

E7541 SES-STA-20170515-00568 IB2017001325
Lockheed Martin Corporation

Approved by OMB
3060-0678

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 BulgariaSat 1 - 2017-05 (30-Day STA)

1. 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		

File # SES-STA-20170515-00568
KTSV1
Call Sign **Grant Date** 6-13-17
(or other identifier)
Term Dates
From: 6B-17 **To:** 7-13-17
Approved: *[Signature]*



Applicant: Lockheed Martin Corporation
Call Sign: E7541
File No.: SES-STA-20170515-00568

Lockheed Martin Corporation ("Lockheed Martin") is granted special temporary authority, for 30 days, beginning June 13, 2017 to operate its Carpentersville, New Jersey fixed earth station to provide telemetry, tracking and control ("TT&C") functions during the post-launch and early orbit phases ("LEOP") for BulgariaSat 1 satellite at 1.9° E.L. orbital location in the 17302.1-17303.1 MHz, and 18096.9-18097.9 MHz (Earth-to-space) frequency bands and center frequencies 11705.5 MHz, and 12496.5 MHz (space-to-Earth) under the following conditions:

1. All operators of satellites 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 BulgariaSat 1 mission is as follows: 24/7 point of contact for the proposed operations is Michael Usarzewicz at (609) 865-2658 (cellular) and (908) 859-4050 (earth station desk)
2. Operations, shall not cause harmful interference to or claim protection from other lawfully operating stations and it shall cease transmission(s) immediately upon notice of such interference.
3. In the event of any harmful interference under this grant of STA, Lockheed Martin must cease operations immediately upon notification of such interference, and must inform the Commission, in writing, immediately of such an event.
4. Grant of this authorization is without prejudice to any determination that the Commission may make regarding pending or future Lockheed Martin applications.
5. Any action taken or expense incurred as a result of operations pursuant to this STA is solely 'at Lockheed Martin's risk.
6. Should an emergency situation exists and the applicant must notify FCC OperationCenter@fcc.gov of the situation with a copy to paul.blais@fcc.gov.

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 20170515-00568
Call Sign E7541 Grant Date 6-13-17
(or other identifier)
From: 6-13-17 Term Dates To: 7-13-17
Approved: [Signature]

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 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
06/11/2017

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: 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 June 11, 2017, to operate its Carpentersville, New Jersey fixed earth station (Call Sign E7541) to provide telemetry, tracking and control (TT&C) functions during the LEOP phase of operation for the BulgariaSat 1 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 <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.

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 BulgariaSat 1 satellite.

BulgariaSat 1 is destined for in-service operation at 1.9° E.L., and is currently scheduled for launch on June 13, 2017, aboard Falcon 9 from the Kennedy Space Center, Florida.

Accordingly, Lockheed Martin requests to begin test transmissions on June 11, 2017 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 BulgariaSat 1 satellite is launched.

1. Requested STA Operations

Lockheed Martin specifically seeks authority to transmit telecommand signals in the 17302.1-17303.1 and 18096.9-18097.9 MHz bands for in transit telecommand communications (Earth-to-space), and to receive telemetry signals from the satellite (space-to-Earth) at the center frequencies 11705.5 and 12496.5 MHz.

The proposed TT&C operations in support of the BulgariaSat 1 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, BulgariaSat 1 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 BulgariaSat 1 satellite serve the public interest. Lockheed Martin understands that the BulgariaSat 1 satellite has been licensed by the Bulgaria administration for the provision of broadcast satellite services. 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 BulgariaSat 1 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 BulgariaSat 1 satellite, for a term of 30 days, commencing June 11, 2017.

TECHNICAL DETAILS OF SPECIAL TEMPORARY AUTHORITY

Satellite Characteristics

Satellite: BulgariaSat 1
Orbital Location: 1.9° E.L.
Manufacturer: SSL (1300)
Launch Vehicle: Falcon 9

* * *

Earth Station Characteristics

Antenna: 14.2-m TIW Systems
Antenna Location: 40°38' 39.1" N / 075° 11' 27.8" W
Frequency: *Transmit:*
17302.1-17303.1 MHz
18096.9-18097.9 MHz
Receive:
11705.5 MHz
12496.5 MHz
Antenna Gain: 63.9 dBi @ 18 GHz
Antenna Power: 21.1 dBW (into the flange)
Maximum EIRP: 85.0 dBW for all carriers
EIRP Density: 23.0 dBW/4kHz
Emissions: 1M00F2D

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Lockheed Martin Corporation-Phillipsburg
CARPENTERSVI, NJ
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
February 16, 2017

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1. CONCLUSIONS

An interference study considering all existing, proposed and prior coordinated microwave facilities within the coordination contours of the proposed earth station demonstrates that this site will operate satisfactorily with the common carrier microwave environment. Further, there will be no restrictions of its operation due to interference considerations.

2. SUMMARY OF RESULTS

A number of great circle interference cases were identified during the interference study of the proposed earth station. Each of the cases, which exceeded the interference objective on a line-of-sight basis, was profiled and the propagation losses estimated using NBS TN101 (Revised) techniques. The losses were found to be sufficient to reduce the signal levels to acceptable magnitudes in every case.

3. SUPPLEMENTAL SHOWING

Pursuant to Part 25.203(c) of the FCC Rules and Regulations, the satellite earth station proposed in this application was coordinated by Comsearch using computer techniques and in accordance with Part 25 of the FCC Rules and Regulations.

Coordination data for this earth station was sent to the below listed carriers with a letter dated 01/16/2017.

Company

ABC, Inc. - WPVI-TV
AT&T Corp.
Affiniti PA, LLC
American Broadcasting Companies, Inc.
Bergen, County of
Blueline Communications
Boeing Company
Borough of Sayreville
Business Only Broadband, LLC
CAMP HILL SCHOOL DISTRICT
CBS Radio Stations Inc.
Carlisle Area School District
City of Jersey City
City of Jersey City, Police Department
City of Lebanon Authority
Clearwire Spectrum Holdings III, LLC
Conterra Ultra Broadband, LLC
County of Hunterdon
Cumberland Valley School District
DREXEL UNIVERSITY
Diocese of Camden
ECW Wireless, LLC
East Pennsboro Area School
Eastern Lancaster County School District
Electric Railroad, LLC
Federal Communication Commission
Federal Home Loan Bank of New York
Franklin County Dept. of Emergency Servi
Freehold Township Police Department
Geodesic Networks LLC
Greater Boston Radio Inc.
Guard Insurance Group
High Voltage Communications LLC (CFN)
Highway Networks, LLC
Hoboken Fire Department
Hopewell Radiology Group
Hudson County MIS Department
Jefferson Microwave, LLC
Kryptick Technologies
Lakewood Municipal Utilities Authority

Limitless Mobile, LLC
MPS Communications
Middlesex, County of
Mifflin Mobilecom
NBC Telemundo License Co.
NBC Telemundo License LLC
NEW JERSEY PUBLIC BROADCASTING AUTHORITY
NEW YORK POLICE DEPARTMENT
NW Technologies, LLC
NYC DOT Staten Island Ferry
National Tower Company LLC
NeXXCom Wireless LLC
Neptune Police Department
New Cingular Wireless PCS LLC - NJ
New Cingular Wireless PCS, LLC - PA
New Jersey Telcomm
New Jersey, State of -NJ Transit
New Line Networks, LLC
New York City Police Department TARU
Nextel Comm. of The Mid-Atlantic, Inc.
Nextel of New York, Inc.
Northrop Grumman Systems Corp.
Northrop Grumman Systems Corporation Inc
Office of Emergency Mng, City of Newark
Pennsylvania Turnpike Commission
Philadelphia, City of
PhillieCo, L.P.
Plymouth Township Police Department
Pottsville Area School District
Qoncept Holdings LLC
R. Fritz Enterprises Inc
READING HOSPITAL & MEDICAL CENTER
Rendezvous Communications LLC
Robin Wesstrom
Rutgers, The State University of N.J.
SCS Networks
SECOM NET
SHIPPENSBURG AREA SCHOOL DISTRICT
SOMERSET COUNTY (M.I.S.)
SONSHINE FAMILY TELEVISION CORPORATION
SUSQUEHANNA TOWNSHIP SCHOOL DISTRICT
Sesame Workshop
Sprint Spectrum L.P.
Sprint Spectrum LP DBA Sprint PCS
Sprintcom, Inc
St. Joseph Medical Center
Standard Backhaul Communications LLC
State of New Jersey
State of New Jersey Infomation Technolog
T-Mobile License LLC
TTWN Networks, LLC
Telecom Transport Management, Inc
The Goldman Sachs Group, Inc.
Total Recall Corp
Towerstream Corp.
Township of Aberdeen

Township of Lower Merion
Township of Middletown
Townsquare Media Monmouth-Ocean License
Turtle Networks 6559
Unifi Fiber PEG, LLC
WILLIAM PATERSON UNIVERSITY
WPHL, LLC
Weblin Holdings LLC
Weehawken, Township of
Wireless Internetwork LLC
World Class Wireless, LLC
XO Communications, LLC
Xchange Telecom Corp.
Zayo Group, LLC
Zen Networks, Inc
xWave Engineering LLC

4. EARTH STATION COORDINATION DATA

This section presents the data pertinent to frequency coordination of the proposed earth station that was circulated to all carriers within its coordination contours.

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5500 <http://www.comsearch.com>

Date: 02/16/2017
Job Number: 170116COMSGE02

Administrative Information

Status: TEMPORARY (Operation from 03/01/2017 to 05/01/2017)
Call Sign: E7541
Licensee Code: RCASTR
Licensee Name: Lockheed Martin Corporation-Phillipsburg

Site Information

CARPENTERSVI, 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: 63.9 dBi / 14.2 m
3-dB / 15-dB Beamwidth: 0.12° / 0.22°

Max Available RF Power (dBW/4 kHz): -2.9
(dBW/MHz): 21.1

Maximum EIRP (dBW/4 kHz): 61.0
(dBW/MHz): 85.0

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

Frequency Information

Transmit 18.0 GHz

Emission / Frequency Range (MHz): 1M00F2D / 17302.1 - 17303.1
1M00F2D / 18096.9 - 18097.9

Max Great Circle Coordination Distance: 424.4 km / 263.7 mi
Precipitation Scatter Contour Radius: 142.3 km / 88.4 mi

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5500 <http://www.comsearch.com>

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	-154.0 dBW/4 kHz 20%
Short Term	-131.0 dBW/4 kHz 0.0025%
Max Available RF Power	-2.9 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 18.0 GHz	
			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	101.01
95	2.74	8.00	9.42	124.43
100	2.73	3.74	17.68	155.15
105	2.58	3.84	17.40	262.66
110	2.72	7.37	10.31	127.72
115	2.80	10.92	6.05	111.44
120	2.62	14.56	2.92	104.03
125	2.05	18.40	0.38	106.06
130	1.63	22.02	-1.57	109.36
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

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5500 <http://www.comsearch.com>

Coordination Values

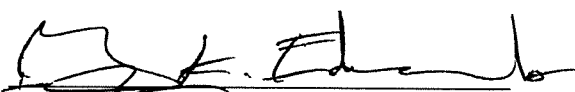
CARPENTERSVI, NJ

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 -154.0 dBW/4 kHz 20%
Short Term -131.0 dBW/4 kHz 0.0025%
Max Available RF Power -2.9 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 18.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	1.23	40.84	-8.28	100.22
195	1.33	39.59	-7.94	100.00
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	100.00
250	2.53	7.51	10.11	129.47
255	2.28	4.01	16.92	282.74
260	2.60	3.20	19.36	424.41
265	3.11	7.34	10.36	121.23
270	3.39	12.19	4.85	100.00
275	2.86	17.22	1.10	100.00
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

5. CERTIFICATION

I HEREBY CERTIFY THAT I AM THE TECHNICALLY QUALIFIED PERSON RESPONSIBLE FOR THE PREPARATION OF THE FREQUENCY COORDINATION DATA CONTAINED IN THIS APPLICATION, THAT I AM FAMILIAR WITH PARTS 101 AND 25 OF THE FCC RULES AND REGULATIONS, THAT I HAVE EITHER PREPARED OR REVIEWED THE FREQUENCY COORDINATION DATA SUBMITTED WITH THIS APPLICATION, AND THAT IT IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

BY: 

Gary K. Edwards
Senior Manager
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147

DATED: February 16, 2017