Narrative
File No. 2431-EX-ST-2023

Applicant Information
Name: Kelsie Rutherford
Phone: (202) 478-7191
Email: kelsie.rutherford@ses.com

Stop Buzzer Contact Person
Name: David Nemeth
Phone: (703) 581-5828
Email: dnemeth@planet.com

Purpose of Experimental Special Temporary Authority

SES Americom Inc. ("SES") respectfully requests an experimental Special Temporary Authority ("STA") for a period of 6 months beginning on January 31, 2024 through July 31, 2024 to test and demonstrate the efficacy and capabilities of the Planet Labs Quadrifilar Helix and the Optisys Horn Array antennas.

Specifically, SES seeks to (1) operate the Planet Labs Quadrifilar Helix antenna with the SES-2[1] geostationary orbit ("GSO") spacecraft using the 6262 - 6423 MHz uplink C-band frequency bands; (2) operate the Planet Labs Quadrifilar Helix antenna with the NSS-9[2] GSO using the 6 262 - 6 423 MHz band; and (3) use the Optisys Horn Array antenna to communicate with the O3b mPOWER non-geostationary orbit ("NGSO") constellation[3] using spectrum in which NGSO operations have sole primary status, transmitting in the 29 072 - 29 098 MHz frequency band.

All operations in these frequency bands will be coordinated in compliance with 47 C.F.R. § 101.103(d). SES has begun the coordination process at the test location and will not seek to operate prior to the completion of the coordination process. SES will submit its completed coordination documents to the application file when they are finalized.

Grant of the requested authority is in the public interest as it will allow SES to evaluate and demonstrate the ability of these antennas to support critical satellite communications, such as for NASA's future commercial space relay missions.[4]

Class of station (fixed, mobile, fixed and mobile)

For this demonstration, the antennas will communicate with SES's MEO and GSO satellites in a fixed position on the ground.

---

[1] SES Americom, Inc., Call Sign S2826, File No. SAT-MOD-20120315-00048.
[2] New Skies Satellites B.V., Call Sign S2756, File Nos. SAT-MPL-20090331-00040 et al., granted July 1, 2009.
[3] *O3b Limited*, Order and Declaratory Ruling, 33 FCC Rcd 5508 (2018) ("Market Access Grant"), *available at* https://www.fcc.gov/document/commission-grants-o3b-modification-us-market-access.
[4] *NASA Selects SES Government Solutions to Support Near-Earth Communications*, (May 10, 2022), https://www.ses.com/press-release/nasa-selects-ses-government-solutions-support-near-earth-communications.

Description of the location and geographical coordinates of the proposed operation

1245 Terra Bella Ave.
Mountain View, CA. 94043
Geographical coordinates: 37° 24' 29.0" N, 122° 4' 21.0" W

Transmit equipment to be used

Manufacturer	Model	Gain (dBi)	Size	Number of Units
Planet Labs	Quadrifilar Helix	4.0	42 mm height 13.4 mm diameter	1
Optisys	Horn Array	30.0	16.5 cm	1

Frequencies and transmit power levels

Antenna	Frequency	Station Class	Max. EIRP (dBW)	Max. EIRP Density (dBW/4kHz)	ERP	Mean /Peak	Frequency Tolerance (+/-)	Emission Designator
Planet Labs Quadrifilar Helix	6262 - 6423 MHz	FX	7.0	-17	3.05 W	P	0.000024 %	1M00G7W
Optisys Horn Array	29072 - 29098 MHz	FX	33	-21	1216 W	P	0.000001%	500KG7W

Overall height of antenna of antenna structure above the ground

The overall height of the antennas above ground level is approximately 3 meters.

Directional Antenna Information

Is a directional antenna used? Yes.

Antenna	Width of the beam in degrees at the half power point	Orientation in horizontal (azimuth) plane (degrees)
Planet Labs Quadrifilar Helix	Az = 140 degrees El = 140 degrees	Azimuth from 246.9° to 246.9°
Optisys Horn Array	Az = 8 degrees El = 8 degrees	Azimuth from 0.0° to 360°

Compliance with Part 25 Off-Axis EIRP Density

Please see Figure 1 below, which demonstrates that the Planet Labs Quadrifilar Helix antenna Off-axis EIRP density, from 0 to 180 degrees, complies with the FCC 25.218(d) envelope.

Figure 1. Planet Labs Quadrifilar Helix antenna EIRP density vs Theta @ 6.3