

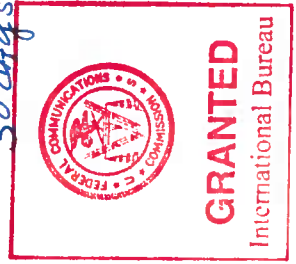
APPLICATION FOR EARTH STATION SPECIAL TEMPORARY AUTHORITY

APPLICANT INFORMATION Enter a description of this application to identify it on the main menu:
Carpentersville TT&C STA for HellasSat 4 (2.4m dishes) – 2018–12 (180–Day STA)

I. Applicant

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

30 days



11 Extension with Conditions
File # SES-STA-20181231-03596

Call Sign E7541 Grant Date 01/03/2019
(or other identifier)

Term Dates
From: 01/03/2019 To: 02/02/2019

Approved: *[Signature]*

Applicant: Lockheed Martin Corporation
Call Sign: E7541
File No.: SES-STA-20181231-03596
Special Temporary Authority (STA)

Lockheed Martin Corporation is granted extension of STA to operate for 30 days, beginning January 3, 2019, its earth station Call Sign E7541 located at geographic coordinates 40° 38' 41"N/ 75° 11' 28"W in Carpentersville, New Jersey to provide command functions during the electric propulsion monitoring for the HellasSat 4/SaudiGeoSat 1 ("HS4") satellite at orbital location 39.0°E on frequencies: 5949.22 MHz, 5950.67MHz, 5963.03 MHz, 5964.49 MHz (Earth-to-space). Operations are authorized under the following conditions:

1. Operations will not exceed the operational power levels and parameters requested:

Maximum EIRP: 55.3 dBW for all carriers
EIRP Density: 19.0 dBW/4kHz
Uplink emissions: 1M44G7W

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. Currently the 24x7 contact information for the HS4 satellite mission is as follows: Cell Phone: (609) 865-2658 and/or earth station desk number (908) 859-4050. Request to speak with Michael Usarzewicz.

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

6. 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.



File # SES-STA-20181231-03596

Call Sign E7541 Grant Date 01/03/2019
(or other identifier)

Term Dates
From: 01/03/2019 To: 02/02/2019

Approved: Paul E. Hale

Extension with conditions

2. Contact

Name: Ryan N. Terry **Phone Number:** 703-413-5747
Company: Lockheed Martin Corporation **Fax Number:** 703-413-5908
Street: 2121 Crystal Drive **E-Mail:** ryan.n.terry@lmco.com
 Suite 100
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 SESSTA201811403198 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

01/03/2019

7. City Carpentersville

8. Latitude

(dd mm ss.s h) 40 38 41.0 N

9. State NJ	10. Longitude (dd mm ss.s h) 75 11 28.0 W
11. Please supply any need attachments. Attachment 1: STA Extension 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 extension of its Special Temporary Authority, beginning January 3, 2019, to operate two Prodelin 2.4m temporary-fixed, transmit-only earth stations immediately adjacent to its Carpentersville, New Jersey fixed earth station (Call Sign E7541) to provide telecommand functions during the Electric Orbit Raising (EOR)	
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 <input checked="" type="radio"/> No <input type="radio"/>	
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

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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.

12. Description

Lockheed Martin Corporation hereby requests extension of its Special Temporary Authority, beginning January 3, 2019, to operate two Prodelin 2.4m temporary-fixed, transmit-only earth stations immediately adjacent to its Carpentersville, New Jersey fixed earth station (Call Sign E7541) to provide telecommand functions during the Electric Orbit Raising (EOR) phase of operation for the HellasSat 4 satellite.

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 one hundred eighty (180) days to operate its Carpentersville, New Jersey fixed earth station (Call Sign E7541) to provide telemetry, tracking, and control ("TT&C") functions during the Electric Orbit Raising ("EOR") period of operation, ranging, and electric propulsion monitoring for the HellasSat 4/ SaudiGeoSat 1 ("HS4") satellite, which Lockheed Martin has manufactured.

HS4 is destined for in-service operation at 39.0° E.L., and is currently scheduled for launch in mid-January 2019, aboard an Ariane 5 ECA rocket, from Guiana Space Center.

1. Requested STA Operations

Lockheed Martin requested authority to begin testing and calibrating the subject antennas on December 3, 2018, given the unique communications configuration of the ground stations supporting launch.¹ Lockheed Martin is requesting herein extension of that initial grant for an additional one hundred eighty (180) days to cover the period required to conduct EOR and the in-orbit testing being conducted by the launch provider. The all-electric propulsion system of HS4 requires extended support for the completion of the mission.

Overall, the proposed TT&C operations in support of the HS4 launch will be on a strictly non-harmful interference, non-protected basis. When no commands are being sent, a CW carrier that is within the emission of the licensed operation would be present. 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 is submitting herewith a Frequency Coordination and Interference Analysis Report prepared by Comsearch. Lockheed Martin notes that the Comsearch Report has been modified from the Report submitted with the initial application to reflect an extended coordination term accounting for the six-month grant contemplated by this extension request and, to the extent necessary, any future extension requests, given the lengthy period of EOR operations.

¹ STA was granted under FCC File No. SES-STA-20181114-03198.

Lockheed Martin designates Michael Usarzewicz to be the contact person that will be available whenever transmission to SES-12 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 HS4 satellite serve the public interest. Lockheed Martin understands that the HS4 satellite will provide to provide in-orbit backup, redundancy services for HellasSat 4 and further expansion over Europe and Southern Africa, through increased Ku-band capacity. Lockheed Martin's Carpentersville earth station facility will be part of a global network of control and ranging facilities that will be used solely to position the satellite as it progresses from transfer orbit to its final location and to calibrate electric propulsion. 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 HS4 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 the subject earth station antennas to provide critical services during the EOR mission of the HellasSat 4/SaudiGeoSat 1 satellite, for a term of 180 days, commencing January 3, 2019.

TECHNICAL DETAILS OF SPECIAL TEMPORARY AUTHORITY

Satellite Characteristics

Satellite: HellasSat 4/ SaudiGeoSat 1 Electric Orbit Raising
Orbital Location: 39.0° E.L.
Manufacturer: Lockheed Martin Corporation
Launch Vehicle: Ariane 5 ECA

* * *

Earth Station Characteristics

Antenna: 2.4-m Prodelin
Antenna Location: 40°38' 41" N / 075° 11' 28" W
Telecommand Uplink Frequencies:
5949.22 MHz (LHCP/RHCP)
5950.67 MHz (LHCP/RHCP)
5963.03 MHz (LHCP/RHCP)
5964.49 MHz (LHCP/RHCP)
Antenna Gain: 42.0 dBi @ 6 GHz
Antenna Power: 13.3 dBW (into the flange)
Maximum EIRP: 55.3 dBW for all carriers
EIRP Density: 19.0 dBW/4kHz
Uplink Emission: 1M44G7W



COMSEARCH
An Andrew Company

19700 Janelia Farm Blvd.
Ashburn, Va 20147
(703)-726-5500 Fax: (703)-726-5600
<http://www.comsearch.com>

December 20, 2018

Re: Lockheed Martin Corporation-Phillipsburg
CARPENTERSVI, NJ
Temporary Transmit-Only Earth Station
Operation Dates: 02/05/2019 - 09/01/2019
Job Number: 181220COMSGE02

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: 12/20/2018
Job Number: 181220COMSGE02

Administrative Information

Status: TEMPORARY (Operation from 02/05/2019 to 09/01/2019)
Call Sign: TEMP09
Licensee Code: RCASTR
Licensee Name: Lockheed Martin Corporation-Phillipsburg

Site Information**CARPENTERSVILLE, NJ**

Venue Name
Latitude (NAD 83): 40° 38' 41.0" N
Longitude (NAD 83): 75° 11' 28.0" 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: 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): 2.74 m / 9.0 ft

Antenna Information**Transmit - FCC32**

Manufacturer: Prodelin
Model: 2.4 meter
Gain / Diameter: 42.0 dBi / 2.4 m
3-dB / 15-dB Beamwidth: 1.20° / 2.40°

Max Available RF Power (dBW/4 kHz): -10.7
(dBW/MHz): 13.3

Maximum EIRP (dBW/4 kHz): 31.3
(dBW/MHz): 55.3

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

Frequency Information**Transmit 6.1 GHz**

Emission / Frequency Range (MHz):
1M44G7W / 5949.22
1M44G7W / 5950.67
1M44G7W / 5963.03
1M44G7W / 5964.49

Max Great Circle Coordination Distance: 234.8 km / 145.9 mi
Precipitation Scatter Contour Radius: 100.0 km / 62.1 mi

Coordination Values	CARPENTERSVI, NJ		
Licensee Name	Lockheed Martin Corporation-Phillipsburg		
Latitude (NAD 83)	40° 38' 41.0" N		
Longitude (NAD 83)	75° 11' 28.0" W		
Ground Elevation (AMSL)	54.86 m / 180.0 ft		
Antenna Centerline (AGL)	2.74 m / 9.0 ft		
Antenna Model	Prodelin 2.4 meter		
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	-10.7 (dBW/4 kHz)		

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	4.46	102.08	-10.00	100.00
5	5.06	97.51	-10.00	100.00
10	5.23	92.51	-10.00	100.00
15	4.76	87.51	-10.00	100.00
20	4.23	82.51	-10.00	100.00
25	4.21	77.51	-10.00	100.00
30	4.42	72.51	-10.00	100.00
35	4.18	67.52	-10.00	100.00
40	4.30	62.52	-10.00	100.00
45	4.47	57.52	-10.00	100.00
50	4.61	52.52	-10.00	100.00
55	4.37	47.52	-9.92	100.00
60	4.17	42.53	-8.72	100.00
65	4.02	37.54	-7.36	100.00
70	3.78	32.55	-5.81	100.00
75	3.54	27.58	-4.01	100.00
80	3.66	22.58	-1.84	100.00
85	3.99	17.57	0.88	100.00
90	3.93	12.61	4.48	100.00
95	3.91	7.68	9.87	100.00
100	3.92	2.97	20.20	135.15
105	3.72	3.06	19.86	165.73
110	3.69	6.71	11.33	106.65
115	3.87	10.17	6.81	100.00
120	4.09	13.51	3.73	100.00
125	4.03	16.96	1.27	100.00
130	3.78	20.43	-0.76	100.00
135	3.03	24.14	-2.57	100.00
140	2.49	27.53	-4.00	100.00
145	2.46	30.33	-5.05	100.00
150	2.32	32.98	-5.96	100.00
155	2.03	35.47	-6.75	100.00
160	2.25	37.19	-7.26	100.00
165	2.66	38.33	-7.59	100.00
170	2.59	39.51	-7.92	100.00
175	2.01	40.77	-8.26	100.00
180	1.99	41.01	-8.32	100.00
185	1.98	40.80	-8.27	100.00

Coordination Values	CARPENTERSVI, NJ	
Licensee Name	Lockheed Martin Corporation-Phillipsburg	
Latitude (NAD 83)	40° 38' 41.0" N	
Longitude (NAD 83)	75° 11' 28.0" W	
Ground Elevation (AMSL)	54.86 m / 180.0 ft	
Antenna Centerline (AGL)	2.74 m / 9.0 ft	
Antenna Model	Prodelin 2.4 meter	
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	-10.7 (dBW/4 kHz)	

Transmit 6.1 GHz				
Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)
190	1.38	40.69	-8.24	100.00
195	1.50	39.43	-7.90	100.00
200	2.43	37.03	-7.21	100.00
205	1.81	35.66	-6.81	100.00
210	1.97	33.28	-6.05	100.00
215	3.07	29.84	-4.87	100.00
220	3.33	26.88	-3.73	100.00
225	4.21	23.23	-2.15	100.00
230	5.09	19.44	-0.22	100.00
235	4.41	16.69	1.44	100.00
240	4.48	13.23	3.96	100.00
245	3.57	10.38	6.60	100.00
250	2.47	7.56	10.04	124.05
255	2.40	3.93	17.14	178.76
260	3.26	2.74	21.05	234.85
265	3.80	7.19	10.58	101.82
270	2.81	12.28	4.77	100.00
275	2.70	17.24	1.09	100.00
280	3.02	22.17	-1.64	100.00
285	3.29	27.14	-3.84	100.00
290	4.00	32.10	-5.66	100.00
295	4.78	37.08	-7.23	100.00
300	5.47	42.09	-8.60	100.00
305	5.74	47.09	-9.82	100.00
310	5.93	52.09	-10.00	100.00
315	5.57	57.09	-10.00	100.00
320	5.04	62.08	-10.00	100.00
325	4.01	67.09	-10.00	100.00
330	3.56	72.09	-10.00	100.00
335	3.37	77.09	-10.00	100.00
340	3.30	82.09	-10.00	100.00
345	3.21	87.09	-10.00	100.00
350	3.47	92.08	-10.00	100.00
355	3.65	97.08	-10.00	100.00