

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 Information Technology
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

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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 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

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Coordination Values

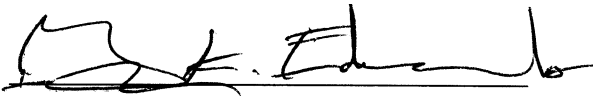
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Max Available RF Power -2.9 (dBW/4 kHz)

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