

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
October 29, 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 09/26/2018.

Company

AB Services LLC
AQ2AT LLC
AT&T Corp.
AT&T Wireless Services 3 LLC - PA
Adams County Department of Emergency Svc
Affiniti PA, LLC
Algonquin Gas Transmission, LLC
Allentown SMSA Limited Partnership
Appalachia Engineering Services
Atlantic City Electric Company
Atlantic, County of
Auburn Data Systems, LLC
Beaver Springs Faith Baptist Church, Inc
Bedford County of
Berks County Department of Emergency Ser
Blair County 911
Blue Ridge Carriers
Blueline Communications
Bucks County Dept. of Emergency Comm
Capital Communications of America
Carbon, County of 911 Center
Cellco Partnership - Bridgeville, PA/WV
Cellco Partnership- PA Region
Cellco Prtnrshp - Phil. Tri-State Rgn
Chester, County of
City of New York
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 Pike
County of Warren, NJ
County of York
Cox Radio Inc
DSRC Networks
Dauphin County Emergency Management
Delaware County (PA) Emergency Services
Delaware Division of Communications
Delmarva Broadcasting Company

Delmarva Power and Light Company
Direct Broadcast Services, Inc.
Dominion Energy Transmission, Inc.
EMS of Northeast Pennsylvania
Eastern MLG LLC
Eastern Pennsylvania EMS Council
Electric Railroad, LLC
Essex County Sheriff's Office (NJ)
Exelon Generation Company, LLC
FELHC, Inc.
Federal Communication Commission
Fascogna, Carl
Fulton County PA
Fundamental Broadcasting LLC
GTT America LLC
Garden State Transmissions
Gloucester, County of
Greene, County of (PA)
Hammarlund Research LLC
Hardy Cellular Telephone Company
High Voltage Communications LLC (CFN)
Higher Ground LLC
Highway Networks, LLC
Huntingdon, County of
Jefferson Microwave, LLC
Juniata County Emergency Services
Kryptick Technologies
Lackawanna, County of
Lancaster County-Wide Communications
Luzerne County of PA
Maryland Public Broadcasting Commission
Maryland, State of - Dept.of Info & Tech
Middlesex, County of
Mifflin County
Monmouth, County of
Monroe County Control Center (PA)
Montgomery County Of
Morris, County of
Nassau County Police Department
New Cingular Wireless PCS LLC - NJ
New Cingular Wireless PCS LLC-DE/NH/RI
New Cingular Wireless PCS, LLC - PA
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
Norfolk Southern Railway
Northeast Pennsylvania SMSA LTD Prtnrsh
Northumberland County DPS/911
Ocean County of - Div of Wireless Tech.
Office of Emergency Telecom Services, NJ
Orange County Dept of Emergency Services
Orange and Rockland Utilities, Inc.
PSEG Services Corporation

Peco Energy Company
Pennsylvania Turnpike Commission
Perry, County of
Pike County Commissioners
Pittsburgh SMSA Limited Partnership
Port Authority of New York & New Jersey
Qoncept Holdings LLC
Radio License Holding CBC, LLC
SW Networks
Shenandoah Personal Communications, LLC
Snyder, County of
Somerset County Dept. of Emergency Servi
South Central Task Force (SCTFNET)
State of Maryland, MIEMSS
Suffolk County Police Department
Sullivan County DPW
T-Mobile License LLC
Texas Eastern Communications, LLC
Thought Transmissions, LLC
Transcontinental Gas Pipeline Corp.
Transwave Communication Systems, Inc.
USCOC of Cumberland, Inc.
USOC of Pennsylvania RSA No 10 B2 Inc.
Uniti Fiber PEG, LLC
Ursa Navigation Solutions, Inc.
Verizon Wireless (VAW) LLC - Delaware/NJ
Verizon Wireless (VAW) LLC - Maryland
Verizon Wireless (VAW) LLC-Pennsylvania
Virginia Electric & Power Company
WV DHHR BPH, Office of Ems, Com. Div.
Weblin Holdings LLC
Wireless Internetwork LLC
World Class Wireless, LLC
iSignal
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: 10/29/2018
Job Number: 180926COMSGE05

Administrative Information

Status: TEMPORARY (Operation from 01/15/2019 to 03/15/2019)
Call Sign: E7541
Licensee Code: RCASTR
Licensee Name: Lockheed Martin Corporation-Phillipsburg

Site Information

CARPENTERSVILLE, NJ

Venue Name: S-ANT 1
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 - 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): 10.0
(dBW/MHz): 34.0

Maximum EIRP (dBW/4 kHz): 67.5
(dBW/MHz): 91.5

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): 27K7G3N - 1M50F2D / 5927.25 - 5928.75
27K7G3N - 1M50F2D / 6421.25 - 6422.75

Max Great Circle Coordination Distance: 597.5 km / 371.2 mi
Precipitation Scatter Contour Radius: 566.7 km / 352.1 mi

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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 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 10.0 (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	105.42
5	3.90	97.51	-10.50	100.00
10	2.91	92.51	-10.50	116.39
15	2.84	87.51	-10.50	117.67
20	2.83	82.52	-10.50	117.88
25	3.07	77.52	-10.50	113.50
30	3.44	72.52	-10.50	106.67
35	3.78	67.52	-10.50	100.69
40	3.82	62.52	-10.50	100.00
45	3.80	57.53	-10.50	100.32
50	3.59	52.54	-10.50	104.01
55	3.40	47.55	-10.01	109.29
60	3.31	42.56	-9.01	114.91
65	3.12	37.58	-7.53	123.77
70	2.88	32.61	-5.54	134.26
75	3.07	27.61	-4.02	136.52
80	3.04	22.64	-2.08	145.19
85	3.06	17.68	0.89	159.02
90	3.07	12.74	4.76	180.10
95	2.74	8.00	7.50	201.28
100	2.73	3.74	14.55	238.46
105	2.58	3.84	14.16	385.67
110	2.72	7.37	7.50	201.66
115	2.80	10.92	5.58	190.32
120	2.62	14.56	2.94	181.37
125	2.05	18.40	0.46	182.49
130	1.63	22.02	-1.71	183.82
135	2.22	24.75	-3.35	157.53
140	2.76	27.32	-3.96	142.78
145	2.31	30.46	-4.68	149.42
150	2.22	33.06	-5.72	146.78
155	1.94	35.55	-6.72	149.17
160	2.22	37.22	-7.39	140.10
165	2.67	38.33	-7.83	130.96
170	2.46	39.65	-8.36	133.08
175	1.94	40.84	-8.67	141.15
180	1.90	41.11	-8.72	141.93
185	1.86	40.92	-8.68	143.25

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Coordination Values

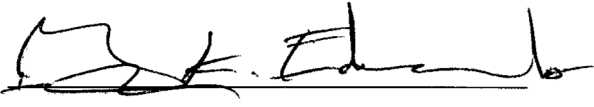
CARPENTERSVI, NJ

Licensee Name Lockheed Martin Corporation-Phillipsburg
Latitude (NAD 83) 40° 38' 39.1" N
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Interference Objectives: Long Term -154.0 dBW/4 kHz 20%
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Max Available RF Power 10.0 (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	161.54
195	1.33	39.59	-8.34	160.02
200	2.37	37.09	-7.34	137.30
205	1.76	35.72	-6.79	154.04
210	1.77	33.44	-5.88	157.67
215	2.21	30.54	-4.72	151.54
220	3.42	26.81	-3.86	132.13
225	3.50	23.78	-2.77	133.66
230	4.90	19.59	-0.25	124.04
235	4.41	16.68	1.49	136.38
240	4.50	13.22	4.28	147.23
245	3.77	10.24	6.26	172.31
250	2.53	7.51	7.50	205.64
255	2.28	4.01	13.48	411.20
260	2.60	3.20	16.69	597.51
265	3.11	7.34	7.50	193.17
270	3.39	12.19	5.31	175.83
275	2.86	17.22	1.17	164.97
280	2.80	22.19	-1.81	151.47
285	3.05	27.15	-3.93	137.28
290	3.56	32.11	-5.35	124.08
295	4.21	37.09	-7.34	106.00
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	108.07
335	3.16	77.09	-10.50	111.71
340	3.15	82.09	-10.50	111.92
345	3.00	87.09	-10.50	114.67
350	3.23	92.08	-10.50	110.55
355	3.48	97.08	-10.50	105.89

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: October 29, 2018