

# FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for

**Educational Media Foundation  
Rocklin, California**

**Satellite Earth Station**

Prepared By:

COMSEARCH

19700 Janelia Farm Boulevard

Ashburn, VA 20147

October 28, 2011

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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, based upon the restrictions noted in the Summary of Results (Section 2).

## 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 most cases.

The following companies reported potential great circle interference conflicts that did not meet the objectives on a line-of-sight basis. When over-the-horizon losses and frequency separation are considered on the interfering paths, sufficient losses exist to negate harmful interference from occurring with the proposed transmit-receive earth station. Further, the transmit band will be limited to frequencies 5925.0 to 5958.5 MHz, 5991.0 to 6028.0 MHz, 6040.5 to 6210.0 MHz, and 6243.0 to 6425.0 MHz.

### Company

MCI Communications Services Inc.  
Sacramento Municipal Utility District

No other carriers reported potential interference cases.

### 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 August 15, 2011.

#### Company

AT&T California  
CALIFORNIA RSA NO. 3 LIMITED PARTNERSHIP  
CBS Broadcasting Inc  
California, State of  
EAST BAY MUNICIPAL UTILITY DISTRICT  
GTE Mobilnet of California LTD Partnersh  
ICG Telecom Group, Inc. - Debtor in poss  
KQED INC  
M.U.T. Licensing, LLC  
MCI Communications Services Inc.  
METROPOLITAN AREA NETWORKS, INC.  
Marin County of California  
New Cingular Wireless PCS LLC - N CAL  
Nextel of California Inc.  
Open Range Communications  
Pacific Gas and Electric Company  
Placer, County of  
Sacramento County  
Sacramento Municipal Utility District  
Sacramento Valley Limited Partnership  
San Joaquin County  
Solano County Communications Division  
Union Pacific Railroad Company  
Volcano Telephone Company  
Western Technical Services  
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: 10/28/2011  
Job Number: 110815COMSJC02

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### Administrative Information

Status ENGINEER PROPOSAL  
Call Sign  
Licensee Code EDUMED  
Licensee Name Educational Media Foundation

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### Site Information

**ROCKLIN, CALIFORNIA**  
Venue Name  
Latitude (NAD 83) 38° 48' 56.3" N  
Longitude (NAD 83) 121° 16' 40.8" W  
Climate Zone A  
Rain Zone 3  
Ground Elevation (AMSL) 61.57 m / 202.0 ft

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### Link Information

Satellite Type Geostationary  
Mode TR - Transmit-Receive  
Modulation Digital  
Satellite Arc 83° W to 125° West Longitude  
Azimuth Range 128.5° to 185.9°  
Corresponding Elevation Angles 30.2° / 44.9°  
Antenna Centerline (AGL) 4.88 m / 16.0 ft

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### Antenna Information

	<b>Receive</b>	<b>Transmit</b>
Manufacturer	Andrew Corporation	Andrew Corporation
Model	7.3 Meter	7.3 Meter
Gain / Diameter	48.5 dBi / 7.3 m	51.8 dBi / 7.3 m
3-dB / 15-dB Beamwidth	0.66° / 1.22°	0.44° / 0.88°
Max Available RF Power (dBW/4 kHz)		-25.7
(dBW/MHz)		-1.7
Maximum EIRP (dBW/4 kHz)		26.1
(dBW/MHz)		50.1
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

	<b>Receive 4.0 GHz</b>	<b>Transmit 6.1 GHz</b>
Emission / Frequency Range (MHz)	3M40G7W / 3700.0 - 4200.0	3M40G7W / 5925.0 - 5958.5 3M40G7W / 5991.0 - 6028.0 3M40G7W / 6040.5 - 6210.0 3M40G7W / 6243.0 - 6425.0
Max Great Circle Coordination Distance	291.1 km / 180.9 mi	105.0 km / 65.2 mi
Precipitation Scatter Contour Radius	360.5 km / 224.0 mi	100.0 km / 62.1 mi

# COMSEARCH

## Earth Station Data Sheet

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### Coordination Values

### ROCKLIN, CA

Licensee Name Educational Media Foundation  
Latitude (NAD 83) 38° 48' 56.3" N  
Longitude (NAD 83) 121° 16' 40.8" W  
Ground Elevation (AMSL) 61.57 m / 202.0 ft  
Antenna Centerline (AGL) 4.88 m / 16.0 ft  
Antenna Model Andrew Corporation 7.3 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 -25.7 (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	0.54	122.72	-10.00	247.09	-10.00	100.00
5	0.65	118.66	-10.00	240.30	-10.00	100.00
10	0.74	114.52	-10.00	234.86	-10.00	100.00
15	0.83	110.30	-10.00	229.36	-10.00	100.00
20	0.91	106.03	-10.00	225.12	-10.00	100.00
25	1.04	101.73	-10.00	219.20	-10.00	100.00
30	1.12	97.39	-10.00	216.46	-10.00	100.00
35	0.95	93.02	-10.00	223.00	-10.00	100.00
40	1.04	88.66	-10.00	219.16	-10.00	100.00
45	1.15	84.29	-10.00	215.65	-10.00	100.00
50	1.12	79.93	-10.00	216.61	-10.00	100.00
55	1.28	75.57	-10.00	211.77	-10.00	100.00
60	1.25	71.26	-10.00	212.79	-10.00	100.00
65	1.26	66.98	-10.00	212.49	-10.00	100.00
70	1.19	62.78	-10.00	214.42	-10.00	100.00
75	1.28	58.59	-10.00	211.86	-10.00	100.00
80	1.20	54.55	-10.00	214.19	-10.00	100.00
85	1.28	50.56	-10.00	211.84	-10.00	100.00
90	1.23	46.76	-9.75	214.49	-9.75	100.00
95	1.21	43.14	-8.87	219.50	-8.87	100.00
100	1.21	39.74	-7.98	223.94	-7.98	100.00
105	1.18	36.66	-7.11	229.74	-7.11	100.00
110	1.16	33.98	-6.28	235.19	-6.28	100.00
115	1.07	31.84	-5.58	242.44	-5.58	100.00
120	0.98	30.32	-5.04	249.36	-5.04	100.00
125	0.92	29.47	-4.73	255.18	-4.73	100.00
130	0.86	29.37	-4.70	258.69	-4.70	100.00
135	0.76	30.10	-4.96	263.94	-4.96	100.00
140	0.64	31.54	-5.47	268.11	-5.47	100.00
145	0.51	33.62	-6.16	273.13	-6.16	100.00
150	0.42	36.15	-6.95	277.41	-6.95	100.00
155	0.42	38.58	-7.66	272.82	-7.66	100.00
160	0.43	40.65	-8.23	268.44	-8.23	100.00
165	0.30	42.46	-8.70	280.54	-8.70	100.00
170	0.00	44.01	-9.09	291.14	-9.09	104.99
175	0.00	44.79	-9.28	289.90	-9.28	104.52
180	0.00	45.05	-9.34	289.49	-9.34	104.36
185	0.00	44.89	-9.30	289.74	-9.30	104.46



# COMSEARCH

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### Coordination Values

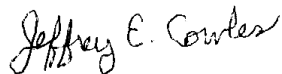
### ROCKLIN, CA

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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			-25.7 (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	0.00	45.03	-9.34	289.53	-9.34	104.38
195	0.00	45.60	-9.47	288.65	-9.47	104.04
200	0.00	46.59	-9.71	287.15	-9.71	103.47
205	0.00	47.96	-10.00	285.28	-10.00	102.74
210	0.00	49.69	-10.00	285.28	-10.00	102.74
215	0.00	51.74	-10.00	285.28	-10.00	102.74
220	0.00	54.07	-10.00	285.28	-10.00	102.74
225	0.00	56.63	-10.00	285.28	-10.00	102.74
230	0.00	59.40	-10.00	285.28	-10.00	102.74
235	0.00	62.35	-10.00	285.28	-10.00	102.74
240	0.00	65.44	-10.00	285.28	-10.00	102.74
245	0.00	68.65	-10.00	285.28	-10.00	102.74
250	0.00	71.96	-10.00	285.28	-10.00	102.74
255	0.00	75.34	-10.00	285.28	-10.00	102.74
260	0.00	78.79	-10.00	285.28	-10.00	102.74
265	0.00	82.28	-10.00	285.28	-10.00	102.74
270	0.00	85.81	-10.00	285.28	-10.00	102.74
275	0.00	89.35	-10.00	285.28	-10.00	102.74
280	0.00	92.89	-10.00	285.28	-10.00	102.74
285	0.00	96.42	-10.00	285.28	-10.00	102.74
290	0.00	99.92	-10.00	285.28	-10.00	102.74
295	0.00	103.39	-10.00	285.28	-10.00	102.74
300	0.00	106.80	-10.00	285.28	-10.00	102.74
305	0.00	110.14	-10.00	285.28	-10.00	102.74
310	0.00	113.39	-10.00	285.28	-10.00	102.74
315	0.00	116.53	-10.00	285.28	-10.00	102.74
320	0.00	119.53	-10.00	285.28	-10.00	102.74
325	0.00	122.37	-10.00	285.28	-10.00	102.74
330	0.00	125.01	-10.00	285.28	-10.00	102.74
335	0.00	127.43	-10.00	285.28	-10.00	102.74
340	0.00	129.59	-10.00	285.28	-10.00	102.74
345	0.00	131.44	-10.00	285.28	-10.00	102.74
350	0.27	130.44	-10.00	276.80	-10.00	100.00
355	0.40	126.65	-10.00	261.12	-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.



Jeffrey E. Cowles  
Engineer III, Telecommunications  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147

DATED: October 28, 2011