



312 File Number: **SATMOD2024110400248**

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## Filing Description

| Question    | Response                               |
|-------------|----------------------------------------|
| Description | LizzieSat - Sidus USASAT-30V-1 IRD MOD |

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**Satellite  
Information**

| Question                                                     | Response   |
|--------------------------------------------------------------|------------|
| Select Orbit Type                                            | NGSO       |
| Space Station or Satellite Network Name                      | USASAT-30V |
| 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 (5)**

| Nature of service                        | Description             | Frequency Band (s)       | Mode Type |
|------------------------------------------|-------------------------|--------------------------|-----------|
| Other Satellite Service (please specify) | Inter-Satellite Service | 1618.725 MHz -1626.5 MHz | Transmit  |
| Other Satellite Service (please specify) | Inter-Satellite Service | 1618.725 MHz -1626.5 MHz | Receive   |
| Earth Exploration-Satellite Service      |                         | 2025.0 MHz -2110.0 MHz   | Receive   |
| Earth Exploration-Satellite Service      |                         | 2200.0 MHz -2290.0 MHz   | Transmit  |
| Earth Exploration-Satellite Service      |                         | 8025.0 MHz -8400.0 MHz   | Transmit  |

**Orbital  
Information For  
Non-  
Geostationary  
Satellites**

| Question                                               | Response   |
|--------------------------------------------------------|------------|
| Total Number of Satellites in the active constellation | 6          |
| Orbit Epoch Date                                       | 01/01/2024 |
| Celestial Reference Body                               | Earth      |

## Orbital Plane 1:

| Question                                                      | Response       |
|---------------------------------------------------------------|----------------|
| Number of Satellites in Plane                                 | 2              |
| Inclination Angle                                             | 45.0 degrees   |
| Right Ascension of Ascending Node                             | 0.0 degrees    |
| Argument of Perigee                                           | 0.0 degrees    |
| Orbital Period                                                | 5708.0 seconds |
| Apogee                                                        | 525.0 km       |
| Perigee                                                       | 525.0 km       |
| Active Service Arc Begin Angle with respect to Ascending Node | -45.0 degrees  |
| Active Service Arc End Angle with respect to Ascending Node   | 45.0 degrees   |

### Mean Anomaly For Each Satellite

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

## Orbital Plane 2:

| Question                                                      | Response       |
|---------------------------------------------------------------|----------------|
| Number of Satellites in Plane                                 | 2              |
| Inclination Angle                                             | 97.5 degrees   |
| Right Ascension of Ascending Node                             | 195.0 degrees  |
| Argument of Perigee                                           | 0.0 degrees    |
| Orbital Period                                                | 5708.0 seconds |
| Apogee                                                        | 525.0 km       |
| Perigee                                                       | 525.0 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                | 180.0                                          |
| 2                | 0.0                                            |

Orbital Plane 3:

| Question                                                      | Response       |
|---------------------------------------------------------------|----------------|
| Number of Satellites in Plane                                 | 2              |
| Inclination Angle                                             | 97.5 degrees   |
| Right Ascension of Ascending Node                             | 195.0 degrees  |
| Argument of Perigee                                           | 0.0 degrees    |
| Orbital Period                                                | 5708.0 seconds |
| Apogee                                                        | 525.0 km       |
| Perigee                                                       | 525.0 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                | 180.0                                          |
| 2                | 0.0                                            |

## Receiving Beams 1:

| Question                                                | Response               |
|---------------------------------------------------------|------------------------|
| Beam ID                                                 | SUP                    |
| Receive Beam Frequency                                  | 2025.0 MHz -2071.2 MHz |
| Beam Type                                               | Steerable              |
| Polarization                                            | RHCP                   |
| Peak Gain                                               | 6.5 dBi                |
| Antenna Pointing Error                                  | 1.0 degrees            |
| Antenna Rotational Error                                | 1.0 degrees            |
| Polarization Switchable                                 |                        |
| Polarization Alignment Relative to the Equatorial Plane | 45.0 degrees           |
| G/T at Max. Gain Point                                  | -21.1 dB/K             |
| Min. Saturation Flux Density                            | -105.3 dBW/m2          |
| Max. Saturation Flux Density                            | -68.3 dBW/m2           |
| Co- or Cross Polar Mode                                 | C                      |
| Service Area Description                                | Global                 |

## Receiving Beams 2:

| Question                 | Response               |
|--------------------------|------------------------|
| Beam ID                  | SUP2                   |
| Receive Beam Frequency   | 2025.0 MHz -2071.2 MHz |
| Beam Type                | Steerable              |
| Polarization             | RHCP                   |
| Peak Gain                | 5.0 dBi                |
| Antenna Pointing Error   | 1.0 degrees            |
| Antenna Rotational Error | 1.0 degrees            |

|                                                         |               |
|---------------------------------------------------------|---------------|
| Polarization Switchable                                 |               |
| Polarization Alignment Relative to the Equatorial Plane | 45.0 degrees  |
| G/T at Max. Gain Point                                  | -22.6 dB/K    |
| Min. Saturation Flux Density                            | -105.3 dBW/m2 |
| Max. Saturation Flux Density                            | -68.3 dBW/m2  |
| Co- or Cross Polar Mode                                 | C             |
| Service Area Description                                | Global        |

## Receiving Beams 3:

| Question                                                | Response                 |
|---------------------------------------------------------|--------------------------|
| Beam ID                                                 | IRDR                     |
| Receive Beam Frequency                                  | 1618.725 MHz -1626.5 MHz |
| Beam Type                                               | Fixed                    |
| Polarization                                            | RHCP                     |
| Peak Gain                                               | 4.5 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                                  | -17.3 dB/K               |
| Min. Saturation Flux Density                            | -999.0 dBW/m2            |
| Max. Saturation Flux Density                            | -998.0 dBW/m2            |
| Co- or Cross Polar Mode                                 | C                        |
| Service Area Description                                | Global                   |

Receiving  
Channels (4)

| Channel ID | Channel Bandwidth (MHz) | Center Frequency s (MHz) | Feeder Link, Service Link or TT&C |
|------------|-------------------------|--------------------------|-----------------------------------|
| IR01       | 0.042                   | 1622.6125                | TT&C                              |
| SU2        | 0.7                     | 2027.65                  | TT&C                              |
| SU3        | 0.7                     | 2070.85                  | TT&C                              |
| SU1        | 0.7                     | 2025.35                  | TT&C                              |

Transmitting  
Beams 1:

| Question                                                | Response               |
|---------------------------------------------------------|------------------------|
| Beam ID                                                 | SDW2                   |
| Transmit Beam Frequency                                 | 2200.0 MHz -2284.5 MHz |
| Beam Type                                               | Steerable              |
| Polarization                                            | RHCP                   |
| Peak Gain                                               | 5.0 dBi                |
| Antenna Pointing Error                                  | 1.0 degrees            |
| Antenna Rotational Error                                | 1.0 degrees            |
| Polarization Switchable                                 |                        |
| Polarization Alignment Relative to the Equatorial Plane | 45.0 degrees           |
| Max. Transmit EIRP Density                              | -59.0 dBW/Hz           |
| Max. Transmit EIRP                                      | 5.0 dBW                |
| Co- or Cross Polar Mode                                 | C                      |
| Service Area Description                                | Global (Outside US)    |

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                     | -157.9                    | -155.8                    | -153.9                    | -152.2                    | -150.8                    | -144.2                    |

Transmitting  
Beams 2:

| Question                | Response               |
|-------------------------|------------------------|
| Beam ID                 | SDW                    |
| Transmit Beam Frequency | 2200.0 MHz -2284.5 MHz |

|                                                         |                     |
|---------------------------------------------------------|---------------------|
| Beam Type                                               | Steerable           |
| Polarization                                            | RHCP                |
| Peak Gain                                               | 6.5 dBi             |
| Antenna Pointing Error                                  | 1.0 degrees         |
| Antenna Rotational Error                                | 1.0 degrees         |
| Polarization Switchable                                 |                     |
| Polarization Alignment Relative to the Equatorial Plane | 45.0 degrees        |
| Max. Transmit EIRP Density                              | -57.5 dBW/Hz        |
| Max. Transmit EIRP                                      | 6.5 dBW             |
| Co- or Cross Polar Mode                                 | C                   |
| Service Area Description                                | Global (Outside US) |

### 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):               |
| <b>4.0 kHz</b> | -157.6              | -155.6              | -153.9              | -152.3              | -151.0              | -144.5              |

### Transmitting Beams 3:

| Question                | Response               |
|-------------------------|------------------------|
| Beam ID                 | XDW                    |
| Transmit Beam Frequency | 8025.0 MHz -8400.0 MHz |
| Beam Type               | Steerable              |
| Polarization            | RHCP                   |
| Peak Gain               | 12.0 dBi               |
| Antenna Pointing Error  | 1.0 degrees            |

|                                                         |              |
|---------------------------------------------------------|--------------|
| Antenna Rotational Error                                | 1.0 degrees  |
| Polarization Switchable                                 |              |
| Polarization Alignment Relative to the Equatorial Plane | 45.0 degrees |
| Max. Transmit EIRP Density                              | -61.2 dBW/Hz |
| Max. Transmit EIRP                                      | 15.0 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 <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 | -159.7              | -157.5              | -155.5              | -153.9              | -152.4              | -145.7              |

### Transmitting Beams 4:

| Question                                                | Response                 |
|---------------------------------------------------------|--------------------------|
| Beam ID                                                 | IRDT                     |
| Transmit Beam Frequency                                 | 1618.725 MHz -1626.5 MHz |
| Beam Type                                               | Fixed                    |
| Polarization                                            | RHCP                     |
| Peak Gain                                               | 4.5 dBi                  |
| Antenna Pointing Error                                  | 1.0 degrees              |
| Antenna Rotational Error                                | 1.0 degrees              |
| Polarization Switchable                                 |                          |
| Polarization Alignment Relative to the Equatorial Plane | 45.0 degrees             |
| Max. Transmit EIRP Density                              | -40.7 dBW/Hz             |

|                          |          |
|--------------------------|----------|
| Max. Transmit EIRP       | 5.54 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 <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> |
| *<br>BW:           | /BW):               | /BW):               | /BW):               | /BW):               | /BW):               | /BW):               |
| <b>4.0<br/>kHz</b> | -142.7              | -141.1              | -139.6              | -138.2              | -137.0              | -130.8              |

Transmitting  
Channels (6)

| Channel ID | Channel Bandwidth (MHz) | Center Frequency s (MHz) | Feeder Link, Service Link or TT&C |
|------------|-------------------------|--------------------------|-----------------------------------|
| SDW1       | 2.5                     | 2201.25                  | TT&C                              |
| SDW2       | 2.5                     | 2262.25                  | TT&C                              |
| IT01       | 0.042                   | 1622.6125                | TT&C                              |
| SDW3       | 2.5                     | 2283.25                  | TT&C                              |
| XDW2       | 42.0                    | 8379.0                   | Service Link                      |
| XDW1       | 42.0                    | 8046.0                   | 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? | 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?                                                     |          |
| 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?                   | N/A      |
| 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**

Information not provided.