



312 File Number: **SATLOA2023031500060**

Filing Description

Question	Response
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Description	Lockheed Martin Corporation request for authority to launch and operate blanket licensed lunar surface Space Stations
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Satellite
Information

Question	Response
Select Orbit Type	NGSO
Space Station or Satellite Network Name	LM Lunar Terminals
Estimated Lifetime of Satellite(s) From Date of Launch	15 Years
Will the space station(s) operate on a Common Carrier basis?	No

Operating Frequency Bands (29)

Nature of service	Description	Frequency Band(s)	Mode Type
Space Research Service		27000.0 MHz -27500.0 MHz	Transmit
Space Research Service		23150.0 MHz -23550.0 MHz	Receive
Space Research Service		25500.0 MHz -27000.0 MHz	Transmit
Space Research Service		22550.0 MHz -23150.0 MHz	Receive
Space Research Service		8450.0 MHz -8500.0 MHz	Transmit
Space Research Service		7190.0 MHz -7235.0 MHz	Receive
Space Research Service		5850.0 MHz -5925.0 MHz	Transmit
Space Research Service		5850.0 MHz -5925.0 MHz	Receive
Space Research Service		5470.0 MHz -5725.0 MHz	Transmit
Space Research Service		5470.0 MHz -5725.0 MHz	Receive
Space Research Service		5150.0 MHz -5350.0 MHz	Transmit
Space Research Service		5150.0 MHz -5350.0 MHz	Receive
Radionavigation-Satellite Service		5010.0 MHz -5030.0 MHz	Receive
Space Research Service		3400.0 MHz -3700.0 MHz	Transmit
Space Research Service		3400.0 MHz -3700.0 MHz	Receive
Space Research Service		2503.5 MHz -2650.0 MHz	Transmit

Space Research Service	2503.5 MHz -2650.0 MHz	Receive
Radionavigation-Satellite Service	2483.5 MHz -2500.0 MHz	Receive
Space Research Service	2400.0 MHz -2480.0 MHz	Transmit
Space Research Service	2400.0 MHz -2480.0 MHz	Receive
Space Research Service	2200.0 MHz -2290.0 MHz	Transmit
Space Research Service	2025.0 MHz -2110.0 MHz	Receive
Space Research Service	435.0 MHz -450.0 MHz	Transmit
Space Research Service	435.0 MHz -450.0 MHz	Receive
Space Research Service	410.0 MHz -420.0 MHz	Transmit
Space Research Service	410.0 MHz -420.0 MHz	Receive
Space Research Service	406.0 MHz -406.1 MHz	Transmit
Space Research Service	390.0 MHz -405.0 MHz	Transmit
Space Research Service	390.0 MHz -405.0 MHz	Receive

**Orbital
Information For
Non-
Geostationary
Satellites**

Question	Response
Total Number of Satellites in the active constellation	230
Orbit Epoch Date	06/01/2024
Celestial Reference Body	Moon

Orbital Plane 1:

Question	Response
Number of Satellites in Plane	230
Inclination Angle	0.0 degrees
Right Ascension of Ascending Node	0.0 degrees
Argument of Perigee	0.0 degrees
Orbital Period	0.0 seconds
Apogee	1.0 km
Perigee	1.0 km
Active Service Arc Begin Angle with respect to Ascending Node	0.0 degrees
Active Service Arc End Angle with respect to Ascending Node	0.0 degrees

Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	5.0
2	5.0
3	5.0
4	5.0
5	5.0
6	5.0
7	5.0
8	5.0
9	5.0
10	5.0
11	5.0
12	5.0
13	5.0

14	5.0
15	5.0
16	5.0
17	5.0
18	5.0
19	5.0
20	5.0
21	5.0
22	5.0
23	5.0
24	5.0
25	5.0
26	5.0
27	5.0
28	5.0
29	5.0
30	5.0
31	5.0
32	5.0
33	5.0
34	5.0
35	5.0
36	5.0
37	5.0
38	5.0
39	5.0

40	5.0
41	5.0
42	5.0
43	5.0
44	5.0
45	5.0
46	5.0
47	5.0
48	5.0
49	5.0
50	5.0
51	5.0
52	5.0
53	5.0
54	5.0
55	5.0
56	5.0
57	5.0
58	5.0
59	5.0
60	5.0
61	5.0
62	5.0
63	5.0
64	5.0
65	5.0

66	5.0
67	5.0
68	5.0
69	5.0
70	5.0
71	5.0
72	5.0
73	5.0
74	5.0
75	5.0
76	5.0
77	5.0
78	5.0
79	5.0
80	5.0
81	5.0
82	5.0
83	5.0
84	5.0
85	5.0
86	5.0
87	5.0
88	5.0
89	5.0
90	5.0
91	5.0

92	5.0
93	5.0
94	5.0
95	5.0
96	5.0
97	5.0
98	5.0
99	5.0
100	5.0
101	5.0
102	5.0
103	5.0
104	5.0
105	5.0
106	5.0
107	5.0
108	5.0
109	5.0
110	5.0
111	5.0
112	5.0
113	5.0
114	5.0
115	5.0
116	5.0
117	5.0

118	5.0
119	5.0
120	5.0
121	5.0
122	5.0
123	5.0
124	5.0
125	5.0
126	5.0
127	5.0
128	5.0
129	5.0
130	5.0
131	5.0
132	5.0
133	5.0
134	5.0
135	5.0
136	5.0
137	5.0
138	5.0
139	5.0
140	5.0
141	5.0
142	5.0
143	5.0

144	5.0
145	5.0
146	5.0
147	5.0
148	5.0
149	5.0
150	5.0
151	5.0
152	5.0
153	5.0
154	5.0
155	5.0
156	5.0
157	5.0
158	5.0
159	5.0
160	5.0
161	5.0
162	5.0
163	5.0
164	5.0
165	5.0
166	5.0
167	5.0
168	5.0
169	5.0

170	5.0
171	5.0
172	5.0
173	5.0
174	5.0
175	5.0
176	5.0
177	5.0
178	5.0
179	5.0
180	5.0
181	5.0
182	5.0
183	5.0
184	5.0
185	5.0
186	5.0
187	5.0
188	5.0
189	5.0
190	5.0
191	5.0
192	5.0
193	5.0
194	5.0
195	5.0

196	5.0
197	5.0
198	5.0
199	5.0
200	5.0
201	5.0
202	5.0
203	5.0
204	5.0
205	5.0
206	5.0
207	5.0
208	5.0
209	5.0
210	5.0
211	5.0
212	5.0
213	5.0
214	5.0
215	5.0
216	5.0
217	5.0
218	5.0
219	5.0
220	5.0
221	5.0

222	5.0
223	5.0
224	5.0
225	5.0
226	5.0
227	5.0
228	5.0
229	5.0
230	5.0

Receiving Beams 1:

Question	Response
Beam ID	Rx1
Receive Beam Frequency	390.0 MHz -405.0 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	0.0 dBi
Antenna Pointing Error	0.0 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	-26.4 dB/K
Min. Saturation Flux Density	-156.6 dBW/m2
Max. Saturation Flux Density	-66.4 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Lunar Surface

Receiving Beams 2:

Question	Response
Beam ID	Rx2
Receive Beam Frequency	410.0 MHz -420.0 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	0.0 dBi
Antenna Pointing Error	0.0 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	-26.4 dB/K
Min. Saturation Flux Density	-156.6 dBW/m2
Max. Saturation Flux Density	-66.4 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Lunar Surface

Receiving
Beams 3:

Question	Response
Beam ID	Rx3
Receive Beam Frequency	435.0 MHz -450.0 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	0.0 dBi
Antenna Pointing Error	0.0 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	-26.4 dB/K
Min. Saturation Flux Density	-156.6 dBW/m2
Max. Saturation Flux Density	-66.4 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Lunar Surface

Receiving
Beams 4:

Question	Response
Beam ID	Rx4

Receive Beam Frequency	2025.0 MHz -2110.0 MHz
Beam Type	Steerable
Polarization	LHCP
Peak Gain	20.0 dBi
Antenna Pointing Error	0.2 degrees
Antenna Rotational Error	0.2 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	-4.8 dB/K
Min. Saturation Flux Density	-142.2 dBW/m2
Max. Saturation Flux Density	-102.9 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Lunar Surface

Receiving Beams 5:

Question	Response
Beam ID	RxN1
Receive Beam Frequency	2483.5 MHz -2500.0 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	3.0 dBi
Antenna Pointing Error	0.0 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	-19.9 dB/K
Min. Saturation Flux Density	-140.6 dBW/m2
Max. Saturation Flux Density	-100.0 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Lunar Surface

Receiving Beams 6:

Question	Response
Beam ID	Rx5
Receive Beam Frequency	2400.0 MHz -2480.0 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	3.0 dBi
Antenna Pointing Error	0.0 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	-19.9 dB/K
Min. Saturation Flux Density	-75.8 dBW/m2
Max. Saturation Flux Density	-65.8 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Lunar Surface

Receiving Beams 7:

Question	Response
Beam ID	Rx6

Receive Beam Frequency	2503.5 MHz -2650.0 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	3.0 dBi
Antenna Pointing Error	0.0 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	-19.9 dB/K
Min. Saturation Flux Density	-80.6 dBW/m2
Max. Saturation Flux Density	-60.6 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Lunar Surface

Receiving Beams 8:

Question	Response
Beam ID	Rx7
Receive Beam Frequency	3400.0 MHz -3700.0 MHz
Beam Type	Fixed
Polarization	LHCP
Peak Gain	3.0 dBi
Antenna Pointing Error	0.0 degrees
Antenna Rotational Error	0.0 degrees
Polarization Switchable	Yes
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees

G/T at Max. Gain Point	-19.9 dB/K
Min. Saturation Flux Density	-80.6 dBW/m2
Max. Saturation Flux Density	-60.6 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Lunar Surface

Receiving Beams 9:

Question	Response
Beam ID	RxN2
Receive Beam Frequency	5010.0 MHz -5030.0 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	6.0 dBi
Antenna Pointing Error	0.0 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	-16.9 dB/K
Min. Saturation Flux Density	-140.6 dBW/m2
Max. Saturation Flux Density	-119.6 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Lunar Surface

Receiving Beams 10:

Question	Response
Beam ID	Rx8

Receive Beam Frequency	5150.0 MHz -5350.0 MHz
Beam Type	Fixed
Polarization	LHCP
Peak Gain	3.0 dBi
Antenna Pointing Error	0.0 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	-19.9 dB/K
Min. Saturation Flux Density	-75.8 dBW/m2
Max. Saturation Flux Density	-65.8 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Lunar Surface

Receiving Beams 11:

Question	Response
Beam ID	Rx9
Receive Beam Frequency	5470.0 MHz -5725.0 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	3.0 dBi
Antenna Pointing Error	0.0 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	-19.9 dB/K
Min. Saturation Flux Density	-80.6 dBW/m2
Max. Saturation Flux Density	-60.6 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Lunar Surface

Receiving Beams 12:

Question	Response
Beam ID	Rx10
Receive Beam Frequency	5850.0 MHz -5925.0 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	3.0 dBi
Antenna Pointing Error	0.0 degrees
Antenna Rotational Error	0.0 degrees
Polarization Switchable	Yes
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	-19.9 dB/K
Min. Saturation Flux Density	-80.6 dBW/m2
Max. Saturation Flux Density	-60.6 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Lunar Surface

Receiving Beams 13:

Question	Response
Beam ID	Rx11

Receive Beam Frequency	7190.0 MHz -7235.0 MHz
Beam Type	Steerable
Polarization	RHCP
Peak Gain	32.3 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	7.4 dB/K
Min. Saturation Flux Density	-145.6 dBW/m2
Max. Saturation Flux Density	-82.6 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Lunar Surface

Receiving Beams 14:

Question	Response
Beam ID	Rx12
Receive Beam Frequency	22550.0 MHz -23150.0 MHz
Beam Type	Steerable
Polarization	RHCP
Peak Gain	41.8 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

**Receiving
Beams 15:**

G/T at Max. Gain Point	16.9 dB/K
Min. Saturation Flux Density	-145.6 dBW/m2
Max. Saturation Flux Density	-75.6 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Lunar Surface

Question	Response
Beam ID	Rx13
Receive Beam Frequency	23150.0 MHz -23550.0 MHz
Beam Type	Steerable
Polarization	RHCP
Peak Gain	42.0 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	16.9 dB/K
Min. Saturation Flux Density	-145.6 dBW/m2
Max. Saturation Flux Density	-69.6 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Lunar Surface

Receiving
Channels (15)

Channel ID	Channel Bandwidth (MHz)	Center Frequency s (MHz)	Feeder Link, Service Link or TT&C
RX1	2.3	7212.5	TT&C
RU3	2.0	442.5	Service Link
RU2	2.0	415.0	Service Link
RU1	2.0	397.5	Service Link
RS4	114.3	2576.75	Service Link
RS3	16.0	2491.75	Service Link
RS2	34.3	2440.0	Service Link
RS1	2.0	2067.5	Service Link
RC5	75.0	5887.5	Service Link
RC1	114.3	3550.0	Service Link
RC2	20.0	5020.0	Service Link
RC3	34.3	5250.0	Service Link
RC4	114.3	5597.5	Service Link
RKa1	11.4	22850.0	Feeder Link
RKa2	45.7	23350.0	Service Link

Transmitting
Beams 1:

Question	Response
Beam ID	Tx1
Transmit Beam Frequency	390.0 MHz -405.0 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	0.0 dBi
Antenna Pointing Error	0.0 degrees
Antenna Rotational Error	0.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-63.0 dBW/Hz
Max. Transmit EIRP	0.0 dBW
Co- or Cross Polar Mode	C
Service Area Description	Lunar Surface

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):
1.0 MHz	-186.1	-186.1	-186.1	-186.1	-186.1	-186.1

Transmitting
Beams 2:

Question	Response
Beam ID	TxBc
Transmit Beam Frequency	406.0 MHz -406.1 MHz
Beam Type	Fixed
Polarization	RHCP

Peak Gain	0.0 dBi
Antenna Pointing Error	0.0 degrees
Antenna Rotational Error	0.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-27.5 dBW/Hz
Max. Transmit EIRP	2.5 dBW
Co- or Cross Polar Mode	C
Service Area Description	Lunar Surface

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	-184.0	-184.0	-184.0	-184.0	-184.0	-184.0

Transmitting Beams 3:

Question	Response
Beam ID	Tx2
Transmit Beam Frequency	410.0 MHz -420.0 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	0.0 dBi
Antenna Pointing Error	0.0 degrees
Antenna Rotational Error	0.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees

Max. Transmit EIRP Density	-63.0 dBW/Hz
Max. Transmit EIRP	0.0 dBW
Co- or Cross Polar Mode	C
Service Area Description	Lunar Surface

Max. Power Flux Density

	* 0° - 5°	* 5° - 10°	* 10° - 15°	* 15° - 20°	* 20° - 25°	* 25° - 90°
* 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):
1.0 MHz	-186.0	-186.0	-186.0	-186.0	-186.0	-186.0

Transmitting Beams 4:

Question	Response
Beam ID	Tx4
Transmit Beam Frequency	2200.0 MHz -2290.0 MHz
Beam Type	Steerable
Polarization	LHCP
Peak Gain	21.0 dBi
Antenna Pointing Error	0.2 degrees
Antenna Rotational Error	0.2 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-27.99 dBW/Hz
Max. Transmit EIRP	32.0 dBW
Co- or Cross Polar Mode	C
Service Area Description	Lunar Surface

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):
1.0 MHz	-154.0	-154.0	-154.0	-154.0	-154.0	-154.0

Transmitting Beams 5:

Question	Response
Beam ID	Tx5
Transmit Beam Frequency	2400.0 MHz -2480.0 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	3.0 dBi
Antenna Pointing Error	0.0 degrees
Antenna Rotational Error	0.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-72.3 dBW/Hz
Max. Transmit EIRP	2.5 dBW
Co- or Cross Polar Mode	C
Service Area Description	Lunar Surface

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):

1.0 MHz	-195.3	-195.3	-195.3	-195.3	-195.3	-195.3
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Transmitting
Beams 6:

Question	Response
Beam ID	Tx6
Transmit Beam Frequency	2503.5 MHz -2650.0 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	3.0 dBi
Antenna Pointing Error	0.0 degrees
Antenna Rotational Error	0.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-77.5 dBW/Hz
Max. Transmit EIRP	2.5 dBW
Co- or Cross Polar Mode	C
Service Area Description	Lunar Surface

Max. Power Flux Density

	* 0° - 5°	* 5° - 10°	* 10° - 15°	* 15° - 20°	* 20° - 25°	* 25° - 90°
* 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):
1.0 MHz	-200.0	-200.0	-200.0	-200.0	-200.0	-200.0

Transmitting
Beams 7:

Question	Response
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Beam ID	Tx7
Transmit Beam Frequency	3400.0 MHz -3700.0 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	3.0 dBi
Antenna Pointing Error	0.0 degrees
Antenna Rotational Error	0.0 degrees
Polarization Switchable	Yes
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-77.5 dBW/Hz
Max. Transmit EIRP	2.5 dBW
Co- or Cross Polar Mode	C
Service Area Description	Lunar Surface

Max. Power Flux Density

	* 0° - 5°	* 5° - 10°	* 10° - 15°	* 15° - 20°	* 20° - 25°	* 25° - 90°
* 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):
1.0 MHz	-200.0	-200.0	-200.0	-200.0	-200.0	-200.0

Transmitting Beams 8:

Question	Response
Beam ID	Tx8
Transmit Beam Frequency	5150.0 MHz -5350.0 MHz
Beam Type	Fixed
Polarization	RHCP

Peak Gain	3.0 dBi
Antenna Pointing Error	0.0 degrees
Antenna Rotational Error	0.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-72.3 dBW/Hz
Max. Transmit EIRP	2.5 dBW
Co- or Cross Polar Mode	C
Service Area Description	Lunar Surface

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):
1.0 MHz	-195.3	-195.3	-195.3	-195.3	-195.3	-195.3

Transmitting Beams 9:

Question	Response
Beam ID	Tx9
Transmit Beam Frequency	5470.0 MHz -5725.0 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	3.0 dBi
Antenna Pointing Error	0.0 degrees
Antenna Rotational Error	0.0 degrees
Polarization Switchable	

Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-72.3 dBW/Hz
Max. Transmit EIRP	2.5 dBW
Co- or Cross Polar Mode	C
Service Area Description	Lunar Surface

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):
1.0 MHz	-195.3	-195.3	-195.3	-195.3	-195.3	-195.3

Transmitting Beams 10:

Question	Response
Beam ID	Tx3
Transmit Beam Frequency	435.0 MHz -450.0 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	0.0 dBi
Antenna Pointing Error	0.0 degrees
Antenna Rotational Error	0.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-61.0 dBW/Hz
Max. Transmit EIRP	2.0 dBW
Co- or Cross Polar Mode	C
Service Area Description	Lunar Surface

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):
1.0 MHz	-184.0	-184.0	-184.0	-184.0	-184.0	-184.0

Transmitting Beams 11:

Question	Response
Beam ID	Tx10
Transmit Beam Frequency	5850.0 MHz -5925.0 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	3.0 dBi
Antenna Pointing Error	0.0 degrees
Antenna Rotational Error	0.0 degrees
Polarization Switchable	Yes
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-77.5 dBW/Hz
Max. Transmit EIRP	2.5 dBW
Co- or Cross Polar Mode	C
Service Area Description	Lunar Surface

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):

1.0 MHz	-200.0	-200.0	-200.0	-200.0	-200.0	-200.0
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Transmitting
Beams 12:

Question	Response
Beam ID	Tx11
Transmit Beam Frequency	8450.0 MHz -8500.0 MHz
Beam Type	Steerable
Polarization	RHCP
Peak Gain	33.7 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
Max. Transmit EIRP Density	-18.3 dBW/Hz
Max. Transmit EIRP	44.7 dBW
Co- or Cross Polar Mode	C
Service Area Description	Lunar Surface

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):
1.0 MHz	-141.3	-141.3	-141.3	-141.3	-141.3	-141.3

Transmitting
Beams 13:

Question	Response
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Beam ID	Tx12
Transmit Beam Frequency	25500.0 MHz -27000.0 MHz
Beam Type	Steerable
Polarization	RHCP
Peak Gain	43.7 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
Max. Transmit EIRP Density	-25.3 dBW/Hz
Max. Transmit EIRP	54.7 dBW
Co- or Cross Polar Mode	C
Service Area Description	Lunar Surface

Max. Power Flux Density

	* 0° - 5°	* 5° - 10°	* 10° - 15°	* 15° - 20°	* 20° - 25°	* 25° - 90°
* 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):
1.0 MHz	-148.3	-148.3	-148.3	-148.3	-148.3	-148.3

**Transmitting
Beams 14:**

Question	Response
Beam ID	Tx13
Transmit Beam Frequency	27000.0 MHz -27500.0 MHz
Beam Type	Steerable
Polarization	RHCP

Peak Gain	43.9 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
Max. Transmit EIRP Density	-25.1 dBW/Hz
Max. Transmit EIRP	54.9 dBW
Co- or Cross Polar Mode	C
Service Area Description	Lunar Surface

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):
1.0 MHz	-148.1	-148.1	-148.1	-148.1	-148.1	-148.1

**Transmitting
Channels (14)**

Channel ID	Channel Bandwidth (MHz)	Center Frequency s (MHz)	Feeder Link, Service Link or TT&C
TU2	2.0	415.0	Service Link
TBec	0.05	406.05	Service Link
TU1	2.0	397.5	Service Link
TKa2	114.3	27250.0	Service Link
TC1	114.3	3550.0	Service Link
TC2	34.3	5250.0	Service Link
TC3	34.3	5597.5	Service Link
TC4	75.0	5887.5	Service Link
TKa1	45.7	26250.0	Feeder Link
TS1	2.0	2245.0	Service Link
TS2	34.3	2440.0	Service Link
TS3	114.3	2576.75	Service Link
TU3	2.0	442.5	Service Link
TX1	2.3	8475.0	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?	N/A
Are the applicable full-frequency-reuse requirements of 25.210 met?	Yes
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>surface_hemispherical.txt</u>	Rx1	NGSO Antenna Gain Data	Text file (*.txt)	Surface hemispherical antenna, with a peak gain of 0 dBi.
<u>surface_dipole.txt</u>	Rx2	NGSO Antenna Gain Data	Text file (*.txt)	Surface dipole antenna, with a peak gain of 0 dBi along the ground plane.
<u>surface_hemispherical.txt</u>	Rx3	NGSO Antenna Gain Data	Text file (*.txt)	Surface hemispherical antenna, with a peak gain of 0 dBi.
<u>s_band_20dBi.txt</u>	Rx4	NGSO Antenna Gain Data	Text file (*.txt)	Pencil beam antenna with 20 dBi peak gain on boresight.
<u>surface_dipole_3dB.txt</u>	Rx5	NGSO Antenna Gain Data	Text file (*.txt)	Surface dipole antenna, with a peak gain of 3 dBi along the ground plane.
<u>3dB.txt</u>	RxN1	NGSO Antenna Gain Data	Text file (*.txt)	Hemispherical antenna, with a peak gain of 3 dBi.
<u>surface_dipole_3dB.txt</u>	Rx6	NGSO Antenna Gain Data	Text file (*.txt)	Surface dipole antenna, with a peak gain of 3 dBi along the ground plane.

<u>surface_dipole_3dB.txt</u>	Rx7	NGSO Antenna Gain Data	Text file (*.txt)	Surface dipole antenna, with a peak gain of 3 dBi along the ground plane.
<u>3dB.txt</u>	RxN2	NGSO Antenna Gain Data	Text file (*.txt)	Hemispherical antenna, with a peak gain of 3 dBi.
<u>surface_dipole_3dB.txt</u>	Rx8	NGSO Antenna Gain Data	Text file (*.txt)	Surface dipole antenna, with a peak gain of 3 dBi along the ground plane.
<u>surface_dipole_3dB.txt</u>	Rx9	NGSO Antenna Gain Data	Text file (*.txt)	Surface dipole antenna, with a peak gain of 3 dBi along the ground plane.
<u>surface_dipole_3dB.txt</u>	Rx10	NGSO Antenna Gain Data	Text file (*.txt)	Surface dipole antenna, with a peak gain of 3 dBi along the ground plane.
<u>x_band_32dBi.txt</u>	Rx11	NGSO Antenna Gain Data	Text file (*.txt)	Pencil beam antenna with 32 dBi peak gain on boresight.
<u>ka_band_42dBi.txt</u>	Rx12	NGSO Antenna Gain Data	Text file (*.txt)	Pencil beam antenna with 42 dBi peak gain on boresight.

<u>ka_band_42dBi.txt</u>	Rx13	NGSO Antenna Gain Data	Text file (*.txt)	Pencil beam antenna with 42 dBi peak gain on boresight.
<u>surface_hemispherical.txt</u>	Tx1	NGSO Antenna Gain Data	Text file (*.txt)	Surface hemispherical antenna, with a peak gain of 0 dBi.
<u>surface_hemispherical.txt</u>	TxBc	NGSO Antenna Gain Data	Text file (*.txt)	Surface hemispherical antenna, with a peak gain of 0 dBi.
<u>surface_hemispherical.txt</u>	Tx3	NGSO Antenna Gain Data	Text file (*.txt)	Surface hemispherical antenna, with a peak gain of 0 dBi.
<u>surface_dipole.txt</u>	Tx2	NGSO Antenna Gain Data	Text file (*.txt)	Surface dipole antenna, with a peak gain of 0 dBi along the ground plane.
<u>s_band_21dBi.txt</u>	Tx4	NGSO Antenna Gain Data	Text file (*.txt)	Pencil beam antenna with 21 dBi peak gain on boresight.
<u>surface_dipole_3dB.txt</u>	Tx5	NGSO Antenna Gain Data	Text file (*.txt)	Surface dipole antenna, with a peak gain of 3 dBi along the ground plane.

<u>surface_dipole_3dB.txt</u>	Tx6	NGSO Antenna Gain Data	Text file (*.txt)	Surface dipole antenna, with a peak gain of 3 dBi along the ground plane.
<u>surface_dipole_3dB.txt</u>	Tx6	NGSO Antenna Gain Data	Text file (*.txt)	Surface dipole antenna, with a peak gain of 3 dBi along the ground plane.
<u>surface_dipole_3dB.txt</u>	Tx7	NGSO Antenna Gain Data	Text file (*.txt)	Surface dipole antenna, with a peak gain of 3 dBi along the ground plane.
<u>surface_dipole_3dB.txt</u>	Tx8	NGSO Antenna Gain Data	Text file (*.txt)	Surface dipole antenna, with a peak gain of 3 dBi along the ground plane.
<u>surface_dipole_3dB.txt</u>	Tx9	NGSO Antenna Gain Data	Text file (*.txt)	Surface dipole antenna, with a peak gain of 3 dBi along the ground plane.
<u>surface_dipole_3dB.txt</u>	Tx10	NGSO Antenna Gain Data	Text file (*.txt)	Surface dipole antenna, with a peak gain of 3 dBi along the ground plane.

<u>x_band_33dBi.txt</u>	Tx11	NGSO Antenna Gain Data	Text file (*.txt)	Pencil beam antenna with 33 dBi peak gain on boresight.
<u>ka_band_43dBi.txt</u>	Tx12	NGSO Antenna Gain Data	Text file (*.txt)	Pencil beam antenna with 43 dBi peak gain on boresight.
<u>ka_band_43dBi.txt</u>	Tx13	NGSO Antenna Gain Data	Text file (*.txt)	Pencil beam antenna with 43 dBi peak gain on boresight.
<u>X-Band_Receive_32dBi_Contour.pdf</u>	Rx11	NGSO Antenna Gain Data	PDF file (*.pdf)	Pencil beam antenna with 32 dBi peak gain on boresight. This beam can provide coverage from Earth to a Lunar User.
<u>Ka-Band_Receive_42dBi_Contour.pdf</u>	Rx12	NGSO Antenna Gain Data	PDF file (*.pdf)	Pencil beam antenna with 42 dBi peak gain on boresight. This beam can provide coverage from Earth to a Lunar User.
<u>X-Band_Transmit_33dBi_Contour.pdf</u>	Tx11	NGSO Antenna Gain Data	PDF file (*.pdf)	Pencil beam antenna with 33 dBi peak gain on boresight. This beam can provide coverage a Lunar User to Earth.

<u>Ka-</u> <u>Band_Transmit_43dBi_Contour.</u> <u>pdf</u>	Tx12	NGSO Antenna Gain Data	PDF file (*.pdf)	Pencil beam antenna with 43 dBi peak gain on boresight. This beam can provide coverage a Lunar User to Earth.
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