

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of)
)
Wireless Telecommunications Bureau Seeks) RM-11798
to Refresh the Record on Unmanned Aircraft)
Systems Use of the 5 GHz Band)

COMMENTS OF THE DYNAMIC SPECTRUM ALLIANCE

The Dynamic Spectrum Alliance (“DSA”)¹ hereby submits these comments in response to the Federal Communications Commission’s (“FCC” or “the Commission”) Public Notice (“Public Notice”) seeking to update the record on unmanned aircraft systems (“UAS”) use of the 5030-5091 MHz band for control and non-payload communications (“CNPC”), as described in the above-captioned proceeding² that began in 2018 with a petition filed by the Aerospace Industries Association (“AIA”) requesting for access for the UAS industry to licensed spectrum

¹ The Dynamic Spectrum Alliance is a global, cross-industry alliance focused on increasing dynamic access to unused radio frequencies. The membership spans multinational companies, small- and medium-sized enterprises, academic, research, and other organizations from around the world, all working to create innovative solutions that will increase the utilization of available spectrum to the benefit of consumers and businesses alike. A full list of the DSA members is available on the DSA’s website at www.dynamicspectrumalliance.org/members/.

² *Wireless Telecommunications Bureau Seeks to Refresh the Record on Unmanned Aircraft Systems Use of the 5 GHz Band*, RM-11798, Public Notice, DA 21-1025 (rel. Aug. 20, 2021) (“Public Notice”).

and service rules.³ DSA welcomes the opportunity to discuss recent developments in the use of automated shared spectrum technology to enable more efficient use of radio frequencies for a variety of innovative use cases. We believe this same technology, and the lessons learned through its implementation in commercial settings, could be leveraged to make the 5030-5091 MHz band available in a timely and efficient manner for UAS operations.

I. USE OF AN AUTOMATED DYNAMIC SPECTRUM SHARING SYSTEM

In its Petition, AIA proposed that individual UAS operators (or organizations that employ such operators) be able to obtain a non-exclusive, nationwide spectrum license, authorizing operators to use the band subject to a dynamic frequency assignment process.⁴ Under this proposed process, licensees could, upon request to a frequency coordinator, obtain operational access to a subset of frequencies in the band for a limited geographic area and duration tailored to a specific flight. In the Public Notice, the Commission asks whether there are any spectrum management technologies or systems that could meet the requirements identified by AIA and “could perform the necessary functions and are scalable to meet the real-time coordination needs of a large and growing number of operations...”⁵ It then asks whether the Spectrum Access System (“SAS”) that was developed to manage sharing in the 3.5 GHz Citizens Broadband

³ See Petition of AIA for Rulemaking to Adopt Service Rules for Unmanned Aircraft Systems Command and Control in the 5030-5091 MHz Band, RM-11798 (filed Feb. 8, 2018) (“Petition”).

⁴ Id.

⁵ Public Notice at 3.

Radio Service (“CBRS”) might be leveraged for this purpose.⁶ DSA’s members have extensive experience in the development and implementation of automated dynamic spectrum sharing technology and believe the CBRS SAS can be adapted to the 5030-5091 MHz band and UAS frequency assignment and coordination requirements.

At its core, an automated dynamic spectrum sharing system, such as the SAS, is a software-based embodiment of the Commission’s rules for managing access to a frequency band. Such systems are able to provide authoritative and virtually real-time decisions on requests to transmit or assign usage rights, enforce the use of authorized devices, and monitor spectrum assignments and, in some cases, actual usage.⁷ Automated dynamic spectrum sharing systems have numerous benefits that are especially relevant to UAS use of the 5030-5091 MHz band for CNPC, namely:

- Speeding access to spectrum;
- Facilitating more intensive use of the resource;
- Lowering access costs for operators and regulatory costs for regulatory authorities;
- Accounting quickly for changes in use of the band or even changes in the rules.⁸

⁶ Id.

⁷ See “Automated Frequency Coordination: An Established Tool for Modern Spectrum Management,” Dynamic Spectrum Alliance, at 3, available at http://dynamicspectrumalliance.org/wp-content/uploads/2019/03/DSA_DB-Report_Final_03122019.pdf

⁸ Id.

The SAS is both a calculation engine that applies the “rule-derived algorithms in response to requests for a spectrum grant” and “a communications interface that allows shared-access users to directly and regularly renew grants, share information, and receive any subsequent changes to their authorization.”⁹ These are the very requirements identified by AIA in its Petition for UAS CNPC frequency management and coordination in the 5030-5091 MHz band. While additional challenges, such as accounting for mobile, airborne transmitters, will need to be addressed for UAS operations, the underlying capabilities of the SAS can be leveraged, and commercial solutions can be adapted.

II. SELECTION OF A FREQUENCY MANAGER

In the Public Notice, the Commission asks for comment on the process for selecting one or more frequency managers and on the need for standardization of a spectrum management system.¹⁰ Recent experience with the development, standardization, and certification of the CBRS SAS may be instructive. After an extensive, five-year, multi-government agency process that included the development, review, and certification of initial proposed SAS administrators and their systems, in January of 2020 the Commission approved five initial SASs for commercial operation. This process included testing in both a controlled lab environment and real-world settings. Much of the work necessary for SAS certification was conducted within the multi-

⁹ Id. at 12.

¹⁰ See Public Notice at 3.

stakeholder group, the Wireless Innovation Forum (WInnForum), which developed the underlying standards for the SAS. Given the time and resources it would take to develop and adopt a new coordination process, DSA recommends leveraging the SAS experience and industry-led technology development that are the underpinning of the highly successful CBRS sharing framework for UAS CNPC.

While the SAS itself was built for sharing of the 3.5 GHz Band among the U.S. Department of Defense, other commercial incumbent users and existing and new commercial terrestrial broadband services, much of the underlying capabilities are appropriate for UAS CNPC coordination and spectrum management. With information about UAS planned operations and flight paths, together with a closed loop architecture that ensures new instructions can be sent and received in a timely manner, the cloud-based SAS can readily scale to meet demand as UAS usage grows. The experience gained from commercializing SAS technology can be adapted and applied to new challenges, such as UAS CNPC.

Furthermore, DSA recommends that, as it considers how best to implement spectrum management solutions for UAS operations in the 5030-5091 MHz band, the Commission continue its policy of authorizing multiple commercial dynamic spectrum management system administrators, in keeping with the frameworks for CBRS and the 6 GHz bands. Competition amongst service providers will spur greater innovation and reduce costs.

DSA members are also aware of the safety-of-flight considerations and welcome the opportunity to collaborate with stakeholders in the aviation and UAS communities.

III. CONCLUSION

DSA appreciates the opportunity to comment on the Commission's Public Notice on the prospect of using an automated dynamic spectrum sharing system, like the SAS, to manage access to the 5030-5091 MHz band for UAS CNPC. DSA and its members have extensive experience in developing sharing frameworks, such as the SAS, that can be adapted to this band and unique UAS requirements. We look forward to working with industry and the Commission to ensure that the 5030-5091 MHz band frequencies can be maximized for UAS operations in the near future.

Respectfully submitted,



Martha SUAREZ
President
Dynamic Spectrum Alliance

October 12, 2021