

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for

**Educational Media Foundation
Indianapolis, Indiana**

Satellite Earth Station

Prepared By:
COMSEARCH

19700 Janelia Farm Boulevard
Ashburn, Virginia 20147
November 5, 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 spectrum will be limited to frequencies 5925.0 to 6181.0 MHz, 6214.0 to 6240.0 MHz, and 6273.0 to 6425.0 MHz.

Company

Duke Energy Carolinas LLC
GTE Mobilnet of Indiana Ltd.
Indiana, State of (IPSC)

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 14, 2011.

Company

AT&T CORP
Aether Group LLC
Butler County Sheriff's Office
CELLULAR PROPERTIES, INC.
Conterra Ultra Broadband, LLC
Cyberlink Inc.
Duke Energy Carolinas LLC
ECW Wireless, LLC
GTE Mobilnet of Indiana Ltd Partnership
Hoosier Energy Rec, Inc.
INDIANA MICHIGAN POWER COMPANY
Indiana Department of Transportation
Indiana RSA #1 Limited Partnership
Indiana RSA #4 Limited Partnership
Indiana RSA #5 Limited Partnership
Indiana, State of (IPSC)
International Communications Group, Inc.
METROPOLITAN AREA NETWORKS, INC.
METROPOLITAN EMERGENCY COMM AGENCY
New Cingular Wireless PCS - Indiana
Norfolk Southern Railway
Northern Indiana Public Service Company
Open Range Communications
PANHANDLE EASTERN PIPELINE COMPANY, LLC
South Central Indiana REMC
Southern Indiana RSA Limited Partnernrship
UTILITIES DISTRICT OF WESTERN INDIANA
United Telephone Co of Indiana, Inc.
Verizon Wireless -Indiana/Kentucky

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: 11/05/2011
Job Number: 110814COMSJC01

Administrative Information

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

Site Information

INDIANAPOLIS, INDIANA
Venue Name
Latitude (NAD 83) 39° 54' 13.2" N
Longitude (NAD 83) 86° 3' 38.5" W
Climate Zone A
Rain Zone 2
Ground Elevation (AMSL) 242.93 m / 797.0 ft

Link Information

Satellite Type Geostationary
Mode TR - Transmit-Receive
Modulation Digital
Satellite Arc 90° W to 140° West Longitude
Azimuth Range 186.1° to 245.0°
Corresponding Elevation Angles 43.7° / 18.6°
Antenna Centerline (AGL) 3.05 m / 10.0 ft

Antenna Information

	Receive	Transmit
Manufacturer	Andrew Corporation	Andrew Corporation
Model	4.5 Meter	4.5 Meter
Gain / Diameter	43.8 dBi / 4.5 m	47.5 dBi / 4.5 m
3-dB / 15-dB Beamwidth	1.10° / 2.10°	0.73° / 1.37°
Max Available RF Power (dBW/4 kHz)		-18.8
(dBW/MHz)		5.2
Maximum EIRP (dBW/4 kHz)		28.7
(dBW/MHz)		52.7
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%

Frequency Information

	Receive 4.0 GHz	Transmit 6.1 GHz
Emission / Frequency Range (MHz)	307KG7W / 3700.0 - 4200.0 3M40G7W / 3700.0 - 4200.0	307KG7W / 5925.0 - 6181.0 307KG7W / 6214.0 - 6240.0 307KG7W / 6273.0 - 6425.0 3M40G7W / 5925.0 - 6181.0 3M40G7W / 6214.0 - 6240.0 3M40G7W / 6273.0 - 6425.0
Max Great Circle Coordination Distance	358.6 km / 222.8 mi	147.8 km / 91.8 mi
Precipitation Scatter Contour Radius	507.4 km / 315.2 mi	100.0 km / 62.1 mi

COMSEARCH

Earth Station Data Sheet

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Coordination Values

INDIANAPOLIS, IN

Licensee Name Educational Media Foundation
Latitude (NAD 83) 39° 54' 13.2" N
Longitude (NAD 83) 86° 3' 38.5" W
Ground Elevation (AMSL) 242.93 m / 797.0 ft
Antenna Centerline (AGL) 3.05 m / 10.0 ft
Antenna Model Andrew Corporation 4.5 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 -18.8 (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	0.00	113.65	-10.00	285.28	-10.00	120.16
5	0.00	118.32	-10.00	285.28	-10.00	120.16
10	0.00	122.97	-10.00	285.28	-10.00	120.16
15	0.00	127.57	-10.00	285.28	-10.00	120.16
20	0.00	132.12	-10.00	285.28	-10.00	120.16
25	0.00	133.21	-10.00	285.28	-10.00	120.16
30	0.00	131.42	-10.00	285.28	-10.00	120.16
35	0.00	129.31	-10.00	285.28	-10.00	120.16
40	0.00	126.92	-10.00	285.28	-10.00	120.16
45	0.00	124.28	-10.00	285.28	-10.00	120.16
50	0.00	121.44	-10.00	285.28	-10.00	120.16
55	0.00	118.42	-10.00	285.28	-10.00	120.16
60	0.00	115.25	-10.00	285.28	-10.00	120.16
65	0.00	111.96	-10.00	285.28	-10.00	120.16
70	0.20	108.64	-10.00	284.75	-10.00	119.82
75	0.22	105.17	-10.00	282.74	-10.00	118.53
80	0.23	101.64	-10.00	281.05	-10.00	117.43
85	0.23	98.06	-10.00	281.04	-10.00	117.43
90	0.24	94.44	-10.00	279.73	-10.00	116.58
95	0.24	90.82	-10.00	279.89	-10.00	116.68
100	0.27	87.18	-10.00	276.98	-10.00	114.78
105	0.31	83.56	-10.00	271.28	-10.00	111.02
110	0.26	79.96	-10.00	277.86	-10.00	115.36
115	0.29	76.40	-10.00	274.15	-10.00	112.92
120	0.24	72.90	-10.00	279.73	-10.00	116.57
125	0.24	69.46	-10.00	280.06	-10.00	116.79
130	0.21	66.13	-10.00	283.43	-10.00	118.97
135	0.26	62.87	-10.00	278.30	-10.00	115.64
140	0.28	59.75	-10.00	275.79	-10.00	114.00
145	0.24	56.83	-10.00	280.83	-10.00	117.29
150	0.22	54.09	-10.00	282.48	-10.00	118.36
155	0.21	51.57	-10.00	284.38	-10.00	119.59
160	0.21	49.32	-10.00	283.83	-10.00	119.23
165	0.00	47.55	-9.93	285.73	-9.93	120.35
170	0.20	45.78	-9.52	288.09	-9.52	121.24
175	0.23	44.55	-9.22	285.86	-9.22	119.35
180	0.20	43.80	-9.04	291.31	-9.04	122.56
185	0.00	43.58	-8.98	291.83	-8.98	122.81

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Coordination Values

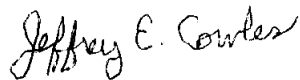
INDIANAPOLIS, IN

Licensee Name	Educational Media Foundation			
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Antenna Model	Andrew Corporation 4.5 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			-18.8 (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	42.83	-8.79	293.07	-8.79	123.31
195	0.00	41.61	-8.48	295.14	-8.48	124.13
200	0.00	39.95	-8.04	298.06	-8.04	125.29
205	0.00	37.92	-7.47	301.87	-7.47	126.79
210	0.00	35.55	-6.77	306.65	-6.77	128.64
215	0.00	32.90	-5.93	313.12	-5.93	130.89
220	0.00	30.00	-4.93	320.19	-4.93	133.57
225	0.00	26.91	-3.75	328.66	-3.75	135.56
230	0.00	23.70	-2.37	338.75	-2.37	139.55
235	0.00	21.02	-1.06	348.51	-1.06	143.54
240	0.00	19.23	-0.10	355.84	-0.10	146.62
245	0.00	18.60	0.26	358.60	0.26	147.80
250	0.00	19.25	-0.11	355.75	-0.11	146.58
255	0.00	21.06	-1.08	348.37	-1.08	143.48
260	0.00	23.75	-2.39	338.59	-2.39	139.48
265	0.00	27.08	-3.82	328.17	-3.82	135.37
270	0.00	30.83	-5.23	318.08	-5.23	132.78
275	0.00	34.87	-6.56	308.09	-6.56	129.20
280	0.00	39.11	-7.81	299.62	-7.81	125.90
285	0.00	43.48	-8.96	292.00	-8.96	122.88
290	0.00	47.96	-10.00	285.28	-10.00	120.16
295	0.00	52.51	-10.00	285.28	-10.00	120.16
300	0.00	57.11	-10.00	285.28	-10.00	120.16
305	0.00	61.75	-10.00	285.28	-10.00	120.16
310	0.00	66.43	-10.00	285.28	-10.00	120.16
315	0.00	71.12	-10.00	285.28	-10.00	120.16
320	0.00	75.84	-10.00	285.28	-10.00	120.16
325	0.00	80.57	-10.00	285.28	-10.00	120.16
330	0.00	85.30	-10.00	285.28	-10.00	120.16
335	0.00	90.04	-10.00	285.28	-10.00	120.16
340	0.00	94.78	-10.00	285.28	-10.00	120.16
345	0.00	99.51	-10.00	285.28	-10.00	120.16
350	0.00	104.24	-10.00	285.28	-10.00	120.16
355	0.00	108.95	-10.00	285.28	-10.00	120.16

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: November 5, 2011