



312 File Number: **SATLOA2020090700105**

Filing Description

Question	Response
Description	Loft Orbital - YAM-3

**Satellite
Information**

Question	Response
Select Orbit Type	NGSO
Space Station or Satellite Network Name	YAM-3
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 (12)

Nature of service	Description	Frequency Band(s)	Mode Type
Other Satellite Service (please specify)	Time Signal Satellite Service	400.05 MHz -400.15 MHz	Transmit
Other Satellite Service (please specify)	Collection of terrestrial communications on a non-interference basis.	864.0 MHz -925.0 MHz	Receive
Earth Exploration-Satellite Service		2025.0 MHz -2110.0 MHz	Receive
Earth Exploration-Satellite Service		8025.0 MHz -8400.0 MHz	Transmit
Other Satellite Service (please specify)	Inter-Satellite Service	1615.0 MHz -1617.5 MHz	Transmit
Other Satellite Service (please specify)	Inter-satellite Service	2483.5 MHz -2495.0 MHz	Receive
Other Satellite Service (please specify)	Inter-satellite Service	1535.0 MHz -1559.0 MHz	Receive
Space Operation Service		401.0 MHz -402.0 MHz	Transmit
Space Operation Service		449.75 MHz -450.25 MHz	Receive
Mobile-Satellite Service		2400.0 MHz -2483.5 MHz	Receive

Mobile-Satellite Service	2400.0 MHz -2483.5 MHz	Transmit
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Space Operation Service	400.15 MHz -401.0 MHz	Transmit
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**Orbital
Information For
Non-
Geostationary
Satellites**

Question	Response
Total Number of Satellites in the active constellation	1
Orbit Epoch Date	01/01/2021
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	ERXH
Receive Beam Frequency	864.0 MHz -925.0 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	10.5 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	-14.1 dB/K
Min. Saturation Flux Density	-162.8 dBW/m2
Max. Saturation Flux Density	-142.8 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Visible Earth

Receiving Beams 2:

Question	Response
Beam ID	ERXL
Receive Beam Frequency	864.0 MHz -925.0 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	6.7 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	-17.9 dB/K
Min. Saturation Flux Density	-167.0 dBW/m2
Max. Saturation Flux Density	-147.0 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Visible Earth

**Receiving
Beams 3:**

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	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	-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
Beams 4:**

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
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

Receiving Beams 5:

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
Beams 6:**

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 7:**

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 Channels (126)

Channel ID	Channel Bandwidth (MHz)	Center Frequency s (MHz)	Feeder Link, Service Link or TT&C
TR58	0.5	2445.5	Service Link
TR59	0.5	2446.25	Service Link
TR60	0.5	2447.0	Service Link
TR61	0.5	2447.75	Service Link
TR05	0.5	2405.75	Service Link
TR04	0.5	2405.0	Service Link
TR40	0.5	2432.0	Service Link
TR41	0.5	2432.75	Service Link
TR79	0.5	2461.25	Service Link
TR80	0.5	2462.0	Service Link
TR81	0.5	2462.75	Service Link
TR82	0.5	2463.5	Service Link
TR83	0.5	2464.25	Service Link
TR84	0.5	2465.0	Service Link
TR85	0.5	2465.75	Service Link
TR86	0.5	2466.5	Service Link
TR87	0.5	2467.25	Service Link
TR88	0.5	2468.0	Service Link
TR97	0.5	2474.75	Service Link
TR67	0.5	2452.25	Service Link
TR68	0.1	2453.0	Service Link
TR98	0.5	2475.5	Service Link
TR96	0.5	2474.0	Service Link
TR95	0.5	2473.25	Service Link

TR94	0.5	2472.5	Service Link
TR93	0.5	2471.75	Service Link
TR92	0.5	2471.0	Service Link
TR91	0.5	2470.25	Service Link
TR90	0.5	2469.5	Service Link
IR08	0.002	1539.9625	Service Link
TR39	0.5	2431.25	Service Link
TR12	0.5	2411.0	Service Link
TR11	0.5	2410.25	Service Link
IR11	0.005	1539.9625	Service Link
IR12	0.005	1545.875	Service Link
IR01	0.005	1539.9325	Service Link
TR44	0.5	2435.0	Service Link
TR43	0.5	2434.25	Service Link
TR42	0.5	2433.5	Service Link
TR33	0.5	2426.75	Service Link
TR32	0.5	2426.0	Service Link
TR29	0.5	2423.75	Service Link
TR28	0.5	2423.0	Service Link
TR27	0.5	2422.25	Service Link
TR16	0.5	2414.0	Service Link
TR17	0.5	2414.75	Service Link
TR18	0.5	2415.5	Service Link
TR19	0.5	2416.25	Service Link
TR20	0.5	2417.0	Service Link
TR21	0.5	2417.75	Service Link

TR22	0.5	2418.5	Service Link
IR03	0.002	1539.9525	Service Link
UR1	0.017	450.125	TT&C
UR2	0.017	450.2	TT&C
TR64	0.5	2450.0	Service Link
TR65	0.5	2450.75	Service Link
TR66	0.5	2451.5	Service Link
IR04	0.002	1546.26	Service Link
ER4	4.0	922.0	Service Link
ER3	4.0	904.0	Service Link
SU5H	0.132	2073.5	TT&C
TR62	0.5	2448.5	Service Link
TR63	0.5	2449.25	Service Link
TR69	0.5	2453.75	Service Link
TR72	0.5	2456.0	Service Link
TR73	0.5	2456.75	Service Link
TR74	0.5	2457.5	Service Link
TR75	0.5	2458.25	Service Link
TR99	0.5	2476.25	Service Link
TRX1	0.5	2477.0	Service Link
TRX2	0.5	2477.75	Service Link
TR15	0.5	2413.25	Service Link
TR14	0.5	2412.5	Service Link
TR13	0.5	2411.75	Service Link
TR23	0.5	2419.25	Service Link
TR24	0.5	2420.0	Service Link

TR25	0.5	2420.75	Service Link
TR26	0.5	2421.5	Service Link
TR76	0.5	2459.0	Service Link
TR77	0.5	2459.75	Service Link
TR78	0.5	2460.5	Service Link
TR57	0.5	2444.75	Service Link
TR47	0.5	2437.25	Service Link
TR48	0.5	2438.0	Service Link
TR49	0.5	2438.75	Service Link
TR50	0.5	2439.5	Service Link
TR10	0.5	2409.5	Service Link
IR06	0.005	1545.9275	Service Link
IR07	0.005	1545.9375	Service Link
TR71	0.5	2455.25	Service Link
GR02	1.23	2490.54	Service Link
ER1	1.4	865.7	Service Link
TR45	0.5	2435.75	Service Link
IR02	0.005	1545.895	Service Link
TR31	0.5	2425.25	Service Link
TR30	0.5	2424.5	Service Link
TR89	0.5	2468.75	Service Link
TR09	0.5	2408.75	Service Link
TR08	0.5	2408.0	Service Link
TR02	0.5	2403.5	Service Link
TR01	0.5	2402.75	Service Link
ER2	1.7	868.85	Service Link

GR01	1.23	2489.31	Service Link
TR06	0.5	2406.5	Service Link
TR07	0.5	2407.25	Service Link
TR38	0.5	2430.5	Service Link
TR37	0.5	2429.75	Service Link
TR36	0.5	2429.0	Service Link
TR35	0.5	2428.25	Service Link
TR34	0.5	2427.5	Service Link
IR09	0.002	1545.835	Service Link
SU1	0.132	2070.0	TT&C
SU2	0.132	2071.25	TT&C
SU3	0.132	2071.875	TT&C
SU4	0.132	2072.5	TT&C
TR55	0.5	2443.25	Service Link
TR46	0.5	2436.5	Service Link
TR70	0.5	2454.5	Service Link
TR03	0.5	2404.25	Service Link
TR56	0.5	2444.0	Service Link
IR05	0.005	1539.9125	Service Link
TR51	0.5	2440.25	Service Link
TR52	0.5	2441.0	Service Link
TR53	0.5	2441.75	Service Link
TR54	0.5	2442.5	Service Link
IR10	0.002	1545.52	Service Link

Transmitting Beams 1:

Question	Response
Beam ID	ETXL
Transmit Beam Frequency	400.05 MHz -400.15 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	1.1 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
Max. Transmit EIRP Density	-31.0 dBW/Hz
Max. Transmit EIRP	5.0 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	-132.8	-131.1	-129.6	-128.2	-127.0	-120.8

Transmitting Beams 2:

Question	Response
Beam ID	GTX
Transmit Beam Frequency	1615.0 MHz -1617.5 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 Beams 3:

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	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	-56.8 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):	/BW):
4.0 kHz	-157.8	-157.2	-155.7	-154.3	-153.1	-146.9

Transmitting Beams 4:

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° (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	-139.6	-137.7	-136.1	-134.8	-133.6	-127.4

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

	* 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	-139.3	-137.7	-136.1	-134.8	-133.6	-127.4

Transmitting Beams 6:

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 Channels (40)

Channel ID	Channel Bandwidth (MHz)	Center Frequency s (MHz)	Feeder Link, Service Link or TT&C
TT01	0.5	2403.5	Service Link
TT02	0.5	2406.5	Service Link
TT03	0.5	2409.5	Service Link
TT04	0.5	2412.5	Service Link
TT05	0.5	2415.5	Service Link
TT11	0.5	2433.5	Service Link
TT12	0.5	2436.5	Service Link
TT13	0.5	2439.5	Service Link
GT01	1.23	1615.65	Service Link
TT14	0.5	2442.5	Service Link
TT15	0.5	2445.5	Service Link
TT26	0.5	2478.5	Service Link
TT25	0.5	2475.5	Service Link
TT24	0.5	2472.5	Service Link
TT23	0.5	2469.5	Service Link
UTX7	0.034	401.4375	TT&C
UTX8	0.034	401.5	TT&C
TT08	0.5	2424.5	Service Link
TT09	0.5	2427.5	Service Link
TT18	0.5	2454.5	Service Link
ET21	0.012	400.1	Service Link
ET31	0.05	400.1	Service Link
UTX2	0.034	401.017	TT&C
UTX1	0.034	400.875	TT&C

TT10	0.5	2430.5	Service Link
TT07	0.5	2421.5	Service Link
UTX6	0.034	401.375	TT&C
UTX5	0.034	401.225	TT&C
UTX4	0.034	401.155	TT&C
UTX3	0.034	401.085	TT&C
XD1H	100.0	8125.0	Service Link
TT22	0.5	2466.5	Service Link
TT21	0.5	2463.5	Service Link
TT20	0.5	2460.5	Service Link
TT19	0.5	2457.5	Service Link
ET11	0.001	400.1	Service Link
GT02	1.23	1616.88	Service Link
TT17	0.5	2451.5	Service Link
TT16	0.5	2448.5	Service Link
TT06	0.5	2418.5	Service Link

Certification Questions

Question	Response
<p>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?</p>	<p>N/A</p>
<p>Are the applicable frequency tolerances of 25.202(e) and out-of-band emission limits of 25.202(f)(1),(2), and (3) met?</p>	<p>Yes</p>
<p>Are the cessation of emissions requirements of 25.207 met?</p>	<p>Yes</p>
<p>Are the applicable power-flux-density limits of 25.208 met, and is the appropriate technical showing provided within the application?</p>	
<p>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?</p>	<p>N/A</p>
<p>Are the applicable full-frequency-reuse requirements of 25.210 met?</p>	
<p>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)?</p>	

Attachments

File Name	Beam	Field	Attachment Type	Description
<u>YAM-3 (USASAT-30L)-GIMS.mdb</u>		NGSO Antenna Gain Data	GIMS file (*.mdb)	NGSO Antenna Beam Projections
