

Approved by OMB
3060-0678

APPLICATION FOR EARTH STATION SPECIAL TEMPORARY AUTHORITY

APPLICANT INFORMATION Enter a description of this application to identify it on the main menu:
Merrillan WI Ka Gateway Respacing STA Request

I. Applicant

Name:	SpaceX Services, Inc.	Phone Number:	202-649-2700
DBA Name:		Fax Number:	
Street:	1155 F Street, N.W.	E-Mail:	patricia.cooper@spacex.com
City:	Washington	State:	DC
Country:	USA	Zipcode:	20004
Attention:	Ms Patricia Cooper		



File # SES-STA-20190925-01231
E190725 Call Sign Grant Date 11-1-19
(or other identifier)
Term Dates
From: 11-1-19 To: 12-16-19
Approved: [Signature]

Applicant: SpaceX Services, Inc.
Call Sign: E190725
File No.: SES-STA-20190925-01231
Special Temporary Authority ("STA")



File # SES-STA-20190925-01231
Call Sign E190725 Grant Date 11-14
(or other identifier)
Term Dates
From: 11-1-19 To: 12-16-19
Approved: [Signature]

SpaceX Services, Inc. ("SpaceX Services") is granted STA, beginning November 1, 2019 through December 16, 2019, to operate its fixed earth station located at geographical coordinates 44°24' 22.8" N/090° 48' 51.4" W in Merrilan, WI to provide telemetry, tracking and command ("TT&C") services to its non-geostationary orbit ("NGSO") Starlink satellites (Call Signs S2983/3018) during the orbit-raising and on-orbit operations on frequencies 13925 MHz (Earth-to-space) and 12221 MHz (space-to-Earth); to test the communications payload on the Starlink satellites on frequency bands: 14000-14500 MHz (Earth-to-space), 10700-12700 MHz (space-to-Earth); 28350-29100 MHz and 29500-30000 MHz (Earth-to-space), 17800-18600 MHz, 18800-19300 MHz (space-to-Earth), 19700-20200 MHz (space-to-Earth) under the following conditions:

1. Operations will not exceed the operational power limits and parameters requested and coordinated.
2. Operations in the 14470-14500 MHz are subject to footnote US342 to the U.S. Table of Frequency Allocations, 47 C.F.R. §2.106, US342, and all practicable steps must be taken to protect the radio astronomy service from harmful interference.
3. All operations under this grant of STA shall be on an unprotected, non-harmful interference basis. SpaceX Services shall not cause harmful interference to, and shall not claim protection from interference caused to it by, any other lawfully operating radio communication system.
4. In the event of any harmful interference SpaceX Services shall cease operations immediately upon notification of such interference, and shall immediately inform the Commission, in writing, of such an event.
5. The use of the band 10.7-11.7 GHz (Space-to-Earth) by the fixed-satellite service in the geostationary satellite orbit shall be limited to international systems, i.e. other than domestic systems. 47 CFR § 2.106 Table of Frequency Allocation, International Footnote NG52.
6. The use of space-to-Earth operations in the 17800-18600 MHz, 18800-19300 MHz, 19700-20200 MHz frequency bands must be in accordance with any signed coordination agreement between SpaceX and U.S. Federal operators in accordance with footnote US334 to the United States Table of Frequency Allocations, 47 CFR §2.106, prior to being used.
7. Operations in the 28350-28600 MHz and 29500-30000 MHz (Earth-to-space) frequency bands are on a secondary basis with respect to GSO FSS operations.
8. Current 24x7 contact information for the NGSO Starlink satellite mission is phone: 1+ (251) 257-0464.

9. The licensee shall take all necessary measures to ensure that the antenna does not create potential exposure of humans to radiofrequency radiation in excess of the FCC exposure limits defined in 47 CFR 1.1307(b) and 1.1310 wherever such exposures might occur. Measures must be taken to ensure compliance with limits for both occupational/controlled exposure and for general population/uncontrolled exposure, as defined in these rule sections. The FCC's OET Bulletin 65 (available on-line at www.fcc.gov/oet/rfsafety) provides information on predicting exposure levels and on methods for ensuring compliance, including the use of warning and alert signs and protective equipment for workers.

10. Grant of this STA is without prejudice to any determination that the Commission may make regarding SpaceX Services pending application IBFS File No. SES-LIC-20190906-01171.

11. Any action taken or expense incurred as a result of operations pursuant to this STA is solely at SpaceX Services' risk.

This grant is issued pursuant to Section 0.261 of the Commission's rules on delegated authority, 47 C.F.R. § 0.261, and is effective upon release. This special temporary authority was authorized pursuant to Section 1.62 of the Commission's rules, 47 C.F.R. § 1.62.

2. Contact			
Name:	William M. Wiltshire	Phone Number:	202-730-1350
Company:	Harris, Wiltshire & Grannis LLP	Fax Number:	202-730-1301
Street:	1919 M Street, NW Suite 800	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 SESLIC2019090601171 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 CGX - Fixed Satellite Transmit/Receive Earth Station			
5. Type Request			
☒ Use Prior to Grant ☐ Change Station Location ☐ Other			
6. Requested Use Prior Date 10/17/2019			
7. City Merrilan		8. Latitude (dd mm ss.s h) 44 24 22.8 N	

9. State WI	10. Longitude (dd mm ss.s h) 90 48 51.4 W
11. Please supply any need attachments. Attachment 1: Gateway STA Request Attachment 2: Attachment 3:	
12. 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 Services seeks special temporary authority for communications between its Ka-band gateway earth station and SpaceX NGSO satellites for 60 days after orbital injection.	
13. 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 ☐	
14. Name of Person Signing Patricia Cooper	15. Title of Person Signing Vice President, Satellite Government Affairs
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

SpaceX Services, Inc. (“SpaceX Services”), pursuant to Section 25.120 of the Commission’s rules, hereby requests Special Temporary Authority (“STA”) for 60 days to allow communications between its earth stations and satellites soon to be launched by its sister company, Space Exploration Holdings, LLC (“SpaceX”), into its non-geostationary orbit (“NGSO”) Starlink constellation. Applications for all of those earth stations are currently pending.¹ For the reasons discussed below, the Commission should find that these temporary operations during early phases of satellite deployment would serve the public interest and grant both aspects of this request.

Earlier this year, the Commission authorized SpaceX to relocate 1,584 of the satellites in its NGSO system to an altitude of 550 km, where they would be able to achieve better performance and orbital debris mitigation characteristics without increasing interference to any other licensed user of the relevant spectrum.² SpaceX has begun the process of deploying its system by launching 60 satellites in May. Recently, SpaceX proposed an incremental modification that will adjust the orbital spacing of its satellites as currently authorized in a way that will accelerate its timetable for providing high speed, low latency, competitively priced consumer broadband service throughout more of the United States.³ Notably, that application does not request any change in the number of satellites, their orbital altitude or inclination, or their operational characteristics in order to achieve more rapid coverage of U.S. consumers, and also will not present any significant interference issues for any other licensed user of the Ku/Ka-band spectrum.

SpaceX currently anticipates that the next Starlink launch will take place before the end of October. In order to achieve the public interest benefits of accelerated deployment, SpaceX needs to be able to start populating the new orbital plane structure proposed in the pending modification application as soon as possible. Accordingly, SpaceX Services requests a 60-day STA for its earth stations to communicate with the Starlink satellites during the orbit-raising and early operation phases under its authorization as modified.⁴

These operations fall into three categories. First, SpaceX Services would operate a TT&C earth station to conduct telemetry, tracking, and control (“TT&C”) functions during orbit raising⁵

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 *See Space Exploration Holdings, LLC*, 34 FCC Rcd. 2526 (IB 2019) (“SpaceX Modification”).

³ *See* IBFS File No. SAT-MOD-20190830-00087 (Aug. 30, 2019). The Commission has accepted that application for filing. *See* Public Notice, Rep. No. SAT-01412 (Sep. 13, 2019).

⁴ SpaceX will file a complementary STA request to place spacecraft in these new planes while the Commission is considering that application.

⁵ 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 Rcd. 11352, ¶ 70 (2018).

and on-orbit operations while its earth station application is pending. These transmissions would occur in the following frequencies: 12.221 GHz (downlink) and 13.925 GHz (uplink). Second, SpaceX Services would operate Ku-band earth stations to test the communications payload on each of the Starlink satellites. These operations would take place throughout the 10.7-12.7 GHz (downlink) and 14.0-14.5 GHz (uplink) bands. Third, SpaceX Services would operate five Ka-band gateway earth stations to test the communications payload on each of the Starlink satellites. These operations would take place throughout the 28.35-29.1 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 at all sites, and also in the 27.5-28.35 GHz (uplink) band at the Conrad, MT and Loring, ME sites.

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 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 Services will operate on a non-interference basis. Consistent with SpaceX's authorization, SpaceX Services 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 Services will take all reasonable steps to eliminate the interference. Should an issue arise, SpaceX Services can be reached at satellite-operators-pager@spacex.com, which links to the pagers of appropriate technical personnel 24/7.

The next tranche of SpaceX satellites is currently scheduled to be launched by the end of October 2019. Accordingly, SpaceX Services requests that the Commission issue an STA structured to begin on the launch date and remain in force for up to 60 days thereafter.