



May 17, 2022

BY ELECTRONIC FILING

Marlene H. Dortch
Secretary
Federal Communications Commission
45 L Street, N.E.
Washington, DC 20554

Re: *IBFS File Nos. SAT-LOA-20200526-00055 and SAT-AMD-20210818-00105*

Dear Ms. Dortch:

On May 13, 2022, representatives of Space Exploration Holdings, LLC and its parent company, Space Exploration Technologies Corp. (collectively, “SpaceX”), met with representatives of the Commission’s International Bureau to discuss SpaceX’s pending applications for a second-generation (“Gen2”) constellation that will drive dramatically improved connectivity and resilience for Americans and underserved communities around the world.¹

During the conversation, SpaceX updated the Commission on the status of its constellation to date and clarified several issues that have been raised in the record for its Gen2 constellation. First, SpaceX reiterated its long-standing commitment to spectrum sharing and highlighted steps it has taken to ensure that its Gen2 system can share spectrum well. In response to claims by OneWeb that SpaceX’s amendment would increase interference,² SpaceX explained that OneWeb had made an error in its calculations.³ Further, contrary to Viasat’s claims, the Commission’s rules do not require “measures to protect GSO operations outside the U.S. in the 18.8-19.3 GHz” portion of the Ka-band,⁴ a band in which Viasat continues to operate without U.S. authorization. On coordination matters such as these that fall outside the United States, the Commission should not tie U.S. operators’ hands behind their backs.

SpaceX also expressed its continuing commitment to space sustainability and responded to baseless allegations from Viasat. As an initial matter, the Commission lacks jurisdiction over many of the issues of space sustainability Viasat raises. SpaceX also reiterated that the National Environmental Policy Act (“NEPA”) does not apply to space and noted that there is no evidence in the record that substances such as alumina would fall back into the atmosphere within NEPA’s jurisdiction. And even if the Commission did have authority over collision risks in space, the Commission followed the expert advice from NASA when it explicitly decided not to adopt an

¹ A list of participants is attached as Exhibit A. A slide presentation is attached as Exhibit B.

² See Comments of OneWeb, IBFS File Nos. SAT-LOA-20200526-00055 and SAT-AMD-20210818-00105, at 10-11 (Mar. 8, 2022).

³ See SpaceX Consolidated Response, IBFS File Nos. SAT-LOA-20200526-00055 and SAT-AMD-20210818-00105, at 35-36 (Feb. 24, 2022).

⁴ See Petition to Deny or Hold in Abeyance of Viasat, Inc., IBFS File Nos. SAT-LOA-20200526-00055 and SAT-AMD-20210818-00105, at 32-34 (Feb. 8, 2022); Reply of Viasat, IBFS File Nos. SAT-LOA-20200526-00055 and SAT-AMD-20210818-00105, at 20-22 (Mar. 8, 2022).

aggregate metric. Instead, the Commission sought further comment on whether such a metric is appropriate and has so far decided not to adopt such a metric. Applying an aggregate metric here that the Commission has never applied before and has decided not to adopt would be in contravention of the decision by the Commission and would be arbitrary and capricious.

The Gen2 application has now been pending for two years, and the record is complete. The Commission should act expeditiously to grant the application so that consumers and businesses around the country—including in rural and remote areas traditionally left on the wrong side of the digital divide—can take advantage of next-generation satellite broadband.

Sincerely,

/s/ David Goldman

David Goldman
Director, Satellite Policy

SPACE EXPLORATION TECHNOLOGIES CORP.

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Attachments

EXHIBIT A

Exhibit A

May 13, 2022 Meeting Participants:

SpaceX:

Mihai Albulet
Jameson Dempsey
David Goldman
David Goldstein
Joseph Petrzela
Brett Tarnutzer

International Bureau:

Jameyanne Fuller
Joseph Hill
Karl Kensinger
Kathryn Medley
Kerry Murray
Merissa Velez

EXHIBIT B

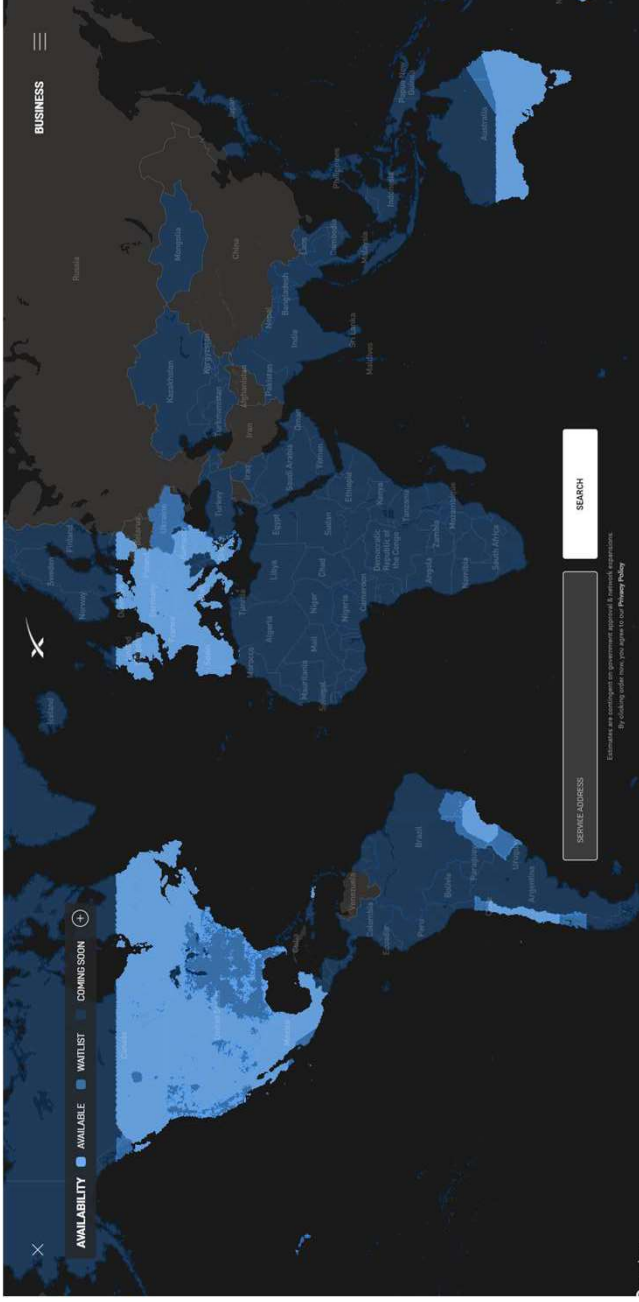
The image features a background of a sunset sky with orange and yellow clouds. In the foreground, the dark, metallic structure of a building is visible, with a small satellite dish antenna mounted on its roof. The SpaceX logo is positioned in the upper left area of the image.

SPACEX

May 2022

STARLINK UPDATE

Briefing for Federal Communications Commission

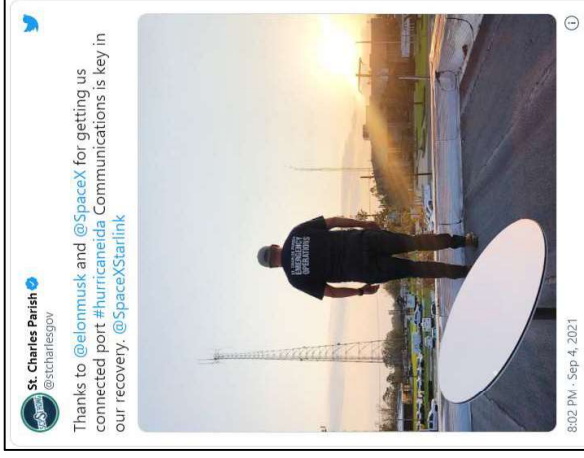


- 2,400+ satellites launched into low Earth orbit (LEO) across 45 missions
- Available in 32 countries
- 200 Mbps (improving to 1 Gbps)



Starlink Deployment Status

- Service underway - direct-to-consumers across 48 U.S. states
- Supporting connectivity to numerous communities, tribes, school districts, etc.
- Supporting enterprise and small businesses
- Brings meaningful service to remote, rural communities with un/underserved households
- Pricing on par or better than existing options in unserved areas
- No contracts; no early termination fees; no data caps



SpaceX Gen2 will Use and Share Spectrum Efficiently

- SpaceX has engineered a system that shares well
 - Supports spectrum splitting, uses small steerable beams
 - Spectrum issues raised were not SpaceX- specific and are being addressed in a proceeding with general applicability:
 - Addressing inline events
 - Protecting earlier round systems from interference
 - Coordinating in good faith
 - Sharing technical information
- SpaceX has demonstrated the Gen2 amendment does not increase interference
- All requested elevation angles are consistent with Commission rules
- The rules don't require any "measures to protect GSO operations outside the U.S. in the 18.8-19.3 GHz" portion of Ka as Viasat suggests. In fact, Viasat is operating in this band without authorization in the US.
- SpaceX expects favorable findings from the ITU on EPFD



SpaceX Gen 2 Filing and Space Sustainability

- SpaceX will operate at or near the nominal altitudes
 - SpaceX has and will continue to coordinate physical operations with other operators
- Gen2 system meets or exceeds all FCC orbital debris requirements as well as widely accepted space sustainability best-practices
 - Probability of collision for inactive Starlink satellites vs > 10 cm debris
 - Maximum is 0.0019 for individual satellite
 - Conservative 3% yields 0.000057 << 0.001
 - Probability of collision for active SpaceX satellites vs < 10 cm debris sufficient to prevent post-mission disposal maneuvers
 - Worst case overall probability of collision with small debris (down to one millimeter in diameter) of less than 0.004672 for an individual space station during its mission lifetime << 0.01



SpaceX Gen 2 Filing and Space Sustainability (2/2)

- SpaceX builds highly reliable, demisable and maneuverable satellites and does not intend to overlap with other owner/operator existing shells
 - Our reliability is > 99%, currently
- SpaceX is committed to continued work with NASA and the broader astronomy community
 - Develop and implement mitigations to meet our target of visual magnitude 7
 - Makes timely and accurate ephemerides available for avoidance and post-processing
- While NEPA does not apply in space, still mitigating all effects of deployment
 - Aluminum is equivalent to previous space operations that did not have negative effects. For instance, the aluminum in the Gen 2 system is comparable to what Space Shuttle injected over its life.

