

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of

Request of RBC Signals LLC for a 180-Day)
Special Temporary Authorization to Operate) Call Sign:
an Earth Station to Provide Receive-Only)
Telemetry Services) File No.: SES-STA-_____

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 180-day special temporary authorization (“STA”) to operate a yagi antenna (the “400 MHz Yagi”) at an existing site in Fairbanks, Alaska to provide receive-only telemetry in the 400.48-400.52 MHz band (space-to-Earth) for a non-geostationary satellite orbit (“NGSO”) satellite operated by Spaceflight, Inc. (“Spaceflight”) – the Sherpa-LTE1.¹ Grant of this STA will allow RBC Signals to collect key data and measurements in support of Spaceflight’s evaluation of the Sherpa LTE-1 controlled deorbiting technology. RBC Signals’ will receive satellite transmissions approximately once per day as the satellite passes over the Earth at latitudes serviceable from the earth station in Fairbanks.²

The expected launch window for the Sherpa-LTE1 is June 1, 2021 to July 31, 2021³ as a

¹ See Spaceflight Inc., File No. SAT-STA-20210205-00017 (“*Spaceflight STA*”). The Sherpa-LTE1 satellite is the subject of a pending request for special temporary authorization. To the extent applicable, RBC Signals incorporates by reference relevant satellite technical and operational information provided in the *Spaceflight STA*. This request is limited to receive-only earth station operating authority.

² To provide comprehensive ground station support for the mission, RBC Signals has concurrently filed identical 180-day STA requests to provide receive-only telemetry support for the Sherpa-LTE1 from its existing facilities in Windham, New York and Deadhorse, Alaska.

³ The mission life of the Sherpa-LTE1 spacecraft, approximately six (6) months from launch, does not warrant long-term commercial earth station license authority for the proposed operations. If needed, RBC Signals intends to request renewal of the proposed 180-day STAs, as necessary, to ensure appropriate Commission authority for the life of the mission. RBC expressly acknowledges that grant of an initial STA or renewal will in no way affect the Commission’s consideration of subsequent renewal requests.

secondary payload aboard a SpaceX Falcon 9 launch vehicle. RBC Signals respectfully requests that the Commission consider and authorize the proposed receive-only operations (as appropriately conditioned) as soon as practicable to permit ground station support that corresponds to the launch and mission life of the satellite. RBC Signals will update the Commission with the final launch date once the launch schedule is finalized.

I. BACKGROUND

RBC Signals seeks to provide telemetry support for the Sherpa-LTE1 using an existing 400 MHz Yagi (M2 Antenna Systems Model 400CP30A) located at its facility in Fairbanks, Alaska, where RBC Signals performs more extensive telemetry, tracking and command (“TT&C”) operations than those proposed herein.⁴ There have been no reported cases of interference from the Fairbanks facility and this request will not create the potential for interference given the limited, receive-only nature of the operations.

With the support of RBC Signals, Spaceflight seeks to perform the secondary mission phase of the Sherpa-LTE1,⁵ whereby Spaceflight will demonstrate and evaluate its controlled deorbiting technology for future implementation. Specifically, during the controlled deorbit phase, Spaceflight will test an onboard computer system providing command and control over the Sherpa-LTE1, as well as evaluate an electric propulsion assembly that will rapidly lower the Sherpa-LTE1 vehicle.

During the mission, RBC Signals’ operations will be conducted on an unprotected and non-interference basis intermittently as the satellites pass over the earth station (once per day) to collect mission data. In addition, RBC Signals will conduct these operations in accordance with the Commission’s rules and interagency requirements governing fixed earth station operations in the

⁴ See, e.g., RBC Signals LLC, File Nos. SES-STA-20180719-01879 & SES-STA-20180312-000206 (authorizing RBC Signals to provide TT&C to the Radix cubesat in the 401-402 MHz band).

⁵ The first mission phase, expected to last less than six hours, will consist of the Sherpa-LTE1 deploying customer cubesat payloads. RBC Signals will not support the first mission phase.

subject band. RBC Signals provides the attached draft FCC Form 312 Schedule B for information on its receive-only earth station operations.⁶ As discussed below, grant of the requested STA will serve the public interest, convenience, and necessity.

II. DISCUSSION

RBC Signals seeks to receive data from the Sherpa-LTE1 in the 400.48-400.52 MHz band (space-to-Earth) using the 400 MHz Yagi. RBC Signals' telemetry operations will be conducted as-needed to communicate with the Sherpa-LTE1 satellite as it passes over the Fairbanks earth station (one time per day for brief periods of approximately 8 minutes). Grant of this STA request is critical for the reliability Sherpa-LTE1 mission and will not increase the potential for interference given RBC Signals' limited, receive-only operations. RBC Signals will work with Commission staff and other U.S. government agencies as needed to ensure that these temporary operations will not increase the potential interference to current or future government users and that the interests of the United States are fully accommodated.

A. Sherpa-LTE1 Satellite Overview

The Sherpa-LTE1 mission will consist of a single satellite launched into sun synchronous orbit with nominal orbit altitude of 525 km (based upon a range of SSO orbit altitudes from 500km to 550km) with an inclination from the equator of 97.6°. The total launch mass of the Sherpa-LTE1 will be approximately 415 kg, of which approximately 212 kg is made up of Spaceflight customer spacecraft that will be deployed. As noted, the Sherpa-LTE1 mission consists of two mission phases. The first mission phase is the deployment of customer spacecraft, whereby the Sherpa-LTE1 will

⁶ RBC respectfully 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 this request.

deploy up to 14 spacecraft.⁷ RBC Signals will not provide ground station support during the first mission phase.

The secondary mission is a controlled deorbit phase lasting no longer than six (6) months. During the controlled deorbit phase, two new modular systems will be enabled and tested. The Spaceflight system will make use of traditional, flight-proven, satellite control systems to effectively point the vehicle to sun-normal for solar panel charging. During this time, the second modular system, an electric propulsion assembly from Apollo Fusion, will be commissioned to lower the Sherpa vehicle altitude from 525 km to approximately 350 km. Spaceflight seeks to partner with RBC Signals to provide receive-only telemetry support for these critical technical evaluations.

B. Telemetry Spectrum Use

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 400.15-401 MHz band is shared between meteorological aids (Earth-to-space), mobile satellite (space-to-Earth), space research (space-to-Earth) and space operation services (space-to-Earth). RBC Signals seeks to perform receive-only telemetry operations in the 400.48-400.52 MHz band, as specified above, consistent with the co-primary space operation allocation in this band.⁸

RBC Signals acknowledges that there are certain U.S. government meteorological aids and space research operations conducted in the 400.15-401 MHz band.⁹ Moreover, RBC Signals understands that although expanded Federal use of the 400.15-401 MHz band is contemplated, such plans do not commence until well after the end of the Sherpa-LTE1 mission. RBC Signals will

⁷ See *Spaceflight STA*, Exhibit A for Spaceflight customer manifest.

⁸ See 47 C.F.R. § 2.1 (defining “space operation” as “a radiocommunication service concerned exclusively with the operation of spacecraft, in particular space tracking, space telemetry, and space telecommand.”).

⁹ See https://www.ntia.doc.gov/files/ntia/publications/compendium/0400.15-0401.00_01MAR14.pdf

support Spaceflight and Commission staff to ensure that these temporary receive-only operations do not increase the potential interference to current or future government users and are compatible with government operations.

The facility in Fairbanks, Alaska currently supports similar earth station transmit and receive operations with no reported cases of interference, and RBC Signals' proposed operations under this STA will not present an increased interference risk to other authorized users.

C. STA Request and Public Interest Considerations

RBC Signals respectfully seeks this 180-day STA pursuant to Section 25.120 of the Commission's rules, 47 C.F.R. § 25.120. A 180-day STA is appropriate because RBC Signals does not plan to file an application for regular authority for the subject operations because the Sherpa-LTE1 mission length (approximately six months) does not warrant a long-term commercial earth station license (*i.e.*, a 15-year term). In addition, given the June-July 2021 launch timeframe, sufficient time should be afforded for public notice and Commission consideration of this application.

A reliable telemetry link is crucial to ensure a successful secondary mission phase for the Sherpa-LTE1, and RBC Signals can provide established and proven ground station support from an existing teleport 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 Sherpa-LTE1 and ensure that the Sherpa-LTE1 has access to uninterrupted ground station services during the life of the mission. With RBC Signals' support, Spaceflight will be able to conduct key performance evaluations of its novel controlled deorbiting technology for future implementation.

III. CONCLUSION

Based on the foregoing, the public interest would be served by a grant of this 180-day STA request to allow RBC Signals to perform receive-only telemetry operations in the 400.48-400.52 MHz band (space-to-Earth) to support the Sherpa-LTE1 from its existing earth station facility in Fairbanks, Alaska.