

# FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for  
**Iridium Constellation LLC**  
**CHANDLER, AZ**  
**(E960244)**  
**Satellite Earth Station**

Prepared By:  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147  
July 28, 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

Global Telecom & Technology Americas  
Verizon Wireless(VAW) LLC-AZ/CO/NM/NV/UT

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 06/23/2016.

#### Company

AT&T Corp.  
AT&T Mobility Spectrum LLC - Arizona  
Affiniti LLC  
Agua Fria Unified School District  
Alltel Comm Southwest Holdings Inc.  
American Medical Response, Inc.  
Arizona Board of Regents Arizona St Univ  
Arizona Board of Regents Univ of Arizona  
Arizona State University - Tempe  
Avondale Police Department  
BNCCORP INC.  
Banner Health  
Bluewire LLC  
Camp Verde Fire District  
Casa Grande Union HS Distrist  
Central Yavapai Fire District  
City of Avondale  
City of Casa Grande  
City of Glendale Water Services Wireless  
City of Surprise  
City of Tucson IT Department  
Clearwire Spectrum Holdings III, LLC  
Commnet Four Corners, LLC  
Conterra Ultra Broadband, LLC  
Coppernet Systems, Inc.  
Creative Airtime Services  
DW Holdings, LLC  
Deer Valley Unified School District  
Drexel Heights Fire District  
Dysart Unified School District  
EVDI Medical Imaging, LLC  
El Paso Natural Gas Company, LLC  
FibAire Communications, LLC  
Gila River Cellular General Partnership  
Global Telecom & Technology Americas  
Global Telecom & Technology Americas, In  
Golder Ranch Fire District  
GovNET Licenses LLC  
Gutierrez-Palmenberg, Inc.  
J.O. Combs Elementary School District

Littleton Unified School District  
Maricopa County Wireless Systems  
Mesa, City of  
NW Communications of Phoenix, Inc.  
New Cingular Wireless PCS LLC - AZ  
Next Level Solutions  
Nextel License Holdings 4 Inc.  
Nextlink Wireless, LLC  
North West Fire District  
Paradise Valley Unified School District  
Pendergast School District #92  
Peoria, City of  
Phoenix, City of  
Qwest Corporation  
Rio Verde Wireless, LLC  
SWWG, LLC  
Saddleback Communications  
Scottsdale Medical Imaging  
Scottsdale, City of  
Shamrock Foods Company  
Silver Bell Mining LLC  
Simply Bits, LLC  
Skyview Networks  
Spanish Independent Broadcast Network  
Sparkplug Southwest, LLC  
SpeedConnect, LLC  
Sprint PCS  
Sprint Spectrum L.P.  
Sprint Spectrum LP DBA Sprint PCS  
Sun City West Fire District  
Sun Health Corporation  
T-Mobile License LLC  
Telink Networks SW, LLC  
Tempe Union High School District #213  
Tempe, City of  
Town of Florence  
Town of Gilbert, AZ  
Treach, James E  
Tucson Electric Power Company  
Union Pacific Railroad Company  
Univision Radio License Corporation  
Verizon Wireless(VAW) LLC-AZ/CO/NM/NV/UT  
Western Broadband, LLC  
Western WiMax, LLC  
XO Communications, LLC

## **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: 07/28/2016  
Job Number: 160623COMSGE01

### Administrative Information

Status ENGINEER PROPOSAL  
Call Sign E960244  
Licensee Code IRICON  
Licensee Name Iridium Constellation LLC

### Site Information CHANDLER, AZ

Venue Name  
Latitude (NAD 83) 33° 15' 59.4" N  
Longitude (NAD 83) 111° 52' 56.4" W  
Climate Zone A  
Rain Zone 5  
Ground Elevation (AMSL) 365.76 m / 1200.0 ft

### Link Information

Satellite Type Low Earth Orbit  
Mode TR - Transmit-Receive  
Modulation Digital  
Minimum Elevation Angle 5.0°  
Azimuth Range 0.0° to 360°  
Antenna Centerline (AGL) 4.88 m / 16.0 ft

### Antenna Information

Manufacturer Scientific-Atlanta  
Model 3.0 meter  
Gain / Diameter 54.0 dBi / 3.0 m  
3-dB / 15-dB Beamwidth 0.40° / 0.70°

### Transmit - FCC32

Scientific-Atlanta  
3.0 meter  
57.4 dBi / 3.0 m  
0.24° / 0.45°

Max Available RF Power (dBW/4 kHz)  
(dBW/MHz)

(1) -12.3 (2) -23.7  
11.7 0.3

Maximum EIRP (dBW/4 kHz)  
(dBW/MHz)

45.1 33.7  
69.1 57.7

Interference Objectives: Long Term -156.0 dBW/MHz 20%  
Short Term -150.2 dBW/MHz 0.01%

-151.0 dBW/4 kHz 20%  
-128.0 dBW/4 kHz 0.0025%

### Frequency Information

Emission / Frequency Range (MHz) Receive 18.0 GHz  
200KF9D / 19400.2 - 19405.0  
14M0G7W / 19400.0 - 19600.0

### Transmit 28.0 GHz

(1) 1M00F9D / 29102.0  
(1) 1M00F9D / 29298.0  
(2) 14M0G7W / 29100.0 - 29300.0

Max Great Circle Coordination Distance 142.1 km / 88.3 mi  
Precipitation Scatter Contour Radius 100.0 km / 62.1 mi

100.0 km / 62.1 mi  
100.0 km / 62.1 mi



# COMSEARCH

## Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147  
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### Coordination Values

### CHANDLER, AZ

Licensee Name Iridium Constellation LLC  
Latitude (NAD 83) 33° 15' 59.4" N  
Longitude (NAD 83) 111° 52' 56.4" W  
Ground Elevation (AMSL) 365.76 m / 1200.0 ft  
Antenna Centerline (AGL) 4.88 m / 16.0 ft  
Antenna Model Scientific-Atlanta 3 meter  
Antenna Mode Receive 18.0 GHz Transmit 28.0 GHz  
Interference Objectives: Long Term -156.0 dBW/MHz 20% -151.0 dBW/4 kHz 20%  
Short Term -150.2 dBW/MHz 0.01% -128.0 dBW/4 kHz 0.0025%  
Max Available RF Power -23.7 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 18.0 GHz		Transmit 28.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	78.85	2.60	142.10	11.50	100.00
5	0.00	74.39	2.60	142.10	11.50	100.00
10	0.00	69.95	2.60	142.10	11.50	100.00
15	0.00	65.54	2.60	142.10	11.50	100.00
20	0.00	61.18	2.60	142.10	11.50	100.00
25	0.00	56.89	2.60	142.10	11.50	100.00
30	0.00	52.67	2.60	142.10	11.50	100.00
35	0.00	48.55	2.60	142.10	11.50	100.00
40	0.00	44.56	2.60	142.10	11.50	100.00
45	0.00	40.75	2.60	142.10	11.50	100.00
50	0.00	37.17	2.60	142.10	11.50	100.00
55	0.00	33.89	2.60	142.10	11.50	100.00
60	0.00	31.02	2.60	142.10	11.50	100.00
65	0.00	28.67	2.60	142.10	11.50	100.00
70	0.00	26.98	2.60	142.10	11.50	100.00
75	0.00	26.09	2.60	142.10	11.50	100.00
80	0.00	26.08	2.60	142.10	11.50	100.00
85	0.00	26.94	2.60	142.10	11.50	100.00
90	0.00	28.60	2.60	142.10	11.50	100.00
95	0.00	30.93	2.60	142.10	11.50	100.00
100	0.00	33.79	2.60	142.10	11.50	100.00
105	0.00	37.06	2.60	142.10	11.50	100.00
110	0.00	40.64	2.60	142.10	11.50	100.00
115	0.00	44.44	2.60	142.10	11.50	100.00
120	0.00	48.42	2.60	142.10	11.50	100.00
125	0.00	52.54	2.60	142.10	11.50	100.00
130	0.00	56.75	2.60	142.10	11.50	100.00
135	0.00	61.05	2.60	142.10	11.50	100.00
140	0.00	65.41	2.60	142.10	11.50	100.00
145	0.00	69.81	2.60	142.10	11.50	100.00
150	0.00	74.25	2.60	142.10	11.50	100.00
155	0.00	78.71	2.60	142.10	11.50	100.00
160	0.00	83.19	2.60	142.10	11.50	100.00
165	0.00	87.68	2.60	142.10	11.50	100.00
170	0.00	92.18	2.60	142.10	11.50	100.00
175	0.00	96.67	2.60	142.10	11.50	100.00
180	0.00	101.15	2.60	142.10	11.50	100.00
185	0.00	105.61	2.60	142.10	11.50	100.00

# COMSEARCH

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### Coordination Values

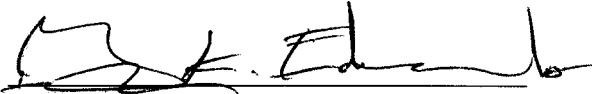
### CHANDLER, AZ

Licensee Name	Iridium Constellation LLC		
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Longitude (NAD 83)	111° 52' 56.4" W		
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Antenna Centerline (AGL)	4.88 m / 16.0 ft		
Antenna Model	Scientific-Atlanta 3 meter		
Antenna Mode	Receive 18.0 GHz		Transmit 28.0 GHz
Interference Objectives: Long Term	-156.0 dBW/MHz	20%	-151.0 dBW/4 kHz 20%
Short Term	-150.2 dBW/MHz	0.01%	-128.0 dBW/4 kHz 0.0025%
Max Available RF Power			-23.7 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 18.0 GHz		Transmit 28.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	110.05	2.60	142.10	11.50	100.00
195	0.00	114.46	2.60	142.10	11.50	100.00
200	0.00	118.82	2.60	142.10	11.50	100.00
205	0.00	123.11	2.60	142.10	11.50	100.00
210	0.00	127.33	2.60	142.10	11.50	100.00
215	0.00	131.45	2.60	142.10	11.50	100.00
220	0.00	135.44	2.60	142.10	11.50	100.00
225	0.00	139.25	2.60	142.10	11.50	100.00
230	0.00	142.83	2.60	142.10	11.50	100.00
235	0.00	146.11	2.60	142.10	11.50	100.00
240	0.00	148.98	2.60	142.10	11.50	100.00
245	0.00	151.33	2.60	142.10	11.50	100.00
250	0.00	153.02	2.60	142.10	11.50	100.00
255	0.00	153.91	2.60	142.10	11.50	100.00
260	0.00	153.92	2.60	142.10	11.50	100.00
265	0.00	153.06	2.60	142.10	11.50	100.00
270	0.00	151.40	2.60	142.10	11.50	100.00
275	0.00	149.07	2.60	142.10	11.50	100.00
280	0.00	146.21	2.60	142.10	11.50	100.00
285	0.00	142.94	2.60	142.10	11.50	100.00
290	0.00	139.36	2.60	142.10	11.50	100.00
295	0.00	135.56	2.60	142.10	11.50	100.00
300	0.00	131.58	2.60	142.10	11.50	100.00
305	0.00	127.46	2.60	142.10	11.50	100.00
310	0.00	123.25	2.60	142.10	11.50	100.00
315	0.00	118.95	2.60	142.10	11.50	100.00
320	0.00	114.60	2.60	142.10	11.50	100.00
325	0.00	110.19	2.60	142.10	11.50	100.00
330	0.00	105.75	2.60	142.10	11.50	100.00
335	0.00	101.29	2.60	142.10	11.50	100.00
340	0.00	96.81	2.60	142.10	11.50	100.00
345	0.00	92.32	2.60	142.10	11.50	100.00
350	0.00	87.82	2.60	142.10	11.50	100.00
355	0.00	83.33	2.60	142.10	11.50	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.

BY: 

Gary K. Edwards  
Senior Manager  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147

DATED: July 28, 2016