



312 File Number: **SATMOD2023022400040**

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## Filing Description

| Question    | Response                                             |
|-------------|------------------------------------------------------|
| Description | SkySat Orbit Raising and Lower Altitude Modification |

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**Satellite  
Information**

| Question                                                     | Response |
|--------------------------------------------------------------|----------|
| Select Orbit Type                                            | NGSO     |
| Space Station or Satellite Network Name                      | SkySat   |
| Estimated Lifetime of Satellite(s) From Date of Launch       | 6 Years  |
| Will the space station(s) operate on a Common Carrier basis? | No       |

Operating  
Frequency  
Bands (2)

| Nature of service                   | Description | Frequency Band(s)         | Mode Type |
|-------------------------------------|-------------|---------------------------|-----------|
| Earth Exploration-Satellite Service |             | 2025.0 MHz<br>-2110.0 MHz | Receive   |
| Earth Exploration-Satellite Service |             | 8025.0 MHz<br>-8400.0 MHz | Transmit  |

**Orbital  
Information For  
Non-  
Geostationary  
Satellites**

| Question                                               | Response   |
|--------------------------------------------------------|------------|
| Total Number of Satellites in the active constellation | 19         |
| Orbit Epoch Date                                       | 03/15/2023 |
| Celestial Reference Body                               | Earth      |

**Orbital Plane 1:**

| Question                                                      | Response        |
|---------------------------------------------------------------|-----------------|
| Number of Satellites in Plane                                 | 7               |
| Inclination Angle                                             | 96.85 degrees   |
| Right Ascension of Ascending Node                             | 134.841 degrees |
| Argument of Perigee                                           | 0.0 degrees     |
| Orbital Period                                                | 5492.4 seconds  |
| Apogee                                                        | 355.0 km        |
| Perigee                                                       | 345.0 km        |
| Active Service Arc Begin Angle with respect to Ascending Node | -90.0 degrees   |
| Active Service Arc End Angle with respect to Ascending Node   | 90.0 degrees    |

**Mean Anomaly For Each Satellite**

| Satellite Number | Mean Anomaly (degrees) at the Orbit Epoch Date |
|------------------|------------------------------------------------|
| 1                | 206.0                                          |
| 2                | 154.0                                          |
| 3                | 103.0                                          |
| 4                | 51.0                                           |
| 5                | 309.0                                          |
| 6                | 257.0                                          |
| 7                | 0.0                                            |

**Orbital Plane 2:**

| Question                      | Response      |
|-------------------------------|---------------|
| Number of Satellites in Plane | 6             |
| Inclination Angle             | 96.85 degrees |

|                                                               |                 |
|---------------------------------------------------------------|-----------------|
| Right Ascension of Ascending Node                             | 194.841 degrees |
| Argument of Perigee                                           | 0.0 degrees     |
| Orbital Period                                                | 5492.4 seconds  |
| Apogee                                                        | 355.0 km        |
| Perigee                                                       | 345.0 km        |
| Active Service Arc Begin Angle with respect to Ascending Node | -90.0 degrees   |
| Active Service Arc End Angle with respect to Ascending Node   | 90.0 degrees    |

### Mean Anomaly For Each Satellite

| Satellite Number | Mean Anomaly (degrees) at the Orbit Epoch Date |
|------------------|------------------------------------------------|
| 1                | 300.0                                          |
| 2                | 240.0                                          |
| 3                | 180.0                                          |
| 4                | 120.0                                          |
| 5                | 60.0                                           |
| 6                | 0.0                                            |

### Orbital Plane 3:

| Question                          | Response       |
|-----------------------------------|----------------|
| Number of Satellites in Plane     | 3              |
| Inclination Angle                 | 53.0 degrees   |
| Right Ascension of Ascending Node | 225.0 degrees  |
| Argument of Perigee               | 0.0 degrees    |
| Orbital Period                    | 5615.4 seconds |
| Apogee                            | 455.0 km       |
| Perigee                           | 445.0 km       |

|                                                               |               |
|---------------------------------------------------------------|---------------|
| Active Service Arc Begin Angle with respect to Ascending Node | -53.0 degrees |
|---------------------------------------------------------------|---------------|

|                                                             |              |
|-------------------------------------------------------------|--------------|
| Active Service Arc End Angle with respect to Ascending Node | 53.0 degrees |
|-------------------------------------------------------------|--------------|

### Mean Anomaly For Each Satellite

| Satellite Number | Mean Anomaly (degrees) at the Orbit Epoch Date |
|------------------|------------------------------------------------|
| 1                | 240.0                                          |
| 2                | 120.0                                          |
| 3                | 0.0                                            |

### Orbital Plane 4:

| Question                                                      | Response       |
|---------------------------------------------------------------|----------------|
| Number of Satellites in Plane                                 | 1              |
| Inclination Angle                                             | 53.0 degrees   |
| Right Ascension of Ascending Node                             | 315.0 degrees  |
| Argument of Perigee                                           | 0.0 degrees    |
| Orbital Period                                                | 5584.2 seconds |
| Apogee                                                        | 430.0 km       |
| Perigee                                                       | 420.0 km       |
| Active Service Arc Begin Angle with respect to Ascending Node | -53.0 degrees  |
| Active Service Arc End Angle with respect to Ascending Node   | 53.0 degrees   |

### Mean Anomaly For Each Satellite

| Satellite Number | Mean Anomaly (degrees) at the Orbit Epoch Date |
|------------------|------------------------------------------------|
| 1                | 0.0                                            |

### Orbital Plane 5:

| Question                      | Response |
|-------------------------------|----------|
| Number of Satellites in Plane | 2        |

|                                                               |                |
|---------------------------------------------------------------|----------------|
| Inclination Angle                                             | 53.0 degrees   |
| Right Ascension of Ascending Node                             | 315.0 degrees  |
| Argument of Perigee                                           | 0.0 degrees    |
| Orbital Period                                                | 5492.4 seconds |
| Apogee                                                        | 355.0 km       |
| Perigee                                                       | 345.0 km       |
| Active Service Arc Begin Angle with respect to Ascending Node | -53.0 degrees  |
| Active Service Arc End Angle with respect to Ascending Node   | 53.0 degrees   |

**Mean Anomaly For Each Satellite**

| Satellite Number | Mean Anomaly (degrees) at the Orbit Epoch Date |
|------------------|------------------------------------------------|
| 1                | 180.0                                          |
| 2                | 0.0                                            |



Receiving  
Beams 1:

| Question                                                | Response               |
|---------------------------------------------------------|------------------------|
| Beam ID                                                 | CMD                    |
| Receive Beam Frequency                                  | 2025.0 MHz -2110.0 MHz |
| Beam Type                                               | Fixed                  |
| Polarization                                            | RHCP                   |
| Peak Gain                                               | 2.0 dBi                |
| Antenna Pointing Error                                  | 0.1 degrees            |
| Antenna Rotational Error                                | 0.0 degrees            |
| Polarization Switchable                                 |                        |
| Polarization Alignment Relative to the Equatorial Plane | 45.0 degrees           |
| G/T at Max. Gain Point                                  | -27.4 dB/K             |
| Min. Saturation Flux Density                            | -106.0 dBW/m2          |
| Max. Saturation Flux Density                            | -82.5 dBW/m2           |
| Co- or Cross Polar Mode                                 | C                      |
| Service Area Description                                | XVE                    |

Receiving  
Channels (2)

| Channel ID | Channel Bandwidth (MHz) | Center Frequency s (MHz) | Feeder Link, Service Link or TT&C |
|------------|-------------------------|--------------------------|-----------------------------------|
| CMD2       | 0.124                   | 2083.0                   | TT&C                              |
| CMD1       | 0.124                   | 2081.0                   | TT&C                              |

Transmitting  
Beams 1:

| Question                                                | Response               |
|---------------------------------------------------------|------------------------|
| Beam ID                                                 | TTC                    |
| Transmit Beam Frequency                                 | 8025.0 MHz -8400.0 MHz |
| Beam Type                                               | Fixed                  |
| Polarization                                            | RHCP                   |
| Peak Gain                                               | 5.0 dBi                |
| Antenna Pointing Error                                  | 0.1 degrees            |
| Antenna Rotational Error                                | 0.0 degrees            |
| Polarization Switchable                                 |                        |
| Polarization Alignment Relative to the Equatorial Plane | 45.0 degrees           |
| Max. Transmit EIRP Density                              | -55.1 dBW/Hz           |
| Max. Transmit EIRP                                      | 2.0 dBW                |
| Co- or Cross Polar Mode                                 | C                      |
| Service Area Description                                | XVE                    |

Max. Power Flux Density

|                             | * 0° - 5°                 | * 5° - 10°                | * 10° - 15°               | * 15° - 20°               | * 20° - 25°               | * 25° - 90°               |
|-----------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| * (dBW/m <sup>2</sup> /BW): | (dBW/m <sup>2</sup> /BW): | (dBW/m <sup>2</sup> /BW): | (dBW/m <sup>2</sup> /BW): | (dBW/m <sup>2</sup> /BW): | (dBW/m <sup>2</sup> /BW): | (dBW/m <sup>2</sup> /BW): |
| 4.0 kHz                     | -154.4                    | -152.3                    | -150.4                    | -148.8                    | -147.4                    | -140.8                    |

Transmitting  
Beams 2:

| Question                | Response               |
|-------------------------|------------------------|
| Beam ID                 | PLD                    |
| Transmit Beam Frequency | 8025.0 MHz -8400.0 MHz |

|                                                         |              |
|---------------------------------------------------------|--------------|
| Beam Type                                               | Fixed        |
| Polarization                                            | RHCP         |
| Peak Gain                                               | 27.0 dBi     |
| Antenna Pointing Error                                  | 0.1 degrees  |
| Antenna Rotational Error                                | 0.0 degrees  |
| Polarization Switchable                                 |              |
| Polarization Alignment Relative to the Equatorial Plane | 45.0 degrees |
| Max. Transmit EIRP Density                              | -54.5 dBW/Hz |
| Max. Transmit EIRP                                      | 22.0 dBW     |
| Co- or Cross Polar Mode                                 | C            |
| Service Area Description                                | XVE          |

### Max. Power Flux Density

|         | * 0° - 5°           | * 5° - 10°          | * 10° - 15°         | * 15° - 20°         | * 20° - 25°         | * 25° - 90°         |
|---------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|         | (dBW/m <sup>2</sup> | (dBW/m <sup>2</sup> | (dBW/m <sup>2</sup> | (dBW/m <sup>2</sup> | (dBW/m <sup>2</sup> | (dBW/m <sup>2</sup> |
| * BW:   | /BW):               | /BW):               | /BW):               | /BW):               | /BW):               | /BW):               |
| 4.0 kHz | -153.8              | -151.7              | -149.8              | -148.2              | -146.9              | -140.3              |

Transmitting  
Channels (10)

| Channel ID | Channel Bandwidth (MHz) | Center Frequency s (MHz) | Feeder Link, Service Link or TT&C |
|------------|-------------------------|--------------------------|-----------------------------------|
| PLD6       | 100.0                   | 8325.0                   | Feeder Link                       |
| PLD1       | 60.0                    | 8075.0                   | Feeder Link                       |
| PLD2       | 60.0                    | 8200.0                   | Feeder Link                       |
| PLD3       | 60.0                    | 8325.0                   | Feeder Link                       |
| PLD4       | 100.0                   | 8075.0                   | Feeder Link                       |
| PLD5       | 100.0                   | 8200.0                   | Feeder Link                       |
| TTC1       | 0.256                   | 8375.0                   | TT&C                              |
| TTC2       | 0.256                   | 8380.0                   | TT&C                              |
| TTC3       | 0.512                   | 8375.0                   | TT&C                              |
| TTC4       | 0.512                   | 8380.0                   | TT&C                              |

## 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? | N/A      |
| 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?                                                                                                                       |          |
| 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 |
|-------------------------------------|------|------------------------|------------------|-------------|
| <a href="#">payload_antenna.pdf</a> | CMD  | NGSO Antenna Gain Data | PDF file (*.pdf) |             |
| <a href="#">ttc_x-band.pdf</a>      | TTC  | NGSO Antenna Gain Data | PDF file (*.pdf) |             |
| <a href="#">payload_antenna.pdf</a> | PLD  | NGSO Antenna Gain Data | PDF file (*.pdf) |             |