

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
March 08, 2019

TABLE OF CONTENTS

1. CONCLUSIONS	3
2. SUMMARY OF RESULTS	4
3. SUPPLEMENTAL SHOWING	5
4. EARTH STATION COORDINATION DATA.....	6
5. CERTIFICATION.....	10

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-only earth station.

Company

<Companies Responding with Cases>

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 01/17/2019.

Company

Avista Corporation
BNSF Railway Company
Bookbinder, LLC
Chelan County PUD #1
Inland Cellular LLC
Kittcom
Multi Agency Communications Center
New Cingular Wireless PCS LLC-Washington
Nextel License Holdings 4 Inc.
Noel Communications, Inc.
Northwest Pipeline GP
Pick Two LLC
Public Utility Dist #2 of Grant County
Puget Sound Energy, Inc
Rivercom 911
USCOC of Richland, Inc.
Verizon Wireless (VAW) LLC - (WA)
Washington State of Dept of Transportat
Washington, State of
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: 03/08/2019
Job Number: 190117COMSGE01

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' 49.9" N
Longitude (NAD 83) 119° 41' 44.5" W
Climate Zone A
Rain Zone 5
Ground Elevation (AMSL) 385.35 m / 1264.3 ft

Link Information

Satellite Type Geostationary
Mode TO - Transmit-Only
Modulation Digital
Satellite Arc 125° W to 125° West Longitude
Azimuth Range 187.1° to 187.1°
Corresponding Elevation Angles 34.5° / 34.5°
Antenna Centerline (AGL) 5.49 m / 18.0 ft

Antenna Information Transmit - FCC32

Manufacturer General Dynamics
Model 11.1 meter
Gain / Diameter 55.5 dBi / 11.1 m
3-dB / 15-dB Beamwidth 0.50° / 1.00°

Max Available RF Power (dBW/4 kHz) -5.8
(dBW/MHz) 18.2

Maximum EIRP (dBW/4 kHz) 49.7
(dBW/MHz) 73.7

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) 20M5G7D / 6608.58
20M5G7D / 6659.73

Max Great Circle Coordination Distance 172.4 km / 107.1 mi
Precipitation Scatter Contour Radius 100.0 km / 62.1 mi

COMSEARCH

Earth Station Data Sheet

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

Coordination Values	BREWSTER, WA
Licensee Name	Denali 20020, LLC
Latitude (NAD 83)	48° 8' 49.9" N
Longitude (NAD 83)	119° 41' 44.5" W
Ground Elevation (AMSL)	385.35 m / 1264.3 ft
Antenna Centerline (AGL)	5.49 m / 18.0 ft
Antenna Model	General Dynamics 11.1 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	-5.8 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 6.7 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	0.33	145.21	-10.00	144.45
5	1.00	146.47	-10.00	108.59
10	0.45	145.87	-10.00	133.97
15	0.85	145.57	-10.00	114.98
20	1.64	144.99	-10.00	100.00
25	0.76	142.34	-10.00	119.15
30	0.37	139.71	-10.00	140.34
35	0.61	137.21	-10.00	126.18
40	0.92	134.40	-10.00	112.23
45	0.88	131.10	-10.00	113.81
50	1.51	127.92	-10.00	100.00
55	1.43	124.20	-10.00	100.00
60	1.71	120.48	-10.00	100.00
65	1.84	116.59	-10.00	100.00
70	1.95	112.59	-10.00	100.00
75	2.10	108.53	-10.00	100.00
80	2.43	104.44	-10.00	100.00
85	2.44	100.24	-10.00	100.00
90	2.55	96.02	-10.00	100.00
95	2.72	91.79	-10.00	100.00
100	2.54	87.54	-10.00	100.00
105	2.22	83.33	-10.00	100.00
110	2.10	79.13	-10.00	100.00
115	1.86	75.00	-10.00	100.00
120	2.02	70.83	-10.00	100.00
125	1.75	66.82	-10.00	100.00
130	1.07	63.04	-10.00	106.71
135	0.65	59.32	-10.00	124.26
140	0.36	55.70	-10.00	141.62
145	0.00	52.29	-10.00	157.27
150	0.00	48.89	-10.00	157.27
155	0.00	45.70	-9.50	159.10
160	0.00	42.79	-8.78	161.76
165	0.00	40.20	-8.11	164.35
170	0.00	38.01	-7.50	168.33
175	0.00	36.29	-6.99	170.29
180	0.00	35.11	-6.63	171.69
185	0.00	34.53	-6.45	172.39

COMSEARCH

Earth Station Data Sheet

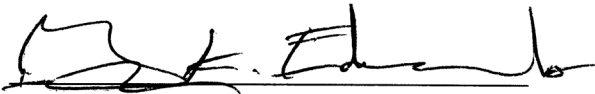
19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5500 <http://www.comsearch.com>

Coordination Values	BREWSTER, WA
Licensee Name	Denali 20020, LLC
Latitude (NAD 83)	48° 8' 49.9" N
Longitude (NAD 83)	119° 41' 44.5" W
Ground Elevation (AMSL)	385.35 m / 1264.3 ft
Antenna Centerline (AGL)	5.49 m / 18.0 ft
Antenna Model	General Dynamics 11.1 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	-5.8 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 6.7 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	34.58	-6.47	172.33
195	0.00	35.26	-6.68	171.51
200	0.00	36.52	-7.06	170.02
205	0.00	38.32	-7.59	167.98
210	0.00	40.59	-8.21	163.95
215	0.00	43.23	-8.89	161.34
220	0.00	46.20	-9.61	158.67
225	0.00	49.42	-10.00	157.27
230	0.00	52.85	-10.00	157.27
235	0.00	56.45	-10.00	157.27
240	0.00	60.18	-10.00	157.27
245	0.46	63.86	-10.00	133.49
250	1.93	67.41	-10.00	100.00
255	3.02	71.28	-10.00	100.00
260	2.12	75.62	-10.00	100.00
265	2.96	79.70	-10.00	100.00
270	3.72	83.90	-10.00	100.00
275	3.83	88.19	-10.00	100.00
280	3.45	92.48	-10.00	100.00
285	3.34	96.75	-10.00	100.00
290	3.38	101.02	-10.00	100.00
295	2.22	105.06	-10.00	100.00
300	1.66	109.09	-10.00	100.00
305	2.49	113.38	-10.00	100.00
310	2.18	117.33	-10.00	100.00
315	1.89	121.17	-10.00	100.00
320	1.59	124.86	-10.00	100.00
325	1.80	128.65	-10.00	100.00
330	2.30	132.46	-10.00	100.00
335	2.09	135.67	-10.00	100.00
340	1.92	138.62	-10.00	100.00
345	1.47	140.99	-10.00	100.00
350	0.63	142.55	-10.00	125.16
355	0.00	143.71	-10.00	157.27

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 08, 2019