

# FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for

**Weigel Broadcasting Company  
South Bend, Indiana**

**Satellite Earth Station**

Prepared By:  
COMSEARCH

19700 Janelia Farm Boulevard  
Ashburn, Virginia 20147  
November 5, 2014

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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 and frequency offset 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 restricted to frequencies 5925.0 to 6077.0 MHz, 6110.0 to 6329.0 MHz, and 6362.0 to 6425.0 MHz.

### Company

Blackwater Telecom  
Celco Partnership – Indiana / Illinois  
Fundamental Broadcastig LLC  
High Voltage Communications LLC  
Indiana Dept. of Transportation Toll Road  
Indiana Michigan Power Company  
MVC Research, LLC  
New Cingular Wireless PCS – Indiana LLC  
Northern Indiana Public Service Company  
Open Line Communications  
Rendezvous Communications LLC  
Webline Holdings LLC

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 September 15, 2014.

#### Company

AB Services LLC  
Aether Group LLC  
Alltel Telelink, Inc.  
Appalachian Broadcasting  
ArcelorMittal USA Inc.  
Auburn Data Systems, LLC  
BNSF Railway Company  
Blackwater Telecom  
Cellco Partnership - Indiana/Illinois  
Chicago SMSA Limited Partnership  
China Cat Productions LLC  
Clear Spiral LLC  
ComEd a.k.a. Commonwealth Edison  
Commercial Broadband Solutions, Inc.  
Community Foundation of NW Indiana  
Comprehensive Wireless LLC  
Converge Towers LLC  
Convergence Technologies, Inc  
Cook, County of  
Coralinks  
Cyberlink Inc.  
ECW Wireless, LLC  
EG Broadcast Newco Corp  
Eastern MLG LLC  
Essex Telcom, Inc.  
Everywhere Wireless, LLC  
FBN INDIANA INC  
Fundamental Broadcasting LLC  
Geodesic Networks LLC  
Hallco Unlimited, Inc.  
High Voltage Communications LLC  
Illinois Central Railroad  
Illinois Department of Transportation  
Illinois State Toll Highway Authority  
Illinois Valley Cellular RSA #2-I

Company (Continued)

Indiana Michigan Power Company  
Indiana Dept of Transportation Toll Road  
Indiana RSA #1 Limited Partnership  
Indiana RSA #4 Limited Partnership  
Indiana RSA 2 Partnership  
Indiana, State of (IPSC)  
Jefferson Microwave, LLC  
Lakeland School District  
LigTel Communications, Inc.  
MCI Communications Services Inc.  
MVC Research. LLC  
Mercury Wireless, Inc.  
MetaLINK Technologies, Inc.  
Mifflin Mobilecom  
National Tower Company LLC  
New Cingular Wireless PCS - Indiana LLC  
New Cingular Wireless PCS LLC - Michigan  
New Cingular Wireless PCS, LLC - IL  
Norfolk Southern Railway  
Northeast IL. Regional Commuter Railroad  
Northern Indiana Public Service Company  
Ohio Turnpike Commission  
Old Dominion LLC  
Open Line Communications  
PA Communications  
Pitt Power  
Real-Time Networks  
Rendezvous Communications LLC  
SW Networks  
Southern Michigan Cellular Company  
Southwest Central Dispatch  
Sprint Spectrum L.P.  
Sprintcom, Inc  
Standard Backhaul Communications LLC  
Thought Transmissions, LLC  
Torelco LLC  
Transworld Network Corp  
Turtle Networks 6559  
Twin Lakes Ventures  
United Telephone Co of Indiana, Inc.  
Velox Networks LLC  
Verizon Wireless (VAW) LLC - IA/IL/WI  
Verizon Wireless (VAW) LLC - Ohio  
Verizon Wireless (VAW) LLC- IN & KY Mkt  
W.A.T.C.H. TV Company Inc.  
WEIGEL BROADCASTING COMPANY  
Weblin Holdings LLC  
Wireless Internetwork LLC  
Wireless World Enterprises, LLC  
Wireless World, LLC  
World Class Wireless, LLC

Company (Continued)

Zen Networks, Inc  
iSignal

## **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: 11/05/2014  
Job Number: 140915COMSJC02

### Administrative Information

Status ENGINEER PROPOSAL  
Call Sign  
Licensee Code SWEIGE  
Licensee Name WEIGEL BROADCASTING COMPANY

### Site Information SOUTH BEND, INDIANA

Venue Name  
Latitude (NAD 83) 41° 42' 55.2" N  
Longitude (NAD 83) 86° 12' 17.7" W  
Climate Zone A  
Rain Zone 2  
Ground Elevation (AMSL) 233.48 m / 766.0 ft

### Link Information

Satellite Type Geostationary  
Mode TR - Transmit-Receive  
Modulation Digital  
Satellite Arc 72° W to 139° West Longitude  
Azimuth Range 159.2° to 243.2°  
Corresponding Elevation Angles 39.7° / 18.6°  
Antenna Centerline (AGL) 3.05 m / 10.0 ft

### Antenna Information

	Receive	Transmit
Manufacturer	ASC Signal	ASC Signal
Model	4.9 Meter	4.9 Meter
Gain / Diameter	44.7 dBi / 4.9 m	48.3 dBi / 4.9 m
3-dB / 15-dB Beamwidth	1.00° / 1.90°	0.66° / 1.25°

4M00G7W to 36M0G7W

Max Available RF Power	(dBW/4 kHz)	-13.0	-16.5		
	(dBW/MHz)	11.0	7.5		
Maximum EIRP	(dBW/4 kHz)	35.3	31.8		
	(dBW/MHz)	59.3	55.8		
	(dBW)	65.3	71.3		
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)	4M00G7W - 36M0G7W / 3700.0 - 4200.0	4M00G7W - 36M0G7W / 5925.0 - 6077.0 4M00G7W - 36M0G7W / 6110.0 - 6329.0 4M00G7W - 36M0G7W / 6362.0 - 6425.0

Max Great Circle Coordination Distance	358.3 km / 222.6 mi	170.3 km / 105.8 mi
Precipitation Scatter Contour Radius	507.4 km / 315.3 mi	100.0 km / 62.1 mi

# COMSEARCH

## Earth Station Data Sheet

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### Coordination Values

### SOUTH BEND, IN

Licensee Name WEIGEL BROADCASTING COMPANY  
Latitude (NAD 83) 41° 42' 55.2" N  
Longitude (NAD 83) 86° 12' 17.7" W  
Ground Elevation (AMSL) 233.48 m / 766.0 ft  
Antenna Centerline (AGL) 3.05 m / 10.0 ft  
Antenna Model ASC Signal 4.9 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 -13.0 (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	0.45	115.37	-10.00	255.59	-10.00	115.46
5	0.43	120.05	-10.00	257.13	-10.00	116.54
10	0.45	124.70	-10.00	255.85	-10.00	115.65
15	0.38	128.87	-10.00	263.28	-10.00	120.81
20	0.32	125.82	-10.00	269.83	-10.00	125.29
25	0.27	122.58	-10.00	276.71	-10.00	129.90
30	0.23	119.20	-10.00	281.08	-10.00	132.79
35	0.22	115.71	-10.00	282.70	-10.00	133.85
40	0.23	112.12	-10.00	281.53	-10.00	133.09
45	0.25	108.44	-10.00	278.62	-10.00	131.17
50	0.22	104.69	-10.00	283.15	-10.00	134.15
55	0.00	100.87	-10.00	285.28	-10.00	134.30
60	0.00	97.05	-10.00	285.28	-10.00	134.30
65	0.00	93.21	-10.00	285.28	-10.00	134.30
70	0.00	89.37	-10.00	285.28	-10.00	134.30
75	0.00	85.52	-10.00	285.28	-10.00	134.30
80	0.00	81.69	-10.00	285.28	-10.00	134.30
85	0.00	77.88	-10.00	285.28	-10.00	134.30
90	0.00	74.12	-10.00	285.28	-10.00	134.30
95	0.00	70.41	-10.00	285.28	-10.00	134.30
100	0.00	66.77	-10.00	285.28	-10.00	134.30
105	0.00	63.22	-10.00	285.28	-10.00	134.30
110	0.00	59.79	-10.00	285.28	-10.00	134.30
115	0.00	56.49	-10.00	285.28	-10.00	134.30
120	0.00	53.37	-10.00	285.28	-10.00	134.30
125	0.00	50.45	-10.00	285.28	-10.00	134.30
130	0.00	47.77	-9.98	285.41	-9.98	134.36
135	0.00	45.40	-9.43	288.96	-9.43	135.91
140	0.00	43.36	-8.93	292.19	-8.93	137.33
145	0.00	41.73	-8.51	294.92	-8.51	138.54
150	0.00	40.55	-8.20	296.99	-8.20	139.47
155	0.00	39.85	-8.01	298.24	-8.01	140.02
160	0.00	39.68	-7.96	298.56	-7.96	140.17
165	0.00	40.03	-8.06	297.93	-8.06	139.88
170	0.00	40.87	-8.29	296.42	-8.29	139.21
175	0.00	41.58	-8.47	295.19	-8.47	138.66
180	0.20	41.61	-8.48	294.64	-8.48	138.29

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Antenna Centerline (AGL)	3.05 m / 10.0 ft				
Antenna Model	ASC Signal 4.9 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	-13.0 (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)
185	0.00	41.58	-8.47	295.19	-8.47	138.66
190	0.00	40.87	-8.29	296.42	-8.29	139.21
195	0.00	39.72	-7.98	298.48	-7.98	140.13
200	0.00	38.16	-7.54	301.41	-7.54	141.45
205	0.00	36.23	-6.98	305.24	-6.98	143.19
210	0.00	33.98	-6.28	310.05	-6.28	145.39
215	0.00	31.44	-5.44	316.57	-5.44	148.13
220	0.00	28.67	-4.44	323.70	-4.44	151.50
225	0.00	25.70	-3.25	332.30	-3.25	155.66
230	0.00	22.66	-1.88	342.38	-1.88	160.64
235	0.00	20.26	-0.66	351.54	-0.66	165.27
240	0.00	18.85	0.12	357.49	0.12	169.94
245	0.00	18.67	0.22	358.29	0.22	170.34
250	0.00	19.75	-0.39	353.61	-0.39	167.96
255	0.00	21.91	-1.52	345.12	-1.52	162.02
260	0.00	24.86	-2.89	334.95	-2.89	156.95
265	0.00	28.36	-4.32	324.57	-4.32	151.92
270	0.00	32.22	-5.70	314.70	-5.70	147.26
275	0.00	36.34	-7.01	305.01	-7.01	143.09
280	0.00	40.63	-8.22	296.84	-8.22	139.40
285	0.28	44.95	-9.32	279.95	-9.32	131.05
290	0.40	49.44	-10.00	260.85	-10.00	119.14
295	0.38	54.03	-10.00	262.92	-10.00	120.56
300	0.35	58.67	-10.00	266.29	-10.00	122.88
305	0.44	63.32	-10.00	256.22	-10.00	115.90
310	0.54	68.01	-10.00	246.98	-10.00	109.41
315	0.56	72.73	-10.00	245.81	-10.00	108.56
320	0.60	77.46	-10.00	243.13	-10.00	106.60
325	0.59	82.21	-10.00	244.07	-10.00	107.29
330	0.51	86.96	-10.00	249.41	-10.00	111.16
335	0.49	91.72	-10.00	251.28	-10.00	112.41
340	0.50	96.47	-10.00	250.18	-10.00	111.62
345	0.42	101.21	-10.00	258.30	-10.00	117.36
350	0.45	105.95	-10.00	255.36	-10.00	115.30
355	0.46	110.67	-10.00	254.58	-10.00	114.75

## 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  
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COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, Va. 20147

DATED: November 5, 2014