

GRANT IN PART / DEFER IN PART



File # SAT-STA-20191230-00155

S2983

Call Sign S3018 Grant Date 01/02/20

(or other identifier) period of

From See conditions Term Dates To: 30 days

Approved by OMB 3060-0678

Approved: Stephen J. Duall, Chief, Satellite Policy Branch

Date & Time Filed: Dec 30 2019 3:25:27:830PM
File Number: SAT-STA-20191230-00155
Callsign:

\*with conditions

FEDERAL COMMUNICATIONS COMMISSION
APPLICATION FOR SPACE STATION SPECIAL TEMPORARY AUTHORITY

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APPLICANT INFORMATION

Enter a description of this application to identify it on the main menu:
Space Station STA Request (12-30-19)

1. Applicant

Name: Space Exploration Holdings, LLC Phone Number: 202-649-2700
DBA Name: Fax Number: 202-649-2701
Street: 1155 F Street, N.W. E-Mail: patricia.cooper@spacex.com
Suite 475
City: Washington State: DC
Country: USA Zipcode: 20004
Attention: Ms Patricia Cooper

**ATTACHMENT TO GRANT**  
 Space Exploration Holdings, LLC  
 IBFS File No. SAT-STA-20191230-00155

<b>IBFS File No(s):</b>	SAT-STA-20191230-00155	<b>GRANTED IN PART--                  DEFERRED IN PART                  With Conditions</b>    <b>International Bureau                  Satellite Division</b>
<b>Licensee/Grantee:</b>	Space Exploration Holdings, LLC	
<b>Call Sign:</b>	S2983/S3018	
<b>Satellite Name:</b>	SpaceX Ku/Ka-band Starlink Constellation	
<b>Orbital Location: (required station-keeping tolerance)</b>	Non-geostationary orbit (NGSO)	
<b>Administration:</b>	United States of America	
<b>Nature of Service:</b>	Telemetry, Tracking, and Command (TT&C); Testing	
<b>Scope of Grant:</b>	Special temporary authority (STA) for a period of 30 days to conduct Launch and Early Orbit-Phase (LEOP) operations (1) to perform TT&C necessary for orbit-raising of each of the approximately 60 satellites to be imminently launched on the Starlink 2 mission in January 2020, <sup>1</sup> and (2) to test the communications payload on each of the satellites. <sup>2</sup>	
<b>Service Area(s):</b>	Not Applicable	
<b>Frequencies:</b>	TT&C Frequencies 12.15-12.25 GHz (space-to-Earth) and 13.85-14.0 GHz (Earth-to-space)  Payload Testing Frequencies Ku-band: 10.7-12.7 GHz (space-to-Earth) and 14.0-14.5 GHz (Earth-to-space) Ka-band: 17.8-18.6 GHz, 18.8-19.3 GHz, and 19.7-20.2 GHz (space-to-Earth); and 27.5-29.1 GHz and 29.5-30.0 GHz (Earth-to-space).	
<p><b>Operations under this grant must comport with the legal and technical specifications set forth by the applicant or petitioner and with Federal Communication Commission's rules not waived herein. This grant is also subject to the following conditions:</b></p> <p>1. All operations under this grant of special temporary authority must be on an unprotected and non-harmful interference basis, <i>i.e.</i>, SpaceX must not cause harmful interference to, and must not claim protection from interference caused to it by, any other lawfully operating station.</p>		

<sup>1</sup> SpaceX requested special temporary authority for a period of 60 days for all Starlink satellites launched during that period. Given to the imminent anticipated launch date of January 3, 2020, for the Starlink 2 mission and the January 1 holiday, we are granting SpaceX this STA for a period of only 30 days to allow it to conduct LEOP operations and communications testing for the approximately 60 satellites on the Starlink 2 mission, and we defer consideration of the remainder of this request for STA to a later date.

<sup>2</sup> Grant of this STA request is based on the same reasoning as our grants of SpaceX's earlier STA requests for LEOP operations and testing. *See* Space Exploration Holdings, LLC., Request for Special Temporary Authority, IBFS file no. SAT-STA-20190405-00023, Basis for Grant (granted May 9, 2019) (granting a 60-day STA to SpaceX for LEOPs and testing for its first tranche of Starlink satellites). While certain temporary operations are already permitted by rule for satellites authorized to operate in the geostationary orbit, without the need to seek further Commission authorization, 47 CFR § 25.282, there is no similar rule automatically authorizing the temporary operations of non-geostationary orbit satellites, so the Commission routinely grants such STAs for orbit-raising and testing operations for NGSO satellites. *See, e.g.*, IBFS File No. SAT-STA-20170726-00109 & SAT-STA-20180724-00055 (granting 180-day STAs to Terra Bella for LEOPs). Given SpaceX's current launch schedule, we find it is in the public interest to waive the requirement of Section 25.120 that an STA be filed at least three working days prior to the date of proposed construction or operation. *See* 25 C.F.R. 25.120.

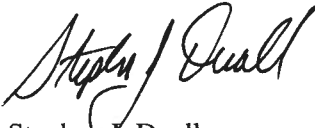
**ATTACHMENT TO GRANT**  
Space Exploration Holdings, LLC  
IBFS File No. SAT-STA-20191230-00155

2. In the event of any harmful interference under this grant of special temporary authority, SpaceX must immediately cease operations upon notification of such interference and inform the Commission, in writing, of such an event.
3. SpaceX's payload-frequency operations must be limited to testing and must not include provision of commercial services.
4. During LEOP operations SpaceX must operate only the TT&C frequencies and test frequencies specified above.
5. SpaceX must continue to make available to any requesting party the data used as input to the ITU-approved validation software to demonstrate compliance with applicable equivalent power flux density (EPFD) limits.
6. Operations authorized in this grant of STA must comport with any conditions contained in the *SpaceX Second Modification Order*.<sup>3</sup>
7. The term of this authorization commences on the date of launch of the satellites covered by this grant. SpaceX must notify the Commission in writing within three business days of the commencement date of this grant.

Licensee/grantee is afforded thirty (30) days from the date of release of this action to decline the grant as conditioned. Failure to respond within this period will constitute formal acceptance of the grant as conditioned.

This action is taken pursuant to Section 0.261 of the Commission's rules on delegated authority, 47 CFR § 0.261, and is effective upon release.

Station licenses are subject to the conditions specified in Section 309(h) of the Communications Act of 1934, as amended, 47 U.S.C. § 309(h).

<b>Action Date:</b>	January 2, 2020	
<b>Term Dates</b>	<b>From:</b> see conditions	<b>To:</b> period of 30 days
<b>Approved:</b>	 Stephen J. Duall Chief, Satellite Policy Branch	

<sup>3</sup> See *Space Exploration Holdings, LLC, Request for Modification of the Authorization for the SpaceX NGSO Satellite System, Order and Authorization, DA 19-1294 (IB rel. Dec. 19, 2019) (SpaceX Second Modification Order)*.

2. Contact			
<b>Name:</b>	William M. Wiltshire	<b>Phone Number:</b>	202-730-1350
<b>Company:</b>	Harris, Wiltshire & Grannis LLP	<b>Fax Number:</b>	202-730-1301
<b>Street:</b>	1919 M St. NW 8th Floor	<b>E-Mail:</b>	wwiltshire@hwglaw.com
<b>City:</b>	Washington	<b>State:</b>	DC
<b>Country:</b>	USA	<b>Zipcode:</b>	20036 -
<b>Attention:</b>		<b>Relationship:</b>	Legal Counsel
(If your application is related to an application filed with the Commission, enter either the file number or the IB Submission ID of the related application. Please enter only one.)			
3. Reference File Number or Submission ID			
4a. Is a fee submitted with this application?			
<input checked="" type="radio"/> If Yes, complete and attach FCC Form 159. If No, indicate reason for fee exemption (see 47 C.F.R. Section 1.1114).			
<input type="radio"/> Governmental Entity <input type="radio"/> Noncommercial educational licensee			
<input type="radio"/> Other (please explain):			
4b. Fee Classification    CXW – Space Station (Non-Geostationary)			
5. Type Request			
<input type="radio"/> Change Station Location <input type="radio"/> Extend Expiration Date <input checked="" type="radio"/> Other			
6. Temporary Orbit Location		7. Requested Extended Expiration Date	

8. Description (If the complete description does not appear in this box, please go to the end of the form to view it in its entirety.)

SpaceX requests special temporary authority for its newly-launched NGSO satellites to communicate with gateway and TT&C earth stations for 60 days.

9. 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

10. Name of Person Signing  
Patricia Cooper

11. Title of Person Signing  
Vice President, Satellite Government Affairs

12. Please supply any need attachments.

Attachment 1: STA Request

Attachment 2:

Attachment 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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**THE FOREGOING NOTICE IS REQUIRED BY THE PAPERWORK REDUCTION ACT OF 1995, PUBLIC LAW 104-13, OCTOBER 1, 1995, 44 U.S.C. SECTION 3507.**

## REQUEST FOR SPECIAL TEMPORARY AUTHORITY

Space Exploration Holdings, LLC (“SpaceX”), pursuant to Section 25.120 of the Commission’s rules, hereby requests Special Temporary Authority (“STA”) for 60 days so that satellites to be launched into its non-geostationary orbit (“NGSO”) Starlink constellation can communicate with earth stations operated by its sister company, SpaceX Services, Inc. (“SpaceX Services”) during the orbit-raising phase and early operations of its satellites. Applications for all of those earth stations are currently pending.<sup>1</sup>

SpaceX has been authorized to launch and operate a constellation of 4,409 NGSO satellites (call sign S2983/S3018) using Ku- and Ka-band spectrum, and to date has launched 120 spacecraft. Pursuant to a series of STAs, these spacecraft have been communicating with earth stations operated by SpaceX Services for over six months, and SpaceX has received no complaints from any other authorized spectrum user. SpaceX anticipates another launch in early January 2020, with additional launches following fairly regularly thereafter.

Accordingly, SpaceX requests an STA to cover three categories of operations for newly-launched satellites. First, SpaceX would communicate with a TT&C earth station to conduct telemetry, tracking, and control (“TT&C”) functions during orbit raising (and, if necessary, de-orbit)<sup>2</sup> and on-orbit operations. These transmissions would occur in the 12.15-12.25 GHz band (downlink) and the 13.85-14.0 GHz band (uplink). Second, SpaceX would communicate with six Ku-band earth stations to test the communications payload on each of its satellites. These operations would take place throughout the 10.7-12.7 GHz (downlink) and 14.0-14.5 GHz (uplink) bands. Third, SpaceX would communicate with five Ka-band gateway earth stations to test the communications payload on each of its satellites. These operations would take place throughout the 27.5-29.1 GHz and 29.5-30.0 GHz (uplink) and 17.8-18.6 GHz, 18.8-19.3 GHz, and 19.7-20.2 GHz (downlink) bands.

The Commission has good cause to approve this request to enhance the safety of space. Specifically, the requested STA would cover TT&C functions that are essential to commanding the spacecraft and ensuring the health and safety of SpaceX’s nascent constellation. The STA would also allow SpaceX to confirm the operational status of its satellites immediately upon insertion, rather than waiting weeks while the satellites are orbit raising to ensure proper functioning. This testing would yield a number of public interest benefits. For instance, SpaceX could act quickly in the unlikely event of a performance issue with one of its spacecraft to identify

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<sup>1</sup> SpaceX Services currently has applications pending for six Ku-band gateway earth stations (located in North Bend, WA; Conrad, MT; Merrillan, WI; Greenville, PA; Redmond, WA; and Hawthorne, CA); one Ku-band TT&C earth station (located in Brewster, WA); and five Ka-band gateway earth stations (located in Conrad, MT; Loring, ME; Redmond, WA; Greenville, PA; and Merrillan, WI). See Public Notice, Rep. No. SAT-01388 (rel. May 10, 2019); IBFS File Nos. SES-LIC-20190816-01062 and -01063, SES-LIC-20190827-01110, SES-LIC-20190906-01170 and -01171. SpaceX Services will file complementary STA requests for these earth stations.

<sup>2</sup> Although the Commission by rule authorizes TT&C operations for GSO satellites during the orbit-raising phase, it has not yet adopted a similar rule for NGSO systems (though one is currently under consideration). See 47 C.F.R. § 25.282; *Mitigation of Orbital Debris in the New Space Age*, 33 FCC 11352, ¶ 70 (2018). Similarly, the Commission’s rules authorize TT&C for end-of-life disposal of GSO systems but has no parallel rule for NGSO systems. See 47 C.F.R. § 25.283.

and correct the problem even before the satellite reaches operational orbit. By continuing testing even after the satellites have reached their intended orbits, SpaceX will ensure ongoing capabilities and be better able to prepare for accelerated launch of service. Accordingly, the STA will serve the public interest by enhancing space safety and promoting the health and safety of SpaceX's NGSO constellation.

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SpaceX will operate on a non-interference basis. Consistent with its authorization, SpaceX will observe the applicable equivalent power flux-density ("EPFD") limits set forth in Article 22 and Resolution 76 of the ITU Radio Regulations and the applicable power flux-density ("PFD") limits set forth in the Commission's rules and Article 21 of the ITU Radio Regulations, which the Commission has found sufficient to protect GSO systems and terrestrial systems, respectively, against harmful interference. Nonetheless, in the extremely unlikely event that harmful interference should occur due to transmissions to or from its spacecraft, SpaceX will take all reasonable steps to eliminate the interference. Should an issue arise, SpaceX can be reached at [satellite-operators-pager@spacex.com](mailto:satellite-operators-pager@spacex.com), which links to the pagers of appropriate technical personnel 24/7.