

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for

Microspace Communications Corporation
Auburn, North Carolina
(Call Sign: E920645)

Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, Virginia 20147
August 20, 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.

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

Alltel Communications LLC – North Carolina
Cellco Partnership – North Carolina
North Carolina State of, State Highway Patrol
USCOC of North Carolina RSA#7, 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.

Expedited coordination data for this earth station was emailed and sent to the below listed carriers with a letter dated July 11, 2012.

Company

Alltel Communications LLC-North Carolina
Alltel Communications of NC, LP
Bellsouth Telecommunications, Inc.
Burlington, City of
Cellco Partnership - North Carolina
Cellco Partnership-Newark-Dallas Verizon
City of Durham, NC
Conterra Ultra Broadband, LLC
Duke Energy Business Services, LLC
Duke Energy Carolinas LLC
GREENSBORO CITY
HARRIS CORPORATION
HIGH POINT, CITY OF
Johnston County 911 Communications
Lenoir County Emergency Management
National Radio Astronomy Observatory
New Cingular Wireless PCS LLC - VA
New Cingular Wireless PCS LLC- WV/NC/SC
Norfolk Southern Railway
North Carolina State Highway Patrol
PITTSYLVANIA COUNTY
UNIVERSITY OF NORTH CAROLINA
USCOC of North Carolina RSA #7, Inc.
USCOC of South Carolina RSA 4, Inc.
Verizon Wireless (VAW) LLC-NC,SC, TN
Verizon Wireless VAW LLC-Southern VA

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: 08/20/2012
Job Number: 120711COMSJC06

Administrative Information

Status ENGINEER PROPOSAL
Call Sign E920645
Licensee Code P5306
Licensee Name Microspace Communications Corporation

Site Information AUBURN, NORTH CAROLINA

Venue Name
Latitude (NAD 83) 35° 40' 27.6" N
Longitude (NAD 83) 78° 32' 9.0" W
Climate Zone A
Rain Zone 1
Ground Elevation (AMSL) 88.39 m / 290.0 ft

Link Information

Satellite Type Geostationary
Mode TR - Transmit-Receive
Modulation Digital
Satellite Arc 40° W to 143° West Longitude
Azimuth Range 126.2° to 254.4°
Corresponding Elevation Angles 32.1° / 12.0°
Antenna Centerline (AGL) 4.88 m / 16.0 ft

Antenna Information

	Receive	Transmit
Manufacturer	RSI	RSI
Model	920C	920C
Gain / Diameter	50.0 dBi / 9.2 m	53.0 dBi / 9.2 m
3-dB / 15-dB Beamwidth	0.52° / 1.06°	0.36° / 0.76°
Max Available RF Power (dBW/4 kHz)		-10.8
(dBW/MHz)		13.2
Maximum EIRP (dBW/4 kHz)		42.20
(dBW/MHz)		66.20
(dBW)		81.75
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)	36M0G7W / 3700.0 - 4200.0	36M0G7W / 5925.0 - 6425.0
Max Great Circle Coordination Distance	377.2 km / 234.4 mi	183.6 km / 114.1 mi
Precipitation Scatter Contour Radius	614.4 km / 381.7 mi	100.0 km / 62.1 mi

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Coordination Values

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Ground Elevation (AMSL) 88.39 m / 290.0 ft
Antenna Centerline (AGL) 4.88 m / 16.0 ft
Antenna Model RSI 920C
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 -10.8 (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	1.17	105.29	-10.00	215.01	-10.00	100.00
5	1.30	110.20	-10.00	211.30	-10.00	100.00
10	1.47	112.34	-10.00	206.49	-10.00	100.00
15	1.80	108.21	-10.00	200.03	-10.00	100.00
20	1.98	103.98	-10.00	195.07	-10.00	100.00
25	2.40	99.73	-10.00	185.27	-10.00	100.00
30	2.44	95.40	-10.00	184.53	-10.00	100.00
35	2.58	91.06	-10.00	181.16	-10.00	100.00
40	2.61	86.71	-10.00	180.42	-10.00	100.00
45	2.63	82.36	-10.00	180.14	-10.00	100.00
50	2.68	78.02	-10.00	178.83	-10.00	100.00
55	2.61	73.72	-10.00	180.50	-10.00	100.00
60	2.49	69.47	-10.00	183.31	-10.00	100.00
65	2.20	65.32	-10.00	189.91	-10.00	100.00
70	1.63	61.36	-10.00	204.40	-10.00	100.00
75	1.00	57.56	-10.00	220.43	-10.00	100.00
80	1.30	53.53	-10.00	211.25	-10.00	100.00
85	1.40	49.69	-10.00	208.39	-10.00	100.00
90	1.40	46.07	-9.59	210.42	-9.59	100.00
95	1.28	42.73	-8.77	217.69	-8.77	100.00
100	1.43	39.49	-7.91	217.52	-7.91	100.00
105	1.55	36.59	-7.09	218.27	-7.09	100.00
110	1.43	34.31	-6.39	225.65	-6.39	100.00
115	1.27	32.61	-5.83	234.00	-5.83	100.00
120	1.01	31.63	-5.50	244.72	-5.50	106.71
125	0.64	31.47	-5.45	268.54	-5.45	123.44
130	0.62	31.68	-5.52	269.77	-5.52	124.39
135	0.60	32.57	-5.82	268.53	-5.82	124.02
140	0.69	34.01	-6.29	259.94	-6.29	118.77
145	0.50	36.25	-6.98	267.99	-6.98	125.43
150	0.35	38.90	-7.75	280.53	-7.75	133.84
155	0.27	41.60	-8.48	285.74	-8.48	138.59
160	0.00	44.12	-9.12	290.96	-9.12	143.38
165	0.00	46.01	-9.57	288.02	-9.57	141.97
170	0.00	47.42	-9.90	285.92	-9.90	140.97
175	0.00	48.29	-10.00	285.28	-10.00	140.66
180	0.21	48.38	-10.00	284.16	-10.00	139.86

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Max Available RF Power -10.8 (dBW/4 kHz)

Azimuth (°)	Receive 4.0 GHz		Transmit 6.1 GHz			
	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
185	0.28	48.02	-10.00	275.65	-10.00	133.93
190	0.31	47.12	-9.83	272.45	-9.83	132.78
195	0.35	45.69	-9.50	269.40	-9.50	130.22
200	0.40	43.79	-9.03	267.32	-9.03	128.11
205	0.39	41.51	-8.45	271.12	-8.45	129.82
210	0.46	38.82	-7.73	268.06	-7.73	126.61
215	0.47	35.88	-6.87	272.22	-6.87	128.16
220	0.56	32.65	-5.85	271.67	-5.85	126.20
225	0.56	29.28	-4.66	278.98	-4.66	129.27
230	0.43	25.84	-3.31	301.43	-3.31	140.87
235	0.47	22.15	-1.63	309.09	-1.63	143.17
240	0.53	18.35	0.41	318.95	0.41	145.71
245	0.33	14.95	2.63	359.71	2.63	174.30
250	0.32	12.47	4.60	377.25	4.60	183.59
255	0.41	11.59	5.39	372.22	5.39	177.60
260	0.33	12.90	4.23	372.33	4.23	180.59
265	0.24	15.76	2.06	367.33	2.06	181.80
270	0.00	19.56	-0.29	354.42	-0.29	176.93
275	0.26	23.55	-2.30	331.04	-2.30	160.71
280	0.37	27.93	-4.15	303.01	-4.15	143.52
285	0.24	32.54	-5.81	307.46	-5.81	149.87
290	0.28	37.21	-7.27	292.49	-7.27	141.40
295	0.26	41.95	-8.57	286.78	-8.57	139.47
300	0.35	46.72	-9.74	268.69	-9.74	130.09
305	0.26	51.55	-10.00	277.54	-10.00	135.22
310	0.23	56.39	-10.00	281.62	-10.00	138.05
315	0.00	61.27	-10.00	285.28	-10.00	140.66
320	0.25	66.11	-10.00	279.21	-10.00	136.38
325	0.33	70.99	-10.00	269.67	-10.00	131.14
330	0.33	75.87	-10.00	268.93	-10.00	130.63
335	0.35	80.77	-10.00	267.08	-10.00	129.37
340	0.40	85.66	-10.00	261.12	-10.00	125.26
345	0.51	90.56	-10.00	249.33	-10.00	116.98
350	0.58	95.46	-10.00	244.63	-10.00	113.56
355	0.81	100.37	-10.00	230.71	-10.00	103.02

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.



Jeffrey E. Cowles
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COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, Va. 20147

DATED: August 20, 2012