

# FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for  
**Orange Business Services U.S.A., Inc.**  
**SOUTH HILL, VA**  
**Satellite Earth Station**

Prepared By:  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147  
February 24, 2014

## TABLE OF CONTENTS

1. CONCLUSIONS .....	3
2. SUMMARY OF RESULTS .....	4
3. SUPPLEMENTAL SHOWING .....	5
4. EARTH STATION COORDINATION DATA.....	7
5. CERTIFICATION.....	11

## 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 01/31/2014.

#### Company

AT&T Communications of Virginia, LLC  
AT&T Corporation  
Alltel Communications LLC-North Carolina  
Alltel Communications LLC-Southern VA  
Alltel Communications of Petersburg Inc  
Bellsouth Telecommunications, Inc.  
Campbell, County of  
Cellco Partnership - North Carolina  
Cellco Partnership - Southern Virginia  
Cellco Partnership-Newark-Dallas Verizon  
Charles City County Sheriffs Office  
Chesterfield, County of  
City of Durham, NC  
City of Richmond (VA)  
Duke Energy Business Services, LLC.  
Goochland County  
HARRIS CORPORATION  
HENRICO COUNTY  
Hampton Roads Planning District Commissi  
Johnston County 911 Communications  
MCI Communications Services Inc.  
Mecklenburg Electric Cooperative  
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  
PEG Bandwidth  
Petersburg Cellular Partnership  
Pittsylvania, County of  
RCTC Wholesale Corporation  
Sprint Spectrum L.P  
Sprintcom, Inc  
Town of Cary, NC  
UNIVERSITY OF NORTH CAROLINA  
USCOC of Greater North Carolina, LLC  
USCOC of North Carolina RSA #7, Inc.  
USCOC of Virginia RSA #3, Inc.  
Verizon Wireless (VAW) LLC-NC&SC Mkts  
Verizon Wireless VAW LLC-Southern VA  
Verizon Wireless(VAW) LLC-AZ/CO/NM/NV/UT

Virginia Department of State Police  
Virginia Electric & Power Company  
Virginia RSA #7, 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: 02/24/2014  
Job Number: 140131COMSGE03

---

### Administrative Information

Status ENGINEER PROPOSAL  
Call Sign  
Licensee Code OBSINC  
Licensee Name Orange Business Services U.S.A., Inc.

---

### Site Information SOUTH HILL, VA

Venue Name  
Latitude (NAD 83) 36° 42' 18.4" N  
Longitude (NAD 83) 78° 7' 15.8" W  
Climate Zone A  
Rain Zone 1  
Ground Elevation (AMSL) 121.21 m / 397.7 ft

---

### Link Information

Satellite Type Geostationary  
Mode TR - Transmit-Receive  
Modulation Digital  
Satellite Arc 40° W to 41° West Longitude  
Azimuth Range 127.3° to 128.3°  
Corresponding Elevation Angles 31.7° / 32.4°  
Antenna Centerline (AGL) 5.18 m / 17.0 ft

---

### Antenna Information

		Receive - FCC32		Transmit - FCC32	
Manufacturer		Prodelin		Prodelin	
Model		1244		1244	
Gain / Diameter		38.0 dBi / 2.4 m		42.0 dBi / 2.4 m	
3-dB / 15-dB Beamwidth		2.20° / 4.90°		1.40° / 3.10°	
Max Available RF Power	(dBW/4 kHz) (dBW/MHz)			-17.0 7.0	
Maximum EIRP	(dBW/4 kHz) (dBW/MHz)			25.0 49.0	
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)	205KG7D - 819KG7D / 3700.0 - 4200.0	205KG7D - 819KG7D / 6368.0 - 6412.0
Max Great Circle Coordination Distance	315.7 km / 196.1 mi	135.5 km / 84.2 mi
Precipitation Scatter Contour Radius	559.0 km / 347.3 mi	100.0 km / 62.1 mi



# COMSEARCH

## Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147  
(703)726-5500 <http://www.comsearch.com>

### Coordination Values

### SOUTH HILL, VA

Licensee Name Orange Business Services U.S.A., Inc.  
Latitude (NAD 83) 36° 42' 18.4" N  
Longitude (NAD 83) 78° 7' 15.8" W  
Ground Elevation (AMSL) 121.21 m / 397.7 ft  
Antenna Centerline (AGL) 5.18 m / 17.0 ft  
Antenna Model Prodelin 2.4 Meter  
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 -17.0 (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	0.30	121.14	-10.00	273.07	-10.00	116.86
5	0.32	117.14	-10.00	270.75	-10.00	115.31
10	0.30	113.04	-10.00	272.55	-10.00	116.52
15	0.39	108.91	-10.00	262.60	-10.00	109.82
20	0.38	104.71	-10.00	263.49	-10.00	110.42
25	0.44	100.49	-10.00	256.67	-10.00	105.73
30	0.38	96.23	-10.00	262.81	-10.00	109.95
35	0.47	91.97	-10.00	253.50	-10.00	103.53
40	0.38	87.69	-10.00	263.08	-10.00	110.14
45	0.39	83.43	-10.00	262.62	-10.00	109.82
50	0.32	79.18	-10.00	269.94	-10.00	114.78
55	0.25	74.97	-10.00	279.59	-10.00	121.16
60	0.20	70.79	-10.00	284.65	-10.00	124.46
65	0.00	66.71	-10.00	285.28	-10.00	124.87
70	0.00	62.64	-10.00	285.28	-10.00	124.87
75	0.00	58.65	-10.00	285.28	-10.00	124.87
80	0.00	54.77	-10.00	285.28	-10.00	124.87
85	0.32	50.85	-10.00	270.81	-10.00	115.35
90	0.30	47.24	-9.86	273.32	-9.86	116.81
95	0.33	43.81	-9.04	274.98	-9.04	116.66
100	0.43	40.59	-8.21	268.80	-8.21	111.21
105	0.40	37.77	-7.43	277.29	-7.43	115.63
110	0.30	35.43	-6.73	294.38	-6.73	125.62
115	0.24	33.56	-6.14	305.45	-6.14	131.68
120	0.26	32.20	-5.70	306.43	-5.70	131.55
125	0.22	31.57	-5.48	313.56	-5.48	134.02
130	0.00	31.81	-5.57	315.67	-5.57	135.51
135	0.22	32.32	-5.74	310.76	-5.74	133.08
140	0.00	33.91	-6.26	310.19	-6.26	133.59
145	0.00	35.86	-6.87	306.00	-6.87	133.20
150	0.00	38.30	-7.58	301.14	-7.58	131.29
155	0.00	41.04	-8.33	296.13	-8.33	129.29
160	0.00	44.08	-9.11	291.03	-9.11	127.22
165	0.00	47.39	-9.89	285.96	-9.89	125.15
170	0.00	50.92	-10.00	285.28	-10.00	124.87
175	0.00	54.62	-10.00	285.28	-10.00	124.87
180	0.00	58.45	-10.00	285.28	-10.00	124.87
185	0.00	62.38	-10.00	285.28	-10.00	124.87

# COMSEARCH

## Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147  
(703)726-5500 <http://www.comsearch.com>

### Coordination Values

### SOUTH HILL, VA

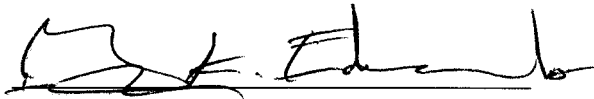
Licensee Name	Orange Business Services U.S.A., Inc.		
Latitude (NAD 83)	36° 42' 18.4" N		
Longitude (NAD 83)	78° 7' 15.8" W		
Ground Elevation (AMSL)	121.21 m / 397.7 ft		
Antenna Centerline (AGL)	5.18 m / 17.0 ft		
Antenna Model	Prodelin 2.4 Meter		
Antenna Mode	Receive 4.0 GHz		Transmit 6.1 GHz
Interference 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			-17.0 (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	66.40	-10.00	285.28	-10.00	124.87
195	0.00	70.49	-10.00	285.28	-10.00	124.87
200	0.00	74.63	-10.00	285.28	-10.00	124.87
205	0.00	78.80	-10.00	285.28	-10.00	124.87
210	0.00	83.00	-10.00	285.28	-10.00	124.87
215	0.00	87.21	-10.00	285.28	-10.00	124.87
220	0.00	91.44	-10.00	285.28	-10.00	124.87
225	0.00	95.65	-10.00	285.28	-10.00	124.87
230	0.00	99.86	-10.00	285.28	-10.00	124.87
235	0.00	104.04	-10.00	285.28	-10.00	124.87
240	0.00	108.19	-10.00	285.28	-10.00	124.87
245	0.00	112.29	-10.00	285.28	-10.00	124.87
250	0.00	116.34	-10.00	285.28	-10.00	124.87
255	0.00	120.30	-10.00	285.28	-10.00	124.87
260	0.00	124.17	-10.00	285.28	-10.00	124.87
265	0.00	127.91	-10.00	285.28	-10.00	124.87
270	0.00	131.50	-10.00	285.28	-10.00	124.87
275	0.00	134.88	-10.00	285.28	-10.00	124.87
280	0.00	138.02	-10.00	285.28	-10.00	124.87
285	0.00	140.85	-10.00	285.28	-10.00	124.87
290	0.00	143.28	-10.00	285.28	-10.00	124.87
295	0.00	145.25	-10.00	285.28	-10.00	124.87
300	0.00	146.66	-10.00	285.28	-10.00	124.87
305	0.00	147.45	-10.00	285.28	-10.00	124.87
310	0.00	147.56	-10.00	285.28	-10.00	124.87
315	0.00	146.99	-10.00	285.28	-10.00	124.87
320	0.22	145.98	-10.00	282.31	-10.00	122.94
325	0.22	144.16	-10.00	282.89	-10.00	123.31
330	0.31	141.92	-10.00	271.10	-10.00	115.55
335	0.24	139.04	-10.00	280.66	-10.00	121.86
340	0.21	135.85	-10.00	284.27	-10.00	124.21
345	0.28	132.46	-10.00	275.63	-10.00	118.56
350	0.25	128.82	-10.00	279.54	-10.00	121.13
355	0.28	125.05	-10.00	275.59	-10.00	118.53

## 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: February 24, 2014