

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Denali 20020, LLC
BREWSTER, WA
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
June 17, 2010

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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

WASHINGTON STATE DOT
Time Warner Cable LLC
QWEST CORPORATION
Washington State Patrol
MULTI AGENCY COMMUNICATIONS CTR E911
Verizon Wireless (VAW) LLC - (WA)
VERIZON NORTHWEST INC.-FRONTIER

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 05/17/2010.

Company

AT&T COMMUNICATIONS OF PACIFIC NORTHWEST
BNSF Railway Company
Boeing Company
CenturyTel of Cowiche, Inc.
CenturyTel of Washington, Inc.
City of Seattle
City of Tacoma / Tacoma Public Utilities
Confederated Tribes of the Colville Res.
Eastern Sub-RSA Limited Partnership
Eastside Public Safety Com Agency
International Communications Group, Inc.
KING COUNTY DEPT OF TRANSPORTATION
King, County of
METROPOLITAN AREA NETWORKS, INC.
MTS Allstream Inc
MULTI AGENCY COMMUNICATIONS CTR E911
New Cingular Wireless PCS -AK,WA,OR, NID
Noel Communications, Inc
North East Washington Microwave
Northwest Microwave Inc.
PACIFIC WIRELESS SYSTEMS LLC
PIERCE, COUNTY OF
PUYALLUP, CITY OF
PocketiNet Communications Inc.
Puget Sound Energy
QWEST CORPORATION
SPOKANE COUNTY
Seattle SMSA Limited Partnership
Snohomish County Pub.Trans.Benefit Area
Sprint Communications Co., LP
Startouch, Inc.
TELUS COMMUNICATIONS,(B.C.)INC.
THURSTON, COUNTY OF
Tacoma, City of
Time Warner Cable LLC
USCOC of Richland, Inc.
Union Pacific Railroad Company
VERIZON NORTHWEST INC.-FRONTIER
Verizon Wireless (VAW) LLC - (WA)
WASHINGTON STATE - MILITARY DEPT

WASHINGTON STATE DOT
Washington RSA No. 8 Limited Partnership
Washington State Patrol
Western Sub-RSA LTD Partnership
Yakima MSA Limited Partnership

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: 06/17/2010
Job Number: 100517COMSGE03

Administrative Information

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

Site Information BREWSTER, WA

Venue Name
Latitude (NAD 83) 48° 8' 50.0" N
Longitude (NAD 83) 119° 41' 28.0" W
Climate Zone A
Rain Zone 5
Ground Elevation (AMSL) 377.0 m / 1236.9 ft

Link Information

Satellite Type Geostationary
Mode TR - Transmit-Receive
Modulation Digital
Satellite Arc 53° W to 186° West Longitude
Azimuth Range 107.8° to 251.9°
Corresponding Elevation Angles 6.7° / 6.9°
Antenna Centerline (AGL) 5.49 m / 18.0 ft

Antenna Information

Receive - FCC32

Transmit - FCC32

Manufacturer	Vertex	Vertex	
Model	11 Meter	11 Meter	
Gain / Diameter	51.9 dBi / 11.0 m	55.4 dBi / 11.0 m	
3-dB / 15-dB Beamwidth	0.90° / 1.80°	0.60° / 1.20°	
Max Available RF Power (dBW/4 kHz)		-0.5	
(dBW/MHz)		23.5	
Maximum EIRP (dBW/4 kHz)		54.9	
(dBW/MHz)		78.9	
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%

Frequency Information

Receive 4.0 GHz

Transmit 6.1 GHz

Emission / Frequency Range (MHz)	2M40G7D - 36M0G7F / 3700.0 - 4200.0 36M0F3F / 3700.0 - 4200.0	2M40G7D - 36M0G7F / 5925.0 - 6425.0 36M0F3F / 5925.0 - 6425.0
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Max Great Circle Coordination Distance 533.6 km / 331.6 mi 322.5 km / 200.4 mi
Precipitation Scatter Contour Radius 448.7 km / 278.8 mi 100.0 km / 62.1 mi

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Coordination Values

BREWSTER, WA

Licensee Name Denali 20020, LLC
Latitude (NAD 83) 48° 8' 50.0" N
Longitude (NAD 83) 119° 41' 28.0" W
Ground Elevation (AMSL) 377.0 m / 1236.9 ft
Antenna Centerline (AGL) 5.49 m / 18.0 ft
Antenna Model Vertex 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 -0.5 (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	1.14	107.71	-10.00	215.85	-10.00	120.50
5	1.07	102.73	-10.00	218.05	-10.00	122.38
10	0.72	97.75	-10.00	236.06	-10.00	135.60
15	1.36	92.78	-10.00	209.54	-10.00	114.95
20	1.67	87.80	-10.00	203.38	-10.00	107.03
25	0.60	82.84	-10.00	243.56	-10.00	141.63
30	0.58	77.87	-10.00	244.39	-10.00	142.31
35	0.74	72.89	-10.00	235.06	-10.00	134.82
40	1.22	67.90	-10.00	213.71	-10.00	118.64
45	1.56	62.91	-10.00	206.25	-10.00	109.72
50	1.61	57.94	-10.00	205.11	-10.00	108.65
55	1.89	52.95	-10.00	197.59	-10.00	101.72
60	1.82	47.98	-10.00	199.51	-10.00	103.47
65	2.15	42.99	-8.83	196.54	-8.83	100.00
70	2.18	38.02	-7.50	202.10	-7.50	103.11
75	2.44	33.04	-5.97	203.72	-5.97	103.33
80	2.63	28.06	-4.20	205.75	-4.20	105.96
85	2.60	23.14	-2.11	217.22	-2.11	114.22
90	2.78	18.20	0.50	228.25	0.50	120.79
95	2.91	13.33	3.88	247.10	3.88	130.90
100	2.85	8.67	8.54	285.00	8.54	149.77
105	2.46	5.05	14.41	348.66	14.41	189.81
110	2.24	4.95	14.63	484.61	14.63	284.46
115	2.22	7.96	9.47	311.93	9.47	170.65
120	2.63	10.68	6.29	273.00	6.29	144.47
125	2.74	13.52	3.72	250.75	3.72	133.53
130	1.82	17.09	1.18	259.70	1.18	141.61
135	1.10	20.37	-0.73	272.76	-0.73	153.83
140	0.46	23.44	-2.25	305.54	-2.25	184.17
145	0.32	25.90	-3.33	316.33	-3.33	193.48
150	0.00	28.30	-4.30	324.71	-4.30	201.11
155	0.00	30.17	-4.99	319.75	-4.99	198.46
160	0.00	31.76	-5.55	315.81	-5.55	196.33
165	0.00	33.03	-5.97	312.82	-5.97	194.70
170	0.00	33.96	-6.27	310.10	-6.27	193.55
175	0.00	34.52	-6.45	308.85	-6.45	192.86
180	0.00	34.71	-6.51	308.43	-6.51	192.63
185	0.00	34.52	-6.45	308.85	-6.45	192.86

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Coordination Values

BREWSTER, WA

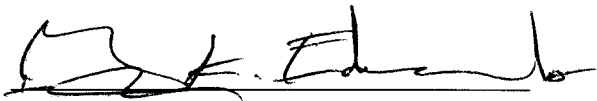
Licensee Name	Denali 20020, LLC		
Latitude (NAD 83)	48° 8' 50.0" N		
Longitude (NAD 83)	119° 41' 28.0" W		
Ground Elevation (AMSL)	377.0 m / 1236.9 ft		
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Antenna Model	Vertex 11 Meter		
Antenna Mode	Receive 4.0 GHz		Transmit 6.1 GHz
Interference Objectives: Long Term	-156.0 dBW/MHz	20%	-154.0 dBW/4 kHz
Short Term	-146.0 dBW/MHz	0.01%	-131.0 dBW/4 kHz
Max Available RF Power			-0.5 (dBW/4 kHz)
			20%
			0.0025%

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	0.00	33.96	-6.27	310.09	-6.27	193.55
195	0.00	33.03	-5.97	312.82	-5.97	194.70
200	0.00	31.76	-5.55	315.81	-5.55	196.33
205	0.00	30.18	-4.99	319.74	-4.99	198.45
210	0.00	28.30	-4.30	324.71	-4.30	201.11
215	0.00	26.18	-3.45	330.84	-3.45	204.33
220	0.00	23.84	-2.43	338.31	-2.43	206.60
225	0.00	21.29	-1.20	347.46	-1.20	211.43
230	0.00	18.59	0.27	358.68	0.27	217.48
235	0.00	15.73	2.08	372.78	2.08	225.26
240	0.00	12.76	4.35	390.35	4.35	235.57
245	0.42	9.38	7.70	390.23	7.70	229.42
250	0.40	6.78	11.22	533.64	11.22	322.49
255	2.08	5.74	13.02	348.16	13.02	191.75
260	1.65	9.65	7.38	315.27	7.38	176.36
265	2.54	13.80	3.50	254.57	3.50	135.17
270	3.12	18.48	0.33	219.14	0.33	113.78
275	3.28	23.37	-2.22	204.50	-2.22	101.09
280	3.32	28.31	-4.30	193.21	-4.30	100.00
285	3.10	33.30	-6.06	189.20	-6.06	100.00
290	2.80	38.29	-7.58	188.26	-7.58	100.00
295	1.54	43.37	-8.93	209.31	-8.93	113.51
300	2.01	48.29	-10.00	194.28	-10.00	100.00
305	2.18	53.25	-10.00	190.45	-10.00	100.00
310	1.84	58.24	-10.00	198.86	-10.00	102.87
315	2.17	63.20	-10.00	190.71	-10.00	100.00
320	2.19	68.18	-10.00	190.14	-10.00	100.00
325	1.97	73.17	-10.00	195.21	-10.00	100.00
330	2.05	78.15	-10.00	193.39	-10.00	100.00
335	1.63	83.13	-10.00	204.49	-10.00	108.06
340	1.18	88.11	-10.00	214.85	-10.00	119.64
345	0.47	93.08	-10.00	252.75	-10.00	149.17
350	0.00	98.04	-10.00	285.28	-10.00	179.20
355	0.00	103.00	-10.00	285.28	-10.00	179.20

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: June 17, 2010