

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for

**Astrium Services Government Inc.
Southbury, Connecticut**

Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, Virginia 20147
May 23, 2014

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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 and receive earth station. Further the transmit spectrum will be limited from 6627.27 to 6651.27 MHz and 6678.42 to 6702.42 MHz, and the receive spectrum will be limited from 4198.0 to 4200.0 MHz.

Company

None

No 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 sent to the below listed carriers with a letter dated April 29, 2014, and a revised expedited coordination notice was forwarded on May 12, 2014..

Company

AERONAUTICAL RADIO INC
AWC Networks
Auburn Data Systems, LLC
Bergen, County of
COMMUNITY PRODUCTS, LLC
CONNECTICUT STATE OF
Capital Communications of America
Cellco Partnership - (W-NY)
Cellco Partnership - CT, W-MA, VT
Columbia, County of
Connecticut State Police Department
Coralinks
Dutchess County Emergency Response
EAST HAMPTON TOWN POLICE DEPARTMENT
ECW Wireless, LLC
Eastern MLG LLC
FELHC, Inc.
GLASTONBURY POLICE DEPARTMENT
High Voltage Communications LLC
Jefferson Microwave, LLC
Keyspan Corp. dba Keyspan Energy
MTA - Long Island Railroad
Mahwah Communications
Massachsett, Comm Of
Massachusetts Commonwealth of
NBC Telemundo License LLC
Nassau County Police Department
National Grid USA Service Company, Inc
National Tower Company LLC
New Jersey State Police
New Jersey Turnpike Authority-Pkwy Div
New Jersey, State of -NJ Transit
New York City Transit Authority
New York Communications Co., Inc
New York, City of
New York, City of

Company (Continued)

Northeast Utilities Service Company
Orange Poughkeepsie SMSA LTD Partnership
Orange and Rockland Utilities, Inc.
PSEG Services Corporation
Port Authority of New York & New Jersey
Qoncept Holdings LLC
SCS Networks
SOUTHAMPTON, TOWN OF, POLICE DEPT.
STATE OF NEW JERSEY - OFFICE OF PUBLIC
SUFFOLK COUNTY WATER AUTHORITY
SW Networks
State of New York, Div of State Police
Suffolk, County of
White Rabbit Networks
Wireless Internetwork LLC
World Class Wireless, LLC
Zen Networks, Inc
Firstlevel Networks
Open Line Communications

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: 05/22/2014
Job Number: 140512COMSJC04

Administrative Information

Status ENGINEER PROPOSAL
Call Sign
Licensee Code VIZSBC
Licensee Name Astrium Services Government Inc

Site Information SOUTHBURY, CONNECTICUT

Venue Name
Latitude (NAD 83) 41° 27' 6.3" N
Longitude (NAD 83) 73° 17' 16.4" W
Climate Zone A
Rain Zone 2
Ground Elevation (AMSL) 36.6 m / 120.1 ft

Link Information

Satellite Type Geostationary
Mode TR - Transmit-Receive
Modulation Digital
Satellite Arc 116° W to 118° West Longitude
Azimuth Range 234.4° to 236.2°
Corresponding Elevation Angles 25.6° / 24.3°
Antenna Centerline (AGL) 8.53 m / 28.0 ft

Antenna Information

		Receive		Transmit	
Manufacturer		GD Satcom		GD Satcom	
Model		13.1 Meter		13.1 Meter	
Gain / Diameter		53.4 dBi / 13.1 m		57.2 dBi / 13.1 m	
3-dB / 15-dB Beamwidth		0.36° / 0.76°		0.23° / 0.48°	
Max Available RF Power	(dBW/4 kHz) (dBW/MHz)			-12.0 12.0	
Maximum EIRP	(dBW/4 kHz) (dBW/MHz) (dBW)			45.2 69.2 83.0	
Interference Objectives:	Long Term Short Term	-156.0 dBW/MHz -146.0 dBW/MHz	20% 0.01%	-154.0 dBW/4 kHz -131.0 dBW/4 kHz	20% 0.0025%

Frequency Information

	Receive 4.0 GHz	Transmit 6.7 GHz
Emission / Frequency Range (MHz)	400KG1D / 4198.2 400KG1D / 4199.8	24M0G1D / 6639.27 24M0G1D / 6690.42
Max Great Circle Coordination Distance	252.6 km / 156.9 mi	103.3 km / 64.2 mi
Precipitation Scatter Contour Radius	496.5 km / 308.5 mi	100.0 km / 62.1 mi

COMSEARCH

Earth Station Data Sheet

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Coordination Values

SOUTHBURY, CT

Licensee Name Astrium Services Government Inc
Latitude (NAD 83) 41° 27' 6.3" N
Longitude (NAD 83) 73° 17' 16.4" W
Ground Elevation (AMSL) 36.6 m / 120.1 ft
Antenna Centerline (AGL) 8.53 m / 28.0 ft
Antenna Model GD Satcom 13.1 Meter
Antenna Mode Receive 4.0 GHz Transmit 6.7 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 -12.0 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz		Transmit 6.7 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	4.34	121.51	-10.00	142.75	-10.00	100.00
5	3.86	125.94	-10.00	150.81	-10.00	100.00
10	3.89	130.43	-10.00	150.12	-10.00	100.00
15	4.03	134.89	-10.00	147.49	-10.00	100.00
20	4.19	139.26	-10.00	145.02	-10.00	100.00
25	4.32	143.50	-10.00	143.04	-10.00	100.00
30	4.47	147.57	-10.00	140.85	-10.00	100.00
35	4.54	151.34	-10.00	139.85	-10.00	100.00
40	4.29	154.48	-10.00	143.44	-10.00	100.00
45	4.04	156.61	-10.00	147.30	-10.00	100.00
50	3.54	157.56	-10.00	157.35	-10.00	100.00
55	3.45	157.87	-10.00	159.35	-10.00	100.00
60	3.00	156.76	-10.00	171.52	-10.00	100.00
65	2.34	154.57	-10.00	186.73	-10.00	100.00
70	2.51	152.37	-10.00	182.91	-10.00	100.00
75	2.63	149.51	-10.00	180.02	-10.00	100.00
80	2.63	146.12	-10.00	180.00	-10.00	100.00
85	2.49	142.32	-10.00	183.27	-10.00	100.00
90	2.30	138.29	-10.00	187.75	-10.00	100.00
95	2.30	134.18	-10.00	187.75	-10.00	100.00
100	2.40	129.99	-10.00	185.32	-10.00	100.00
105	2.06	125.55	-10.00	193.16	-10.00	100.00
110	1.93	121.12	-10.00	196.53	-10.00	100.00
115	2.34	116.77	-10.00	186.70	-10.00	100.00
120	3.28	112.43	-10.00	163.18	-10.00	100.00
125	4.20	107.97	-10.00	144.86	-10.00	100.00
130	5.69	103.48	-10.00	128.20	-10.00	100.00
135	7.34	98.88	-10.00	110.71	-10.00	100.00
140	8.32	94.16	-10.00	101.01	-10.00	100.00
145	8.61	89.38	-10.00	100.00	-10.00	100.00
150	8.44	84.61	-10.00	100.00	-10.00	100.00
155	8.02	79.86	-10.00	103.63	-10.00	100.00
160	8.11	75.09	-10.00	102.86	-10.00	100.00
165	8.16	70.34	-10.00	102.34	-10.00	100.00
170	7.94	65.64	-10.00	104.45	-10.00	100.00
175	7.34	61.04	-10.00	110.71	-10.00	100.00
180	6.44	56.59	-10.00	120.44	-10.00	100.00

COMSEARCH

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Coordination Values

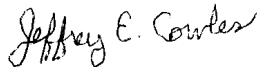
SOUTHBURY, CT

Licensee Name	Astrium Services Government Inc		
Latitude (NAD 83)	41° 27' 6.3" N		
Longitude (NAD 83)	73° 17' 16.4" W		
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Antenna Centerline (AGL)	8.53 m / 28.0 ft		
Antenna Model	GD Satcom 13.1 Meter		
Antenna Mode	Receive 4.0 GHz		Transmit 6.7 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			-12.0 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz		Transmit 6.7 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
185	5.52	52.27	-10.00	129.77	-10.00	100.00
190	4.41	48.18	-10.00	141.67	-10.00	100.00
195	3.49	44.23	-9.14	162.75	-9.14	100.00
200	3.04	40.31	-8.14	180.08	-8.14	100.00
205	3.22	36.28	-6.99	181.75	-6.99	100.00
210	3.46	32.44	-5.78	182.81	-5.78	100.00
215	3.64	28.93	-4.53	185.24	-4.53	100.00
220	3.63	26.01	-3.38	191.54	-3.38	100.00
225	3.14	23.79	-2.41	206.36	-2.41	100.00
230	2.62	22.48	-1.79	218.55	-1.79	100.00
235	1.73	22.56	-1.83	242.53	-1.83	100.00
240	1.39	23.16	-2.12	252.59	-2.12	103.34
245	1.75	24.08	-2.54	237.48	-2.54	100.00
250	1.96	26.02	-3.38	225.90	-3.38	100.00
255	1.96	28.83	-4.50	219.59	-4.50	100.00
260	2.01	32.11	-5.67	212.17	-5.67	100.00
265	2.49	35.51	-6.76	198.92	-6.76	100.00
270	2.59	39.42	-7.89	191.23	-7.89	100.00
275	2.61	43.56	-8.98	185.60	-8.98	100.00
280	3.14	47.66	-9.95	166.75	-9.95	100.00
285	3.95	51.82	-10.00	148.97	-10.00	100.00
290	4.18	56.29	-10.00	145.21	-10.00	100.00
295	4.05	60.89	-10.00	147.14	-10.00	100.00
300	3.61	65.57	-10.00	155.83	-10.00	100.00
305	3.48	70.21	-10.00	158.64	-10.00	100.00
310	3.67	74.83	-10.00	154.64	-10.00	100.00
315	3.88	79.48	-10.00	150.29	-10.00	100.00
320	3.99	84.16	-10.00	148.14	-10.00	100.00
325	3.95	88.85	-10.00	148.83	-10.00	100.00
330	4.15	93.54	-10.00	145.59	-10.00	100.00
335	4.50	98.25	-10.00	140.47	-10.00	100.00
340	4.75	102.97	-10.00	136.95	-10.00	100.00
345	5.10	107.70	-10.00	133.86	-10.00	100.00
350	5.11	112.38	-10.00	133.78	-10.00	100.00
355	4.87	117.00	-10.00	135.31	-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.



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

DATED: May 23, 2014