve regional connectivity and closing the Gap.

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 Mobile Black Spot Program (MBSP). However, we want to emphasize the importance of Wi-Fi, which uses unlicensed spectrum, in supporting these policy objectives.

Broadband technologies such as FWA and 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 directional antenna and 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 Fibre, DOCSIS, FWA, and satellite. Secondly, expanding spectrum access and permitting higher EIRP for outdoor Wi-Fi can reduce the cost for connectivity in regional and remote areas. Small operators like WISPs, local councils and SME will benefit from cheap equipment, zero cost on spectrum, and low skillset requirement. These measures would involve policy actions such as opening up the entire 1.2 GHz spectrum for Wi-Fi and allowing Standard Power Wi-Fi usage in the 6 GHz band.

Wi-Fi technology will help Australia to achieve net zero emissions target.

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. A recent study by Wi-Fi alliance shows excluding Wi-Fi access to the 6.425 - 7.125 GHz will lead to congestion and degradation in fixed broadband performance, driving a 15% increase in data traffic over mobile networks. This increased reliance on mobile networks will, in turn, result in 16% higher energy consumption[1].

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

[1] Wi-Fi Alliance - Sustainability Benefits of 6 GHz Spectrum Policy

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.

Private cellular will complement enterprises' connectivity.

HPE shares the view with the ACMA that there will be increasing industry interest in deploying private networks using cellular technology to take advantage of new market opportunities and potential applications. We acknowledge 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 cellular 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 cellular, in combination with existing cost-effective, high-capacity Wi-Fi, can be a promising solution for enterprise connectivity in the future. Private cellular 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. A typical example is HPE's private cellular and Wi-Fi deployment for Ryder Cup in 2023[2]. To address the connectivity requirements of the Ryder Cup, HPE designed an integrated Wi-Fi and private cellular network. Wi-Fi primarily offered high-capacity connectivity in densely populated areas where thousands of fans congregated. Private cellular, on the other hand, provided wide-area coverage to remote parts of the golf course. In additional to provide coverage, Private cellular is also used for backhauling remote Wi-Fi APs deployed in the golf course without the need for cabling.

We have seen the device ecosystem grows robustly for private cellular networks. The wide availability of private cellular equipment has made it affordable for enterprise users. On the spectrum policy side, we are pleased to see the ACMA's recent work on 3.4 - 4.0 GHz spectrum allocation for private cellular. We encourage the ACMA to continue using innovative licensing regime for more spectrum bands to lower the financial and technical barriers for pilot users.

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 IMT businesses. We believe that to maximize the value of broadband infrastructure investment over the years in

[2] https://www.hpe.com/us/en/newsroom/press-release/2023/09/hewlett-packard-enterprise-deploys-groundbreaking-integrated-private-5g-and-wi-fi-network-at-the-2023-ryder-cup.html

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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 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 3.4 GHz, 3.7 GHz, and 26/28 GHz, 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.

IMT also faces significant difficulties in working with incumbents. This was evidenced by Office of the Communications Authority Hong Kong SAR (OFCA)'s spectrum auction plan for the 6 GHz band. To make spectrum available in the upper 6 GHz band for IMT services, OFCA has arranged to relocate the concerned users of fixed links and outside broadcasting links to other frequency bands[3]. On the other hand, Wi-Fi can co-exist with incumbents by using technologies like Listen Before Talk and Automated Frequency Coordination. Since the FCC made the 6 GHz band available for Wi-Fi, no single interference was reported by FSS and FS operators. The number of FS links in the 6 GHz even grows by 8%.

[3] https://www.coms-auth.hk/filemanager/statement/en/upload/632/ca_statement_20240301.pdf