

Ka-Band Earth Station – Tempe, AZ

Frequency Coordination Report

28 GHz



Prepared on Behalf of
Iridium Constellation LLC

July 27, 2016



COMSEARCH
A CommScope Company



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1. Summary of Results

On behalf of Iridium Constellation, Comsearch performed a coordination notice for all existing and proposed terrestrial licenses within the coordination contours of their existing Ka-Band earth station in Tempe, Arizona, which will transmit at 28 GHz¹. Prior-notification letters were sent to the licensees and a copy of the notification data is provided in section four of this report. The earth station coordination was finalized on July 27, 2016.

No objections were received from any of the incumbent 28 GHz licensees. Our notification to the LMDS incumbents was performed under the assumption that the earth station would be operating on a non-interference basis in relation to primary LMDS Block A operations. A contact at Iridium Constellation has been provided in case any concerns may arise in the future.

2. 28 GHz Common Carrier and LTTTS Coordination

In accordance with FCC Rules and Regulations, the Ka-Band earth station in Tempe, Arizona was prior-coordinated by Comsearch. A notification letter and datasheets for this earth station were sent to the following 28 GHz common carrier fixed microwave licensee on June 21, 2016. This licensee is authorized to operate temporary fixed operations from 27.5 to 29.5 GHz on a nationwide basis.

Licensee	Authorized Geographic Area
Frontier	Continental US

A notification letter and datasheet for the Ka-Band earth station in Tempe, Arizona were also sent to the following 28 GHz local television transmission licensee on June 21, 2016. This licensee is authorized to operate temporary fixed operations from 27.5 to 29.5 GHz on a nationwide basis.

Licensee	Authorized Geographic Area
Information Super Station, LLC	Continental US

No objections were received from the common carrier or local television transmission service incumbents.

¹ The proposed earth station will operate in the 29.1 – 29.3 GHz portion of the Ka-Band.



3. 28 GHz LMDS Coordination

A Notification letter was sent to the following 28 GHz LMDS licensees on June 21, 2016. The proposed earth station will operate on frequencies that overlap Block A of the LMDS service. The total frequency allocation for Block A of the LMDS spectrum appears below.

Block A: 27.500-28.350 GHz
29.100-29.250 GHz
31.075-31.225 GHz

Licensee	Market	Market Name
EchoStar	BTA347 ²	Phoenix, AZ
Nextlink / XO ³	BTA347	Phoenix, AZ
Nextlink / XO	BTA447	Tucson, AZ

No objections were received from the LMDS incumbents.

² The Iridium Constellation earth station is located inside BTA347.

³ XO Communications is leasing spectrum from EchoStar in the Phoenix, AZ Basic Trading Area (BTA).



4. Earth Station Coordination Data

This section presents the data pertinent to the Ka-Band earth station in Tempe, Arizona. This data was circulated to all incumbent licensees in the shared 28 GHz frequency ranges.



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Date: 06/23/2016
 Job Number: 160620COMSGE04

Administrative Information

Status: ENGINEER PROPOSAL
 Call Sign: E960131
 Licensee Code: IRICON
 Licensee Name: Iridium Constellation LLC

Site Information

Venue Name: **TEMPE, AZ**
 Latitude (NAD 83): 33° 20' 32.2" N
 Longitude (NAD 83): 111° 53' 48.5" W
 Climate Zone: A
 Rain Zone: 5
 Ground Elevation (AMSL): 362.7 m / 1190.0 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

	Receive - FCC32	Transmit - FCC32
Manufacturer	Scientific-Atlanta	Scientific-Atlanta
Model	3.0 meter	3.0 meter
Gain / Diameter	54.0 dBi / 3.0 m	57.4 dBi / 3.0 m
3-dB / 15-dB Beamwidth	0.40° / 0.70°	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 Short Term	-156.0 dBW/MHz 20% -150.2 dBW/MHz 0.01%
		-151.0 dBW/4 kHz 20% -128.0 dBW/4 kHz 0.0025%

Frequency Information

	Receive 18.0 GHz	Transmit 28.0 GHz
Emission / Frequency Range (MHz)	200KF9D / 19400.2 - 19405.0 14M0G7W / 19400.0 - 19600.0	(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	100.0 km / 62.1 mi
Precipitation Scatter Contour Radius	100.0 km / 62.1 mi	100.0 km / 62.1 mi



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Coordination Values	TEMPE, AZ		
Licensee Name	Iridium Constellation LLC		
Latitude (NAD 83)	33° 20' 32.2" N		
Longitude (NAD 83)	111° 53' 48.5" W		
Ground Elevation (AMSL)	362.7 m / 1190.0 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		-12.3 (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	78.82	2.60	142.10	11.50	100.00
5	0.00	74.36	2.60	142.10	11.50	100.00
10	0.00	69.92	2.60	142.10	11.50	100.00
15	0.00	65.51	2.60	142.10	11.50	100.00
20	0.00	61.15	2.60	142.10	11.50	100.00
25	0.00	56.86	2.60	142.10	11.50	100.00
30	0.00	52.64	2.60	142.10	11.50	100.00
35	0.00	48.52	2.60	142.10	11.50	100.00
40	0.00	44.53	2.60	142.10	11.50	100.00
45	0.00	40.72	2.60	142.10	11.50	100.00
50	0.00	37.14	2.60	142.10	11.50	100.00
55	0.00	33.87	2.60	142.10	11.50	100.00
60	0.00	30.99	2.60	142.10	11.50	100.00
65	0.00	28.65	2.60	142.10	11.50	100.00
70	0.00	26.97	2.60	142.10	11.50	100.00
75	0.00	26.08	2.60	142.10	11.50	100.00
80	0.00	26.08	2.60	142.10	11.50	100.00
85	0.00	26.95	2.60	142.10	11.50	100.00
90	0.00	28.61	2.60	142.10	11.50	100.00
95	0.00	30.95	2.60	142.10	11.50	100.00
100	0.00	33.81	2.60	142.10	11.50	100.00
105	0.00	37.08	2.60	142.10	11.50	100.00
110	0.00	40.66	2.60	142.10	11.50	100.00
115	0.00	44.46	2.60	142.10	11.50	100.00
120	0.00	48.45	2.60	142.10	11.50	100.00
125	0.00	52.56	2.60	142.10	11.50	100.00
130	0.00	56.78	2.60	142.10	11.50	100.00
135	0.00	61.08	2.60	142.10	11.50	100.00
140	0.00	65.43	2.60	142.10	11.50	100.00
145	0.00	69.84	2.60	142.10	11.50	100.00
150	0.00	74.28	2.60	142.10	11.50	100.00
155	0.00	78.74	2.60	142.10	11.50	100.00
160	0.00	83.22	2.60	142.10	11.50	100.00
165	0.00	87.71	2.60	142.10	11.50	100.00
170	0.00	92.21	2.60	142.10	11.50	100.00
175	0.00	96.70	2.60	142.10	11.50	100.00
180	0.00	101.18	2.60	142.10	11.50	100.00
185	0.00	105.64	2.60	142.10	11.50	100.00



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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		-12.3 (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	110.08	2.60	142.10	11.50	100.00
195	0.00	114.49	2.60	142.10	11.50	100.00
200	0.00	118.85	2.60	142.10	11.50	100.00
205	0.00	123.14	2.60	142.10	11.50	100.00
210	0.00	127.36	2.60	142.10	11.50	100.00
215	0.00	131.48	2.60	142.10	11.50	100.00
220	0.00	135.47	2.60	142.10	11.50	100.00
225	0.00	139.28	2.60	142.10	11.50	100.00
230	0.00	142.86	2.60	142.10	11.50	100.00
235	0.00	146.13	2.60	142.10	11.50	100.00
240	0.00	149.01	2.60	142.10	11.50	100.00
245	0.00	151.35	2.60	142.10	11.50	100.00
250	0.00	153.03	2.60	142.10	11.50	100.00
255	0.00	153.92	2.60	142.10	11.50	100.00
260	0.00	153.92	2.60	142.10	11.50	100.00
265	0.00	153.05	2.60	142.10	11.50	100.00
270	0.00	151.39	2.60	142.10	11.50	100.00
275	0.00	149.05	2.60	142.10	11.50	100.00
280	0.00	146.19	2.60	142.10	11.50	100.00
285	0.24	142.76	2.60	142.10	11.50	100.00
290	0.23	139.21	2.60	142.10	11.50	100.00
295	0.00	135.54	2.60	142.10	11.50	100.00
300	0.00	131.55	2.60	142.10	11.50	100.00
305	0.00	127.44	2.60	142.10	11.50	100.00
310	0.00	123.22	2.60	142.10	11.50	100.00
315	0.00	118.92	2.60	142.10	11.50	100.00
320	0.00	114.57	2.60	142.10	11.50	100.00
325	0.00	110.16	2.60	142.10	11.50	100.00
330	0.00	105.73	2.60	142.10	11.50	100.00
335	0.00	101.26	2.60	142.10	11.50	100.00
340	0.00	96.78	2.60	142.10	11.50	100.00
345	0.00	92.29	2.60	142.10	11.50	100.00
350	0.00	87.79	2.60	142.10	11.50	100.00
355	0.00	83.30	2.60	142.10	11.50	100.00



5. Contact Information

For questions or information regarding the 28 GHz Frequency Coordination Report, please contact:

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