



**INTELSAT**

*Envision. Connect. Transform.*

November 29, 2016

Ms. Marlene H. Dortch  
Secretary  
Federal Communications Commission  
445 12th Street, S.W.  
Washington, D.C. 20554

Re: Intelsat License LLC Application for Earth Station License  
Napa, California Earth Station E160169  
File No. SES-LIC-20161109-00878

Dear Ms. Dortch:

Intelsat License LLC ("Intelsat") herein supplements its above referenced pending application for a new earth station at its Napa, California facility to correct errors in the exhibits. Specifically, in Exhibit B, a 13 GHz report, Intelsat makes the following corrections:

- Coordinates (NAD83): 38° 14' 43.0" N, 122° 16' 51.0" W
- Satellite Location for Earth Station: 194°W
- Polarizations: Horizontal/Vertical
- Emissions: 900KF2D
- Minimum Elevation Angle: 7.87° @ 256.38° Azimuth, 5. 2° @ 258.4° Azimuth

In addition, in Exhibit C, a coordination report, the emission designator is erroneously defined as 900KG7W. The correct emission designator is 900KF2D. This correction does not affect the interference environment coordinated in the report.

Attached for reference are updated copies of both exhibits.

Please direct any further questions regarding this supplemental information to the undersigned at (703) 559-6949.

Sincerely,

Cynthia J. Grady  
Regulatory Counsel  
Intelsat Corporation

cc: Paul Blais  
Trang Nguyen

Intelsat Corporation  
7900 Tysons One Place, McLean, VA 22102-5972 USA [www.intelsat.com](http://www.intelsat.com) T +1 703-559-6800

**Intelsat Licences LLC  
Napa, California**

**Vertex 8.1 Meter Earth Station**

**1. Background**

This Exhibit is presented to demonstrate the extent to which the Intelsat License LLC ("Intelsat") satellite earth station in Napa, California is in compliance with the Federal Communications Commission ("FCC") Report and Order 96-377. The potential interference from the earth station to U.S. Navy shipboard radiolocation operations ("RADAR") and the National Aeronautics and Space Administration ("NASA") space research activities in the 13.75-14.0 GHz band is addressed in this exhibit. The parameters for the earth station are:

Coordinates (NAD83):	38° 14' 43.0" N, 122° 16' 51.0" W
Satellite Location for Earth Station:	IS-8 at 194°W to 50°W
Frequency Band:	13.75-14.00 GHz
Polarizations:	Horizontal/Vertical
Emissions:	900KF2D
Modulation:	FM/PCM/BPSK
Maximum Aggregate Uplink EIRP:	75dBW for all Carriers
<b>Transmit Antenna Characteristics</b>	
Antenna Size:	8.1 Meters in Diameter
Antenna Type/Model:	Vertex
Gain:	59.9 dBi
RF Power into Antenna Flange:	15.1 dBW or -8.4 dBW/4kHz
Minimum Elevation Angle:	7.87° @ 256.38° Azimuth 5.2° @ 258.4° Azimuth
Side Lobe Antenna Gain	FCC Reference Pattern

Because the above uplink spectrum is shared with the Federal Government, coordination in this band requires resolution data pertaining to potential interference between the earth stations and both U.S. Navy Department and NASA systems. Potential interference from the earth station could impact the U.S. Navy and/or NASA systems in two areas. These areas are noted in FCC Report and Order 96-377 dated September 1996, and consist of (1) Radiolocation and Radio Navigation, (2) Data Relay Satellites.

Summary of Coordination Issues:

- a.) Potential Impact to Government Radiolocation (Shipboard Radar)
- b.) Potential Impact to NASA Tracking and Data Relay Satellite Systems ("TDRSS")

## 2. Potential Impact to Government Radiolocation (Shipboard Radar)

Radiolocation operations ("RADAR") may occur anywhere in the 13.4-14.0 GHz frequency band aboard ocean-going U.S. Navy ships. FCC order 96-377 allocates the top 250MHz of this 600 MHz band to the Fixed Satellite Service ("FSS") on a co-primary basis with the radiolocation operations and provides for an interference protection level of  $-167 \text{ dBW/m}^2/4\text{kHz}$ .

The closest distance to the shoreline from Napa, California earth station is approximately 60 km southwest toward the Pacific Ocean. The calculation of the power spectral density at this distance is given by:

- |                              |  |
|------------------------------|--|
| 1. Clear Sky EIRP:           | 75 dBW   |
| 2. Carrier Bandwidth:        | 900 kHz  |
| 3. PD at antenna input:      | -8.4 dBW/4kHz                                  |
| 4. Transmit Antenna Gain:    | 59.9 dBi                                       |
| 5. Antenna Gain to Horizon:  | 6.6 dBi  |
| 6. Antenna Elevation Angles: | 7.9° @ 256.4° azimuth<br>5.2° @ 258.4° azimuth |

The earth station will radiate interference toward the ocean according to its off-axis side-lobe performance. A conservative analysis, using FCC standard reference pattern, results in an off-axis antenna gain of 6.6 towards the Pacific Ocean.

The signal density at the shoreline, through free space is:

PFD = Antenna Feed Power density (dBW/4kHz) + Antenna Off-Axis Gain (dBi) - Spread Loss ( $\text{dBW/m}^2$ )

$$= -8.4\text{dBW}/4\text{kHz} + 6.6\text{dBi} - 10*\log[4*\text{PI}*(60\text{km})^2]$$

$$= -108.4 \text{ dBW}/\text{m}/4\text{kHz} - \text{Additional Path Losses (62.8 dB)}$$

Our calculation indicate additional path loss of approximately 62.82 dB including absorption loss and earth diffraction loss for the actual path profiles from the earth station to the nearest shoreline.

The calculated PFD, including additional path losses to the closest shoreline, is  $-171.2\text{dBW}/\text{m}^2/4 \text{ kHz}$ . This is 4.2dB below the  $-167.0 \text{ dBW}/\text{m}^2/4 \text{ kHz}$  interference criteria of the R&O 96-377. Therefore, there should be no interference to the U.S. Navy RADAR from the Napa, California earth station due to the distance and the terrain blockage between the site and the shore.

## 3. Potential Impact to NASA's Tracking and Data Relay Satellite System

The geographic location of the Intelsat earth station in Napa, California is outside the 60 km radius coordination contour surrounding NASA's White Sands, New Mexico ground station complex. Therefore the TDRSS space-to-earth link will not be impacted by the Intelsat earth station in Napa, California.

The TDRSS space-to-space link in the 13.772 to 13.778 GHz band is assumed to be protected if an earth station produces an EIRP of less than 71 dBW/6MHz in this band. The 8.1 meter earth station antenna will not transmit in this band. Therefore, there will be no potential interference to the TDRSS space-to-space link.

#### **4. Coordination Result Summary and Conclusions**

The results of the analysis and calculation performed in this exhibit indicate that compatible operation between the earth station at the Napa, California facility and U.S. Navy and NASA TDRSS space-to-earth and space-to-space links are possible. No interference to U.S. Navy RADAR or NASA TDRSS operations from the Napa, California site earth station should occur.

# 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  
November 28, 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 09/09/2016.

Company

Amazing Facts, Inc  
CBS Broadcasting Inc  
CNN America, Inc.  
COMCAST OF CALIFORNIA XV, INC.  
Calneva Broadband, LLC  
Cocola Broadcasting Companies LLC  
Comcast Cablevision Corp of California  
Comcast of California/MD/PA/VA/WV, LLC  
Esteem Broadcasting of California LLC  
HORIZON CABLE TV, INC  
Hearst Stations, Inc.  
Hearst Stations, Inc. (KCRA)  
ION MEDIA SACRAMENTO LICENSE, INC.  
KDTV License Partnership, G.P.  
KGO Television, Inc.  
KQED INC  
KTVU, Fox Television Stations Inc.  
KTXL, LLC  
KUVS License Partnership, G.P.  
KVIE, Inc.  
KXTV, LLC  
Lincoln Broadcasting Co, A California LP  
Locuspoint KFTL Licensee, LLC  
Mediacom California LLC  
Midcontinent Communications  
NBC Telemundo License Co. - KNTV  
NBC Telemundo License Co. - KSTS  
NBC Telemundo License LLC  
NRJ TV SF License Co, LLC  
Sacramento Television Stations, Inc  
TTWN Networks, LLC  
Young Broadcasting of San Francisco  
Yuba Community College District

## **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: 09/09/2016  
Job Number: 160909COMSGE03

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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' 42.7" N  
Longitude (NAD 83) 122° 16' 48.9" W  
Climate Zone A  
Rain Zone 3  
Ground Elevation (AMSL) 11.23 m / 36.8 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

		<b>Receive - FCC32</b>		<b>Transmit - FCC32</b>
Manufacturer		Vertex		Vertex
Model		8.1 KPK		8.1 KPK
Gain / Diameter		58.4 dBi / 8.1 m		59.1 dBi / 8.1 m
3-dB / 15-dB Beamwidth		0.22° / 0.44°		0.20° / 0.38°
Max Available RF Power	(dBW/4 kHz) (dBW/MHz)			-14.0 10.0
Maximum EIRP	(dBW/4 kHz) (dBW/MHz)			45.1 69.1
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%

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### Frequency Information

	<b>Receive 12.0 GHz</b>	<b>Transmit 13.0 GHz</b>
Emission / Frequency Range (MHz)	300KG7W / 12747.0 - 12748.0	900KF2D / 13998.0
Max Great Circle Coordination Distance	626.2 km / 389.0 mi	279.8 km / 173.9 mi
Precipitation Scatter Contour Radius	418.5 km / 260.0 mi	100.0 km / 62.1 mi

# COMSEARCH

## Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147  
(703)726-5500 <http://www.comsearch.com>

### Coordination Values

### NAPA, CA

Licensee Name	Intelsat License LLC		
Latitude (NAD 83)	38° 14' 42.7" N		
Longitude (NAD 83)	122° 16' 48.9" W		
Ground Elevation (AMSL)	11.23 m / 36.8 ft		
Antenna Centerline (AGL)	5.49 m / 18.0 ft		
Antenna Model	Vertex 8.1 meter		
Antenna Mode	Receive 12.0 GHz		Transmit 13.0 GHz
Interference Objectives: Long Term	-156.0 dBW/MHz	20%	-151.0 dBW/4 kHz 20%
	Short Term	-146.0 dBW/MHz	0.01%
Max Available RF Power		-14.0 (dBW/4 kHz)	-128.0 dBW/4 kHz 0.0025%

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 12.0 GHz		Transmit 13.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	101.14	-10.00	227.19	-10.00	115.80
5	0.00	96.17	-10.00	227.19	-10.00	115.80
10	0.84	91.19	-10.00	185.46	-10.00	100.00
15	0.69	86.20	-10.00	193.55	-10.00	100.00
20	0.42	81.22	-10.00	207.34	-10.00	100.00
25	0.42	76.24	-10.00	207.35	-10.00	100.00
30	1.17	71.24	-10.00	171.73	-10.00	100.00
35	2.35	66.22	-10.00	135.58	-10.00	100.00
40	1.70	61.25	-10.00	151.90	-10.00	100.00
45	2.75	56.22	-10.00	129.26	-10.00	100.00
50	2.83	51.23	-10.00	127.71	-10.00	100.00
55	3.36	46.22	-9.62	119.73	-9.62	100.00
60	3.71	41.21	-8.38	118.23	-8.38	100.00
65	4.55	36.20	-6.97	111.38	-6.97	100.00
70	4.72	31.19	-5.35	115.12	-5.35	100.00
75	4.44	26.20	-3.46	126.03	-3.46	100.00
80	4.14	21.21	-1.17	138.43	-1.17	100.00
85	4.01	16.23	1.74	154.54	1.74	100.00
90	3.78	11.28	5.70	183.97	5.70	100.00
95	3.03	6.55	11.60	227.20	11.60	100.00
100	3.36	2.16	23.63	626.17	23.63	279.84
105	3.07	4.26	16.25	344.33	16.25	139.38
110	2.79	8.24	9.10	218.52	9.10	100.00
115	3.78	11.32	5.65	183.71	5.65	100.00
120	4.53	14.47	2.99	152.22	2.99	100.00
125	4.86	17.78	0.75	136.28	0.75	100.00
130	4.29	21.61	-1.37	135.37	-1.37	100.00
135	4.60	24.67	-2.80	126.57	-2.80	100.00
140	4.54	27.81	-4.10	122.21	-4.10	100.00
145	4.68	30.58	-5.14	116.50	-5.14	100.00
150	4.73	33.15	-6.01	112.62	-6.01	100.00
155	4.46	35.68	-6.81	113.02	-6.81	100.00
160	3.97	38.08	-7.52	116.92	-7.52	100.00
165	3.34	40.24	-8.12	125.40	-8.12	100.00
170	3.14	41.60	-8.48	127.68	-8.48	100.00
175	2.95	42.50	-8.71	130.31	-8.71	100.00
180	2.85	42.84	-8.80	130.45	-8.80	100.00
185	2.55	42.90	-8.81	136.22	-8.81	100.00

# COMSEARCH

## Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147  
(703)726-5500 <http://www.comsearch.com>

### Coordination Values

### NAPA, CA

Licensee Name	Intelsat License LLC		
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Antenna Centerline (AGL)	5.49 m / 18.0 ft		
Antenna Model	Vertex 8.1 meter		
Antenna Mode	Receive 12.0 GHz		Transmit 13.0 GHz
Interference Objectives:	Long Term	-156.0 dBW/MHz	20%
	Short Term	-146.0 dBW/MHz	0.01%
Max Available RF Power			-14.0 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 12.0 GHz		Transmit 13.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	2.35	42.36	-8.68	141.05	-8.68	100.00
195	1.96	41.53	-8.46	151.33	-8.46	100.00
200	1.32	40.44	-8.17	175.56	-8.17	100.00
205	1.06	38.57	-7.66	186.01	-7.66	100.00
210	0.73	36.40	-7.03	203.36	-7.03	100.00
215	0.45	33.87	-6.25	220.10	-6.25	105.97
220	0.00	31.20	-5.36	249.22	-5.36	127.55
225	0.00	28.00	-4.18	255.05	-4.18	130.59
230	0.00	24.63	-2.79	262.10	-2.79	133.07
235	0.00	21.13	-1.12	270.77	-1.12	137.83
240	0.00	17.51	0.92	281.72	0.92	144.11
245	0.00	13.82	3.48	296.05	3.48	152.74
250	0.23	9.91	7.10	311.89	7.10	164.20
255	0.00	6.57	11.56	419.79	11.56	200.35
260	0.33	5.50	13.49	601.26	13.49	269.24
265	0.42	8.35	8.95	302.33	8.95	150.32
270	0.51	12.62	4.47	270.11	4.47	130.17
275	0.45	17.32	1.04	256.19	1.04	124.50
280	0.46	22.14	-1.63	240.98	-1.63	116.84
285	0.46	27.02	-3.79	230.04	-3.79	111.07
290	0.85	31.88	-5.59	203.63	-5.59	100.00
295	1.19	36.79	-7.14	184.38	-7.14	100.00
300	0.86	41.78	-8.52	191.08	-8.52	100.00
305	1.13	46.72	-9.74	174.27	-9.74	100.00
310	0.77	51.72	-10.00	189.31	-10.00	100.00
315	0.85	56.69	-10.00	185.31	-10.00	100.00
320	0.99	61.66	-10.00	177.82	-10.00	100.00
325	1.16	66.63	-10.00	172.06	-10.00	100.00
330	0.87	71.62	-10.00	184.09	-10.00	100.00
335	0.00	76.62	-10.00	227.19	-10.00	115.80
340	0.00	81.60	-10.00	227.19	-10.00	115.80
345	0.00	86.58	-10.00	227.19	-10.00	115.80
350	0.00	91.55	-10.00	227.19	-10.00	115.80
355	0.00	96.53	-10.00	227.19	-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: November 28, 2016