Spire LEMUR-2 Satellite Bus Experimental Special Temporary Authority Request

Spire Global, Inc. ("Spire") requests experimental special temporary authority ("STA") for one (1) to-be-deployed Spire LEMUR-2 satellite bus ("LEMUR-2 Satellite"), which will host a payload to be operated by KeyW Corporation (the "KeyW Payload") onboard. Grant of the LEMUR-2 Satellite STA request will allow KeyW to provide valuable demonstration and test data to the United States Air Force in a timely manner.[1]

The Spire LEMUR-2 Satellite subject to the STA request will be launched in Q4 2019 from the International Space Station ("ISS"). Given the necessary review and integration time frames, Spire respectfully requests expedited consideration and grant of this STA request by August 31, 2019, or at the earliest practicable time thereafter.

Spire understands that it is possible that the operational lifetime of the experimental KeyW Payload mission could extend up to one year. To the extent that valuable additional test data may be available beyond the initial six-month experimental STA period requested herein, Spire may seek a single, one-time renewal of the experimental STA consistent with the Commission's rules.

Description

Spire has received multiple Federal Communications Commission ("Commission") Part 25 licenses to operate its own constellation of LEMUR-2 satellites on orbit.[2] In its most recent Part 25 license application, Spire noted that:

> its new hosted payload service will provide added benefits to the quickly growing low-Earth orbit ("LEO") market. Educational, government, and other commercial entities will have easier and quicker access to space as Spire will be deploying new satellites frequently. By utilizing Spire's Phase II small satellite ("smallsat") platform, these entities will also minimize the amount of

[1] A companion experimentation STA request to operate the KeyW Payload, including relevant supporting materials regarding the nature and important public interest benefits of the proposed operations, will be filed separately by KeyW.

[2] *See* Stamp Grant, Spire Global, Inc., File No. SAT-LOA-20151123-00078 (granted in part and deferred in part Mar. 18, 2016, as corrected Mar. 24, 2016); Stamp Grant, Spire Global, Inc., File No. SAT-LOA-20151123-00078 (granted in part and deferred in part June 16, 2016); Stamp Grant, Spire Global, Inc., File No. SAT-LOA-20151123-00078 (granted in part and deferred in part Oct. 14, 2016); Stamp Grant, Spire Global, Inc., File No. SAT-AMD-20161114-00107 (granted in part and deferred in part Apr. 7, 2017); Stamp Grant, Spire Global, Inc., File No. SAT-AMD-20161114-00107 (granted in part and deferred in part May 18, 2017); Stamp Grant, Spire Global, Inc., File No. SAT-AMD-20161114-00107 (granted in part and deferred in part July 13, 2017); Stamp Grant, Spire Global, Inc., File No. SAT-AMD-20180102-00001 (granted in part and deferred in part Nov. 29, 2018).

spacecraft deployed into LEO and the burden on NTIA and others in coordinating active radiofrequency links.[3]

Spire now requests experimental STA for one (1) to-be-deployed Spire LEMUR-2 Satellite, which will host the KeyW Payload onboard.

The LEMUR-2 Satellite subject to this STA request will (i) receive commands and software updates and (ii) downlink telemetry and data gathered by the KeyW Payload. Spire notes that the LEMUR-2 Satellite will not contain its typical Automatic Identification System, Automatic Dependent Surveillance-Broadcast, and Global Navigation Satellite System Radio Occultation payloads. Instead, this LEMUR-2 Satellite will only contain the KeyW Payload and standard LEMUR-2 Satellite radios and associated hardware. These radios and hardware have already been approved for use by the Commission under the Spire Phase II License Grant.[4]

As noted, the LEMUR-2 Satellite (including the KeyW Payload) will be deployed from the ISS. It will be deployed at the ISS altitude with an inclination of 51.6˚. Accordingly, the LEMUR-2 Satellite will operate within the parameters (385-650 km at any inclination) permissible under the Spire Phase II License Grant,[5] which similarly should be permissible in the context of this experimental STA request.

As the Schedule S (list of frequencies and associated technical parameters), ODAR, and Orbital Debris Mitigation Plan have been previously submitted, reviewed, and approved by the Commission's International Bureau, Spire hereby (i) incorporates these materials by reference in the attached exhibits and (ii) requests an experimental STA grant for one (1) to-be-deployed LEMUR-2 Satellite. To the extent the Commission requests other information in connection with this experimental STA request, Spire will expeditiously supplement the record of this proceeding.

Spire confirms that it will adhere to all Phase II License Grant conditions and applicable coordination agreements with Federal/non-Federal operators in the bands, as well as additional conditions that may be imposed in the context of this experimental STA request. At all times, Spire will operate the LEMUR-2 Satellite on a non-interference basis vis-à-vis other authorized radio systems and services. Accordingly, an expeditious grant of this STA request for the LEMUR-2 Satellite is in the public interest and will quickly allow KeyW to provide valuable data to the United States Air Force in a timely manner.

---

[3] Amendment Application of Spire Global, Inc., File No. SAT-AMD-20180102-00001, Exhibit A at 4-5 (filed Jan. 2, 2018) ("Phase II Amendment Application").

[4] *See* Phase II License Grant.

[5] *See id.*; *see also* attached exhibits (Phase II Amendment Application exhibits). The KeyW Payload and LEMUR-2 Satellite together will weigh approximately 5.6 kg, and the surface area will be no more than the surface area dimensions for the Phase II LEMUR-2 satellite listed in the Orbital Debris Assessment Report ("ODAR"). As a result, the LEMUR-2 Satellite and KeyW Payload meet all applicable orbital dwell and collision risk thresholds.