E7541 SES-STA-20161007-00831 IB2016002231
Lockheed Martin Corporation

Approved by OMB
3060–0678

APPLICATION FOR EARTH STATION SPECIAL TEMPORARY AUTHORITY

APPLICANT INFORMATIONEnter a description of this application to identify it on the main menu:
Carpentersville LEOP TT&C STA for EchoStar 23 – Oct 2016 (30–day STA)

1. Applicant

Name:	Lockheed Martin Corporation	**Phone Number:**	703–413–5970
DBA Name:		**Fax Number:**	703–413–5908
Street:	2121 Crystal Drive Suite 100	**E–Mail:**	Jennifer.Warren@lmco.com
City:	Arlington	**State:**	VA
Country:	USA	**Zipcode:**	22202 –
Attention:	Ms Jennifer Warren		

FEDERAL COMMUNICATIONS COMMISSION
GRANTED
International Bureau

File # SES-STA-20161007-00831
E7541
Call Sign ____ Grant Date 10-24-16
(or other identifier)
Term Dates
From: 10-28-16 To: 11-24-16
Approved: Paul E Hans

Applicant: Lockheed Martin Corporation
Call Sign: E7541
File No.: SES-STA-20161007-00831
Special Temporary Authority (STA)

GRANTED
International Bureau

File # SES-STA-20161007-00831
Call Sign E7541 Grant Date 10-24-16
(or other identifier)
Term Dates
From: 10-25-16 To: 11-24-16
Approved:

Lockheed Martin Corporation is granted special temporary authority ("STA") for 30 days commencing October 25, 2016 for earth station (Call Sign E7541) at Carpentersville, NJ, at 40° 38' 39.1" NL/75° 11' 27.8"W.L. to provide telemetry, tracking and control (TT&C) functions during the post-launch and early orbit phases (LEOP) of operation for the EchoStar 23 satellite operating at the 45° W.L. orbital location on the following center frequencies: 17305.0 MHz, and 17791.0 MHz (Earth-to-space) and 12207.0 MHz, and 12208.0 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 EchoStar 23 satellite LEOP mission is as follows: Cell Ph: (609) 865-2658 and/or station number (908) 859-4050. Request to speak with Mr. Usarzewicz.

4. Grant of this STA is without prejudice to any determination that the Commission may make regarding pending or future Lockheed Martin Corporation LLC applications.

5. 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.

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?
◉ If Yes, complete and attach FCC Form 159. If No, indicate reason for fee exemption (see 47 C.F.R.Section 1.1114).
○ Governmental Entity ○ Noncommercial educational licensee
○ Other(please explain):

4b. Fee Classification CGX – Fixed Satellite Transmit/Receive Earth Station

5. Type Request

○ Use Prior to Grant ○ Change Station Location ◉ Other

6. Requested Use Prior Date 10/25/2016	
7. CityCarpentersville	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: Freq Coordination | 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 October 25, 2016, to operate its Carpentersville, New Jersey fixed earth station (Call Sign E7541) to provide telemetry, tracking and control (TT&C) functions during the post-launch and early orbit phases (LEOP) of operation for the EchoStar 23 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.

◉ Yes ○ No

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).

FCC NOTICE REQUIRED BY THE PAPERWORK REDUCTION ACT

The public reporting for this collection of information is estimated to average 2 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the required data, and completing and reviewing the collection of information. If you have any comments on this burden estimate, or how we can improve the collection and reduce the burden it causes you, please write to the Federal Communications Commission, AMD–PERM, Paperwork Reduction Project (3060–0678), Washington, DC 20554. We will also accept your comments regarding the Paperwork Reduction Act aspects of this collection via the Internet if you send them to PRA@fcc.gov. PLEASE DO NOT SEND COMPLETED FORMS TO THIS ADDRESS.

Remember – You are not required to respond to a collection of information sponsored by the Federal government, and the government may not conduct or sponsor this collection, unless it displays a currently valid OMB control number or if we fail to provide you with this notice. This collection has been assigned an OMB control number of 3060–0678.

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 E7541) to provide telemetry, tracking and control ("TT&C") functions during the post-launch and early orbit phases ("LEOP") of operation for the EchoStar 23 satellite.

EchoStar 23 is a Space Systems Loral Model SSL-1300 Ku-band Broadcasting-Satellite Service ("BSS") satellite authorized under Brazilian authority for operations at the 45° W.L. orbital location by EchoStar 45, an EchoStar affiliate. The satellite will provide direct-to-home ("DTH") television service to Brazil from its assigned orbital location.

The satellite is scheduled for an upcoming launch aboard a SpaceX Falcon 9 launch vehicle from Cape Canaveral, Florida, as early as October 25, 2016.[1] Accordingly, Lockheed Martin respectfully requests authority to begin test transmissions on that date. 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 ten (10) days after the EchoStar 23 satellite is launched.

1. Requested STA Operations

Lockheed Martin specifically seeks authority to transmit telecommand signals at the center frequencies 17305.0 and 17791.0 MHz for in transit telecommand communications (Earth-to-space), and to receive telemetry signals from the satellite on 12207.0 and 12208.0 MHz frequencies.

The proposed TT&C operations in support of the EchoStar 23 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.

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[1] As the Bureau is aware, recent events at the Cape Canaveral launch facility have resulted in unforeseen delays. Because of the uncertainty related to the actual launch date, Lockheed Martin will be submitting a concurrent STA extension request for a period of up to sixty (60) days. Nonetheless, in the event that the launch is permitted to take place on October 25, Lockheed Martin respectfully requests Commission consideration of its request for authority to commence from that date onward.

Lockheed Martin incorporates by reference the radiation hazard study and Schedule B information that were included with its most recent filings at the FCC. In addition, Lockheed Martin is submitting herewith a Frequency Coordination Report prepared by Comsearch.

Lockheed Martin designates Michael Usarzewicz to be the contact person that will be available whenever transmission to, or reception from, EchoStar 23 is to occur through the subject earth station. Mr. Usarzewicz can be reached at the following cell phone number: (609) 865-2658 and/or station number: (908) 859-4050.

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 EchoStar 23 satellite serve the public interest. Lockheed Martin understands that the EchoStar 23 satellite has been licensed by the Brazilian Administration to provide DTH television service to Brazil. 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 EchoStar 23 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 EchoStar 23 satellite, for a term of 30 days, commencing October 25, 2016.

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

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

Antenna location

Longitude (deg, min, sec- *NAD 83*)	75 ° 11 ' 27.8 " W
Latitude (deg, min, sec- *NAD 83*)	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	57.3 dBi @ 6.0 GHz
RX Gain	53.9 dBi @ 4.0 GHz
Antenna Model	14.2 KFPA
Antenna Manufacturer	TIW (GD SATCOM)

Maximum HPA Power 650W

Telecommand Uplink		
TC1 Center Frequency	*Center frequency of TC1 in MHz*	17791.00
TC1 Bandwidth	*TC1 carrier maximum occupied RF bandwidth in kHz*	1000
TC1 Start Frequency	*Calculated start frequency for TC1 carrier*	*17790.50*
TC1 End Frequency	*Calculated end frequency for TC1 carrier*	*17791.50*
TC1 Polarization	*Polarization for TC1 carrier*	RHCP
TC2 Center Frequency	*Center frequency of TC2 in MHz*	17305.00
TC2 Bandwidth	*TC2 carrier maximum occupied RF bandwidth in kHz*	1000
TC2 Start Frequency	*Calculated start frequency for TC2 carrier*	*17304.50*
TC2 End Frequency	*Calculated end frequency for TC2 carrier*	*17305.50*
TC2 Polarization	*Polarization for TC2 carrier*	LHCP
TC3 Center Frequency	*Center frequency of TC3 in MHz*	
TC3 Bandwidth	*TC3 carrier maximum occupied RF bandwidth in kHz*	
TC3 Start Frequency	*Calculated start frequency for TC3 carrier*	*0.00*
TC3 End Frequency	*Calculated end frequency for TC3 carrier*	*0.00*
TC3 Polarization	*Polarization for TC3 carrier*	
TC4 Center Frequency	*Center frequency of TC4 in MHz*	
TC4 Bandwidth	*TC4 carrier maximum occupied RF bandwidth in kHz*	
TC4 Start Frequency	*Calculated start frequency for TC4 carrier*	*0.00*
TC4 End Frequency	*Calculated end frequency for TC4 carrier*	*0.00*
TC4 Polarization	*Polarization for TC4 carrier*	
Data Rate	*Data rate for command carriers*	250bps
Modulation Type(s)	*Type(s) of modulation for command carriers (i.e. FM, BPSK etc.)*	FM, NRZ-L BPSK
Emission Designator(s)	*ITU standard code to represent bandwidth and modulation of a carrier (i.e. 800KF8D). See Emission Designator tab for more information*	1M00F2DAN
Ranging Uplink		
Bandwidth	*Ranging carrier maximum occupied RF bandwidth in kHz*	1000
Modulation Type	*Type of modulation (i.e. FM, QPSK, 16QAM, etc.)*	FM
Emission Designator(s)	*ITU standard code to represent bandwidth and modulation of a carrier (i.e. 800KF8D). See Emission Designator tab for more information*	1M00F8XJN
Telemetry downlink		
TM1 Center Frequency	*Center frequency of TM1 in MHz*	12207.00
TM1 Bandwidth	*TM1 carrier maximum occupied RF bandwidth in kHz*	1000
TM1 Start Frequency	*Calculated start frequency for TM1 carrier*	12206.50
TM1 End Frequency	*Calculated end frequency for TM1 carrier*	12207.50
TM1 Polarization	*Polarization for TM1 carrier*	LHCP
TM2 Center Frequency	*Center frequency of TM2 in MHz*	12208.00
TM2 Bandwidth	*TM2 carrier maximum occupied RF bandwidth in kHz*	1000
TM2 Start Frequency	*Calculated start frequency for TM2 carrier*	12207.50
TM2 End Frequency	*Calculated end frequency for TM2 carrier*	12208.50
TM2 Polarization	*Polarization for TM2 carrier*	LHCP
TM3 Center Frequency	*Center frequency of TM3 in MHz*	
TM3 Bandwidth	*TM3 carrier maximum occupied RF bandwidth in kHz*	
TM3 Start Frequency	*Calculated start frequency for TM3 carrier*	0.00
TM3 End Frequency	*Calculated end frequency for TM3 carrier*	0.00
TM3 Polarization	*Polarization for TM3 carrier*	

TM4 Center Frequency	*Center frequency of TM4 in MHz*	
TM4 Bandwidth	*TM4 carrier maximum occupied RF bandwidth in kHz*	
TM4 Start Frequency	*Calculated start frequency for TM4 carrier*	0.00
TM4 End Frequency	*Calculated end frequency for TM4 carrier*	0.00
TM4 Polarization	*Polarization for TM4 carrier*	
Data Rate	*Data rate for telemetry carriers*	4.8kbps
Modulation Type(s)	*Type(s) of modulation (i.e. FM, BPSK,etc.)*	PM, BPSK PCM/NRZ-L
Emission Designator(s)	*ITU standard code to represent bandwidth and modulation of a carrier (i.e. 800KF8D). See Emission Designator tab for more information*	1M00G8DAN

COMSEARCH
A CommScope Company

October 06, 2016

Re: Lockheed Martin Corporation-Phillipsburg
CARPENTERSVILLE, NJ
Temporary Transmit-Only Earth Station
Operation Dates: 10/25/2016 - 12/24/2016
Job Number: 161006COMSGE03

Dear Frequency Coordinator:

On behalf of Lockheed Martin Corporation-Phillipsburg, we are forwarding the attached coordination data for a Temporary Transmit-Only Earth Station to be located at the site referenced above.

This earth station will transmit only on the satellite(s) and frequency or frequencies as described in the attached data. Please do not report cases involving non-active paths or frequencies outside the specified range.

If there are any questions concerning this coordination notice, please contact Comsearch.

Sincerely,

COMSEARCH

Gary K. Edwards
Senior Manager
gedwards@comsearch.com

Enclosure(s)

Date:	10/06/2016
Job Number:	161006COMSGE03

Administrative Information	
Status	ENGINEER PROPOSAL
Call Sign	TEMP12
Licensee Code	RCASTR
Licensee Name	Lockheed Martin Corporation-Phillipsburg

Site Information	**CARPENTERSVILE, NJ**
Venue Name	
Latitude (NAD 83)	40° 38' 39.1" N
Longitude (NAD 83)	75° 11' 27.8" W
Climate Zone	A
Rain Zone	2
Ground Elevation (AMSL)	54.86 m / 180.0 ft

Link Information	
Satellite Type	Geostationary
Mode	TO - Transmit-Only
Modulation	Analog and Digital
Satellite Arc	4° W to 147° West Longitude
Azimuth Range	102.5° to 257.9°
Corresponding Elevation Angles	5.5° / 5.0°
Antenna Centerline (AGL)	9.14 m / 30.0 ft

Antenna Information		**Transmit - FCC32**	
Manufacturer		TIW SYSTEMS	
Model		FCC STD 14.2-MET	
Gain / Diameter		57.5 dBi / 14.2 m	
3-dB / 15-dB Beamwidth		0.24° / 0.46°	
Max Available RF Power	(dBW/4 kHz)	2.2	
	(dBW/MHz)	26.2	
Maximum EIRP	(dBW/4 kHz)	59.7	
	(dBW/MHz)	83.7	
	(dBW)	83.0	
Interference Objectives:	Long Term	-151.0 dBW/4 kHz	20%
	Short Term	-128.0 dBW/4 kHz	0.0025%

Frequency Information	**Transmit 18.0 GHz**
Emission / Frequency Range (MHz)	1M00G8D / 17305.0 - 17791.0
Max Great Circle Coordination Distance	384.5 km / 238.9 mi
Precipitation Scatter Contour Radius	179.1 km / 111.3 mi

Coordination Values	**CARPENTERSVI, NJ**		
Licensee Name	Lockheed Martin Corporation-Phillipsburg		
Latitude (NAD 83)	40° 38' 39.1" N		
Longitude (NAD 83)	75° 11' 27.8" W		
Ground Elevation (AMSL)	54.86 m / 180.0 ft		
Antenna Centerline (AGL)	9.14 m / 30.0 ft		
Antenna Model	TIW 14.2 meter		
Antenna Mode	Transmit 18.0 GHz		
Interference Objectives: Long Term	-151.0 dBW/4 kHz	20%	
Short Term	-128.0 dBW/4 kHz	0.0025%	
Max Available RF Power	2.2 (dBW/4 kHz)		

			Transmit 18.0 GHz	
Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)
0	3.51	102.08	-10.00	100.00
5	3.90	97.51	-10.00	100.00
10	2.91	92.51	-10.00	100.00
15	2.84	87.51	-10.00	100.00
20	2.83	82.52	-10.00	100.00
25	3.07	77.52	-10.00	100.00
30	3.44	72.52	-10.00	100.00
35	3.78	67.52	-10.00	100.00
40	3.82	62.52	-10.00	100.00
45	3.80	57.53	-10.00	100.00
50	3.59	52.54	-10.00	100.00
55	3.40	47.55	-9.93	100.00
60	3.31	42.56	-8.72	100.00
65	3.12	37.58	-7.37	100.00
70	2.88	32.61	-5.83	100.00
75	3.07	27.61	-4.03	100.00
80	3.04	22.64	-1.87	100.00
85	3.06	17.68	0.82	100.00
90	3.07	12.74	4.37	108.30
95	2.74	8.00	9.42	130.79
100	2.73	3.74	17.68	164.93
105	2.58	3.84	17.40	243.12
110	2.72	7.37	10.31	134.27
115	2.80	10.92	6.05	118.85
120	2.62	14.56	2.92	111.14
125	2.05	18.40	0.38	112.88
130	1.63	22.02	-1.57	115.83
135	2.22	24.75	-2.84	100.00
140	2.76	27.32	-3.91	100.00
145	2.31	30.46	-5.09	100.00
150	2.22	33.06	-5.98	100.00
155	1.94	35.55	-6.77	100.00
160	2.22	37.22	-7.27	100.00
165	2.67	38.33	-7.59	100.00
170	2.46	39.65	-7.95	100.00
175	1.94	40.84	-8.28	100.00
180	1.90	41.11	-8.35	100.00
185	1.86	40.92	-8.30	100.00

Coordination Values	**CARPENTERSVI, NJ**		
Licensee Name	Lockheed Martin Corporation-Phillipsburg		
Latitude (NAD 83)	40° 38' 39.1" N		
Longitude (NAD 83)	75° 11' 27.8" W		
Ground Elevation (AMSL)	54.86 m / 180.0 ft		
Antenna Centerline (AGL)	9.14 m / 30.0 ft		
Antenna Model	TIW 14.2 meter		
Antenna Mode	Transmit 18.0 GHz		
Interference Objectives: Long Term	-151.0 dBW/4 kHz	20%	
Short Term	-128.0 dBW/4 kHz	0.0025%	
Max Available RF Power	2.2 (dBW/4 kHz)		

			Transmit 18.0 GHz	
Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)
190	1.23	40.84	-8.28	105.88
195	1.33	39.59	-7.94	104.48
200	2.37	37.09	-7.23	100.00
205	1.76	35.72	-6.82	100.00
210	1.77	33.44	-6.11	100.00
215	2.21	30.54	-5.12	100.00
220	3.42	26.81	-3.71	100.00
225	3.50	23.78	-2.41	100.00
230	4.90	19.59	-0.30	100.00
235	4.41	16.68	1.44	100.00
240	4.50	13.22	3.97	100.00
245	3.77	10.24	6.75	105.33
250	2.53	7.51	10.11	136.88
255	2.28	4.01	16.92	259.02
260	2.60	3.20	19.36	384.46
265	3.11	7.34	10.36	128.41
270	3.39	12.19	4.85	104.72
275	2.86	17.22	1.10	100.66
280	2.80	22.19	-1.65	100.00
285	3.05	27.15	-3.84	100.00
290	3.56	32.11	-5.67	100.00
295	4.21	37.09	-7.23	100.00
300	4.98	42.08	-8.60	100.00
305	5.49	47.09	-9.82	100.00
310	5.46	52.09	-10.00	100.00
315	5.57	57.09	-10.00	100.00
320	4.81	62.08	-10.00	100.00
325	3.99	67.09	-10.00	100.00
330	3.36	72.09	-10.00	100.00
335	3.16	77.09	-10.00	100.00
340	3.15	82.09	-10.00	100.00
345	3.00	87.09	-10.00	100.00
350	3.23	92.08	-10.00	100.00
355	3.48	97.08	-10.00	100.00