

August 2, 2021

BY ELECTRONIC FILING

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

Re: *IBFS File No. SAT-LOA-20200526-00055*

Dear Ms. Dortch:

This is to inform you that, on July 29, 2021, representatives of Space Exploration Holdings, LLC ("SpaceX") had a conference call with members of the Commission's International Bureau to discuss the above referenced application for SpaceX's second generation non-geostationary orbit satellite system.¹ The topics of discussion are reflected in the attached presentation, which SpaceX provided to the staff in advance of the call.

Sincerely,

/s/ David Goldman

David Goldman
Director, Satellite Policy

SPACE EXPLORATION TECHNOLOGIES CORP.
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Washington, DC 20004
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Attachments

cc: International Bureau participants

¹ Participants on the call are listed in Exhibit 1 hereto.

EXHIBIT 1
CALL PARTICIPANTS

International Bureau

Karl Kensinger
Joe Hill
Kerry Murray
Jameyanne Fuller

SpaceX

David Goldman
Mihai Albulet
Zahid Islam
Ryan Wallace
Kevin Wu
Bill Wiltshire

July 2021

SPACEX GEN2 CONSTELLATION



STARLINK DEPLOYMENT STATUS

~1740 SpaceX satellites launched

Starlink is rapidly rolling out internationally

- Currently serving ~90,000 users in 12 countries
- Over half a million orders/deposits globally



SpaceX Next-Generation Constellation



Next-Generation Satellites

- Faster speeds
- Lower latency
- More people served
- More backhaul capacity

Leveraging Advanced Capabilities of Starship

- Faster deployment
- Includes lower self-cleaning altitudes

Gen2 Constellation Design Overview

Configuration 1

Altitude (km)	Inclination (deg)	Planes	Sats/Plane	Total Sats
535	33	28	120	3,360
530	43	28	120	3,360
525	53	28	120	3,360
360	96.9	30	120	3,600
350	38	48	110	5,280
345	46	48	110	5,280
340	53	48	110	5,280
604	148	12	12	144
614	115.7	18	18	324
				29,988

Configuration 2

Altitude (km)	Inclination (deg)	Planes	Sats/Plane	Total Sats
535	38	72	24	1,728
530	45	72	24	1,728
525	53	72	23	1,656
520	30	72	23	1,656
515	22	72	23	1,656
510	14	72	23	1,656
360	96.9	40	50	2,000
346	53	5816	1	5,816
334	40	5816	1	5,816
328	30	5816	1	5,816
604	148	12	12	144
614	115.7	18	18	324

29,996

- Gen2 amendment will include parameters for next-gen SpaceX satellite and gateway deployment
- Amendment to application driven by better definition of Starship performance and Gen2 satellite design specifications
- Primary configuration is #1

Orbital Safety

Configuration 1

Altitude (km)	Inclination (deg)	Decay Time (yrs)	Large Object Passive Decay Collision Risk
535	33	1.46	3.39E-04
530	43	1.37	3.31E-04
525	53	1.29	3.24E-04
360	96.9	0.06	4.33E-06
350	38	0.04	2.16E-06
345	46	0.04	2.06E-06
340	53	0.04	1.86E-06
604	148	2.78	1.25E-03
614	115.7	3.43	1.99E-03

Configuration 2

Altitude (km)	Inclination (deg)	Decay Time (yrs)	Large Object Passive Decay Collision Risk
535	38	1.47	3.21E-04
530	45	1.34	3.31E-04
525	53	1.29	3.24E-04
520	30	1.17	2.51E-04
515	22	1.07	2.20E-04
510	14	0.98	1.97E-04
360	96.9	0.06	4.33E-06
346	53	0.04	2.21E-06
334	40	0.03	1.39E-06
328	30	0.03	1.13E-06
604	148	2.78	1.25E-03
614	115.7	3.43	1.99E-03

- Large object passive decay risks shown per satellite
- Passive decay times on average <4 years
- Gen2 satellite intended to improve even further from current near-perfect Gen1 rates above injection altitude.

Unchanged Parameters

Unchanged from original Gen2 license application:

- User links will use both Ku and Ka band with a max number of co frequency beams, $N_{co} = 1$
- Gateways links will use both Ka and E band with a max number of co frequency beams, $N_{co} = 32$
- Min elevation angle will be 25° , except at latitudes $> 62^\circ$ will use 5° min elevation
- Starlink will meet all applicable regulatory constraints, including PFD and EPFD limits

Interference Analyses

NGSO Interference Analysis

- Ku Band : OneWeb (UT) , Kepler (GW)
- Ka Band: O3B, Viasat, Telesat, Amazon, OneWeb (GW)
- E band: No other NGSO system filed in E-band.
- Downlink & Uplink interference Analysis (I/N from/to SpaceX to/from other NGSO)
- Low/High gain for victim ES and victim satellite antenna
- Constant PFD / EIRP for interfering satellite, Low/High EIRP for interfering ES
- Collocated ES for SpaceX and the other NGSO
 - No change in polar orbits
- SpaceX full constellation comparison – pending filing vs. amendment
- No change in SpaceX RF parameters
- No GSO exclusion angle is assumed for any NGSO system
- Satellite selection: Random pointing from all visible satellites