


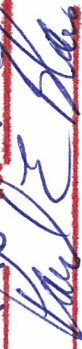
APPLICATION FOR EARTH STATION SPECIAL TEMPORARY AUTHORITY

APPLICANT INFORMATION Enter a description of this application to identify it on the main menu:  
Carpentersville LEOP TT&C STA for Eutelsat 117 West B - May 2016 (180-Day STA)

1. Applicant

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

  
**GRANTED**  
International Bureau

File # SES-STA-20160512-00429  
E7541  
Call Sign E7541 Grant Date 6-23-16  
(or other identifier)  
Term Dates  
From: 7-9-16 To: 1-5-17  
Approved: 

Applicant: Lockheed Martin Corporation  
Call Sign: E7541  
File No.: SES-STA-20160512-00429  
Special Temporary Authority (STA)

Lockheed Martin Corporation ("Lockheed Martin") is granted STA for 180 days, under the following conditions, beginning July 9, 2016, to test the RF functionality of fixed earth station's antenna located in Carpentersville, New Jersey (40° 38' 39.1" N.L./ 075° 11' 27.8" W.L) and to provide telemetry, tracking, and command (TT&C) functions on frequencies: 6423.3 MHz (Earth-to-space), and 4198.20 MHz and 4199.80 MHz (space-to-Earth) during the post-launch and early orbit phases for the Mexico-licensed satellite EUTELSAT 117 West B, Call Sign S2926, at the permanent orbital location 116.8° W.L.(formerly known as SATMEX 9).

- 1) Lockheed Martin will transmit command signals in the 6423.3 MHz using the coordinated emission carrier 400KFXD-800FXD.
- 2) All operations shall be on an unprotected and non-harmful interference basis, and shall not claim protection from interference caused to it by any other lawfully operating station and it shall cease transmission(s) immediately upon notice of such interference.
- 3) Any action taken or expense incurred as a result of operations pursuant to this STA is solely at Lockheed Martin's risk.
- 4) This action is issued pursuant to Section 0.261 of the Commission's rules on delegated authority, 47 C.F.R. § 0.261, and is effective immediately.



File # SES-STA-20160512-00429  
Call Sign E7541 Grant Date 6-23-16  
(or other identifier)  
Term Dates  
From: 7-9-16 To: 1-5-17  
Approved: Paul E. Hales

<b>2. Contact</b>	
<b>Name:</b> David S. Keir	<b>Phone Number:</b> (202) 429-8970
<b>Company:</b> Lerman Senter PLLC	<b>Fax Number:</b> (202) 293-7783
<b>Street:</b> 2001 L Street, NW Suite 400	<b>E-Mail:</b> dkeir@lermansenter.com
<b>City:</b> Washington	<b>State:</b> DC
<b>Country:</b> USA	<b>Zipcode:</b> 20036 -4946
<b>Attention:</b>	<b>Relationship:</b> Legal Counsel
(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 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 06/08/2016	
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: Narrative	Attachment 2: Comsearch Report      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.)	<div style="border: 1px solid black; padding: 5px;"> <p>Lockheed Martin Corporation requests a 180-day STA to use the C-band antenna at its Carpentersville, NJ earth station to support post-launch/early-operations TT&amp;C for the Eutelsat 117 West B satellite following its upcoming launch. The STA period should commence June 8, 2016 to allow for calibration testing. See Exhibit A.</p> </div>
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 &quot;party to the application&quot;; for these purposes.	<p style="text-align: center;">Yes      <input checked="" type="radio"/>      No      <input type="radio"/></p>
14. Name of Person Signing Jennifer Warren	15. Title of Person Signing Vice President, Technology Policy & Regulation
<p style="text-align: center;"><b>WILLFUL FALSE STATEMENTS MADE ON THIS FORM ARE PUNISHABLE BY FINE AND / OR IMPRISONMENT</b> (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).</p>	

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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**

Lockheed Martin Corporation (“Lockheed Martin”) hereby requests special temporary authority (“STA”) to operate its Carpentersville, New Jersey C-band fixed earth station (FCC 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 Eutelsat 117 West B satellite (“E117WB”)(formerly known as Satmex-9). E117WB is a Boeing Model 702SP satellite using all-electric propulsion and licensed by Mexico for operation at the 116.8° West longitude orbital location (116.8° W.L.), which is scheduled for an upcoming launch aboard a SpaceX Falcon 9 launch vehicle from Cape Canaveral, Florida.

Lockheed Martin will need to begin test transmissions in preparation for the launch on or about June 8, 2016.<sup>1</sup> Due to the need to place this request on FCC Public Notice and solicit public comment prior to grant under the FCC’s Rules and the Communications Act of 1934, as amended,<sup>2</sup> Lockheed Martin respectfully requests that this request be placed on Public Notice at the earliest possible date. However, as insufficient time remains prior to launch to allow complete processing of this 180-day STA Request by June 8, 2016, Lockheed Martin is also filing concurrently a request for an interim 30-day STA for these same operations to allow testing and LEOP operations to commence on a timely basis in advance of grant of the longer term authority requested here.

#### **1. Requested STA Operations**

Lockheed Martin specifically seeks authority to transmit telecommand signals at the center frequency 6423.3 MHz for in-transit communications. Additional technical parameters for the STA operation are set forth in the table that is the final page of this attachment and in the Comsearch Frequency Coordination and Interference Analysis Report (“Comsearch Report”) that is Attachment 2 to this STA request. Lockheed Martin is requesting STA for a total of one-hundred and eighty (180) days commencing June 8, 2016, or such later date as may be coincident with the expiration of the related 30-day STA that is being requested contemporaneously. The requested 180-day duration is longer than has been typical in the past for most satellite LEOP

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<sup>1</sup> The test transmissions that would begin on or about June 8<sup>th</sup> would occur over a period of approximately three to five 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.

<sup>2</sup> As detailed below, the nature of these operations requires at least 180 days of operational authority. See 47 U.S.C. §309(c)(2)(G) (non-broadcast special temporary authorizations limited to thirty days where no application for regular operation is contemplated unless public notice is provided under Section 309(b) of the Act); 47 C.F.R. § 25.120(b)(2).

operations because the satellite employs an all-electric propulsion system.<sup>3</sup> An all-electric satellite allows a much lighter payload, as heavy chemical fuel tanks are not required. Indeed, the Boeing 702SP Class satellites are of sufficiently reduced mass and weight that two can be launched on a single launch vehicle, resulting in cost savings of up to twenty percent when compared to previously available launch options. The trade-off, however, is that it takes a matter of months, rather than weeks, for an all-electric satellite to reach its final, on-orbit operating position. Given this lengthy period for LEOP maneuvers, Lockheed Martin anticipates that it may require an additional STA to extend operations beyond the initial 180-day period.<sup>4</sup>

Lockheed Martin's proposed transmissions will use total input power and emissions for telecommand as stated in the Comsearch Report. When no commands are being sent, a CW carrier that is within the emission of Lockheed Martin's E7541 operation would be present, as provided for in its license. The authority requested in this application is very similar to that previously granted to Lockheed Martin to perform LEOP services early last year.<sup>5</sup> A radiation hazard study with respect non-ionizing radiation for the antenna at higher power operation was part of Lockheed Martin's original application for this facility under FCC File No. SES-LIC-20081103-01443, and that report is hereby incorporated by reference.

All of Lockheed Martin's proposed TT&C operations in support of the E117WB launch will be on a strictly non-harmful interference, non-protected basis as the requested transmit frequencies are not included in Lockheed Martin's current C-band authority for the Carpentersville site. Lockheed Martin designates Michael Usarzewicz to be the contact person that will be available whenever transmission to, or reception from, E117WB 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 operations it proposes in support of the launch of the E117WB satellite are required in furtherance of the public interest. Operations have been

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<sup>3</sup> The Commission has previously granted several STAs for LEOP operations of 180 days in length to cover deployments of this same class of satellite. *See, e.g.*, Intelsat License LLC, FCC File No. SES-STA-20141217-00907, granted Jan. 27, 2015 (granting a 180-day STA, commencing February 1, 2015, to provide LEOP services for the Eutelsat-115WB satellite); Lockheed Martin Corporation, FCC File No. SES-STA-20150304-00111, granted April 17, 2015 (granting 180-day STA to provide LEOP for the ABS-3A satellite).

<sup>4</sup> "The Commission may grant a temporary authorization for a period not to exceed 180 days, *with additional periods not exceeding 180 days*, if the Commission has placed the [original] special temporary authority (STA) request on public notice." 47 C.F.R. § 25.120(b)(2) (emphasis added).

<sup>5</sup> *See* Lockheed Martin Corporation, FCC File No. SES-STA-20150304-00111, *supra* n.3.

coordinated with all potentially affected entities that operate communications systems in compliance with the Table of Frequency Allocations, and a copy of the coordination report is attached to this application. E117WB is a next-generation satellite that will be located in geostationary orbit at 116.8° W.L. providing service to customers in Mexico, Central America, the Caribbean, and South America in the telecommunications, government and video sectors, including the direct-to-home video market.

Lockheed Martin's Carpentersville earth station will be part of a global network of control facilities that will be used to position the satellite as it progresses from transfer orbit over a period of months to its final location. 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 E117WB satellite is controlled while over North America; Lockheed Martin's earth station thus will serve a vital function.

\* \* \* \* \*

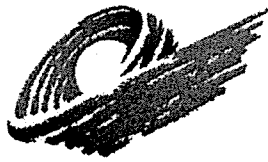
As outlined above, Lockheed Martin requests authority to operate its Carpentersville, NJ C-band earth station antenna to provide critical TT&C services during the launch and early operations phase of the E117WB satellite, for a term of 180 days commencing on June 8, 2016, or such later date as may be coincident with the expiration of an interim 30-day STA granted pursuant to a separately-filed request for authority.



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

SITE NAME (or identifier):	Carpentersville, NJ – Call Sign E7541
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<b>Antenna details</b>	
Latitude	40-38-39.1 N
Longitude	075-11-27.8 W
Antenna height	19.14 m AGL
Ground elevation (AMSL)	54.86 m
Diameter	14.2 m
Tx Gain	57.5 dBi @ 14.0 GHz
<b>Telecommand uplink</b>	
TC1 frequency (MHz)	6423.3
TC1 polarization	On-station: RHCP Fwd/AftPipe: LHCP
Command Modulation scheme	2 Layer - FM/BPSK
Emission Designators	400KFXD – 800KFXD
BPSK coding	NZR-L format
BPSK rate	1 kHz
PSK subcarrier	16 kHz
FM deviation	±400 kHz
Max occupied RF bandwidth	800 kHz
<b>Ranging uplink</b>	
Ranging Modulation scheme	seven-tone (ESA-like)
Highest freq baseband tone	53.1 kHz
FM deviation	±200 kHz
Max occupied RF bandwidth	400 kHz
Satellite Commercial name:	Eutelsat 117 West B (f.k.a. Satmex-9)
Orbital Longitude:	116.8°W



**COMSEARCH**

A CommScope Company

May 11, 2016

Re: Lockheed Martin Corporation-Phillipsburg  
CARPENTERSVILLE, NJ - SATMEX 9  
Temporary Transmit-Only Earth Station  
Operation Dates: 06/10/2016 - 12/10/2016  
Job Number: 160511COMSGE02

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 4 GHz facilities or problems 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: 05/11/2016  
Job Number: 160511COMSGE02

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**Administrative Information**

Status: TEMPORARY (Operation from 06/10/2016 to 12/10/2016)  
Call Sign: TEMP05  
Licensee Code: RCASTR  
Licensee Name: Lockheed Martin Corporation-Phillipsburg

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**Site Information**

**CARPENTERSVILLE, NJ**  
Venue Name: SATMEX 9  
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

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**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

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**Antenna Information**

**Transmit - T61421**  
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): 6.5  
(dBW/MHz): 30.5

Maximum EIRP (dBW/4 kHz): 64.0  
(dBW/MHz): 88.0  
(dBW): 84.0

Interference Objectives: Long Term: -154.0 dBW/4 kHz 20%  
Short Term: -131.0 dBW/4 kHz 0.0025%

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**Frequency Information**

**Transmit 6.1 GHz**  
Emission / Frequency Range (MHz): 400KFXD - 800KFXD / 6423.3

Max Great Circle Coordination Distance: 557.6 km / 346.4 mi  
Precipitation Scatter Contour Radius: 406.9 km / 252.8 mi

<b>Coordination Values</b>	<b>CARPENTERSVI, NJ</b>		
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 SYSTEMS FCC STD 14.2-MET		
Antenna Mode	Transmit 6.1 GHz		
Interference Objectives:	Long Term	-154.0 dBW/4 kHz	20%
	Short Term	-131.0 dBW/4 kHz	0.0025%
Max Available RF Power	6.5 (dBW/4 kHz)		

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	3.51	102.08	-10.50	100.00
5	3.90	97.51	-10.50	100.00
10	2.91	92.51	-10.50	103.26
15	2.84	87.51	-10.50	104.57
20	2.83	82.52	-10.50	104.78
25	3.07	77.52	-10.50	100.33
30	3.44	72.52	-10.50	100.00
35	3.78	67.52	-10.50	100.00
40	3.82	62.52	-10.50	100.00
45	3.80	57.53	-10.50	100.00
50	3.59	52.54	-10.50	100.00
55	3.40	47.55	-10.01	100.00
60	3.31	42.56	-9.01	101.43
65	3.12	37.58	-7.53	110.43
70	2.88	32.61	-5.54	122.58
75	3.07	27.61	-4.02	124.72
80	3.04	22.64	-2.08	132.36
85	3.06	17.68	0.89	142.62
90	3.07	12.74	4.76	160.56
95	2.74	8.00	7.50	183.89
100	2.73	3.74	14.55	217.90
105	2.58	3.84	14.16	353.21
110	2.72	7.37	7.50	184.29
115	2.80	10.92	5.58	172.73
120	2.62	14.56	2.94	161.86
125	2.05	18.40	0.46	163.33
130	1.63	22.02	-1.71	165.25
135	2.22	24.75	-3.35	142.17
140	2.76	27.32	-3.96	130.55
145	2.31	30.46	-4.68	135.26
150	2.22	33.06	-5.72	134.18
155	1.94	35.55	-6.72	134.93
160	2.22	37.22	-7.39	128.01
165	2.67	38.33	-7.83	117.70
170	2.46	39.65	-8.36	119.82
175	1.94	40.84	-8.67	128.96
180	1.90	41.11	-8.72	129.69
185	1.86	40.92	-8.68	130.89

<b>Coordination Values</b>	<b>CARPENTERSVI, NJ</b>		
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 SYSTEMS FCC STD 14.2-MET		
Antenna Mode	Transmit 6.1 GHz		
Interference Objectives:	Long Term	-154.0 dBW/4 kHz	20%
	Short Term	-131.0 dBW/4 kHz	0.0025%
Max Available RF Power	6.5 (dBW/4 kHz)		

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	1.23	40.84	-8.67	145.98
195	1.33	39.59	-8.34	144.55
200	2.37	37.09	-7.34	125.36
205	1.76	35.72	-6.79	139.23
210	1.77	33.44	-5.88	142.53
215	2.21	30.54	-4.72	137.12
220	3.42	26.81	-3.86	119.07
225	3.50	23.78	-2.77	121.68
230	4.90	19.59	-0.25	110.26
235	4.41	16.68	1.49	123.55
240	4.50	13.22	4.28	133.53
245	3.77	10.24	6.26	152.73
250	2.53	7.51	7.50	188.51
255	2.28	4.01	13.48	377.31
260	2.60	3.20	16.69	557.56
265	3.11	7.34	7.50	175.31
270	3.39	12.19	5.31	156.29
275	2.86	17.22	1.17	147.85
280	2.80	22.19	-1.81	136.52
285	3.05	27.15	-3.93	125.43
290	3.56	32.11	-5.35	111.09
295	4.21	37.09	-7.34	100.00
300	4.98	42.08	-8.92	100.00
305	5.49	47.09	-9.92	100.00
310	5.46	52.09	-10.50	100.00
315	5.57	57.09	-10.50	100.00
320	4.81	62.08	-10.50	100.00
325	3.99	67.09	-10.50	100.00
330	3.36	72.09	-10.50	100.00
335	3.16	77.09	-10.50	100.00
340	3.15	82.09	-10.50	100.00
345	3.00	87.09	-10.50	101.51
350	3.23	92.08	-10.50	100.00
355	3.48	97.08	-10.50	100.00