

**EXHIBIT A**

# **FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT**

Prepared for

**Microspace Communications Corporation  
Auburn, North Carolina  
(Call Sign: E900889)**

**Satellite Earth Station**

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

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  
Duke Energy Business Services, LLC  
North Carolina State of, State Hwy Patrol  
USCOC of North Carolina RSA #7

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 a minor revision to this earth station's license was emailed and sent to the below listed carriers with a letter dated July 10, 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  
City of High Point  
Conterra Ultra Broadband, LLC  
Duke Energy Business Services, LLC  
Duke Energy Carolinas LLC  
GREENSBORO CITY  
HARRIS CORPORATION  
Johnston County 911 Communications  
Lenoir County Emergency Management  
National Radio Astronomy Observatory  
New Cingular Wireless PCS LLC- WV/NC/SC  
Norfolk Southern Railway  
North Carolina State Highway Patrol  
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

## **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: 07/29/2012  
Job Number: 120710COMSJC04

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### Administrative Information

Status ENGINEER PROPOSAL  
Call Sign E900889  
Licensee Code P5306  
Licensee Name Microspace Communications Corporation

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### Site Information AUBURN, NORTH CAROLINA

Venue Name  
Latitude (NAD 83) 35° 40' 27.6" N  
Longitude (NAD 83) 78° 32' 7.0" W  
Climate Zone A  
Rain Zone 1  
Ground Elevation (AMSL) 88.39 m / 290.0 ft

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### Link Information

Satellite Type Geostationary  
Mode TR - Transmit-Receive  
Modulation Digital  
Satellite Arc 62° W to 143° West Longitude  
Azimuth Range 153.0° to 254.4°  
Corresponding Elevation Angles 45.0° / 12.0°  
Antenna Centerline (AGL) 3.05 m / 10.0 ft

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### Antenna Information

#### Receive

#### Transmit

Manufacturer	Scientific-Atlanta	Scientific-Atlanta
Model	8002	8002
Gain / Diameter	50.8 dBi / 10.0 m	53.5 dBi / 10.0 m
3-dB / 15-dB Beamwidth	0.60° / 1.00°	0.32° / 0.70°
Max Available RF Power (dBW/4 kHz)		-8.7
(dBW/MHz)		15.3
Maximum EIRP (dBW/4 kHz)		44.8
(dBW/MHz)		68.8
(dBW)		81.3
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%

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### Frequency Information

#### Receive 4.0 GHz

#### Transmit 6.1 GHz

Emission / Frequency Range (MHz)	18M0G7W / 3700.0 - 4200.0	18M0G7W / 5925.0 - 6425.0
Max Great Circle Coordination Distance	375.3 km / 233.2 mi	190.6 km / 118.4 mi
Precipitation Scatter Contour Radius	614.4 km / 381.7 mi	100.0 km / 62.1 mi

# COMSEARCH

## Earth Station Data Sheet

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### Coordination Values

### AUBURN, NC

Licensee Name Microspace Communications Corporation  
Latitude (NAD 83) 35° 40' 27.6" N  
Longitude (NAD 83) 78° 32' 7.0" W  
Ground Elevation (AMSL) 88.39 m / 290.0 ft  
Antenna Centerline (AGL) 3.05 m / 10.0 ft  
Antenna Model Scientific-Atlanta 8002  
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 -8.7 (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	2.95	105.37	-10.00	172.70	-10.00	100.00
5	3.11	110.31	-10.00	168.81	-10.00	100.00
10	3.32	115.26	-10.00	162.29	-10.00	100.00
15	3.60	120.21	-10.00	156.17	-10.00	100.00
20	3.75	120.86	-10.00	153.00	-10.00	100.00
25	4.07	117.73	-10.00	146.81	-10.00	100.00
30	4.14	114.34	-10.00	145.76	-10.00	100.00
35	4.25	110.85	-10.00	144.04	-10.00	100.00
40	4.40	107.27	-10.00	141.83	-10.00	100.00
45	4.47	103.60	-10.00	140.90	-10.00	100.00
50	4.31	99.84	-10.00	143.15	-10.00	100.00
55	4.02	96.05	-10.00	147.56	-10.00	100.00
60	3.60	92.27	-10.00	156.16	-10.00	100.00
65	3.09	88.53	-10.00	169.28	-10.00	100.00
70	2.52	84.86	-10.00	182.67	-10.00	100.00
75	1.80	81.30	-10.00	200.02	-10.00	100.00
80	1.57	77.76	-10.00	206.23	-10.00	100.00
85	1.78	74.18	-10.00	200.56	-10.00	100.00
90	1.68	70.73	-10.00	203.21	-10.00	100.00
95	1.87	67.27	-10.00	198.00	-10.00	100.00
100	2.17	63.83	-10.00	190.67	-10.00	100.00
105	2.22	60.60	-10.00	189.41	-10.00	100.00
110	2.04	57.66	-10.00	193.66	-10.00	100.00
115	1.97	54.85	-10.00	195.30	-10.00	100.00
120	1.90	52.26	-10.00	197.28	-10.00	100.00
125	1.74	50.00	-10.00	201.66	-10.00	100.00
130	1.84	47.84	-9.99	198.95	-9.99	100.00
135	1.70	46.21	-9.62	204.26	-9.62	100.00
140	1.70	44.86	-9.30	205.93	-9.30	100.00
145	1.50	44.09	-9.11	209.59	-9.11	100.00
150	1.02	44.07	-9.10	224.20	-9.10	102.17
155	0.77	44.28	-9.15	237.93	-9.15	113.04
160	0.40	45.04	-9.34	265.11	-9.34	132.86
165	0.22	46.03	-9.58	284.90	-9.58	146.29
170	0.29	47.14	-9.84	274.92	-9.84	139.24
175	0.00	48.29	-10.00	285.28	-10.00	147.27
180	0.23	48.36	-10.00	281.38	-10.00	144.30



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Antenna Model	Scientific-Atlanta 8002		
Antenna Mode	Receive 4.0 GHz		Transmit 6.1 GHz
Interference Objectives: Long Term	-156.0 dBW/MHz	20%	-154.0 dBW/4 kHz
Short Term	-146.0 dBW/MHz	0.01%	-131.0 dBW/4 kHz
Max Available RF Power			-8.7 (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)
185	0.30	48.00	-10.00	273.29	-10.00	138.31
190	0.33	47.10	-9.83	269.99	-9.83	135.69
195	0.37	45.68	-9.49	267.41	-9.49	133.41
200	0.40	43.79	-9.03	267.10	-9.03	133.80
205	0.48	41.44	-8.44	261.53	-8.44	129.09
210	0.48	38.80	-7.72	265.65	-7.72	130.93
215	0.54	35.83	-6.86	266.32	-6.86	130.13
220	0.58	32.63	-5.84	270.31	-5.84	131.36
225	0.59	29.26	-4.66	277.37	-4.66	133.08
230	0.51	25.78	-3.28	292.11	-3.28	141.05
235	0.48	22.14	-1.63	307.39	-1.63	149.20
240	0.59	18.31	0.43	314.09	0.43	149.65
245	0.41	14.90	2.67	350.60	2.67	175.56
250	0.34	12.46	4.61	375.33	4.61	190.58
255	0.42	11.58	5.40	371.02	5.40	185.45
260	0.34	12.90	4.23	372.17	4.23	189.00
265	0.27	15.73	2.08	363.21	2.08	186.79
270	0.21	19.44	-0.21	353.41	-0.21	184.10
275	0.28	23.54	-2.30	328.42	-2.30	168.36
280	0.42	27.91	-4.14	296.86	-4.14	146.03
285	0.26	32.54	-5.81	305.09	-5.81	155.41
290	0.31	37.20	-7.26	289.29	-7.26	145.79
295	0.31	41.94	-8.57	281.03	-8.57	141.77
300	0.36	46.71	-9.74	267.78	-9.74	134.01
305	0.29	51.54	-10.00	273.87	-10.00	138.73
310	0.28	56.38	-10.00	274.82	-10.00	139.42
315	0.51	61.22	-10.00	249.31	-10.00	122.69
320	0.76	66.07	-10.00	233.77	-10.00	111.04
325	1.01	70.94	-10.00	219.88	-10.00	100.00
330	1.20	75.83	-10.00	214.16	-10.00	100.00
335	1.49	80.73	-10.00	205.94	-10.00	100.00
340	1.89	85.64	-10.00	197.49	-10.00	100.00
345	2.04	90.56	-10.00	193.61	-10.00	100.00
350	2.33	95.49	-10.00	187.03	-10.00	100.00
355	2.54	100.43	-10.00	182.19	-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.



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DATED: July 29, 2012