

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Denali 20020, LLC
VERNON VALLEY, NJ
(WB81)
(RSI 11 meter)
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
March 27, 2015

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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.

The following companies reported potential great circle interference conflicts that did not meet the objectives on a line-of-sight basis. When over-the-horizon losses are considered on the interfering paths, sufficient blockage exists to negate harmful interference from occurring with the proposed transmit-receive earth station.

Company

Auburn Data Systems, LLC
Eastern MLG LLC
High Voltage Communications LLC
Mahwah Communications
Orange and Rockland Utilities, Inc.
Orange Poughkeepsie SMSA LTD Partnership
Rendezvous Communications LLC
SCS Networks
SW Networks
Turtle Networks 6559

No other carriers reported potential interference cases.

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 02/04/2015.

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256Q Networks
AB Services LLC
ALGONQUIN GAS TRANSMISSION, LLC
AT&T Corporation
AWC Networks
Allentown SMSA Limited Partnership
Auburn Data Systems, LLC
BFI Licenses, LLC
Beaver Springs Faith Baptist Church, Inc
Blueline Communications
Bucks County Dept. of Emergency Communic
CONSOLIDATED EDISON COMPANY OF NEW YORK
CTAB Holdings LLC
Capital Communications of America
Carbon, County of 911 Center
Cellco Partnership - (W-NY)
Cellco Partnership - CT, W-MA, VT
Cellco Partnership- PA Region
Central Hudson Gas & Electric Corp.
China Cat Productions LLC
City of New York
Commonwealth of Pennsylvania-Radio Proj.
Comprehensive Wireless LLC
Connecticut State Police Department
Conterra Ultra Broadband, LLC
Converge Towers LLC
Coral Reef Technologies Ltd
Coralinks
County of Camden
County of Warren, NJ
Direct Broadcast Services, Inc.
ECW Wireless, LLC
EG Broadcast Newco Corp
EMS OF NORTHEAST PENNSYLVANIA
Eastern MLG LLC
Eastern Pennsylvania EMS Council
Electric Railroad, LLC
Essex County Sheriff's Office (NJ)
FELHC, INC
Firstlevel Networks
Fundamental Broadcasting LLC

Garden State Transmissions
Geodesic Networks LLC
Goosetown Network Services, LLC
Green Line Networks
High Voltage Communications LLC
Highway Networks, LLC
Jefferson Microwave, LLC
Kryptick Technologies
Lackawanna, County of
MONMOUTH, COUNTY OF
MVC Research. LLC
Mahwah Communications
Mifflin Mobilecom
Monroe County Control Center (PA)
Montgomery County Of
Morris, County of
Nassau County Police Department
National Tower Company LLC
NeXXCom Wireless LLC
New Cingular Wireless PCS LLC -NJ
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, State of -NJ Transit
New York Communications Co., Inc
New York, City of (Police Department)
Northeast Pennsylvania SMSA LTD Prtnrsh
Northeast Utilities Service Company
Northumberland, County of
Office of Emergency Telecom Services, NJ
Open Line Communications
Orange Poughkeepsie SMSA LTD Partnership
Orange and Rockland Utilities, Inc.
PEG Bandwidth, LLC
PSEG Services Corporation
Peco Energy Company
Penn Service Microwave Co., Inc.
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Stevens Institute of Technology
Suffolk, County of
Texas Eastern Communications, LLC
Thought Transmissions, LLC
Transwave Communication Systems, Inc.
Turtle Networks 6559
Turtle Networks 6562
Velox Networks LLC
Verizon Wireless (VAW) LLC-Pennsylvania

Weblin Holdings LLC
White Rabbit Networks
Wireless Internetwork LLC
World Class Wireless, 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: 03/27/2015
Job Number: 150204COMSGE08

Administrative Information

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

Site Information

Venue Name: **VERNON VALLEY, NJ**
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): 182.88 m / 600.0 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): 5.49 m / 18.0 ft

Antenna Information

		Receive - FCC32	Transmit - FCC32
Manufacturer		RSI Satcom	RSI Satcom
Model		1100C	1100C
Gain / Diameter		52.0 dBi / 11.0 m	55.4 dBi / 11.0 m
3-dB / 15-dB Beamwidth		0.42° / 0.86°	0.60° / 1.20°
Max Available RF Power	(dBW/4 kHz) (dBW/MHz)		(1) -10.9 (2) 2.3 (3) 6.5 13.1 26.3 30.5
Maximum EIRP	(dBW/4 kHz) (dBW/MHz)		44.5 57.7 61.9 68.5 81.7 85.9
Interference Objectives:	Long Term Short Term	-156.0 dBW/MHz -146.0 dBW/MHz	20% 0.01%
			-154.0 dBW/4 kHz 20% -131.0 dBW/4 kHz 0.0025%

Frequency Information

	Receive 4.0 GHz	Transmit 6.1 GHz
Emission / Frequency Range (MHz)	215KG7D - 36M0F8W / 3700.0 - 4200.0	(1) 215KG7D - 36M0F8W / 5925.0 - 6425.0 (2) 215KG7D - 36M0F8W / 5925.0 - 6085.0 (2) 215KG7D - 36M0F8W / 6125.0 - 6425.0 (3) 215KG7D - 36M0F8W / 6085.0 - 6125.0

Max Great Circle Coordination Distance	706.1 km / 438.7 mi	336.2 km / 208.9 mi
Precipitation Scatter Contour Radius	617.2 km / 383.4 mi	100.0 km / 62.1 mi

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Earth Station Data Sheet

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Coordination Values

VERNON VLY, 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) 182.88 m / 600.0 ft
Antenna Centerline (AGL) 5.49 m / 18.0 ft
Antenna Model RSI Satcom 11 meter
Antenna Mode Receive 4.0 GHz Transmit 6.1 GHz
Interference Objectives: Long Term -156.0 dBW/MHz 20% -154.0 dBW/4 kHz 20%
Short Term -146.0 dBW/MHz 0.01% -131.0 dBW/4 kHz 0.0025%
Max Available RF Power -10.9 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz		Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	4.68	102.41	-10.00	137.84	-10.00	100.00
5	3.42	97.41	-10.00	160.01	-10.00	100.00
10	2.67	92.41	-10.00	179.14	-10.00	100.00
15	1.69	87.42	-10.00	202.78	-10.00	100.00
20	2.50	82.42	-10.00	182.97	-10.00	100.00
25	2.87	77.42	-10.00	174.39	-10.00	100.00
30	3.02	72.43	-10.00	171.02	-10.00	100.00
35	1.69	67.46	-10.00	202.94	-10.00	100.00
40	0.62	62.51	-10.00	241.84	-10.00	111.23
45	0.00	57.56	-10.00	285.28	-10.00	140.36
50	0.00	52.59	-10.00	285.28	-10.00	140.36
55	0.00	47.62	-9.95	285.63	-9.95	140.52
60	0.00	42.66	-8.75	293.34	-8.75	144.21
65	0.00	37.71	-7.41	302.27	-7.41	148.55
70	0.00	32.77	-5.89	313.41	-5.89	153.75
75	1.06	27.69	-4.06	252.24	-4.06	109.51
80	1.79	22.65	-1.88	240.10	-1.88	100.00
85	1.91	17.70	0.80	253.77	0.80	102.31
90	2.22	12.74	4.37	269.97	4.37	107.41
95	2.47	7.87	9.60	305.21	9.60	121.58
100	2.76	3.38	18.77	706.06	18.77	336.25
105	2.82	3.47	18.50	517.86	18.50	225.92
110	2.67	7.20	10.56	307.31	10.56	121.52
115	2.47	10.89	6.07	275.90	6.07	108.59
120	2.98	14.02	3.33	241.65	3.33	100.00
125	2.85	17.50	0.92	229.06	0.92	100.00
130	3.48	20.29	-0.68	205.87	-0.68	100.00
135	3.59	23.31	-2.19	198.42	-2.19	100.00
140	4.35	25.63	-3.22	178.56	-3.22	100.00
145	4.30	28.36	-4.32	173.53	-4.32	100.00
150	4.25	30.84	-5.23	169.45	-5.23	100.00
155	4.79	32.50	-5.80	155.42	-5.80	100.00
160	4.08	34.96	-6.59	163.33	-6.59	100.00
165	3.17	37.27	-7.28	181.38	-7.28	100.00
170	3.21	38.30	-7.58	178.98	-7.58	100.00
175	3.39	38.78	-7.71	174.23	-7.71	100.00
180	2.95	39.44	-7.90	183.32	-7.90	100.00
185	2.55	39.62	-7.95	191.99	-7.95	100.00

COMSEARCH

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Coordination Values

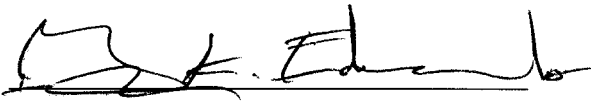
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Max Available RF Power -10.9 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz		Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	2.14	39.35	-7.87	201.33	-7.87	100.00
195	0.48	39.80	-8.00	263.76	-8.00	123.79
200	0.00	38.67	-7.68	300.44	-7.68	147.65
205	0.27	36.48	-7.05	295.75	-7.05	143.08
210	0.93	33.65	-6.18	245.42	-6.18	107.98
215	2.09	30.17	-4.99	213.86	-4.99	100.00
220	2.32	27.24	-3.88	214.22	-3.88	100.00
225	2.72	23.99	-2.50	212.58	-2.50	100.00
230	3.42	20.33	-0.70	206.90	-0.70	100.00
235	4.00	16.65	1.46	206.85	1.46	100.00
240	4.38	13.01	4.14	216.08	4.14	100.00
245	4.76	9.29	7.80	233.63	7.80	100.00
250	5.15	5.47	13.56	269.95	13.56	100.00
255	5.75	1.71	26.18	516.19	26.18	219.43
260	6.44	4.67	15.27	263.74	15.27	100.00
265	7.15	9.57	7.48	202.65	7.48	100.00
270	8.27	14.59	2.90	158.62	2.90	100.00
275	9.45	19.67	-0.34	131.69	-0.34	100.00
280	9.91	24.69	-2.81	116.84	-2.81	100.00
285	11.15	29.78	-4.85	100.00	-4.85	100.00
290	11.54	34.78	-6.53	100.00	-6.53	100.00
295	11.03	39.71	-7.97	100.00	-7.97	100.00
300	10.55	44.65	-9.25	100.00	-9.25	100.00
305	9.86	49.61	-10.00	100.00	-10.00	100.00
310	9.54	54.60	-10.00	100.00	-10.00	100.00
315	9.34	59.59	-10.00	100.00	-10.00	100.00
320	8.58	64.57	-10.00	100.00	-10.00	100.00
325	8.26	69.57	-10.00	101.46	-10.00	100.00
330	9.06	74.57	-10.00	100.00	-10.00	100.00
335	9.16	79.57	-10.00	100.00	-10.00	100.00
340	9.40	84.57	-10.00	100.00	-10.00	100.00
345	8.36	89.57	-10.00	100.63	-10.00	100.00
350	7.02	94.57	-10.00	114.17	-10.00	100.00
355	5.84	99.56	-10.00	126.73	-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: March 27, 2015

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
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FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Denali 20020, LLC
VERNON VALLEY, NJ
(WB81)
(S-A 11 meter)
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
March 28, 2015

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Kryptick Technologies
Lackawanna, County of
MONMOUTH, COUNTY OF
MVC Research. LLC
Mahwah Communications
Massachusetts Commonwealth of
Mifflin Mobilecom
Monroe County Control Center (PA)
Montgomery County Of
Morris, County of
Nassau County Police Department
National Tower Company LLC
NeXXCom Wireless LLC
New Cingular Wireless PCS LLC -NJ
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, State of -NJ Transit
New York Communications Co., Inc
New York, City of (Police Department)
Northeast Pennsylvania SMSA LTD Prtnrsh
Northeast Utilities Service Company
Northumberland, County of
Office of Emergency Telecom Services, NJ
Open Line Communications
Orange Poughkeepsie SMSA LTD Partnership
Orange and Rockland Utilities, Inc.
PEG Bandwidth, LLC
PSEG Services Corporation
Peco Energy Company
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Antenna Centerline (AGL): 5.49 m / 18.0 ft

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		Receive - FCC32	Transmit - FCC32		
Manufacturer		Scientific-Atlanta	Scientific-Atlanta		
Model		8007	8007		
Gain / Diameter		51.4 dBi / 11.0 m	55.0 dBi / 11.0 m		
3-dB / 15-dB Beamwidth		0.40° / 0.78°	0.26° / 0.54°		
Max Available RF Power	(dBW/4 kHz) (dBW/MHz)		(1) -1.8 (2) 2.7 (3) 6.9 22.2 26.7 30.9		
Maximum EIRP	(dBW/4 kHz) (dBW/MHz)		53.2 57.7 61.9 77.2 81.7 85.9		
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Max Available RF Power -1.8 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz		Transmit 6.1 GHz	
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20	2.50	82.42	-10.00	182.97	-10.00	100.00
25	2.87	77.42	-10.00	174.39	-10.00	100.00
30	3.02	72.43	-10.00	171.02	-10.00	100.00
35	1.69	67.46	-10.00	202.94	-10.00	102.69
40	0.62	62.51	-10.00	241.84	-10.00	136.06
45	0.00	57.56	-10.00	285.28	-10.00	174.16
50	0.00	52.59	-10.00	285.28	-10.00	174.16
55	0.00	47.62	-9.95	285.63	-9.95	174.37
60	0.00	42.66	-8.75	293.34	-8.75	179.00
65	0.00	37.71	-7.41	302.27	-7.41	184.17
70	0.00	32.77	-5.89	313.41	-5.89	190.04
75	1.06	27.69	-4.06	252.24	-4.06	136.68
80	1.79	22.65	-1.88	240.10	-1.88	127.01
85	1.91	17.70	0.80	253.77	0.80	133.93
90	2.22	12.74	4.37	269.97	4.37	139.81
95	2.47	7.87	9.60	305.21	9.60	157.14
100	2.76	3.38	18.77	691.15	18.77	424.66
105	2.82	3.47	18.50	512.61	18.50	292.16
110	2.67	7.20	10.56	307.31	10.56	157.29
115	2.47	10.89	6.07	275.90	6.07	141.47
120	2.98	14.02	3.33	241.65	3.33	123.04
125	2.85	17.50	0.92	229.06	0.92	116.06
130	3.48	20.29	-0.68	205.87	-0.68	100.00
135	3.59	23.31	-2.19	198.42	-2.19	100.00
140	4.35	25.63	-3.22	178.56	-3.22	100.00
145	4.30	28.36	-4.32	173.53	-4.32	100.00
150	4.25	30.84	-5.23	169.45	-5.23	100.00
155	4.79	32.50	-5.80	155.42	-5.80	100.00
160	4.08	34.96	-6.59	163.33	-6.59	100.00
165	3.17	37.27	-7.28	181.38	-7.28	100.00
170	3.21	38.30	-7.58	178.98	-7.58	100.00
175	3.39	38.78	-7.71	174.23	-7.71	100.00
180	2.95	39.44	-7.90	183.32	-7.90	100.00
185	2.55	39.62	-7.95	191.99	-7.95	100.00

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Coordination Values

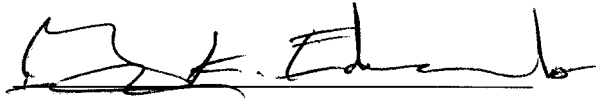
VERNON VLY, NJ

Licensee Name Denali 20020, LLC
Latitude (NAD 83) 41° 12' 6.3" N
Longitude (NAD 83) 74° 31' 34.6" W
Ground Elevation (AMSL) 182.88 m / 600.0 ft
Antenna Centerline (AGL) 5.49 m / 18.0 ft
Antenna Model Scientific-Atlanta 11 Meter
Antenna Mode Receive 4.0 GHz Transmit 6.1 GHz
Interference Objectives: Long Term -156.0 dBW/MHz 20% -154.0 dBW/4 kHz 20%
Short Term -146.0 dBW/MHz 0.01% -131.0 dBW/4 kHz 0.0025%
Max Available RF Power -1.8 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz		Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	2.14	39.35	-7.87	201.33	-7.87	100.00
195	0.48	39.80	-8.00	263.76	-8.00	150.83
200	0.00	38.67	-7.68	300.44	-7.68	183.12
205	0.27	36.48	-7.05	295.75	-7.05	178.24
210	0.93	33.65	-6.18	245.42	-6.18	134.04
215	2.09	30.17	-4.99	213.86	-4.99	109.21
220	2.32	27.24	-3.88	214.22	-3.88	108.50
225	2.72	23.99	-2.50	212.58	-2.50	105.85
230	3.42	20.33	-0.70	206.90	-0.70	100.00
235	4.00	16.65	1.46	206.85	1.46	100.00
240	4.38	13.01	4.14	216.08	4.14	102.56
245	4.76	9.29	7.80	233.63	7.80	111.23
250	5.15	5.47	13.56	269.95	13.56	129.40
255	5.75	1.71	26.18	511.00	26.18	286.72
260	6.44	4.67	15.27	263.74	15.27	123.20
265	7.15	9.57	7.48	202.65	7.48	100.00
270	8.27	14.59	2.90	158.62	2.90	100.00
275	9.45	19.67	-0.34	131.69	-0.34	100.00
280	9.91	24.69	-2.81	116.84	-2.81	100.00
285	11.15	29.78	-4.85	100.00	-4.85	100.00
290	11.54	34.78	-6.53	100.00	-6.53	100.00
295	11.03	39.71	-7.97	100.00	-7.97	100.00
300	10.55	44.65	-9.25	100.00	-9.25	100.00
305	9.86	49.61	-10.00	100.00	-10.00	100.00
310	9.54	54.60	-10.00	100.00	-10.00	100.00
315	9.34	59.59	-10.00	100.00	-10.00	100.00
320	8.58	64.57	-10.00	100.00	-10.00	100.00
325	8.26	69.57	-10.00	101.46	-10.00	100.00
330	9.06	74.57	-10.00	100.00	-10.00	100.00
335	9.16	79.57	-10.00	100.00	-10.00	100.00
340	9.40	84.57	-10.00	100.00	-10.00	100.00
345	8.36	89.57	-10.00	100.63	-10.00	100.00
350	7.02	94.57	-10.00	114.17	-10.00	100.00
355	5.84	99.56	-10.00	126.73	-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: March 28, 2015

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Earth Station Data Sheet

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

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Denali 20020, LLC
VERNON VALLEY, NJ
(WB81)
(Vertex 13.1 meter)
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
March 28, 2015

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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.

The following companies reported potential great circle interference conflicts that did not meet the objectives on a line-of-sight basis. When over-the-horizon losses are considered on the interfering paths, sufficient blockage exists to negate harmful interference from occurring with the proposed transmit-receive earth station.

Company

Auburn Data Systems, LLC
Eastern MLG LLC
High Voltage Communications LLC
Mahwah Communications
Orange and Rockland Utilities, Inc.
Orange Poughkeepsie SMSA LTD Partnership
Rendezvous Communications LLC
SCS Networks
SW Networks
Turtle Networks 6559

No other carriers reported potential interference cases.

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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 02/04/2015.

Company

256Q Networks
AB Services LLC
ALGONQUIN GAS TRANSMISSION, LLC
AT&T Corporation
AWC Networks
Allentown SMSA Limited Partnership
Atlantic City Electric Company
Auburn Data Systems, LLC
BFI Licenses, LLC
Beaver Springs Faith Baptist Church, Inc
Blueline Communications
Bucks County Dept. of Emergency Communic
CONSOLIDATED EDISON COMPANY OF NEW YORK
CTAB Holdings LLC
Capital Communications of America
Carbon, County of 911 Center
Cellco Partnership - (W-NY)
Cellco Partnership - CT, W-MA, VT
Cellco Partnership- PA Region
Cellco Prtnrshp - Phil. Tri-State Rgn
Central Hudson Gas & Electric Corp.
China Cat Productions LLC
City of New York
Commonwealth of Pennsylvania-Radio Proj.
Comprehensive Wireless LLC
Connecticut State Police Department
Conterra Ultra Broadband, LLC
Converge Towers LLC
Coral Reef Technologies Ltd
Coralinks
County of Burlington, Public Safety Cntr
County of Camden
County of Warren, NJ
Delaware County (PA) Emergency Services
Delmarva Power and Light Company
Direct Broadcast Services, Inc.
ECW Wireless, LLC
EG Broadcast Newco Corp
EMS OF NORTHEAST PENNSYLVANIA

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Eastern MLG LLC
Eastern Pennsylvania EMS Council
Electric Railroad, LLC
Essex County Sheriff's Office (NJ)
FELHC, INC
Firstlevel Networks
Fundamental Broadcasting LLC
Garden State Transmissions
Geodesic Networks LLC
Gloucester, County of
Goosetown Network Services, LLC
High Voltage Communications LLC
Highway Networks, LLC
Jefferson Microwave, LLC
Juniata County Emergency Services
Kryptick Technologies
Lackawanna, County of
MONMOUTH, COUNTY OF
MVC Research. LLC
Mahwah Communications
Massachusetts Commonwealth of
Mifflin Mobilecom
Monroe County Control Center (PA)
Montgomery County Of
Morris, County of
Nassau County Police Department
National Tower Company LLC
NeXXCom Wireless LLC
New Cingular Wireless PCS LLC -NJ
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, State of -NJ Transit
New York Communications Co., Inc
New York, City of (Police Department)
Northeast Pennsylvania SMSA LTD Prtnrsh
Northeast Utilities Service Company
Northumberland, County of
Office of Emergency Telecom Services, NJ
Open Line Communications
Orange Poughkeepsie SMSA LTD Partnership
Orange and Rockland Utilities, Inc.
PEG Bandwidth, LLC
PSEG Services Corporation
Peco Energy Company
Penn Service Microwave Co., Inc.
Pennsylvania Turnpike Commission
Pike, County of PA
Pitt Power
Port Authority of New York & New Jersey
Qoncept Holdings LLC
Rendezvous Communications LLC

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SCS Networks
SW Networks
Stevens Institute of Technology
Suffolk, County of
Texas Eastern Communications, LLC
Thought Transmissions, LLC
Transwave Communication Systems, Inc.
Turtle Networks 6559
Turtle Networks 6562
Velox Networks LLC
Verizon Wireless (VAW) LLC-Pennsylvania
Weblin Holdings LLC
White Rabbit Networks
Wireless Internetwork LLC
World Class Wireless, 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.

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Earth Station Data Sheet

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Date: 03/28/2015
Job Number: 150204COMSGE06

Administrative Information

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

Site Information

Venue Name: VERNON VALLEY, NJ
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): 182.88 m / 600.0 ft

Link Information

Satellite Type: Geostationary
Mode: TR - Transmit-Receive
Modulation: Analog and 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): 7.62 m / 25.0 ft

Antenna Information

		Receive - FCC32	Transmit - FCC32		
Manufacturer		Vertex	Vertex		
Model		13 KPC	13 KPC		
Gain / Diameter		53.5 dBi / 13.1 m	56.8 dBi / 13.1 m		
3-dB / 15-dB Beamwidth		0.38° / 0.80°	0.26° / 0.50°		
Max Available RF Power	(dBW/4 kHz) (dBW/MHz)		(1) -1.8 22.2	(2) 0.9 24.9	(3) 5.1 29.1
Maximum EIRP	(dBW/4 kHz) (dBW/MHz)		55.0 79.0	57.7 81.7	61.9 85.9
Interference Objectives:	Long Term Short Term	-156.0 dBW/MHz -144.0 dBW/MHz	20% 0.01%	-154.0 dBW/4 kHz 20% -131.0 dBW/4 kHz 0.0025%	

Frequency Information

Emission / Frequency Range (MHz)	Receive 4.0 GHz	Transmit 6.1 GHz
	215KG7D - 36M0F8W / 3700.0 - 4200.0	(1) 215KG7D - 36M0F8W / 5925.0 - 6425.0 (2) 215KG7D - 36M0F8W / 5925.0 - 6085.0 (3) 215KG7D - 36M0F8W / 6085.0 - 6125.0

Max Great Circle Coordination Distance: 697.1 km / 433.1 mi 444.4 km / 276.1 mi
Precipitation Scatter Contour Radius: 614.0 km / 381.5 mi 124.3 km / 77.2 mi

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Earth Station Data Sheet

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Coordination Values

VERNON VLY, 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) 182.88 m / 600.0 ft
Antenna Centerline (AGL) 7.62 m / 25.0 ft
Antenna Model Vertex 13.1 Meter
Antenna Mode Receive 4.0 GHz Transmit 6.1 GHz
Interference Objectives: Long Term -156.0 dBW/MHz 20% -154.0 dBW/4 kHz 20%
Short Term -144.0 dBW/MHz 0.01% -131.0 dBW/4 kHz 0.0025%
Max Available RF Power -1.8 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz		Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	4.60	102.41	-10.00	132.07	-10.00	100.00
5	3.35	97.41	-10.00	151.81	-10.00	100.00
10	2.56	92.41	-10.00	171.52	-10.00	100.00
15	1.60	87.42	-10.00	196.22	-10.00	104.94
20	2.46	82.42	-10.00	173.90	-10.00	100.00
25	2.82	77.42	-10.00	163.58	-10.00	100.00
30	2.96	72.43	-10.00	160.25	-10.00	100.00
35	1.66	67.46	-10.00	194.63	-10.00	103.51
40	0.60	62.51	-10.00	232.42	-10.00	137.29
45	0.00	57.56	-10.00	272.88	-10.00	174.16
50	0.00	52.59	-10.00	272.88	-10.00	174.16
55	0.00	47.62	-9.95	273.21	-9.95	174.37
60	0.00	42.66	-8.75	280.55	-8.75	179.00
65	0.00	37.71	-7.41	289.05	-7.41	184.17
70	0.00	32.77	-5.89	299.07	-5.89	190.04
75	1.04	27.69	-4.06	240.51	-4.06	137.13
80	1.78	22.65	-1.88	228.72	-1.88	127.43
85	1.89	17.70	0.80	241.04	0.80	133.13
90	2.20	12.75	4.36	255.88	4.36	140.24
95	2.45	7.88	9.59	288.87	9.59	157.58
100	2.73	3.40	18.71	697.06	18.71	444.38
105	2.79	3.48	18.45	505.02	18.45	302.67
110	2.65	7.22	10.54	291.08	10.54	157.71
115	2.45	10.91	6.05	261.15	6.05	141.89
120	2.95	14.04	3.32	229.08	3.32	123.45
125	2.81	17.53	0.91	218.02	0.91	116.73
130	3.44	20.32	-0.70	198.84	-0.70	100.00
135	3.55	23.34	-2.20	188.93	-2.20	100.00
140	4.31	25.66	-3.23	166.51	-3.23	100.00
145	4.26	28.40	-4.33	161.60	-4.33	100.00
150	4.20	30.88	-5.24	157.81	-5.24	100.00
155	4.75	32.54	-5.81	146.37	-5.81	100.00
160	4.04	34.99	-6.60	153.85	-6.60	100.00
165	3.14	37.29	-7.29	171.73	-7.29	100.00
170	3.18	38.33	-7.59	169.30	-7.59	100.00
175	3.36	38.81	-7.72	162.74	-7.72	100.00
180	2.92	39.47	-7.91	173.86	-7.91	100.00
185	2.51	39.65	-7.96	182.96	-7.96	100.00

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Coordination Values

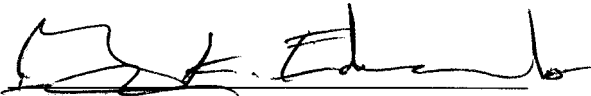
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Interference Objectives: Long Term -156.0 dBW/MHz 20% -154.0 dBW/4 kHz 20%
Short Term -144.0 dBW/MHz 0.01% -131.0 dBW/4 kHz 0.0025%
Max Available RF Power -1.8 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz		Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	2.11	39.38	-7.88	192.56	-7.88	100.00
195	0.47	39.82	-8.00	253.60	-8.00	152.45
200	0.00	38.67	-7.68	287.30	-7.68	183.12
205	0.25	36.50	-7.06	285.51	-7.06	180.70
210	0.81	33.76	-6.21	240.95	-6.21	139.68
215	1.97	30.27	-5.03	206.80	-5.03	111.70
220	2.18	27.35	-3.93	207.20	-3.93	111.18
225	2.50	24.15	-2.57	206.79	-2.57	109.73
230	3.21	20.50	-0.79	203.17	-0.79	102.94
235	3.79	16.81	1.36	202.39	1.36	100.73
240	4.15	13.18	4.00	207.44	4.00	105.16
245	4.47	9.48	7.57	223.54	7.57	114.19
250	4.86	5.67	13.17	256.21	13.17	131.10
255	5.32	2.13	23.81	496.27	23.81	293.12
260	6.01	4.77	15.03	253.10	15.03	126.92
265	6.93	9.58	7.47	193.37	7.47	100.00
270	8.06	14.58	2.90	149.47	2.90	100.00
275	9.28	19.65	-0.34	124.29	-0.34	100.00
280	9.70	24.67	-2.80	110.13	-2.80	100.00
285	10.94	29.76	-4.84	100.00	-4.84	100.00
290	11.33	34.76	-6.53	100.00	-6.53	100.00
295	10.82	39.69	-7.97	100.00	-7.97	100.00
300	10.34	44.64	-9.24	100.00	-9.24	100.00
305	9.65	49.60	-10.00	100.00	-10.00	100.00
310	9.37	54.59	-10.00	100.00	-10.00	100.00
315	9.17	59.58	-10.00	100.00	-10.00	100.00
320	8.36	64.57	-10.00	100.00	-10.00	100.00
325	7.65	69.57	-10.00	100.00	-10.00	100.00
330	8.92	74.57	-10.00	100.00	-10.00	100.00
335	9.02	79.57	-10.00	100.00	-10.00	100.00
340	9.28	84.57	-10.00	100.00	-10.00	100.00
345	8.25	89.57	-10.00	100.00	-10.00	100.00
350	6.92	94.57	-10.00	107.15	-10.00	100.00
355	5.76	99.56	-10.00	119.54	-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: 

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Senior Manager
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DATED: March 28, 2015