



312 File Number: **SATAMD2022080900079**

Filing Description

Question	Response
Description	Loft Orbital - YAM-5

**Satellite
Information**

Question	Response
Select Orbit Type	NGSO
Space Station or Satellite Network Name	YAM-5
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 (10)

Nature of service	Description	Frequency Band(s)	Mode Type
Space Operation Service		400.998 MHz -401.032 MHz	Transmit
Space Operation Service		400.15 MHz -401.0 MHz	Transmit
Mobile-Satellite Service		2400.0 MHz -2483.5 MHz	Transmit
Mobile-Satellite Service		2400.0 MHz -2483.5 MHz	Receive
Space Operation Service		449.75 MHz -450.25 MHz	Receive
Space Operation Service		401.0 MHz -402.0 MHz	Transmit
Other Satellite Service (please specify)	Inter-satellite Service	1535.0 MHz -1559.0 MHz	Receive
Earth Exploration-Satellite Service		8025.0 MHz -8400.0 MHz	Transmit
Earth Exploration-Satellite Service		2025.0 MHz -2110.0 MHz	Receive
Space Operation Service		2240.0 MHz -2290.0 MHz	Transmit

**Orbital
Information For
Non-
Geostationary
Satellites**

Question	Response
Total Number of Satellites in the active constellation	1
Orbit Epoch Date	01/01/2023
Celestial Reference Body	Earth

Orbital Plane 1:

Question	Response
Number of Satellites in Plane	1
Inclination Angle	97.6 degrees
Right Ascension of Ascending Node	108.7 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	0.0

Receiving Beams 1:

Question	Response
Beam ID	SRX2
Receive Beam Frequency	2067.0 MHz -2110.0 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	6.9 dBi
Antenna Pointing Error	2.0 degrees
Antenna Rotational Error	2.0 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	-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	IRX
Receive Beam Frequency	1535.0 MHz -1559.0 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	4.1 dBi
Antenna Pointing Error	2.0 degrees
Antenna Rotational Error	2.0 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
Beams 3:

Question	Response
Beam ID	URX
Receive Beam Frequency	449.75 MHz -450.25 MHz
Beam Type	Fixed
Polarization	H
Peak Gain	4.4 dBi
Antenna Pointing Error	2.0 degrees
Antenna Rotational Error	2.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	0.0 degrees
G/T at Max. Gain Point	-41.7 dB/K
Min. Saturation Flux Density	-114.0 dBW/m2
Max. Saturation Flux Density	-94.0 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Visible Earth

Receiving

Beams 4:

Question	Response
Beam ID	TRX
Receive Beam Frequency	2400.0 MHz -2483.5 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	7.0 dBi
Antenna Pointing Error	2.0 degrees
Antenna Rotational Error	2.0 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	-120.0 dBW/m2
Max. Saturation Flux Density	-100.0 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Visible Earth

Receiving Beams 5:

Question	Response
Beam ID	SRX
Receive Beam Frequency	2025.0 MHz -2110.0 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	6.0 dBi
Antenna Pointing Error	2.0 degrees
Antenna Rotational Error	2.0 degrees
Polarization Switchable	

Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	-23.5 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 Channels (76)

Channel ID	Channel Bandwidth (MHz)	Center Frequency s (MHz)	Feeder Link, Service Link or TT&C
IR10	0.002	1545.52	Service Link
IR01	0.005	1539.9325	Service Link
IR12	0.005	1545.875	Service Link
TR19	0.5	2454.25	Service Link
TR14	0.5	2451.75	Service Link
TR01	0.5	2445.25	Service Link
TR02	0.5	2445.75	Service Link
TR03	0.5	2446.25	Service Link
TR04	0.5	2446.75	Service Link
TR05	0.5	2447.25	Service Link
SU24	0.099	2072.5	TT&C
SU25	0.099	2073.5	TT&C
IR03	0.002	1539.9525	Service Link
TR06	0.5	2447.75	Service Link
TR35	0.5	2473.0	Service Link
TR34	0.5	2472.5	Service Link
TR29	0.5	2470.0	Service Link
TR28	0.5	2469.5	Service Link
TR27	0.5	2469.0	Service Link
TR26	0.5	2468.5	Service Link
TR25	0.5	2457.25	Service Link
TR24	0.5	2456.75	Service Link
TR23	0.5	2456.25	Service Link
TR22	0.5	2455.75	Service Link

TR21	0.5	2455.25	Service Link
SU41	0.02	2067.5	TT&C
SU51	0.002	2067.5	TT&C
SU23	0.099	2071.875	TT&C
TR13	0.5	2451.25	Service Link
SU11	0.132	2070.0	TT&C
IR05	0.005	1539.9125	Service Link
SU14	0.132	2072.5	TT&C
SU12	0.132	2071.25	TT&C
SU13	0.132	2071.875	TT&C
SU15	0.132	2073.5	TT&C
TR17	0.5	2453.25	Service Link
TR16	0.5	2452.75	Service Link
IR11	0.005	1539.9625	Service Link
TRX2	0.5	2477.75	Service Link
TR18	0.5	2453.75	Service Link
IR02	0.005	1545.895	Service Link
TR07	0.5	2448.25	Service Link
TR09	0.5	2449.25	Service Link
TR12	0.5	2450.75	Service Link
TR36	0.5	2473.5	Service Link
TR37	0.5	2474.0	Service Link
TR38	0.5	2474.5	Service Link
TR39	0.5	2475.0	Service Link
TR40	0.5	2475.5	Service Link
TR41	0.5	2476.0	Service Link

TR42	0.5	2476.5	Service Link
TR43	0.5	2477.0	Service Link
TR44	0.5	2477.5	Service Link
TR45	0.5	2478.0	Service Link
TR46	0.5	2478.5	Service Link
TR47	0.5	2479.0	Service Link
TR30	0.5	2470.5	Service Link
TR31	0.5	2471.0	Service Link
TR32	0.5	2471.5	Service Link
TR33	0.5	2472.0	Service Link
UR1	0.017	450.125	TT&C
TR11	0.5	2450.25	Service Link
IR09	0.002	1545.835	Service Link
TR10	0.5	2449.75	Service Link
TR20	0.5	2454.75	Service Link
IR08	0.002	1539.9625	Service Link
IR06	0.005	1545.9275	Service Link
SU31	0.2	2067.5	TT&C
SU22	0.099	2071.25	TT&C
SU21	0.099	2070.0	TT&C
UR2	0.017	450.2	TT&C
TRX1	0.5	2477.0	Service Link
IR04	0.002	1546.26	Service Link
TR15	0.5	2452.25	Service Link
TR08	0.5	2448.75	Service Link
IR07	0.005	1545.9375	Service Link

Transmitting
Beams 1:

Question	Response
Beam ID	STX
Transmit Beam Frequency	2240.0 MHz -2290.0 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	7.4 dBi
Antenna Pointing Error	2.0 degrees
Antenna Rotational Error	2.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-57.6 dBW/Hz
Max. Transmit EIRP	5.4 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 /BW):	(dBW/m ² /BW):	(dBW/m ² /BW):	(dBW/m ² /BW):	(dBW/m ² /BW):	(dBW/m ² /BW):	(dBW/m ² /BW):
4.0 kHz	-159.2	-157.5	-155.9	-154.5	-153.2	-147.0

Transmitting
Beams 2:

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

Beam Type	Steerable
Polarization	RHCP
Peak Gain	16.2 dBi
Antenna Pointing Error	2.0 degrees
Antenna Rotational Error	2.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-56.8 dBW/Hz
Max. Transmit EIRP	23.2 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	-157.8	-157.2	-155.7	-154.3	-153.1	-146.9

Transmitting Beams 3:

Question	Response
Beam ID	UTX1
Transmit Beam Frequency	400.15 MHz -401.0 MHz
Beam Type	Fixed
Polarization	H
Peak Gain	4.1 dBi
Antenna Pointing Error	2.0 degrees
Antenna Rotational Error	2.0 degrees

Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	0.0 degrees
Max. Transmit EIRP Density	-39.3 dBW/Hz
Max. Transmit EIRP	6.7 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	-139.6	-137.7	-136.1	-134.8	-133.6	-127.4

Transmitting Beams 4:

Question	Response
Beam ID	TTX
Transmit Beam Frequency	2400.0 MHz -2483.5 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	7.0 dBi
Antenna Pointing Error	2.0 degrees
Antenna Rotational Error	2.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-50.0 dBW/Hz
Max. Transmit EIRP	7.0 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	-151.5	-149.8	-148.2	-146.8	-145.6	-139.3

Transmitting Beams 5:

Question	Response
Beam ID	UTX2
Transmit Beam Frequency	401.0 MHz -402.0 MHz
Beam Type	Fixed
Polarization	H
Peak Gain	4.1 dBi
Antenna Pointing Error	2.0 degrees
Antenna Rotational Error	2.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	0.0 degrees
Max. Transmit EIRP Density	-39.3 dBW/Hz
Max. Transmit EIRP	6.7 dBW
Co- or Cross Polar Mode	C
Service Area Description	Visible Earth

Max. Power Flux Density

Transmitting
Beams 6:

	* 0° - 5°	* 5° - 10°	* 10° - 15°	* 15° - 20°	* 20° - 25°	* 25° - 90°
* (dBW/m ² /BW):	(dBW/m ² /BW):	(dBW/m ² /BW):	(dBW/m ² /BW):	(dBW/m ² /BW):	(dBW/m ² /BW):	(dBW/m ² /BW):
4.0 kHz	-139.3	-137.7	-136.1	-134.8	-133.6	-127.4

Question	Response
Beam ID	UTX3
Transmit Beam Frequency	400.998 MHz -401.032 MHz
Beam Type	Fixed
Polarization	H
Peak Gain	4.1 dBi
Antenna Pointing Error	2.0 degrees
Antenna Rotational Error	2.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	0.0 degrees
Max. Transmit EIRP Density	-39.3 dBW/Hz
Max. Transmit EIRP	6.7 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 /BW):	(dBW/m ² /BW):	(dBW/m ² /BW):	(dBW/m ² /BW):	(dBW/m ² /BW):	(dBW/m ² /BW):	(dBW/m ² /BW):
4.0 kHz	-139.3	-137.7	-136.1	-134.8	-133.6	-127.4

Transmitting Channels (38)

Channel ID	Channel Bandwidth (MHz)	Center Frequency s (MHz)	Feeder Link, Service Link or TT&C
UTX9	0.034	401.015	TT&C
TT22	0.5	2476.25	Service Link
TT21	0.5	2475.25	Service Link
TT20	0.5	2474.25	Service Link
TT19	0.5	2473.25	Service Link
TT17	0.5	2471.25	Service Link
UTX2	0.034	401.017	TT&C
TT09	0.5	2453.25	Service Link
TT08	0.5	2452.25	Service Link
TT14	0.5	2468.25	Service Link
TT13	0.5	2457.25	Service Link
TT04	0.5	2448.25	Service Link
TT25	0.5	2479.25	Service Link
TT24	0.5	2478.25	Service Link
TT23	0.5	2477.25	Service Link
UTX8	0.034	401.5	TT&C
UTX7	0.034	401.4375	TT&C
TT15	0.5	2469.25	Service Link
TT05	0.5	2449.25	Service Link
ST31	0.02	2245.0	TT&C
UTX3	0.034	401.085	TT&C
UTX4	0.034	401.155	TT&C
UTX5	0.034	401.225	TT&C
UTX6	0.034	401.375	TT&C

TT02	0.5	2446.25	Service Link
TT01	0.5	2445.25	Service Link
XD1H	100.0	8125.0	Service Link
TT03	0.5	2447.25	Service Link
TT11	0.5	2455.25	Service Link
TT12	0.5	2456.25	Service Link
UTX1	0.034	400.875	TT&C
TT10	0.5	2454.25	Service Link
TT16	0.5	2470.25	Service Link
TT06	0.5	2450.25	Service Link
ST11	2.0	2245.0	TT&C
ST21	0.2	2245.0	TT&C
TT18	0.5	2472.25	Service Link
TT07	0.5	2451.25	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

Attachment				
File Name	Beam	Field	Type	Description
<u>YAM-5</u> <u>(USASAT-</u> <u>30L-1)-GIMS.</u> <u>mdb</u>		NGSO Antenna Gain Data	GIMS file (*. mdb)	GXT Files for all Antenna Beam Projections as GSO Projections to provide actual contours.