FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
EchoStar Corporation
CHEYENNE, WY
(E080120)
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
August 29, 2012

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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.

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 08/09/2012.

Company
ACS Communications
BOARD OF PUBLIC UTILITIES
City of Cheyenne
Clearwire Spectrum Holdings III, LLC
Eagle-Net Alliance
LP Broadband, Inc.
Laurence Brett Glass
Millhouse Electronics Inc
State of Colorado
Thompson School District
Verizon Wireless (VAW) LLC -CO/ID/MT/WY
WELD COUNTY COLORADO

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:	08/09/2012
Job Number:	<PCNJobCode>

Administrative Information	
Status	ENGINEER PROPOSAL
Call Sign	<PCNCallSign>
Licensee Code	ZECHOS
Licensee Name	EchoStar Corporation

Site Information	**CHEYENNE, WY**
Venue Name	
Latitude (NAD 83)	41° 7' 54.4" N
Longitude (NAD 83)	104° 44' 13.0" W
Climate Zone	A
Rain Zone	2
Ground Elevation (AMSL)	1810.51 m / 5940.0 ft

Link Information	
Satellite Type	Geostationary
Mode	TR - Transmit-Receive
Modulation	Digital
Satellite Arc	42° W to 148° West Longitude
Azimuth Range	108.7° to 235.0°
Corresponding Elevation Angles	11.7° / 25.4°
Antenna Centerline (AGL)	5.49 m / 18.0 ft

Antenna Information		**Receive - FCC32**		**Transmit - FCC32**
Manufacturer		Vertex		Vertex
Model		9 Meter		9 Meter
Gain / Diameter		58.6 dBi / 9.0 m		62.9 dBi / 9.0 m
3-dB / 15-dB Beamwidth		0.20° / 0.40°		0.05° / 0.15°
Max Available RF Power	(dBW/4 kHz)			-7.8
	(dBW/MHz)			16.2
Maximum EIRP	(dBW/4 kHz)			55.1
	(dBW/MHz)			79.1
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 12.2 GHz**	**Transmit 17.3 GHz**
Emission / Frequency Range (MHz)	800KG2D - 24M0G1W / 12200.0 - 12700.0	800KG2D - 24M0G1W / 17300.0 - 17800.0
Max Great Circle Coordination Distance	303.8 km / 188.7 mi	184.2 km / 114.5 mi
Precipitation Scatter Contour Radius	520.2 km / 323.2 mi	100.0 km / 62.1 mi

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Coordination Values	**CHEYENNE, WY**		
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Max Available RF Power		-7.8 (dBW/4 kHz)	

			Receive 12.2 GHz		Transmit 17.3 GHz	
Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.82	108.38	-10.00	186.72	-10.00	100.00
5	0.86	103.48	-10.00	184.41	-10.00	100.00
10	0.84	98.57	-10.00	185.71	-10.00	100.00
15	0.79	93.66	-10.00	188.31	-10.00	100.00
20	0.82	88.75	-10.00	186.91	-10.00	100.00
25	0.81	83.84	-10.00	187.21	-10.00	100.00
30	0.85	78.93	-10.00	185.23	-10.00	100.00
35	0.74	74.03	-10.00	190.64	-10.00	100.00
40	0.72	69.13	-10.00	192.05	-10.00	100.00
45	0.65	64.25	-10.00	195.26	-10.00	101.59
50	0.66	59.37	-10.00	195.00	-10.00	101.37
55	0.55	54.51	-10.00	200.54	-10.00	106.29
60	0.43	49.68	-10.00	205.83	-10.00	113.35
65	0.39	44.87	-9.30	212.42	-9.30	118.53
70	0.34	40.10	-8.08	221.82	-8.08	125.33
75	0.32	35.37	-6.72	229.92	-6.72	130.57
80	0.36	30.70	-5.18	233.41	-5.18	130.46
85	0.42	26.12	-3.42	236.19	-3.42	130.72
90	0.41	21.74	-1.43	247.29	-1.43	137.05
95	0.00	17.94	0.65	280.28	0.65	166.69
100	0.00	14.53	2.94	292.96	2.94	175.39
105	0.00	12.24	4.81	300.96	4.81	182.48
110	0.00	11.73	5.26	303.79	5.26	184.21
115	0.30	12.96	4.19	288.86	4.19	169.22
120	0.45	15.85	2.00	262.06	2.00	145.33
125	0.54	19.21	-0.09	242.73	-0.09	131.95
130	0.65	22.43	-1.77	228.18	-1.77	123.47
135	0.66	25.60	-3.20	220.95	-3.20	119.13
140	0.77	28.51	-4.37	210.36	-4.37	111.21
145	0.68	31.37	-5.41	210.18	-5.41	112.24
150	0.76	33.86	-6.24	202.92	-6.24	106.56
155	0.85	36.04	-6.92	198.17	-6.92	100.75
160	0.84	37.98	-7.49	196.34	-7.49	100.00
165	0.80	39.58	-7.94	196.35	-7.94	100.31
170	0.85	40.67	-8.23	192.62	-8.23	100.00
175	0.91	41.32	-8.40	189.09	-8.40	100.00
180	1.02	41.45	-8.44	183.76	-8.44	100.00
185	1.12	41.11	-8.35	181.07	-8.35	100.00

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			Receive 12.2 GHz		Transmit 17.3 GHz	
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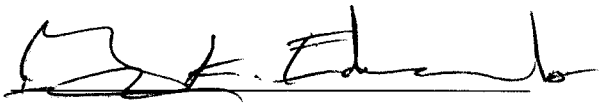
190	1.10	40.44	-8.17	182.52	-8.17	100.00
195	1.15	39.25	-7.85	182.50	-7.85	100.00
200	1.18	37.67	-7.40	183.46	-7.40	100.00
205	1.18	35.75	-6.83	186.04	-6.83	100.00
210	1.01	33.65	-6.17	194.15	-6.17	100.00
215	1.08	31.05	-5.30	195.76	-5.30	100.00
220	1.13	28.33	-4.30	198.79	-4.30	100.00
225	1.06	26.23	-3.47	204.19	-3.47	102.22
230	0.77	25.12	-3.00	216.34	-3.00	114.90
235	0.83	24.58	-2.76	214.21	-2.76	112.74
240	1.03	24.85	-2.88	205.06	-2.88	104.58
245	0.66	26.57	-3.61	219.36	-3.61	118.24
250	0.62	28.70	-4.45	217.11	-4.45	117.27
255	0.78	31.30	-5.39	205.49	-5.39	107.92
260	0.85	34.45	-6.43	200.33	-6.43	102.14
265	1.08	37.87	-7.46	186.45	-7.46	100.00
270	1.08	41.69	-8.50	181.59	-8.50	100.00
275	1.27	45.61	-9.48	170.97	-9.48	100.00
280	1.48	49.70	-10.00	158.91	-10.00	100.00
285	1.33	54.03	-10.00	163.66	-10.00	100.00
290	1.24	58.41	-10.00	169.41	-10.00	100.00
295	1.10	62.85	-10.00	173.76	-10.00	100.00
300	0.94	67.34	-10.00	180.45	-10.00	100.00
305	1.02	71.81	-10.00	176.54	-10.00	100.00
310	0.75	76.35	-10.00	190.20	-10.00	100.00
315	0.70	80.88	-10.00	192.82	-10.00	100.00
320	0.60	85.42	-10.00	198.09	-10.00	104.09
325	0.59	89.96	-10.00	198.40	-10.00	104.36
330	0.66	94.50	-10.00	194.76	-10.00	101.16
335	0.76	99.04	-10.00	190.04	-10.00	100.00
340	0.92	103.58	-10.00	181.70	-10.00	100.00
345	0.81	108.08	-10.00	187.03	-10.00	100.00
350	0.80	112.55	-10.00	187.56	-10.00	100.00
355	0.88	113.28	-10.00	183.74	-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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DATED: August 29, 2012