



312 File Number: **SATMOD2020041700037**

Filing Description

| Question | Response |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | SpaceX Ku/Ka NGSO Constellation. Application to lower remaining satellites above 1000 km. This form reflects a representative subset of the complete system technical data. Complete technical data is included in the databases attached |

Satellite Information

| Question | Response |
|--------------------------------------------------------------|----------------------|
| Select Orbit Type | NGSO |
| Space Station or Satellite Network Name | SpaceX Constellation |
| Estimated Lifetime of Satellite(s) From Date of Launch | 5 Years |
| Will the space station(s) operate on a Common Carrier basis? | No |

Operating Frequency Bands (11)

| Nature of service | Description | Frequency Band(s) | Mode Type |
|-------------------------|-------------|--------------------------|-----------|
| Fixed-Satellite Service | | 12750.0 MHz -13250.0 MHz | Receive |
| Fixed-Satellite Service | | 14000.0 MHz -14500.0 MHz | Receive |
| Fixed-Satellite Service | | 27500.0 MHz -29100.0 MHz | Receive |
| Fixed-Satellite Service | | 29500.0 MHz -30000.0 MHz | Receive |
| Fixed-Satellite Service | | 13850.0 MHz -14000.0 MHz | Receive |
| Fixed-Satellite Service | | 10700.0 MHz -12700.0 MHz | Transmit |
| Fixed-Satellite Service | | 17800.0 MHz -18600.0 MHz | Transmit |
| Fixed-Satellite Service | | 18800.0 MHz -19300.0 MHz | Transmit |
| Fixed-Satellite Service | | 19700.0 MHz -20200.0 MHz | Transmit |
| Fixed-Satellite Service | | 12150.0 MHz -12250.0 MHz | Transmit |
| Fixed-Satellite Service | | 18550.0 MHz -18600.0 MHz | Transmit |

**Orbital
Information For
Non-
Geostationary
Satellites**

| Question | Response |
|--------------------------------------------------------|------------|
| Total Number of Satellites in the active constellation | 22 |
| Orbit Epoch Date | 01/01/2015 |
| Celestial Reference Body | Earth |

Orbital Plane 1:

| Question | Response |
|---------------------------------------------------------------|----------------|
| Number of Satellites in Plane | 22 |
| Inclination Angle | 53.0 degrees |
| Right Ascension of Ascending Node | 0.0 degrees |
| Argument of Perigee | 0.0 degrees |
| Orbital Period | 5760.0 seconds |
| Apogee | 550.0 km |
| Perigee | 550.0 km |
| Active Service Arc Begin Angle with respect to Ascending Node | 0.0 degrees |
| Active Service Arc End Angle with respect to Ascending Node | 0.0 degrees |

Mean Anomaly For Each Satellite

| Satellite Number | Mean Anomaly (degrees) at the Orbit Epoch Date |
|------------------|------------------------------------------------|
| 1 | 32.7 |
| 2 | 16.4 |
| 3 | 196.4 |
| 4 | 278.2 |
| 5 | 294.5 |
| 6 | 343.6 |
| 7 | 0.0 |
| 8 | 49.1 |
| 9 | 65.5 |
| 10 | 81.8 |
| 11 | 98.2 |
| 12 | 114.5 |
| 13 | 261.8 |

| | |
|-----------|-------|
| 14 | 147.3 |
|-----------|-------|

| | |
|-----------|-------|
| 15 | 327.3 |
|-----------|-------|

| | |
|-----------|-------|
| 16 | 212.7 |
|-----------|-------|

| | |
|-----------|-------|
| 17 | 229.1 |
|-----------|-------|

| | |
|-----------|-------|
| 18 | 245.5 |
|-----------|-------|

| | |
|-----------|-------|
| 19 | 130.9 |
|-----------|-------|

| | |
|-----------|-------|
| 20 | 180.0 |
|-----------|-------|

| | |
|-----------|-------|
| 21 | 163.6 |
|-----------|-------|

| | |
|-----------|-------|
| 22 | 310.9 |
|-----------|-------|

Receiving Beams 1:

| Question | Response |
|---------------------------------------------------------|--------------------------|
| Beam ID | Rx4 |
| Receive Beam Frequency | 13850.0 MHz -14000.0 MHz |
| Beam Type | Fixed |
| Polarization | LHCP |
| Peak Gain | 3.0 dBi |
| Antenna Pointing Error | 0.1 degrees |
| Antenna Rotational Error | 0.1 degrees |
| Polarization Switchable | |
| Polarization Alignment Relative to the Equatorial Plane | 45.0 degrees |
| G/T at Max. Gain Point | -29.3 dB/K |
| Min. Saturation Flux Density | -0.1 dBW/m2 |
| Max. Saturation Flux Density | 0.0 dBW/m2 |
| Co- or Cross Polar Mode | C |
| Service Area Description | Global |

Receiving Beams 2:

| Question | Response |
|--------------------------|--------------------------|
| Beam ID | Rx10 |
| Receive Beam Frequency | 29500.0 MHz -30000.0 MHz |
| Beam Type | Steerable |
| Polarization | LHCP |
| Peak Gain | 38.5 dBi |
| Antenna Pointing Error | 0.1 degrees |
| Antenna Rotational Error | 0.1 degrees |

| | |
|---------------------------------------------------------|--------------|
| Polarization Switchable | |
| Polarization Alignment Relative to the Equatorial Plane | 45.0 degrees |
| G/T at Max. Gain Point | 11.5 dB/K |
| Min. Saturation Flux Density | -0.1 dBW/m2 |
| Max. Saturation Flux Density | 0.0 dBW/m2 |
| Co- or Cross Polar Mode | C |
| Service Area Description | Global |

Receiving Beams 3:

| Question | Response |
|---------------------------------------------------------|--------------------------|
| Beam ID | Rx8 |
| Receive Beam Frequency | 27500.0 MHz -29100.0 MHz |
| Beam Type | Steerable |
| Polarization | LHCP |
| Peak Gain | 38.5 dBi |
| Antenna Pointing Error | 0.1 degrees |
| Antenna Rotational Error | 0.1 degrees |
| Polarization Switchable | |
| Polarization Alignment Relative to the Equatorial Plane | 45.0 degrees |
| G/T at Max. Gain Point | 11.5 dB/K |
| Min. Saturation Flux Density | -0.1 dBW/m2 |
| Max. Saturation Flux Density | 0.0 dBW/m2 |
| Co- or Cross Polar Mode | C |
| Service Area Description | Global |

Receiving

Beams 4:

| Question | Response |
|---------------------------------------------------------|------------------------------|
| Beam ID | Rx6 |
| Receive Beam Frequency | 14000.0 MHz -14500.0 MHz |
| Beam Type | Both Steerable and Shapeable |
| Polarization | LHCP |
| Peak Gain | 35.7 dBi |
| Antenna Pointing Error | 0.1 degrees |
| Antenna Rotational Error | 0.1 degrees |
| Polarization Switchable | |
| Polarization Alignment Relative to the Equatorial Plane | 45.0 degrees |
| G/T at Max. Gain Point | 8.4 dB/K |
| Min. Saturation Flux Density | -0.1 dBW/m2 |
| Max. Saturation Flux Density | 0.0 dBW/m2 |
| Co- or Cross Polar Mode | C |
| Service Area Description | Global |

Receiving Beams 5:

| Question | Response |
|--------------------------|------------------------------|
| Beam ID | Rx2 |
| Receive Beam Frequency | 12750.0 MHz -13250.0 MHz |
| Beam Type | Both Steerable and Shapeable |
| Polarization | LHCP |
| Peak Gain | 35.7 dBi |
| Antenna Pointing Error | 0.1 degrees |
| Antenna Rotational Error | 0.1 degrees |
| Polarization Switchable | |

| | |
|---------------------------------------------------------|--------------|
| Polarization Alignment Relative to the Equatorial Plane | 45.0 degrees |
| G/T at Max. Gain Point | 8.4 dB/K |
| Min. Saturation Flux Density | -0.1 dBW/m2 |
| Max. Saturation Flux Density | 0.0 dBW/m2 |
| Co- or Cross Polar Mode | C |
| Service Area Description | Global |

Receiving Beams 6:

| Question | Response |
|---------------------------------------------------------|--------------------------|
| Beam ID | Rx3 |
| Receive Beam Frequency | 13850.0 MHz -14000.0 MHz |
| Beam Type | Fixed |
| Polarization | RHCP |
| Peak Gain | 3.0 dBi |
| Antenna Pointing Error | 0.1 degrees |
| Antenna Rotational Error | 0.1 degrees |
| Polarization Switchable | |
| Polarization Alignment Relative to the Equatorial Plane | 45.0 degrees |
| G/T at Max. Gain Point | -29.3 dB/K |
| Min. Saturation Flux Density | -0.1 dBW/m2 |
| Max. Saturation Flux Density | 0.0 dBW/m2 |
| Co- or Cross Polar Mode | C |
| Service Area Description | Global |

Receiving Beams 7:

| Question | Response |
|----------|----------|
|----------|----------|

| | |
|---------------------------------------------------------|--------------------------|
| Beam ID | Rx9 |
| Receive Beam Frequency | 29500.0 MHz -30000.0 MHz |
| Beam Type | Steerable |
| Polarization | RHCP |
| Peak Gain | 38.5 dBi |
| Antenna Pointing Error | 0.1 degrees |
| Antenna Rotational Error | 0.1 degrees |
| Polarization Switchable | |
| Polarization Alignment Relative to the Equatorial Plane | 45.0 degrees |
| G/T at Max. Gain Point | 11.5 dB/K |
| Min. Saturation Flux Density | -0.1 dBW/m2 |
| Max. Saturation Flux Density | 0.0 dBW/m2 |
| Co- or Cross Polar Mode | C |
| Service Area Description | Global |

Receiving Beams 8:

| Question | Response |
|--------------------------|--------------------------|
| Beam ID | Rx7 |
| Receive Beam Frequency | 27500.0 MHz -29100.0 MHz |
| Beam Type | Steerable |
| Polarization | RHCP |
| Peak Gain | 38.5 dBi |
| Antenna Pointing Error | 0.1 degrees |
| Antenna Rotational Error | 0.1 degrees |
| Polarization Switchable | |

| | |
|---------------------------------------------------------|--------------|
| Polarization Alignment Relative to the Equatorial Plane | 45.0 degrees |
| G/T at Max. Gain Point | 11.5 dB/K |
| Min. Saturation Flux Density | -0.1 dBW/m2 |
| Max. Saturation Flux Density | 0.0 dBW/m2 |
| Co- or Cross Polar Mode | C |
| Service Area Description | Global |

Receiving Beams 9:

| Question | Response |
|---------------------------------------------------------|------------------------------|
| Beam ID | Rx5 |
| Receive Beam Frequency | 14000.0 MHz -14500.0 MHz |
| Beam Type | Both Steerable and Shapeable |
| Polarization | RHCP |
| Peak Gain | 35.7 dBi |
| Antenna Pointing Error | 0.1 degrees |
| Antenna Rotational Error | 0.1 degrees |
| Polarization Switchable | |
| Polarization Alignment Relative to the Equatorial Plane | 45.0 degrees |
| G/T at Max. Gain Point | 8.4 dB/K |
| Min. Saturation Flux Density | -0.1 dBW/m2 |
| Max. Saturation Flux Density | 0.0 dBW/m2 |
| Co- or Cross Polar Mode | C |
| Service Area Description | Global |

Receiving Beams 10:

| Question | Response |
|----------|----------|
|----------|----------|

| | |
|---------------------------------------------------------|------------------------------|
| Beam ID | Rx1 |
| Receive Beam Frequency | 12750.0 MHz -13250.0 MHz |
| Beam Type | Both Steerable and Shapeable |
| Polarization | RHCP |
| Peak Gain | 35.7 dBi |
| Antenna Pointing Error | 0.1 degrees |
| Antenna Rotational Error | 0.1 degrees |
| Polarization Switchable | |
| Polarization Alignment Relative to the Equatorial Plane | 45.0 degrees |
| G/T at Max. Gain Point | 8.4 dB/K |
| Min. Saturation Flux Density | -0.1 dBW/m ² |
| Max. Saturation Flux Density | 0.0 dBW/m ² |
| Co- or Cross Polar Mode | C |
| Service Area Description | Global |

**Receiving
Channels (10)**

| Channel ID | Channel Bandwidth (MHz) | Center Frequency s (MHz) | Feeder Link, Service Link or TT&C |
|-------------------|--------------------------------|---------------------------------|----------------------------------------------|
| Rx10 | 500.0 | 29750.0 | Service Link |
| Rx01 | 500.0 | 13000.0 | Service Link |
| Rx02 | 500.0 | 13000.0 | Service Link |
| Rx03 | 150.0 | 13925.0 | TT&C |
| Rx04 | 150.0 | 13925.0 | TT&C |
| Rx05 | 500.0 | 14250.0 | Service Link |
| Rx06 | 500.0 | 14250.0 | Service Link |
| Rx07 | 1600.0 | 28300.0 | Service Link |
| Rx08 | 1600.0 | 28300.0 | Service Link |
| Rx09 | 500.0 | 29750.0 | Service Link |

Transmitting Beams 1:

| Question | Response |
|---------------------------------------------------------|--------------------------|
| Beam ID | Tx8 |
| Transmit Beam Frequency | 18550.0 MHz -18600.0 MHz |
| Beam Type | Fixed |
| Polarization | LHCP |
| Peak Gain | 5.0 dBi |
| Antenna Pointing Error | 0.1 degrees |
| Antenna Rotational Error | 0.1 degrees |
| Polarization Switchable | |
| Polarization Alignment Relative to the Equatorial Plane | 45.0 degrees |
| Max. Transmit EIRP Density | -86.1 dBW/Hz |
| Max. Transmit EIRP | 0.0 dBW |
| Co- or Cross Polar Mode | C |
| Service Area Description | Global |

Max. Power Flux Density

| | * 0° - 5° | * 5° - 10° | * 10° - 15° | * 15° - 20° | * 20° - 25° | * 25° - 90° |
|----------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| * | (dBW/m ² | (dBW/m ² | (dBW/m ² | (dBW/m ² | (dBW/m ² | (dBW/m ² |
| BW: | /BW): | /BW): | /BW): | /BW): | /BW): | /BW): |
| 1.0 MHz | -164.0 | -162.3 | -160.7 | -159.3 | -158.1 | -151.9 |

Transmitting Beams 2:

| Question | Response |
|-------------------------|--------------------------|
| Beam ID | Tx4 |
| Transmit Beam Frequency | 12150.0 MHz -12250.0 MHz |

| | |
|---------------------------------------------------------|--------------|
| Beam Type | Fixed |
| Polarization | LHCP |
| Peak Gain | 3.0 dBi |
| Antenna Pointing Error | 0.1 degrees |
| Antenna Rotational Error | 0.1 degrees |
| Polarization Switchable | |
| Polarization Alignment Relative to the Equatorial Plane | 45.0 degrees |
| Max. Transmit EIRP Density | -89.2 dBW/Hz |
| Max. Transmit EIRP | 0.0 dBW |
| Co- or Cross Polar Mode | C |
| Service Area Description | Global |

Max. Power Flux Density

| | * 0° - 5° (dBW/m ² /BW): | * 5° - 10° (dBW/m ² /BW): | * 10° - 15° (dBW/m ² /BW): | * 15° - 20° (dBW/m ² /BW): | * 20° - 25° (dBW/m ² /BW): | * 25° - 90° (dBW/m ² /BW): |
|----------------|-------------------------------------------|--------------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|
| 4.0 kHz | -191.0 | -189.4 | -187.8 | -186.4 | -185.2 | -179.0 |

Transmitting Beams 3:

| Question | Response |
|-------------------------|--------------------------|
| Beam ID | Tx12 |
| Transmit Beam Frequency | 19700.0 MHz -20200.0 MHz |
| Beam Type | Steerable |
| Polarization | LHCP |
| Peak Gain | 34.5 dBi |
| Antenna Pointing Error | 0.1 degrees |

| | |
|---------------------------------------------------------|--------------|
| Antenna Rotational Error | 0.1 degrees |
| Polarization Switchable | |
| Polarization Alignment Relative to the Equatorial Plane | 45.0 degrees |
| Max. Transmit EIRP Density | -54.3 dBW/Hz |
| Max. Transmit EIRP | 29.5 dBW |
| Co- or Cross Polar Mode | C |
| Service Area Description | Global |

Max. Power Flux Density

| | * 0° - 5° (dBW/m ²) /BW: | * 5° - 10° (dBW/m ²) /BW: | * 10° - 15° (dBW/m ²) /BW: | * 15° - 20° (dBW/m ²) /BW: | * 20° - 25° (dBW/m ²) /BW: | * 25° - 90° (dBW/m ²) /BW: |
|----------------|--------------------------------------------|---------------------------------------------|----------------------------------------------|----------------------------------------------|----------------------------------------------|----------------------------------------------|
| 1.0 MHz | -157.0 | -153.6 | -148.7 | -140.5 | -126.3 | -126.3 |

Transmitting Beams 4:

| Question | Response |
|---------------------------------------------------------|--------------------------|
| Beam ID | Tx10 |
| Transmit Beam Frequency | 18800.0 MHz -19300.0 MHz |
| Beam Type | Steerable |
| Polarization | LHCP |
| Peak Gain | 34.5 dBi |
| Antenna Pointing Error | 0.1 degrees |
| Antenna Rotational Error | 0.1 degrees |
| Polarization Switchable | |
| Polarization Alignment Relative to the Equatorial Plane | 45.0 degrees |
| Max. Transmit EIRP Density | -54.3 dBW/Hz |

| | |
|--------------------------|----------|
| Max. Transmit EIRP | 29.5 dBW |
| Co- or Cross Polar Mode | C |
| Service Area Description | Global |

Max. Power Flux Density

| | * 0° - 5° (dBW/m ²) /BW): | * 5° - 10° (dBW/m ²) /BW): | * 10° - 15° (dBW/m ²) /BW): | * 15° - 20° (dBW/m ²) /BW): | * 20° - 25° (dBW/m ²) /BW): | * 25° - 90° (dBW/m ²) /BW): |
|----------------|---------------------------------------------|----------------------------------------------|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------|
| 1.0 MHz | -157.0 | -153.6 | -148.7 | -140.5 | -126.3 | -126.3 |

Transmitting Beams 5:

| Question | Response |
|---------------------------------------------------------|--------------------------|
| Beam ID | Tx6 |
| Transmit Beam Frequency | 17800.0 MHz -18600.0 MHz |
| Beam Type | Steerable |
| Polarization | LHCP |
| Peak Gain | 34.5 dBi |
| Antenna Pointing Error | 0.1 degrees |
| Antenna Rotational Error | 0.1 degrees |
| Polarization Switchable | |
| Polarization Alignment Relative to the Equatorial Plane | 45.0 degrees |
| Max. Transmit EIRP Density | -54.3 dBW/Hz |
| Max. Transmit EIRP | 29.5 dBW |
| Co- or Cross Polar Mode | C |
| Service Area Description | Global |

Max. Power Flux Density

| | * 0° - 5° | * 5° - 10° | * 10° - 15° | * 15° - 20° | * 20° - 25° | * 25° - 90° |
|----------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| * | (dBW/m ² | (dBW/m ² | (dBW/m ² | (dBW/m ² | (dBW/m ² | (dBW/m ² |
| BW: | /BW): | /BW): | /BW): | /BW): | /BW): | /BW): |
| 1.0 MHz | -157.0 | -153.6 | -148.7 | -140.5 | -126.3 | -126.3 |

Transmitting Beams 6:

| Question | Response |
|---------------------------------------------------------|------------------------------|
| Beam ID | Tx2 |
| Transmit Beam Frequency | 10700.0 MHz -12700.0 MHz |
| Beam Type | Both Steerable and Shapeable |
| Polarization | LHCP |
| Peak Gain | 34.0 dBi |
| Antenna Pointing Error | 0.1 degrees |
| Antenna Rotational Error | 0.1 degrees |
| Polarization Switchable | |
| Polarization Alignment Relative to the Equatorial Plane | 45.0 degrees |
| Max. Transmit EIRP Density | -51.1 dBW/Hz |
| Max. Transmit EIRP | 32.7 dBW |
| Co- or Cross Polar Mode | C |
| Service Area Description | Global |

Max. Power Flux Density

| | * 0° - 5° | * 5° - 10° | * 10° - 15° | * 15° - 20° | * 20° - 25° | * 25° - 90° |
|----------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| * | (dBW/m ² | (dBW/m ² | (dBW/m ² | (dBW/m ² | (dBW/m ² | (dBW/m ² |
| BW: | /BW): | /BW): | /BW): | /BW): | /BW): | /BW): |
| 4.0 kHz | -170.4 | -167.0 | -162.1 | -154.1 | -147.5 | -146.0 |

Transmitting Beams 7:

| Question | Response |
|---------------------------------------------------------|--------------------------|
| Beam ID | Tx7 |
| Transmit Beam Frequency | 18550.0 MHz -18600.0 MHz |
| Beam Type | Fixed |
| Polarization | RHCP |
| Peak Gain | 5.0 dBi |
| Antenna Pointing Error | 0.1 degrees |
| Antenna Rotational Error | 0.1 degrees |
| Polarization Switchable | |
| Polarization Alignment Relative to the Equatorial Plane | 45.0 degrees |
| Max. Transmit EIRP Density | -86.1 dBW/Hz |
| Max. Transmit EIRP | 0.0 dBW |
| Co- or Cross Polar Mode | C |
| Service Area Description | Global |

Max. Power Flux Density

| | * 0° - 5° | * 5° - 10° | * 10° - 15° | * 15° - 20° | * 20° - 25° | * 25° - 90° |
|----------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| * | (dBW/m ² | (dBW/m ² | (dBW/m ² | (dBW/m ² | (dBW/m ² | (dBW/m ² |
| BW: | /BW): | /BW): | /BW): | /BW): | /BW): | /BW): |
| 1.0 MHz | -164.0 | -162.3 | -160.7 | -159.3 | -158.1 | -151.9 |

Transmitting Beams 8:

| Question | Response |
|-------------------------|--------------------------|
| Beam ID | Tx3 |
| Transmit Beam Frequency | 12150.0 MHz -12250.0 MHz |

| | |
|---------------------------------------------------------|--------------|
| Beam Type | Fixed |
| Polarization | RHCP |
| Peak Gain | 3.0 dBi |
| Antenna Pointing Error | 0.1 degrees |
| Antenna Rotational Error | 0.1 degrees |
| Polarization Switchable | |
| Polarization Alignment Relative to the Equatorial Plane | 45.0 degrees |
| Max. Transmit EIRP Density | -89.2 dBW/Hz |
| Max. Transmit EIRP | 0.0 dBW |
| Co- or Cross Polar Mode | C |
| Service Area Description | Global |

Max. Power Flux Density

| | * 0° - 5° (dBW/m ² /BW): | * 5° - 10° (dBW/m ² /BW): | * 10° - 15° (dBW/m ² /BW): | * 15° - 20° (dBW/m ² /BW): | * 20° - 25° (dBW/m ² /BW): | * 25° - 90° (dBW/m ² /BW): |
|----------------|-------------------------------------------|--------------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|
| 4.0 kHz | -191.0 | -189.4 | -187.8 | -186.4 | -185.2 | -179.0 |

Transmitting Beams 9:

| Question | Response |
|-------------------------|--------------------------|
| Beam ID | Tx11 |
| Transmit Beam Frequency | 19700.0 MHz -20200.0 MHz |
| Beam Type | Steerable |
| Polarization | RHCP |
| Peak Gain | 34.5 dBi |
| Antenna Pointing Error | 0.1 degrees |

| | |
|---------------------------------------------------------|--------------|
| Antenna Rotational Error | 0.1 degrees |
| Polarization Switchable | |
| Polarization Alignment Relative to the Equatorial Plane | 45.0 degrees |
| Max. Transmit EIRP Density | -54.3 dBW/Hz |
| Max. Transmit EIRP | 29.5 dBW |
| Co- or Cross Polar Mode | C |
| Service Area Description | Global |

Max. Power Flux Density

| | * 0° - 5° (dBW/m ²) /BW: | * 5° - 10° (dBW/m ²) /BW: | * 10° - 15° (dBW/m ²) /BW: | * 15° - 20° (dBW/m ²) /BW: | * 20° - 25° (dBW/m ²) /BW: | * 25° - 90° (dBW/m ²) /BW: |
|----------------|--------------------------------------------|---------------------------------------------|----------------------------------------------|----------------------------------------------|----------------------------------------------|----------------------------------------------|
| 1.0 MHz | -157.0 | -153.6 | -148.7 | -140.5 | -126.3 | -126.3 |

Transmitting Beams 10:

| Question | Response |
|---------------------------------------------------------|--------------------------|
| Beam ID | Tx9 |
| Transmit Beam Frequency | 18800.0 MHz -19300.0 MHz |
| Beam Type | Steerable |
| Polarization | RHCP |
| Peak Gain | 34.5 dBi |
| Antenna Pointing Error | 0.1 degrees |
| Antenna Rotational Error | 0.1 degrees |
| Polarization Switchable | |
| Polarization Alignment Relative to the Equatorial Plane | 45.0 degrees |
| Max. Transmit EIRP Density | -54.3 dBW/Hz |

| | |
|--------------------------|----------|
| Max. Transmit EIRP | 29.5 dBW |
| Co- or Cross Polar Mode | C |
| Service Area Description | Global |

Max. Power Flux Density

| | * 0° - 5° (dBW/m ²) /BW): | * 5° - 10° (dBW/m ²) /BW): | * 10° - 15° (dBW/m ²) /BW): | * 15° - 20° (dBW/m ²) /BW): | * 20° - 25° (dBW/m ²) /BW): | * 25° - 90° (dBW/m ²) /BW): |
|----------------|---------------------------------------------|----------------------------------------------|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------|
| 1.0 MHz | -157.0 | -153.6 | -148.7 | -140.5 | -126.3 | -126.3 |

Transmitting Beams 11:

| Question | Response |
|---------------------------------------------------------|--------------------------|
| Beam ID | Tx5 |
| Transmit Beam Frequency | 17800.0 MHz -18600.0 MHz |
| Beam Type | Steerable |
| Polarization | RHCP |
| Peak Gain | 34.5 dBi |
| Antenna Pointing Error | 0.1 degrees |
| Antenna Rotational Error | 0.1 degrees |
| Polarization Switchable | |
| Polarization Alignment Relative to the Equatorial Plane | 45.0 degrees |
| Max. Transmit EIRP Density | -54.3 dBW/Hz |
| Max. Transmit EIRP | 29.5 dBW |
| Co- or Cross Polar Mode | C |
| Service Area Description | Global |

Max. Power Flux Density

| | * 0° - 5° | * 5° - 10° | * 10° - 15° | * 15° - 20° | * 20° - 25° | * 25° - 90° |
|----------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| * | (dBW/m ² | (dBW/m ² | (dBW/m ² | (dBW/m ² | (dBW/m ² | (dBW/m ² |
| BW: | /BW): | /BW): | /BW): | /BW): | /BW): | /BW): |
| 1.0 MHz | -157.0 | -153.6 | -148.7 | -140.5 | -126.3 | -126.3 |

Transmitting Beams 12:

| Question | Response |
|---------------------------------------------------------|------------------------------|
| Beam ID | Tx1 |
| Transmit Beam Frequency | 10700.0 MHz -12700.0 MHz |
| Beam Type | Both Steerable and Shapeable |
| Polarization | RHCP |
| Peak Gain | 34.0 dBi |
| Antenna Pointing Error | 0.1 degrees |
| Antenna Rotational Error | 0.1 degrees |
| Polarization Switchable | |
| Polarization Alignment Relative to the Equatorial Plane | 45.0 degrees |
| Max. Transmit EIRP Density | -51.1 dBW/Hz |
| Max. Transmit EIRP | 32.7 dBW |
| Co- or Cross Polar Mode | C |
| Service Area Description | Global |

Max. Power Flux Density

| | * 0° - 5° | * 5° - 10° | * 10° - 15° | * 15° - 20° | * 20° - 25° | * 25° - 90° |
|----------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| * | (dBW/m ² | (dBW/m ² | (dBW/m ² | (dBW/m ² | (dBW/m ² | (dBW/m ² |
| BW: | /BW): | /BW): | /BW): | /BW): | /BW): | /BW): |
| 4.0 kHz | -170.4 | -167.0 | -162.1 | -154.1 | -147.5 | -146.0 |

Transmitting Channels (12)

| Channel ID | Channel Bandwidth (MHz) | Center Frequency s (MHz) | Feeder Link, Service Link or TT&C |
|------------|-------------------------|--------------------------|-----------------------------------|
| Tx3 | 1000.0 | 12200.0 | TT&C |
| Tx4 | 100.0 | 12200.0 | TT&C |
| Tx5 | 800.0 | 18200.0 | Service Link |
| Tx6 | 800.0 | 18200.0 | Service Link |
| Tx7 | 50.0 | 18575.0 | TT&C |
| Tx8 | 50.0 | 18575.0 | TT&C |
| Tx9 | 500.0 | 19050.0 | Service Link |
| Tx12 | 500.0 | 19950.0 | Service Link |
| Tx1 | 2000.0 | 11700.0 | Service Link |
| Tx10 | 500.0 | 19050.0 | Service Link |
| Tx11 | 500.0 | 19950.0 | Service Link |
| Tx2 | 2000.0 | 11700.0 | Service Link |

Certification Questions

| Question | Response |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| Are the applicable service area coverage requirements of 25.143(b)(2) (ii) and (iii), or 25.144(a)(3)(i), or 25.145 (c)(1) and (2), or 25.146(i)(1) and (2), or 25.148(c), or 25.225 met? | Yes |
| Are the applicable frequency tolerances of 25.202(e) and out-of-band emission limits of 25.202(f)(1),(2), and (3) met? | Yes |
| Are the cessation of emissions requirements of 25.207 met? | Yes |
| Are the applicable power-flux-density limits of 25.208 met, and is the appropriate technical showing provided within the application? | Yes |
| For NGSO applications, are the applicable equivalent-power-flux-density limits of 25.208 met, and is the appropriate technical showing provided within the application? | Yes |
| Are the applicable full-frequency-reuse requirements of 25.210 met? | Yes |
| If the application is for a 17/24 GHz BSS space station, will it be operated at an offset location with full power and interference protection in accordance with 25.262(b)? | |

Attachments

| File Name | Beam | Field | Attachment Type | Description |
|---------------------------------------------------------|------|---------------------------------|-------------------|-------------------------------------------------------|
| <u>technical_parameters_APR2020.mdb</u> | | NGSO Antenna Gain Data | GIMS file (*.mdb) | Includes complete constellation technical parameters. |
