

# FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for  
**CACI Technologies, Inc.**  
**ABERDEEN PROVING GROUND, MD**  
**Satellite Earth Station**

Prepared By:  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147  
April 26, 2011

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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

DELAWARE STATE - DTI  
SCTF NET  
Baltimore Gas and Electric Company  
Delmarva Power & Light Company  
New Jersey, State of -NJ Transit  
State of Maryland, MIEMSS  
Atlantic City Electric Company  
New Cingular Wireless PCS LLC- DE/NH/RI  
Baltimore County of Maryland  
New Cingular Wireless PCS LLC - DC  
St. Mary's County Dept. of Public Safety  
WASHINGTON SUBURBAN SANITARY COMMISSION  
New Cingular Wireless PCS - VA/DC/MD  
Open Range Communications  
Cellco Prtnrshp - Phil. Tri-State Rgn  
Exelon Generation Company, L.L.C  
Cellco Partnership-Newark-Dallas Verizon  
MCI Communications Services 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.

Coordination data for this earth station was sent to the below listed carriers with a letter dated 03/04/2011.

Company

AB Services LLC  
AT&T COMMUNICATIONS OF MARYLAND INC  
AT&T COMMUNICATIONS OF VIRGINIA INC  
AT&T CORP  
Allentown SMSA Limited Partnership  
Alltel Communications of Petersburg Inc  
Atlantic Broadband (Delmar), LLC  
Atlantic Broadband (Penn), LLC  
Atlantic City Electric Company  
BAY BROADBAND COMMUNICATIONS LLC  
Baltimore County of Maryland  
Baltimore Gas and Electric Company  
Berks, County of  
CHESTER, COUNTY OF  
COLLEGE OF SOUTHERN MARYLAND  
Cellco Partnership - Southern Virginia  
Cellco Partnership- PA Region  
Cellco Partnership-Newark-Dallas Verizon  
Cellco Partnership-Washington/Baltimore  
Cellco Prtnrshp - Phil. Tri-State Rgn  
Charles, County of  
Comprehensive Wireless LLC  
Conterra Ultra Broadband, LLC  
Coral Reef Technologies Ltd  
County of Frederick  
County of Stafford  
County of Warren  
DAUPHIN COUNTY EMERGENCY MANAGEMENT  
DELAWARE STATE - DTI  
Delmarva Power & Light Company  
Direct Broadcast Services, Inc.  
EASTERN PENNSYLVANIA EMS COUNCIL  
Enoch Pratt Free Library  
Exelon Generation Company, L.L.C  
FELHC, Inc.  
Frederick County  
Fundamental Broadcasting LLC  
Gloucester, County of  
Hardy Cellular Telephone Company  
International Communications Group, Inc.

LB Tower Company LLC  
Last Mile Inc.  
Loudoun, County of  
MCI Communications Services Inc.  
METROPOLITAN AREA NETWORKS, INC.  
Maryland Public Broadcasting Commission  
Maryland State Highway Administration  
Maryland, State of - Dept. of Info & Tech  
NEW JERSEY STATE POLICE  
National Radio Astronomy Observatory  
New Cingular Wireless PCS LLC -NJ  
New Cingular Wireless PCS - VA/DC/MD  
New Cingular Wireless PCS LLC - DC  
New Cingular Wireless PCS LLC -NE Reg  
New Cingular Wireless PCS LLC- DE/NH/RI  
New Cingular Wireless PCS of PA LLC  
New Cingular Wireless PCS, LLC - PA  
New Jersey Turnpike Authority-Pkwy Div  
New Jersey, State of -NJ Transit  
Norfolk Southern Railway  
Northern Virginia Electric Cooperative  
OCEAN, COUNTY OF  
Ocean, County of-Div of Wireless Tech.  
Open Range Communications  
PENNSYLVANIA TURNPIKE COMMISSION  
PSEG Services Corporation  
Peco Energy Company  
Penn Service Microwave Co., Inc.  
Prince George's County  
Prince William, County of  
RAPPAHANNOCK ELECTRIC COOPERATIVE  
SCTF NET  
SHENANDOAH VALLEY ELECTRIC COOPERATIVE  
Southern Maryland Electric Cooperative I  
St. Mary's County Dept. of Public Safety  
State of Maryland, MIEMSS  
State of WV DHHR/BPH STECS  
Texas Eastern Communications, Inc.  
Thought Transmissions, LLC  
USCOC of Cumberland, Inc.  
Verizon Maryland, Inc.  
Virginia Broadband, LLC  
Virginia Department of State Police  
Virginia Electric & Power Company  
Virginia PCS Alliance, L.C.  
WASHINGTON SUBURBAN SANITARY COMMISSION  
WITF Inc.  
Washington D.C. SMSA L.P.  
Washington Gas Light Company  
York County Dept of Emergency Services

## **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: 04/26/2011  
Job Number: 110304COMSGE02

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### Administrative Information

Status ENGINEER PROPOSAL  
Call Sign  
Licensee Code CACII  
Licensee Name CACI Technologies, Inc.

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### Site Information

#### ABERDEEN PROVING GROUND, MD

Venue Name OBJECTIVE SITE  
Latitude (NAD 83) 39° 28' 33.2" N  
Longitude (NAD 83) 76° 7' 34.7" W  
Climate Zone A  
Rain Zone 2  
Ground Elevation (AMSL) 8.53 m / 28.0 ft

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### Link Information

Satellite Type Geostationary  
Mode TR - Transmit-Receive  
Modulation Digital  
Satellite Arc 5° W to 143° West Longitude  
Azimuth Range 102.3° to 254.8°  
Corresponding Elevation Angles 5.8° / 9.1°  
Antenna Centerline (AGL) 5.49 m / 18.0 ft

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### Antenna Information

#### Receive - FCC32

#### Transmit - FCC32

Manufacturer	General Dynamics	General Dynamics	
Model	9.0 Meter	9.0 Meter	
Gain / Diameter	50.0 dBi / 9.0 m	53.7 dBi / 9.0 m	
3-dB / 15-dB Beamwidth	0.54° / 1.20°	0.40° / 0.80°	
Max Available RF Power (dBW/4 kHz)		-2.7	
(dBW/MHz)		21.3	
Maximum EIRP (dBW/4 kHz)		51.0	
(dBW/MHz)		75.0	
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%

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### Frequency Information

#### Receive 4.0 GHz

#### Transmit 6.1 GHz

Emission / Frequency Range (MHz)	250KG7D - 36M0F8W / 3700.0 - 4200.0	250KG7D - 36M0F8W / 5925.0 - 6425.0
Max Great Circle Coordination Distance	634.2 km / 394.0 mi	377.8 km / 234.7 mi
Precipitation Scatter Contour Radius	602.9 km / 374.6 mi	101.0 km / 62.8 mi



# COMSEARCH

## Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147  
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### Coordination Values

### ABERDEEN PROVING GROUND, MD

Licensee Name CACI Technologies, Inc.  
Latitude (NAD 83) 39° 28' 33.2" N  
Longitude (NAD 83) 76° 7' 34.7" W  
Ground Elevation (AMSL) 8.53 m / 28.0 ft  
Antenna Centerline (AGL) 5.49 m / 18.0 ft  
Antenna Model General Dynamics 9.0 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 -2.7 (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	0.32	102.21	-10.00	271.00	-10.00	156.63
5	0.30	97.23	-10.00	272.92	-10.00	158.27
10	0.00	92.25	-10.00	285.28	-10.00	170.66
15	0.00	87.28	-10.00	285.28	-10.00	170.66
20	0.00	82.30	-10.00	285.28	-10.00	170.66
25	0.00	77.33	-10.00	285.28	-10.00	170.66
30	0.00	72.36	-10.00	285.28	-10.00	170.66
35	0.00	67.39	-10.00	285.28	-10.00	170.66
40	0.00	62.42	-10.00	285.28	-10.00	170.66
45	0.00	57.45	-10.00	285.28	-10.00	170.66
50	0.00	52.49	-10.00	285.28	-10.00	170.66
55	0.00	47.54	-9.93	285.75	-9.93	170.95
60	0.00	42.59	-8.73	293.47	-8.73	175.58
65	0.00	37.65	-7.39	302.40	-7.39	180.77
70	0.00	32.73	-5.87	313.52	-5.87	186.64
75	0.00	27.83	-4.11	326.03	-4.11	193.40
80	0.00	22.97	-2.03	341.28	-2.03	201.36
85	0.00	18.19	0.51	360.50	0.51	209.48
90	0.00	13.55	3.70	385.71	3.70	222.73
95	0.00	9.29	7.80	419.44	7.80	241.51
100	0.00	6.23	12.14	634.16	12.14	377.75
105	0.00	6.42	11.82	513.85	11.82	294.37
110	0.00	9.63	7.41	416.04	7.41	239.63
115	0.00	13.32	3.89	387.20	3.89	223.53
120	0.00	16.94	1.27	366.45	1.27	212.55
125	0.00	20.48	-0.78	350.63	-0.78	206.10
130	0.00	23.90	-2.46	338.08	-2.46	199.71
135	0.00	27.19	-3.86	327.84	-3.86	194.36
140	0.00	30.31	-5.04	319.39	-5.04	189.84
145	0.00	33.24	-6.04	311.71	-6.04	185.99
150	0.00	35.92	-6.88	305.88	-6.88	182.74
155	0.00	38.32	-7.58	301.11	-7.58	180.03
160	0.00	40.38	-8.15	297.30	-8.15	177.83
165	0.00	42.05	-8.59	294.37	-8.59	176.12
170	0.00	43.29	-8.91	292.30	-8.91	174.89
175	0.00	44.06	-9.10	291.07	-9.10	174.16
180	0.00	44.31	-9.16	290.66	-9.16	173.91
185	0.00	44.06	-9.10	291.07	-9.10	174.16

# COMSEARCH

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### Coordination Values

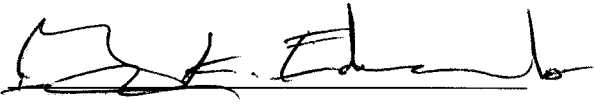
### ABERDEEN PROVING GROUND, MD

Licensee Name	CACI Technologies, Inc.				
Latitude (NAD 83)	39° 28' 33.2" N				
Longitude (NAD 83)	76° 7' 34.7" W				
Ground Elevation (AMSL)	8.53 m / 28.0 ft				
Antenna Centerline (AGL)	5.49 m / 18.0 ft				
Antenna Model	General Dynamics 9.0 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			-2.7 (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)
190	0.00	43.29	-8.91	292.30	-8.91	174.89
195	0.00	42.05	-8.59	294.37	-8.59	176.12
200	0.00	40.38	-8.15	297.29	-8.15	177.83
205	0.00	38.32	-7.58	301.11	-7.58	180.03
210	0.00	35.92	-6.88	305.87	-6.88	182.74
215	0.00	33.24	-6.04	311.71	-6.04	185.99
220	0.00	30.32	-5.04	319.38	-5.04	189.83
225	0.00	27.19	-3.86	327.85	-3.86	194.36
230	0.00	23.90	-2.46	338.09	-2.46	199.72
235	0.00	20.48	-0.78	350.64	-0.78	206.11
240	0.00	16.95	1.27	366.43	1.27	212.54
245	0.00	13.32	3.89	387.21	3.89	223.53
250	0.00	10.25	6.74	410.26	6.74	236.44
255	0.00	9.06	8.07	489.08	8.07	280.28
260	0.00	10.43	6.54	408.61	6.54	235.53
265	0.00	13.60	3.66	385.36	3.66	222.54
270	0.00	17.63	0.84	363.09	0.84	210.81
275	0.00	22.05	-1.59	344.59	-1.59	203.05
280	0.00	26.67	-3.65	329.37	-3.65	195.17
285	0.00	31.40	-5.42	316.68	-5.42	188.37
290	0.00	36.19	-6.97	305.31	-6.97	182.42
295	0.00	41.03	-8.33	296.14	-8.33	177.15
300	0.28	45.86	-9.53	278.41	-9.53	162.27
305	0.28	50.75	-10.00	274.78	-10.00	159.87
310	0.31	55.66	-10.00	271.87	-10.00	157.37
315	0.46	60.56	-10.00	253.99	-10.00	142.60
320	0.44	65.49	-10.00	256.91	-10.00	144.94
325	0.43	70.43	-10.00	257.57	-10.00	145.47
330	0.38	75.37	-10.00	263.79	-10.00	150.57
335	0.45	80.30	-10.00	255.37	-10.00	143.70
340	0.44	85.25	-10.00	255.93	-10.00	144.15
345	0.68	90.19	-10.00	238.68	-10.00	132.19
350	0.56	95.14	-10.00	246.01	-10.00	136.47
355	0.46	100.08	-10.00	254.08	-10.00	142.67

## 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: April 26, 2011