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April 29, 2022

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

Re: Five-year spectrum outlook 2022–27 and 2022–23 work program

Dear Manager, Spectrum Licensing Policy –

The Dynamic Spectrum Alliance (DSA)[1] respectfully submits these comments in response to the Australian Communications and Media Authority (ACMA) "Five-year spectrum outlook 2022–27 and 2022–23 work program" (the Draft for Consultation). DSA welcomes ACMA's efforts to explore new spectrum sharing techniques to address increased demand for spectrum and better "manage coordination and spectrum congestion."[2] DSA agrees with ACMA that efficient assignment and use of scarce frequencies will have "a significant impact on the nature of competition in downstream markets that rely on spectrum." [3] DSA believes that providing new spectrum access options through use of new spectrum management tools will benefit competition, create conditions for innovation, and spur more rapid deployments of new wireless broadband networks and services.

DSA appreciates the opportunity to participate in the Draft for Consultation and to present our views and comments. We are available to discuss these comments and provide any additional information.

Respectfully submitted,

/s/ Martha SUAREZ
President
Dynamic Spectrum Alliance

[1] The DSA is a global, cross-industry, not for profit organization advocating for laws, regulations, and economic best practices that will lead to more efficient utilization of spectrum, fostering innovation and affordable connectivity for all. Our membership spans multinationals, small-and medium-sized enterprises, as well as academic, research and other organizations from around the world all working to create innovative solutions that will benefit consumers and businesses alike by making spectrum abundant through dynamic spectrum sharing. A full list of DSA members is available on the DSA's website at www.dynamicspectrumalliance.org/members.

[2] Draft for Consultation at 1.

[3] Id. at 5.

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DSA COMMENTS

A. Introduction

DSA recommends that telecommunications regulators worldwide take a balanced approach between licenced, licence-exempt (class licence), and lightly licenced when allocating spectrum to wireless broadband services. An unbalanced approach may have the unintended consequence of creating an artificial scarcity, which could, in turn, increase the cost of broadband access. Both licenced and class licenced spectrum bands play important and complementary roles in the delivery of advanced wireless broadband services. As part of spectrum planning, DSA supports coordinated shared spectrum approaches that lead to the more efficient utilization while fostering innovation and affordable connectivity. The opportunities made possible by spectrum sharing go beyond the economy, facilitating the evolution of the ecosystem as the potential for new use cases expands and large-scale applications are realized.

In the whitepaper entitled "Automated Frequency Coordination - An established tool for modern spectrum management,"[4] DSA makes the case that the use of automated databases to coordinate spectrum assignments has evolved significantly since its first introduction, but at its heart, it is nothing new. The basic steps are the same as in a manual coordination process or where a regulator assesses the opportunities for local licensing on a case-by-case basis. However, what is new includes:

(1) Surging consumer demand for wireless connectivity and hence the need to intensively share underutilized frequency bands;

(2) Significant improvements in the computation power to efficiently and rapidly run advanced propagation analysis and coordinate devices and users in near real-time; and

[4] http://dynamicspectrumalliance.org/wp-content/uploads/2019/03/DSA_DB-Report_Final_03122019.pdf

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(3) More agile wireless equipment that can interact directly with dynamic frequency coordination databases.

There is no question that today we have the technical ability to automate frequency coordination and thereby lower transaction costs, use spectrum more efficiently, speed time-to-market for new services, protect incumbents from interference with greater certainty, and generally expand the supply of wireless connectivity that is fast becoming, like electricity, a critical input for most other industries and economic activity. Increasing spectrum access by a wide range of new users, including vertical sectors, will result in increased and more rapid deployment of new networks and services. The introduction of new licensing options supported by automated dynamic spectrum sharing technology is the best path to support such deployments.

B. Update on Spectrum Sharing in the 3.55-3.70 GHz Band in the United States

DSA would like to provide an update on spectrum sharing in the 3.5 GHz Citizens Broadband Radio Service (CBRS) in the United States. CRBS utilizes a three-tiered framework to enable efficient sharing of the 3550-3700 MHz band (the 3.5 GHz band) among federal and non-federal incumbents, holders of priority access licences (PALs), and general authorized access (GAA) broadband licencees. The three-tiered framework promotes broadband innovation and investment by facilitating spectrum availability on a very localized basis and reducing barriers to entry, particularly for applications in the GAA, while ensuring predictable access to spectrum for service providers holding PALs and protecting incumbents in the band. The lynchpin for the entire CBRS regime is the dynamic Spectrum Access System (SAS), which allows all three tiers of users and their diverse technologies to coexist in the band.

Through the automation of shared spectrum access, a whole host of private wireless network opportunities, from smart energy to smart city, have emerged since CBRS commercial services launched in early 2020. From business to leisure, hundreds of smart office, airport and stadium private networks have been deployed using CBRS as the result of having access to spectrum without the need for an individual licence. To date, over 228,000 CBRS cell sites have been

deployed across the United States with the vast majority of them using the GAA tier. Examples of such deployments include:

1) Retail

The American Dream Entertainment and Retail Complex in New Jersey has implemented CBRS to cover the entire 3 million square foot venue, servicing over 40 million annual visitors and more than 450 stores. Beyond the mall itself, CBRS has also been used for traffic and parking management, assessing approximately 33,000 parking spaces. Equipping security cameras, digital signage and other systems for both internal and external mall operations, CBRS has proved essential for supporting and enabling interesting such new use cases. This type of infrastructure deployment has proven to be faster and more economic than traditional fixed infrastructure, offering reliable and simple, yet effective means of connectivity.

2) Airports

In Dallas, CBRS has transformed airport communication systems, bringing airport staff and management connections onto the CBRS spectrum. Such deterministic spectrum access is critical in emergency scenarios to cater to higher power requirements and improve coverage. This network supports critical airport communications and coexists with a robust Wi-Fi network.

3) Sport stadiums

Angel Stadium in Anaheim, California has adopted CBRS capabilities to support its internal communications, lightening the load on the Wi-Fi system, similar to what Dallas airport has achieved. Since the full commercial deployment of CBRS, they have also been working as a neutral host provider, offering Mobile Network Operators (MNOs) support in managing signal traffic for customers attending events. By not only supporting internal connectivity for both staff and customers but extending this service for the reinforcement of existing MNOs, CBRS has presented the opportunity to eliminate barriers and limitations, providing full, flexible coverage whenever it is needed – even when roaming.

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4) Rural connectivity

Fixed Wireless Access providers, also known as Wireless Internet Service Providers (WISPs), are able to harness the newly available CBRS spectrum, tripling the amount of spectrum previously available to them. WISPs, which typically operate in rural areas and have been using this part of the CBRS band for the past 12-15 years, have transitioned older WiMAX and proprietary systems to the new CBRS rules and LTE equipment to expand their reach and improve their service offerings.

5) Smart agriculture

In the state of Missouri, Hurst Greenery is using real-time IoT services over a private LTE network on CBRS spectrum to increase profits by 10% through increased yields and cost savings. Hurst is working with Trilogy Networks to implement next-generation agriculture technology in 18 greenhouses that are part of a 600-acre farm. Automation is improving monitoring of temperature and soil moisture. Sensors and drones are able to move between the private CBRS network and the public wide-area network at the edges of the farm.

6) Smart mining

In Salt Lake City, Utah, Redline Communications Group Inc is using CBRS spectrum for a private LTE at a leading salt and minerals mine. The private network at the mine connects a wide variety of Programmable Logic Controller (PLC) devices, pumps, and laptops to support operations, and is expected to connect mining trucks in 2022.

As we reflect on the use cases developing across the United States, it is clear that CBRS has revolutionized the ways in which spectrum is utilized to improve connectivity across a diverse number of vertical sectors. [5] DSA recognizes that ACMA is seeking to support these use-cases

[5] Other examples of CBRS deployments can be found here: >https://www.lightreading.com/5g/charter-to-start-first-cbrs-market-buildout-in-2021/d/d-id/769456?itc=lrnewsletter_cabledaily<; >https://www.telecompetitor.com/wisps-get-cbrs-range-as-great-as-six-miles-at-100-mbps-speeds/<; >https://ongoalliance.org/news/watch-communications-and-bec-technologies-partner-to-expand-rural-internet-access/<; >https://www.fiercewireless.com/wireless/wispa-cbrs-a-good-guide-for-3-45-3-55-ghz<; https://enterpriseiotinsights.com/20210714/channels/news/las-vegas-deploys-largest-private-municipal-lte-network-in-45-

through licensing arrangements for local area networks. However, DSA believes that adopting an automated shared spectrum sharing model will enable even more users, including verticals, to access scarce and valuable spectrum resources, while providing greater operational flexibility to broadband network operators – whether they operate on a public or private basis. This will in turn lead to more efficient spectrum usage, lower-costs, lower barriers to entry, and most effective allocation for innovative businesses.

In the Draft for Consultation, ACMA identifies several bands, including 1.5 GHz, 1.9 GHz, 3.7-4.2 GHz, and 4.9 GHz, where the implementation of automated sharing and licensing approaches could assist in meeting the Australian government's objectives of "grow(ing) the digital economy, build capability in emerging technologies and support the growth of modern and globally competitive industry sectors in areas like manufacturing, agriculture, mining and construction."[6] DSA looks forward to working with ACMA on planning for these bands and exploring how commercially available automated sharing technology can be leveraged to maximize opportunities for additional spectrum access.

C. Next steps on sharing in the 6 GHz band

DSA would also like to comment on another band where innovative spectrum sharing is enabling more efficient use and facilitating access by next generation broadband technologies, including those based on the Wi-Fi family of standards. DSA applauds ACMA's decision to make the lower 500 MHz of this band available for RLAN operations on a shared basis. We further encourage ACMA to make the full 6 GHz band (5925-7125 MHz) available under the same framework and to review how power levels and other operating conditions can be amended.

DSA is of the opinion that licence-exempt access to the upper 6 GHz (6425-7125 MHz) is imperative. The entire 1200 MHz of spectrum in the 6 GHz band is required to meet the projected

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[6] Draft for Consultation at 8.

demand for mid-band WAS/RLANs and other uses. It would also support future Wi-Fi 7 devices that will feature 320 MHz wide channels. If only the lower 500 MHz is made available, only one 320 MHz channel is possible. On the other hand, three non-overlapping 320 MHz channels will be supported if the entire 1200 MHz of the 6 GHz Band is made available for WAS/RLAN.

DSA also recommends that ACMA permit Standard Power operations operating under an automated frequency coordination ('AFC') system. There are unique high power indoor and outdoor RLAN operations that can benefit from this category of device. DSA believes that Standard Power access points (and client devices) could operate throughout the band under AFC control while fully protecting incumbent services.

DSA and its members look forward to working with ACMA to make the full 6 GHz band (5925-7125 MHz) available under the same framework as the lower half of the band, and to review how power levels and other operating conditions can be amended as soon as possible.

D. Conclusion

DSA appreciates the opportunity to provide input on the Draft for Consultation. We believe that the use of spectrum sharing and automated sharing technology can help the Australian Government to reach its policy goals of facilitating spectrum access by a variety of entities and use cases, fostering investment, and encouraging innovation, while also reducing administrative burdens on both government and industry players.