

September 4, 2020

BY ELECTRONIC FILING

Marlene H. Dortch
Secretary
Federal Communications Commission
445 Twelfth Street, S.W.
Washington, DC 20554

Re: *Space Exploration Holdings, LLC, IBFS File No. SAT-MOD-20200417-00037;
RM-11768*

Dear Ms. Dortch:

This is to inform you that, on September 2, 2020, Tim Hughes, Bryon Hargis, and David Goldman from Space Exploration Technologies Corp. (“SpaceX”) spoke with Nick Degani, Senior Counsel to Chairman Pai, to discuss the above referenced proceedings. During the meeting we provided the handout attached hereto as Exhibit A.

SpaceX urged the Commission to act expeditiously on its proposed modification. The record in response to the application clearly demonstrates the public interest benefits from the modification, particularly by improving space safety and bringing faster service to consumers. As shown in Exhibit A, results from beta initial tests have shown both low latency below 30 ms and download speeds greater than 100 Mbps. As it works through these beta tests, SpaceX continues to add features to unlock the full capability of the satellites and user equipment. SpaceX continues its aggressive launch schedule, and this modification is a crucial component in closing the digital divide, including service to Polar Regions.

SpaceX also explained why the record does not support initiating a rulemaking to change the rules for the 12.2-12.7 GHz band. But just as SpaceX was preparing to deliver service, certain interests attempted to resurrect the stale 2016 Petition from MVDDS licensees asking the government to give them additional rights at the expense of existing operations. Initiating any manner of proceeding based on the proposals from those aligned with MVDSS licensees risks harming service to consumers in the most rural and remote areas of the country.

Marlene H. Dortch
September 4, 2019
Page 2 of 2

Sincerely,

/s/ David Goldman

David Goldman
Director of Satellite Policy

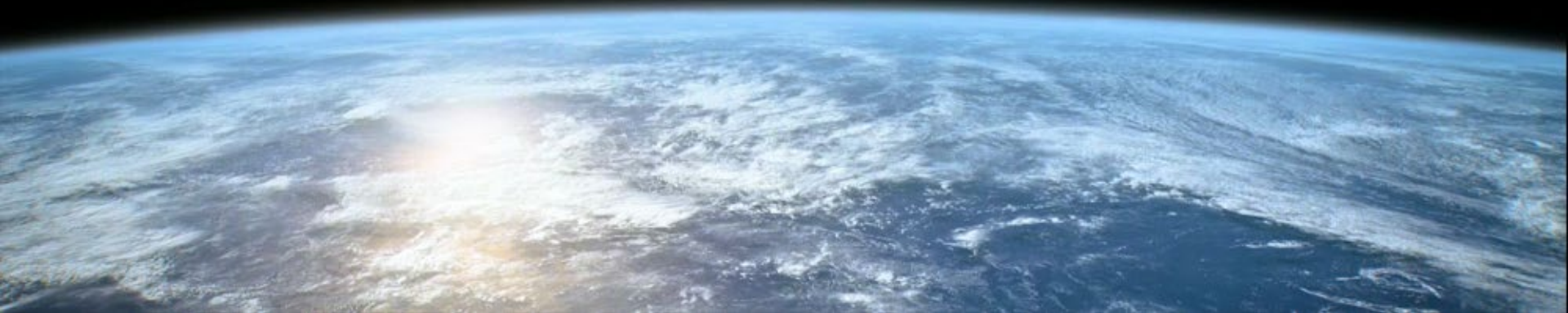
SPACE EXPLORATION TECHNOLOGIES CORP.
1155 F Street, NW
Suite 475
Washington, DC 20004
Tel: 202-649-2641
Email: David.Goldman@spacex.com

Attachment

cc: Nick Degani

EXHIBIT A

Starlink April 2020 Modification



Starlink will provide high speed, low-latency broadband connectivity across the globe, including to locations where traditionally internet has been too expensive, unreliable, or entirely unavailable.



Starlink Basics

Starlink is a constellation of 4,409 satellites operating close to the earth for high-speed, low-latency broadband services directly to the end-user.

SpaceX is manufacturing 120 Starlink satellites each month, with spectrum efficient phased-array antennas and safe space operations

Eleven launches to date, each of ~60 satellites, leveraging Falcon 9 reusable first stages (pioneered 6th reuse)

The U.S. FCC licensed the Starlink constellation in 2018



Starlink Deployment Status

- In the past two years, SpaceX has:
 - Invested hundreds of millions of dollars in Starlink to date
 - Built a U.S. world-leading manufacturing system, now building 120 satellites per month
 - Deployed over 650 satellites to date, now by far the largest satellite constellation in the world by far
 - Building gateway ground stations throughout the United States and internationally
 - On track to produce thousands of consumer user terminals per month, heading toward high-rate production
 - Begun beta service for users across multiple U.S. states



Starlink Global Broadband

- High-speed, low latency broadband to any location on Earth
 - Tested at over 100 Mbps using standard user equipment
 - Latency <40-50ms round trip to internet
- Rapid build-out of constellation – gearing to launch 120 satellites per month with SpaceX’s reusable Falcon 9 launch system
- Resiliency through path diversity: phased-array antennas for satellites and user terminals
- Responsible space operation with low altitude system and autonomous collision avoidance
- Ethernet and integrated Wi-Fi capacity in user terminal
- Simple user installation—point at the sky and plug in
- Hundreds of gateways across the US to optimize service anywhere in the country



MODIFICATION OF KU/KA-BAND LICENSE

Partial constellation modification

- Move remaining satellites to lower altitudes of 540 km to 570 km
- Align polar shells to speed deployment to Polar Regions, including Alaska

Further enhance space safety

- Update orbital debris showing

Slightly reduce number of satellites

- Now 4,408 satellites
- Demonstrate EPFD, PFD compliance to protect space, terrestrial systems
- Demonstrate lack of significant impact on other licensed NGSO systems

SpaceX System Constellation

SPACEX PROPOSED MODIFICATION					
Orbital Planes	72	72	36	6	4
Satellites per plane	22	22	20	58	43
Altitude	550 km	540 km	570 km	560 km	560 km
Inclination	53°	53.2°	70°	97.6°	97.6°

RF COMPLIANCE APPROACH: NO SIGNIFICANT INTERFERENCE

- Similar or lower Downlink PFD
- Similar or lower ES EIRP
- Same sidelobe levels
- Same GSO avoidance angles

- **EARTH STATION ELEVATION:**
 - at $\geq 25^\circ$ (except for gateways in the polar regions using $\geq 5^\circ$)

- **LOWER ALTITUDE → SMALLER SPOT SIZE, FEWER SATELLITES IN VIEW**

SPACEX

