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File Number: SAT-STA-20191230-00156
Callsign:

GRANTED *
International Bureau
* with conditions

File # SAT-STA-20191230-00156
Call Sign S2983/S3018 Grant Date March 19, 2020
(or other identifier)
Term Dates
From January 6, 2020 To: 180 Days
Approved: John W. Lymberg
Acting Chief
Satellite Policy Branch

Approved by OMB
3060-0678

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 180 STA Request

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. Suite 475	**E-Mail:**	patricia.cooper@spacex.com
City:	Washington	**State:**	DC
Country:	USA	**Zipcode:**	20004 -
Attention:	Ms Patricia Cooper		

ATTACHMENT TO GRANT

Space Exploration Holdings, LLC
IBFS File No. SAT-STA-20191230-00156

IBFS File No(s):	SAT-STA-20191230-00156	**GRANTED -- With Conditions**
Licensee/Grantee:	Space Exploration Holdings, LLC	
Call Sign:	S2983/S3018	
Satellite Name:	SpaceX Ku/Ka-band Starlink Constellation	
Orbital Location: (required station-keeping tolerance)	Non-geostationary orbit (NGSO)	
Administration:	United States of America	**International Bureau Satellite Division**
Nature of Service:	Telemetry, Tracking, and Command (TT&C); Testing	
Scope of Grant:	Special temporary authority (STA) for a period of 180 days to conduct Launch and Early Orbit-Phase (LEOP) operations (1) to perform TT&C necessary for orbit-raising of all of the Starlink satellites, both those previously launched and those to be launched during the 180-day period, and (2) to test the communications payload on each of these satellites.[1]	
Service Area(s):	Not Applicable	
Frequencies:	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).	

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:

1. All operations under this grant of special temporary authority must be on an unprotected and non-harmful interference basis, *i.e.,* SpaceX must not cause harmful interference to, and must not claim protection from interference caused to it by, any other lawfully operating station.

2. In the event of any harmful interference under this grant of special temporary authority, SpaceX

[1] 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 for the Starlink constellation. *See* Space Exploration Holdings, LLC., Request for Special Temporary Authority, Grant Stamp, IBFS file no. SAT-STA-20190405-00023, Basis for Grant (granted May 9, 2019) (granting a 60-day STA to SpaceX for LEOP operations and testing for its first tranche of Starlink satellites) and extensions: IBFS file Nos. SAT-STA-20190717-00063 (granted Jul. 25, 2019), SAT-STA-20190815-00075 (granted Sept. 4, 2019), SAT-STA-20190917-00095 (granted Sept. 25, 2019), SAT-STA-20191018-00118 (granted Oct. 24, 2019), SAT-STA-20191118-00134 (granted Dec. 5, 2019), SAT-STA-20191220-00151 (granted Jan. 2, 2020); Space Exploration Holdings, LLC., Request for Special Temporary Authority, Grant Stamp, IBFS File No. SAT-STA-20190924-00098 (granted Nov. 7, 2019) (granting SpaceX a 60-day STA for LEOP operations and testing for its second tranche of Starlink satellites) and extensions: IBFS file nos. SAT-STA-20200103-00005 (granted Jan. 30, 2020), SAT-STA-20200207-00014 (granted Feb. 10, 2020); Space Exploration Holdings, LLC., Request for Special Temporary Authority, Grant Stamp, IBFS file no. SAT-STA-20191231-00155 (granted-in-part and deferred in part Jan. 2, 2020, granted-in-full Jan 17, 2020). This STA grants SpaceX authority to conduct LEOP operations and testing for all Starlink satellites previously launched and all Starlink satellites launched within the 180-day period of this grant. 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 Nos. SAT-STA-20170726-00109 and SAT-STA-20180724-00055 (granting 180-day STAs to Terra Bella for LEOPs).

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*.[2]

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).

Action Date:	March 19, 2020	
Term Dates	**From:** January 6, 2020	**To:** period of 180 days

Approved:

John W. Whaley
Acting Chief, Satellite Policy Branch

[2] *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

Name:	William M. Wiltshire	**Phone Number:**	202−730−1350
Company:	Harris, Wiltshire & Grannis LLP	**Fax Number:**	202−730−1301
Street:	1919 M St. NW 8th Floor	**E-Mail:**	wwiltshire@hwglaw.com
City:	Washington	**State:**	DC
Country:	USA	**Zipcode:**	20036 -
Attention:		**Relationship:**	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?

◉ 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):

4b. Fee Classification CXW – Space Station (Non-Geostationary)

5. Type Request

○ Change Station Location ○ Extend Expiration Date ◉ 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 180 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	11. Title of Person Signing
Patricia Cooper	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 180 days so that satellites 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 and de-orbit phases and early operations of its satellites. Applications for all of those earth stations are currently pending.[1]

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 a regular cadence of further launches throughout 2020, which will require additional authorization for communications with these earth stations.

Accordingly, SpaceX requests a 180-day 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)[2] 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 obit raising to ensure proper functioning. This testing would yield a number of public interest benefits. For instance, SpaceX

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1 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.

2 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.

could act quickly in the unlikely event of a performance issue with one of its spacecraft to identify 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. In addition, granting a longer-term STA to cover ongoing launch activities will alleviate the burden on staff resources of issuing short-term STAs in connection with each upcoming SpaceX launch. Accordingly, the STA will serve the public interest by enhancing space safety and promoting the health and safety of SpaceX's NGSO constellation while increasing administrative efficiency.

* * *

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, which links to the pagers of appropriate technical personnel 24/7.