

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for

**Antenna Technology Communications Inc.
Chandler, Arizona**

Satellite Earth Station

Prepared By:
COMSEARCH

19700 Janelia Farm Boulevard
Ashburn, Virginia 20147
February 17, 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

New Cingular Wireless PCS LLC – AZ
Telink Networks SW LLC
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 December 27, 2013.

Company

Accipiter Communications, Inc
Alltel Comm Southwest Holdings Inc.
Arizona Public Service Company (APS)
Arizona, State Of
CNG Communications, Inc.
Calvary Chapel of Casa Grande / KVNG
Central Arizona Water Conservation Distr
City of Casa Grande
City of Yuma
Commnet Four Corners, LLC
Fisher Wireless Services, Inc.
Gila River Cellular General Partnership
GovNET Licenses, LLC
Marana, Town of
Maricopa County Wireless Systems
Mesa, City of
New Cingular Wireless PCS LLC - AZ
PHOENIX , CITY OF
Pima County Information Technology
Qwest Corporation
Salt River Pima-Maricopa Indian Communit
Salt River Project AI & PD
Sander Operanting Co. II LLC
Scottsdale, City of
Smith Bagley Inc
Southern California Edison Company
Sparkplug Southwest, LLC
Sprint Spectrum L.P
T-Mobile License LLC
Table Top Telephone Company
Telink Networks SW, LLC
Tucson Electric Power
Verizon Wireless - Arizona, Nevada
Verizon Wireless(VAW) LLC-AZ/CO/NM/NV/UT

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: 02/17/2014
Job Number: 131227COMSJC01

Administrative Information

Status: ENGINEER PROPOSAL
Call Sign:
Licensee Code: ATCIAZ
Licensee Name: Antenna Technology Communications, Inc.

Site Information CHANDLER, ARIZONA

Venue Name:
Latitude (NAD 83): 33° 18' 39.9" N
Longitude (NAD 83): 111° 57' 11.5" W
Climate Zone: A
Rain Zone: 5
Ground Elevation (AMSL): 357.23 m / 1172.0 ft

Link Information

Satellite Type: Geostationary
Mode: TR - Transmit-Receive
Modulation: Digital
Satellite Arc: 60° W to 143° West Longitude
Azimuth Range: 113.3° to 227.6°
Corresponding Elevation Angles: 23.0° / 39.0°
Antenna Centerline (AGL): 2.74 m / 9.0 ft

Antenna Information

	Receive	Transmit
Manufacturer	Prodelin	Prodelin
Model	3.7 Meter	3.7 Meter
Gain / Diameter	41.0 dBi / 3.7 m	45.9 dBi / 3.7 m
3-dB / 15-dB Beamwidth	1.53° / 2.90°	0.87° / 1.64°

5M00G7W to 36M0G7W

Max Available RF Power	(dBW/4 kHz)	-21.0	-21.7		
	(dBW/MHz)	3.0	2.3		
Maximum EIRP	(dBW/4 kHz)	24.9	24.2		
	(dBW/MHz)	48.9	48.2		
	(dBW)	55.9	63.7		
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)	5M00G7W - 36M0G7W / 3700.0 - 4200.0	5M00G7W - 36M0G7W / 5925.0 - 6425.0

Max Great Circle Coordination Distance	341.0 km / 211.8 mi	134.1 km / 83.3 mi
Precipitation Scatter Contour Radius	392.7 km / 244.0 mi	100.0 km / 62.1 mi

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Coordination Values

CHANDLER, AZ

Licensee Name Antenna Technology Communications, Inc.
Latitude (NAD 83) 33° 18' 39.9" N
Longitude (NAD 83) 111° 57' 11.5" W
Ground Elevation (AMSL) 357.23 m / 1172.0 ft
Antenna Centerline (AGL) 2.74 m / 9.0 ft
Antenna Model Prodelin 3.7 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 -21.0 (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	0.00	111.32	-10.00	285.28	-10.00	114.51
5	0.00	106.76	-10.00	285.28	-10.00	114.51
10	0.00	102.19	-10.00	285.28	-10.00	114.51
15	0.00	97.60	-10.00	285.28	-10.00	114.51
20	0.00	93.00	-10.00	285.28	-10.00	114.51
25	0.00	88.40	-10.00	285.28	-10.00	114.51
30	0.00	83.80	-10.00	285.28	-10.00	114.51
35	0.00	79.20	-10.00	285.28	-10.00	114.51
40	0.00	74.62	-10.00	285.28	-10.00	114.51
45	0.00	70.06	-10.00	285.28	-10.00	114.51
50	0.00	65.53	-10.00	285.28	-10.00	114.51
55	0.00	61.04	-10.00	285.28	-10.00	114.51
60	0.00	56.59	-10.00	285.28	-10.00	114.51
65	0.00	52.21	-10.00	285.28	-10.00	114.51
70	0.00	47.90	-10.00	285.28	-10.00	114.51
75	0.00	43.71	-9.02	291.62	-9.02	117.03
80	0.00	39.67	-7.96	298.58	-7.96	119.75
85	0.00	35.83	-6.85	306.07	-6.85	122.62
90	0.00	32.25	-5.71	314.63	-5.71	125.62
95	0.00	29.05	-4.58	322.67	-4.58	128.62
100	0.00	26.37	-3.53	330.28	-3.53	131.43
105	0.00	24.36	-2.67	336.56	-2.67	133.74
110	0.00	23.22	-2.14	340.43	-2.14	133.91
115	0.00	23.06	-2.07	340.97	-2.07	134.11
120	0.00	23.91	-2.47	338.05	-2.47	133.03
125	0.00	25.68	-3.24	332.38	-3.24	132.20
130	0.00	28.18	-4.25	325.07	-4.25	129.51
135	0.00	31.24	-5.37	317.08	-5.37	126.54
140	0.00	34.67	-6.50	308.52	-6.50	123.55
145	0.00	38.02	-7.50	301.67	-7.50	120.94
150	0.00	41.14	-8.36	295.95	-8.36	118.72
155	0.00	43.96	-9.08	291.22	-9.08	116.87
160	0.00	46.43	-9.67	287.39	-9.67	115.35
165	0.00	48.46	-10.00	285.28	-10.00	114.51
170	0.00	49.99	-10.00	285.28	-10.00	114.51
175	0.00	50.94	-10.00	285.28	-10.00	114.51
180	0.00	51.26	-10.00	285.28	-10.00	114.51

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Short Term -146.0 dBW/MHz 0.01% -131.0 dBW/4 kHz 0.0025%
Max Available RF Power -21.0 (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	50.94	-10.00	285.28	-10.00	114.51
190	0.00	49.99	-10.00	285.28	-10.00	114.51
195	0.00	48.46	-10.00	285.28	-10.00	114.51
200	0.00	46.43	-9.67	287.39	-9.67	115.35
205	0.00	44.14	-9.12	290.93	-9.12	116.76
210	0.00	42.19	-8.63	294.15	-8.63	118.02
215	0.00	40.65	-8.23	296.80	-8.23	119.06
220	0.00	39.59	-7.94	298.72	-7.94	119.80
225	0.00	39.05	-7.79	299.73	-7.79	120.19
230	0.00	39.03	-7.79	299.75	-7.79	120.20
235	0.00	39.55	-7.93	298.79	-7.93	119.83
240	0.00	40.59	-8.21	296.92	-8.21	119.10
245	0.00	42.10	-8.61	294.29	-8.61	118.08
250	0.00	44.04	-9.10	291.10	-9.10	116.82
255	0.00	46.34	-9.65	287.52	-9.65	115.40
260	0.24	48.79	-10.00	279.91	-10.00	111.08
265	0.26	51.68	-10.00	277.63	-10.00	109.62
270	0.69	54.56	-10.00	237.96	-10.00	100.00
275	0.67	57.90	-10.00	239.32	-10.00	100.00
280	1.06	61.21	-10.00	218.29	-10.00	100.00
285	0.89	64.89	-10.00	226.10	-10.00	100.00
290	1.23	68.49	-10.00	213.39	-10.00	100.00
295	2.38	72.01	-10.00	185.82	-10.00	100.00
300	2.43	75.92	-10.00	184.62	-10.00	100.00
305	2.34	79.90	-10.00	186.70	-10.00	100.00
310	2.35	83.89	-10.00	186.59	-10.00	100.00
315	1.80	87.91	-10.00	199.84	-10.00	100.00
320	1.29	91.88	-10.00	211.41	-10.00	100.00
325	1.43	95.84	-10.00	207.44	-10.00	100.00
330	0.73	99.69	-10.00	235.22	-10.00	100.00
335	0.67	103.56	-10.00	238.77	-10.00	100.00
340	0.56	107.36	-10.00	245.66	-10.00	100.00
345	0.28	111.03	-10.00	275.80	-10.00	108.43
350	0.00	114.60	-10.00	285.28	-10.00	114.51
355	0.00	115.84	-10.00	285.28	-10.00	114.51

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
Engineer III, Telecommunications
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, Va. 20147

DATED: February 17, 2014