

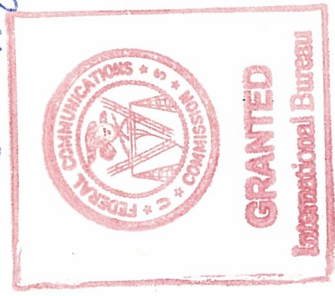
APPLICATION FOR EARTH STATION SPECIAL TEMPORARY AUTHORITY

APPLICANT INFORMATION Enter a description of this application to identify it on the main menu:
Carpentersville LEOP TT&C STA for JCSat 15 - Dec 2016 (30-Day STA)

1. Applicant

Name: Lockheed Martin Corporation Phone Number: 703-413-5747
DBA Name: DBA Name: 703-413-5908
Street: 2121 Crystal Drive E-Mail: ryan.n.terry@lmco.com
Suite 100
City: Arlington State: VA
Country: USA Zipcode: 22202
Attention: Ryan N. Terry

30 days "with conditions"
File # SES-57A-20161123-00910



Call Sign E7541 Grant Date 12/19/2014
(or other identifier) Term Dates
From 12/22/2014 To: 01/20/2017
Approved: [Signature]

Applicant: Lockheed Martin Corporation
Call Sign: E7541
File No.: SES-STA-20161123-00910
Special Temporary Authority (STA)

Lockheed Martin Corporation is granted STA for 30 days to operate its earth station Call Sign E7541 in Carpentersville, New Jersey to provide telemetry, tracking and control ("TT&C") functions during the post-launch and transfer orbit phases (LEOP) for JCSAT-15 at 110° W.L. on frequencies 13750.5 MHz and 13754.5 MHz (Earth-to-space) and 12201.0 MHz and 12203.0 MHz (space-to-Earth). Operations are authorized under the following conditions:

1. Operations will not exceed the operational power levels and parameters requested and coordinated.
2. All operations under this grant of STA shall be on an unprotected and non-harmful interference basis. Lockheed Martin Corporation shall not cause harmful interference to, and shall not claim protection from interference caused to it by, any other lawfully operating radio communication system.
3. In the event of any harmful interference Lockheed Martin Corporation shall cease operations immediately upon notification of such interference, and shall immediately inform the Commission, in writing, of such an event.
4. The LEOP operations must be coordinated with all operators of satellites that use the same frequency bands and are in the LEOP path. All operators of satellites in that path will be provided with an emergency phone number where the licensee can be reached in the event that harmful interference occurs. Currently the 24x7 contact information for the JCSAT-15 satellite LEOP mission is as follows: Cell Phone: (609) 865-2658 and/or station number (908) 859-4050. Request to speak with Mr. Usarzewicz.
5. All operations must comply with the EIRP limitations established in 47 C.F.R. § 2.106 Footnote US 356 and US 357.
6. Grant of this STA is without prejudice to any determination that the Commission may make regarding pending or future Lockheed Martin Corporation LLC applications.
7. Any action taken or expense incurred as a result of operations pursuant to this STA is solely at Lockheed Martin Corporation LLC's risk.

This grant is issued pursuant to Section 0.261 of the Commission's rules on delegated authority, 47 C.F.R. § 0.261, and is effective upon release.



30 days
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File # SES-STA-20161123-00910
Call Sign E7541 Grant Date 12/19/2016
(or other identifier)
Term Dates
From 12/22/2016 To: 01/20/2017
Approved: Paul E. Blair

2. Contact	
Name: Ryan N. Terry	Phone Number: 703-413-5747
Company: Lockheed Martin Corporation	Fax Number: 703-413-5908
Street: 2121 Crystal Drive Suite 100	E-Mail: ryan.n.terry@lmco.com
City: Washington	State: DC
Country: USA	Zipcode: 22202
Attention:	Relationship: Same
(If your application is related to an application filed with the Commission, enter either the file number or the IB Submission ID of the related application. Please enter only one.)	
3. Reference File Number SESLIC2008110301443 or Submission ID	
4a. Is a fee submitted with this application?	
<input checked="" type="radio"/> If Yes, complete and attach FCC Form 159. If No, indicate reason for fee exemption (see 47 C.F.R. Section 1.1114).	
<input type="radio"/> Governmental Entity <input type="radio"/> Noncommercial educational licensee	
<input type="radio"/> Other (please explain):	
4b. Fee Classification CGX – Fixed Satellite Transmit/Receive Earth Station	
5. Type Request	
<input type="radio"/> Use Prior to Grant <input type="radio"/> Change Station Location <input checked="" type="radio"/> Other	
6. Requested Use Prior Date 12/17/2016	
7. City Carpentersville	
8. Latitude (dd mm ss.s h) 40 38 39.1 N	

9. State NJ	10. Longitude (dd mm ss.s h) 75 11 27.8 W
11. Please supply any need attachments. Attachment 1: STA Attachment 2: Attachment 3:	
12. Description. (If the complete description does not appear in this box, please go to the end of the form to view it in its entirety.) Lockheed Martin Corporation hereby requests Special Temporary Authority beginning December 17, 2016, 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.	
13. By checking Yes, the undersigned certifies that neither applicant nor any other party to the application is subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Act of 1988, 21 U.S.C. Section 862, because of a conviction for possession or distribution of a controlled substance. See 47 CFR 1.2002(b) for the meaning of "party to the application"; for these purposes.	
14. Name of Person Signing Jennifer A. Warren	15. Title of Person Signing Vice President, Technology Policy & Regulation
WILLFUL FALSE STATEMENTS MADE ON THIS FORM ARE PUNISHABLE BY FINE AND / OR IMPRISONMENT (U.S. Code, Title 18, Section 1001), AND/OR REVOCATION OF ANY STATION AUTHORIZATION (U.S. Code, Title 47, Section 312(a)(1)), AND/OR FORFEITURE (U.S. Code, Title 47, Section 503).	

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THE FOREGOING NOTICE IS REQUIRED BY THE PAPERWORK REDUCTION ACT OF 1995, PUBLIC LAW 104-13, OCTOBER 1, 1995, 44 U.S.C. SECTION 3507.

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.

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

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

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

Antenna Gain

The Tx antenna gain at 13.75 GHz = 63.3 dBi

SUPPLEMENT: Transmit Power

The proposed operations will be limited to a maximum transmit power of 84 dBW.

SUPPLEMENT: EIRP Density

The proposed operations will be limited to a maximum EIRP density of 24 dBW/4kHz for the subject carrier.

Supplemental Information for SES-STA-20161123-00910

Operating Parameters for Proposed Carpentersville, NJ Ku-band TT&C LEOP STA

SITE NAME (or identifier):	Carpentersville, NJ – Call Sign E7541
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Antenna location

Longitude (deg, min, sec- <i>NAD 83</i>)	75 ° 11 ' 27.8 " W
Latitude (deg, min, sec- <i>NAD 83</i>)	40 ° 38 ' 39.1 " N
Antenna Height:	19.2 m
Ground Elevation (AMSL):	85.7 m

Antenna Characteristics (size & gain)

Size	14.2
TX Gain	63.5 dBi @ 14.0 GHz
RX Gain	62.9 dBi @ 12.0 GHz
Antenna Model	14.2 KFPA
Antenna Manufacturer	TIW (GD SATCOM)

Maximum Power (at Flange) 500 W

Command:

13.7545 GHz LHCP
13.7505 GHz LHCP

Telemetry:

12.201 GHz RHCP
12.203 GHz RHCP