

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

In the Matter of)	
)	
Spectrum Rules and Policies for the Operation of Unmanned Aircraft Systems)	WT Docket No. 22-323
)	
Petition of AIA for Rulemaking to Adopt Service Rules for Unmanned Aircraft Systems Command and Control in the 5030-5091 MHz Band)	RM-11798 (terminated)
)	

**Comments of the
Alliance for Telecommunications Industry Solutions**

The Alliance for Telecommunications Industry Solutions (ATIS), on behalf of its Uncrewed Aerial Vehicles (UAV) Initiative, hereby submits these comments in response to the *Notice of Proposed Rulemaking (NPRM)*, released January 4, 2023, in the above-referenced dockets. In the *NPRM*, the Federal Communications Commission (Commission) proposes to promote access by unmanned aircraft (UA) operators to licensed spectrum. In these comments, the ATIS UAV Initiative recommends that the Commission: (1) adopt the specification under development in 3GPP Release 18 for non-network access (NNA) equipment and operations; (2) allocate the 5030-5091 MHz band in three blocks – one 20 MHz of contiguous spectrum for UA-to-UA communications to be managed on a license-by-rule basis and two 20.5 MHz blocks (total 41 MHz) to support network-based Unmanned Aircraft Systems (UAS) communications; and (3) not extend the restrictions on aeronautical communications to mobile carriers’ existing licenses in other bands.

I. Background

ATIS is a global standards development and technical planning organization that develops and promotes worldwide technical and operations standards for the information and communications technologies (ICT) industry. ATIS' diverse membership includes key ICT stakeholders, including wireless, wireline, and VoIP service providers, equipment manufacturers, broadband providers, software developers, consumer electronics companies, public safety agencies, and internet service providers. ATIS is also a founding partner and the North American Organizational Partner of the Third Generation Partnership Project (3GPP), the global collaborative effort that has developed the 4G Long-Term Evolution (LTE) and 5G New Radio (NR) wireless specifications.

Launched in 2017, ATIS' UAV Initiative considers applications of UAVs in telecommunication-related applications and the use of mobile cellular networks to provide communications and other services for UAVs. The group is considering how the existing specifications for UAV communications can be enriched to leverage network identification and geolocation network capabilities to improve the safety and operations of UAVs. The UAV Initiative has published a number of white papers discussing the importance of UAVs for the mobile cellular industry, and the UAV-related capabilities incorporated into the 3GPP specifications. These include the *Use of UAVs for Restoring Communications in Emergency Situations*, *Use of Cellular Communications to Support Unmanned Aerial Vehicles (UAV) Flight Operations*, *Unmanned Aerial Vehicle Utilization of Cellular Services: Enabling Scalable and Safe Operation*, and *3GPP Release 17 – Building Blocks for UAV Applications*.¹

¹ These publications are available from the ATIS website at: <https://www.atis.org/whitepapers/>.

II. Comments

A. Appropriate Technical Standard for NNA

In the *NPRM*, the Commission seeks to establish rules and polices to authorize UAS operations in the 5030-5091 MHz band. The Commission identifies two primary UAS use cases for the purposes of determine the appropriate band plan and service rules: (1) NNA operations, which generally occur within the radio-line-of-sight of the UAS operator; and (2) network supported service (NSS) operations, which rely on network infrastructure to support flights beyond radio-line-of-sight of the operator.² The Commission further proposes to adopt the RTCA DO-362A³ standard for NNA equipment and operations and seeks comment on the adequacy of the RTCA DO-362A specified equipment and operational performance requirements.⁴ The ATIS UAV Initiative does not believe that RTCA DO-362A is the appropriate technical standard for NNA equipment and operations. The RTCA DO-362A standard's focus on high-altitude, large drones is inappropriate for the NNA band, which the ATIS UAV Initiative anticipates will predominately be used to operate small drones.

As an alternative to the RTCA DO-362A standard, the ATIS UAV Initiative recommends use of the specification under development by 3GPP for NNA operations. 3GPP is defining in Release 18⁵ a specification that enhances the UAS features found in 3GPP Release 17.⁶ The

² *NPRM* at ¶13.

³ RCTA DO-362, Command and Control (C2) Data Link Minimum Operational Performance Standards (MOPS) (Terrestrial) (Revision A, December 17, 2020).

⁴ *NPRM* at ¶61.

⁵ 3GPP standards are structured as Releases. Each release incorporates hundreds of individual Technical Specification and Technical Report documents, each of which may have been through many revisions. 3GPP Release 17 was released in June 2022.

⁶ This work is occurring in 3GPP SA2 (SP-221323), with the results incorporated in 3GPP TR 23.700-58 and 3GPP TS 23.256 and in 3GPP RAN2 ([RP-223545](#)).

ongoing 3GPP work specifies application-independent architectural and radio aspects for the support of a Detect-and-Avoid (DAA) solution defined by the aviation industry. The new specification is based on the cellular PC5 interface (also called sidelink) and uses either Long Term Evolution (LTE) or 5G New Radio (NR) technology for direct communications between devices. The PC5 interface is also the basis of Cellular Vehicle to Everything (C-V2X), a successful solution for vehicle-to-vehicle communications, which was adopted in 3GPP Release 14. C-V2X was adopted for 5.9 GHz band operations to ensure that devices made by multiple manufacturers could directly communicate independently of the various spectrum bands used by different mobile operators.⁷ C-V2X addresses scenarios very similar to UAS DAA communications, and has been adopted in many countries, including the U.S., Europe, Canada, Brazil, and China.⁸

3GPP Release 18 is scheduled to be completed in June 2024.

B. UAS Band Plan

The Commission seeks comment in the *NPRM* on the appropriate band plan for communications to support the growth and safety of UAS operations.⁹ To enable safe and

⁷ C-V2X operates in spectrum licensed to mobile operators (for network mode) and in the 5.9 GHz band (for direct mode). European administrations have designated the 5.9 GHz band for use by road Intelligent Transport Systems (ITS) as specified in ECC Recommendation (08)01 and ECC Decision (08)01, respectively, both of which were approved by the ECC (CEPT) in March 2020. These are complemented by Decision 2020/1426 of the European Commission as adopted in October 2020. In China, in 2018 the MIIT decided to make 5905-5925 MHz available for use by LTE-V2X (PC5). In the United States, in November 2020 the Commission concluded that the United States should move forward with C-V2X in the 5895-5925 MHz portion of the band.

⁸ The possibility of using PC5/sidelink (C-V2X) for NNA has been investigated and documented by MITRE-Engenuity Open Generation 5G Consortium (Open Generation). In its deliverable entitled *Making Detect and Avoid a Reality For UAS: Investigating Leveraging 3gpp C-V2x Technology for Aerial Applications* (Document No. OG0074), Open Generation explains that an experiment was conducted to determine if PC5/sidelink functionality could provide a framework for UA-to-UA and UA-to-ground broadcast communications. The results of this experiment confirmed that PC5/sidelink could support such communications.

⁹ *NPRM* at ¶13.

efficient UA communications, ATIS' UAV Initiative recommends the Commission allocate the 61 MHz of spectrum in the 5030-5091 MHz band in three blocks: one 20 MHz block of contiguous spectrum for UA-to-UA communications to be managed on a license-by-rule basis; and two 20.5 MHz blocks (total 41 MHz) to support network-based UAS communications involving safety-critical Control and Non-Payload Communications (CNPC).

20 MHz for UA DAA. The ATIS UAV Initiative strongly believes that a dedicated band should be allocated for UA-to-UA communications to support DAA and other direct communications. There are many advantages to this proposal. By providing a contiguous 20 MHz for NNA operations for DAA and other NNA communications, the Commission would facilitate scalability and innovation in the band. Based on the anticipated use of the band, ATIS' UAV Initiative believes that a minimum of 20 MHz of spectrum is necessary. An allocation of 20 MHz of spectrum will permit longer range UA-to-UA communications. Based on simulations, it is estimated 20 MHz would allow direct communications over 2.5 km in a density of 5 UAV/km². This extended range will be helpful in rural and remote contexts to facilitate inspection of infrastructure and utilities, and to aid in public safety operations and agriculture monitoring. The ATIS UAV Initiative also notes that the proposed 20 MHz block is commensurate with the spectrum allocated for use for C-V2X basic communications, which addresses similar use cases. The ATIS UAV Initiative believes that an allocation of less than 20 MHz would be insufficient to support these use cases or to address the expected growth of UAS, especially in urban areas.

Consolidating the NNA-designated spectrum into one 20 MHz block would be easy to implement from a spectrum management perspective. It would lower equipment costs by: not requiring complex frequency band management for transmission and reception. It would also

reduce the need for a guard band to protect adjacent band operations because NNA operations tend to operate at lower power than NSS/terrestrial operations.

41 MHz for Network-based UAS Communications. The ATIS UAV Initiative also recommends that the remaining 41 MHz of the 5030-5091 MHz band should be allocated in two 20.5 MHz blocks to support network-based UA communications involving safety-critical CNPC and enable UA payload communications and terrestrial mobile uses. Such an allocation would allow service providers to use the blocks to support safety-critical CNPC traffic when demand requires it, while offering providers the flexibility to use the spectrum for other purposes when CNPC traffic permits.

C. Restrictions on CMRS Aeronautical Communications

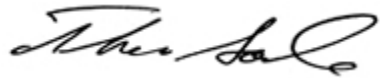
In the *NPRM*, the Commission asks if it should extend restrictions on aeronautical communications to mobile carriers' existing mobiles licenses in all other bands where the associated service rules do not explicitly prohibit such communications.¹⁰ The ATIS UAV Initiative believes that there is no technical justification for this action. Absent a demonstrated risk of harmful interference, the ATIS UAV Initiative recommends the Commission not impose new restrictions on carriers' existing licenses to address aeronautical communications.

¹⁰ *NPRM* at ¶94.

III. Conclusion

ATIS appreciates the opportunity to provide its input to the *NPRM* and urges the Commission to consider the recommendations above.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Thomas Goode". The signature is fluid and cursive, with a large initial "T" and a long, sweeping underline.

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