

# FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

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

Prepared By:  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147  
October 03, 2016

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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 09/01/2016.

#### Company

AMFM Broadcasting Licenses, LLC  
AT&T Mobility Spectrum LLC - N CA  
AT&T Mobility Wireless Operations Hldgs  
Advanced Technology Distributors, Inc.  
Alameda County of California  
Alpha Media Licensee LLC  
Antioch, City of  
Ayer Technology Inc  
BUTTE, COUNTY OF  
CALAVERAS COUNTY SHERIFF'S DEPARTMENT  
CBS Broadcasting Inc  
CBS Communication Services Inc  
CCT Telecomm, Inc.  
CENTRAL VALLEY CABLE TV, LLC  
CITY OF LODI  
CONTRA COSTA COUNTY COMMUNICATIONS DEPT.  
Cal.net, Inc.  
California Internet Solutions, Inc.  
California RSA No. 3 Limited Partnership  
California Rural Service Area #1, Inc.  
California Water Service Company  
California, State of  
Cellco Partnership - Southern California  
Central Valley Broadband  
Citizens Telecommunications of CA Inc.  
City & County of San Francisco PUC  
City of Oakland  
City of Woodland  
Clearwire Spectrum Holdings II, LLC  
Clearwire Spectrum Holdings III, LLC  
Clearwire Spectrum Holdings LLC  
Coastside Net, Inc.  
Commnet Four Corners, LLC  
Commnet of Nevada, LLC  
Conifer Communications  
Conterra Ultra Broadband, LLC  
Contra Costa Water District  
County of Sacramento - ECS-Network  
County of Sacramento - ECS-Network  
County of San Mateo

DM-TECH INC  
DigitalPath, Inc  
East Bay Municipal Utility District  
East Bay Regional Park  
Encore Business Systems  
Ether Web Network, Inc.  
Etheric Networks, Inc.  
Farmwald, Dr. Paul M  
Field, David J  
Fixed Wireless Holdings, LLC  
GTE Mobilnet of California LTD Partnersh  
Glenn County Office of Education  
Hayward, City of  
Interwest Management Services Inc.  
Johannesen, Norman A  
John K LaRue  
KGO Television, Inc.  
KTXL, LLC  
Lake County  
Lyon, Mike  
M.U.T. Licensing, LLC  
MENDOCINO COUNTY OF  
MHO Networks  
Marin County of California  
Mediacom California LLC  
Midpeninsula Regional Open Space Dist.  
Mimosa Networks  
Modesto Irrigation District  
Monte Leon LLC  
Muir Beach LAN, LLC  
NBC Telemundo License Co. - KNTV  
NORTHERN CALIFORNIA POWER AGENCY  
Napa, City of  
New Cingular Wireless PCS LLC - N CAL  
New Cingular Wireless PCS LLC - N Texas  
NextEra Energy Operating Services, LLC  
Nextlink Wireless, LLC  
Nextweb Inc  
Nor Cal Reg Pub Safety Traing Coll - JPA  
North Coast Internet  
Olympic Wireless, LLC  
Pacific Bell Tel Com dba AT&T California  
Pacific Gas and Electric Company  
Personal Network Computing, Inc.  
Proxim Wireless Corporation  
Radio License Holding VIII, LLC  
Redding MSA Limited Partnership  
Regents of the University of California  
Ricketts, Curtis W  
River Delta Wireless  
Ruralnet  
SAN FRANCISCO CITY & COUNTY CALIFORNIA  
Sacramento County  
Sacramento Television Stations, Inc  
Sacramento Valley Limited Partnership  
San Francisco, City and County of

San Francisco, City and County of  
San Joaquin County  
San Jose, City of (ECOMM)  
Santa Clara Valley Transportation Auth  
Sierra Nevada Communications  
Silicon Valley Regional Interop Authorit  
SmarterBroadband Inc.  
Softcom Internet Communications, Inc.  
Solano County Communications Division  
Sonoma, County of  
South San Joaquin Irrigation District  
Southern California Edison Company  
Sprint Spectrum L.P.  
Sprintcom, Inc  
St Francis Yacht Club  
Sutro Tower Inc.  
T-Mobile License LLC  
Tekify, LLC  
Telepath Corporation  
The Internet Store, Inc.  
Towerstream Corp.  
Union Pacific Railroad Company  
Valley Electric Association, Inc  
Valley Internet  
Varnet, Inc.  
Velociter Wireless, Inc.  
Verizon California Inc.  
Verizon Wireless (VAW) LLC-N CA/NV  
Vista Broadband Networks, Inc.  
Webpass Inc.  
Webperception, LLC  
WiLine Networks Inc.  
Wiline Spectrum Holdings LLC  
Winters Broadband  
XILLIENT, LLC  
Zeta Broadband, LLC  
enXco, Inc.  
unWired Broadband, Inc

## **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: 10/03/2016  
Job Number: 160901COMSGE04

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### Administrative Information

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

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### Site Information NAPA, CA

Venue Name  
Latitude (NAD 83) 38° 14' 41.0" N  
Longitude (NAD 83) 122° 16' 44.0" W  
Climate Zone A  
Rain Zone 3  
Ground Elevation (AMSL) 13.51 m / 44.3 ft

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### Link Information

Satellite Type Geostationary  
Mode TR - Transmit-Receive  
Modulation Digital  
Satellite Arc 50° W to 194° West Longitude  
Azimuth Range 101.2° to 258.4°  
Corresponding Elevation Angles 5.2° / 5.6°  
Antenna Centerline (AGL) 5.49 m / 18.0 ft

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### Antenna Information

		Receive - FCC32		Transmit - FCC32	
Manufacturer		Vertex		Vertex	
Model		9.0 KPK		9.0 KPK	
Gain / Diameter		58.6 dBi / 9.0 m		60.1 dBi / 9.0 m	
3-dB / 15-dB Beamwidth		0.20° / 0.38°		0.16° / 0.32°	
Max Available RF Power	(dBW/4 kHz) (dBW/MHz)			-14.0 10.0	
Maximum EIRP	(dBW/4 kHz) (dBW/MHz)			46.1 70.1	
Interference Objectives:	Long Term Short Term	-156.0 dBW/MHz -146.0 dBW/MHz	20% 0.01%	-151.0 dBW/4 kHz -128.0 dBW/4 kHz	20% 0.0025%

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### Frequency Information

	Receive 11.0 GHz	Transmit 14.0 GHz
Emission / Frequency Range (MHz)	7M10G7W - 14M0G7W / 10950.0 - 11200.0 7M10G7W - 14M0G7W / 11450.0 - 11700.0	7M10G7W - 14M0G7W / 14000.0 - 14500.0
Max Great Circle Coordination Distance	646.6 km / 401.7 mi	287.4 km / 178.5 mi
Precipitation Scatter Contour Radius	420.7 km / 261.4 mi	100.0 km / 62.1 mi

# COMSEARCH

## Earth Station Data Sheet

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### Coordination Values

### NAPA, CA

Licensee Name	Intelsat License LLC		
Latitude (NAD 83)	38° 14' 41.0" N		
Longitude (NAD 83)	122° 16' 44.0" W		
Ground Elevation (AMSL)	13.51 m / 44.3 ft		
Antenna Centerline (AGL)	5.49 m / 18.0 ft		
Antenna Model	Vertex 9 meter		
Antenna Mode	Receive 11.0 GHz		Transmit 14.0 GHz
Interference Objectives:	Long Term	-156.0 dBW/MHz 20%	-151.0 dBW/4 kHz 20%
	Short Term	-146.0 dBW/MHz 0.01%	-128.0 dBW/4 kHz 0.0025%
Max Available RF Power			-14.0 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 11.0 GHz		Transmit 14.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	101.15	-10.00	231.37	-10.00	115.80
5	0.00	96.17	-10.00	231.37	-10.00	115.80
10	0.84	91.19	-10.00	189.84	-10.00	100.00
15	0.50	86.20	-10.00	204.27	-10.00	100.00
20	0.48	81.22	-10.00	205.77	-10.00	100.00
25	0.51	76.24	-10.00	203.74	-10.00	100.00
30	1.57	71.23	-10.00	159.72	-10.00	100.00
35	2.00	66.23	-10.00	146.56	-10.00	100.00
40	2.00	61.24	-10.00	146.47	-10.00	100.00
45	2.95	56.22	-10.00	128.34	-10.00	100.00
50	2.94	51.23	-10.00	128.56	-10.00	100.00
55	3.68	46.21	-9.62	116.95	-9.62	100.00
60	3.82	41.21	-8.37	119.08	-8.37	100.00
65	4.61	36.20	-6.97	113.41	-6.97	100.00
70	4.67	31.19	-5.35	118.59	-5.35	100.00
75	4.32	26.20	-3.46	130.68	-3.46	100.00
80	4.23	21.21	-1.16	140.39	-1.16	100.00
85	4.05	16.23	1.74	158.27	1.74	100.00
90	3.91	11.26	5.71	186.20	5.71	100.00
95	3.05	6.54	11.61	232.07	11.61	100.00
100	3.46	2.08	24.04	646.56	24.04	287.38
105	3.25	4.15	16.56	350.31	16.56	140.56
110	4.02	7.44	10.22	204.91	10.22	100.00
115	4.84	10.61	6.35	173.20	6.35	100.00
120	5.65	13.70	3.58	143.62	3.58	100.00
125	6.35	16.74	1.41	127.64	1.41	100.00
130	6.77	19.82	-0.43	116.02	-0.43	100.00
135	6.55	23.21	-2.14	111.82	-2.14	100.00
140	5.94	26.73	-3.68	112.15	-3.68	100.00
145	6.26	29.31	-4.68	105.22	-4.68	100.00
150	6.02	32.07	-5.65	104.09	-5.65	100.00
155	6.79	33.65	-6.17	100.00	-6.17	100.00
160	5.50	36.70	-7.12	103.50	-7.12	100.00
165	5.78	37.95	-7.48	100.00	-7.48	100.00
170	5.20	39.60	-7.94	103.23	-7.94	100.00
175	4.54	40.92	-8.30	109.40	-8.30	100.00
180	4.46	41.23	-8.38	110.13	-8.38	100.00
185	4.55	40.91	-8.30	109.31	-8.30	100.00

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Antenna Mode	Receive 11.0 GHz		Transmit 14.0 GHz
Interference Objectives: Long Term	-156.0 dBW/MHz	20%	-151.0 dBW/4 kHz 20%
Short Term	-146.0 dBW/MHz	0.01%	-128.0 dBW/4 kHz 0.0025%
Max Available RF Power			-14.0 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 11.0 GHz		Transmit 14.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	4.87	39.92	-8.03	106.26	-8.03	100.00
195	5.07	38.62	-7.67	105.39	-7.67	100.00
200	4.47	37.63	-7.39	113.66	-7.39	100.00
205	4.88	35.32	-6.70	110.92	-6.70	100.00
210	4.20	33.59	-6.15	121.69	-6.15	100.00
215	4.28	30.89	-5.25	124.10	-5.25	100.00
220	3.57	28.54	-4.39	137.68	-4.39	100.00
225	2.77	26.01	-3.38	160.84	-3.38	100.00
230	2.02	23.22	-2.14	188.61	-2.14	100.00
235	1.30	20.24	-0.66	211.83	-0.66	100.00
240	0.62	17.11	1.17	249.51	1.17	115.88
245	0.00	13.82	3.48	297.76	3.48	152.74
250	0.00	10.05	6.94	320.76	6.94	167.04
255	0.00	6.57	11.56	430.66	11.56	202.74
260	0.26	5.56	13.37	621.32	13.37	276.80
265	0.42	8.35	8.95	308.30	8.95	150.72
270	0.45	12.64	4.46	279.85	4.46	133.11
275	0.46	17.32	1.04	259.75	1.04	124.09
280	0.44	22.14	-1.63	247.30	-1.63	118.21
285	0.42	27.02	-3.79	238.69	-3.79	114.44
290	0.81	31.88	-5.59	207.34	-5.59	100.00
295	0.96	36.81	-7.15	196.48	-7.15	100.00
300	0.84	41.78	-8.52	196.46	-8.52	100.00
305	1.08	46.73	-9.74	180.34	-9.74	100.00
310	0.67	51.73	-10.00	198.42	-10.00	100.00
315	0.90	56.69	-10.00	186.98	-10.00	100.00
320	0.88	61.66	-10.00	187.93	-10.00	100.00
325	0.99	66.64	-10.00	182.26	-10.00	100.00
330	0.74	71.63	-10.00	195.13	-10.00	100.00
335	0.00	76.62	-10.00	231.37	-10.00	115.80
340	0.00	81.60	-10.00	231.37	-10.00	115.80
345	0.00	86.57	-10.00	231.37	-10.00	115.80
350	0.00	91.55	-10.00	231.37	-10.00	115.80
355	0.00	96.53	-10.00	231.37	-10.00	115.80

## 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: October 03, 2016