

# FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for  
**Kanza Society, Inc**  
**GARDEN CITY, KS**  
**Satellite Earth Station**

Prepared By:  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147  
January 23, 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. 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.

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 are considered on the interfering paths, sufficient blockage exists to negate harmful interference from occurring with the proposed transmit-receive earth station.

### Company

Kansas Department of Transportation  
Sunflower Electric Power Corporation  
NE Colorado Cellular, Inc  
Verizon Wireless (VAW) LLC (KS,MO,MN)

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 09/17/2013.

Company

Cellular Inc. Network Corporation  
Elkhart Telephone Co., Inc.  
Epic Touch LLC  
FiberLight LLC  
KN Telecommunications, Inc.  
Kansas Department of Transportation  
Mid Kansas Inc.  
NE Colorado Cellular, Inc.  
New Cingular Wireless PCS LLC -Colorado  
New Cingular Wireless PCS, LLC - KS/MO  
New Cingular Wireless PCS, LLC - OK  
Oklahoma Department of Transportation  
PANHANDLE EASTERN PIPELINE COMPANY, LLC  
Stelera Wireless, LLC  
Sunflower Electric Power Corporation  
TRI-COUNTY ELECTRIC COOPERATIVE  
Verizon Wireless (VAW) LLC (KS,MO,MN)

## **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: 01/23/2014  
Job Number: 130917COMSTC03

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### Administrative Information

Licensee Name Kanza Society, Inc

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### Site Information

#### GARDEN CITY, KS

Latitude (NAD 83) 37° 57' 58.0" N  
Longitude (NAD 83) 100° 52' 19.0" W  
Climate Zone A  
Rain Zone 2  
Ground Elevation (AMSL) 864.09 m / 2834.9 ft

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### Link Information

Satellite Type Geostationary  
Mode TR - Transmit-Receive  
Modulation Digital  
Satellite Arc 90° W to 140° West Longitude  
Azimuth Range 162.7° to 232.9°  
Corresponding Elevation Angles 44.5° / 30.2°  
Antenna Centerline (AGL) 2.44 m / 8.0 ft

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### Antenna Information

#### Receive

Manufacturer Prodelin 13830  
Model 1380  
Gain / Diameter 42.1 dBi / 3.8 m  
3-dB / 15-dB Beamwidth 2.00° / 4.00°

#### Transmit

Prodelin  
1380  
46.0 dBi / 3.8 m  
1.00° / 2.00°

		<u>76K8G7W – 307KG7W</u>			
Max Available RF Power	(dBW/4 kHz)	-5.84	-5.84		
	(dBW/MHz)	18.16	18.16		
Maximum EIRP	(dBW/4 kHz)	40.16	40.16		
	(dBW/MHz)	64.16	64.16		
	(dBW)	53.00	59.01		
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

#### Receive 4.0 GHz

Emission / Frequency Range (MHz) 76K0G7W – 307K0G7W / 3700.0 - 4200.0

#### Transmit 6.1 GHz

76K0G7W – 307K0G7W / 5925.0 - 6425.0

Max Great Circle Coordination Distance 311.3 km / 193.4 mi 172.7 km / 107.3 mi  
Precipitation Scatter Contour Radius 489.0 km / 303.8 mi 100.0 km / 62.1 mi

# COMSEARCH

## Earth Station Data Sheet

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### Coordination Values

### GARDEN CITY, KS

Licensee Name Kanza Society, Inc  
Latitude (NAD 83) 37° 57' 58.0" N  
Longitude (NAD 83) 100° 52' 19.0" W  
Ground Elevation (AMSL) 864.09 m / 2834.9 ft  
Antenna Centerline (AGL) 2.44 m / 8.0 ft  
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 -5.8 (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	121.43	-10.00	285.28	-10.00	157.27
5	0.00	125.41	-10.00	285.28	-10.00	157.27
10	0.00	129.28	-10.00	285.28	-10.00	157.27
15	0.00	127.02	-10.00	285.28	-10.00	157.27
20	0.00	124.52	-10.00	285.28	-10.00	157.27
25	0.00	121.79	-10.00	285.28	-10.00	157.27
30	0.00	118.88	-10.00	285.28	-10.00	157.27
35	0.00	115.81	-10.00	285.28	-10.00	157.27
40	0.00	112.62	-10.00	285.28	-10.00	157.27
45	0.00	109.32	-10.00	285.28	-10.00	157.27
50	0.00	105.94	-10.00	285.28	-10.00	157.27
55	0.00	102.49	-10.00	285.28	-10.00	157.27
60	0.00	98.99	-10.00	285.28	-10.00	157.27
65	0.00	95.45	-10.00	285.28	-10.00	157.27
70	0.00	91.90	-10.00	285.28	-10.00	157.27
75	0.00	88.34	-10.00	285.28	-10.00	157.27
80	0.00	84.78	-10.00	285.28	-10.00	157.27
85	0.00	81.24	-10.00	285.28	-10.00	157.27
90	0.00	77.74	-10.00	285.28	-10.00	157.27
95	0.00	74.29	-10.00	285.28	-10.00	157.27
100	0.00	70.90	-10.00	285.28	-10.00	157.27
105	0.00	67.59	-10.00	285.28	-10.00	157.27
110	0.00	64.39	-10.00	285.28	-10.00	157.27
115	0.00	61.32	-10.00	285.28	-10.00	157.27
120	0.00	58.40	-10.00	285.28	-10.00	157.27
125	0.00	55.66	-10.00	285.28	-10.00	157.27
130	0.00	53.13	-10.00	285.28	-10.00	157.27
135	0.00	50.86	-10.00	285.28	-10.00	157.27
140	0.00	48.88	-10.00	285.28	-10.00	157.27
145	0.00	47.23	-9.86	286.20	-9.86	157.79
150	0.00	45.95	-9.56	288.12	-9.56	158.89
155	0.00	45.07	-9.35	289.47	-9.35	159.66
160	0.31	44.31	-9.16	277.30	-9.16	149.42
165	0.30	44.30	-9.16	278.56	-9.16	150.42
170	0.41	44.62	-9.24	264.34	-9.24	139.51
175	0.37	45.37	-9.42	268.50	-9.42	142.93
180	0.29	45.71	-9.50	276.90	-9.50	149.64
185	0.30	45.43	-9.43	275.83	-9.43	148.68



# COMSEARCH

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### Coordination Values

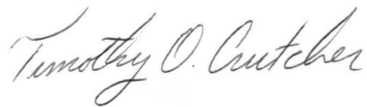
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Antenna Mode	Receive 4.0 GHz			Transmit 6.1 GHz	
Interference Objectives: Long Term	-156.0 dBW/MHz	20%		-154.0 dBW/4 kHz	20%
Short Term	-146.0 dBW/MHz	0.01%		-131.0 dBW/4 kHz	0.0025%
Max Available RF Power				-5.8 (dBW/4 kHz)	

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	0.31	44.63	-9.24	276.01	-9.24	148.52
195	0.23	43.42	-8.94	288.60	-8.94	158.24
200	0.24	41.67	-8.49	290.14	-8.49	158.76
205	0.46	39.34	-7.87	267.25	-7.87	139.69
210	0.35	36.94	-7.19	284.49	-7.19	151.93
215	0.28	34.43	-6.42	299.19	-6.42	162.61
220	0.29	32.33	-5.74	302.21	-5.74	163.87
225	0.26	30.86	-5.24	309.19	-5.24	170.39
230	0.30	30.02	-4.94	306.81	-4.94	167.83
235	0.26	30.00	-4.93	311.29	-4.93	171.55
240	0.25	30.70	-5.18	311.21	-5.18	171.96
245	0.28	32.06	-5.65	304.17	-5.65	165.35
250	0.00	34.30	-6.38	309.34	-6.38	172.67
255	0.00	36.79	-7.14	304.10	-7.14	169.71
260	0.22	39.54	-7.93	295.80	-7.93	162.49
265	0.00	42.93	-8.82	292.90	-8.82	161.63
270	0.00	46.42	-9.67	287.40	-9.67	158.48
275	0.00	50.11	-10.00	285.28	-10.00	157.27
280	0.00	53.96	-10.00	285.28	-10.00	157.27
285	0.00	57.93	-10.00	285.28	-10.00	157.27
290	0.00	62.00	-10.00	285.28	-10.00	157.27
295	0.00	66.14	-10.00	285.28	-10.00	157.27
300	0.00	70.35	-10.00	285.28	-10.00	157.27
305	0.00	74.59	-10.00	285.28	-10.00	157.27
310	0.00	78.87	-10.00	285.28	-10.00	157.27
315	0.00	83.18	-10.00	285.28	-10.00	157.27
320	0.00	87.49	-10.00	285.28	-10.00	157.27
325	0.00	91.82	-10.00	285.28	-10.00	157.27
330	0.00	96.13	-10.00	285.28	-10.00	157.27
335	0.00	100.44	-10.00	285.28	-10.00	157.27
340	0.00	104.72	-10.00	285.28	-10.00	157.27
345	0.00	108.98	-10.00	285.28	-10.00	157.27
350	0.00	113.19	-10.00	285.28	-10.00	157.27
355	0.00	117.34	-10.00	285.28	-10.00	157.27

## 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.



Timothy O. Crutcher  
Frequency Planner  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147

DATED: January 23, 2014