



312 File Number: **SATLOA2019080700072**

Filing Description

Question	Response
Description	Loft Orbital

**Satellite
Information**

Question	Response
Select Orbit Type	NGSO
Space Station or Satellite Network Name	YAM
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 (6)**

Nature of service	Description	Frequency Band (s)	Mode Type
Other Satellite Service (please specify)	Inter-satellite Service	1535.0 MHz -1559.0 MHz	Receive
Other Satellite Service (please specify)	Inter-satellite Service	2483.5 MHz -2495.0 MHz	Receive
Other Satellite Service (please specify)	Inter-Satellite Service	1613.8 MHz -1626.5 MHz	Transmit
Earth Exploration-Satellite Service		8025.0 MHz -8400.0 MHz	Transmit
Earth Exploration-Satellite Service		2200.0 MHz -2290.0 MHz	Transmit
Earth Exploration-Satellite Service		2025.0 MHz -2110.0 MHz	Receive

**Orbital
Information For
Non-
Geostationary
Satellites**

Question	Response
Total Number of Satellites in the active constellation	10
Orbit Epoch Date	01/01/2020
Celestial Reference Body	Earth

Orbital Plane 1:

Question	Response
Number of Satellites in Plane	2
Inclination Angle	97.7 degrees
Right Ascension of Ascending Node	108.7 degrees
Argument of Perigee	0.0 degrees
Orbital Period	5739.0 seconds
Apogee	550.0 km
Perigee	550.0 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 2:

Question	Response
Number of Satellites in Plane	2
Inclination Angle	97.6 degrees
Right Ascension of Ascending Node	108.7 degrees
Argument of Perigee	0.0 degrees
Orbital Period	5707.0 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	97.4 degrees
Right Ascension of Ascending Node	108.7 degrees
Argument of Perigee	0.0 degrees
Orbital Period	5677.0 seconds
Apogee	500.0 km
Perigee	500.0 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 4:

Question	Response
Number of Satellites in Plane	2
Inclination Angle	97.3 degrees
Right Ascension of Ascending Node	108.7 degrees

Argument of Perigee	0.0 degrees
Orbital Period	5646.0 seconds
Apogee	475.0 km
Perigee	475.0 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 5:

Question	Response
Number of Satellites in Plane	1
Inclination Angle	97.2 degrees
Right Ascension of Ascending Node	108.7 degrees
Argument of Perigee	0.0 degrees
Orbital Period	5615.0 seconds
Apogee	450.0 km
Perigee	450.0 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	0.0

Orbital Plane 6:

Question	Response
Number of Satellites in Plane	1
Inclination Angle	97.1 degrees
Right Ascension of Ascending Node	108.7 degrees
Argument of Perigee	0.0 degrees
Orbital Period	5584.0 seconds
Apogee	425.0 km
Perigee	425.0 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	0.0

Receiving Beams 1:

Question	Response
Beam ID	SRX
Receive Beam Frequency	2025.0 MHz -2110.0 MHz
Beam Type	Steerable
Polarization	RHCP
Peak Gain	6.9 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	-25.4 dB/K
Min. Saturation Flux Density	-100.0 dBW/m2
Max. Saturation Flux Density	-80.0 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Visible Earth

Receiving Beams 2:

Question	Response
Beam ID	GRX
Receive Beam Frequency	2483.5 MHz -2495.0 MHz
Beam Type	Fixed
Polarization	LHCP
Peak Gain	5.0 dBi
Antenna Pointing Error	1.0 degrees
Antenna Rotational Error	1.0 degrees

**Receiving
Beams 3:**

Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	-24.0 dB/K
Min. Saturation Flux Density	-131.0 dBW/m2
Max. Saturation Flux Density	-124.0 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Visible Earth

Question	Response
Beam ID	IRX
Receive Beam Frequency	1535.0 MHz -1559.0 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	4.1 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	-20.0 dB/K
Min. Saturation Flux Density	-140.0 dBW/m2
Max. Saturation Flux Density	-130.0 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Visible Earth

Receiving Channels (41)

Channel ID	Channel Bandwidth (MHz)	Center Frequency s (MHz)	Feeder Link, Service Link or TT&C
IR12	0.005	1545.875	Service Link
IR11	0.005	1539.9625	Service Link
IR05	0.005	1539.9125	Service Link
IR04	0.002	1546.26	Service Link
IR03	0.002	1539.9525	Service Link
IR02	0.005	1545.895	Service Link
SU8M	0.02	2100.0	TT&C
IR01	0.005	1539.9325	Service Link
SU1L	0.002	2030.0	TT&C
SU2L	0.002	2040.0	TT&C
SU3L	0.002	2050.0	TT&C
SU4L	0.002	2060.0	TT&C
IR10	0.002	1545.52	Service Link
IR07	0.005	1545.9375	Service Link
IR06	0.005	1545.9275	Service Link
SU5L	0.002	2070.0	TT&C
SU6L	0.002	2080.0	TT&C
SU7L	0.002	2090.0	TT&C
SU8L	0.002	2100.0	TT&C
IR09	0.002	1545.835	Service Link
IR08	0.002	1539.9625	Service Link
SU9L	0.002	2105.0	TT&C
SU9M	0.02	2105.0	TT&C
SU8H	0.2	2100.0	TT&C

SU9H	0.2	2105.0	TT&C
SU1H	0.2	2030.0	TT&C
SU2H	0.2	2040.0	TT&C
SU3H	0.2	2050.0	TT&C
SU4H	0.2	2060.0	TT&C
SU5H	0.2	2070.0	TT&C
SU6H	0.2	2080.0	TT&C
SU7H	0.2	2090.0	TT&C
SU1M	0.02	2030.0	TT&C
SU7M	0.02	2090.0	TT&C
SU6M	0.02	2080.0	TT&C
SU5M	0.02	2070.0	TT&C
SU4M	0.02	2060.0	TT&C
SU3M	0.02	2050.0	TT&C
SU2M	0.02	2040.0	TT&C
GR02	1.23	2490.54	Service Link
GR01	1.23	2489.31	Service Link

Transmitting
Beams 1:

Question	Response
Beam ID	STX
Transmit Beam Frequency	2200.0 MHz -2290.0 MHz
Beam Type	Steerable
Polarization	RHCP
Peak Gain	7.4 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	-42.9 dBW/Hz
Max. Transmit EIRP	7.1 dBW
Co- or Cross Polar Mode	C
Service Area Description	Visible Earth

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	-154.7	-153.0	-151.5	-150.1	-148.8	-144.5

Transmitting
Beams 2:

Question	Response
Beam ID	XTX
Transmit Beam Frequency	8025.0 MHz -8400.0 MHz

Beam Type	Steerable
Polarization	RHCP
Peak Gain	23.0 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	-55.7 dBW/Hz
Max. Transmit EIRP	20.5 dBW
Co- or Cross Polar Mode	C
Service Area Description	Visible Earth

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):
4.0 kHz	-157.0	-155.3	-153.8	-152.4	-151.1	-144.9

Transmitting Beams 3:

Question	Response
Beam ID	GTX
Transmit Beam Frequency	1613.8 MHz -1626.5 MHz
Beam Type	Fixed
Polarization	LHCP
Peak Gain	4.3 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	-56.9 dBW/Hz
Max. Transmit EIRP	4.0 dBW
Co- or Cross Polar Mode	C
Service Area Description	Visible Earth

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	-164.0	-162.3	-160.8	-159.4	-158.2	-152.0

**Transmitting
Channels (53)**

Channel ID	Channel Bandwidth (MHz)	Center Frequency s (MHz)	Feeder Link, Service Link or TT&C
GT01	1.23	1615.65	Service Link
XD7M	25.0	8350.0	Service Link
XD3L	10.0	8150.0	Service Link
XD4L	10.0	8200.0	Service Link
XD5L	10.0	8250.0	Service Link
XD6L	10.0	8300.0	Service Link
SD9H	2.0	2287.5	TT&C
SD1M	0.2	2207.5	TT&C
SD6H	2.0	2252.5	TT&C
SD5H	2.0	2242.5	TT&C
SD4H	2.0	2232.5	TT&C
XD1M	25.0	8050.0	Service Link
XD8H	50.0	8375.0	Service Link
XD7H	50.0	8350.0	Service Link
SD5M	0.2	2242.5	TT&C
XD5H	50.0	8250.0	Service Link
XD4H	50.0	8200.0	Service Link
XD3H	50.0	8150.0	Service Link
GT02	1.23	1616.88	Service Link
XD8M	25.0	8375.0	Service Link
XD1L	10.0	8050.0	Service Link
XD2L	10.0	8100.0	Service Link
XD7L	10.0	8350.0	Service Link
XD8L	10.0	8375.0	Service Link

XD6H	50.0	8300.0	Service Link
XD2M	25.0	8100.0	Service Link
XD3M	25.0	8150.0	Service Link
XD4M	25.0	8200.0	Service Link
XD5M	25.0	8250.0	Service Link
SD2L	0.02	2212.5	TT&C
SD1L	0.02	2207.5	TT&C
SD8M	0.2	2272.5	TT&C
SD7M	0.2	2262.5	TT&C
SD6M	0.2	2252.5	TT&C
SD1H	2.0	2207.5	TT&C
SD2H	2.0	2212.5	TT&C
SD3H	2.0	2217.5	TT&C
XD1H	50.0	8050.0	Service Link
XD2H	50.0	8100.0	Service Link
SD9L	0.02	2287.5	TT&C
SD8L	0.02	2272.5	TT&C
SD7L	0.02	2262.5	TT&C
SD6L	0.02	2252.5	TT&C
SD5L	0.02	2242.5	TT&C
SD4L	0.02	2232.5	TT&C
SD3L	0.02	2217.5	TT&C
SD4M	0.2	2232.5	TT&C
SD3M	0.2	2217.5	TT&C
SD2M	0.2	2212.5	TT&C
XD6M	25.0	8300.0	Service Link

SD8H	2.0	2272.5	TT&C
SD7H	2.0	2262.5	TT&C
SD9M	0.2	2287.5	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?	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

File Name	Beam	Field	Attachment Type	Description
<u>YAM</u> <u>(USASAT-30J)</u> <u>-GIMS.mdb</u>		NGSO Antenna Gain Data	GIMS file (*. mdb)	GIMS Database with beam projections for SRX, STX and XTX beams.