Dynamic Spectrum Alliance Limited
3855 SW 153rd Drive
Beaverton, OR 97003
United States
http://www.dynamicspectrumalliance.org

June 15, 2021

Swedish Post and Telecom Agency (PTS)
Box 5398, 102 49 Stockholm
pts@pts.se

Re: DSA Comments on Proposed Conditions for Local Permits in the 3.5 GHz and 26 GHz Bands

Dear Sir/Madam,

The Dynamic Spectrum Alliance (DSA[1]) respectfully submits comments in response to the PTS consultation on "Proposed Conditions for Local Permits in the 3.5 GHz and 26 GHz Bands." DSA welcomes PTS's interest in making more efficient use of the spectrum and maximizing the benefits to society over time by increasing spectrum access for a variety of new, local use cases and applications. We agree that providing new spectrum access options will benefit competition and create conditions for innovation.

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

Respectfully submitted,

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

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DSA COMMENTS

DSA recommends that telecommunications regulators worldwide take a balanced approach between licensed, unlicensed, and lightly licensed, when dedicating 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. DSA believes that licensed and unlicensed spectrum bands will both play important and complementary roles in the delivery of advanced 5G services and that coordinated shared spectrum should be considered in spectrum planning. As part of spectrum planning, DSA also supports spectrum sharing that will lead to the more efficient utilization of spectrum and foster innovation and affordable connectivity for all. 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,"[2] the DSA makes the case that the use of 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

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

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

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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.

The DSA would like to highlight some real applications that have been developed in the United States as a result of the commercial deployment of the 3.5 GHz Citizens Broadband Radio Service (CBRS) authorized by the Federal Communications Commission (FCC) in January 2020 – a major milestone for automated spectrum sharing in the United States of America.

Under the CBRS regulatory framework, the spectrum access system (SAS) coordinates CBRS frequency use and manages coexistence among the three tiers of access: 1) incumbent (e.g., navy radar and commercial fixed satellite), 2) priority access licensed (PAL), and 3) general authorized access (GAA). The environmental sensing capability (ESC) network detects incumbent naval radar use of the band and alerts the SAS to move new terrestrial commercial operations to non-interfering channels. New commercial users in the CBRS band have multiple options for accessing this 150 MHz of spectrum:

a) Acquisition of a PAL in the FCC's 2020 CBRS auction where use-or-share rights for county-based licenses were offered;

b) Use of the GAA tier, which does not require an individual license to operate, but only connectivity to a SAS to receive a spectrum grant for operations with a particular transmit power and antenna orientation at a specific location and height; or

c) Leased rights from a PAL license holder.

Based on the type of device (fixed or personal/ portable) and its coordinates, information about the transmitter's location and operating parameters, and the technical rules the regulator puts in place to protect incumbents and/or adjacent users from harmful interference, the SAS calculation engine determines the list of available channels at the PAL's and/or GAA's device location and its maximum

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permissible radiated power. The SAS not only coordinates protection of incumbent users from new commercial operations, but also manages the assignment of frequencies to PAL and GAA users, protection of PAL operations, and co-existence among GAA users to maximize spectrum efficiency and provide deterministic access for all users. The automated SAS process provides near real-time management of the CBRS band, speeding time-to-market while minimizing uncertainty and administrative burdens.

Through this automation of shared spectrum, a whole host of private network opportunities, from smart energy to smart city, have emerged. 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 license. In fact, only sixteen months after receiving authorization for commercial operations, over 150,000 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:

A. 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.

B. Airport

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.

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C. Sport stadium

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.

D. 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, are transitioning older WiMAX and proprietary systems to the new CBRS rules and LTE equipment to expand their reach and improve their service offerings.

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 sectors. DSA believes that adopting a similar spectrum sharing model in Europe will enable more users to access scarce and valuable spectrum resources, leading to lower-costs, lower barriers to entry, and most effective allocation for innovative businesses. This, in turn, enables and encourages competition and innovation by existing service providers as well as new entrants.

DSA supports PTS's efforts to implement a new licensing approach, such as the proposed local permits for the 3.5 and 26 GHz bands. As part of that effort, we encourage PTS to leverage commercially available automated sharing technology to effectuate its policy goals. Such technology can facilitate spectrum access by a variety of entities and use cases, foster investment, and encourage innovation, while also reducing administrative burdens on both PTS and industry players by eliminating the need for each

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individual user to apply for permission to access shared spectrum. Allowing an automated spectrum sharing system to manage access to these frequencies will encourage more users to leverage shared spectrum and maximize spectrum efficiency where it may be possible to authorize multiple users to operate on an overlapping and shared basis. Furthermore, DSA encourages PTS to consider implementing a use-or-share it requirement on adjacent 3 GHz band licenses so that any unused spectrum can be put to use by other users. An automated shared access system, such as the SAS, can readily protect licensee operations while authorizing opportunistic access by other users, which should make even more efficient use of these bands.

Furthermore, DSA recommends that PTS consider implementing a tiered shared spectrum licensing framework for the 3.8-4.2 GHz band. Automated database shared access systems are able to manage access to this band by new commercial users while simultaneously protecting incumbents. The CBRS experience in the United States may again be instructive given the successful sharing that has taken place between commercial FSS and CBRS terrestrial use.