



Input Contribution to ASMG Meeting of ASMG Emerging Technology (WG6)

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Dynamic Spectrum Alliance

The DSA believes that providing additional spectrum access options through use of new spectrum management tools, such as dynamic shared access systems, will benefit competition, create conditions for innovation, and spur more rapid deployments of wireless networks and services. We recommend that telecommunications regulators worldwide include licenced, licence-exempt, and lightly licenced options when allocating spectrum to wireless broadband services to avoid artificial scarcity, which could, in turn, increase the cost of broadband access. Both licenced and licence-exempt spectrum bands will play important and complementary roles in the delivery of advanced wireless services.

1. Topic/Issue: Use of Frequency band 3800-4200 MHz

Regarding the use of the frequency band 3800-4200 MHz, DSA recommends licensing approaches that will accommodate smaller service providers and industrial users in addition to traditional national mobile network operators. For example, the DSA supports tiered licensing approaches that offer multiple access options, such as the CBRS licensing framework, where incumbent users are given protection from two lower tier categories of new users that include nationwide mobile network operators, FWA providers, and a wide range of private wireless users:

Tier 1 – **Incumbent users** operating in the band have the highest priority in accessing spectrum, with their access always guaranteed during their operations so that their radio equipment need not be aware of other operations sharing the band.

Tier 2 – **Licensed new users** require a degree of certainty in accessing spectrum. To ensure sharing of the band with this tier of users, it is fundamental that the operation of incumbent services is well understood (e.g., operate only in certain areas) and is predictable (e.g., operate at certain times or otherwise offer information about when spectrum needs to be vacated). If such information is not accurate enough or unavailable, then access to the band for Tier 2 users might be greatly reduced or impossible. A use-or-share requirement for licensed spectrum is also important to ensure that spectrum use is maximized.

Tier 3 – **Opportunistic users** can access spectrum on a license-exempt or licensed-by-rule basis. These users may not need access to spectrum over a larger geographic area, may be operating indoors or on a campus, or may be operating in more remote areas where spectrum usage will not be as competitive. In many cases, such networks are deployed in very remote areas where spectrum is largely unused and the risk of interference to

higher-tier users is negligible. There might be other cases where there is sufficient spectrum available and the envisioned applications allow QoS flexibility, for example because the band is used to provide additional capacity to networks using other anchor frequencies. In such cases, it is conceivable to have a third tier of users with minimal regulatory barriers and no need for interference protection from other Tier 3 users.

We call to ASMG's attention the recent report issued by the U.S. Institute for Telecommunication Science (ITS), entitled "An Analysis of Aggregate CBRS SAS Data from April 2021 to January 2023." This report shows that growth of access to the 3.5 GHz Citizens Broadband Radio Service (CBRS) has been strong, with a "mean quarterly increase of 12.0% and a total increase of 121% over the 21-month analysis period." ITS notes that the majority of these deployments use spectrum in the CBRS licensed-by-rule General Authorized Access (GAA) tier, which does not require a user to apply for a license, but only to use certified equipment and to receive a spectrum assignment by one of the Spectrum Access System (SAS) administrators.

The SAS administrators use DSMS technology to manage spectrum assignments for over 370,000 CBSDs deployed for 4G and 5G base stations, deployed by both 228 Priority Access License (PAL) holders and more than 1200 GAA operators, while protecting incumbent operations from interference. Currently there are more than 250 certified CBSD models, 700 end user devices and 1,000 operators. Much of this deployment has been driven by enterprises for private wireless use cases, including utilities, retail, smart agriculture, smart warehousing, smart manufacturing, schools, healthcare institutions, etc.

As Mobile World Live wrote, the private 5G networks will be "one of the primary growth areas for CBRS deployment in the U.S."¹, expecting that the most important use cases to be in the energy, mining, and manufacturing sectors. Besides, the same article mentions that it "allows enterprises to deploy services in remote locations without needing public networks from operators, which reduces the cost of connectivity"; like that "private 5G is enabling enterprises to transition to network slicing".

Examples of such private wireless network deployments using the CBRS GAA tier include:

- Energy management:
<https://www.fiercewireless.com/private-wireless/schneider-electric-adds-private-wireless-smart-factories>
- Retail:
<https://www.druidsoftware.com/2019/11/15/cbrs-ongo-at-american-dream-entertainment-retail-complex-nj-usa/>
- Military logistics:
<https://www.fiercewireless.com/private-wireless/federated-demo-dod-highlights-benefits-shared-spectrum>
- Municipal government:

¹ <https://www.mobileworldlive.com/network-tech/juniper-research-tips-private-5g-to-drive-us-cbrs-boom/>

<https://www.fiercewireless.com/private-wireless/motorola-and-harris-county-build-private-lte-network>

<https://www.fiercewireless.com/private-wireless/cox-launches-cbrs-pilot-city-las-vegas>

- Transportation:

<https://www.fiercewireless.com/wireless/boingo-deploys-trial-cbrs-network-at-dallas-love-field-airport>

- Education:

https://www.csrwire.com/press_releases/747561-private-wireless-helps-schools-close-digital-divide

<https://www.fiercewireless.com/private-wireless/fort-worth-isd-builds-sustainable-cbrs-network>

<https://www.fiercewireless.com/private-wireless/samsung-amdocs-deploy-private-cbrs-network-howard-university>

- Entertainment:

<https://inbuildingtech.com/venues/connectivity-wireless-jma-stadium-cbrs/>

- Hospitality:

<https://www.thefastmode.com/technology-solutions/24585-airspan-networks-deploys-5g-cbrs-private-network-for-hospitality-industry>

- Manufacturing warehouse/supply chain:

<https://www.fiercewireless.com/private-wireless/calchip-connect-emerges-key-player-private-wireless>

<https://www.fiercewireless.com/private-wireless/mxd-adds-second-private-wireless-network>

- Agriculture:

<https://www.fiercewireless.com/private-wireless/three-day-deployment-makes-tractors-autonomous>

<https://enterpriseiotinsights.com/20220607/smart-farm/how-robot-tractors-and-a-private-network-came-together-at-a-smart-vineyard>

2. Topic/Issue: Standards and parameters associated with the 6 GHz band for Wi-Fi 6 and 6e systems

DSA continues to advocate for opening up the entire 5.925-7.125 GHz frequency range for three categories of free use devices – Standard Power (SP), Low Power Indoor (LPI), and Very Lower Power (VLP) devices. There have been some recent developments that DSA believe that ASMG Administrations should be aware of. First, in February, the United States regulator approved seven entities to operate Automated Frequency Coordination (AFC) systems, which is now enabling unlicensed SP device operations across the country in the 5.925-6.425 GHz and 6.525-6.875 GHz frequency ranges. Different stakeholders can now access this spectrum to provide broadband access.

AFC systems maximize spectrum availability for unlicensed technologies such as Wi-Fi. By determining channel and transmit power availability at specific locations, AFC systems allow Wi-Fi 7 and Wi-Fi 6E devices to transmit at up to 63 times higher power than those limited to low-power indoor operation, while ensuring protection of incumbent user operation in the 6 GHz band. The FCC's decision to leverage dynamic spectrum sharing technology and capabilities to manage access to the 6 GHz band by standard power devices ensures increased range, faster speeds and improved capacity of unlicensed operations. As a result, digital transformation across a range of enterprise and consumer use cases will be achieved.

The other recent development is that the U.S. rules for VLP devices operating in the 5.925-6.425 GHz and 6.525-6.875 GHz frequency bands went into effect earlier this month. There is an ongoing consultation at the United States regulator, that among other things, is considering extending these rules to the 6.425-6.525 GHz and 6.875-7.125 GHz segments for unlicensed access.

Respectfully submitted,

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