

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Lockheed Martin Corporation
CARPENTERSVI, NJ
(E7541)
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
December 16, 2015

TABLE OF CONTENTS

1. CONCLUSIONS	3
2. SUMMARY OF RESULTS	4
3. SUPPLEMENTAL SHOWING	5
4. EARTH STATION COORDINATION DATA.....	8
5. CERTIFICATION.....	12

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 12/11/2015.

Company

ABC, Inc. - WPVI-TV
AT&T Corporation
Affiniti PA, LLC
American Broadcasting Companies, Inc.
Auburn Data Systems, LLC
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 Bethlehem
City of Jersey City
City of Lebanon Authority
Clearwire Spectrum Holdings III, LLC
Comprehensive Wireless 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
Guard Insurance Group
High Voltage Communications LLC (CFN)
Highway Networks, LLC
Hoboken Fire Department
Hopewell Radiology Group
Hotwire Communications
Hudson County MIS Department
Jefferson Microwave, LLC

Jersey City, City of
Lakewood Municipal Utilities Authority
Limitless Mobile, LLC
Live Mobile Group
MONTGOMERY, McCracken, Walker & Rhoads
Metro Networks Communications, Inc.
Middlesex, County of
Mifflin Mobilecom
NBC Telemundo License Co.
NBC Telemundo License LLC
NEW JERSEY PUBLIC BROADCASTING AUTHORITY
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 Line Networks, LLC
New York City Police Department TARU
New York Methodist Hospital
Nextel Comm. of The Mid-Atlantic, Inc.
Nextel of New York, Inc.
Nextlink Wireless, LLC
Northrop Grumman Systems Corp.
Northrop Grumman Systems Corporation Inc
OCEAN, COUNTY OF
Ocean, County of - Div of Wireless Tech.
Office of Emergency Mng, City of Newark
PEG Bandwidth, LLC
Pennsylvania Turnpike Commission
Philadelphia, City of
PhillieCo, L.P.
Pitt Power
Plymouth Township Police Department
Pottsville Area School District
Qoncept Holdings LLC
READING HOSPITAL & MEDICAL CENTER
Rendezvous Communications LLC
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
Somerset, County of
Spotlight Media Corp., Inc.
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
Steelton-Highspire School District
T-Mobile License LLC
Telecom Transport Management, Inc
The Goldman Sachs Group, Inc.
Total Recall Corp
Towerstream Corp.
Township of Lower Merion
Township of Middletown
Townsquare Media Monmouth-Ocean License
Turtle Networks 6562
Verizon New Jersey, Inc.
WILLIAM PATERSON UNIVERSITY
WPHL, LLC
Weblin Holdings LLC
Weehawken, Township of
Western PA Internet Access, Inc.
Wireless Internetnetwork LLC
World Class Wireless, LLC
Xchange Telecom Corp.
Zayo Group, LLC
Zen Networks, Inc
iSignal

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: 12/16/2015
Job Number: 151211COMSGE09

Administrative Information

Status: TEMPORARY (Operation from 12/21/2015 to 01/21/2016)
Call Sign: E7541
Licensee Code: RCASTR
Licensee Name: Lockheed Martin Corporation

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: Analog and Digital
Satellite Arc: 6° W to 149° West Longitude
Azimuth Range: 103.9° to 259.3°
Corresponding Elevation Angles: 7.0° / 3.5°
Antenna Centerline (AGL): 9.14 m / 30.0 ft

Antenna Information

Transmit - FCC32

Manufacturer: TIW
Model: 120-00-00
Gain / Diameter: 64.5 dBi / 14.2 m
3-dB / 15-dB Beamwidth: 0.10° / 0.20°

Max Available RF Power (dBW/4 kHz): -0.5
(dBW/MHz): 23.5

Maximum EIRP (dBW/4 kHz): 64.0
(dBW/MHz): 88.0

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): 800KFXD / 17301.5 - 17303.0

Max Great Circle Coordination Distance: 487.2 km / 302.7 mi
Precipitation Scatter Contour Radius: 193.2 km / 120.0 mi

COMSEARCH

Earth Station Data Sheet

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Coordination Values

CARPENTERSVI, NJ

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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 -0.5 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 18.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	3.51	100.71	-10.00	100.00
5	3.90	98.89	-10.00	100.00
10	2.91	93.90	-10.00	100.00
15	2.84	88.91	-10.00	100.00
20	2.83	83.92	-10.00	100.00
25	3.07	78.93	-10.00	100.00
30	3.44	73.94	-10.00	100.00
35	3.78	68.94	-10.00	100.00
40	3.82	63.95	-10.00	100.00
45	3.80	58.96	-10.00	100.00
50	3.59	53.98	-10.00	100.00
55	3.40	49.00	-10.00	100.00
60	3.31	44.03	-9.09	100.00
65	3.12	39.07	-7.80	100.00
70	2.88	34.13	-6.33	100.00
75	3.07	29.15	-4.62	100.00
80	3.04	24.21	-2.60	100.00
85	3.06	19.30	-0.14	100.00
90	3.07	14.44	3.01	104.60
95	2.74	9.87	7.14	124.84
100	2.73	5.79	12.94	145.26
105	2.58	4.56	15.54	279.67
110	2.72	7.37	10.31	135.36
115	2.80	10.92	6.05	119.93
120	2.62	14.56	2.92	112.17
125	2.05	18.40	0.38	113.87
130	1.63	22.02	-1.57	116.78
135	2.22	24.75	-2.84	100.19
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

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Coordination Values

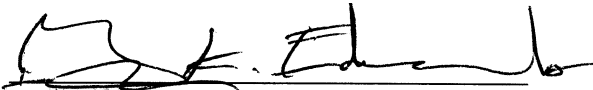
CARPENTERSVI, NJ

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Latitude (NAD 83) 40° 38' 39.1" N
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Max Available RF Power -0.5 (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	106.70
195	1.33	39.59	-7.94	105.30
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	106.37
250	2.53	7.51	10.11	137.99
255	2.28	4.01	16.92	304.69
260	2.60	1.17	30.30	487.23
265	3.11	5.73	13.05	138.63
270	3.39	10.71	6.25	110.86
275	2.86	15.73	2.08	105.01
280	2.80	20.72	-0.91	100.00
285	3.05	25.72	-3.26	100.00
290	3.56	30.71	-5.18	100.00
295	4.21	35.72	-6.82	100.00
300	4.98	40.73	-8.25	100.00
305	5.49	45.74	-9.51	100.00
310	5.46	50.74	-10.00	100.00
315	5.57	55.74	-10.00	100.00
320	4.81	60.72	-10.00	100.00
325	3.99	65.71	-10.00	100.00
330	3.36	70.71	-10.00	100.00
335	3.16	75.71	-10.00	100.00
340	3.15	80.71	-10.00	100.00
345	3.00	85.71	-10.00	100.00
350	3.23	90.71	-10.00	100.00
355	3.48	95.71	-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: December 16, 2015