



**Comments of the Wireless Innovation Forum
in the Matter of Spectrum Rules and Policies
for Operation of Unmanned Aircraft Systems
Petition of AIA for Rulemaking to Adopt**

Document WINNF-RC-1018

Version V1.0.0

March 7, 2023



TERMS, CONDITIONS & NOTICES

This document has been prepared by the Wireless Innovation Committee Steering Group to assist The Software Defined Radio Forum Inc. (or its successors or assigns, hereafter “the Forum”). It may be amended or withdrawn at a later time and it is not binding on any member of the Forum or of the Wireless Innovation Committee Steering Group.

Contributors to this document that have submitted copyrighted materials (the Submission) to the Forum for use in this document retain copyright ownership of their original work, while at the same time granting the Forum a non-exclusive, irrevocable, worldwide, perpetual, royalty-free license under the Submitter’s copyrights in the Submission to reproduce, distribute, publish, display, perform, and create derivative works of the Submission based on that original work for the purpose of developing this document under the Forum's own copyright.

Permission is granted to the Forum’s participants to copy any portion of this document for legitimate purposes of the Forum. Copying for monetary gain or for other non-Forum related purposes is prohibited.

THIS DOCUMENT IS BEING OFFERED WITHOUT ANY WARRANTY WHATSOEVER, AND IN PARTICULAR, ANY WARRANTY OF NON-INFRINGEMENT IS EXPRESSLY DISCLAIMED. ANY USE OF THIS SPECIFICATION SHALL BE MADE ENTIRELY AT THE IMPLEMENTER'S OWN RISK, AND NEITHER THE FORUM, NOR ANY OF ITS MEMBERS OR SUBMITTERS, SHALL HAVE ANY LIABILITY WHATSOEVER TO ANY IMPLEMENTER OR THIRD PARTY FOR ANY DAMAGES OF ANY NATURE WHATSOEVER, DIRECTLY OR INDIRECTLY, ARISING FROM THE USE OF THIS DOCUMENT.

Recipients of this document are requested to submit, with their comments, notification of any relevant patent claims or other intellectual property rights of which they may be aware that might be infringed by any implementation of the specification set forth in this document, and to provide supporting documentation.

This document was developed following the Forum's policy on restricted or controlled information (Policy 009) to ensure that that the document can be shared openly with other member organizations around the world. Additional Information on this policy can be found here: http://www.wirelessinnovation.org/page/Policies_and_Procedures

Although this document contains no restricted or controlled information, the specific implementation of concepts contain herein may be controlled under the laws of the country of origin for that implementation. Readers are encouraged, therefore, to consult with a cognizant authority prior to any further development.

Wireless Innovation Forum TM and SDR Forum TM are trademarks of the Software Defined Radio Forum Inc.

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)
)
)
Spectrum Rules and Policies for the Operation) WT Docket No. 22-323
of Unmanned Aircraft Systems)
Petition of AIA for Rulemaking to Adopt)
)
)
)

To: Marlene H. Dortch
Office of the Secretary, Federal Communications Commission

COMMENTS OF THE WIRELESS INNOVATION FORUM

In response to the above-mentioned *Notice of Proposed Rulemaking (NPRM)*¹, The Wireless Innovation Forum hereby submits the following comments.

I. INTRODUCTION

The Wireless Innovation Forum (WinnForum) is a U.S. based international non-profit organization driving technology innovation in commercial, civil, and defense communications around the world. Forum members bring a broad base of experience in Software Defined Radio (SDR), Cognitive Radio (CR) and Dynamic Spectrum Access (DSA) technologies in diverse markets and at all levels of the wireless value chain to address emerging wireless

¹ *Spectrum Rules and Policies for the Operation of Unmanned Aircraft Systems*, Notice of Proposed Rulemaking, WT Docket No. 22-323, December 23, 2022, (NPRM)

communications requirements through enhanced value, reduced total life cost of ownership, and accelerated deployment of standardized families of products, technologies, and services.

The WinnForum advocates for technology and service neutrality across the band to enable innovative and efficient use of spectrum. The WinnForum believes that increased neutrality with respect to the specific uses of licensed spectrum results in increased innovation in wireless applications.

In addition, the WinnForum advocates allocating spectrum with licenses adapted towards a spectrum usage rights method that has the minimum necessary technical restrictions to provide adequate protection against harmful interference. Optimal use of radio spectrum is more likely to be secured if the market, and not the regulator, decides what technology or service should be provided in a particular frequency band. The increase in users' flexibility and ability to respond faster to changing market and deployment conditions will enhance the ability to increase spectrum usage efficiency. Licenses should not necessarily restrict the technology or application.

The WinnForum is pleased to submit these comments in this proceeding and looks forward to working with all stakeholders to develop technical standards that support spectrum rules and policies for the operation of Unmanned Aircraft Systems in the 5030-5051 MHz band. However, the WinnForum finds it difficult to respond to many of the questions raised by the Commission since they refer to documents that are accessible only behind a paywall that limits access by our collective membership.² For the questions that we can respond to, we offer the following comments.

² For example, see NPRM at ¶18: "An analysis by RTCA based in part on the use of an "online filter-design tool" finds that filters that sufficiently protect services in the adjacent bands "would necessitate guardbands unusable by terrestrial CNPC at both ends of the 5030-5091 MHz bands, reducing the 61 MHz of usable passband width to 42-52 MHz depending on the case." [RTCA DO-362A, Appx. T at T.5, T.6.] It further states, however, that "[c]ustom filter designs could probably provide larger usable passbands than those obtained using the online tool, possibly at

II. DYNAMIC FREQUENCY MANAGEMENT SYSTEM

The Commission has undertaken at least three similar efforts in the past including TV White Space,³ CBRS Spectrum Access System (SAS)⁴ and the 6 GHz Automated Frequency Coordination (AFC) system.⁵ The WinnForum has also been at the forefront of standards development for these efforts.

The WinnForum advocates the unified active management of spectrum to maximize spectrum utilization. The use of spectrum access databases is one important tool to enable increased sharing and thereby increase the dynamic nature of spectrum management. Accordingly, we support the use of a Dynamic Frequency Management System (DFMS) to manage spectrum UAS control and non-payload communications in the 5030-5091 MHz band.

We suggest that for the development of the DFMS, the Commission should look to the experience and lessons learned from previous efforts as mentioned above. The Commission should review requirements for the DFMS and provide regulatory guidance to multi-stakeholder groups working on associated standards and specifications. The Commission should establish minimum high-level requirements and rely on stakeholder involvement to develop standards and specifications for operation of DFMS. The Commission should rely more on industry and ultimate users of the systems to develop approaches to using the spectrum that provide reliable and interference-protected assignments. This is exactly how the Commission approached

the cost of increased size and weight.” We seek comment on this analysis...” We note that RTCA DO-362A appears to be only available for purchase from RTCA.

³ See, *Office of Engineering and Technology Invites Proposals from Entities Seeking to be Designated Tv Band Device Database Managers*, ET Docket 04-186, DA-09-2479, 24 FCC Rcd 14136 (17), November 25, 2009

⁴ See, *Wireless Telecommunications Bureau and Office of Engineering and Technology Establish Procedure and Deadline for Filing Spectrum Access System (SAS) Administrator(s) and Environmental Sensing Capability (ESC) Operator(s) Applications*, GN Docket 15-319, DA-15-1426, 30 FCC Rcd 14170 (18), December 16, 2015

⁵ Sees, *FCC Requests 6 GHz Automated Frequency Coordination Proposals*, ET Docket 21-352, FCC 21-100, 86 FR 58267 (10/21/2021), September 28, 2021

development and application of the regulatory framework for TV White Space, CBRS/SAS and the AFC.

WinnForum suggests the DFMS selection process should be consistent with the steps outlined in the PN for SAS approval (these same steps are being used to select AFCs for the 6 GHz band):⁶

- (1) the Bureaus would issue a Public Notice requesting proposals from entities desiring to administer a DFMS;
- (2) applicants would be required, at a minimum, to demonstrate how they plan to meet the Commission's rules governing DFMS operations, demonstrate their technical qualifications to operate a DFMS, and provide any additional information requested by WTB and OET;
- (3) based on these applications, WTB and OET would determine whether to conditionally approve any of the applicants; and
- (4) any applicants that received conditional approval would be required to demonstrate that their DFMS s meet all the requirements in the rules and any other conditions the Bureaus deemed necessary, and at a minimum, to allow their systems to be tested and analyzed by Commission staff.

This selection process has become the de facto means for selecting and certifying dynamic spectrum management systems and we suggest the FCC could consider applying it to DFMS selection as well.

However, we note that the four steps outlined above for SAS selection took over four years to complete and involved three federal agencies (i.e., FCC, NTIA and DoD). For DFMS certification, we assume three federal agencies would also be involved including FCC, NTIA and FAA. In addition, there will be multi-stakeholder groups and a wide array of other participants across several commercial sectors including telecommunications and aviation. The FCC might

⁶ *Supra* at 4

consider establishing a collaboration framework as soon as possible with this large and diverse community.

III. MULTI-STAKEHOLDER GROUPS

As noted several times above, WINNForum strongly supports the use of multi-stakeholder groups to develop and promulgate the necessary standards, recommendations and guidelines that will help ensure that the DFMS is developed and managed quickly and efficiently.

In 2015, the WINNForum created the Spectrum Sharing Committee (SSC) focused on implementing the Commission's regulations for three-tiered spectrum sharing in the CBRS band.⁷ The SSC presently has broad participation from organizational stakeholders in the CBRS band, including wireless operators, SAS and ESC administrators, equipment manufacturers, satellite operators, Wireless Internet Service Providers (WISPs), utilities, Communications Research Centre Canada (CRC), MITRE, and others. The WINNForum collaborated through the SSC with federal agency stakeholders from the Institute for Telecommunication Sciences, the National Institute of Standards and Technology, the Defense Information Systems Agency, the DoD CIO, the Navy and other government agencies. All federal agency stakeholders had a strong role and participated heavily in the development of the SSC baseline standards that are all publicly available and can be found here:

<https://cbrs.wirelessinnovation.org/winnforum-cbrs-knowledge-base>.

Ultimately, the Commission relied heavily on the WINNForum standards and recommendations for development and operation of the SAS.

⁷ See: https://www.wirelessinnovation.org/assets/Press_Room/ssc%20announcement%20final.pdf

In 2019, The WinnForum created the 6 GHz Committee focused on the study of sharing arrangements in spectrum designated for unlicensed operation within the 6 GHz band (5925-7125 MHz).⁸ The committee provides technical input to inform the FCC's 6 GHz rulemaking and facilitates the interpretation and implementation of the rulemaking that allows industry and regulators to collaborate on implementation of a common, efficient and well-functioning 6 GHz ecosystem. The Committee has created five baseline standards for the AFC and numerous recommendations and reports. The full set of the Committee's work can be found at the following link:

<https://6ghz.wirelessinnovation.org/work-group-products>

Because the 6 GHz band is of great importance to the Wi-Fi community, the Wi-Fi Alliance also has a critical role in developing specifications for Wi-Fi devices and the interfaces to the AFC system. The WinnForum and Wi-Fi Alliance have collaborated closely on the respective development of specifications and have shared numerous documents through liaison statements. We have also held several joint meetings with the FCC.

We suggest there is an important role for multi-stakeholder groups to help develop the requirements and processes applicable to the DFMSs, as well as to study standards and interference issues associated with UAS operations in the band. The Commission should work with interested multi-stakeholders as soon as possible to establish a collaboration framework.

⁸ See: <https://www.businesswire.com/news/home/20190821005549/en/Wireless-Innovation-Forum-Announces-Approval-of-New-6-GHz-Multi-stakeholder-Committee>

IV. CONCLUSIONS

The WinnForum welcomes the opportunity to comment in this proceeding. We are ready to work with the Commission to develop the necessary requirements that will help realize Dynamic Frequency Coordination Systems in the 5030-5091 MHz band.

Respectfully Submitted,

/s/ H. Mark Gibson
President and Chair

The Wireless Innovation Forum
11130 Sunrise Valley Drive., Suite 350
Reston, VA 20191

Date: March 9, 2023