



FEDERAL COMMUNICATIONS COMMISSION

[RM-11798; DA 21-1025; FRS 46463]

Wireless Telecommunications Bureau Seeks to Refresh the Record on Unmanned Aircraft Systems Use of the 5 GHz Band

AGENCY: Federal Communications Commission.

ACTION: Notice.

SUMMARY: In this document, the Wireless Telecommunications Bureau seeks to refresh and update the record in this proceeding, which was commenced to consider a petition for rulemaking filed by the Aerospace Industries Association (AIA) that asked the Commission to adopt licensing and service rules for Control and Non-Payload Communications (CNPC) links in the 5030-5091 MHz band to support Unmanned Aircraft Systems (UAS) operations in the United States.

DATES: Comments are due [INSERT 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER] and reply comments are due [INSERT 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may submit comments, identified by RM-11798, by any of the following methods:

- Federal Communications Commission's Web Site: <http://apps.fcc.gov/ecfs/>. Follow the instructions for submitting comments.
- People with Disabilities: Contact the FCC to request reasonable accommodations (accessible format documents, sign language interpreters, CART, etc.) by e-mail: FCC504@fcc.gov or phone: 202-418-0530 or TTY: 202-418-0432.

For detailed instructions for submitting comments and additional information on the rulemaking process, see the SUPPLEMENTARY INFORMATION section of this document.

FOR FURTHER INFORMATION CONTACT: Peter Trachtenberg of the Wireless Telecommunications Bureau, Mobility Division, at (202) 418-7369 or Peter.Trachtenberg@fcc.gov.

SUPPLEMENTARY INFORMATION: This is a summary of the Commission's document (Public Notice), RM-11798, DA 21-1025, released on August 20, 2021. The complete text of this document is available on the Commission's website at <https://www.fcc.gov/document/wtb-seeks-refresh-record-uas-use-5-ghz-band> or by using the search function for RM-11798 on the Commission's ECFS web page at www.fcc.gov/ecfs.

Synopsis

With this Public Notice, the Wireless Telecommunications Bureau seeks to refresh the record on a petition for rulemaking filed by the AIA on February 8, 2018 to address the growing need of the UAS industry for access to licensed spectrum for CNPC links. We issue this Public Notice to update the record to reflect operational, technical, and regulatory developments that have occurred over the last three years in the rapidly growing and evolving area of UAS operations and that are relevant to this proceeding. We also seek to explore certain aspects of the AIA proposal in greater detail than is reflected in the current record. Finally, because the focus of the AIA proposal and the resulting comment record appears to be in support of direct radio-line-of-sight (LOS) communications links between controller and unmanned aircraft, we seek comment on whether the Commission should consider licensing alternatives in this band to support the growing interest in beyond-radio-line-of-sight (BLOS) UAS operations. We anticipate that the resulting record could help the Commission to proceed with a more informed and specific Notice of Proposed Rulemaking to make the 5030-5091 MHz band available as a suitable spectrum resource for UAS operations.

AIA Proposal

We first seek updated and additional comment on all aspects of the AIA proposal as a licensing approach for UAS operations in the 5030-5091 MHz band, and in particular, the aspects discussed below.

License eligibility. We seek comment on whether, as proposed by AIA, the Commission should require that parties seeking a 5030-5091 MHz band spectrum license must certify they have the requisite FAA remote pilot certification, or, in the case of organizations, to certify that they will utilize only individuals with such qualifications for their UAS operations in the band. Given that UAS operators would in any case be subject to applicable FAA regulations, including regulations requiring the relevant FAA pilot certification, we seek comment on the benefits of conditioning license eligibility on compliance with such requirements.

Dynamic frequency assignment. As mentioned earlier, a central element of AIA's proposal is a dynamic frequency assignment management system, which would automatically process requests from licensees for temporary assignment of bandwidth in the 5030-5091 MHz band in a specified geographic area or path covering the anticipated flight path, for a specified duration covering the anticipated flight duration. Under the AIA proposal, requests would need to be made a short time before the expected flight (AIA suggests no more than 20 minutes), and at the end of the estimated flight duration, or some "reasonable" period after, the assigned frequencies would automatically become available for reassignment. We seek comment on this proposal, including the feasibility and practicality of implementing and operating a dynamic frequency assignment management system for this purpose, any current or planned technologies or systems that could perform the necessary functions and are scalable to meet the real-time coordination needs of a large and growing number of operations, and what new or modified technologies, devices, connections, or standards would be needed to implement this approach. For example, Spectrum Access Systems are automated frequency coordinators that the Commission established in the 3550-3700 MHz band to coordinate and implement spectrum access and prioritization among users of three different tiers of services in that band with

ascending priority rights. Would this technology be appropriate here? We seek comment on the status of pending standards work relevant to implementing a dynamic frequency assignment approach for UAS access to the 5030-5091 MHz band, and to the extent additional standards work would be required. We seek comment on the process for authorizing the frequency assignment manager, on minimum eligibility requirements or restrictions for applicants, and on whether we should permit more than one manager. We further seek comment on any requirements or standards governing requests for assignment of frequencies and the processing of these requests, and whether the standards and processing procedures for requests should be left to the discretion of the manager.

AIA proposes that the Commission require licensees to “release” assignments at the end of the flight, and that assignments be automatically “revoked” some period after the estimated duration of the flight if not otherwise released. We seek comment on these aspects of AIA’s proposal. We seek comment on what, if any, enforcement mechanism to impose on the requirement that assignments be released at the end of the flight. We also seek comment on what connections or communications between the frequency assignment management system and UAS stations will be needed to implement these processes. Would revocation create potential safety concerns if revocation occurred while a flight was ongoing? If so, how should such concerns be addressed? We seek comment on any requirements needed to ensure that these processes, as well as the initial processing of requests, occur in a manner that is secure, reliable, and timely.

Technical requirements. We seek comment on the appropriate technical requirements and parameters. In its petition, AIA states that the technical rules for CNPC links in the 5030-5091 MHz band should be flexible to support ongoing UAS development, but also proposes certain technical parameters based on the technical standard RTCA DO-362. Specifically, AIA proposes that:

- Transmitter power and emissions in the 5030-5091 MHz band should conform to the requirements in RTCA DO-362 § 2.2.1.6.
- The frequency accuracy of a 5030-5091 MHz CNPC transmitter, or of the local oscillator of a 5030-5091 MHz CNPC receiver, should not vary more than 0.2 parts per million (ppm) from the intended value, as stipulated in RTCA DO-362 § 2.2.1.4.
- Emission limits for Aeronautical Stations and Aircraft Stations indicated in Section 87.139(c) of the Commission's rules be applicable to such stations that are capable of operating in the 5030-5091 MHz band to support UAS CNPC links, in addition to the emission limits imposed by RTCA DO-362 § 2.2.1.6.32.

We request comment on these parameters and any other parameters that must be considered, including whether an altitude limit on UAS use of the 5030-5091 MHz band should be established to maximize the spectral efficiency of the band. We also request comment on the emission limitations of section 87.139, and whether any changes are necessary to accommodate UAS operations, especially those considered in RTCA DO-362. We also request comment on any additional technical limitations necessary to protect the AeroMACS bands, 5000-5030 MHz and 5091-5150 MHz.

Scope of permitted services. We seek further comment on the scope of services to be permitted in the band. The relevant allocation of the band to aeronautical mobile (route) service (AM(R)S) may be used only for communications “relating to the safety and regularity of flight.” We seek comment on what types of UAS communications fall within the scope of this allocation, and on whether all UAS communications that are within the scope of AM(R)S should be permitted. We further seek comment on whether CNPC generally are consistent with the allocation and its purpose, whether we should permit all UAS CNPC communications in the band while prohibiting UAS payload or non-UAS communications, and if so, how CNPC communications and payload communications should be defined for the purpose of these rules. We also seek comment on whether to adopt an approach that combines a broad scope of

permitted communications with a prioritization mechanism. For example, should we permit UAS payload communications in the band or non-UAS general purpose communications subject to the prioritization of UAS CNPC? We seek comment on whether permitting such services would require the Commission to modify the current allocation of the band, and if so, whether the band allocation should be modified as necessary to permit payload and/or non-UAS general purpose mobile communications on a secondary basis and subject to some scheme of CNPC priority.

Alternative Approaches Supporting BLOS Use

As mentioned, the focus of the AIA proposal appears to be in support of direct LOS communications links between controller and unmanned aircraft. The proposal would provide operators with highly transitory spectrum assignments tailored in both geography and time to specific flights. We seek comment on whether the spectrum assignment model proposed by AIA would provide sufficient scope and certainty to incentivize the deployment of network infrastructure that can support both LOS and BLOS flights. We seek comment on the extent to which additional or alternative approaches to licensing the 5030-5091 MHz band might better support such deployment, or otherwise be more effective in supporting BLOS flights in particular, or UAS flights overall. To the extent that commenters advocate for alternatives, we ask them to submit specific, detailed, and comprehensive proposals for licensing the 5030-5091 MHz band to support UAS communications.

We seek comment on whether alternatives to the AIA proposal might provide better support for BLOS communications. We note that while UAS operations have in the past been predominantly LOS, there is growing interest in and exploration of BLOS operations, such as for package delivery, mapping, search-and-rescue, long-range infrastructure inspections, and surveillance flights. We seek comment on the anticipated uses of the 5030-5091 MHz band, the extent to which there is interest in use of the 5030-5091 MHz band for BLOS operations in

particular, and the type of infrastructure necessary to support such use. We anticipate that BLOS communications will require the deployment of network infrastructure, and seek comment on this assessment, and on whether licensing the band with exclusive geographic area-based licenses would more effectively promote such deployment, and on the costs and benefits generally of such an approach. We further seek comment on what specific license terms would be appropriate for a geographic area-based license approach to the band, including the appropriate geographic area, spectrum block size, license duration, performance requirements, permissible service scope, and technical requirements. We seek comment on whether adopting relatively larger geographic areas, such as Regional Economic Area Groupings, is justified to better support long-range, BLOS UAS operations. We seek comment on a spectrum block size that will maximize the utility and benefit of the band, considering factors such as the benefits of competition from multiple providers, the expected spectrum needs and demand level of UAS operations, and the interest in accommodating, as much as is practical, a range of UAS operations that may have significantly varying bandwidth requirements. Regarding license duration and performance requirements, we seek comment on a ten-year renewable license and establishing population-based buildout requirements, similar to what the Commission has established in many other mobile network bands.

We further seek comment on other alternatives that do not require an operator license. As discussed above, AIA proposes that we require operators or organizations that employ them to hold a nationwide, non-exclusive license before they can receive spectrum assignments. We seek comment on whether this aspect of the proposal is necessary for this type of service, or whether an approach could be implemented that does not require any operator license but relies instead on some form of station license, with station equipment held to technical requirements (such as RTCA DO-362 requirements) in the Commission's equipment authorization process. For example, we seek comment on whether to adopt licensed-by-rule station licensing for the band, analogous to aircraft station licensing under Part 87. Under this approach, operators would

not need a separate spectrum license from the Commission, and equipment that met Commission equipment authorization requirements would be licensed automatically, although potentially still subject to an automatic frequency assignment or reservation process such as the dynamic assignment process proposed by AIA. We seek comment on whether, under this approach, ground stations should be separately licensed, whether we should provide site-based licenses to cover such stations, and the costs and benefits of this approach. Is site-based licensing practical to implement very temporary assignments (e.g. assignments for uses lasting only a few hours or days)? How would site-based licensing address operations that involve hand-held or portable controllers rather than fixed stations? If we were to adopt such an approach, what rules should we adopt to foster efficient use of spectrum and to avoid interference? How should we define the permissible scope of a site and the duration of the license? What coordination requirements and mechanisms should we adopt?

We also invite comment on hybrid approaches to licensing the band. For example, we seek comment on whether to partition the band into two segments, one in which we adopt an approach like the AIA proposal, the other in which we issue exclusive geographic area licenses for network-based services. If so, should we split the band equally between the two segments, or assign more spectrum to one of them? We further seek comment on options that might support both approaches in the same segment of the band. For example, should the frequencies subject to geographic area licensing nevertheless be assignable for temporary direct links in a particular geographic area through an approach such as the AIA proposal until the relevant geographic area licenses in that area are actually assigned to a licensee? Or should we allow such access unless the spectrum is actually “in use,” e.g., providing licensees in the direct link segment of the band with access to the spectrum in the segment subject to geographic area licensing except in those license areas with at least some actual deployment, or except within the signal coverage of deployed base stations?

Comment Filing Procedures

Pursuant to sections 1.415 and 1.419 of the Commission's rules, 47 CFR §§ 1.415, 1.419, interested parties may file comments and reply comments on or before the dates indicated on the first page of this document. Comments may be filed using the Commission's Electronic Comment Filing System (ECFS). *See Electronic Filing of Documents in Rulemaking Proceedings*, 63 FR 24121 (1998).

- **Electronic Filers:** Comments may be filed electronically using the Internet by accessing the ECFS: <http://apps.fcc.gov/ecfs/>.
- **Paper Filers:** Parties who choose to file by paper must file an original and one copy of each filing.
- Filings can be sent by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail. All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.
- Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9050 Junction Drive, Annapolis Junction, MD 20701. U.S. Postal Service first-class, Express, and Priority mail must be addressed to 45 L Street NE Washington, DC 20554.
- Effective March 19, 2020, and until further notice, the Commission no longer accepts any hand or messenger delivered filings. This is a temporary measure taken to help protect the health and safety of individuals, and to mitigate the transmission of COVID-19. See *FCC Announces Closure of FCC Headquarters Open Window and Change in Hand-Delivery Policy*, Public Notice, 35 FCC Rcd 2788 (2020), <https://www.fcc.gov/document/fcc-closes-headquarters-open-window-and-changes-hand-delivery-policy>.

People with Disabilities: To request materials in accessible formats for people with disabilities (braille, large print, electronic files, audio format), send an e-mail to fcc504@fcc.gov or call the Consumer & Governmental Affairs Bureau at 202-418-0530 (voice), 202-418-0432 (TTY).

Ex Parte Rules

This proceeding shall be treated as a “permit-but-disclose” proceeding in accordance with the Commission’s *ex parte* rules.¹ Persons making *ex parte* presentations must file a copy of any written presentation or a memorandum summarizing any oral presentation within two business days after the presentation (unless a different deadline applicable to the Sunshine period applies). Persons making oral *ex parte* presentations are reminded that memoranda summarizing the presentation must (1) list all persons attending or otherwise participating in the meeting at which the *ex parte* presentation was made, and (2) summarize all data presented and arguments made during the presentation. If the presentation consisted in whole or in part of the presentation of data or arguments already reflected in the presenter’s written comments, memoranda or other filings in the proceeding, the presenter may provide citations to such data or arguments in his or her prior comments, memoranda, or other filings (specifying the relevant page and/or paragraph numbers where such data or arguments can be found) in lieu of summarizing them in the memorandum. Documents shown or given to Commission staff during *ex parte* meetings are deemed to be written *ex parte* presentations and must be filed consistent with rule 1.1206(b). In proceedings governed by rule 1.49(f) or for which the Commission has made available a method of electronic filing, written *ex parte* presentations and memoranda summarizing oral *ex parte* presentations, and all attachments thereto, must be filed through the electronic comment filing system available for that proceeding, and must be filed in their native format (*e.g.*, .doc, .xml,

¹ 47 C.F.R. §§ 1.1200 *et seq.* Although the Rules do not generally require *ex parte* presentations to be treated as “permit but disclose” in Petition for Rulemaking proceedings, *see* 47 CFR 1.1204(b)(2), we exercise our discretion in this instance, and find that the public interest is served by making *ex parte* presentations available to the public, in order to encourage a robust record. *See id.* § 1.1200(a).

.ppt, searchable .pdf). Participants in this proceeding should familiarize themselves with the Commission's *ex parte* rules.

FEDERAL COMMUNICATIONS COMMISSION

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