Description of Operations and Public Interest Statement

Pursuant to 47 CFR 25.120 of the Commission's Rules, Lockheed Martin Corporation ("Lockheed Martin") hereby requests Special Temporary Authority ("STA") for a period of thirty (30) days to operate its Carpentersville, New Jersey fixed earth station (Call Sign E7451) to provide telemetry, tracking and control ("TT&C") functions during the post-launch and early orbit phases ("LEOP") of operation for the JCSAT-15 satellite.

JCSAT-15 is destined for in-service operation at 110.0° E.L., and is currently scheduled for launch on December 20, 2016, aboard an Ariane-5ECA from the European Spaceport in Kourou, French Guiana.

Accordingly, Lockheed Martin requests to begin test transmissions on December 17, 2016 in preparation for the launch.[1] Further, Lockheed Martin is requesting that the duration of this STA be a total of thirty (30) days to cover any slippage in the anticipated dates of the various phases of operation; it nonetheless expects that all Carpentersville operations in support of the launch will be completed within fourteen (14) days after the JCSAT-15 satellite is launched.

1. Requested STA Operations

Lockheed Martin specifically seeks authority to transmit telecommand signals at the center frequencies 13750.5 MHz and 13754.5 MHz for in transit telecommand communications (Earth-to-space), and to receive telemetry signals from the satellite (space-to-Earth) at the center frequencies 12201.0 MHz and 12203.0 MHz.

The proposed TT&C operations in support of the JCSAT-15 launch will be on a strictly non-harmful interference, non-protected basis. Lockheed Martin's proposed transmissions will use total input power and emissions for Ku-band telecommand that will fall below the highest input power, EIRP, EIRP density, and bandwidth prescribed for the telecommand carriers in its above-referenced FCC license. When no commands are being sent, a CW carrier that is within the emission of the licensed operation would be present. However, in the case of an anomaly, extraordinary measures, such as increasing power, may be necessary; if such measures are required during this STA period, Lockheed Martin will notify the FCC within seven (7) business days that such measures were needed.

Lockheed Martin incorporates by reference the radiation hazard study and Schedule B information that were included with its most recent filings at the FCC.

[1] The proposed test transmissions would occur over a period of approximately two to three days. During these tests, the earth station would not be communicating with any satellite; instead, the transmissions will be made with the antenna at zenith to verify RF functionality.

Lockheed Martin designates Michael Usarzewicz to be the contact person that will be available whenever transmission to, or reception from, JCSAT-15 is to occur through the subject earth station. Mr. Usarzewicz can be reached at the following phone numbers:

(609) 865-2658 (cellular)
(908) 859-4050 (earth station desk)

2. Grant of the Requested Authority Will Serve the Public Interest

Lockheed Martin believes that the limited operations it proposes in support of the launch of the JCSAT-15 satellite serve the public interest. Lockheed Martin understands that the JCSAT-15 satellite has been licensed by the Japanese administration for the provision of communications services to Japanese satellite operator SKY Perfect JSAT. Lockheed Martin's Carpentersville earth station will be part of a global network of control facilities that will be used solely to position the satellite as it progresses from transfer orbit to its final location. No end user service will be provided within the United States at any time. The safe and orderly use of the entire geostationary orbital resource and protection of the hundreds of satellites licensed by the U.S. and other countries that operate there depends in no small part on ensuring that the JCSAT-15 satellite is controlled while over North America en route to its final geostationary orbital position. In this regard, Lockheed Martin's earth station thus will serve a vital function.

* * * * *

Lockheed Martin requests authority to operate its Carpentersville, NJ earth station antenna to provide critical TT&C services during the launch and early operations phase of the JCSAT-15 satellite, for a term of 30 days, commencing December 17, 2016.

TC&R Subsystem Performance

Parameter	Performance
Orbit-Raising Operations and Contingency Operations (Telemetry)	
Antenna coverage	-130° to +90° from +Z and -70° to +30° from –Z
Antenna polarization	Linear Horizontal Polarization (HP)
Antenna configuration	Four antennas
	Two +Z elements
	Two -Z elements
On-Station Normal Operations (Telemetry)	
Antenna coverage	Ku-band Japan beam
Antenna polarization	Right Hand Circular Polarization (RHCP)
Antenna configuration	Ku-band Japan transmit antenna
Orbit-Raising Operations and Contingency Operations (Command)	
Antenna coverage	-130° to +90° from +Z and -70° to +30° from –Z
Antenna polarization	Left-Hand Circular Polarization (LHCP)
Antenna configuration	Four antennas
	Two +Z elements
	Two –Z elements
On-Station Normal Operations (Command)	
Antenna coverage	Ku-band Japan Regional Coverage
Antenna polarization	Linear Vertical Polarization (VP)
Antenna configuration	Ku-band Command Horn
Telemetry	
Frequency	12.201 GHz RHCP 12.203 GHz RHCP
EIRP	
Wide-angle antenna	3 dBW (min at EOC), 10 dBW (max)
Ku-Band Japan Communications antenna (On-station)	22 dBW
Modulation	Phase modulation telemetry and/or ranging
Telemetry	
Subcarrier frequencies	
Physical Channel 1	128 kHz

Parameter	Performance
Physical Channel 2	320 kHz (Back up only)
Output data	
Normal/Dwell telemetry	128 kHz (Normal + Dwell)
Data rate	BPSK on 128-kHz subcarrier
Data modulation	16,000 bps Bi-phase L
Ranging	27.777-kHz 7 tones ESA ranging subcarrier
Modulation index	
One subcarrier	1.0 ±0.1 radian
Two subcarriers	0.7 ±0.1 radian
Three subcarriers	0.58 ±0.1 radian
Phase Noise	4 deg rms
Command	
Frequency	13.7505 GHz VP (On-Station) 13.7545 GHz and 13.7505 GHz LHCP (Orbit-raising/Contingency)
Flux density (min)	
Transfer orbit and contingency on-station	≥ -90 dBW/m^2
Normal on-station No Response No damage	≥ -105dBW/m^2 -120 dBW/m -50 dBW/m
Modulation	
Type	FM
Deviation	±400 kHz
Bit rate	1,000 bps
Baseband encoding	Non-return to Zero-Level (NRZ-L) Binary Phase-Shift Keyed (BPSK)
Data modulation	Binary Phase-Shift Keyed (BPSK) on 16-kHz subcarrier, coherent
Ranging	
Baseband	Ranging tones 7-tone-27.7 kHz ESA-like (on-station) or Intelsat tone burst ranging scheme
Flux density	> -86 dBW/m^2 (Contingency) > -101 dBW/m^2 (Normal on-station)
Modulation	

Parameter	Performance
Uplink	FM, ±400-kHz carrier deviation
Downlink	PM, 1.0 ±0.1 radian, 0.7 ±0.1 radian, or 0.58 ±0.1 radian
Ranging accuracy	±15 m, On-station ±30 m, Transfer Orbit