

Original E-mail information request from FCC March 27, 2019

From: oetech@fccsun27w.fcc.gov <oetech@fccsun27w.fcc.gov>

Sent: Wednesday, March 27, 2019 6:37 AM

To: Speicher, Andy (US) <andy.speicher@lmco.com>

Subject: EXTERNAL: 1031-EX-CN-2018

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Office of Engineering and Technology

To: Andy Speicher, Lockheed Martin Corporation

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From: Behnam Ghaffari

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Applicant: Lockheed Martin Corporation

File Number: 1031-EX-CN-2018

Correspondence Reference Number: 46988

Date of Original Email: 03/27/2019

Please provide the following parameters:

For Non-geostationary satellite:

INCLINATION ANGLE, APOGEE IN KILOMETERS, PERIGEE IN KILOMETERS, ORBITAL PERIOD IN HOURS.
ANTENNA POLARIZATION, ANTENNA GAIN (dBi), ANTENNA BEAMWIDTH@ ½ Power.

For Ground Station:

ANTENNA POLARIZATION, ANTENNA GAIN(dBi), BEAMWIDTH@ ½ Power,

LM Space Pony Express 1 program Responses to FCC Questions on March 27th, 2019.

Applicant: Lockheed Martin Corporation

File Number: 1031-EX-CN-2018

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Questions and responses follow:

For the Non-geostationary satellite:

NGSO Question 1) INCLINATION ANGLE is 37 Degrees.

NGSO Question 2) APOGEE IN KILOMETERS is 555 Km.

NGSO Question 3) PERIGEE IN KILOMETERS is 555 Km.

NGSO Question 4) ORBITAL PERIOD IN HOURS is 1.596 hours.

NGSO Question 5) ANTENNA POLARIZATION is Right Hand Circular Polarization

NGSO Question 6) ANTENNA GAIN (dBi) is per attached.

NGSO Question 7) ANTENNA BEAMWIDTH@ ½ Power is per attached.

Pony Express 1 NGSO Antenna characteristics

Frequency	Antenna Polarization	Antenna Gain, dB isotropic (dBi)	Antenna ½ Power (3 dB) Beamwidth degrees
904.4 MHz	RHCP	-2.3	80°
1397.5 MHz	RHCP	0.1	40°
2395 MHz	RHCP	5.8	35°
2492 MHz	RHCP	5.8	35°

For the Ground Station:

Question GS 1) ANTENNA POLARIZATION is shown in the table below.

Question GS 2) ANTENNA GAIN (dBi) is shown in the table below.

Question GS 3) BEAMWIDTH@ ½ Power (3dB) is shown in the table below.

Ground Station Technical Characteristics:

Action	Frequency	Station Class	ERP Watts	Mean Peak	Emission designator	Antenna Polarization	Antenna Gain, dBi	Antenna 3 dB Beamwidth
New	904.4 MHz	FX	1300	Peak	400KD1W	Vertical	15.2	30°
New	1397.5 MHz	FX	1600	Peak	2M0F3D	Vertical	18	22°
New	2395 MHz	FX	1600	Peak	2M0F3D	RHCP	22	13°
New	2492 MHz	FX	1600	Peak	20M0F3D	RHCP	22	13°

Frequency Tolerance: < 1.2 E-11 / day for all frequencies.

Modulation: Various for all frequencies

Question GS 4) AZIMUTHAL RANGE is 0 to 360 degrees.

Antenna movement characteristics:

Antenna range of motion	Minimum (Degrees)	Maximum (Degrees)
Rotation in azimuth plane (AZMUTHAL RANGE):	0	360
Rotation in Elevation plane (ELEVATION RANGE):	15	90

Question GS 5) THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS is 6198 ft MSL

Question GS 6) THE ANTENNA HEIGHT ABOVE TERRAIN (Overall height above ground to tip of antenna) IN METERS is 3 meters.

Site elevation above Mean Sea Level and other relevant antenna location information:

City	County	Latitude	Longitude	Elevation ft. MSL	Mobile	Radius of Operation
Littleton, CO	Jefferson County	39° 30' 46" North	-105° 6' 46" West	6198	NO	4.0 Km

Lockheed Martin Littleton CO (Waterton Canyon) Campus.

Distance to the nearest Airport:25 km (Centennial Airport: KAPA).

Other Transmitter component details:

Function	Manufacturer	Model Number	# of units	Experimental
Reference Oscillator	Symmetricon	5071A Cesium Reference	1	NO

Signal Generator	Agilent	83732	1	NO
RF power Amplifier	Amplifier Research	Model 50S1G4A	1	NO