

# FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for  
**Intelsat License LLC**  
**NAPA, CA**  
**(E950307)**  
**Satellite Earth Station**

Prepared By:  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147  
November 16, 2015

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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.

### 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 10/27/2015.

Company

AT&T Corporation  
AT&T Mobility Wireless Operations Hldgs  
Alameda County of California  
American Tower, LLC  
CALIFORNIA OREGON BROADCASTING INC  
CBS Broadcasting Inc  
CBS Communication Services Inc  
CONTRA COSTA COUNTY COMMUNICATIONS DEPT.  
CRYSTAL SMR INC.  
California Rural Service Area #1, Inc.  
California, State of  
Cellco Partnership - Southern California  
Citizens Telecommunications of CA Inc.  
City & County of San Francisco PUC  
Conterra Ultra Broadband, LLC  
County of San Mateo  
County of Santa Cruz  
DigitalPath, Inc  
East Bay Municipal Utility District  
Encina Communications Company  
Etheric Networks, Inc.  
FIELD Tower Systems, Inc.  
GTE Mobilnet of California LTD Partnersh  
Gogo LLC  
Happy Valley Telephone Company  
ICG Telecom Group, Inc. - Debtor in poss  
ION MEDIA SACRAMENTO LICENSE, INC.  
Johannesen, Norman A  
KDTV License Partnership, G.P.  
KGO Television, Inc.  
KQED INC  
KVIE, Inc.  
Lyon, Mike  
M.U.T. Licensing, LLC  
MENDOCINO COUNTY OF  
Marin County of California  
Modesto Irrigation District  
Mountain Tower Network Company, LLC  
Napa, County of  
New Cingular Wireless PCS LLC - N CAL

Olympic Wireless, LLC  
Pacific Bell Tel Com dba AT&T California  
Pacific Gas and Electric Company  
Placer, County of  
Plumas County  
Proxim Wireless Corporation  
ROMAN CATHOLIC COMMUNICATIONS CORP  
Redding MSA Limited Partnership  
SAN FRANCISCO CITY & COUNTY CALIFORNIA  
Sacramento County  
Sacramento Municipal Utility District  
Sacramento Valley Limited Partnership  
San Joaquin County  
San Jose, City of  
Santa Clara Valley Water District  
Santa Clara, County of  
Silicon Valley Regional Interop Authorit  
Solano County Communications Division  
Sonoma County, California  
The Internet Store, Inc.  
Una Vez Mas San Francisco License LLC  
Union Pacific Railroad Company  
Verizon California Inc.  
Verizon Wireless (VAW) LLC-N CA/NV  
Willits Online LLC  
YUBA COUNTY WATER AGENCY  
Yolo Emergency Communications Agency  
Yolo, County of

## **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: 10/27/2015  
Job Number: 151027COMSGE08

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### Administrative Information

Status ENGINEER PROPOSAL  
Call Sign E950307  
Licensee Code INTELS  
Licensee Name Intelsat License LLC

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### Site Information NAPA, CA

Venue Name  
Latitude (NAD 83) 38° 14' 43.7" N  
Longitude (NAD 83) 122° 16' 50.9" W  
Climate Zone B  
Rain Zone 3  
Ground Elevation (AMSL) 7.62 m / 25.0 ft

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### Link Information

Satellite Type Geostationary  
Mode TR - Transmit-Receive  
Modulation Analog and Digital  
Satellite Arc 190° W to 192° West Longitude  
Azimuth Range 255.8° to 257.1°  
Corresponding Elevation Angles 8.7° / 7.2°  
Antenna Centerline (AGL) 7.62 m / 25.0 ft

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### Antenna Information

#### Receive - FCC32

#### Transmit - FCC32

Manufacturer	Vertex	Vertex
Model	15.2 KPC	15.2 KPC
Gain / Diameter	54.9 dBi / 15.2 m	58.4 dBi / 15.2 m
3-dB / 15-dB Beamwidth	0.34° / 0.70°	0.22° / 0.44°
Max Available RF Power (dBW/4 kHz)		11.8
(dBW/MHz)		35.8
Maximum EIRP (dBW/4 kHz)		70.2
(dBW/MHz)		94.2
(dBW)		93.5
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)	850KFXD / 3700.0 - 4200.0	850KFXD / 6173.7 - 6176.3
Max Great Circle Coordination Distance	753.0 km / 467.8 mi	542.4 km / 337.0 mi
Precipitation Scatter Contour Radius	410.1 km / 254.8 mi	390.0 km / 242.3 mi



# COMSEARCH

## Earth Station Data Sheet

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### Coordination Values

### NAPA, CA

Licensee Name Intelsat License LLC  
Latitude (NAD 83) 38° 14' 43.7" N  
Longitude (NAD 83) 122° 16' 50.9" W  
Ground Elevation (AMSL) 7.62 m / 25.0 ft  
Antenna Centerline (AGL) 7.62 m / 25.0 ft  
Antenna Model Vertex 15.2 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 11.8 (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	102.78	-10.00	412.20	-10.00	297.29
5	0.00	107.74	-10.00	412.20	-10.00	297.29
10	0.90	112.74	-10.00	264.82	-10.00	192.13
15	0.80	117.70	-10.00	277.19	-10.00	201.99
20	0.47	122.63	-10.00	329.55	-10.00	240.42
25	0.36	127.57	-10.00	358.77	-10.00	260.36
30	0.83	132.56	-10.00	274.09	-10.00	199.63
35	2.06	137.64	-10.00	197.23	-10.00	141.08
40	1.48	142.52	-10.00	226.28	-10.00	161.72
45	2.55	147.59	-10.00	179.55	-10.00	129.11
50	2.84	152.57	-10.00	169.79	-10.00	122.79
55	3.18	157.55	-10.00	159.74	-10.00	116.54
60	3.65	162.54	-10.00	148.41	-10.00	111.17
65	4.36	167.57	-10.00	137.08	-10.00	103.28
70	4.71	172.48	-10.00	133.99	-10.00	100.95
75	4.39	175.60	-10.00	136.80	-10.00	103.07
80	4.21	173.81	-10.00	138.41	-10.00	104.25
85	4.11	169.68	-10.00	139.35	-10.00	104.93
90	3.72	164.93	-10.00	146.59	-10.00	109.96
95	3.06	159.98	-10.00	162.92	-10.00	118.48
100	3.50	155.24	-10.00	151.68	-10.00	113.45
105	2.95	150.25	-10.00	166.02	-10.00	120.41
110	2.71	145.30	-10.00	174.00	-10.00	125.48
115	3.16	140.44	-10.00	160.38	-10.00	116.93
120	3.45	135.52	-10.00	152.98	-10.00	114.28
125	4.18	130.61	-10.00	138.66	-10.00	104.44
130	4.47	125.65	-10.00	136.07	-10.00	102.53
135	4.15	120.66	-10.00	138.99	-10.00	104.68
140	3.41	115.65	-10.00	153.86	-10.00	114.82
145	3.56	110.68	-10.00	150.18	-10.00	112.49
150	4.25	105.72	-10.00	138.07	-10.00	104.01
155	4.31	100.73	-10.00	137.55	-10.00	103.63
160	3.91	95.74	-10.00	142.35	-10.00	107.06
165	3.42	90.76	-10.00	153.55	-10.00	114.63
170	3.06	85.79	-10.00	163.07	-10.00	118.58
175	2.65	80.82	-10.00	175.87	-10.00	126.70
180	2.33	75.86	-10.00	187.08	-10.00	134.13
185	2.03	70.90	-10.00	198.58	-10.00	142.01

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Antenna Centerline (AGL)	7.62 m / 25.0 ft			
Antenna Model	Vertex 15.2 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			11.8 (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	1.76	65.96	-10.00	211.62	-10.00	151.08
195	1.37	61.03	-10.00	232.47	-10.00	166.31
200	0.92	56.13	-10.00	262.62	-10.00	190.43
205	0.52	51.24	-10.00	318.74	-10.00	232.68
210	0.00	46.41	-9.66	416.38	-9.66	300.08
215	0.00	41.53	-8.46	431.79	-8.46	310.35
220	0.00	36.68	-7.11	449.71	-7.11	322.29
225	0.00	31.86	-5.58	470.27	-5.58	336.38
230	0.00	27.11	-3.83	495.86	-3.83	352.85
235	0.00	22.45	-1.78	527.46	-1.78	373.82
240	0.00	17.97	0.64	567.24	0.64	400.22
245	0.22	13.69	3.59	607.06	3.59	426.43
250	0.26	9.90	7.10	655.74	7.10	453.42
255	0.21	7.27	10.46	752.97	10.46	542.41
260	0.34	7.41	10.25	673.88	10.25	465.43
265	0.46	10.34	6.64	548.87	6.64	386.22
270	0.49	14.49	2.98	477.56	2.98	339.11
275	0.51	19.05	0.00	430.31	0.00	307.08
280	0.45	23.80	-2.41	419.41	-2.41	300.15
285	0.50	28.61	-4.41	378.27	-4.41	272.46
290	0.88	33.42	-6.10	300.46	-6.10	218.66
295	0.98	38.31	-7.58	273.87	-7.58	199.06
300	0.80	43.27	-8.90	286.47	-8.90	208.80
305	1.18	48.17	-10.00	243.29	-10.00	174.43
310	0.80	53.15	-10.00	277.46	-10.00	202.20
315	0.85	58.10	-10.00	270.66	-10.00	197.01
320	1.00	63.06	-10.00	254.20	-10.00	182.76
325	1.12	68.02	-10.00	246.80	-10.00	177.10
330	0.82	73.00	-10.00	274.92	-10.00	200.26
335	0.00	77.98	-10.00	412.20	-10.00	297.29
340	0.00	82.94	-10.00	412.20	-10.00	297.29
345	0.00	87.90	-10.00	412.20	-10.00	297.29
350	0.00	92.86	-10.00	412.20	-10.00	297.29
355	0.00	97.83	-10.00	412.20	-10.00	297.29

## 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: November 16, 2015