

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

In the Matter of

Application of RBC Signals LLC for a	)	
30-Day Special Temporary Authorization	)	Call Sign:
to Operate an Earth Station to Provide	)	
Tracking, Telemetry & Command for a	)	File No.: SES-STA-_____
U.S.-Licensed Satellite	)	

REQUEST FOR SPECIAL TEMPORARY AUTHORIZATION

RBC Signals LLC (“RBC Signals”), pursuant to Section 25.120 of the Commission’s rules, 47 C.F.R. § 25.120, respectfully seeks a 30-day special temporary authorization (“STA”) commencing on May 25, 2022, to operate a 4.5m Orbit Gaia-100 earth station (the “4.5m”) at its existing site in Deadhorse, Alaska to provide telemetry, tracking and command (“TT&C”) in the 2074.90-2075.10 MHz (Earth-to-space; center frequency 2075.0 MHz) and 8199-8201 MHz (space-to-Earth; center frequency 8200.0 MHz) bands for the Vigoride-3 (“VR-3”) spacecraft, a non-geostationary orbit (“NGSO”) spacecraft operated by Momentus Space LLC (“Momentus”),¹ the launch date for which was recently moved up from mid-next month to May 25, 2022.

RBC Signals respectfully requests that the Commission authorize the proposed operations as soon as practicable to permit ground station support for the VR-3 spacecraft consistent with its new, earlier launch date. Grant of this STA will allow RBC to provide mission critical TT&C support during VR-3 customer payload deployments and orbit adjustment maneuver evaluations.

¹ See Momentus Space LLC, File No. SAT-STA-20211216-00195 (grant stamp, April 28, 2022) (“*VR-3 STA*”) at Appendix A. RBC Signals incorporates by reference relevant satellite technical and operational information provided in the *VR-3 STA* application.

I. INTRODUCTION

RBC Signals seeks to provide TT&C to support the VR-3 mission using the 4.5m earth station located at its facility in Deadhorse, Alaska. The Commission's recent grant of the *VR-3 STA* expressly contemplates spacecraft communications with RBC Signals' earth station in Deadhorse.² The proposed operations are already the subject of a pending 180-day STA request to support the VR-3 mission.³ However, the VR-3 spacecraft will be launched and commence operations before the 180-day STA can be granted, RBC Signals is filing this 30-day STA request.

RBC Signals has fully coordinated its 4.5m earth station transmit operations in the entire 2025-2110 MHz uplink band,⁴ and RBC Signals will work with Momentum and other operators to ensure that its temporary S-band uplink (transmit) and X-band downlink (receive-only) operations do not cause harmful interference to and are otherwise compatible with authorized uses of the spectrum. During the VR-3 mission, RBC Signals' TT&C operations will be conducted intermittently when the satellites pass over the earth station (four to five passes per day, with each pass approximately seven minutes in duration) on an unprotected and non-interference basis.

RBC Signals provides the attached Technical Appendix, which includes a radiation hazard analysis, frequency coordination report, and draft Form 312 Schedule B, providing information relating to the proposed earth station operations.⁵ As discussed below, in the unique circumstances presented here, grant of the requested 30-day STA will plainly serve the public interest, convenience, and necessity.

² See *id.* at Appendix A.

³ See File No. SES-STA-20220415-00412 ("*RBC Signals 180-day STA*"). The mission life of the VR-3 spacecraft is approximately six (6) months.

⁴ See Coordination Report, April 2022 (attached).

⁵ RBC Signals requests leave to update the technical or operational data associated with this STA request should the Commission seek any clarifying or supplemental information in considering the request.

II. DISCUSSION

RBC Signals seeks to provide TT&C in the 2074.90-2075.10 MHz (Earth-to-space; center frequency 2075.0 MHz) and 8199-8201 MHz (space-to-Earth; center frequency 8200.0 MHz) bands as needed to communicate with the VR-3 satellite as it passes over the Deadhorse, Alaska earth station. Grant of this STA request is necessary given the new, near-term launch date of the VR-3 and to ensure the reliability and safety of the VR-3 mission. Because earth station uplink transmissions have been coordinated, and because RBC Signals will work with the Momentus and other operators to ensure compatibility of VR-3 TT&C operations, grant of this STA will not increase the potential for interference.

A. VR-3 Satellite Overview

The VR-3 satellite is a self-propulsive, free-flying spacecraft designed to transport and deploy, as well as permanently host, customer payloads.⁶ The VR-3 will carry customer payloads, deliver those payloads to multiple sequential orbits, and then perform a post-deployment series of demonstration maneuvers to exhibit the orbital adjustment capabilities of the VR-3 platform and monitor propellant consumption.

RBC Signals will not be providing ground station support for any individual VR-3 customer payloads or missions and solely seeks to partner with Momentus to provide U.S.-based TT&C ground station services to support the safe operation of the VR-3 spacecraft. RBC Signals' TT&C operations will facilitate Momentus' evaluation of VR-3's novel microwave electrothermal thruster ("MET"), a non-toxic and low-pressurized water propellant system capable of providing

⁶ See *VR-3 STA*; see also Letter from Tony Lin to Marlene H. Dortch, File No. SAT-STA-20211216-00195 (April 13, 2022) ("*Momentus April 13, 2022 Update*").

orbit transfers. RBC Signals incorporates by reference the VR-3 mission information and satellite specifications provided in the *VR-3 STA* application.

B. TT&C Spectrum Use

a. 8025-8400 MHz band (space-to-Earth)

The United States Table of Frequency Allocations (“Table of Allocations”), Section 2.106 of the Commission’s rules, 47 C.F.R. § 2.106, provides that the 8025-8400 MHz band is allocated on a primary basis for non-federal Earth exploration-satellite service (space-to-Earth) and other non-federal operations may be authorized on a case-by-case basis.⁷ RBC Signals seeks to support receive-only TT&C, with limited satellite imaging,⁸ in the 8199-8201 MHz band (space-to-Earth), with a center frequency of 8200 MHz. RBC Signals incorporates by reference space-to-Earth interference analysis and coordination showings provided by Momentus for the proposed receive-only operations.⁹

To the extent necessary, RBC Signals requests waiver of the U.S. Table of Frequency Allocations, 47 C.F.R. § 2.106, to permit the proposed TT&C receive-only operations in the 8025-8400 MHz band.¹⁰ RBC Signals submits that waiver is warranted given the limited use of the 8201-8299 MHz band during the brief mission, Momentus’ commitment to coordinate use of these

⁷ See 47 C.F.R. § 2.106 fn. US 258.

⁸ Such use will also include transmission of limited imagery of the payloads during deployment primarily to provide mission assurance and, to a limited degree, selected images for publicity or marketing purposes. Although such imagery is limited to the spacecraft itself, Momentus holds a commercial remote sensing license issued by the National Oceanic and Atmospheric Administration (“NOAA”) for the operations of imaging sensors.

⁹ See *Momentus April 13, 2022 Update* at Exhibit 2.

¹⁰ The Commission may waive any of its rules if there is “good cause” to do so. See 47 C.F.R. § 1.3; *Northeast Cellular Tel. Co. v. FCC*, 897 F.2d 1164 (D.C. Cir. 1990); *WAIT Radio v. FCC*, 418 F.2d 1153 (D.C. Cir. 1969).

frequencies,¹¹ the non-interfering and limited nature of such use, and the public interest justification supporting the mission. RBC Signals will work with Momentum and other operators to ensure that its temporary receive-only operations do not cause harmful interference into current or future government or commercial users.

b. 2025-2110 MHz band (Earth-to-space)

This band is allocated to Space Operations and Earth-Exploration Satellites Services (“EESS”), *inter alia*, in all ITU regions. In the United States, Space Operations are limited to federal operators, and EESS use by commercial operators is subject to conditions as may be applied on a case-by-case basis and the limitation that any use may not cause harmful interference to authorized operations.¹²

RBC Signals proposes to operate the 4.5m in the 2074.90-2075.10 MHz band (Earth-to-space), with a center frequency of 2075 MHz, to provide TT&C for the VR-3 consistent with the Commission’s Table of Allocations.¹³ RBC Signals understands that there are certain U.S. government operations conducted in the 2025-2110 MHz band, including use by National Aeronautics and Space Administration (“NASA”).¹⁴ RBC Signals will continue to support Momentum in its coordination efforts with NASA and other government agencies to ensure compatibility of the proposed operations.

Given that RBC Signals only seeks to perform transmit operations using a 100 kilohertz carrier bandwidth from 2074.90-2075.10 MHz and, given the remote location of the Deadhorse

¹¹ See *VR-3 STA*.

¹² See 47 C.F.R. § 2.106, fn. US 347.

¹³ See 47 C.F.R. § 2.1 (defining “space research services” as “a radio communication service which spacecraft or other objects in space are used for scientific or technological research purposes.”).

¹⁴ See https://www.ntia.doc.gov/files/ntia/publications/compendium/2025.00-2110.00_01MAR14.pdf

facility in the North Slope of Alaska, RBC Signals believes that the proposed operations will not present a potential for interference to other spectrum users of the band and has not identified any conflicting Federal operations. RBC Signals will operate on an unprotected, non-interference basis and, if it learns that its operations are causing harmful interference to other operations, it will suspend or modify its operations to resolve such interference.

Although RBC Signals previously coordinated its uplink operations in the 2025-2110 MHz band at the Deadhorse facility in 2021 (with no concerns or objections), it engaged Micronet to perform a new frequency coordination on behalf of RBC Signals that considers all existing, proposed, and prior-coordinated terrestrial microwave facilities within the contours of the 4.5m earth station. A copy of the final coordination report is attached.

RBC Signals is confident there is no potential for interference between other users of this spectrum and the operations of the 4.5m earth station at the Deadhorse facility.¹⁵ In addition, RBC Signals understands that Momentus has coordinated access to the subject spectrum as it relates to the VR-3 spacecraft operations, as reflected by the recent grant of the *VR-3 STA*.

To the extent necessary, RBC Signals requests waiver of the U.S. Table of Frequency Allocations, 47 C.F.R. § 2.106, to permit the proposed TT&C transmit operations in the 2025-2110 MHz band. Similar to above, given the limited use of the 2074.90-2075.10 MHz band during the brief 180-day mission, RBC Signals' commitment to coordinating use of the band with Micronet well beyond its actual operational limits, and the public interest justification supporting the mission, RBC Signals submits that a limited waiver is justified in this instance.

¹⁵ RBC Signals coordinated worst-case scenario power levels across the entire frequency band. In reality, RBC Signals will operate at significant lower power levels.

C. STA Request and Public Interest Considerations

RBC Signals respectfully seeks this 30-day STA pursuant to Section 25.120 of the Commission's rules, 47 C.F.R. § 25.120. A 30-day STA is appropriate because RBC Signals does not plan to file an application for regular authority for the subject operations because the VR-3 mission length (approximately six months) does not warrant a long-term commercial earth station license (*i.e.*, a 15-year term). Given the pending *RBC Signals 180-day STA*, the Commission will have the opportunity to undertake a public notice period for the mission while still granting this 30-day STA request to support the May 25, 2022 launch date and initial mission operations.

Reliable TT&C is crucial to ensure a successful mission phase for the VR-3, and RBC Signals can provide established and proven ground station support from an existing earth station facility without increasing the potential for interference into other commercial or Federal users. Moreover, grant of this STA request is in the public interest because it will facilitate the successful operation of the VR-3 and ensure that the spacecraft has access to uninterrupted ground station services during the brief life of the mission. With RBC Signals' support, Momentus will be able to successfully deploy customer payloads into orbit and conduct key performance evaluations of its orbital adjustment

III. CONCLUSION

Based on the foregoing, and for all of the reasons proffered by Momentus in the *VR-3 STA* application, the public interest would be served by a grant of this 30-day STA request commencing on May 25, 2022 to allow RBC Signals to operate its 4.5m earth station in Deadhorse, Alaska using the 2074.90-2075.10 MHz band (Earth-to-space) and 8199-8201 band (space-to-Earth) to provide TT&C support for the recently authorized and rescheduled VR-3 mission.