

# FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for  
**Computer Sciences Raytheon**  
**CAPE CANAVER, FL**  
**Satellite Earth Station**

Prepared By:  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147  
December 01, 2010

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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 Wireless Holdings, LLC.  
Central Florida Cellular Telephone Co  
New Cingular Wireless PCS LLC - S FL  
Orlando SMSA Ltd Partnership  
Verizon Wireless Personal Comm, LP(S FL

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 09/28/2010.

Company

ALLTEL Wireless Holdings, LLC.  
Central Florida Cellular Telephone Co  
FLORIDA POWER AND LIGHT COMPANY  
Florida RSA No. 2B (Indian River) LP  
Harris Corporation - Orlando, FL  
Hernando County Board of Co Commissioner  
Hillsborough County Sheriff's Office  
Hillsborough County Tax Collector  
Lake, County of  
METROPOLITAN AREA NETWORKS, INC.  
New Cingular Wireless PCS LLC - S FL  
Orlando SMSA Ltd Partnership  
PINELLAS COUNTY  
POLK, COUNTY OF  
Saint Lucie, County of  
South Florida Water Management District  
Sumter Electric Cooperative, Inc.  
Tampa Electric Company  
Verizon Wireless Personal Comm, LP(S FL)  
Villages Public Saftey

## **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: 12/01/2010  
Job Number: 100928COMSTC03

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### Administrative Information

Licensee Name Computer Sciences Raytheon

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### Site Information

#### CAPE CANAVER, FL

Venue Name EAST TERMINAL  
Latitude (NAD 83) 28° 25' 52.2" N  
Longitude (NAD 83) 80° 35' 40.2" W  
Climate Zone B  
Rain Zone 1  
Ground Elevation (AMSL) 2.6 m / 8.5 ft

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### Link Information

Satellite Type Geostationary  
Mode TR - Transmit-Receive  
Modulation Digital  
Satellite Arc 18° W to 143° West Longitude  
Azimuth Range 103.9° to 256.0°  
Corresponding Elevation Angles 15.5° / 15.7°  
Antenna Centerline (AGL) 9.0 m / 29.5 ft

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### Antenna Information

#### Receive

Manufacturer VERTEX RSI  
Gain / Diameter 55.1 dBi / 16.4 m  
3-dB / 15-dB Beamwidth 0.30° / 0.60°

#### Transmit

VERTEX RSI  
59.0 dBi / 16.4 m  
0.20° / 0.40°

Max Available RF Power (dBW/4 kHz)  
(dBW/MHz)

51K2G7W - 36M0G7W  
-13.52 -13.52  
10.48 10.48

Maximum EIRP (dBW/4 kHz)  
(dBW/MHz)  
(dBW)

45.48 45.48  
69.48 59.48  
56.55 85.02

Interference Objectives: Long Term -156.0 dBW/MHz 20%  
Short Term -146.0 dBW/MHz 0.01%

-154.0 dBW/4 kHz 20%  
-131.0 dBW/4 kHz 0.0025%

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### Frequency Information

#### Receive 4.0 GHz

Emission / Frequency Range (MHz) 51K2G7W - 36M0G7W / 3700.0 - 4200.0

#### Transmit 6.1 GHz

51K2G7W - 36M0G7W / 5925.0 - 6425.0

Max Great Circle Coordination Distance 594.6 km / 369.4 mi  
Precipitation Scatter Contour Radius 596.7 km / 370.7 mi

209.0 km / 129.8 mi  
100.0 km / 62.1 mi

# COMSEARCH

## Earth Station Data Sheet

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### Coordination Values

### CAPE CANAVER, FL

Licensee Name	Computer Sciences Raytheon			
Latitude (NAD 83)	28° 25' 52.2" N			
Longitude (NAD 83)	80° 35' 40.2" W			
Ground Elevation (AMSL)	2.6 m / 8.5 ft			
Antenna Centerline (AGL)	9.0 m / 29.5 ft			
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			-13.5 (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	103.35	-10.00	412.20	-10.00	148.04
5	0.00	98.54	-10.00	412.20	-10.00	148.04
10	0.00	93.73	-10.00	412.20	-10.00	148.04
15	0.00	88.91	-10.00	412.20	-10.00	148.04
20	0.00	84.09	-10.00	412.20	-10.00	148.04
25	0.00	79.28	-10.00	412.20	-10.00	148.04
30	0.00	74.47	-10.00	412.20	-10.00	148.04
35	0.00	69.67	-10.00	412.20	-10.00	148.04
40	0.00	64.89	-10.00	412.20	-10.00	148.04
45	0.00	60.12	-10.00	412.20	-10.00	148.04
50	0.00	55.37	-10.00	412.20	-10.00	148.04
55	0.00	50.66	-10.00	412.20	-10.00	148.04
60	0.00	45.99	-9.57	417.60	-9.57	149.66
65	0.00	41.38	-8.42	432.28	-8.42	154.42
70	0.00	36.86	-7.16	448.99	-7.16	159.89
75	0.00	32.45	-5.78	467.48	-5.78	166.21
80	0.00	28.21	-4.26	489.42	-4.26	173.49
85	0.00	24.24	-2.61	514.40	-2.61	181.81
90	0.00	20.68	-0.89	541.79	-0.89	190.96
95	0.00	17.80	0.74	568.94	0.74	200.42
100	0.00	15.96	1.92	589.43	1.92	207.26
105	0.00	15.54	2.22	594.58	2.22	208.97
110	0.00	16.64	1.47	581.55	1.47	204.63
115	0.00	19.00	0.03	556.99	0.03	196.42
120	0.00	22.23	-1.67	529.19	-1.67	186.75
125	0.00	25.99	-3.37	502.73	-3.37	177.92
130	0.00	30.05	-4.95	479.37	-4.95	170.15
135	0.00	34.05	-6.30	460.79	-6.30	163.79
140	0.00	37.91	-7.47	444.87	-7.47	158.54
145	0.00	41.60	-8.48	431.53	-8.48	154.18
150	0.00	45.08	-9.35	420.35	-9.35	150.55
155	0.00	48.27	-10.00	412.20	-10.00	148.04
160	0.00	51.11	-10.00	412.20	-10.00	148.04
165	0.00	53.48	-10.00	412.20	-10.00	148.04
170	0.00	55.29	-10.00	412.20	-10.00	148.04
175	0.00	56.43	-10.00	412.20	-10.00	148.04
180	0.00	56.82	-10.00	412.20	-10.00	148.04
185	0.00	56.43	-10.00	412.20	-10.00	148.04



# COMSEARCH

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### Coordination Values

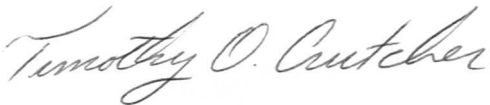
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Antenna Mode	Receive 4.0 GHz		Transmit 6.1 GHz
Interference Objectives: Long Term	-156.0 dBW/MHz	20%	-154.0 dBW/4 kHz 20%
Short Term	-146.0 dBW/MHz	0.01%	-131.0 dBW/4 kHz 0.0025%
Max Available RF Power			-13.5 (dBW/4 kHz)

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	55.29	-10.00	412.20	-10.00	148.04
195	0.00	53.48	-10.00	412.20	-10.00	148.04
200	0.00	51.10	-10.00	412.20	-10.00	148.04
205	0.00	48.27	-10.00	412.20	-10.00	148.04
210	0.00	45.08	-9.35	420.36	-9.35	150.55
215	0.00	41.60	-8.48	431.54	-8.48	154.18
220	0.00	37.91	-7.47	444.88	-7.47	158.54
225	0.00	34.05	-6.30	460.80	-6.30	163.79
230	0.00	30.05	-4.95	479.36	-4.95	170.15
235	0.00	26.00	-3.38	502.66	-3.38	177.89
240	0.00	22.26	-1.69	528.89	-1.69	186.65
245	0.00	19.08	-0.01	556.28	-0.01	195.81
250	0.00	16.76	1.40	580.22	1.40	204.19
255	0.00	15.70	2.10	592.61	2.10	208.32
260	0.00	16.15	1.80	587.19	1.80	206.51
265	0.00	18.00	0.62	566.90	0.62	199.74
270	0.00	20.88	-0.99	540.14	-0.99	190.41
275	0.00	24.42	-2.69	513.11	-2.69	181.38
280	0.00	28.38	-4.33	488.43	-4.33	173.16
285	0.00	32.61	-5.83	466.69	-5.83	165.95
290	0.00	37.02	-7.21	448.36	-7.21	159.69
295	0.00	41.54	-8.46	431.76	-8.46	154.25
300	0.00	46.14	-9.60	417.17	-9.60	149.52
305	0.00	50.80	-10.00	412.20	-10.00	148.04
310	0.00	55.51	-10.00	412.20	-10.00	148.04
315	0.00	60.25	-10.00	412.20	-10.00	148.04
320	0.00	65.01	-10.00	412.20	-10.00	148.04
325	0.00	69.79	-10.00	412.20	-10.00	148.04
330	0.00	74.59	-10.00	412.20	-10.00	148.04
335	0.00	79.39	-10.00	412.20	-10.00	148.04
340	0.00	84.20	-10.00	412.20	-10.00	148.04
345	0.00	89.01	-10.00	412.20	-10.00	148.04
350	0.00	93.83	-10.00	412.20	-10.00	148.04
355	0.00	98.64	-10.00	412.20	-10.00	148.04

## 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.



Timothy O. Crutcher  
Frequency Planner  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147

DATED: December 01, 2010