

S2946 SAT-LOA-20151123-00078 IB2015002274
Spire Global, Inc.
LEMUR Phases I & II

**** GRANT IN PART / DEFER IN PART ****



File # SAT-LOA-20151123-00078

Call Sign S2946 Grant Date 06/16/16
(or other identifier)

From see conditions Term Dates see conditions
To: conditions

Approved: Stephen J. Duall

Stephen J. Duall
Chief, Satellite Policy Branch

Approved by OMB
3060-0678

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Callsign/Satellite ID: S2946

*with conditions

APPLICATION FOR SATELLITE SPACE STATION AUTHORIZATIONS FCC 312 MAIN FORM FOR OFFICIAL USE ONLY	FCC Use Only
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APPLICANT INFORMATION

Enter a description of this application to identify it on the main menu:

Draft Satellite Application

1-8. Legal Name of Applicant			
Name:	Spire Global, Inc.	Phone Number:	415-356-3400
DBA Name:		Fax Number:	
Street:	33 Norfolk Street	E-Mail:	jonathan.rosenblatt@spire.com
City:	San Francisco	State:	CA
Country:	USA	Zipcode:	94103
Attention:	Jonathan Rosenblatt		

Spire Global, Inc.
IBFS File No. SAT-LOA-20151123-00078
Call Sign: S2946

The application of Spire Global, Inc. (Spire), IBFS File No. SAT-LOA-20151123-00078, for authority to construct, deploy, and operate a constellation of up to 175 technically identical non-geostationary satellites (Call Sign S2946), is GRANTED IN PART AND DEFERRED IN PART.¹ Specifically, Spire is authorized to construct up to 20 technically identical satellites in addition to the nine satellites already authorized – with deployment at orbital altitudes between 400 and 550 km – and to conduct maritime monitoring, meteorological monitoring and earth imaging operations using the 2020-2025 MHz frequency band (space-to-Earth). Spire is also authorized to operate a back-up downlink for those operations in the 402-403 MHz frequency band and to conduct telemetry, tracking and command functions in the 402-403 MHz band (Earth-to-space and space-to-Earth). The maximum bandwidth of any transmission in the 402-403 MHz band is limited to 15 kHz, and all transmissions in these frequencies shall be within a 200 kHz band centered on 402.7 MHz, *i.e.*, within 402.6-402.8 MHz, except as necessary for a period immediately following the deployment of the satellites to allow for the retuning of transmissions. In addition, the satellites will also receive Automatic Identification System (AIS) signals centered at 161.975 MHz and 162.025 MHz, and GPS signals centered at 1575.42 MHz and 1227.60 MHz. We defer action on the remainder of Spire’s application. Operations under this grant of authority must be in accordance with the terms, conditions, and technical specifications set forth in Spire’s application and the Federal Communications Commission’s rules, and are subject to the following conditions:

1. Spire must prepare the necessary information, as may be required, for submission to the International Telecommunication Union (ITU) to initiate and complete the advance publication, international coordination, due diligence, and notification process for these space stations, in accordance with the ITU Radio Regulations. Spire will be held responsible for all cost-recovery fees associated with ITU filings. No protection from interference caused by radio stations authorized by other administrations is guaranteed unless coordination and notification procedures are timely completed or, with respect to individual administrations, by successfully completing coordination agreements. Any radio station authorization for which coordination has not been completed may be subject to additional terms and conditions as required to effect coordination of the frequency assignments of other administrations. *See* 47 C.F.R. § 25.111(b).

2. Spire’s request for a waiver of the United States Table of Frequency Allocations, 47 C.F.R. § 2.106, is GRANTED. Operations in the 402-403 MHz frequency band (Earth-to-space) and the 2020-2025 MHz frequency band (space-to-Earth) must be on a non-conforming, non-harmful interference basis. Spire must immediately terminate non-conforming operations upon notification of harmful

¹ The application was placed on Public Notice as accepted for filing on January 22, 2016. *See Policy Branch Information, Satellite Space Applications Accepted for Filing*, Public Notice, Report No. SAT- 01130 (IBFS File No. SAT-LOA-20151123-00078). ORBCOMM License Corp. (ORBCOMM) filed a Petition to Dismiss, Deny or Hold in Abeyance certain portions of the Spire application on February 22, 2016. The application was granted in part and deferred in part on March 18, 2016 to authorize Spire to construct, deploy and operate nine technically identical satellites. *See Policy Branch Information, Satellite Space Applications Actions Taken*, Public Notice, DA 16-314, Report No. SAT-01145 (IBFS File No. SAT-LOA-20151123-00078). Those nine satellites were launched aboard a Cygnus cargo capsule on March 25, 2016, for deployment from the International Space Station. The 20 satellites authorized by this grant stamp are in addition to those nine satellites. ORBCOMM objected to Planet Lab’s proposed operations using altitudes and orbital planes that would intersect with the authorized 47 degree-inclined 715 kilometer target operational orbits for its ORBCOMM Generation 2 satellites. ORBCOMM Petition at 1. The satellites authorized in this grant will be deployed at an altitude at or below 550 km. These orbital altitudes are not the subject of ORBCOMM’s Petition and can be granted without prejudice to ORBCOMM’s Petition.

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interference.

3. Spire must maintain a U.S. point of contact available by telephone 24 hours per day, seven days per week, with the authority and ability to terminate operations authorized herein. The telephone number for this U.S. point of contact must be provided to NTIA (bmitchell@ntia.doc.gov) and DOC/NOAA (alfredo.mistichelli@noaa.gov).

4. Based upon information provided by the National Telecommunication and Information Administration as part of the frequency coordination process, future non-federal licenses for additional satellites will be considered on a case-by-case basis, especially for requests in the band 402-403 MHz, and Spire shall have no expectations that future licenses will be approved. For future missions, transition of TT&C links out of the 402-403 MHz band is recommended.

5. Deployment into an orbit with an inclination of 51.6 degrees, plus or minus 0.1 degree, at an altitude above the ISS, is not authorized by this grant.

6. This authorization to launch up to twenty additional NGSO satellites for initial deployment in the 400-550 kilometer altitude range, and to operate those satellites, will become null and void if, at any time during the license term, there are no such satellites operating. This authorization may be subject to additional conditions, or a reduction in the number of authorized satellites, in the event future deployment rates do not justify an authorization for 20 operational satellites.

7. Spire is subject to milestone and bond obligations imposed as conditions to a previous grant of authority to operate up to nine NGSO satellites in the 2020-2025 MHz band. *See supra*, note 1. We find that, following the discharge of the bond requirement associated with this previous grant, warehousing concerns are addressed in this situation through the imposition of condition #6 above.

8. The license term for the twenty satellites is six years and will begin on 3 a.m. eastern time on the date that Spire certifies to the Commission that the initial space station has been successfully placed into orbit and its operations fully conform to the terms and conditions of this authorization. Spire must file such certification within five business days of placing its initial satellite into operation.

9. Spire's request for a waiver of Section 25.114(c) of the Commission's rules, 47 C.F.R. §25.114(c), to the extent described in its application with respect to certain information to be provided in the Schedule S, IS GRANTED. We find that a waiver is warranted for the requirement for orbital information on the Schedule S for each satellite because the information Spire provided in its Narrative is sufficient to fulfill the relevant informational requirements.

10. Within 30 days after deployment of each satellite pursuant to this authorization, Spire must file a notification with the Commission specifying its apogee and perigee altitudes and orbital inclination.

11. Spire is afforded 30 days from the date of release of this authorization to decline this authorization as conditioned. Failure to respond within this period will constitute formal acceptance of the authorization as conditioned.

12. This action is issued pursuant to Section 0.261 of the Commission's rules on delegated authority, 47 C.F.R. § 0.261, and is effective immediately. Petitions for reconsideration under Section 1.106 or applications for review under Section 1.115 of the Commission's rules, 47 C.F.R. §§ 1.106 and 1.115, maybe filed within 30 days of the date of the public notice indicating that this action was taken.

** GRANTED IN PART/
DEFER IN PART **



+ with conditions

File # SAT-LOA-20151123-00078

Call Sign S2946 Grant Date 06/16/16
(or other identifier)

From see conditions To: see conditions
Term Dates see conditions

Approved: Stephen J. Duall
Stephen J. Duall

9-16. Name of Contact Representative			
Name:	Trey Hanbury	Phone Number:	202-637-5534
Company:	Hogan Lovells US LLP	Fax Number:	
Street:	555 13th Street, NW	E-Mail:	trey.hanbury@hoganlovells.com
City:	Washington	State:	DC
Country:	USA	Zipcode:	20004 -
Attention:		Relationship:	Legal Counsel

CLASSIFICATION OF FILING

<p>17. Choose the button next to the classification that applies to this filing for both questions a. and b. Choose only one for 17a and only one for 17b.</p> <p>a.</p> <p>(N/A) a1. Earth Station</p> <p><input checked="" type="radio"/> a2. Space Station</p>	<p>b.</p> <p><input checked="" type="radio"/> b1. Application for License of New Station</p> <p>(N/A) b2. Application for Registration of New Domestic Receive-Only Station</p> <p>(N/A) b3. Amendment to a Pending Application</p> <p>(N/A) b4. Modification of License or Registration</p> <p>(N/A) b5. Assignment of License or Registration</p> <p>(N/A) b6. Transfer of Control of License or Registration</p> <p>(N/A) b7. Notification of Minor Modification</p> <p>(N/A) b8. Application for License of New Receive-Only Station Using Non-U.S. Licensed Satellite</p> <p><input type="radio"/> b9. Letter of Intent to Use Non-U.S. Licensed Satellite to Provide Service in the United States</p> <p><input type="radio"/> b10. Replacement Satellite Application – no new frequency bands</p> <p><input type="radio"/> b11. Replacement Satellite Application – new frequency bands (Not eligible for streamlined processing)</p> <p><input type="radio"/> b12. Petition for Declaratory Ruling to be Added to the Permitted List</p> <p>(N/A) b13. Other (Please specify)</p>
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17c. Is a fee submitted with this application?

If Yes, complete and attach FCC Form 159.

If No, indicate reason for fee exemption (see 47 C.F.R. Section 1.1114).

Governmental Entity Noncommercial educational licensee

Other (please explain):

17c. Fee Classification CLW – Space Station (Non-Geostationary)

18. If this filing is in reference to an existing station, enter:

(a) Call sign of station:

Not Applicable

19. If this filing is an amendment to a pending application enter:

(a) Date pending application was filed:

Not Applicable

(b) File number of pending application:

Not Applicable

TYPE OF SERVICE

<p>20. NATURE OF SERVICE: This filing is for an authorization to provide or use the following type(s) of service(s): Select all that apply:</p> <p><input type="checkbox"/> a. Fixed Satellite</p> <p><input type="checkbox"/> b. Mobile Satellite</p> <p><input type="checkbox"/> c. Radiodetermination Satellite</p> <p><input checked="" type="checkbox"/> d. Earth Exploration Satellite</p> <p><input type="checkbox"/> e. Direct to Home Fixed Satellite</p> <p><input type="checkbox"/> f. Digital Audio Radio Service</p> <p><input checked="" type="checkbox"/> g. Other (please specify)</p>	
<p>21. STATUS: Choose the button next to the applicable status. Choose only one.</p> <p><input type="radio"/> Common Carrier <input checked="" type="radio"/> Non-Common Carrier</p>	<p>22. If earth station applicant, check all that apply.</p> <p>Not Applicable</p>
<p>23. If applicant is providing INTERNATIONAL COMMON CARRIER service, see instructions regarding Sec. 214 filings. Choose one. Are these facilities:</p> <p><input type="radio"/> Connected to a Public Switched Network <input type="radio"/> Not connected to a Public Switched Network <input checked="" type="radio"/> N/A</p>	
<p>24. FREQUENCY BAND(S): Place an "X" in the box(es) next to all applicable frequency band(s).</p> <p><input type="checkbox"/> a. C-Band (4/6 GHz) <input type="checkbox"/> b. Ku-Band (12/14 GHz)</p> <p><input checked="" type="checkbox"/> c. Other (Please specify upper and lower frequencies in MHz.)</p> <p>Frequency Lower: 402 Frequency Upper: 8400 (Please specify additional frequencies in an attachment)</p>	

TYPE OF STATION

25. CLASS OF STATION: Choose the button next to the class of station that applies. Choose only one.

- (N/A) a. Fixed Earth Station
- (N/A) b. Temporary-Fixed Earth Station
- (N/A) c. 12/14 GHz VSAT Network
- (N/A) d. Mobile Earth Station
- e. Geostationary Space Station.
- f. Non-Geostationary Space Station
- g. Other (please specify)

26. TYPE OF EARTH STATION FACILITY: Not Applicable

PURPOSE OF MODIFICATION

27. The purpose of this proposed modification is to: (Place an "X" in the box(es) next to all that apply.) Not Applicable

ENVIRONMENTAL POLICY

28. Would a Commission grant of any proposal in this application or amendment have a significant environmental impact as defined by 47 CFR 1.1307? If YES, submit the statement as required by Sections 1.1308 and 1.1311 of the Commission's rules, 47 C.F.R. §§ 1.1308 and 1.1311, as an exhibit to this application. A Radiation Hazard Study must accompany all applications for new transmitting facilities, major modifications, or major amendments. Yes No
Exhibit E

ALIEN OWNERSHIP

Earth station applicants not proposing to provide broadcast, common carrier, aeronautical en route or aeronautical fixed radio station services are not required to respond to Items 30-34.

<p>29. Is the applicant a foreign government or the representative of any foreign government?</p>	<p><input type="radio"/> Yes <input checked="" type="radio"/> No</p>
<p>30. Is the applicant an alien or the representative of an alien?</p>	<p><input type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> N/A</p>
<p>31. Is the applicant a corporation organized under the laws of any foreign government?</p>	<p><input type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> N/A</p>
<p>32. Is the applicant a corporation of which more than one-fifth of the capital stock is owned of record or voted by aliens or their representatives or by a foreign government or representative thereof or by any corporation organized under the laws of a foreign country?</p>	<p><input type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> N/A</p>
<p>33. Is the applicant a corporation directly or indirectly controlled by any other corporation of which more than one-fourth of the capital stock is owned of record or voted by aliens, their representatives, or by a foreign government or representative thereof or by any corporation organized under the laws of a foreign country?</p>	<p><input type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> N/A</p>
<p>34. If any answer to questions 29, 30, 31, 32 and/or 33 is Yes, attach as an exhibit an identification of the aliens or foreign entities, their nationality, their relationship to the applicant, and the percentage of stock they own or vote.</p>	

BASIC QUALIFICATIONS

35. Does the Applicant request any waivers or exemptions from any of the Commission's Rules?
If Yes, attach as an exhibit, copies of the requests for waivers or exceptions with supporting documents.

Yes No

36. Has the applicant or any party to this application or amendment had any FCC station authorization or license revoked or had any application for an initial, modification or renewal of FCC station authorization, license, or construction permit denied by the Commission? If Yes, attach as an exhibit, an explanation of circumstances.

Yes No

37. Has the applicant, or any party to this application or amendment, or any party directly or indirectly controlling the applicant ever been convicted of a felony by any state or federal court? If Yes, attach as an exhibit, an explanation of circumstances.

Yes No

38. Has any court finally adjudged the applicant, or any person directly or indirectly controlling the applicant, guilty of unlawfully monopolizing or attempting unlawfully to monopolize radio communication, directly or indirectly, through control of manufacture or sale of radio apparatus, exclusive traffic arrangement or any other means or unfair methods of competition? If Yes, attach as an exhibit, an explanation of circumstances

Yes No

39. Is the applicant, or any person directly or indirectly controlling the applicant, currently a party in any pending matter referred to in the preceding two items? If yes, attach as an exhibit, an explanation of the circumstances.

Yes No

40. If the applicant is a corporation and is applying for a space station license, attach as an exhibit the names, address, and citizenship of those stockholders owning a record and/or voting 10 percent or more of the Filer's voting stock and the percentages so held. In the case of fiduciary control, indicate the beneficiary(ies) or class of beneficiaries. Also list the names and addresses of the officers and directors of the Filer. Exhibit C

41. By checking Yes, the undersigned certifies, that neither applicant nor any other party to the application is subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Act of 1988, 21 U.S.C. Section 862, because of a conviction for possession or distribution of a controlled substance. See 47 CFR 1.2002(b) for the meaning of "party to the application" for these purposes. Yes No

42a. Does the applicant intend to use a non-U.S. licensed satellite to provide service in the United States? If Yes, answer 42b and attach an exhibit providing the information specified in 47 C.F.R. 25.137, as appropriate. If No, proceed to question 43. Yes No

42b. What administration has licensed or is in the process of licensing the space station? If no license will be issued, what administration has coordinated or is in the process of coordinating the space station?

43. Description. (Summarize the nature of the application and the services to be provided). (If the complete description does not appear in this box, please go to the end of the form to view it in its entirety.)

Applicant seeks authority to deploy a satellite system, providing maritime monitoring, meteorological monitoring, and earth imaging services.

Exhibit A

43a. Geographic Service Rule Certification

By selecting A, the undersigned certifies that the applicant is not subject to the geographic service or geographic coverage requirements specified in 47 C.F.R. Part 25.

A

By selecting B, the undersigned certifies that the applicant is subject to the geographic service or geographic coverage requirements specified in 47 C.F.R. Part 25 and will comply with such requirements.

B

By selecting C, the undersigned certifies that the applicant is subject to the geographic service or geographic coverage requirements specified in 47 C.F.R. Part 25 and will not comply with such requirements because it is not feasible as a technical matter to do so, or that, while technically feasible, such services would require so many compromises in satellite design and operation as to make it economically unreasonable. A narrative description and technical analysis demonstrating this claim are attached.

C

Exhibit D

CERTIFICATION

The Applicant waives any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise, and requests an authorization in accordance with this application. The applicant certifies that grant of this application would not cause the applicant to be in violation of the spectrum aggregation limit in 47 CFR Part 20. All statements made in exhibits are a material part hereof and are incorporated herein as if set out in full in this application. The undersigned, individually and for the applicant, hereby certifies that all statements made in this application and in all attached exhibits are true, complete and correct to the best of his or her knowledge and belief, and are made in good faith.

44. Applicant is a (an): (Choose the button next to applicable response.)

- Individual
- Unincorporated Association
- Partnership
- Corporation
- Governmental Entity
- Other (please specify)

45. Name of Person Signing
Jonathan Rosenblatt

46. Title of Person Signing
General Counsel

47. Please supply any need attachments.

1: Exhibit B

2:

3:

WILLFUL FALSE STATEMENTS MADE ON THIS FORM ARE PUNISHABLE BY FINE AND / OR IMPRISONMENT
(U.S. Code, Title 18, Section 1001), AND/OR REVOCATION OF ANY STATION AUTHORIZATION
(U.S. Code, Title 47, Section 312(a)(1)), AND/OR FORFEITURE (U.S. Code, Title 47, Section 503).

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