

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Intelsat License LLC
BREWSTER, WA
(Brewster C3 and C4)
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
September 28, 2020

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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

Cellco Partnership - Washington
Frontier Communications Northwest Inc.
New Cingular Wireless PCS LLC-Washington
Washington State of Dept of Transportat
Inland Cellular LLC
Noel Communications, Inc.

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 08/19/2020.

Company

AT&T Mobility Spectrum LLC - ID, MT, WY
AT&T Mobility Spectrum LLC - Washington
Accel Net, Inc.
Avista Corporation
BNSF Railway Company
Bearclaw, LLC
Benton County Emergency Services
Boeing Company
Bookbinder, LLC
Brigadier, LLC
Capstar TX LLC
Cascade Natural Gas Corporation
Cellco Partnership - Washington
CenturyTel of Cowiche, Inc.
CenturyTel of Washington, Inc.
Chelan County PUD #1
City of Tacoma / Tacoma Public Utilities
Columbia Rural Electric Association, Inc
Community Transit Snohomish County PTBA
Computer 5, Inc.
Confluence Health
Eastside Public Safety Com Agency
EcliptixNet Broadband, Inc.
Franklin County Sheriff
Frontier Communications Northwest Inc.
Inland Cellular LLC
International Communications Group, Inc.
King County DOT Metro Transit Division
King, County of
Kittcom
Kootenai, County of
McDaniel Cellular Telephone Company
Multi Agency Communications Center
NCI Datacom, Inc.
New Cingular Wireless PCS - ID, WY
New Cingular Wireless PCS LLC-Washington
New Cingular Wireless PCS, LLC (NY)
Nextel West Corporation
Noel Communications, Inc.
Northwest Pipeline GP

Olympic Wireless, LLC
Oregon RSA #2, Inc.
PacifiCorp
Pick Two LLC
Pierce County
Public Util Dist. #1 of Snohomish County
Puget Sound Energy, Inc
Puyallup, City of
Qwest Corporation
RSN Wireless, LLC
Seattle City Light
Seattle SMSA Limited Partnership
Seattle, City of
Shoshone Medical Center
Snohomish County Emergency Radio System
Spokane Regional Emergency Communication
Sprint Spectrum L.P.
Startouch, Inc.
State of Idaho
Stevens County Sheriff's Office
T-Mobile License LLC
USCOC of Richland, Inc.
Union Pacific Railroad Company
Verizon Wireless (VAW) LLC - (WA)
Verizon Wireless (VAW) LLC - Idaho
Washington State of Dept of Transportat
Washington, State of
Western Sub-RSA LTD Partnership
Wired or Wireless, Inc.
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: 09/28/2020
Job Number: 200819COMSGE04

Administrative Information

Status ENGINEER PROPOSAL
Call Sign
Licensee Code INTELS
Licensee Name Intelsat License LLC

Site Information BREWSTER, WA

Venue Name
Latitude (NAD 83) 48° 8' 46.1" N
Longitude (NAD 83) 119° 41' 45.0" W
Climate Zone A
Rain Zone 5
Ground Elevation (AMSL) 383.88 m / 1259.5 ft

Link Information

Satellite Type Geostationary
Mode TR - Transmit-Receive
Modulation Digital
Satellite Arc 53° W to 180° West Longitude
Azimuth Range 107.8° to 247.0°
Corresponding Elevation Angles 6.7° / 10.8°
Antenna Centerline (AGL) 5.49 m / 18.0 ft

Antenna Information

	Receive - FCC32	Transmit - FCC32
Manufacturer	CPI Sat	CPI Sat
Model	13.1KPC	13.1KPC
Gain / Diameter	53.0 dBi / 13.1 m	56.6 dBi / 13.1 m
3-dB / 15-dB Beamwidth	0.38° / 0.76°	0.26° / 0.52°
Max Available RF Power (dBW/4 kHz) (dBW/MHz)		5.4 29.4
Maximum EIRP (dBW/4 kHz) (dBW/MHz)		62.0 86.0
Interference Objectives:	Long Term -156.0 dBW/MHz 20% Short Term -146.0 dBW/MHz 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)	56K0G7W - 72M0G7W / 3600.0 - 4200.0 500KG9D - 1M50G9D / 3600.0 - 4200.0	64K0G7W - 72M0G7W / 5850.0 - 6425.0 1M00F9D - 1M50F9D / 5850.0 - 6425.0
Max Great Circle Coordination Distance	494.3 km / 307.1 mi	339.1 km / 210.7 mi
Precipitation Scatter Contour Radius	448.7 km / 278.8 mi	120.4 km / 74.8 mi

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
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Coordination Values

BREWSTER, WA

Licensee Name Intelsat License LLC
Latitude (NAD 83) 48° 8' 46.1" N
Longitude (NAD 83) 119° 41' 45.0" W
Ground Elevation (AMSL) 383.88 m / 1259.5 ft
Antenna Centerline (AGL) 5.49 m / 18.0 ft
Antenna Model CPI Sat 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 -146.0 dBW/MHz 0.01% -131.0 dBW/4 kHz 0.0025%
Max Available RF Power 5.4 (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	0.00	107.67	-10.00	285.28	-10.00	201.86
5	0.71	102.72	-10.00	236.61	-10.00	158.03
10	0.46	97.75	-10.00	254.64	-10.00	176.43
15	0.90	92.78	-10.00	225.62	-10.00	147.78
20	1.66	87.80	-10.00	203.78	-10.00	127.06
25	0.74	82.83	-10.00	234.60	-10.00	156.15
30	0.39	77.87	-10.00	261.83	-10.00	182.76
35	0.62	72.89	-10.00	241.91	-10.00	163.05
40	0.95	67.91	-10.00	222.77	-10.00	145.15
45	0.95	62.94	-10.00	222.89	-10.00	145.26
50	1.44	57.94	-10.00	207.34	-10.00	132.50
55	1.31	52.98	-10.00	210.93	-10.00	134.44
60	1.65	47.99	-10.00	203.88	-10.00	127.15
65	1.91	43.00	-8.84	202.30	-8.84	125.06
70	2.00	38.04	-7.50	206.11	-7.50	127.83
75	2.25	33.05	-5.98	205.35	-5.98	128.52
80	2.48	28.08	-4.21	208.89	-4.21	130.83
85	2.42	23.16	-2.12	221.39	-2.12	138.56
90	2.62	18.23	0.48	231.89	0.48	145.05
95	2.71	13.38	3.84	252.36	3.84	158.67
100	2.51	8.82	8.36	293.60	8.36	187.88
105	2.24	5.23	14.03	352.25	14.03	220.58
110	2.10	5.07	14.37	494.26	14.37	339.06
115	1.96	8.18	9.19	318.83	9.19	204.46
120	2.05	11.15	5.82	286.71	5.82	186.26
125	1.70	14.37	3.06	277.83	3.06	182.61
130	1.11	17.68	0.81	283.50	0.81	189.58
135	0.63	20.77	-0.94	300.67	-0.94	204.16
140	0.37	23.52	-2.28	317.26	-2.28	215.38
145	0.00	26.18	-3.45	330.83	-3.45	226.89
150	0.00	28.31	-4.30	324.71	-4.30	223.17
155	0.00	30.17	-4.99	319.75	-4.99	220.18
160	0.00	31.76	-5.55	315.81	-5.55	217.82
165	0.00	33.03	-5.97	312.82	-5.97	216.05
170	0.00	33.96	-6.27	310.09	-6.27	214.81
175	0.00	34.52	-6.45	308.85	-6.45	214.07
180	0.00	34.71	-6.51	308.43	-6.51	213.82
185	0.00	34.52	-6.45	308.84	-6.45	214.07

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Coordination Values

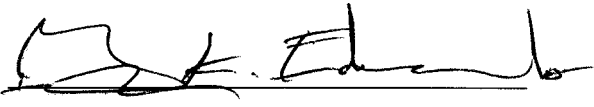
BREWSTER, WA

Licensee Name: Intelsat License LLC
Latitude (NAD 83): 48° 8' 46.1" N
Longitude (NAD 83): 119° 41' 45.0" W
Ground Elevation (AMSL): 383.88 m / 1259.5 ft
Antenna Centerline (AGL): 5.49 m / 18.0 ft
Antenna Model: CPI Sat 13.1 meter
Antenna Mode: Receive 4.0 GHz
Interference Objectives: Long Term: -156.0 dBW/MHz 20% Transmit 6.1 GHz: -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: 5.4 (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	0.00	33.96	-6.27	310.09	-6.27	214.80
195	0.00	33.03	-5.97	312.82	-5.97	216.05
200	0.00	31.76	-5.55	315.81	-5.55	217.83
205	0.00	30.18	-4.99	319.74	-4.99	220.17
210	0.00	28.31	-4.30	324.71	-4.30	223.17
215	0.00	26.18	-3.45	330.84	-3.45	226.90
220	0.00	23.84	-2.43	338.31	-2.43	231.49
225	0.00	21.29	-1.20	347.46	-1.20	237.19
230	0.00	18.59	0.27	358.68	0.27	244.29
235	0.00	15.73	2.08	372.77	2.08	252.74
240	0.00	12.80	4.32	390.08	4.32	264.72
245	0.42	10.53	6.44	380.23	6.44	252.68
250	1.77	9.48	7.58	311.78	7.58	202.22
255	3.18	11.02	5.95	255.31	5.95	158.68
260	2.26	15.50	2.24	253.31	2.24	161.33
265	2.43	19.79	-0.41	231.14	-0.41	145.28
270	3.18	24.17	-2.58	204.82	-2.58	124.04
275	3.64	28.84	-4.50	185.57	-4.50	108.67
280	3.72	33.68	-6.18	174.95	-6.18	100.63
285	3.44	38.61	-7.67	173.47	-7.67	100.00
290	3.45	43.51	-8.97	164.70	-8.97	100.00
295	2.91	48.50	-10.00	173.62	-10.00	101.10
300	1.67	53.56	-10.00	203.49	-10.00	126.80
305	2.24	58.41	-10.00	189.06	-10.00	114.00
310	2.53	63.32	-10.00	182.40	-10.00	108.33
315	1.80	68.30	-10.00	199.94	-10.00	123.57
320	1.43	73.25	-10.00	207.54	-10.00	132.68
325	1.70	78.17	-10.00	202.50	-10.00	125.90
330	1.97	83.10	-10.00	195.41	-10.00	119.53
335	2.18	88.04	-10.00	190.36	-10.00	115.12
340	1.83	92.98	-10.00	199.19	-10.00	122.90
345	1.54	97.91	-10.00	204.44	-10.00	129.86
350	0.79	102.82	-10.00	231.65	-10.00	153.38
355	0.00	107.69	-10.00	285.28	-10.00	201.86

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: September 28, 2020

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
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BREWSTER, WA
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Satellite Earth Station

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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.

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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.

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Bookbinder, LLC
Brigadier, LLC
Capstar TX LLC
Cascade Natural Gas Corporation
Cellco Partnership - Washington
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CenturyTel of Washington, Inc.
Chelan County PUD #1
City of Tacoma / Tacoma Public Utilities
Columbia Rural Electric Association, Inc
Community Transit Snohomish County PTBA
Computer 5, Inc.
Confluence Health
Eastside Public Safety Com Agency
EcliptixNet Broadband, Inc.
Franklin County Sheriff
Frontier Communications Northwest Inc.
Inland Cellular LLC
International Communications Group, Inc.
King County DOT Metro Transit Division
King, County of
Kittcom
Kootenai, County of
McDaniel Cellular Telephone Company
Multi Agency Communications Center
NCI Datacom, Inc.
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New Cingular Wireless PCS LLC-Washington
New Cingular Wireless PCS, LLC (NY)
Nextel West Corporation
Noel Communications, Inc.

Northwest Pipeline GP
Olympic Wireless, LLC
Oregon RSA #2, Inc.
PacifiCorp
Pick Two LLC
Pierce County
Public Util Dist. #1 of Snohomish County
Puget Sound Energy, Inc
Puyallup, City of
Qwest Corporation
RCC Minnesota, Inc - Washington/Oregon
RSN Wireless, LLC
Seattle City Light
Seattle SMSA Limited Partnership
Seattle, City of
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Snohomish County Emergency Radio System
Spokane Regional Emergency Communication
Sprint Spectrum L.P.
Startouch, Inc.
State of Idaho
Stevens County Sheriff's Office
T-Mobile License LLC
Thurston 9-1-1 Communications
USCOC of Richland, Inc.
Union Pacific Railroad Company
United Telephone Co. of the Northwest
Verizon Wireless (VAW) LLC - (WA)
Verizon Wireless (VAW) LLC - Idaho
Verizon Wireless (VAW) LLC -CO/ID/MT/WY
Verizon Wireless (VAW) LLC-Portland, OR
Washington State Military Dept, Emerg. M
Washington State of Dept of Transportat
Washington, State of
Western Sub-RSA LTD Partnership
Whitman County Emergency Management
Whitman County Fire District #11
Wired or Wireless, Inc.
Yakima MSA Limited Partnership

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Date: 09/28/2020
Job Number: 200819COMSGE05

Administrative Information

Status ENGINEER PROPOSAL
Call Sign
Licensee Code INTELS
Licensee Name Intelsat License LLC

Site Information BREWSTER, WA

Venue Name
Latitude (NAD 83) 48° 8' 46.1" N
Longitude (NAD 83) 119° 41' 45.0" W
Climate Zone A
Rain Zone 5
Ground Elevation (AMSL) 383.88 m / 1259.5 ft

Link Information

Satellite Type Geostationary
Mode TR - Transmit-Receive
Modulation Digital
Satellite Arc 53° W to 180° West Longitude
Azimuth Range 107.8° to 247.0°
Corresponding Elevation Angles 6.7° / 10.8°
Antenna Centerline (AGL) 4.88 m / 16.0 ft

Antenna Information

		Receive - FCC32	Transmit - FCC32		
Manufacturer		CPI Sat	CPI Sat		
Model		7.3KXC	7.3KXC		
Gain / Diameter		48.1 dBi / 7.3 m	51.8 dBi / 7.3 m		
3-dB / 15-dB Beamwidth		0.70° / 1.30°	0.50° / 1.00°		
Max Available RF Power	(dBW/4 kHz) (dBW/MHz)		10.2 34.2		
Maximum EIRP	(dBW/4 kHz) (dBW/MHz)		62.0 86.0		
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)	56K0G7W - 72M0G7W / 3600.0 - 4200.0 500KG9D - 1M50G9D / 3600.0 - 4200.0	64K0G7W - 72M0G7W / 5850.0 - 6425.0 1M00F9D - 1M50F9D / 5850.0 - 6425.0
Max Great Circle Coordination Distance	461.8 km / 286.9 mi	353.6 km / 219.7 mi
Precipitation Scatter Contour Radius	448.7 km / 278.8 mi	222.3 km / 138.1 mi

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Coordination Values

BREWSTER, WA

Licensee Name	Intelsat License LLC		
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Longitude (NAD 83)	119° 41' 45.0" W		
Ground Elevation (AMSL)	383.88 m / 1259.5 ft		
Antenna Centerline (AGL)	4.88 m / 16.0 ft		
Antenna Model	CPI Sat 7.3 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	10.2 (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	0.00	107.67	-10.00	285.28	-10.00	219.29
5	0.71	102.72	-10.00	236.34	-10.00	181.00
10	0.46	97.75	-10.00	254.11	-10.00	196.38
15	0.91	92.78	-10.00	225.35	-10.00	170.35
20	1.66	87.80	-10.00	203.64	-10.00	143.73
25	0.75	82.83	-10.00	234.29	-10.00	179.08
30	0.40	77.87	-10.00	261.11	-10.00	202.03
35	0.63	72.89	-10.00	241.50	-10.00	185.69
40	0.96	67.91	-10.00	222.53	-10.00	165.83
45	0.96	62.94	-10.00	222.65	-10.00	165.96
50	1.44	57.94	-10.00	207.22	-10.00	149.89
55	1.31	52.98	-10.00	210.81	-10.00	153.63
60	1.66	47.99	-10.00	203.76	-10.00	143.84
65	1.92	43.00	-8.84	202.16	-8.84	141.92
70	2.00	38.04	-7.50	206.00	-7.50	145.05
75	2.26	33.05	-5.98	205.25	-5.98	145.85
80	2.49	28.08	-4.21	208.80	-4.21	148.42
85	2.43	23.16	-2.12	221.29	-2.12	159.58
90	2.63	18.23	0.48	231.77	0.48	169.62
95	2.71	13.38	3.84	252.24	3.84	184.60
100	2.51	8.82	8.36	293.48	8.36	209.70
105	2.24	5.23	14.04	352.18	14.04	248.13
110	2.10	5.07	14.38	461.80	14.38	353.56
115	1.96	8.17	9.19	318.70	9.19	227.10
120	2.05	11.14	5.82	286.60	5.82	207.46
125	1.70	14.37	3.06	277.69	3.06	205.30
130	1.11	17.68	0.82	283.34	0.82	209.78
135	0.63	20.77	-0.93	300.37	-0.93	224.00
140	0.37	23.51	-2.28	316.61	-2.28	237.22
145	0.00	26.18	-3.45	330.83	-3.45	249.02
150	0.00	28.31	-4.30	324.71	-4.30	245.43
155	0.00	30.17	-4.99	319.75	-4.99	242.04
160	0.00	31.76	-5.55	315.81	-5.55	239.36
165	0.00	33.03	-5.97	312.82	-5.97	237.35
170	0.00	33.96	-6.27	310.09	-6.27	235.93
175	0.00	34.52	-6.45	308.85	-6.45	235.09
180	0.00	34.71	-6.51	308.43	-6.51	234.81
185	0.00	34.52	-6.45	308.84	-6.45	235.09

COMSEARCH

Earth Station Data Sheet

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

Coordination Values

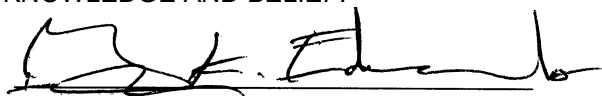
BREWSTER, WA

Licensee Name: Intelsat License LLC
Latitude (NAD 83): 48° 8' 46.1" N
Longitude (NAD 83): 119° 41' 45.0" W
Ground Elevation (AMSL): 383.88 m / 1259.5 ft
Antenna Centerline (AGL): 4.88 m / 16.0 ft
Antenna Model: CPI Sat 7.3 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: 10.2 (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	0.00	33.96	-6.27	310.09	-6.27	235.93
195	0.00	33.03	-5.97	312.82	-5.97	237.34
200	0.00	31.76	-5.55	315.81	-5.55	239.37
205	0.00	30.18	-4.99	319.74	-4.99	242.03
210	0.00	28.31	-4.30	324.71	-4.30	245.43
215	0.00	26.18	-3.45	330.84	-3.45	249.02
220	0.00	23.84	-2.43	338.31	-2.43	254.24
225	0.00	21.29	-1.20	347.46	-1.20	260.76
230	0.00	18.59	0.27	358.68	0.27	268.94
235	0.00	15.73	2.08	372.77	2.08	279.48
240	0.00	12.80	4.32	390.08	4.32	293.29
245	0.42	10.52	6.45	379.71	6.45	280.49
250	1.77	9.48	7.58	311.65	7.58	224.13
255	3.18	11.01	5.95	255.21	5.95	184.80
260	2.27	15.50	2.24	253.20	2.24	187.02
265	2.45	19.78	-0.41	230.80	-0.41	169.36
270	3.19	24.16	-2.58	204.55	-2.58	140.94
275	3.65	28.83	-4.50	185.28	-4.50	126.40
280	3.73	33.67	-6.18	174.65	-6.18	118.63
285	3.45	38.61	-7.67	173.16	-7.67	118.12
290	3.46	43.51	-8.97	164.41	-8.97	113.15
295	2.92	48.50	-10.00	173.33	-10.00	118.89
300	1.67	53.56	-10.00	203.38	-10.00	143.46
305	2.25	58.41	-10.00	188.85	-10.00	131.54
310	2.53	63.32	-10.00	182.27	-10.00	126.09
315	1.80	68.30	-10.00	199.82	-10.00	139.98
320	1.44	73.25	-10.00	207.36	-10.00	150.03
325	1.71	78.17	-10.00	202.35	-10.00	142.44
330	1.97	83.10	-10.00	195.25	-10.00	135.78
335	2.22	88.04	-10.00	189.56	-10.00	132.13
340	1.86	92.98	-10.00	198.24	-10.00	138.50
345	1.56	97.91	-10.00	206.31	-10.00	146.45
350	0.81	102.82	-10.00	230.90	-10.00	175.85
355	0.00	107.69	-10.00	285.28	-10.00	219.29

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: September 28, 2020