

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for

**Astrium Services Government Inc.
Santa Paula, California
(Call Sign: E980137)**

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 existing 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

AT&T California
Area Energy LLC
BNSF Railway Company
Boeing Company
CBS Broadcasting Inc
CBS Communications Services Inc.
CITY OF POMONA COMMUNICATIONS
California, State of
Chevron USA Inc.
City of Los Angeles Dept Water & Power
Freeport-McMoRan Oil & Gas LLC
Fresno MSA Limited Partnership
GTE Mobilnet of Santa Barbara LTD Ptsh
Glendale, City of
INCOMM DIVISION CHURCH OF SCIENTOLOGY
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
MOBILE RELAY ASSOCIATES INC
Metropolitan Water Dist of So California
New Cingular Wireless PCS - Los Angeles
New Cingular Wireless PCS LLC - N CAL
PACIFIC PIPELINE SYSTEM LLC
Pacific Gas and Electric Company
Santa Barbara, County of
Southern California Edison Company
Southern California Gas Company
Union Pacific Railroad Company

Company (Continued)

VENOCO, INC.
Ventura, County of
Verizon California Inc.
Verizon Wireless (VAW) LLC (CA)
American Tower, LLC

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: 05/23/2014
Job Number: 140512COMSJC06

Administrative Information

Status ENGINEER PROPOSAL
Call Sign E980137
Licensee Code VIZSAT
Licensee Name Astrium Services Government Inc.

Site Information SANTA PAULA, CALIFORNIA

Venue Name
Latitude (NAD 83) 34° 24' 6.0" N
Longitude (NAD 83) 119° 4' 25.2" W
Climate Zone A
Rain Zone 4
Ground Elevation (AMSL) 229.2 m / 752.0 ft

Link Information

Satellite Type Geostationary
Mode TR - Transmit-Receive
Modulation Digital
Satellite Arc 116° W to 118° West Longitude
Azimuth Range 174.6° to 178.1°
Corresponding Elevation Angles 49.9° / 50.0°
Antenna Centerline (AGL) 10.97 m / 36.0 ft

Antenna Information

	Receive	Transmit
Manufacturer	Comsat RSI	Comsat RSI
Model	16.4 Meter	16.4 Meter
Gain / Diameter	55.5 dBi / 16.4 m	58.7 dBi / 16.4 m
3-dB / 15-dB Beamwidth	0.29° / 0.61°	0.20° / 0.40°
Max Available RF Power (dBW/4 kHz)		-13.5
(dBW/MHz)		10.5
Maximum EIRP (dBW/4 kHz)		45.2
(dBW/MHz)		69.2
(dBW)		83.0
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 6.7 GHz
Emission / Frequency Range (MHz)	400KG1D / 4198.2 400KG1D / 4199.8	24M0G1D / 6639.27 24M0G1D / 6690.42
Max Great Circle Coordination Distance	285.3 km / 177.2 mi	134.2 km / 83.4 mi
Precipitation Scatter Contour Radius	100.0 km / 62.1 mi	100.0 km / 62.1 mi

COMSEARCH

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Coordination Values	SANTA PAULA, CA			
Licensee Name	Astrium Services Government Inc.			
Latitude (NAD 83)	34° 24' 6.0" N			
Longitude (NAD 83)	119° 4' 25.2" W			
Ground Elevation (AMSL)	229.2 m / 752.0 ft			
Antenna Centerline (AGL)	10.97 m / 36.0 ft			
Antenna Model	Comsat RSI 16.4 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			-13.5 (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	8.89	138.70	-10.00	100.00	-10.00	100.00
5	10.33	139.31	-10.00	100.00	-10.00	100.00
10	11.98	139.52	-10.00	100.00	-10.00	100.00
15	11.05	136.88	-10.00	100.00	-10.00	100.00
20	11.74	135.25	-10.00	100.00	-10.00	100.00
25	12.47	133.22	-10.00	100.00	-10.00	100.00
30	12.68	130.46	-10.00	100.00	-10.00	100.00
35	13.19	127.62	-10.00	100.00	-10.00	100.00
40	13.13	124.22	-10.00	100.00	-10.00	100.00
45	12.35	120.34	-10.00	100.00	-10.00	100.00
50	11.61	116.45	-10.00	100.00	-10.00	100.00
55	9.62	112.12	-10.00	100.00	-10.00	100.00
60	8.79	108.26	-10.00	100.00	-10.00	100.00
65	8.45	104.55	-10.00	100.00	-10.00	100.00
70	7.78	100.76	-10.00	106.06	-10.00	100.00
75	8.09	97.12	-10.00	102.98	-10.00	100.00
80	8.04	93.41	-10.00	103.49	-10.00	100.00
85	7.42	89.69	-10.00	109.91	-10.00	100.00
90	7.16	86.02	-10.00	112.64	-10.00	100.00
95	6.78	82.41	-10.00	116.75	-10.00	100.00
100	6.57	78.84	-10.00	119.02	-10.00	100.00
105	5.79	75.48	-10.00	127.21	-10.00	100.00
110	6.34	71.87	-10.00	121.49	-10.00	100.00
115	6.80	68.29	-10.00	116.43	-10.00	100.00
120	4.67	65.90	-10.00	138.05	-10.00	100.00
125	3.65	63.35	-10.00	155.03	-10.00	100.00
130	1.71	61.64	-10.00	202.33	-10.00	100.00
135	2.34	58.65	-10.00	186.84	-10.00	100.00
140	1.49	56.86	-10.00	205.93	-10.00	100.00
145	0.49	55.53	-10.00	251.21	-10.00	111.04
150	0.00	54.13	-10.00	285.28	-10.00	134.19
155	0.00	52.62	-10.00	285.28	-10.00	134.19
160	0.00	51.42	-10.00	285.28	-10.00	134.19
165	0.00	50.56	-10.00	285.28	-10.00	134.19
170	0.00	50.04	-10.00	285.28	-10.00	134.19
175	0.00	49.89	-10.00	285.28	-10.00	134.19
180	0.36	49.68	-10.00	266.07	-10.00	121.39

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Coordination Values


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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			-13.5 (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	1.02	49.35	-10.00	219.80	-10.00	100.00
190	1.62	49.47	-10.00	204.72	-10.00	100.00
195	3.63	48.69	-10.00	155.51	-10.00	100.00
200	4.11	49.78	-10.00	146.19	-10.00	100.00
205	3.18	52.40	-10.00	165.45	-10.00	100.00
210	2.72	54.84	-10.00	178.10	-10.00	100.00
215	3.23	56.79	-10.00	164.22	-10.00	100.00
220	3.58	59.13	-10.00	156.56	-10.00	100.00
225	5.46	60.86	-10.00	130.40	-10.00	100.00
230	3.79	64.72	-10.00	152.16	-10.00	100.00
235	6.08	66.84	-10.00	124.35	-10.00	100.00
240	5.49	70.37	-10.00	130.14	-10.00	100.00
245	4.67	73.99	-10.00	138.04	-10.00	100.00
250	6.08	77.07	-10.00	124.36	-10.00	100.00
255	5.09	80.76	-10.00	134.01	-10.00	100.00
260	5.82	84.20	-10.00	126.95	-10.00	100.00
265	6.89	87.74	-10.00	115.55	-10.00	100.00
270	5.40	91.35	-10.00	130.93	-10.00	100.00
275	4.81	94.85	-10.00	136.15	-10.00	100.00
280	5.02	98.38	-10.00	134.65	-10.00	100.00
285	5.25	101.91	-10.00	132.39	-10.00	100.00
290	5.67	105.47	-10.00	128.38	-10.00	100.00
295	5.96	108.98	-10.00	125.59	-10.00	100.00
300	5.87	112.28	-10.00	126.46	-10.00	100.00
305	5.44	115.32	-10.00	130.57	-10.00	100.00
310	6.30	118.86	-10.00	121.93	-10.00	100.00
315	5.95	121.65	-10.00	125.67	-10.00	100.00
320	5.51	124.15	-10.00	129.88	-10.00	100.00
325	5.42	126.62	-10.00	130.81	-10.00	100.00
330	5.43	128.93	-10.00	130.66	-10.00	100.00
335	6.49	131.84	-10.00	119.85	-10.00	100.00
340	7.71	134.68	-10.00	106.77	-10.00	100.00
345	7.84	136.21	-10.00	105.47	-10.00	100.00
350	8.12	137.48	-10.00	102.71	-10.00	100.00
355	8.08	137.98	-10.00	103.05	-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