

FREQUENCY COORDINATION AND INTERFERENCE
ANALYSIS REPORT

PREPARED FOR
UNITED UTILITIES, INC.
MARSHALL, ALASKA
SATELLITE EARTH STATION

PREPARED BY
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, Virginia 20147
March 18, 2002

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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

NO GREAT CIRCLE INTERFERENCE CASES WERE IDENTIFIED DURING THE INTERFERENCE STUDY OF THE PROPOSED EARTH STATION.

NO CARRIERS REPORTED POTENTIAL INTERFERENCE CASES.

3. SUPPLEMENTAL SHOWING
RE: PART 25.203(C)

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 FEBRUARY 21, 2002.

4. EARTH STATION COORDINATION DATA

THIS SECTION PRESENTS THE DATA PERTINENT TO FREQUENCY COORDINATION OF THE PROPOSED EARTH STATION THAT WAS CIRCULATED TO ALL COMMON CARRIERS WITHIN ITS COORDINATION CONTOURS.

SATELLITE EARTH STATION
FREQUENCY COORDINATION DATA
02/21/2002

Company	UNITED UTILITIES, INC.			
Earth Station Name, State	MARSHALL, AK			
Latitude (DMS) (NAD83)	61 52 51.3 N			
Longitude (DMS) (NAD83)	162 5 18.5 W			
Ground Elevation AMSL (Ft/m)	40.00 /		12.19	
Antenna Centerline AGL (Ft/m)	6.99 /		2.13	
Receive Antenna Type:	S40362	SCIENTIFIC-ATLANTA 8136		
4.0 GHz Gain (dBi) / Diameter (m)	41.8 /		3.6	
3 dB / 15 dB Half Beamwidth	0.70 /		1.50	
Transmit Antenna Type:	S60362	SCIENTIFIC-ATLANTA 8136		
6.0 GHz Gain (dBi) / Diameter (m)	45.6 /		3.6	
3 dB / 15 dB Half Beamwidth	0.45 /		0.85	
Operating Mode	TRANSMIT AND RECEIVE			
Modulation	DIGITAL			
Emission / Receive Band (MHz)	45K0G7W - 36M0G7W / 3700.00 - 4200.00 60K0D7W - 36M0D7W / 3700.00 - 4200.00			
Emission / Transmit Band (MHz)	45K0G7W - 36M0G7W / 5925.00 - 6425.00 60K0D7W - 36M0D7W / 5925.00 - 6425.00			
Max. Available RF Power (dBW)/4 kHz	<u>45K0G7W - 36M0G7W</u>	<u>60K0D7W - 36M0D7W</u>	<u>45K0G7W - 36M0G7W</u>	<u>60K0D7W - 36M0D7W</u>
(dBW)/MHz	-2.70	-26.60	-2.70	-26.60
	21.30	-2.60	21.30	-2.60
Max. EIRP (dBW)/4 kHz	42.90	19.00	42.90	19.00
(dBW)/MHz	66.90	43.00	66.90	43.00
(dBW)	53.40	58.60	54.70	58.60
Max permissible Interference Power				
4.0 GHz, 20% (dBW/1 MHz)	-156.0			
4.0 GHz, 0.0100% (dBW/1 MHz)	-146.0			
6.0 GHz, 20% (dBW/4 kHz)	-154.0			
6.0 GHz, 0.0025% (dBW/4 kHz)	-131.0			
Range of Satellite Arc (Geostationary)				
Degrees Longitude	103.0 W / 194.0 W			
Azimuth Range (Min/Max)	117.8 / 215.2			
Corresponding Elevation Angles	5.4 / 15.2			
Radio Climate	B			
Rain Zone	2			
Max Great Circle Coordination Distance (Mi/Km)				
4.0 GHz	467.2 /		751.9	
6.0 GHz	215.5 /		346.8	
Precipitation Scatter Contour Radius (Mi/Km)				
4.0 GHz	380.4 /		612.3	
6.0 GHz	63.0 /		101.4	

Table of Earth Station Coordination Values
02/21/2002

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 Latitude (DMS) (NAD83) 61 52 51.3 N
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 Ground Elevation (Ft/m) 40.00 / 12.19 AMSL
 Antenna Centerline (Ft/m) 6.99 / 2.13 AGL
 Antenna Model SCIENTIFIC-ATLANTA 8136
 Objectives: Receive -156.0 (dBW /1 MHz)
 Transmit -154.0 (dBW /4 kHz) TX Power -2.7 (dBW/4 kHz)

Azimuth (Deg)	Horizon Elevation Angle (Deg)	Antenna Disc. Angle (Deg)	4.0 GHz		6.0 GHz	
			Antenna Gain (dBi)	Coordination Distance (Km)	Antenna Gain (dBi)	Coordination Distance (Km)
0	0.00	117.71	-10.20	409.7	-10.40	198.5
5	0.00	112.74	-10.20	409.7	-10.40	198.5
10	0.00	107.76	-10.20	409.7	-10.40	198.5
15	0.00	102.78	-10.20	409.7	-10.40	198.5
20	0.00	97.81	-10.20	409.7	-10.40	198.5
25	0.00	92.83	-10.20	409.7	-10.40	198.5
30	0.00	87.85	-10.20	409.7	-10.40	198.5
35	0.00	82.87	-10.20	409.7	-10.40	198.5
40	0.00	77.89	-10.20	409.7	-10.40	198.5
45	0.00	72.92	-10.20	409.7	-10.40	198.5
50	0.00	67.94	-10.20	409.7	-10.40	198.5
55	0.00	62.97	-10.20	409.7	-10.40	198.5
60	0.00	58.00	-10.20	409.7	-10.40	198.5
65	0.00	53.03	-10.20	409.7	-10.40	198.5
70	0.00	48.07	-9.81	414.5	-10.01	200.7
75	0.00	43.11	-8.82	427.0	-9.02	206.4
80	0.00	38.16	-7.46	444.9	-7.66	214.4
85	0.00	33.23	-5.85	466.5	-6.05	224.3
90	0.00	28.31	-4.52	485.5	-4.72	232.6
95	0.00	23.43	-2.26	519.9	-2.46	247.4
100	0.00	18.60	0.64	567.2	0.44	265.8
105	0.00	13.89	2.91	606.9	3.71	290.8
110	0.00	9.48	7.32	690.3	7.12	319.8
115	0.00	6.06	9.69	739.5	9.49	341.2
120	0.00	5.77	10.26	751.9	10.06	346.8
125	0.00	7.78	7.80	700.1	7.60	324.1
130	0.00	9.69	7.11	686.2	6.91	317.9
135	0.00	11.49	5.31	650.9	5.11	302.3
140	0.00	13.15	3.65	620.3	4.45	296.8
145	0.00	14.66	2.80	605.0	2.94	284.6
150	0.00	16.01	2.19	594.1	1.99	277.3
155	0.00	17.18	1.49	581.8	1.29	272.0
160	0.00	18.16	0.90	571.7	0.70	267.7
165	0.00	18.94	0.44	563.8	0.24	264.3
170	0.00	19.50	0.10	558.1	-0.10	262.0
175	0.00	19.83	-0.10	554.8	-0.30	260.5
180	0.00	19.95	-0.17	553.6	-0.37	260.1

Table of Earth Station Coordination Values
02/21/2002

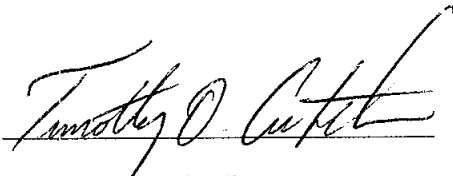
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Azimuth (Deg)	Horizon Elevation Angle (Deg)	Antenna Disc. Angle (Deg)	4.0 GHz		6.0 GHz	
			Antenna Gain (dBi)	Coordination Distance (Km)	Antenna Gain (dBi)	Coordination Distance (Km)
185	0.00	19.84	-0.10	554.7	-0.30	260.5
190	0.00	19.50	0.10	558.1	-0.10	262.0
195	0.00	18.93	0.44	563.8	0.24	264.4
200	0.00	18.16	0.91	571.7	0.71	267.7
205	0.00	17.18	1.49	581.9	1.29	272.0
210	0.00	16.01	2.19	594.2	1.99	277.3
215	0.00	15.19	2.68	602.9	2.48	281.1
220	0.00	15.91	2.26	595.2	2.06	277.8
225	0.00	18.00	1.00	573.3	0.80	268.4
230	0.00	21.07	-0.84	542.5	-1.04	257.0
235	0.00	24.75	-3.05	507.6	-3.25	242.2
240	0.00	28.81	-4.72	482.6	-4.92	231.3
245	0.00	33.11	-5.82	466.8	-6.02	224.4
250	0.00	37.56	-7.23	448.1	-7.43	215.8
255	0.00	42.13	-8.63	429.6	-8.83	207.5
260	0.00	46.76	-9.55	417.7	-9.75	202.1
265	0.00	51.45	-10.20	409.7	-10.40	198.5
270	0.00	56.18	-10.20	409.7	-10.40	198.5
275	0.00	60.94	-10.20	409.7	-10.40	198.5
280	0.00	65.72	-10.20	409.7	-10.40	198.5
285	0.00	70.51	-10.20	409.7	-10.40	198.5
290	0.00	75.32	-10.20	409.7	-10.40	198.5
295	0.00	80.14	-10.20	409.7	-10.40	198.5
300	0.00	84.96	-10.20	409.7	-10.40	198.5
305	0.00	89.79	-10.20	409.7	-10.40	198.5
310	0.00	94.61	-10.20	409.7	-10.40	198.5
315	0.00	99.43	-10.20	409.7	-10.40	198.5
320	0.00	104.25	-10.20	409.7	-10.40	198.5
325	0.00	109.06	-10.20	409.7	-10.40	198.5
330	0.00	113.86	-10.20	409.7	-10.40	198.5
335	0.00	118.64	-10.20	409.7	-10.40	198.5
340	0.00	123.40	-10.20	409.7	-10.40	198.5
345	0.00	128.13	-10.20	409.7	-10.40	198.5
350	0.00	127.65	-10.20	409.7	-10.40	198.5
355	0.00	122.68	-10.20	409.7	-10.40	198.5

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. 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:



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19700 Janelia Farm Boulevard
Ashburn, Virginia 20147

DATED: March 18, 2002