

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
July 26, 2016

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 07/13/2016.

Company

AWC Networks
Affiniti PA, LLC
Atlantic City Electric Company
Auburn Data Systems, LLC
Bedford, County of
Bergen, County of
Berks County Department of Emergency Ser
Blue Ridge Carriers
Blueline Communications
Bucks County Dept. of Emergency Comm
CBS Communication Services Inc
Carbon, County of 911 Center
Cellco Partnership - Bridgeville, PA/WV
Chester, County of
City of Bethlehem
City of New York
Commonwealth of Pennsylvania
Commonwealth of Pennsylvania-Radio Proj.
County of Burlington, Public Safety Cntr
County of Camden
County of Fayette
County of Hunterdon
County of Warren, NJ
Cumberland, County of
DAUPHIN COUNTY EMERGENCY MANAGEMENT
Delaware County (PA) Emergency Services
Delaware Division of Communications
ECW Wireless, LLC
Eastern MLG LLC
Eastern Pennsylvania EMS Council
Egan LLC
Electric Railroad, LLC
Exelon Generation Company, LLC
FELHC, INC
Federal Communication Commission
Franklin County Dept. of Emergency Servi
Fundamental Broadcasting LLC
Geodesic Networks LLC
Gloucester, County of
Green Line Networks

Hardy Cellular Telephone Company
High Voltage Communications LLC (CFN)
Kryptick Technologies
Lackawanna County Dept. of Emergency Ser
Lancaster County-Wide Communications
Lebanon, County of
Lehigh, County of
Luzerne County Department of Public Sfty
MONMOUTH, COUNTY OF
MTA - Long Island Railroad
Mahwah Communications
Mifflin Mobilecom
Monroe County Control Center (PA)
Montgomery County Of
Morris, County of
NBC Telemundo License LLC
NEW YORK CITY POLICE DEPARTMENT
Nassau County Police Department
National Tower Company LLC
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 Transit Authority
Norfolk Southern Railway
Northumberland County DPS/911
OCEAN, COUNTY OF
Ocean, County of - Div of Wireless Tech.
Orange and Rockland Utilities, Inc.
PEG Bandwidth, LLC
PIKE COUNTY COMMISSIONERS
PSEG Services Corporation
Peco Energy Company
Pennsylvania Sports Entertainment Netwo.
Pennsylvania State Police
Pennsylvania Turnpike Commission
Perseus Technology Holdings USA Inc.
Pitt Power
Pittsburgh SMSA Limited Partnership
Port Authority of New York & New Jersey
Rockland, County of
SCHUYLKILL, COUNTY OF
SCS Networks
SECOM NET
STATE OF NEW JERSEY - OFFICE OF PUBLIC
SW Networks
South Central Task Force (SCTFNET)
Southeastern Pennsylvania Transit Auth
Standard Backhaul Communications LLC
State of Maryland, MIEMSS
State of New York, Div of State Police
Texas Eastern Communications, LLC
The Scranton Times, L.P.
Townsquare Media Monmouth-Ocean License

Transcontinental Gas Pipeline Corp.
Triangle Communications, Inc.
Turtle Networks 6559
Turtle Networks 6562
USOC of Pennsylvania RSA No 10 B2 Inc.
WAYNE COUNTY PENNSYLVANIA
Weblin Holdings LLC
Wireless Internetwork LLC
World Class Wireless, LLC
Zango LLC
Zen Networks, Inc
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: 07/26/2016
Job Number: 160713COMSGE11

Administrative Information

Status: TEMPORARY (Operation from 08/24/2016 to 09/08/2016)
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: 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: 58.6 dBi / 14.2 m
3-dB / 15-dB Beamwidth: 0.24° / 0.46°

Max Available RF Power (dBW/4 kHz): 1.1
(dBW/MHz): 25.1

Maximum EIRP (dBW/4 kHz): 59.7
(dBW/MHz): 83.7
(dBW): 83.0

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

Frequency Information

Transmit 6.7 GHz

Emission / Frequency Range (MHz): 850KFXD / 6722.0 - 6724.5

Max Great Circle Coordination Distance: 506.2 km / 314.5 mi
Precipitation Scatter Contour Radius: 207.6 km / 129.0 mi

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
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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 6.7 GHz
Interference Objectives: Long Term -154.0 dBW/4 kHz 20%
Short Term -131.0 dBW/4 kHz 0.0025%
Max Available RF Power 1.1 (dBW/4 kHz)

| Azimuth (°) | Horizon Elevation (°) | Antenna Discrimination (°) | Transmit 6.7 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 | 101.16 |
| 75 | 3.07 | 27.61 | -4.03 | 104.21 |
| 80 | 3.04 | 22.64 | -1.87 | 112.87 |
| 85 | 3.06 | 17.68 | 0.82 | 122.92 |
| 90 | 3.07 | 12.74 | 4.37 | 134.52 |
| 95 | 2.74 | 8.00 | 9.42 | 164.56 |
| 100 | 2.73 | 3.74 | 17.68 | 206.10 |
| 105 | 2.58 | 3.84 | 17.40 | 320.36 |
| 110 | 2.72 | 7.37 | 10.31 | 171.30 |
| 115 | 2.80 | 10.92 | 6.05 | 146.79 |
| 120 | 2.62 | 14.56 | 2.92 | 137.59 |
| 125 | 2.05 | 18.40 | 0.38 | 139.30 |
| 130 | 1.63 | 22.02 | -1.57 | 141.89 |
| 135 | 2.22 | 24.75 | -2.84 | 124.77 |
| 140 | 2.76 | 27.32 | -3.91 | 110.38 |
| 145 | 2.31 | 30.46 | -5.09 | 114.81 |
| 150 | 2.22 | 33.06 | -5.98 | 113.26 |
| 155 | 1.94 | 35.55 | -6.77 | 116.37 |
| 160 | 2.22 | 37.22 | -7.27 | 108.80 |
| 165 | 2.67 | 38.33 | -7.59 | 100.00 |
| 170 | 2.46 | 39.65 | -7.95 | 101.71 |
| 175 | 1.94 | 40.84 | -8.28 | 111.10 |
| 180 | 1.90 | 41.11 | -8.35 | 111.81 |
| 185 | 1.86 | 40.92 | -8.30 | 113.07 |

COMSEARCH

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Coordination Values

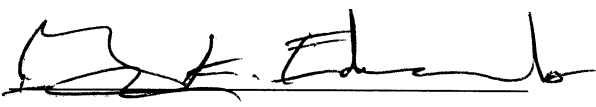
CARPENTERSVI, NJ

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Interference Objectives: Long Term -154.0 dBW/4 kHz 20%
Short Term -131.0 dBW/4 kHz 0.0025%
Max Available RF Power 1.1 (dBW/4 kHz)

| Azimuth (°) | Horizon Elevation (°) | Antenna Discrimination (°) | Transmit 6.7 GHz | |
|-------------|-----------------------|----------------------------|--------------------|----------------------------|
| | | | Horizon Gain (dBi) | Coordination Distance (km) |
| 190 | 1.23 | 40.84 | -8.28 | 128.90 |
| 195 | 1.33 | 39.59 | -7.94 | 127.55 |
| 200 | 2.37 | 37.09 | -7.23 | 106.01 |
| 205 | 1.76 | 35.72 | -6.82 | 120.65 |
| 210 | 1.77 | 33.44 | -6.11 | 122.77 |
| 215 | 2.21 | 30.54 | -5.12 | 116.67 |
| 220 | 3.42 | 26.81 | -3.71 | 100.00 |
| 225 | 3.50 | 23.78 | -2.41 | 102.55 |
| 230 | 4.90 | 19.59 | -0.30 | 100.00 |
| 235 | 4.41 | 16.68 | 1.44 | 102.85 |
| 240 | 4.50 | 13.22 | 3.97 | 111.12 |
| 245 | 3.77 | 10.24 | 6.75 | 132.56 |
| 250 | 2.53 | 7.51 | 10.11 | 174.62 |
| 255 | 2.28 | 4.01 | 16.92 | 341.90 |
| 260 | 2.60 | 3.20 | 19.36 | 506.22 |
| 265 | 3.11 | 7.34 | 10.36 | 160.68 |
| 270 | 3.39 | 12.19 | 4.85 | 131.96 |
| 275 | 2.86 | 17.22 | 1.10 | 127.53 |
| 280 | 2.80 | 22.19 | -1.65 | 118.13 |
| 285 | 3.05 | 27.15 | -3.84 | 105.27 |
| 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: July 26, 2016