

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Denali 20020, LLC
VERNON VALLEY, NJ
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
December 18, 2018

TABLE OF CONTENTS

1. CONCLUSIONS	3
2. SUMMARY OF RESULTS	4
3. SUPPLEMENTAL SHOWING	5
4. EARTH STATION COORDINATION DATA.....	9
5. CERTIFICATION.....	13

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 11/26/2018.

Company

3G Wireless, LLC
ABC, Inc.
ABC, Inc. - WPVI-TV
AERIAL VIDEO SYSTEMS
Alascom Inc
American Broadcasting Companies, Inc.
AQ2AT LLC
Ascent Media Network Services, LLC
Bellsouth Telecommunications, Inc.
Bergen, County of
Berkshire County Sheriff's Office
BFI Licenses, LLC
Bloomberg, L.P.
Blueline Communications
Borgeson, Tom R.
Broadcast Sports Inc.
Bucks County Dept. of Emergency Comm
Carbon, County of 911 Center
Carolina Telephone and Telegraph Co
Casper, John
Catholic Broadcasting of Scranton, Inc.
CBS Broadcasting Inc
Cellco Partnership - (W-NY)
CenturyTel of the Southwest, Inc.
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.
Community Products, LLC
Connecticut Public Broadcasting Inc
Connecticut, State of
County of Burlington, Public Safety Cntr
County of Hunterdon
County of Warren, NJ
Cowboys Stadium LP
DCI II, INC.
Delaware County (PA) Emergency Services
Direct Broadcast Services, Inc.

DSRC Networks
Dutchess County Emergency Response
Eastern MLG LLC
Eastern Pennsylvania EMS Council
Electric Railroad, LLC
Eversource Energy Service Company
FELHC, Inc.
Fox Television Stations Inc (MTVA LLC)
Fox Television Stations LLC - WNYW TV
Fox Television Stations, LLC
Frontier California Inc.
Fundamental Broadcasting LLC
Geodesic Networks LLC
Global Telecom & Technology Americas, In
Gloucester, County of
GTT America LLC
Hallco Unlimited, Inc.
HARRIS CORPORATION
Hawaiian Telcom, Inc.
Heiden, William
HF Enterprises, Inc
High Voltage Communications LLC (CFN)
Highway Networks, LLC
Illinois Bell Telephone Company
Indiana Bell Telephone Company
Information & Display Systems, Inc.
Information Super Station, LLC
International Communications Group, Inc.
Ion Media Scranton License, Inc.
Kentucky RSA #3 Cellular General Partner
Kentucky RSA #4 Cellular General Partner
Keyspan Corp. dba Keyspan Energy
Kryptick Technologies
Lackawanna County Dept. of Emergency Ser
Lackawanna, County of
Local TV Pennsylvania License, LLC
Maranatha Broadcasting Company
MERCURY COMMUNICATIONS
Michigan Bell Telephone Company
Monmouth, County of
Monroe County Control Center (PA)
Montgomery County Of
Moreen, Steven K
Morris, County of
MTA - Long Island Railroad
Nassau County Police Department
Navajo Communications Company
NBC Telemundo License LLC
NEW ENGLAND DIGITAL DISTRIBUTION, INC.
New Jersey Public Broadcasting Authority
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
New York Communications Co., Inc
NorthWest Suburbs Community Access Corp
NSM Surveillance
Ohio Bell Telephone Company
Onboard Images
Optiver GT US, LLC
Orange and Rockland Utilities, Inc.
Pacific Bell Tel Com dba AT&T California
Peco Energy Company
Penn Service Microwave Co., Inc.
Pennsylvania Turnpike Commission
Philadelphia Television Station WPSG
Pike County Commissioners
Plateau Telecommunications, Inc.
Plum TV, LLC
Port Authority of New York & New Jersey
Production & Satellite Services, Inc.
PSEG Services Corporation
Quick Link Connections Inc.
Qwest Corporation
Radiofone, Inc.
Rainbow News 12 Company
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
SBE Coordinator
Secom Net
Southeastern Pennsylvania Transit Auth
Southwestern Bell Telephone L.P.
Speedshotz, Inc
Standard Backhaul Communications LLC
State of New Jersey
State of New York, Div of State Police
Suffolk County Police Department
Sullivan County DPW
SW Networks
Texas Eastern Communications, LLC
The New York Yankees
Time Warner Entertainment Company L.P.
Transcontinental Gas Pipeline Corp.
TTWN Networks, LLC
Unisat, Inc.
United Telephone - Southeast
Uniti Fiber PEG, LLC
Univision New York LLC
Univision Philadelphia LLC
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.
Vyvx, LLC
Wayne, County of
Weblin Holdings LLC
Westar Satellite Services LP
Winged Vision Inc
Wireless Internetwork LLC
Wisconsin Bell Telephone Company
WNET
Wolfe Air Aviation
World Class Wireless, LLC
WPHL, LLC
WPIX, LLC
WRNN License Company, LLC
WXTV License Partnership, G.P.
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: 12/12/2018
Job Number: 181126COMSGE06

Administrative Information

Status ENGINEER PROPOSAL
Call Sign WB81
Licensee Code DENALI
Licensee Name Denali 20020, LLC

Site Information

VERNON VALLEY, NJ
Venue Name
Latitude (NAD 83) 41° 12' 6.3" N
Longitude (NAD 83) 74° 31' 34.6" W
Climate Zone A
Rain Zone 2
Ground Elevation (AMSL) 182.9 m / 600.1 ft

Link Information

Satellite Type Geostationary
Mode TO - Transmit-Only
Modulation Digital
Satellite Arc 65° W to 65° West Longitude
Azimuth Range 165.7° to 165.7°
Corresponding Elevation Angles 41.4° / 41.4°
Antenna Centerline (AGL) 5.49 m / 18.0 ft

Antenna Information

Transmit - FCC32
Manufacturer Harris
Model 13 meter
Gain / Diameter 56.4 dBi / 13.0 m
3-dB / 15-dB Beamwidth 0.26° / 0.50°

Max Available RF Power (dBW/4 kHz) -2.7
(dBW/MHz) 21.3

Maximum EIRP (dBW/4 kHz) 53.7
(dBW/MHz) 77.7

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) 6M00G7W - 54M0G7W / 6425.5 - 6875.0

Max Great Circle Coordination Distance 170.7 km / 106.0 mi
Precipitation Scatter Contour Radius 100.0 km / 62.1 mi

COMSEARCH

Earth Station Data Sheet

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(703)726-5500 <http://www.comsearch.com>

Coordination Values	VERNON VALY, NJ
Licensee Name	Denali 20020, LLC
Latitude (NAD 83)	41° 12' 6.3" N
Longitude (NAD 83)	74° 31' 34.6" W
Ground Elevation (AMSL)	182.9 m / 600.1 ft
Antenna Centerline (AGL)	5.49 m / 18.0 ft
Antenna Model	Harris 13 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	-2.7 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 6.7 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	4.68	140.98	-10.00	100.00
5	3.42	138.08	-10.00	100.00
10	2.67	135.33	-10.00	100.00
15	1.69	132.15	-10.00	100.00
20	2.50	130.02	-10.00	100.00
25	2.87	127.27	-10.00	100.00
30	3.02	124.14	-10.00	100.00
35	1.69	120.12	-10.00	100.00
40	0.62	116.24	-10.00	133.32
45	0.00	112.53	-10.00	170.66
50	0.00	108.99	-10.00	170.66
55	0.00	105.39	-10.00	170.66
60	0.00	101.72	-10.00	170.66
65	0.00	98.01	-10.00	170.66
70	0.00	94.28	-10.00	170.66
75	1.06	90.54	-10.00	116.19
80	1.79	86.70	-10.00	100.00
85	1.91	82.84	-10.00	100.00
90	2.22	78.97	-10.00	100.00
95	2.47	75.11	-10.00	100.00
100	2.76	71.26	-10.00	100.00
105	2.82	67.51	-10.00	100.00
110	2.67	63.93	-10.00	100.00
115	2.47	60.48	-10.00	100.00
120	2.98	56.83	-10.00	100.00
125	2.85	53.64	-10.00	100.00
130	3.48	50.16	-10.00	100.00
135	3.59	47.21	-9.85	100.00
140	4.35	44.01	-9.09	100.00
145	4.30	41.74	-8.51	100.00
150	4.25	39.88	-8.02	100.00
155	4.79	37.92	-7.47	100.00
160	4.08	37.68	-7.40	100.00
165	3.17	38.22	-7.56	100.00
170	3.21	38.38	-7.60	100.00
175	3.39	38.95	-7.76	100.00
180	2.95	40.63	-8.22	100.00
185	2.55	42.68	-8.76	100.00

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Earth Station Data Sheet

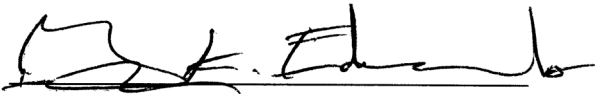
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Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 6.7 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	2.14	45.10	-9.36	100.00
195	0.48	48.76	-10.00	140.81
200	0.00	51.70	-10.00	170.66
205	0.27	54.34	-10.00	161.48
210	0.93	57.00	-10.00	120.84
215	2.09	59.69	-10.00	100.00
220	2.32	63.05	-10.00	100.00
225	2.71	66.50	-10.00	100.00
230	3.42	70.00	-10.00	100.00
235	4.00	73.68	-10.00	100.00
240	4.38	77.51	-10.00	100.00
245	4.75	81.42	-10.00	100.00
250	5.15	85.40	-10.00	100.00
255	5.74	89.42	-10.00	100.00
260	6.43	93.51	-10.00	100.00
265	7.14	97.67	-10.00	100.00
270	8.27	101.93	-10.00	100.00
275	9.45	106.28	-10.00	100.00
280	9.91	110.54	-10.00	100.00
285	11.15	115.00	-10.00	100.00
290	11.53	119.25	-10.00	100.00
295	11.03	123.12	-10.00	100.00
300	10.55	126.84	-10.00	100.00
305	9.86	130.25	-10.00	100.00
310	9.54	133.61	-10.00	100.00
315	9.34	136.78	-10.00	100.00
320	8.57	139.22	-10.00	100.00
325	8.26	141.56	-10.00	100.00
330	9.05	144.43	-10.00	100.00
335	9.16	146.22	-10.00	100.00
340	9.40	147.56	-10.00	100.00
345	8.36	146.96	-10.00	100.00
350	7.01	145.39	-10.00	100.00
355	5.84	143.41	-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 18, 2018