

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Denali 20020, LLC
VERNON, NJ
(9 Meter)
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
December 15, 2016

TABLE OF CONTENTS

1. CONCLUSIONS	3
2. SUMMARY OF RESULTS	4
3. SUPPLEMENTAL SHOWING	5
4. EARTH STATION COORDINATION DATA.....	10
5. CERTIFICATION.....	14

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 11/28/2016.

Company

256Q Networks
ALGONQUIN GAS TRANSMISSION, LLC
AMFM Radio Licenses, LLC
AT&T Corp.
AWC Networks
Affiniti PA, LLC
Allentown SMSA Limited Partnership
Archdiocese of New York Dept of Educatio
Atlantic Telecommunications
BFI Licenses, LLC
BLAIR COUNTY 911
Bedford County of
Bergen, County of
Berks County Department of Emergency Ser
Blueline Communications
Buckeye Partners
Bucks County Dept. of Emergency Comm
Business Only Broadband, LLC
CBS Communication Services Inc
CBS Radio East Inc.
CITY OF WESTFIELD
Cambria, County of
Capital Communications of America
Cellco Partnership - Bridgeville, PA/WV
Cellco Partnership- PA Region
Cellco Partnership-Northern New Jersey
Central Hudson Gas & Electric Corp.
Chester, County of
China Cat Productions LLC
City of Bethlehem
City of Bristol Mayor's Office
City of Jersey City
City of New Haven Police Services
City of New York
City of Springfield Police Department
Clearwire Spectrum Holdings III, LLC
Columbia, County
Columbia, County of
Community Products, LLC
Comprehensive Wireless LLC

Connect-Vision LTD
Connecticut State Police Department
Conterra Ultra Broadband, LLC
Coralinks
County of Burlington
County of Burlington, Public Safety Cntr
County of Camden
County of Hunterdon
County of Mercer
County of Warren, NJ
Cox Media Group Northeast, LLC
Cox Radio Inc
Delaware County (PA) Emergency Services
Delaware Division of Communications
Direct Broadcast Services, Inc.
Dutchess County Emergency Response
EAST HAMPTON TOWN POLICE DEPARTMENT
ECW Wireless, LLC
East Brunswick, Township of, NJ
Eastern MLG LLC
Electric Railroad, LLC
Essex County Sheriff's Office (NJ)
Eversource Energy Service Company
Exelon Generation Company, LLC
FELHC, INC
FORDHAM UNIVERSITY(WFUV)
Fundamental Broadcasting LLC
GAW High Speed Internet
Garden State Transmissions
Geodesic Networks LLC
Global Crossing Telecommunications, Inc.
Global Telecom & Technology Americas
Gloucester Township
Gloucester, County of
Goosetown Network Services, LLC
Greater Boston Radio Inc.
Greater Philadelphia Radio, Inc.
Greenwich, Town of (CT)
Hamilton, Township of
High Voltage Communications LLC (CFN)
Highway Networks, LLC
Hilltower Tower Leasing, Inc
Holy Name Hospital
Hopewell Radiology Group
Hudson County MIS Department
Hudson County Prosecutors Office
Huntingdon, County of
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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

Lehigh, County of
Limitless Mobile, LLC
Local Media TV Philadelphia
MONMOUTH, COUNTY OF
Mahwah Communications
Manchester, Township of
Massachusetts Commonwealth of
Massachusetts, Commonwealth of
Mid-Hudson Data Corp
Middlesex, County of
Mifflin County
Monroe County Control Center (PA)
Monroe Township Police Dept
Montgomery County Of
Morris, County of
NBC Telemundo License LLC
NEW YORK CITY POLICE DEPARTMENT
NW Technologies, LLC
NY Dept of Health and Mental Hygiene
NYC DOT Staten Island Ferry
Nassau County Police Department
National Tower Company LLC
NeXXCom Wireless LLC
New Britain, City of
New Cingular Wireless PCS LLC - NJ
New Cingular Wireless PCS LLC - MA
New Cingular Wireless PCS LLC - N CAL
New Cingular Wireless PCS of PA LLC
New Cingular Wireless PCS, LLC (NY)
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 Police Department TARU
New York Communications Co., Inc
New York Presbyterian Hospital
New York SMSA LP (Northern NJ)
New York SMSA Limited Partnership
Newark Police Department
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
Optiver GT US, LLC
Orange County Dept of Emergency Services
Orange and Rockland Utilities, Inc.
Orangetown, Town of
PISCATAWAY, TOWNSHIP OF
PSEG Services Corporation
Peco Energy Company
Pennsylvania Turnpike Commission

Perry, County of
Perseus Technology Holdings USA Inc.
PhillieCo, L.P.
Pierce Broadband, LLC
Pines Pantry, Inc.
Pitt Power
Port Authority of New York & New Jersey
QUALCOMM INC.
Qoncept Holdings LLC
R. Fritz Enterprises Inc
Rendezvous Communications LLC
Ridgefield Police Department
Rockland, County of
SANOFI PASTEUR
SCHUYLKILL, COUNTY OF
SCS Networks
SECOM NET
SOMERSET COUNTY (M.I.S.)
STAMFORD, CITY OF
STATE OF NEW JERSEY - OFFICE OF PUBLIC
SUFFOLK, COUNTY OF
SW Networks
Salem County Information Technology
Shenandoah Personal Communications, LLC
Somerset, County of
Somerset, County of - Emergency Manageme
Southeastern Pennsylvania Transit Auth
Southington Town of CT
Spot On Networks
Sprint Spectrum L.P.
Sprintcom, Inc
Standard Backhaul Communications LLC
State of New Jersey
State of New Jersey Infomation Technolog
State of New York, Div of State Police
Suffolk County Police Department
Sullivan County DPW
Sussex County Sheriffs Office
T-Mobile License LLC
TTWN Networks, LLC
Telecom Transport Management, Inc
Towerstream Corp.
Town of Smithtown Dept of Public Safety
Town of Thomaston
Town of Wethersfield
Town of Woodbridge, Police Department
Township of Middletown
Township of Old Bridge
Transcontinental Gas Pipeline Corp.
Turtle Networks 6559
Turtle Networks 6562
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 - NJ
Verizon Wireless (VAW) LLC-Pennsylvania
WHYY, Inc.
Wayne County - DHS-EM
Wayne, Township of
Weblin Holdings LLC
West Haven, City of
Westchester, County of
Wireless Internetwork LLC
World Class Wireless, LLC
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: 12/15/2016
Job Number: 161128COMSGE02

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) 4.5 m / 14.8 ft

Antenna Information

		Receive - FCC32		Transmit - FCC32	
Manufacturer		Vertex		Vertex	
Model		9 Meter		9 Meter	
Gain / Diameter		58.5 dBi / 9.0 m		60.1 dBi / 9.0 m	
3-dB / 15-dB Beamwidth		0.18° / 0.38°		0.16° / 0.34°	
Max Available RF Power	(dBW/4 kHz) (dBW/MHz)			-14.0 10.0	
Maximum EIRP	(dBW/4 kHz) (dBW/MHz)			46.1 70.1	
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 / 10950.0 - 11200.0 64K0G7W - 72M0G7W / 11450.0 - 12200.0	64K0G7W - 72M0G7W / 14000.0 - 14500.0
Max Great Circle Coordination Distance	647.5 km / 402.3 mi	288.7 km / 179.4 mi
Precipitation Scatter Contour Radius	605.8 km / 376.4 mi	100.0 km / 62.1 mi

COMSEARCH

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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) 4.5 m / 14.8 ft
Antenna Model Vertex 9 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	5.08	102.41	-10.00	100.00	-10.00	100.00
5	3.71	97.41	-10.00	115.16	-10.00	100.00
10	2.74	92.41	-10.00	130.68	-10.00	100.00
15	1.89	87.42	-10.00	149.71	-10.00	100.00
20	2.06	82.42	-10.00	145.12	-10.00	100.00
25	2.73	77.42	-10.00	131.04	-10.00	100.00
30	3.13	72.42	-10.00	125.14	-10.00	100.00
35	1.70	67.46	-10.00	155.55	-10.00	100.00
40	0.54	62.51	-10.00	204.87	-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	203.40	-4.06	100.00
80	1.75	22.65	-1.88	197.32	-1.88	100.00
85	1.99	17.69	0.81	203.00	0.81	100.00
90	2.30	12.73	4.38	210.11	4.38	100.00
95	2.32	7.93	9.52	236.71	9.52	100.00
100	2.65	3.46	18.54	647.47	18.54	288.75
105	2.73	3.53	18.32	452.32	18.32	190.11
110	2.66	7.21	10.55	234.73	10.55	100.00
115	2.80	10.66	6.31	209.00	6.31	100.00
120	2.98	14.02	3.33	193.71	3.33	100.00
125	2.95	17.43	0.97	182.64	0.97	100.00
130	3.46	20.31	-0.69	158.61	-0.69	100.00
135	3.80	23.15	-2.11	143.71	-2.11	100.00
140	4.43	25.57	-3.19	130.26	-3.19	100.00
145	4.17	28.47	-4.36	129.09	-4.36	100.00
150	4.38	30.73	-5.19	123.07	-5.19	100.00
155	4.66	32.63	-5.84	116.97	-5.84	100.00
160	3.70	35.31	-6.70	127.41	-6.70	100.00
165	3.23	37.21	-7.27	132.10	-7.27	100.00
170	2.96	38.55	-7.65	135.71	-7.65	100.00
175	3.54	38.63	-7.67	126.49	-7.67	100.00
180	2.86	39.53	-7.92	136.61	-7.92	100.00
185	2.55	39.61	-7.95	143.16	-7.95	100.00

COMSEARCH

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Coordination Values

VERNON, NJ

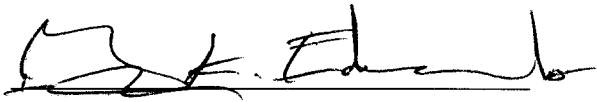
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			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	1.88	39.60	-7.94	160.16	-7.94	100.00
195	0.40	39.88	-8.02	220.81	-8.02	105.03
200	0.00	38.67	-7.68	241.80	-7.68	121.61
205	0.23	36.52	-7.06	241.96	-7.06	121.05
210	1.57	33.11	-6.00	182.70	-6.00	100.00
215	2.31	30.00	-4.93	167.04	-4.93	100.00
220	2.60	27.02	-3.79	162.93	-3.79	100.00
225	3.19	23.62	-2.33	156.26	-2.33	100.00
230	3.78	20.06	-0.56	151.73	-0.56	100.00
235	4.48	16.30	1.69	150.28	1.69	100.00
240	4.79	12.71	4.39	159.68	4.39	100.00
245	5.01	9.12	8.01	179.98	8.01	100.00
250	5.19	5.44	13.61	206.42	13.61	100.00
255	5.71	1.74	25.98	448.52	25.98	182.94
260	6.16	4.73	15.12	204.25	15.12	100.00
265	7.19	9.57	7.48	144.11	7.48	100.00
270	7.68	14.57	2.91	119.69	2.91	100.00
275	8.09	19.58	-0.29	103.61	-0.29	100.00
280	9.50	24.65	-2.80	100.00	-2.80	100.00
285	11.28	29.80	-4.85	100.00	-4.85	100.00
290	12.28	34.87	-6.56	100.00	-6.56	100.00
295	12.30	39.82	-8.00	100.00	-8.00	100.00
300	12.56	44.80	-9.28	100.00	-9.28	100.00
305	11.77	49.71	-10.00	100.00	-10.00	100.00
310	10.94	54.65	-10.00	100.00	-10.00	100.00
315	9.99	59.60	-10.00	100.00	-10.00	100.00
320	9.42	64.58	-10.00	100.00	-10.00	100.00
325	8.57	69.57	-10.00	100.00	-10.00	100.00
330	8.60	74.57	-10.00	100.00	-10.00	100.00
335	8.28	79.57	-10.00	100.00	-10.00	100.00
340	8.40	84.57	-10.00	100.00	-10.00	100.00
345	8.60	89.57	-10.00	100.00	-10.00	100.00
350	7.45	94.57	-10.00	100.00	-10.00	100.00
355	6.13	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: December 15, 2016

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5500 <http://www.comsearch.com>

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Denali 20020, LLC
VERNON, NJ
(4.8 meter)
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
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AT&T Corp.
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Affiniti PA, LLC
Allentown SMSA Limited Partnership
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Atlantic Telecommunications
BFI Licenses, LLC
BLAIR COUNTY 911
Bedford County of
Bergen, County of
Berks County Department of Emergency Ser
Blueline Communications
Buckeye Partners
Bucks County Dept. of Emergency Comm
Business Only Broadband, LLC
CBS Communication Services Inc
CBS Radio East Inc.
CITY OF WESTFIELD
Cambria, County of
Capital Communications of America
Cellco Partnership - Bridgeville, PA/WV
Cellco Partnership- PA Region
Cellco Partnership-Northern New Jersey
Central Hudson Gas & Electric Corp.
Chester, County of
China Cat Productions LLC
City of Bethlehem
City of Bristol Mayor's Office
City of Jersey City
City of New Haven Police Services
City of New York
City of Springfield Police Department
Clearwire Spectrum Holdings III, LLC
Columbia, County
Columbia, County of

COMSEARCH

Earth Station Data Sheet

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Community Products, LLC
Comprehensive Wireless LLC
Connect-Vision LTD
Connecticut State Police Department
Conterra Ultra Broadband, LLC
Coralinks
County of Burlington
County of Burlington, Public Safety Cntr
County of Camden
County of Hunterdon
County of Mercer
County of Warren, NJ
Cox Media Group Northeast, LLC
Cox Radio Inc
Delaware County (PA) Emergency Services
Delaware Division of Communications
Direct Broadcast Services, Inc.
Dutchess County Emergency Response
EAST HAMPTON TOWN POLICE DEPARTMENT
ECW Wireless, LLC
East Brunswick, Township of, NJ
Eastern MLG LLC
Electric Railroad, LLC
Essex County Sheriff's Office (NJ)
Eversource Energy Service Company
Exelon Generation Company, LLC
FELHC, INC
FORDHAM UNIVERSITY(WFUV)
Fundamental Broadcasting LLC
GAW High Speed Internet
Garden State Transmissions
Geodesic Networks LLC
Global Crossing Telecommunications, Inc.
Global Telecom & Technology Americas
Gloucester Township
Gloucester, County of
Goosetown Network Services, LLC
Greater Boston Radio Inc.
Greater Philadelphia Radio, Inc.
Greenwich, Town of (CT)
Hamilton, Township of
High Voltage Communications LLC (CFN)
Highway Networks, LLC
Hilltower Tower Leasing, Inc
Holy Name Hospital
Hopewell Radiology Group
Hudson County MIS Department
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

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19700 Janelia Farm Boulevard, Ashburn, VA 20147
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Kryptick Technologies
LANline Communications, Inc.
Lackawanna County Dept. of Emergency Ser
Lackawanna, County of
Lehigh, County of
Limitless Mobile, LLC
Local Media TV Philadelphia
MONMOUTH, COUNTY OF
Mahwah Communications
Manchester, Township of
Massachusetts Commonwealth of
Massachusetts, Commonwealth of
Mid-Hudson Data Corp
Middlesex, County of
Mifflin County
Monroe County Control Center (PA)
Monroe Township Police Dept
Montgomery County Of
Morris, County of
NBC Telemundo License LLC
NEW YORK CITY POLICE DEPARTMENT
NW Technologies, LLC
NY Dept of Health and Mental Hygiene
NYC DOT Staten Island Ferry
Nassau County Police Department
National Tower Company LLC
NeXXCom Wireless LLC
New Britain, City of
New Cingular Wireless PCS LLC - NJ
New Cingular Wireless PCS LLC - MA
New Cingular Wireless PCS LLC - N CAL
New Cingular Wireless PCS of PA LLC
New Cingular Wireless PCS, LLC (NY)
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 Police Department TARU
New York Communications Co., Inc
New York Presbyterian Hospital
New York SMSA LP (Northern NJ)
New York SMSA Limited Partnership
Newark Police Department
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
Optiver GT US, LLC
Orange County Dept of Emergency Services

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19700 Janelia Farm Boulevard, Ashburn, VA 20147
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Orange and Rockland Utilities, Inc.
Orangetown, Town of
PISCATAWAY, TOWNSHIP OF
PSEG Services Corporation
Peco Energy Company
Pennsylvania Turnpike Commission
Perry, County of
Perseus Technology Holdings USA Inc.
PhillieCo, L.P.
Pierce Broadband, LLC
Pines Pantry, Inc.
Pitt Power
Port Authority of New York & New Jersey
QUALCOMM INC.
Qoncept Holdings LLC
R. Fritz Enterprises Inc
Rendezvous Communications LLC
Ridgefield Police Department
Rockland, County of
SANOFI PASTEUR
SCHUYLKILL, COUNTY OF
SCS Networks
SECOM NET
SOMERSET COUNTY (M.I.S.)
STAMFORD, CITY OF
STATE OF NEW JERSEY - OFFICE OF PUBLIC
SUFFOLK, COUNTY OF
SW Networks
Salem County Information Technology
Shenandoah Personal Communications, LLC
Somerset, County of
Somerset, County of - Emergency Manageme
Southeastern Pennsylvania Transit Auth
Southington Town of CT
Spot On Networks
Sprint Spectrum L.P.
Sprintcom, Inc
Standard Backhaul Communications LLC
State of New Jersey
State of New Jersey Infomation Technolog
State of New York, Div of State Police
Suffolk County Police Department
Sullivan County DPW
Sussex County Sheriffs Office
T-Mobile License LLC
TTWN Networks, LLC
Telecom Transport Management, Inc
Towerstream Corp.
Town of Smithtown Dept of Public Safety
Town of Thomaston
Town of Wethersfield
Town of Woodbridge, Police Department
Township of Middletown
Township of Old Bridge

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5500 <http://www.comsearch.com>

Transcontinental Gas Pipeline Corp.
Turtle Networks 6559
Turtle Networks 6562
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 - NJ
Verizon Wireless (VAW) LLC-Pennsylvania
WHYY, Inc.
Wayne County - DHS-EM
Wayne, Township of
Weblin Holdings LLC
West Haven, City of
Westchester, County of
Wireless Internetwork LLC
World Class Wireless, LLC
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.

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Date: 12/15/2016
Job Number: 161128COMSGE03

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) 4.5 m / 14.8 ft

Antenna Information

		Receive - FCC32		Transmit - FCC32	
Manufacturer		Vertex		Vertex	
Model		4.8 meter		4.8 meter	
Gain / Diameter		53.5 dBi / 4.8 m		55.2 dBi / 4.8 m	
3-dB / 15-dB Beamwidth		0.34° / 0.68°		0.28° / 0.56°	
Max Available RF Power	(dBW/4 kHz) (dBW/MHz)			-14.0 10.0	
Maximum EIRP	(dBW/4 kHz) (dBW/MHz)			41.2 65.2	
Interference Objectives:	Long Term Short Term	-156.0 dBW/MHz -146.0 dBW/MHz	20% 0.01%	-151.0 dBW/4 kHz -128.0 dBW/4 kHz	20% 0.0025%

Frequency Information

	Receive 11.0 GHz	Transmit 14.0 GHz
Emission / Frequency Range (MHz)	64K0G7W - 72M0G7W / 10950.0 - 11200.0 64K0G7W - 72M0G7W / 11450.0 - 12200.0	64K0G7W - 72M0G7W / 14000.0 - 14500.0
Max Great Circle Coordination Distance	573.0 km / 356.0 mi	253.6 km / 157.6 mi
Precipitation Scatter Contour Radius	605.8 km / 376.4 mi	100.0 km / 62.1 mi

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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) 4.5 m / 14.8 ft
Antenna Model Vertex 4.8 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	5.08	102.41	-10.00	100.00	-10.00	100.00
5	3.71	97.41	-10.00	115.16	-10.00	100.00
10	2.74	92.41	-10.00	130.68	-10.00	100.00
15	1.89	87.42	-10.00	149.71	-10.00	100.00
20	2.06	82.42	-10.00	145.12	-10.00	100.00
25	2.73	77.42	-10.00	131.04	-10.00	100.00
30	3.13	72.42	-10.00	125.14	-10.00	100.00
35	1.70	67.46	-10.00	155.55	-10.00	100.00
40	0.54	62.51	-10.00	204.87	-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	203.40	-4.06	100.00
80	1.75	22.65	-1.88	197.32	-1.88	100.00
85	1.99	17.69	0.81	203.00	0.81	100.00
90	2.30	12.73	4.38	210.11	4.38	100.00
95	2.32	7.93	9.52	236.71	9.52	100.00
100	2.65	3.46	18.54	573.03	18.54	253.59
105	2.73	3.53	18.32	413.91	18.32	172.71
110	2.66	7.21	10.55	234.73	10.55	100.00
115	2.80	10.66	6.31	209.00	6.31	100.00
120	2.98	14.02	3.33	193.71	3.33	100.00
125	2.95	17.43	0.97	182.64	0.97	100.00
130	3.46	20.31	-0.69	158.61	-0.69	100.00
135	3.80	23.15	-2.11	143.71	-2.11	100.00
140	4.43	25.57	-3.19	130.26	-3.19	100.00
145	4.17	28.47	-4.36	129.09	-4.36	100.00
150	4.38	30.73	-5.19	123.07	-5.19	100.00
155	4.66	32.63	-5.84	116.97	-5.84	100.00
160	3.70	35.31	-6.70	127.41	-6.70	100.00
165	3.23	37.21	-7.27	132.10	-7.27	100.00
170	2.96	38.55	-7.65	135.71	-7.65	100.00
175	3.54	38.63	-7.67	126.49	-7.67	100.00
180	2.86	39.53	-7.92	136.61	-7.92	100.00
185	2.55	39.61	-7.95	143.16	-7.95	100.00

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Coordination Values

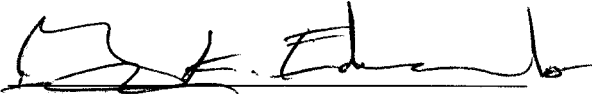
VERNON, NJ

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)	4.5 m / 14.8 ft		
Antenna Model	Vertex 4.8 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)
190	1.88	39.60	-7.94	160.16	-7.94	100.00
195	0.40	39.88	-8.02	220.81	-8.02	105.03
200	0.00	38.67	-7.68	241.80	-7.68	121.61
205	0.23	36.52	-7.06	241.96	-7.06	121.05
210	1.57	33.11	-6.00	182.70	-6.00	100.00
215	2.31	30.00	-4.93	167.04	-4.93	100.00
220	2.60	27.02	-3.79	162.93	-3.79	100.00
225	3.19	23.62	-2.33	156.26	-2.33	100.00
230	3.78	20.06	-0.56	151.73	-0.56	100.00
235	4.48	16.30	1.69	150.28	1.69	100.00
240	4.79	12.71	4.39	159.68	4.39	100.00
245	5.01	9.12	8.01	179.98	8.01	100.00
250	5.19	5.44	13.61	206.42	13.61	100.00
255	5.71	1.74	25.98	410.54	25.98	165.74
260	6.16	4.73	15.12	204.25	15.12	100.00
265	7.19	9.57	7.48	144.11	7.48	100.00
270	7.68	14.57	2.91	119.69	2.91	100.00
275	8.09	19.58	-0.29	103.61	-0.29	100.00
280	9.50	24.65	-2.80	100.00	-2.80	100.00
285	11.28	29.80	-4.85	100.00	-4.85	100.00
290	12.28	34.87	-6.56	100.00	-6.56	100.00
295	12.30	39.82	-8.00	100.00	-8.00	100.00
300	12.56	44.80	-9.28	100.00	-9.28	100.00
305	11.77	49.71	-10.00	100.00	-10.00	100.00
310	10.94	54.65	-10.00	100.00	-10.00	100.00
315	9.99	59.60	-10.00	100.00	-10.00	100.00
320	9.42	64.58	-10.00	100.00	-10.00	100.00
325	8.57	69.57	-10.00	100.00	-10.00	100.00
330	8.60	74.57	-10.00	100.00	-10.00	100.00
335	8.28	79.57	-10.00	100.00	-10.00	100.00
340	8.40	84.57	-10.00	100.00	-10.00	100.00
345	8.60	89.57	-10.00	100.00	-10.00	100.00
350	7.45	94.57	-10.00	100.00	-10.00	100.00
355	6.13	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: December 15, 2016