

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 Telstar 18V - 2018-08 (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 E-Mail:
Suite 100
City: Arlington State: VA
Country: USA Zipcode: 22202
Attention:

30 days "with conditions"

File # SES-STA-20180803-02092

Call Sign E7541 Grant Date 09/06/2018
(or other identifier)

Term Dates

From: 09/06/2018 To: 10/06/2018

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
08/18/2018

7. City Carpentersville

8. Latitude
(dd mm ss.s h) 40 38 39.1 N

9. State NJ	10. Longitude (dd mm ss.h) 75 11 27.8 W
11. Please supply any need attachments. Attachment 1: STA Attachment 2: 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.) <div style="border: 1px solid black; padding: 5px;"> <p>Lockheed Martin Corporation hereby requests Special Temporary Authority beginning August 18, 2018, to operate its Carpentersville, NJ fixed earth station (Call Sign E7541) to provide telemetry, tracking and control (TT&C) functions in support of Launch and Early Orbit Phase operations for the Telstar 18 VANTAGE mission. Specifically, authority is</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 "party to the application"; for these purposes. <input checked="" type="radio"/> Yes <input type="radio"/> No	
14. Name of Person Signing Ryan N Terry	15. Title of Person Signing Director, Regulatory Licensing & Policy
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.

12. Description

Lockheed Martin Corporation hereby requests Special Temporary Authority beginning August 18, 2018, to operate its Carpentersville, NJ fixed earth station (Call Sign E7541) to provide telemetry, tracking and control (TT&C) functions in support of Launch and Early Orbit Phase operations for the Telstar 18 VANTAGE mission. Specifically, authority is sought to transmit telecommand signals (Earth-to-space) in various 6 GHz frequencies, and to receive telemetry signals from the satellite (space-to-Earth) in 3/4 GHz frequencies.


Applicant: Lockheed Martin Corporation
Call Sign: E7541
File No.: SES-STA-20180803-02092
Special Temporary Authority (STA)

Lockheed Martin Corporation ("Lockheed Martin") is granted STA for 30 days starting September 06, 2018 to operate its earth station in Carpentersville, NJ to provide telemetry, tracking, and control ("TT&C") functions during the launch and early orbit phase ("LEOP") in support of ranging and propulsion monitoring for the Telstar 18 VANTAGE satellite with in-service operation at 138.0° E.L. orbital location. Operations shall utilize frequency bands 6415.00 MHz - 6431.00 MHz and 6639-6657 MHz (Earth-to-space). Operations are authorized under the following conditions:

1. Operations will not exceed the operational power levels and parameters coordinated.
2. In the event of any harmful interference Lockheed Martin shall cease operations immediately upon notification of such interference, and shall immediately inform the Commission, in writing, of such an event.
3. Grant of this STA is without prejudice to any determination that the Commission may make regarding pending or future Lockheed Martin applications.
4. Any action taken or expense incurred as a result of operations pursuant to this STA is solely at Lockheed Martin's risk.
5. The 24/7 point of contact for this 18VANTAGE mission is as follows: Mr. Usarzewicz-(609) 865-2658 (cellular) and (908) 859-4050 (earth station desk).

This grant is issued pursuant to Section 0.26 1 of the Commission's rules on delegated authority, 47 C.F.R. § 0.261, and is effective upon release.

30 days *"with conditions"*

 GRANTED International Bureau	File # <u>SES-STA-20180803-02092</u>
	Call Sign <u>E7541</u> Grant Date <u>09/06/2018</u> (or other identifier)
	Term Dates From: <u>09/06/2018</u> To: <u>10/06/2018</u>
	Approved: <u><i>Paul E. Hales</i></u>

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 launch and early orbit phase ("LEOP") in support of ranging and propulsion monitoring for the Telstar 18 VANTAGE satellite. Telstar 18-V is destined for in-service operation at 138.0° E.L., and is currently scheduled for launch in mid-August 2018, aboard a Falcon 9 heavy rocket, from Cape Canaveral, Florida.

Accordingly, Lockheed Martin requests authority to begin communications on August 18, 2018, in preparation for the start of the LEOP mission.

Requested STA Operations.

The TT&C and ranging signals will be transmitted in the 6.0 GHz C-band frequencies using the earth station facility for which Lockheed Martin already has authority under Call Sign E7541. However, to ensure no risk of interference with adjacent microwave operators, Lockheed Martin has coordinated use of the 6415-6431 and 6639-6657 MHz bands to transmit to the satellite. In all other respects, operation of the earth station will be consistent with the parameters set forth under the existing permanent authority.

Lockheed Martin is requesting that the duration of this STA be a total of thirty (30) days. Lockheed Martin also designates Michael Usarzewicz to be the contact person that will be available whenever transmission to Telstar 18-V 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)

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 Telstar 18-V satellite serve the public interest. Lockheed Martin understands that the Telstar 18-V satellite will provide high-throughput communications services in the Asia-Pacific region. Lockheed Martin's Carpentersville earth station 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. 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 Telstar 18-V 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.

* * * * *

Based on the foregoing Lockheed Martin requests authority to operate its Carpentersville, NJ earth station antenna to provide critical TT&C and ranging services during the LEOP mission of the Telstar 18 VANTAGE satellite, for a term of 30 days, commencing August 18, 2018.

In support of this request, Lockheed Martin provides the following technical details:

Satellite Characteristics

Satellite:
Telstar 18 VANTAGE

Orbital Location:
138 E.L.

Manufacturer:
Space Systems Loral

Transponders:
C-band / Ku-band

Earth Station Characteristics

Antenna:
14.2-m TIW Systems

Antenna Location: 40°38' 39.1" N / 075° 11' 27.8" W

Telecommand Uplink Frequencies:
6415-6431 MHz (RHCP)
6639-6657 MHz (RHCP)

Telemetry Downlink Frequencies:
3623 MHz (LHCP)
3625 MHz (LHCP)
4199 MHz (LHCP)

Antenna Gain: 63.9 dBi @ 6 GHz

Antenna Power: 20.1 dBW (into the flange)

Maximum EIRP: 84.9 dBW for all carriers

EIRP Density: 23.0 dBW/4kHz

Uplink Emission:
16K0F3D – 27K7G3N

Downlink Emission:
320KG3D

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

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

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
August 02, 2018

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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 07/12/2018.

Company

3G Wireless, LLC
AB Services LLC
ABC, Inc. - WPVI-TV
AERIAL VIDEO SYSTEMS
Affiniti PA, LLC
Alascom Inc
Algonquin Gas Transmission, LLC
Allentown SMSA Limited Partnership
American Broadcasting Companies, Inc.
AQ2AT LLC
Ascent Media Network Services, LLC
AT&T Corp.
AT&T Wireless Services 3 LLC - PA
Atlantic City Electric Company
Auburn Data Systems, LLC
Bedford County of
Bellsouth Telecommunications, Inc.
Bergen, County of
Berks County Department of Emergency Ser
BFI Licenses, LLC
Blair County 911
Blue Ridge Carriers
Blueline Communications
Borgeson, Tom R.
Broadcast Sports Inc.
Bucks County Dept. of Emergency Comm
Capital Communications of America
Carbon, County of 911 Center
Carolina Telephone and Telegraph Co
Casper, John
CBS Broadcasting Inc
Cellco Partnership - Bridgeville, PA/WV
Cellco Prtnrshp - Phil. Tri-State Rgn
CenturyTel of the Southwest, Inc.
Chester, County of
Chicago Comnet Corp
Cincinnati Bell Wireless LLC
City of Bethlehem
City of New York
Citywide News Network, Inc.

Commonwealth of Pennsylvania
Commonwealth of Pennsylvania-Radio Proj.
Consolidated Edison Company of New York
Conterra Ultra Broadband, LLC
County of Burlington, Public Safety Cntr
County of Camden
County of Fayette
County of Hunterdon
County of Pike
County of Warren, NJ
Cowboys Stadium LP
Cumberland, County of (PA)
Dauphin County Emergency Management
DCI II, INC.
Delaware County (PA) Emergency Services
Delaware Division of Communications
Delmarva Broadcasting Company
Direct Broadcast Services, Inc.
Direct Broadcast Services, Inc.
Dominion Energy Transmission, Inc.
DSRC Networks
DSRC Networks
Eastern MLG LLC
Eastern Pennsylvania EMS Council
ECW Wireless, LLC
Egan LLC
Electric Railroad, LLC
Essex County Sheriff's Office (NJ)
Exelon Generation Company, LLC
Federal Communication Commission
FELHC, Inc.
Fox Television Stations, LLC
Franklin County Dept. of Emergency Servi
Frontier California Inc.
Fulton County of (PA)
Fundamental Broadcasting LLC
Garden State Transmissions
Geodesic Networks LLC
Global Telecom & Technology Americas, In
Gloucester, County of
Greene, County of (PA)
GTT America LLC
Hallco Unlimited, Inc.
Hammarlund Research LLC
Hardy Cellular Telephone Company
HARRIS CORPORATION
Hawaiian Telcom, Inc.
Hearst Properties Inc.
Heiden, William
HF Enterprises, Inc
High Voltage Communications LLC (CFN)
Higher Ground LLC
Huntingdon, County of
Illinois Bell Telephone Company
Indiana Bell Telephone Company
Information & Display Systems, Inc.

Information Super Station, LLC
International Communications Group, Inc.
iSignal
Jefferson Microwave, LLC
Kentucky RSA #3 Cellular General Partner
Kentucky RSA #4 Cellular General Partner
Kryptick Technologies
Lackawanna County Dept. of Emergency Ser
Lackawanna, County of
Lancaster County-Wide Communications
Lebanon, County of
Lehigh, County of
Luzerne County of PA
MERCURY COMMUNICATIONS
Michigan Bell Telephone Company
Middlesex, County of
Mifflin County
Monmouth, County of
Monroe County Control Center (PA)
Montgomery County Of
Moreen, Steven K
Morris, County of
Morris, County of
Nassau County Police Department
National Tower Company LLC
Navajo Communications Company
NBC Telemundo License Co.
NBC Telemundo License LLC
New Cingular Wireless PCS LLC - NJ
New Cingular Wireless PCS LLC - WV,NC,SC
New Cingular Wireless PCS LLC-DE/NH/RI
New Cingular Wireless PCS, LLC - PA
NEW ENGLAND DIGITAL DISTRIBUTION, INC.
New Jersey State Police
New Jersey Transit Rail Operations, Inc.
New Jersey Turnpike Authority-Pkwy Div
New Jersey, State of -NJ Transit
New Line Networks, LLC
New York City Police Department
New York City Transit Authority
Norfolk Southern Railway
Northeast Pennsylvania SMSA LTD Prtnrsh
NorthWest Suburbs Community Access Corp
NSM Surveillance
Ocean County of - Div of Wireless Tech.
Ocean, County of
Office of Emergency Telecom Services, NJ
Ohio Bell GTelephone Company
Onboard Images
Optiver GT US, LLC
Orange and Rockland Utilities, Inc.
Orange County Dept of Emergency Services
Pacific Bell Tel Com dba AT&T California
Peco Energy Company
Penn Service Microwave Co., Inc.
Pennsylvania Sports Entertainment Netwo.

Pennsylvania State Police
Pennsylvania Turnpike Commission
Philadelphia, City of
Pike County Commissioners
Pittsburgh SMSA Limited Partnership
Plateau Telecommunications, Inc.
Plum TV, LLC
Port Authority of New York & New Jersey
Production & Satellite Services, Inc.
PSEG Services Corporation
Qoncept Holdings LLC
Quick Link Connections Inc.
Qwest Corporation
Radiofone, Inc.
Randy Hermes Production
RCC Minnesota Inc. - MN NE ND SD
Remote Broadcasts, Inc.
REMOTE FACILITIES CONSULTING SERVICES
RF Central, LLC
RF Film, Inc
Rockland, County of
Schuylkill, County of
Secom Net
Somerset County Dept. of Emergency Servi
South Central Task Force (SCTFNET)
Southeastern Pennsylvania Transit Auth
Southwestern Bell Telephone L.P.
Speedshotz, Inc
Standard Backhaul Communications LLC
State of Maryland, MIEMSS
State of New Jersey
State of New York, Div of State Police
Sullivan County DPW
SW Networks
Texas Eastern Communications, LLC
Thought Transmissions, LLC
T-Mobile License LLC
Townsquare Media Monmouth-Ocean License
Transcontinental Gas Pipeline Corp.
Transwave Communication Systems, Inc.
Triangle Communications, Inc.
TTWN Networks, LLC
Unisat, Inc.
United Telephone - Southeast
Uniti Fiber PEG, LLC
USCOC of Cumberland, Inc.
USOC of Pennsylvania RSA No 10 B2 Inc.
Verizon Maryland, Inc.
Verizon New England Inc.
Verizon New Jersey, Inc.
Verizon New York, Inc.
Verizon North Inc.
Verizon Northwest Inc.
Verizon Pennsylvania, Inc.
VERIZON SOUTH INC.
Verizon Virginia, Inc.

Verizon Washington DC, Inc.
Verizon Wireless (VAW) LLC-Pennsylvania
Virginia Electric & Power Company
Vyvx, LLC
Wayne, County of
Weblin Holdings LLC
Westar Satellite Services LP
Winged Vision Inc
Wireless Internetwork LLC
Wisconsin Bell Telephone Company
Wolfe Air Aviation
World Class Wireless, LLC
xWave Engineering LLC
Zango LLC
Zen Networks, Inc

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: 08/02/2018
Job Number: 180712COMSGE10

Administrative Information

Status TEMPORARY (Operation from 08/17/2018 to 08/26/2018)
Call Sign
Licensee Code RCASTR
Licensee Name Lockheed Martin Corporation-Phillipsburg

Site Information

CARPENTERSVILLE, 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 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) -3.9
(dBW/MHz) 20.1

Maximum EIRP (dBW/4 kHz) 60.0
(dBW/MHz) 84.0

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

Frequency Information

Transmit 6.0 GHz
Emission / Frequency Range (MHz) 16K0F3D - 27K7G3N /6415.0 – 6431.0
6639.0 - 6657.0

Max Great Circle Coordination Distance 509.6 km / 316.6 mi
Precipitation Scatter Contour Radius 100.0 km / 62.1 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 6.0 GHz
Interference Objectives: Long Term -154.0 dBW/4 kHz 20%
Short Term -131.0 dBW/4 kHz 0.0025%
Max Available RF Power -3.9 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 6.0 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	103.87
90	3.07	12.74	4.37	117.12
95	2.74	8.00	9.42	141.20
100	2.73	3.74	17.68	182.92
105	2.58	3.84	17.40	310.63
110	2.72	7.37	10.31	145.33
115	2.80	10.92	6.05	128.44
120	2.62	14.56	2.92	120.05
125	2.05	18.40	0.38	121.72
130	1.63	22.02	-1.57	124.74
135	2.22	24.75	-2.84	106.72
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
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Coordination Values

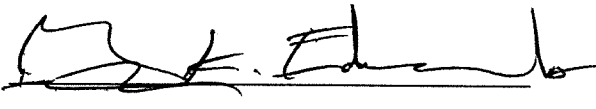
CARPENTERSVI, NJ

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Short Term -131.0 dBW/4 kHz 0.0025%
Max Available RF Power -3.9 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 6.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	1.23	40.84	-8.28	113.23
195	1.33	39.59	-7.94	111.72
200	2.37	37.09	-7.23	100.00
205	1.76	35.72	-6.82	104.23
210	1.77	33.44	-6.11	106.01
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	113.64
250	2.53	7.51	10.11	148.39
255	2.28	4.01	16.92	334.06
260	2.60	3.20	19.36	509.64
265	3.11	7.34	10.36	137.67
270	3.39	12.19	4.85	113.30
275	2.86	17.22	1.10	108.58
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: August 02, 2018