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 covering satellites soon to be launched into its non-geostationary orbit ("NGSO") Starlink constellation. This request has two distinct components. One relates to the orbital positioning of space stations, while the other relates to communications with earth stations during early phases of operation. For the reasons discussed below, the Commission should find that these temporary operations would serve the public interest and grant both aspects of this request.

1. Orbital Positioning

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.[1] 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.[2] 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 requests a 60-day STA to place spacecraft in these new planes while the Commission is considering that application.

Grant of this aspect of SpaceX's request would serve the public interest by enabling SpaceX to begin to place spacecraft where they will be able to provide service more quickly to more of the United States. This will accelerate the pace at which SpaceX can introduce robust broadband service to those Americans in underserved or completely unserved areas. As demonstrated in its modification application, the small change in satellite spacing will have no material impact on other spectrum users, including NGSO and GSO satellite systems and Ka-band terrestrial links. SpaceX understands that positioning its satellites under this STA would be at its own risk. In the unlikely event that the proposed modification is denied, SpaceX would be able to relocate satellites to locations authorized under its existing license.

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

2 *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).

2. Earth Station Communications

SpaceX also seeks an STA to 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.[3]

These operations fall into three categories. First, SpaceX would communicate with a TT&C earth station to conduct telemetry, tracking, and control ("TT&C") functions during orbit raising[4] 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 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 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 obit 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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With respect to both aspects of this STA request, 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

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[3] 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.

[4] 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).

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.

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