

# FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for  
**Learfield Communications Inc.**  
**JEFFERSON, MO**  
**(10 Meter)**  
**Satellite Earth Station**

Prepared By:  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147  
April 14, 2016

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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

Missouri RSA 11/12 Limited Partnership  
USCOC of Greater Missouri, 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 03/04/2016.

Company

Ameren Services Company  
Cellco Partnership - Missouri  
KCP&L Greater Missouri Operations Co  
MISSOURI, STATE OF  
Missouri #15 Rural Cellular, Inc  
Missouri RSA 11/12 Limited Partnership  
Missouri RSA 8 Limited Partnership  
New Cingular Wireless PCS, LLC - KS, MO  
Northeast Technologies, LLC  
Panhandle Eastern Pipe Line Company, L.P  
Saint Charles, County of  
Shawn C. Peppers dba: Video Direct  
USCOC of Greater Missouri, LLC  
USCOC of Missouri RSA #5, Inc.  
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: 04/13/2016  
Job Number: 160304COMSGE03

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### Administrative Information

Status ENGINEER PROPOSAL  
Call Sign E5184  
Licensee Code ZLEARF  
Licensee Name Learfield Communications Inc.

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### Site Information

**JEFFERSON, MO**  
Venue Name  
Latitude (NAD 83) 38° 34' 52.1" N  
Longitude (NAD 83) 92° 15' 16.7" W  
Climate Zone A  
Rain Zone 2  
Ground Elevation (AMSL) 237.74 m / 780.0 ft

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### Link Information

Satellite Type Geostationary  
Mode TR - Transmit-Receive  
Modulation Analog and Digital  
Satellite Arc 70° W to 145° West Longitude  
Azimuth Range 146.7° to 244.6°  
Corresponding Elevation Angles 39.7° / 20.1°  
Antenna Centerline (AGL) 5.49 m / 18.0 ft

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### Antenna Information

		Receive - FCC32	Transmit - FCC32
Manufacturer		Scientific-Atlanta	Scientific-Atlanta
Model		8015	8015
Gain / Diameter		51.2 dBi / 10.0 m	54.4 dBi / 10.0 m
3-dB / 15-dB Beamwidth		0.60° / 1.20°	0.60° / 1.20°
Max Available RF Power	(dBW/4 kHz) (dBW/MHz)		(1) -14.5 (2) -5.0 9.5 19.0
Maximum EIRP	(dBW/4 kHz) (dBW/MHz)		39.9 49.4 63.9 73.4
Interference Objectives:	Long Term Short Term	-156.0 dBW/MHz 20% -146.0 dBW/MHz 0.01%	-154.0 dBW/4 kHz 20% -131.0 dBW/4 kHz 0.0025%

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### Frequency Information

Emission / Frequency Range (MHz)	Receive 4.0 GHz	Transmit 6.1 GHz
	1M50G7W - 2M45G7W / 3700.0 - 4200.0	(1) 200KF3A, 1M50G7W, 2M45G7W / 5925.0 - 6425.0 (2) 200KF3A, 1M50G7W, 2M45G7W / 5925.0 - 6175.0

Max Great Circle Coordination Distance 298.5 km / 185.5 mi 135.8 km / 84.4 mi  
Precipitation Scatter Contour Radius 503.5 km / 312.8 mi 100.0 km / 62.1 mi

# COMSEARCH

## Earth Station Data Sheet

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### Coordination Values

### JEFFERSON, MO

Licensee Name Learfield Communications Inc.  
Latitude (NAD 83) 38° 34' 52.1" N  
Longitude (NAD 83) 92° 15' 16.7" W  
Ground Elevation (AMSL) 237.74 m / 780.0 ft  
Antenna Centerline (AGL) 5.49 m / 18.0 ft  
Antenna Model Scientific-Atlanta 10 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 -14.5 (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	113.74	-10.00	285.28	-10.00	131.50
5	0.00	118.36	-10.00	285.28	-10.00	131.50
10	0.00	122.94	-10.00	285.28	-10.00	131.50
15	0.00	120.83	-10.00	285.28	-10.00	131.50
20	0.00	117.41	-10.00	285.28	-10.00	131.50
25	0.00	113.88	-10.00	285.28	-10.00	131.50
30	0.00	110.26	-10.00	285.28	-10.00	131.50
35	0.00	106.56	-10.00	285.28	-10.00	131.50
40	0.00	102.80	-10.00	285.28	-10.00	131.50
45	0.00	99.01	-10.00	285.28	-10.00	131.50
50	0.00	95.18	-10.00	285.28	-10.00	131.50
55	0.00	91.33	-10.00	285.28	-10.00	131.50
60	0.31	87.47	-10.00	271.93	-10.00	122.69
65	0.47	83.60	-10.00	252.60	-10.00	109.39
70	0.68	79.72	-10.00	238.51	-10.00	100.00
75	0.00	76.03	-10.00	285.28	-10.00	131.50
80	0.00	72.29	-10.00	285.28	-10.00	131.50
85	0.00	68.62	-10.00	285.28	-10.00	131.50
90	0.00	65.02	-10.00	285.28	-10.00	131.50
95	0.00	61.52	-10.00	285.28	-10.00	131.50
100	0.00	58.15	-10.00	285.28	-10.00	131.50
105	0.00	54.93	-10.00	285.28	-10.00	131.50
110	0.00	51.90	-10.00	285.28	-10.00	131.50
115	0.00	49.10	-10.00	285.28	-10.00	131.50
120	0.00	46.56	-9.70	287.19	-9.70	132.31
125	0.00	44.34	-9.17	290.61	-9.17	133.73
130	0.00	42.50	-8.71	293.62	-8.71	133.73
135	0.00	41.08	-8.34	296.05	-8.34	134.74
140	0.00	40.13	-8.09	297.74	-8.09	135.45
145	0.00	39.69	-7.97	298.54	-7.97	135.79
150	0.00	39.77	-7.99	298.39	-7.99	135.73
155	0.00	40.37	-8.15	297.31	-8.15	135.27
160	0.00	41.47	-8.44	295.37	-8.44	134.46
165	0.00	42.99	-8.83	292.81	-8.83	133.39
170	0.00	44.26	-9.15	290.73	-9.15	133.78
175	0.00	45.05	-9.34	289.50	-9.34	133.27
180	0.00	45.32	-9.41	289.08	-9.41	133.10
185	0.28	44.77	-9.27	279.38	-9.27	126.56



# COMSEARCH

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### Coordination Values

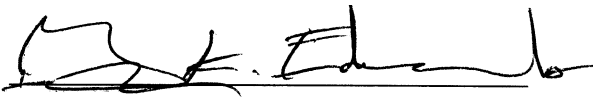
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Short Term -146.0 dBW/MHz 0.01% -131.0 dBW/4 kHz 0.0025%  
Max Available RF Power -14.5 (dBW/4 kHz)

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	0.20	44.07	-9.10	290.53	-9.10	133.58
195	0.00	42.99	-8.83	292.81	-8.83	133.39
200	0.00	41.26	-8.39	295.73	-8.39	134.61
205	0.42	38.80	-7.72	273.36	-7.72	120.13
210	0.90	35.98	-6.90	243.14	-6.90	100.00
215	1.25	32.99	-5.96	233.96	-5.96	100.00
220	1.14	30.12	-4.97	243.58	-4.97	100.00
225	2.04	26.31	-3.50	223.09	-3.50	100.00
230	2.27	22.89	-1.99	225.83	-1.99	100.00
235	2.42	20.03	-0.54	230.58	-0.54	100.00
240	2.73	17.94	0.65	230.45	0.65	100.00
245	2.75	17.34	1.03	232.28	1.03	100.00
250	2.77	18.10	0.56	228.70	0.56	100.00
255	2.82	20.06	-0.56	220.93	-0.56	100.00
260	3.23	22.66	-1.88	204.75	-1.88	100.00
265	2.17	26.87	-3.73	218.58	-3.73	100.00
270	2.08	30.76	-5.20	213.10	-5.20	100.00
275	2.12	34.85	-6.55	205.44	-6.55	100.00
280	2.18	39.11	-7.81	200.81	-7.81	100.00
285	2.24	43.52	-8.97	193.87	-8.97	100.00
290	2.27	48.03	-10.00	188.25	-10.00	100.00
295	2.41	52.58	-10.00	185.08	-10.00	100.00
300	2.43	57.22	-10.00	184.72	-10.00	100.00
305	2.21	61.94	-10.00	189.82	-10.00	100.00
310	1.90	66.68	-10.00	197.17	-10.00	100.00
315	1.42	71.45	-10.00	207.84	-10.00	100.00
320	1.70	76.14	-10.00	202.53	-10.00	100.00
325	1.38	80.89	-10.00	209.09	-10.00	100.00
330	1.10	85.63	-10.00	217.11	-10.00	100.00
335	1.05	90.36	-10.00	218.60	-10.00	100.00
340	1.07	95.08	-10.00	218.12	-10.00	100.00
345	0.86	99.79	-10.00	227.98	-10.00	100.00
350	0.29	104.45	-10.00	274.34	-10.00	124.30
355	0.44	109.14	-10.00	256.34	-10.00	112.02

## 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: April 14, 2016