

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
EchoStar Corporation
MUSTANG RIDGE, TX
(13.2 Meter)
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
January 10, 2013

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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-only earth station.

Company

Clearwire Spectrum Holdings III, LLC
FiberTower Network Services Corp.

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 12/19/2012.

Company

AirCanopy Internet Services, Inc.
Airband Communications Inc
Cibolo, TX Police Dept
City of Bee Cave
Clearwire Spectrum Holdings II, LLC
Clearwire Spectrum Holdings III, LLC
Clearwire Spectrum Holdings LLC
ENTERPRISE PRODUCTS OPERATING LLC
Electronic Corporate Pages, Inc.
FiberTower Network Services Corp.
Fixed Wireless Holdings, LLC
Guadalupe Valley Electric Cooperative
KVUE TV Inc.
KXAN INC
La Vernia Holdings, Inc.
MULTITECHNOLOGY SERVICES LP
NW Communications of Austin, Inc.
Netspend Corporation
New Cingular Wireless PCS LLC - N Texas
New Cingular Wireless PCS LLC - S Texas
Nextlink Wireless, LLC
Randolph Brooks Federal Credit Union
San Antonio Water System
Sprint Spectrum, LP
T-Mobile License LLC
TXWI NET LLC
Texas Broadband, Inc
UNIVERSITY OF TX HEALTH SCIENCE CENTER
Verizon Wireless (VAW) LLC-Central Texas
Verizon Wireless Texas LLC - Houston GC
West Central Wireless
Zeecon Wireless Internet LLC

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: 12/19/2012
Job Number: <PCNJobCode>

Administrative Information

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

Site Information

MUSTANG RIDGE, TX
Venue Name
Latitude (NAD 83) 30° 0' 34.6" N
Longitude (NAD 83) 97° 41' 8.3" 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 44° W to 148° West Longitude
Azimuth Range 110.2° to 247.5°
Corresponding Elevation Angles 22.8° / 25.7°
Antenna Centerline (AGL) 7.92 m / 26.0 ft

Antenna Information

		Receive - FCC32		Transmit - FCC32	
Manufacturer		General Dynamics		General Dynamics	
Model		13.2 Meter		13.2 Meter	
Gain / Diameter		62.0 dBi / 13.2 m		65.0 dBi / 13.2 m	
3-dB / 15-dB Beamwidth		0.09° / 0.18°		0.06° / 0.12°	
Max Available RF Power	(dBW/4 kHz) (dBW/MHz)			-3.0 21.0	
Maximum EIRP	(dBW/4 kHz) (dBW/MHz)			62.0 86.0	
Interference Objectives:	Long Term Short Term	-156.0 dBW/MHz -146.0 dBW/MHz	20% 0.01%	-151.0 dBW/4 kHz -128.0 dBW/4 kHz	20% 0.0025%

Frequency Information

	Receive 12.2 GHz	Transmit 17.3 GHz
Emission / Frequency Range (MHz)	800KG2D - 24M0G7W / 12200.0 - 12700.0	800KG2D - 24M0G7W / 17300.0 - 17800.0
Max Great Circle Coordination Distance	266.3 km / 165.5 mi	175.0 km / 108.7 mi
Precipitation Scatter Contour Radius	488.1 km / 303.3 mi	100.0 km / 62.1 mi

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Coordination Values

MUSTANG RIDGE, TX

Licensee Name EchoStar Corporation
Latitude (NAD 83) 30° 0' 34.6" N
Longitude (NAD 83) 97° 41' 8.3" W
Ground Elevation (AMSL) 182.88 m / 600.0 ft
Antenna Centerline (AGL) 7.92 m / 26.0 ft
Antenna Model General Dynamics 13.2 Meter
Antenna Mode Receive 12.2 GHz Transmit 17.3 GHz
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%
Max Available RF Power -3.0 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 12.2 GHz		Transmit 17.3 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	108.54	-10.00	227.19	-10.00	144.38
5	0.00	103.97	-10.00	227.19	-10.00	144.38
10	0.00	99.38	-10.00	227.19	-10.00	144.38
15	0.00	94.78	-10.00	227.19	-10.00	144.38
20	0.00	90.17	-10.00	227.19	-10.00	144.38
25	0.00	85.56	-10.00	227.19	-10.00	144.38
30	0.00	80.96	-10.00	227.19	-10.00	144.38
35	0.00	76.37	-10.00	227.19	-10.00	144.38
40	0.00	71.80	-10.00	227.19	-10.00	144.38
45	0.00	67.25	-10.00	227.19	-10.00	144.38
50	0.00	62.73	-10.00	227.19	-10.00	144.38
55	0.00	58.25	-10.00	227.19	-10.00	144.38
60	0.00	53.84	-10.00	227.19	-10.00	144.38
65	0.00	49.49	-10.00	227.19	-10.00	144.38
70	0.00	45.25	-9.39	229.86	-9.39	146.36
75	0.00	41.13	-8.35	234.51	-8.35	149.83
80	0.00	37.19	-7.26	239.56	-7.26	153.63
85	0.00	33.49	-6.12	245.49	-6.12	157.74
90	0.00	30.12	-4.97	251.11	-4.97	163.56
95	0.00	27.20	-3.86	256.62	-3.86	167.77
100	0.00	24.90	-2.90	261.50	-2.90	171.42
105	0.00	23.39	-2.23	264.99	-2.23	173.99
110	0.00	22.84	-1.97	266.33	-1.97	174.97
115	0.00	23.32	-2.19	265.17	-2.19	174.12
120	0.00	24.76	-2.84	261.82	-2.84	171.65
125	0.00	27.01	-3.79	257.02	-3.79	168.06
130	0.26	29.69	-4.82	245.39	-4.82	156.02
135	0.30	33.03	-5.97	235.08	-5.97	147.73
140	0.32	36.70	-7.12	228.66	-7.12	142.82
145	0.26	40.31	-8.14	229.95	-8.14	145.15
150	0.00	43.83	-9.04	231.40	-9.04	147.51
155	0.00	46.90	-9.78	228.15	-9.78	145.09
160	0.00	49.61	-10.00	227.19	-10.00	144.38
165	0.00	51.87	-10.00	227.19	-10.00	144.38
170	0.21	53.39	-10.00	225.85	-10.00	143.09
175	0.22	54.44	-10.00	225.45	-10.00	142.70
180	0.00	55.02	-10.00	227.19	-10.00	144.38
185	0.00	54.65	-10.00	227.19	-10.00	144.38

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Coordination Values

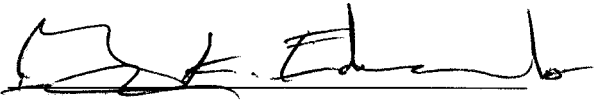
MUSTANG RIDGE, TX

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Antenna Model	General Dynamics 13.2 Meter			
Antenna Mode	Receive 12.2 GHz		Transmit 17.3 GHz	
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%
Max Available RF Power			-3.0 (dBW/4 kHz)	

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 12.2 GHz		Transmit 17.3 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	0.23	53.37	-10.00	224.58	-10.00	141.87
195	0.00	51.87	-10.00	227.19	-10.00	144.38
200	0.00	49.61	-10.00	227.19	-10.00	144.38
205	0.00	46.90	-9.78	228.15	-9.78	145.09
210	0.00	43.83	-9.04	231.40	-9.04	147.51
215	0.00	40.47	-8.18	235.31	-8.18	150.43
220	0.00	36.94	-7.19	239.91	-7.19	153.90
225	0.00	33.65	-6.17	245.24	-6.17	157.55
230	0.00	30.77	-5.20	249.97	-5.20	161.18
235	0.00	28.41	-4.34	254.25	-4.34	165.97
240	0.00	26.73	-3.67	257.58	-3.67	168.49
245	0.00	25.85	-3.31	259.42	-3.31	169.87
250	0.00	25.86	-3.32	259.40	-3.32	169.85
255	0.00	26.75	-3.68	257.54	-3.68	168.45
260	0.00	28.45	-4.35	254.19	-4.35	165.92
265	0.00	30.81	-5.22	249.90	-5.22	161.13
270	0.00	33.70	-6.19	245.16	-6.19	157.49
275	0.00	37.00	-7.20	239.83	-7.20	153.84
280	0.00	40.59	-8.21	235.16	-8.21	150.32
285	0.00	44.42	-9.19	230.75	-9.19	147.02
290	0.00	48.42	-10.00	227.19	-10.00	144.38
295	0.00	52.55	-10.00	227.19	-10.00	144.38
300	0.36	56.67	-10.00	212.27	-10.00	130.44
305	0.34	61.00	-10.00	214.30	-10.00	132.28
310	0.34	65.39	-10.00	214.22	-10.00	132.20
315	0.29	69.82	-10.00	218.67	-10.00	136.28
320	0.27	74.28	-10.00	219.96	-10.00	137.49
325	0.24	78.77	-10.00	223.00	-10.00	140.36
330	0.23	83.27	-10.00	224.03	-10.00	141.34
335	0.27	87.78	-10.00	220.23	-10.00	137.75
340	0.23	92.29	-10.00	224.26	-10.00	141.56
345	0.00	96.79	-10.00	227.19	-10.00	144.38
350	0.00	101.28	-10.00	227.19	-10.00	144.38
355	0.00	105.75	-10.00	227.19	-10.00	144.38

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: January 10, 2013