In the Matter of )
Allocation of Spectrum for Non-Federal Space ) ET Docket No. 13-115
Launch Operations )
) Amendment of Part 2 of the Commission’s Rules ) RM-11341
for Federal Earth Stations Communicating with Non-Federal Fixed Satellite Service Space Stations; )
and )
) Federal Space Station Use of the 399.9-400.05 MHz Band )

COMMENTS OF
AEROSPACE AND FLIGHT TEST RADIO COORDINATING COUNCIL, INC.

Aerospace and Flight Test Radio Coordinating Council, Inc. (“AFTRCC”), by its counsel, hereby submits its comments on the Further Notice of Proposed Rulemaking (“FNPRM”) in the above-captioned proceeding.1 AFTRCC’s comments are limited to those portions of the FNPRM that address frequency coordination for the space operations frequencies. AFTRCC submits that: (1) if the Commission determines that it is in the public interest to require pre-application frequency coordination for non-Federal space operations in the 2200-2290 MHz band similar to that specified in § 87.305 of the Commission’s rules, AFTRCC is well qualified

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to serve as coordinator; and (2) AFTRCC is willing to serve as the frequency coordinator subject to further clarification of the coordinator’s role and responsibilities, including coordination of non-Federal launch operations with the Government Area Frequency Coordinators (“AFCs”).

I. Introduction

AFTRCC is an association of the nation’s principal aerospace manufacturers. AFTRCC was founded in 1954 to serve as an advocate for the aerospace industry on matters affecting spectrum policy. AFTRCC is also the recognized non-Federal Government coordinator for the shared government/non-government spectrum allocated for flight testing—the Aeronautical Mobile Telemetry (“AMT”) frequencies. AFTRCC works closely with AFCs, who are responsible for Federal Government (i.e., the Department of Defense, or “DoD”) use of the spectrum, in an effort to ensure that interference-free flight test operations are protected and flight safety is maximized.2

The Commission “seek[s] comment regarding which [licensing and technical] rules under Part 87 would be the most appropriate model for non-Federal [space] operations in the 2200-2290 MHz, 420-430 MHz, and 2025-2110 MHz bands ….”3 The FCC notes that “applicants for flight test station licenses under Part 87, Subpart J are required to meet all applicable frequency coordination requirements,”4 and asks whether it “should require applicants for a license in space launch frequencies to undergo a pre-application coordination requirement similar to that specified in section 87.305.”5 The Commission notes that this “pre-application coordination

2 For more information regarding AFTRCC, its mission, and its membership, see https://aftrcc.org/.
3 FNPRM, ¶ 61.
4 FNPRM, ¶ 102.
5 FNPRM, ¶ 103.
requirement historically has been successful in minimizing the risk of harmful interference between flight test stations and other users of the band.”

Specifically, in proposed rules 87.603 and 87.604, the Commission recommends that frequency coordination be required for the following frequency bands, which are to be “assigned for telemetry and telecommand operations of expendable and re-usable launch vehicles:”

1. **420-430 MHz.** Frequencies in the 420-430 MHz band are assigned on a shared basis for the transmission of flight termination signals during pre-launch testing and launch operations.
2. **2025-2110 MHz.** Frequencies in the 2025-2110 MHz band are assigned on a shared basis for telecommand uplink transmissions from controllers on the ground to the launch vehicle.
3. **2200-2290 MHz.** Frequencies in the 2200-2290 MHz band are assigned on a shared basis for the transmission of telemetry data from the launch vehicle to controllers on the ground.

As an experienced frequency coordinator for AMT frequencies, AFTRCC offers its preliminary observations as to the most constructive and efficient responsibilities for the non-government frequency coordinator for space launch frequencies.

**II. If the FCC Requires Pre-Application Coordination, AFTRCC Is Well Qualified to Serve as the Coordinator**

AFTRCC agrees with the Commission that, when coupled with appropriate service and technical rules, pre-application frequency coordination is an effective means to avoid conflicting frequency uses and harmful interference. For example, and as detailed below, AFTRCC’s role as

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6 Id.
7 FNPRM, Appendix A.
8 Id.
9 Id.
a frequency coordinator has been instrumental in preventing frequency conflicts with both space
launch operations and medical telemetry in bands used for AMT under Part 87.

Assuming the Commission chooses to require pre-application frequency coordination for
commercial space launch operations, AFTRCC is well-qualified and willing to serve as the non-
government coordinator. As recognized in the FNPRM, AFTRCC “is the frequency coordinating
committee for non-government flight test telemetry station assignments.”\(^{10}\) In 1984, the
Commission extended AFTRCC’s frequency coordinating authority to the 2310-2390 MHz
bands.\(^ {11}\) As part of its flight test frequency coordination portfolio, AFTRCC works closely with
AFCs, who are responsible for Federal Government use of the spectrum, in an effort to ensure
that interference-free flight test operations are protected, and flight safety is preserved. Of
particular interest to this proceeding, AFTRCC currently coordinates space launch operations
with AMT operations for the frequencies 2364.5 MHz, 2370.5 MHz, and 2382.5 MHz when any
of these three frequencies are used for space launches.\(^ {12}\)

The Commission also recognized AFTRCC’s important and long-standing role as
coordinator of flight test frequencies when it allocated spectrum in the 2360-2390 MHz band for
Medical Body Area Networks (“MBANs”).\(^ {13}\) To facilitate spectrum sharing, both with non-
Federal Government and Federal Government AMT operations in the same band, the

\[^{10}\] FNPRM, ¶ 102 n.234 (citing Amendment of Part 87 of the Commission’s Rules to Make Provision
for the Establishment of an Indus. Frequency Advisory Comm. for Coordination of Frequencies in the
1435-1535 MC/S Band, Docket No. 18-234, Report and Order, 15 FCC 2d 831 (1969)).

\[^{11}\] See Amendment of Parts 2 and 87 of the Commission’s Rules Regarding Aeronautical Flight Test

\[^{12}\] FNPRM n.293, citing Footnote US276 to the Table of Frequency Allocations.

\[^{13}\] Amendment of the Commission’s Rules to Provide Spectrum for the Operation of Medical Body
Commission concluded that it would require an MBAN frequency coordinator to coordinate MBAN operations with AMT operations through AFTRCC:

74. Regarding the AMT coordinator functions, in 1969 the Commission designated Aerospace & Flight Test Radio Coordinating Council (AFTRCC) as the AMT coordinator under its rules. AFTRCC performs coordination for non-Federal Government licensees and coordinates with the Federal Government Area Frequency Coordinators for day-to-day scheduling of missions. In the NPRM, we acknowledged AFTRCC’s role as AMT coordinator and sought comment on the organization’s involvement in MBAN and AMT spectrum-sharing. We expect that AFTRCC will represent both Federal and non-Federal AMT interests when coordinating with the MBAN coordinator, thereby eliminating the need for MBAN licensees to separately coordinate with Federal AMT systems. This should significantly reduce the time needed to complete coordination and should facilitate timely deployment of MBAN operations.\(^\text{14}\)

The Commission also adopted coordination requirements for mobile broadband networks to be deployed in the Wireless Communications Service (“WCS”) spectrum at 2345-2360 MHz to protect AMT operations in the adjacent spectrum at 2360-2395 MHz. In adopting this coordination requirement, the Commission found that the number of AMT facilities to be protected and “AFTRCC’s experience as a frequency coordinator” led it to believe that coordination between WCS licensees and AFTRCC “could be effective in reducing interference between these services, without overly burdening either service.”\(^\text{15}\) AFTRCC has successfully coordinated thousands of WCS frequency assignments under these provisions.

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\(^{14}\) 27 FCC Rcd at 6457.

\(^{15}\) *Amendment of Part 27 of the Commission’s Rules to Govern the Operation of Wireless Communications Services in the 2.3 GHz Band, Establishment of Rules and Policies for the Digital Audio Satellite Service in the 2310-2360 MHz Frequency Band, WT Docket No. 07-23, IB Docket No. 95-91, GEN Docket No. 90-357, Report and Order and Second Report and Order, 25 FCC Rcd 11710, 11785 (2010). Codified at 47 C.F.R. 27.73(a) (“The coordinator for the assignment of flight test frequencies in the 2360-2390 MHz band, Aerospace and Flight Test Radio Coordination [sic] Council (AFTRCC), will facilitate a mutually satisfactory coordination agreement between the WCS licensee(s) and AMT entity(ies) for existing AMT receiver sites.”).
The FNPRM raises many significant questions on the frequencies to be allocated on a shared basis for commercial space launches and the service and technical rules applicable to those frequencies, including the distinction between launch operations and payload operations. AFTRCC notes that the specifics of coordination will vary depending on the bands at issue and the other services sharing the bands, whether Federal or non-Federal, with which coordination may be required.\(^\text{16}\)

AFTRCC’s preliminary assessment is that, of the bands allocated or suggested for commercial space launch operations, telemetry downlink operations in the 2200-2290 MHz band would benefit most from pre-application coordination. Given that the non-government frequency coordinator will lack ready access to the Government Master File (“GMF”), AFTRCC suggests that the pre-application responsibilities of the non-government frequency coordinator should be as follows:

- Serve as a single point of contact for applicants to initiate frequency coordination and licensing;
- Verify that the applicant is qualified for the frequencies and that the frequency request is compliant with the allocation;
- Seek concurrence from the applicable AFCs;
- Verify that the requested frequencies will not conflict with any other proposed or existing frequency assignments within 320 km. (200 mi.) of the “proposed area of operation” (per proposed §87.604(a));
- Seek concurrence from coordinator(s) for any other non-Federal users in the shared bands (e.g., the Society of Broadcast Engineers for the 2025-2110 MHz band); and
- Respond to the applicant in writing with the results of coordination, including any conditions or limitations recommended by the AFC(s) or relevant coordinators for other non-Federal services allocated in the same bands.

\(^{16}\) The Commission suggests that space launch frequencies should be limited to “space launch vehicle communications operations (including space launch vehicle reentry),” as opposed to “payload communications operations.” FNPRM, ¶ 144. As noted by the Commission, “the telemetry, tracking, and command functions associated with the vehicle launch phase of a space launch are more akin to terrestrial aeronautical mobile and radiolocation operations under Parts 87 and 90, respectively, while the payload stage and associated communications may be more aptly viewed as space operations.” Id. AFTRCC takes no position on actual use of the frequencies, other than to note that coordination could be very challenging if space launch frequencies are also used for payload operations.
The Commission also seeks comment on how much post-grant coordination is necessary, “[g]iven that the license terms associated with permanent authorizations may span several years,”\textsuperscript{17} and “changes in the operational environment on and around Federal ranges and other sites … are likely to occur over time ….”\textsuperscript{18} AFTRCC agrees with the Commission that “a one-time coordination would [not] be effective to cover all launches that occur during the term of an operator’s license.”\textsuperscript{19} Therefore AFTRCC believes that post-grant coordination and scheduling will be necessary because the frequencies are heavily utilized by the DoD and other Federal users, and space launches are of a limited temporal duration. Such post-grant coordination can be accomplished by scheduling the date and time of permitted frequency uses to coincide with the licensee’s launch schedule, and ensuring that the license grant is conditioned on licensee compliance with scheduling by the relevant AFC(s).

Under the FCC’s current process of issuing Special Temporary Authority (“STA”) for commercial space launches, launch operators are required to coordinate and schedule operations directly with the AFCs after grant of the STA. AFTRCC strongly recommends that the AFCs continue to coordinate launch frequencies with all potentially affected Federal users and manage the scheduling of launch frequencies. However, AFTRCC submits that the designated non-government coordinator can help facilitate information exchange by serving as the single point of contact between applicants or licensees and the AFCs, and where applicable, with non-Federal

\textsuperscript{17} FNPRM, ¶106.

\textsuperscript{18} Id.

\textsuperscript{19} Id.
licensees or with coordinators in bands that are shared with other non-Federal licensees (e.g., in the 2025-2110 MHz band, if it is allocated for commercial space launch use).

III. Conclusion

Assuming the Commission determines that applicants for commercial space launch frequencies should be required to engage in pre-application and/or post-grant frequency coordination, AFTRCC submits that it is well qualified to serve as the non-government frequency coordinator. AFTRCC is willing to serve as the non-government coordinator subject to further clarification of the coordinator’s responsibilities.

Respectfully submitted,

AEROSPACE AND FLIGHT TEST RADIO COORDINATING COUNCIL, INC.

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