

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

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

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
July 29, 2019

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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 07/23/2019.

Company

10Band LLC
AMFM Radio Licenses, LLC
AQ2AT LLC
AT&T Corp.
Affiniti PA, LLC
Algonquin Gas Transmission, LLC
Archdiocese of New York Dept of Educatio
Atlantic Telecommunications
Avon Police Department
Beasley Media Group, LLC
Bedford County of
Bergen, County of
Berks County Department of Emergency Ser
Bethel CT Police Department
Blair County 911
Bloomfield Center Fire District
Blueline Communications
Buckeye Partners
Bucks County Dept. of Emergency Comm
Business Only Broadband, LLC
CBS Communications Services Inc
Cambria, County of
Capital Communications of America
Carbon, County of 911 Center
Cellco Partnership - Bridgeville, PA/WV
Cellco Partnership- PA Region
Cellco Partnership-Northern New Jersey
Central Hudson Gas & Electric Corp.
Cherry Hill, Township Of
Chester, County of
City of Bethlehem
City of Bristol Mayor's Office
City of Jersey City
City of New York
City of Springfield Police Department
City of Westfield
Citywisper LLC
Clearwire Spectrum Holdings III, LLC
Columbia, County
Columbia, County of
Comcast of Southeast Pennsylvania, Inc.

Commonwealth of Pennsylvania-Radio Proj.
Community Products, LLC
Comprehensive Wireless LLC
Connecticut, State of
Connoisseur Media Licenses, LLC
Consult Dynamics, Inc
Conterra Ultra Broadband, LLC
Conxx, Inc.
County of Burlington
County of Burlington, Public Safety Cntr
County of Camden
County of Hunterdon
County of Mercer
County of Pike
County of Warren, NJ
Cox Radio Inc
Delaware County (PA) Emergency Services
Delaware Division of Communications
Direct Broadcast Services, Inc.
Drive
Dutchess County Emergency Response
ECW Wireless, LLC
East Brunswick, Township of, NJ
East Hampton Town Police Department
Eastern MLG LLC
Electric Railroad, LLC
Entercom License, LLC
Essex County Sheriff's Office (NJ)
Eversource Energy Service Company
Exelon Generation Company, LLC
FELHC, Inc.
Fiberless Networks Corporation
Fordham University(WFUV)
Frascozna, Carl
Fundamental Broadcasting LLC
GAW High-Speed Internet
GTT America LLC
Garden State Transmissions
Geodesic Networks LLC
Glastonbury Police Department
Global Crossing Telecommunications, Inc.
Global Telecom & Technology Americas
Gloucester Township
Gloucester, County of
Goosetown Network Services, LLC
Greater Boston Radio Inc.
Greenwich, Town of (CT)
HARRIS CORPORATION
Hamilton, Township of
High Voltage Communications LLC (CFN)
Highway Networks, LLC
Hilltower Tower Leasing, Inc
Hudson County Prosecutors Office
Huntingdon, County of
In The Stix Broadband LLC
Jackson Twp. Police Department

Jefferson Microwave, LLC
Jlink, Inc
Juniata County Emergency Services
Kryptick Technologies
LANline Communications, Inc.
Lackawanna County Dept. of Emergency Ser
Lackawanna, County of
Lake Mohegan Fire District
Lakewood Municipal Utilities Authority
Lehigh, County of
Local Media TV Philadelphia
Manchester, Township of
Marcus Communications
Massachusetts Commonwealth of
Massachusetts, Commonwealth of
Mid-Hudson Cablevision
Mid-Hudson Data Corp
Middlesex, County of
Middletown, City of
Mifflin County
Monmouth, County of
Monroe County Control Center (PA)
Montgomery County Of
Morris, County of
NBC Telemundo License LLC
NCN Data,LLC
NW Technologies, LLC
NY Dept of Health and Mental Hygiene
NYC DOT Staten Island Ferry
Nassau County Police Department
New Britain, City of
New Cingular Wireless PCS LLC - NJ
New Cingular Wireless PCS LLC - MA
New Cingular Wireless PCS LLC-DE/NH/RI
New Cingular Wireless PCS, LLC (NY)
New Cingular Wireless PCS, LLC - PA
New Haven, City of
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 Police TARU
New York City Transit Authority
New York Communications Co., Inc
New York Presbyterian Hospital
New York Public Radio
New York SMSA LP (Northern NJ)
New York SMSA Limited Partnership
New York State Electric & Gas Corp
Newark Police Department
Newark, City of
Norcom Communications Corp.
Northrop Grumman Systems Corp.
Northrop Grumman Systems Corporation Inc

Northumberland County DPS/911
Norton, Douglas R
Ocean County of - Div of Wireless Tech.
Office of Emergency Telecom Services, NJ
Orange County Dept of Emergency Services
Orange and Rockland Utilities, Inc.
Orangetown, Town of
PSEG Services Corporation
Peco Energy Company
Pennsylvania Turnpike Commission
Perry, County of
PhillieCo, L.P.
Pierce Broadband, LLC
Pines Pantry, Inc.
Piscataway, Township Of
Pocono Mountain School District
Port Authority of New York & New Jersey
Putnam County Bureau of Emerg. Services
Qoncept Holdings LLC
R. Fritz Enterprises Inc
Ridgefield Police Department
Rockland, County of
SW Networks
Salem County Information Technology
Sanofi Pasteur
Schuylkill, County of
Secom Net
Setauket Fire District
Shenandoah Personal Communications, LLC
Snyder, County of
Somerset County (M.I.S.)
Somerset, County of
Southampton, Town Of, Police Dept.
Southeastern Pennsylvania Transit Auth
Southington Town of CT
Spot On Networks
Sprint Spectrum L.P.
Sprintcom, Inc
St Lukes Hospital
Stamford, City of
Standard Backhaul Communications LLC
State of New Jersey
State of New Jersey
State of New Jersey Information Technology
State of New York, Div of State Police
Suffolk County Police Department
Suffolk, County of
Sullivan County DPW
Susquehanna County
Sussex County Sheriffs Office
T-Mobile License LLC
TTWN Networks, LLC
Telecom Transport Management, Inc
Towerstream Corp.
Town of North Haven
Town of Smithtown Dept of Public Safety

Town of Wethersfield
Town of Woodbridge, Police Department
Township of Middletown
Township of Old Bridge
Transcontinental Gas Pipeline Corp.
Ulster County of
Union County New Jersey
Union, County Of
Uniti Fiber PEG, LLC
Valley Rural Electric Cooperative, Inc.
Verizon New Jersey, Inc.
Verizon Wireless (VAW) LLC (NY)
Verizon Wireless (VAW) LLC - Northern NJ
Verizon Wireless (VAW) LLC-Pennsylvania
WHYY, Inc.
Wayne County - DHS-EM
Wayne, Township of
Weblin Holdings LLC
West Springfield, Town of Fire Dept
Westchester, County of
Wireless Internetwork LLC
World Class Wireless, LLC
Xvergent
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: 07/29/2019
Job Number: 190723COMSGE01

Administrative Information

Status ENGINEER PROPOSAL
Call Sign E150116
Licensee Code DENALI
Licensee Name Denali 20020, LLC

Site Information

VERNON, NJ

Venue Name
Latitude (NAD 83) 41° 12' 4.1" N
Longitude (NAD 83) 74° 31' 37.5" W
Climate Zone A
Rain Zone 2
Ground Elevation (AMSL) 186.49 m / 611.8 ft

Link Information

Satellite Type Geostationary
Mode TR - Transmit-Receive
Modulation Digital
Satellite Arc 3° W to 143° West Longitude
Azimuth Range 102.4° to 255.4°
Corresponding Elevation Angles 5.1° / 7.4°
Antenna Centerline (AGL) 4.88 m / 16.0 ft

Antenna Information

Receive - FCC32

Transmit - FCC32

Manufacturer	Andrew	Andrew	
Model	7.6 meter	7.6 meter	
Gain / Diameter	58.0 dBi / 7.6 m	59.4 dBi / 7.6 m	
3-dB / 15-dB Beamwidth	0.44° / 0.78°	0.36° / 0.62°	
Max Available RF Power (dBW/4 kHz)		-14.0	
(dBW/MHz)		10.0	
Maximum EIRP (dBW/4 kHz)		45.4	
(dBW/MHz)		69.4	
Interference Objectives:	Long Term	-156.0 dBW/MHz 20%	-151.0 dBW/4 kHz 20%
	Short Term	-146.0 dBW/MHz 0.01%	-128.0 dBW/4 kHz 0.0025%

Frequency Information

Receive 11.0 GHz

Transmit 14.0 GHz

Emission / Frequency Range (MHz)	64K0G7W - 72M0G7W / 10700.0 - 11450.0	64K0G7W - 72M0G7W / 13750.0 - 14500.0
	64K0G7W - 72M0G7W / 11700.0 - 12200.0	
Max Great Circle Coordination Distance	639.7 km / 397.4 mi	283.4 km / 176.1 mi
Precipitation Scatter Contour Radius	605.8 km / 376.4 mi	100.0 km / 62.1 mi

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
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Coordination Values

VERNON, NJ

Licensee Name Denali 20020, LLC
Latitude (NAD 83) 41° 12' 4.1" N
Longitude (NAD 83) 74° 31' 37.5" W
Ground Elevation (AMSL) 186.49 m / 611.8 ft
Antenna Centerline (AGL) 4.88 m / 16.0 ft
Antenna Model Andrew 7.6 meter
Antenna Mode Receive 11.0 GHz Transmit 14.0 GHz
Interference Objectives: Long Term -156.0 dBW/MHz 20% -151.0 dBW/4 kHz 20%
Short Term -146.0 dBW/MHz 0.01% -128.0 dBW/4 kHz 0.0025%
Max Available RF Power -14.0 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 11.0 GHz		Transmit 14.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	5.07	102.41	-10.00	100.00	-10.00	100.00
5	3.69	97.41	-10.00	115.38	-10.00	100.00
10	2.73	92.41	-10.00	131.04	-10.00	100.00
15	1.88	87.42	-10.00	150.22	-10.00	100.00
20	2.05	82.42	-10.00	145.30	-10.00	100.00
25	2.72	77.42	-10.00	131.18	-10.00	100.00
30	3.12	72.42	-10.00	125.31	-10.00	100.00
35	1.70	67.46	-10.00	155.74	-10.00	100.00
40	0.54	62.51	-10.00	205.08	-10.00	100.00
45	0.00	57.56	-10.00	231.37	-10.00	115.80
50	0.00	52.59	-10.00	231.37	-10.00	115.80
55	0.00	47.62	-9.95	231.61	-9.95	115.94
60	0.00	42.66	-8.75	236.91	-8.75	118.92
65	0.00	37.71	-7.41	243.07	-7.41	122.30
70	0.00	32.77	-5.89	250.45	-5.89	126.18
75	1.07	27.69	-4.06	203.47	-4.06	100.00
80	1.74	22.65	-1.88	197.40	-1.88	100.00
85	1.98	17.69	0.81	203.08	0.81	100.00
90	2.30	12.73	4.38	210.19	4.38	100.00
95	2.31	7.93	9.52	236.79	9.52	100.00
100	2.65	3.46	18.53	639.68	18.53	283.37
105	2.73	3.53	18.31	448.27	18.31	187.42
110	2.65	7.21	10.55	234.80	10.55	100.00
115	2.80	10.66	6.30	209.07	6.30	100.00
120	2.98	14.02	3.33	193.79	3.33	100.00
125	2.94	17.44	0.96	182.78	0.96	100.00
130	3.45	20.31	-0.69	158.75	-0.69	100.00
135	3.80	23.15	-2.12	143.83	-2.12	100.00
140	4.42	25.57	-3.20	130.35	-3.20	100.00
145	4.16	28.48	-4.36	129.19	-4.36	100.00
150	4.37	30.74	-5.19	123.17	-5.19	100.00
155	4.65	32.63	-5.84	117.05	-5.84	100.00
160	3.69	35.31	-6.70	127.51	-6.70	100.00
165	3.23	37.21	-7.27	132.18	-7.27	100.00
170	2.96	38.55	-7.65	135.82	-7.65	100.00
175	3.53	38.64	-7.68	126.58	-7.68	100.00
180	2.86	39.53	-7.92	136.71	-7.92	100.00
185	2.54	39.62	-7.95	143.27	-7.95	100.00

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Coordination Values

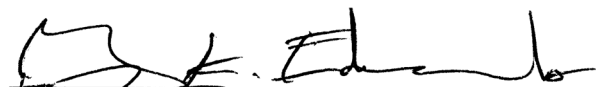
VERNON, NJ

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	Short Term	-146.0 dBW/MHz 0.01%	-128.0 dBW/4 kHz 0.0025%
Max Available RF Power			-14.0 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 11.0 GHz		Transmit 14.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	1.88	39.60	-7.94	160.32	-7.94	100.00
195	0.40	39.88	-8.02	221.08	-8.02	105.27
200	0.00	38.67	-7.68	241.80	-7.68	121.61
205	0.22	36.52	-7.06	242.38	-7.06	121.37
210	1.55	33.13	-6.01	183.45	-6.01	100.00
215	2.28	30.02	-4.94	167.68	-4.94	100.00
220	2.55	27.06	-3.81	166.93	-3.81	100.00
225	3.14	23.66	-2.35	157.40	-2.35	100.00
230	3.73	20.10	-0.58	152.77	-0.58	100.00
235	4.43	16.34	1.67	151.02	1.67	100.00
240	4.74	12.75	4.36	160.42	4.36	100.00
245	4.95	9.15	7.96	180.55	7.96	100.00
250	5.14	5.47	13.54	206.59	13.54	100.00
255	5.64	1.82	25.52	443.41	25.52	179.82
260	6.09	4.75	15.08	204.90	15.08	100.00
265	7.04	9.57	7.47	146.06	7.47	100.00
270	7.53	14.57	2.91	121.24	2.91	100.00
275	7.94	19.57	-0.29	104.93	-0.29	100.00
280	9.46	24.65	-2.79	100.00	-2.79	100.00
285	11.24	29.79	-4.85	100.00	-4.85	100.00
290	12.24	34.86	-6.56	100.00	-6.56	100.00
295	12.26	39.82	-8.00	100.00	-8.00	100.00
300	12.52	44.80	-9.28	100.00	-9.28	100.00
305	11.73	49.71	-10.00	100.00	-10.00	100.00
310	10.91	54.64	-10.00	100.00	-10.00	100.00
315	9.84	59.60	-10.00	100.00	-10.00	100.00
320	9.39	64.58	-10.00	100.00	-10.00	100.00
325	8.54	69.57	-10.00	100.00	-10.00	100.00
330	8.45	74.57	-10.00	100.00	-10.00	100.00
335	8.25	79.57	-10.00	100.00	-10.00	100.00
340	8.38	84.57	-10.00	100.00	-10.00	100.00
345	8.58	89.57	-10.00	100.00	-10.00	100.00
350	7.43	94.57	-10.00	100.00	-10.00	100.00
355	6.12	99.57	-10.00	100.00	-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 29, 2019