

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for

**Astrium Services Government Inc.
Santa Paula, California
(Call Sign: E930320)**

Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, Virginia 20147
June 12, 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-receive earth station.

Company

Los Angeles SMSA Limited Partnership
New Cingular Wireless PCS – Los Angeles
Southern California Edison Company
Southern California Regional Rail Authority

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 this earth station was emailed and sent to the below listed carriers with a letter dated May 27, 2014.

Company

ABC Holding Company Inc.
AT&T California
AirSites2000, LLC
American Tower, LLC
California, State of
Chevron USA Inc.
City of Los Angeles Dept Water & Power
Conterra Ultra Broadband, LLC
Exxon Communications Company
Freeport-McMoRan Oil & Gas LLC
Fresno MSA Limited Partnership
Fundamental Broadcasting LLC
GTE Mobilnet of Santa Barbara LTD Ptsh
Glendale, City of
ION Media Los Angeles License, Inc.
KTLA, LLC
Kern Ed Telecom Consortium
Kern, County of
LOS ANGELES UNIFIED SCHOOL DISTRICT
Los Angeles City Info Technology Agency
Los Angeles County Dept of Public Works
Los Angeles County FCC Licensing Section
Los Angeles County Metro Transit Auth
Los Angeles SMSA Ltd. Partnership
MHO Networks
MONTEBELLO CITY CALIFORNIA
Metropolitan Water Dist of So California
New Cingular Wireless PCS - Los Angeles
New Cingular Wireless PCS LLC - N CAL
Nextel of California Inc.
Nextweb, Inc
Occidental of Elk Hills Inc.
Regents of the University of California
Santa Barbara Cellular Systems, Ltd.
Santa Barbara, County of

Company (Continued)

SkyRiver Communications
Southern California Edison Company
Southern California Gas Company
Southern California Regional Rail Auth.
TV MICROWAVES CO
Turn Wireless, LLC
Ventura, County of
Verizon California Inc.
Verizon Wireless (VAW) LLC (CA)
Vintage Production California LLC
Western Technical 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: 06/12/2014
Job Number: 140527COMSJC05

Administrative Information

Status ENGINEER PROPOSAL
Call Sign E930320
Licensee Code VIZSAT
Licensee Name Astrium Services Government, Inc.

Site Information SANTA PAULA, CALIFORNIA

Venue Name
Latitude (NAD 83) 34° 24' 5.0" N
Longitude (NAD 83) 119° 4' 29.4" W
Climate Zone A
Rain Zone 4
Ground Elevation (AMSL) 228.6 m / 750.0 ft

Link Information

Satellite Type Geostationary
Mode TR - Transmit-Receive
Modulation Digital
Satellite Arc 176° W to 192° West Longitude
Azimuth Range 249.8° to 260.2°
Corresponding Elevation Angles 18.5° / 5.4°
Antenna Centerline (AGL) 4.27 m / 14.0 ft

Antenna Information

Receive
Manufacturer Vertex RSI
Model 6.3 Meter
Gain / Diameter 46.5 dBi / 6.3 m
3-dB / 15-dB Beamwidth 0.81° / 1.70°

Transmit

Vertex RSI
6.3 Meter
50.7 dBi / 6.3 m
0.50° / 1.05°

108KG7W & 203KG7W

Max Available RF Power	(dBW/4 kHz)	-10.5	-18.4		
	(dBW/MHz)	13.5	5.6		
Maximum EIRP	(dBW/4 kHz)	40.2	32.3		
	(dBW/MHz)	64.2	56.3		
	(dBW)	54.5	49.4		
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

Emission / Frequency Range (MHz)

Receive 4.0 GHz

108KG7W / 3700.0 - 4200.0
203KG7W / 3700.0 - 4200.0

Transmit 6.1 GHz

108KG7W / 5925.0 - 6425.0
203KG7W / 5925.0 - 6425.0

Max Great Circle Coordination Distance 608.3 km / 377.9 mi 292.4 km / 181.6 mi
Precipitation Scatter Contour Radius 429.0 km / 266.5 mi 100.0 km / 62.1 mi

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Coordination Values

SANTA PAULA, CA

Licensee Name	Astrium Services Government, Inc.				
Latitude (NAD 83)	34° 24' 5.0" N				
Longitude (NAD 83)	119° 4' 29.4" W				
Ground Elevation (AMSL)	228.6 m / 750.0 ft				
Antenna Centerline (AGL)	4.27 m / 14.0 ft				
Antenna Model	Vertex RSI 6.3 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			-10.5 (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	7.62	99.84	-10.00	107.72	-10.00	100.00
5	8.27	104.83	-10.00	101.43	-10.00	100.00
10	9.86	109.78	-10.00	100.00	-10.00	100.00
15	10.42	114.74	-10.00	100.00	-10.00	100.00
20	11.10	119.68	-10.00	100.00	-10.00	100.00
25	11.39	124.63	-10.00	100.00	-10.00	100.00
30	12.07	129.52	-10.00	100.00	-10.00	100.00
35	12.67	134.39	-10.00	100.00	-10.00	100.00
40	13.02	139.25	-10.00	100.00	-10.00	100.00
45	12.43	144.23	-10.00	100.00	-10.00	100.00
50	11.74	149.24	-10.00	100.00	-10.00	100.00
55	9.53	154.53	-10.00	100.00	-10.00	100.00
60	8.55	159.61	-10.00	100.00	-10.00	100.00
65	8.38	164.56	-10.00	100.43	-10.00	100.00
70	7.66	169.15	-10.00	107.30	-10.00	100.00
75	7.96	168.24	-10.00	104.26	-10.00	100.00
80	7.90	165.32	-10.00	104.80	-10.00	100.00
85	7.49	161.29	-10.00	109.16	-10.00	100.00
90	7.12	156.92	-10.00	113.01	-10.00	100.00
95	6.63	152.30	-10.00	118.37	-10.00	100.00
100	6.20	147.60	-10.00	123.02	-10.00	100.00
105	5.79	142.85	-10.00	127.21	-10.00	100.00
110	6.10	138.24	-10.00	124.09	-10.00	100.00
115	4.81	133.20	-10.00	136.11	-10.00	100.00
120	3.14	128.11	-10.00	166.31	-10.00	100.00
125	2.38	123.24	-10.00	185.74	-10.00	100.00
130	2.10	118.47	-10.00	192.14	-10.00	100.00
135	2.18	113.73	-10.00	190.43	-10.00	100.00
140	1.59	108.91	-10.00	205.61	-10.00	100.00
145	0.00	104.01	-10.00	285.28	-10.00	141.57
150	0.00	99.28	-10.00	285.28	-10.00	141.57
155	0.00	94.55	-10.00	285.28	-10.00	141.57
160	0.00	89.81	-10.00	285.28	-10.00	141.57
165	0.00	85.07	-10.00	285.28	-10.00	141.57
170	0.00	80.33	-10.00	285.28	-10.00	141.57
175	0.00	75.60	-10.00	285.28	-10.00	141.57
180	1.63	70.70	-10.00	204.51	-10.00	100.00
185	2.81	65.80	-10.00	175.79	-10.00	100.00

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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			-10.5 (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	3.08	60.99	-10.00	169.67	-10.00	100.00
195	5.19	55.88	-10.00	132.97	-10.00	100.00
200	3.91	51.34	-10.00	149.75	-10.00	100.00
205	4.14	46.58	-9.70	147.14	-9.70	100.00
210	3.04	42.23	-8.64	177.53	-8.64	100.00
215	5.79	36.77	-7.14	137.48	-7.14	100.00
220	7.37	31.63	-5.50	128.57	-5.50	100.00
225	6.87	27.24	-3.88	139.67	-3.88	100.00
230	5.65	23.47	-2.26	162.95	-2.26	100.00
235	6.13	19.21	-0.09	171.15	-0.09	100.00
240	5.93	15.57	2.19	187.15	2.19	100.00
245	6.49	11.37	5.61	199.80	5.61	100.00
250	6.42	7.49	10.13	226.08	10.13	100.00
255	5.73	3.94	17.11	292.58	17.11	103.86
260	6.48	0.54	38.75	608.27	38.75	292.36
265	7.67	5.37	13.76	232.69	13.76	100.00
270	7.14	10.01	6.99	199.81	6.99	100.00
275	6.39	14.88	2.68	183.98	2.68	100.00
280	4.80	19.85	-0.45	186.36	-0.45	100.00
285	5.34	24.85	-2.88	163.29	-2.88	100.00
290	5.45	29.85	-4.87	151.49	-4.87	100.00
295	6.16	34.86	-6.56	136.02	-6.56	100.00
300	6.17	39.85	-8.01	131.19	-8.01	100.00
305	5.66	44.85	-9.29	131.21	-9.29	100.00
310	6.30	49.85	-10.00	121.96	-10.00	100.00
315	6.03	54.85	-10.00	124.88	-10.00	100.00
320	5.94	59.85	-10.00	125.83	-10.00	100.00
325	5.38	64.85	-10.00	131.13	-10.00	100.00
330	5.31	69.85	-10.00	131.86	-10.00	100.00
335	6.28	74.85	-10.00	122.19	-10.00	100.00
340	7.72	79.86	-10.00	106.68	-10.00	100.00
345	8.02	84.85	-10.00	103.58	-10.00	100.00
350	8.09	89.85	-10.00	102.99	-10.00	100.00
355	8.29	94.84	-10.00	101.24	-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: June 12, 2014