

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
KVH Industries, Inc.
NUEVO, CA
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
May 31, 2012

TABLE OF CONTENTS

1. CONCLUSIONS	3
2. SUMMARY OF RESULTS	4
3. SUPPLEMENTAL SHOWING	5
4. EARTH STATION COORDINATION DATA.....	6
5. CERTIFICATION.....	10

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 05/22/2012.

Company

ANAHEIM CITY, COMMUNICATIONS DIVISION
AT&T California
AirSites2000, LLC
BNSF Railway Company
CCO SoCal I, LLC
CNG Communications, Inc.
COAST COMMUNITY COLLEGE DISTRICT
California, State of
Calvary Chapel of Costa Mesa
Cellco Partnership - California
Coachella Valley Water District
DRS Technical Services
ENTRAVISION HOLDINGS, LLC
LOS ANGELES CITY WATER & POWER
Los Angeles County Dept of Public Works
Los Angeles County FCC Licensing Section
Los Angeles SMSA Ltd. Partnership
MOBILE RELAY ASSOCIATES INC
MONTEBELLO CITY CALIFORNIA
Metropolitan Water Dist of So California
New Cingular Wireless PCS - Los Angeles
New Cingular Wireless PCS LLC -San Diego
ORANGE, COUNTY OF, CA
QUALCOMM INC.
Regional 3Cs
Riverside, County of
SAN DIEGO, CITY OF
San Bernardino County of California
San Diego County
San Diego Gas & Electric Company
Skyriver Communications
Southern California Edison Company
Southern California Gas Company
Southern California Regional Rail Auth.
T-Mobile License LLC
TV MICROWAVES CO
Turn Wireless, LLC
University of California,HPWREN
Verizon California Inc.
Verizon Wireless (VAW) LLC (CA)
Western Pacific Mobile Microwave
Western Technical Services

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: 05/30/2012
Job Number: 120522COMSGE03

Administrative Information

Status ENGINEER PROPOSAL
Call Sign
Licensee Code KVHIND
Licensee Name KVH Industries, Inc.

Site Information

NUEVO, CA
Venue Name
Latitude (NAD 83) 33° 47' 46.3" N
Longitude (NAD 83) 117° 5' 20.7" W
Climate Zone A
Rain Zone 4
Ground Elevation (AMSL) 562.97 m / 1847.0 ft

Link Information

Satellite Type Geostationary
Mode TR - Transmit-Receive
Modulation Digital
Satellite Arc 53° W to 180° West Longitude
Azimuth Range 105.1° to 254.1°
Corresponding Elevation Angles 12.8° / 13.8°
Antenna Centerline (AGL) 2.74 m / 9.0 ft

Antenna Information

	Receive - FCC32	Transmit - FCC32
Manufacturer	KVH	KVH
Model	Tracphone V11	Tracphone V11
Gain / Diameter	15.5 dBi / 1.0 m	15.5 dBi / 1.0 m
3-dB / 15-dB Beamwidth	5.20° / 10.40°	3.50° / 7.90°
Max Available RF Power	(dBW/4 kHz) (dBW/MHz)	-24.1 -0.1
Maximum EIRP	(dBW/4 kHz) (dBW/MHz)	18.1 42.1
Interference Objectives:	Long Term -156.0 dBW/MHz 20% Short Term -146.0 dBW/MHz 0.01%	-154.0 dBW/4 kHz 20% -131.0 dBW/4 kHz 0.0025%

Frequency Information

	Receive 4.0 GHz	Transmit 6.1 GHz
Emission / Frequency Range (MHz)	10M0G7D - 30M0G7D / 3700.0 - 4200.0	10M0G7D - 30M0G7D / 5925.0 - 6425.0
Max Great Circle Coordination Distance	285.9 km / 177.6 mi	106.9 km / 66.4 mi
Precipitation Scatter Contour Radius	381.8 km / 237.2 mi	100.0 km / 62.1 mi

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Coordination Values

NUEVO, CA

Licensee Name KVH Industries, Inc.
Latitude (NAD 83) 33° 47' 46.3" N
Longitude (NAD 83) 117° 5' 20.7" W
Ground Elevation (AMSL) 562.97 m / 1847.0 ft
Antenna Centerline (AGL) 2.74 m / 9.0 ft
Antenna Model KVH 1 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 -24.1 (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	1.31	104.81	-10.00	210.97	-10.00	100.00
5	2.69	99.96	-10.00	178.61	-10.00	100.00
10	2.03	95.03	-10.00	193.91	-10.00	100.00
15	2.83	90.12	-10.00	175.46	-10.00	100.00
20	3.24	85.19	-10.00	164.00	-10.00	100.00
25	3.16	80.27	-10.00	165.93	-10.00	100.00
30	3.93	75.31	-10.00	149.25	-10.00	100.00
35	3.44	70.40	-10.00	159.55	-10.00	100.00
40	3.54	65.47	-10.00	157.49	-10.00	100.00
45	3.57	60.55	-10.00	156.81	-10.00	100.00
50	3.28	55.67	-10.00	163.19	-10.00	100.00
55	2.74	50.86	-10.00	177.59	-10.00	100.00
60	2.69	46.01	-9.57	180.85	-9.57	100.00
65	3.40	41.03	-8.33	170.91	-8.33	100.00
70	3.63	36.15	-6.95	172.73	-6.95	100.00
75	3.19	31.49	-5.45	190.30	-5.45	100.00
80	3.73	26.61	-3.63	188.01	-3.63	100.00
85	3.74	22.00	-1.56	198.51	-1.56	100.00
90	3.64	17.63	0.84	210.72	0.84	100.00
95	2.83	14.18	3.21	244.49	3.21	100.00
100	3.01	11.05	5.92	259.48	5.92	100.00
105	3.35	9.46	7.60	263.33	7.60	100.00
110	3.84	10.20	6.78	244.31	6.78	100.00
115	3.88	13.29	3.91	223.87	3.91	100.00
120	4.12	17.02	1.23	206.17	1.23	100.00
125	3.80	21.04	-1.08	199.80	-1.08	100.00
130	4.02	24.63	-2.78	186.57	-2.78	100.00
135	3.84	28.33	-4.31	182.30	-4.31	100.00
140	3.89	31.71	-5.53	174.70	-5.53	100.00
145	4.14	34.73	-6.52	162.64	-6.52	100.00
150	3.24	38.35	-7.59	178.24	-7.59	100.00
155	3.62	40.69	-8.24	164.57	-8.24	100.00
160	4.88	41.85	-8.54	141.18	-8.54	100.00
165	4.95	43.53	-8.97	138.49	-8.97	100.00
170	5.18	44.55	-9.22	134.94	-9.22	100.00
175	5.68	44.79	-9.28	131.15	-9.28	100.00
180	5.90	44.81	-9.28	129.00	-9.28	100.00
185	6.47	44.01	-9.09	123.67	-9.09	100.00

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Coordination Values

NUEVO, CA

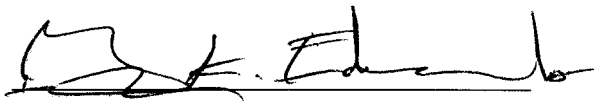
Licensee Name	KVH Industries, Inc.			
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Antenna Mode	Receive 4.0 GHz		Transmit 6.1 GHz	
Interference Objectives: Long Term	-156.0 dBW/MHz	20%	-154.0 dBW/4 kHz	20%
Short Term	-146.0 dBW/MHz	0.01%	-131.0 dBW/4 kHz	0.0025%
Max Available RF Power			-24.1 (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	6.53	43.24	-8.90	123.72	-8.90	100.00
195	5.93	42.62	-8.74	130.85	-8.74	100.00
200	5.37	41.43	-8.43	136.24	-8.43	100.00
205	5.61	39.07	-7.80	136.45	-7.80	100.00
210	5.82	36.37	-7.02	137.67	-7.02	100.00
215	6.42	33.05	-5.98	135.52	-5.98	100.00
220	6.23	30.07	-4.95	142.22	-4.95	100.00
225	6.15	26.77	-3.69	149.33	-3.69	100.00
230	6.11	23.26	-2.16	157.73	-2.16	100.00
235	5.83	19.75	-0.39	173.26	-0.39	100.00
240	5.88	15.93	1.95	186.34	1.95	100.00
245	5.64	12.21	4.83	205.53	4.83	100.00
250	5.10	9.60	7.44	225.43	7.44	100.00
255	4.59	9.25	7.85	237.08	7.85	100.00
260	4.94	10.61	6.36	220.54	6.36	100.00
265	4.83	14.06	3.30	206.52	3.30	100.00
270	4.77	18.21	0.49	192.01	0.49	100.00
275	4.82	22.65	-1.88	178.07	-1.88	100.00
280	3.39	27.76	-4.09	192.95	-4.09	100.00
285	2.85	32.58	-5.82	195.75	-5.82	100.00
290	1.18	37.75	-7.42	228.01	-7.42	100.00
295	1.19	42.45	-8.70	220.86	-8.70	100.00
300	0.00	47.46	-9.91	285.86	-9.91	106.93
305	0.00	52.21	-10.00	285.28	-10.00	106.70
310	0.27	56.95	-10.00	275.93	-10.00	100.83
315	0.00	61.80	-10.00	285.28	-10.00	106.70
320	0.00	66.62	-10.00	285.28	-10.00	106.70
325	0.00	71.46	-10.00	285.28	-10.00	106.70
330	0.00	76.30	-10.00	285.28	-10.00	106.70
335	0.00	81.15	-10.00	285.28	-10.00	106.70
340	0.00	86.00	-10.00	285.28	-10.00	106.70
345	0.00	90.86	-10.00	285.28	-10.00	106.70
350	0.00	95.71	-10.00	285.28	-10.00	106.70
355	0.44	100.59	-10.00	256.00	-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.

BY: _



Gary K. Edwards
Senior Manager
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147

DATED: May 31, 2012