

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Shell Communications Inc
MC 809 URSA, GM
(E060231)
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
January 07, 2016

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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 12/15/2015.

Company

ENERGY XXI LLC

Infrastructure Networks, Inc.

RigNet SatCom, Inc.

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: 01/07/2016
Job Number: 151215COMSGE05

Administrative Information

Status ENGINEER PROPOSAL
Call Sign E060231
Licensee Code S00876
Licensee Name Shell Communications Inc

Site Information MC 809 URSA, GM

Venue Name
Latitude (NAD 83) 28° 9' 22.8" N
Longitude (NAD 83) 89° 6' 19.8" W
Climate Zone A
Rain Zone 1
Ground Elevation (AMSL) 0.0 m / 0.0 ft

Link Information

Satellite Type Geostationary
Mode TR - Transmit-Receive
Modulation Digital
Satellite Arc 60° W to 143° West Longitude
Azimuth Range 130.3° to 251.0°
Corresponding Elevation Angles 44.2° / 23.3°
Antenna Centerline (AGL) 60.96 m / 200.0 ft

Antenna Information

		Receive - FCC32		Transmit - FCC32	
Manufacturer		SeaTel		SeaTel	
Model		9797		9797	
Gain / Diameter		38.5 dBi / 2.4 m		41.7 dBi / 2.4 m	
3-dB / 15-dB Beamwidth		1.00° / 2.00°		1.20° / 2.40°	
Max Available RF Power	(dBW/4 kHz) (dBW/MHz)			-19.6 4.4	
Maximum EIRP	(dBW/4 kHz) (dBW/MHz)			22.1 46.1	
Interference Objectives:	Long Term	-156.0 dBW/MHz	20%	-151.8 dBW/4 kHz	20%
	Short Term	-146.0 dBW/MHz	0.01%	-130.8 dBW/4 kHz	0.0025%

Frequency Information

	Receive 4.0 GHz	Transmit 6.1 GHz
Emission / Frequency Range (MHz)	1M81G7W - 4M30G7W / 3700.0 - 4200.0	1M81G7W - 4M30G7W / 5925.0 - 6425.0
Max Great Circle Coordination Distance	340.0 km / 211.2 mi	137.1 km / 85.2 mi
Precipitation Scatter Contour Radius	572.0 km / 355.4 mi	100.0 km / 62.1 mi

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Coordination Values

MC 809 URSA, GM

Licensee Name Shell Communications Inc
Latitude (NAD 83) 28° 9' 22.8" N
Longitude (NAD 83) 89° 6' 19.8" W
Ground Elevation (AMSL) 0.0 m / 0.0 ft
Antenna Centerline (AGL) 60.96 m / 200.0 ft
Antenna Model SeaTel 2.4 Meter
Antenna Mode Receive 4.0 GHz Transmit 6.1 GHz
Interference Objectives: Long Term -156.0 dBW/MHz 20% -151.8 dBW/4 kHz 20%
Short Term -146.0 dBW/MHz 0.01% -130.8 dBW/4 kHz 0.0025%
Max Available RF Power -19.6 (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	107.39	-10.00	285.28	-10.00	117.58
5	0.00	111.93	-10.00	285.28	-10.00	117.58
10	0.00	111.21	-10.00	285.28	-10.00	117.58
15	0.00	107.85	-10.00	285.28	-10.00	117.58
20	0.00	104.40	-10.00	285.28	-10.00	117.58
25	0.00	100.90	-10.00	285.28	-10.00	117.58
30	0.00	97.36	-10.00	285.28	-10.00	117.58
35	0.00	93.79	-10.00	285.28	-10.00	117.58
40	0.00	90.21	-10.00	285.28	-10.00	117.58
45	0.00	86.62	-10.00	285.28	-10.00	117.58
50	0.00	83.05	-10.00	285.28	-10.00	117.58
55	0.00	79.50	-10.00	285.28	-10.00	117.58
60	0.00	76.00	-10.00	285.28	-10.00	117.58
65	0.00	72.55	-10.00	285.28	-10.00	117.58
70	0.00	69.17	-10.00	285.28	-10.00	117.58
75	0.00	65.89	-10.00	285.28	-10.00	117.58
80	0.00	62.72	-10.00	285.28	-10.00	117.58
85	0.00	59.68	-10.00	285.28	-10.00	117.58
90	0.00	56.82	-10.00	285.28	-10.00	117.58
95	0.00	54.15	-10.00	285.28	-10.00	117.58
100	0.00	51.72	-10.00	285.28	-10.00	117.58
105	0.00	49.56	-10.00	285.28	-10.00	117.58
110	0.00	47.71	-9.96	285.51	-9.96	117.67
115	0.00	46.21	-9.62	287.72	-9.62	118.57
120	0.00	45.10	-9.35	289.42	-9.35	119.25
125	0.00	44.41	-9.19	290.51	-9.19	119.68
130	0.00	44.16	-9.12	290.91	-9.12	119.84
135	0.00	44.35	-9.17	290.59	-9.17	119.71
140	0.00	45.00	-9.33	289.58	-9.33	119.31
145	0.00	46.06	-9.58	287.95	-9.58	118.66
150	0.00	47.51	-9.92	285.79	-9.92	117.79
155	0.00	49.33	-10.00	285.28	-10.00	117.58
160	0.00	51.46	-10.00	285.28	-10.00	117.58
165	0.00	53.76	-10.00	285.28	-10.00	117.58
170	0.00	55.59	-10.00	285.28	-10.00	117.58
175	0.00	56.74	-10.00	285.28	-10.00	117.58
180	0.00	57.14	-10.00	285.28	-10.00	117.58
185	0.00	56.74	-10.00	285.28	-10.00	117.58

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Coordination Values

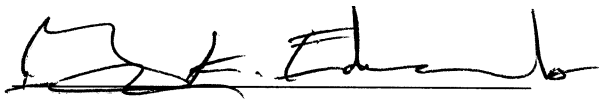
MC 809 URSA, GM

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Antenna Model	SeaTel 2.4 Meter			
Antenna Mode	Receive 4.0 GHz	Transmit 6.1 GHz		
Interference Objectives: Long Term	-156.0 dBW/MHz	20%	-151.8 dBW/4 kHz	20%
Short Term	-146.0 dBW/MHz	0.01%	-130.8 dBW/4 kHz	0.0025%
Max Available RF Power			-19.6 (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	55.59	-10.00	285.28	-10.00	117.58
195	0.00	53.76	-10.00	285.28	-10.00	117.58
200	0.00	51.36	-10.00	285.28	-10.00	117.58
205	0.00	48.51	-10.00	285.28	-10.00	117.58
210	0.00	45.29	-9.40	289.12	-9.40	119.13
215	0.00	41.80	-8.53	294.81	-8.53	121.39
220	0.00	38.08	-7.52	301.55	-7.52	124.03
225	0.00	34.38	-6.41	309.17	-6.41	126.96
230	0.00	30.99	-5.28	317.70	-5.28	129.95
235	0.00	28.03	-4.19	325.48	-4.19	132.87
240	0.00	25.65	-3.23	332.45	-3.23	134.23
245	0.00	24.04	-2.52	337.63	-2.52	136.20
250	0.00	23.34	-2.20	340.00	-2.20	137.12
255	0.00	23.64	-2.34	338.97	-2.34	136.72
260	0.00	24.90	-2.91	334.81	-2.91	135.12
265	0.00	26.99	-3.78	328.43	-3.78	133.97
270	0.00	29.74	-4.83	320.87	-4.83	131.15
275	0.00	32.97	-5.95	312.96	-5.95	128.16
280	0.00	36.56	-7.08	304.56	-7.08	125.19
285	0.00	40.41	-8.16	297.23	-8.16	122.34
290	0.00	44.46	-9.20	290.42	-9.20	119.65
295	0.00	48.65	-10.00	285.28	-10.00	117.58
300	0.00	52.95	-10.00	285.28	-10.00	117.58
305	0.00	57.33	-10.00	285.28	-10.00	117.58
310	0.00	61.77	-10.00	285.28	-10.00	117.58
315	0.00	66.26	-10.00	285.28	-10.00	117.58
320	0.00	70.78	-10.00	285.28	-10.00	117.58
325	0.00	75.33	-10.00	285.28	-10.00	117.58
330	0.00	79.90	-10.00	285.28	-10.00	117.58
335	0.00	84.49	-10.00	285.28	-10.00	117.58
340	0.00	89.08	-10.00	285.28	-10.00	117.58
345	0.00	93.67	-10.00	285.28	-10.00	117.58
350	0.00	98.25	-10.00	285.28	-10.00	117.58
355	0.00	102.83	-10.00	285.28	-10.00	117.58

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 07, 2016