

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
Ayeria Technologies 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.
Ethereic 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

Administrative Information

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

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

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

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	-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%

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

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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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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