Doug Vernier, Telecommunications Consultants
401 Main St., Ste 213, Cedar Falls, IA 50613

CH 233, Iowa City Application
University Of Northern Iowa

REFERENCE CH# 233D - 94.5 MHz, Pwr= 0.08 kW, HAAT= 64.9 M, COR= 287 M DISPLAY DATES
41 39 10.0 N. Average Protected F(50-50)= 7.82 km DATA 12-07-15
91 36 42.0 W. Omni-directional SEARCH 12-07-15

CH CALL / CITY	TYPE ANT / STATE	AZI / <--	DIST / FILE #	LAT / LNG	PWR(kW) / HAAT(M)	INT(km) / COR(M)	PRO(km) / LICENSEE	*IN* / (Overlap in km)	*OUT*
231C1 KRNA Iowa City	LIC _CN IA	300.0 119.9	21.65 BLH19911115KA	41 45 00.0 91 50 16.0	100.000 299	10.3 546	73.4 Townsquare Media Cedar Rap	3.5	-52.4* <*
233D ~~636762~~ Iowa City	APP _C_ IA	0.0 0.0	0.00 BNPFT20030314CDF	41 39 10.0 91 36 42.0	0.250 65	32.5 287	9.7 University Of Northern Iow	-39.6*	-33.8*
233C KRXL Kirksville	LIC _CY MO	203.9 23.4	171.10 BLH19900604KE	40 14 34.0 92 25 42.0	100.000 308	174.0 578	73.7 Kirx, Inc.	-10.7*	71.6
235D 636323 Iowa City	APP DC_ IA	65.6 245.7	8.98 BNPFT20030313AJO	41 41 10.0 91 30 47.0	0.250 73	0.5 299	7.2 Friendship Communications,	0.5	0.4
236D K236AA Cedar Rapids	LIC _HN IA	352.9 172.8	28.72 BLFT19930722TB	41 54 33.0 91 39 17.0	0.205 116	1.0 357	13.5 Family Stations, Inc.	20.3	14.5
234C3 KQMG-FM Independence	LIC ___ IA	349.0 168.8	88.91	42 26 15.2 91 49 07.6	6.100 125	50.3 414	33.2 User	31.2	45.0
236D K236CF Muscatine	LIC DC_ IA	117.5 297.8	50.32 BLFT20141021ABL	41 26 34.0 91 04 33.0	0.250	0.9 286	10.9 Kaskaskia Broadcasting, In	40.6	38.8
233D K233AA Davenport	LIC _HN IA	100.1 280.8	87.70 BLFT19920302TB	41 30 36.0 90 34 28.0	0.170 93	35.5 294	10.5 University Of Northern Iow	43.6	49.1
234A KMCH Manchester	LIC _CN IA	11.0 191.1	99.18 BLH19911227KB	42 31 42.0 91 22 53.0	6.000 100	48.0 412	31.3 Coloff Media, Llc	43.7	57.1

Terrain database is FCC NGDC 30 Sec , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM
In & Out distances between contours are shown at closest points. Reference zone= West Zone, Co to 3rd adjacent.
All separation margins (if shown) include rounding.
Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)
"*"affixed to 'IN' or 'OUT' values = site inside restricted contour.
<* Protected by U/D

HOW TO READ THE FM COMPUTER PRINT-OUT

Translator Reference Station

The computer printout should be self-explanatory for the most part. The parameters of the station being checked, (reference station) are printed in the heading. The 60 dBu protected contour is predicted from the Commission's F(50-50) table. Contour distances are in kilometers and are predicted using the Commission's TVFMINT FORTRAN subroutine. When interference contour distances are less than 16 kilometers the F(50-50) tables are used. If signal contour distances are less than 1.6 km the free-space equation is used.

All distances are derived by the method detailed in Sec. 73.208 of the Rules and Regulations as amended in Docket 80-90. The column labeled "* OUT *" shows the greatest distance in kilometers of overlap (or smallest distance of clearance) between the reference station's interference contour and the database station's protected contour. Negative distance figures in this column indicate outgoing contour overlap. Since translators are able to receive interference there is no “In” or incoming column in this report.

Listed antenna heights and power are the specific antenna heights and power from the FCC database.

Under the "AZI" column, the first row of numbers indicate the True North azimuths from the reference station toward the database stations, while the numbers in the second row indicate the reverse bearings from the database stations to the reference station. Bearings are calculated using spherical trigonometry.

The columns labeled "INT" and "PRO" contain the distance in kilometers of the appropriate interference contour and the protected contour of a data base station.

For I.F. relationships the minimum spacings the "OUT" columns change its significance. The letter "R" stands for the minimum **required** distance in kilometers, while the letter "M" in the next column displays the **available clear space** separation in kilometers. Minimum separation distances when displayed are taken from Sec 73.207 of the rules as amended. Canadian and Mexican separation distances, U/D ratios and protected contour values are from the US/Mexican Working Agreement and the US/Canada Working Agreement".

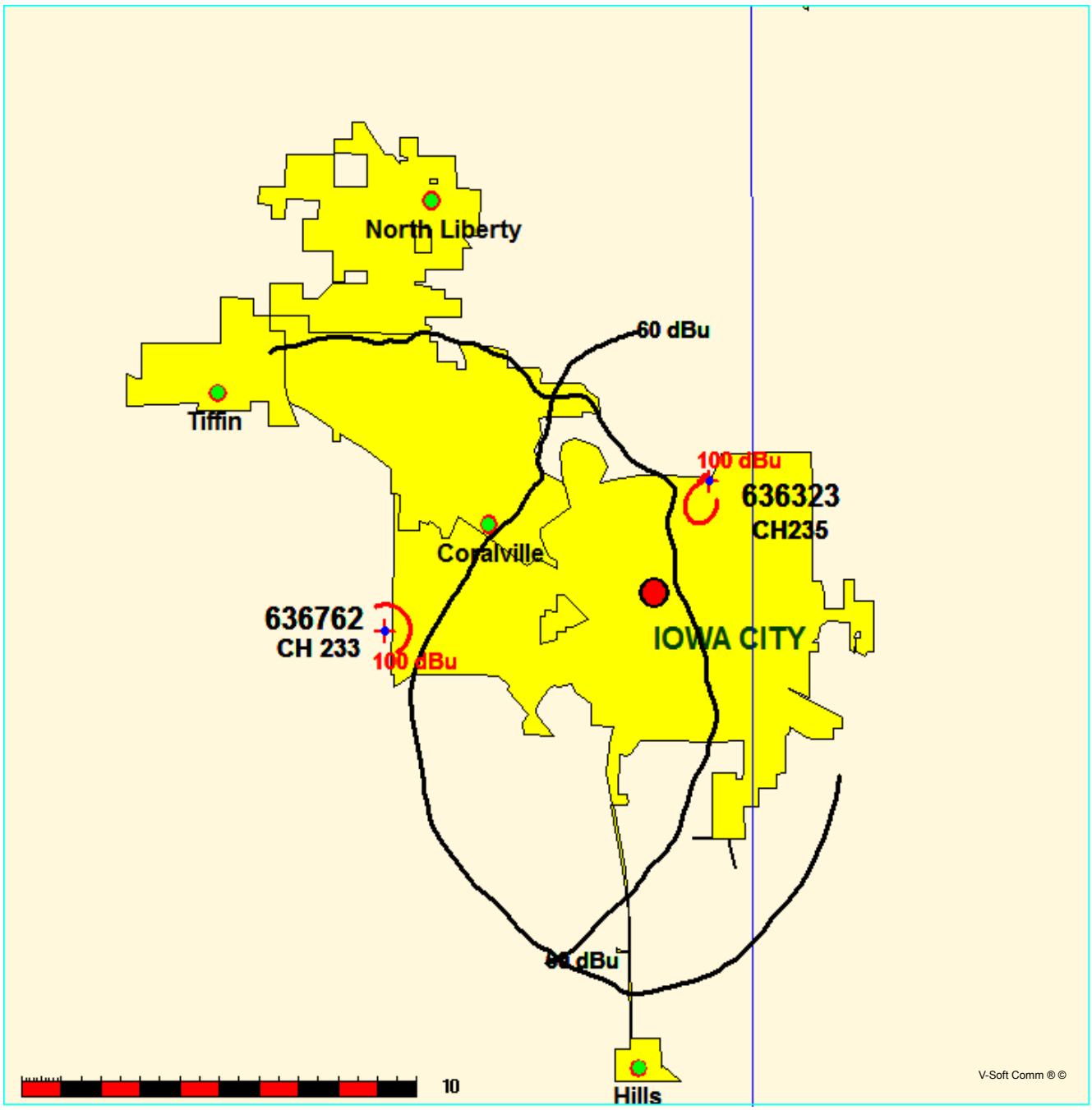
The first three letters of the "TYPE" column identify the current FCC status of the stations. The fourth letter will be a "D" if the facility is directional. “Z” indicates a 73.215 directional. An “N” indicates it is a 73.215 station that operates with an omni-directional antenna. The fifth letter will be an E, H or V depending on the type of antenna polarization. The sixth letter will be a "Y" if the antenna uses beam tilt or an “X” if the commission is not sure, otherwise it will be an “N” or left blank.

CH 233, Iowa City Application -Contour to Contour - 636323
University Of Northern Iowa

FMCommander Single Allocation Study - 12-07-2015 - FCC NGDC 30 Sec
636762's Overlaps (In= 0.48 km, Out= 0.42 km)

636762 CH 233 D
Lat= 41 39 10.0, Lng= 91 36 42.0
0.08 kW 64.9 m HAAT, 287 m COR
Prot.= 60 dBu, Intef.= 100 dBu

636323 CH 235 D DA BNPFT20030313AJO
Lat= 41 41 10.0, Lng= 91 30 47.0
0.25 kW 73.1 m HAAT, 299 m COR
Prot.= 60 dBu, Intef.= 100 dBu



12-07-2015 Terrain Data: FCC NGDC 30 Sec FMOver Analysis

636762

Channel = 233D
Max ERP = 0.08 kW
RCAMSL = 287 m
N. Lat. 41 39 10.0
W. Lng. 91 36 42.0
Protected
60 dBu

636323 BNPFT20030313AJO

Channel = 235D
Max ERP = 0.25 kW
RCAMSL = 299 m
N. Lat. 41 41 10.0
W. Lng. 91 30 47.0
Interfering
100 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
006.0	000.0800	0058.3	007.4	296.4	000.0074	0068.2	008.3	49.18	
007.0	000.0800	0059.6	007.5	297.2	000.0076	0067.7	008.2	49.39	
008.0	000.0800	0059.7	007.5	297.5	000.0077	0067.4	008.1	49.64	
009.0	000.0800	0059.7	007.5	297.8	000.0077	0067.3	007.9	49.89	
010.0	000.0800	0059.5	007.5	298.1	000.0078	0067.2	007.8	50.17	
011.0	000.0800	0059.2	007.5	298.2	000.0078	0067.1	007.7	50.45	
012.0	000.0800	0058.6	007.4	298.3	000.0078	0067.1	007.5	50.75	
013.0	000.0800	0058.3	007.4	298.4	000.0078	0067.0	007.4	51.05	
014.0	000.0800	0058.1	007.4	298.6	000.0079	0066.9	007.3	51.37	
015.0	000.0800	0058.4	007.4	299.0	000.0080	0066.8	007.2	51.69	
016.0	000.0800	0059.1	007.5	299.5	000.0081	0066.6	007.0	52.02	
017.0	000.0800	0059.7	007.5	300.0	000.0082	0066.5	006.9	52.36	
018.0	000.0800	0059.6	007.5	300.2	000.0082	0066.4	006.8	52.70	
019.0	000.0800	0059.0	007.5	300.2	000.0082	0066.4	006.7	53.06	
020.0	000.0800	0058.6	007.4	300.2	000.0082	0066.4	006.5	53.41	
021.0	000.0800	0058.5	007.4	300.3	000.0082	0066.4	006.4	53.77	
022.0	000.0800	0058.4	007.4	300.5	000.0082	0066.4	006.3	54.14	
023.0	000.0800	0058.6	007.4	300.7	000.0082	0066.4	006.1	54.52	
024.0	000.0800	0059.1	007.5	301.2	000.0083	0066.4	006.0	54.91	
025.0	000.0800	0059.3	007.5	301.4	000.0083	0066.4	005.9	55.32	
026.0	000.0800	0058.5	007.4	301.1	000.0083	0066.4	005.8	55.73	
027.0	000.0800	0057.4	007.4	300.5	000.0082	0066.4	005.6	56.15	
028.0	000.0800	0056.7	007.3	300.1	000.0082	0066.5	005.5	56.57	
029.0	000.0800	0056.3	007.3	299.8	000.0082	0066.5	005.4	56.98	
030.0	000.0800	0055.6	007.2	299.3	000.0080	0066.6	005.2	57.37	
031.0	000.0800	0054.4	007.2	298.4	000.0078	0067.0	005.1	57.72	
032.0	000.0800	0053.3	007.1	297.4	000.0076	0067.5	005.0	58.08	
033.0	000.0800	0052.8	007.0	296.9	000.0075	0067.8	004.9	58.47	
034.0	000.0800	0052.9	007.1	296.8	000.0075	0067.9	004.8	58.89	
035.0	000.0800	0053.7	007.1	297.3	000.0076	0067.6	004.6	59.37	
036.0	000.0800	0054.9	007.2	298.1	000.0078	0067.1	004.5	59.92	
037.0	000.0800	0056.4	007.3	299.2	000.0080	0066.7	004.3	60.53	
038.0	000.0800	0058.1	007.4	300.4	000.0082	0066.4	004.2	61.17	
039.0	000.0800	0060.0	007.5	301.7	000.0083	0066.5	004.1	61.81	
040.0	000.0800	0061.7	007.6	303.0	000.0084	0066.6	003.9	62.48	
041.0	000.0800	0062.8	007.7	303.8	000.0084	0066.6	003.8	63.12	

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
042.0	000.0800	0063.2	007.7	303.8	000.0084	0066.6	003.6	63.74
043.0	000.0800	0062.9	007.7	303.2	000.0084	0066.6	003.5	64.34
044.0	000.0800	0062.1	007.6	302.0	000.0083	0066.5	003.4	64.89
045.0	000.0800	0061.3	007.6	300.6	000.0082	0066.4	003.3	65.42
046.0	000.0800	0060.7	007.6	299.3	000.0080	0066.6	003.2	65.94
047.0	000.0800	0060.2	007.5	298.1	000.0078	0067.2	003.0	66.49
048.0	000.0800	0059.7	007.5	296.5	000.0075	0068.1	002.9	67.05
049.0	000.0800	0059.3	007.5	295.1	000.0072	0068.9	002.8	67.66
050.0	000.0800	0059.3	007.5	294.0	000.0069	0069.3	002.7	68.33
051.0	000.0800	0059.5	007.5	292.9	000.0067	0069.5	002.6	69.05
052.0	000.0800	0059.8	007.5	291.9	000.0065	0069.7	002.4	69.82
053.0	000.0800	0059.9	007.5	290.3	000.0062	0070.4	002.3	70.54
054.0	000.0800	0059.7	007.5	288.2	000.0060	0071.6	002.2	71.23
055.0	000.0800	0059.7	007.5	286.1	000.0057	0072.6	002.1	71.93
056.0	000.0800	0060.3	007.5	284.6	000.0055	0074.6	002.0	72.95
057.0	000.0800	0061.3	007.6	283.3	000.0054	0076.9	001.9	74.14
058.0	000.0800	0062.5	007.7	282.0	000.0053	0078.7	001.7	75.35
059.0	000.0800	0064.0	007.8	280.6	000.0051	0079.5	001.6	76.57
060.0	000.0800	0065.6	007.9	279.0	000.0050	0080.0	001.4	80.97
061.0	000.0800	0067.3	008.0	276.8	000.0049	0081.8	001.2	81.92
062.0	000.0800	0068.7	008.0	273.4	000.0047	0078.9	001.1	82.85
063.0	000.0800	0069.7	008.1	268.1	000.0052	0082.1	001.0	84.36
064.0	000.0800	0070.0	008.1	260.5	000.0088	0077.2	000.9	87.27
065.0	000.0800	0069.4	008.1	251.2	000.0244	0076.3	000.9	91.61
066.0	000.0800	0067.8	008.0	242.7	000.0564	0077.0	001.0	94.39
067.0	000.0800	0065.5	007.9	236.3	000.0897	0081.0	001.2	95.19
068.0	000.0800	0063.1	007.7	231.7	000.1175	0079.0	001.3	95.17
069.0	000.0800	0061.6	007.6	227.7	000.1412	0077.8	001.5	95.15
070.0	000.0800	0061.0	007.6	223.7	000.1644	0080.1	001.5	91.82
071.0	000.0800	0060.8	007.6	219.7	000.1885	0083.4	001.6	91.96
072.0	000.0800	0060.7	007.6	216.0	000.2028	0085.0	001.7	91.75
073.0	000.0800	0060.9	007.6	212.4	000.2169	0085.9	001.8	91.47
074.0	000.0800	0060.9	007.6	209.3	000.2282	0086.6	001.9	91.04
075.0	000.0800	0060.7	007.6	206.8	000.2339	0086.8	002.0	90.33
076.0	000.0800	0060.4	007.5	204.8	000.2385	0089.1	002.1	89.70
077.0	000.0800	0059.9	007.5	203.4	000.2419	0090.7	002.2	88.95
078.0	000.0800	0059.3	007.5	202.2	000.2447	0091.5	002.3	88.16
079.0	000.0800	0058.7	007.4	201.2	000.2471	0092.1	002.5	87.37
080.0	000.0800	0058.3	007.4	200.1	000.2497	0092.6	002.6	86.65
081.0	000.0800	0058.5	007.4	198.6	000.2466	0094.0	002.7	86.02
082.0	000.0800	0058.9	007.5	196.9	000.2426	0096.8	002.8	85.53
083.0	000.0800	0059.8	007.5	194.9	000.2379	0099.3	002.9	85.05
084.0	000.0800	0060.7	007.6	192.9	000.2334	0101.0	003.0	84.53
085.0	000.0800	0061.7	007.6	191.1	000.2291	0103.4	003.1	84.07
086.0	000.0800	0062.8	007.7	189.3	000.2239	0106.9	003.2	83.67
087.0	000.0800	0063.4	007.7	188.2	000.2193	0108.0	003.3	83.08
088.0	000.0800	0064.1	007.8	187.1	000.2149	0107.9	003.5	82.43
089.0	000.0800	0064.9	007.8	186.0	000.2105	0107.7	003.6	81.77
090.0	000.0800	0065.8	007.9	185.0	000.2066	0107.4	003.7	81.11
091.0	000.0800	0066.6	007.9	184.1	000.2031	0107.2	003.9	80.46
092.0	000.0800	0067.4	008.0	183.4	000.2002	0107.0	004.0	79.83

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
093.0	000.0800	0068.4	008.0	182.5	000.1971	0106.8	004.1	79.20
094.0	000.0800	0069.3	008.1	181.8	000.1942	0106.7	004.3	78.58
095.0	000.0800	0070.2	008.1	181.1	000.1917	0106.5	004.4	77.98
096.0	000.0800	0070.7	008.2	180.9	000.1907	0106.4	004.6	77.44
097.0	000.0800	0071.0	008.2	180.9	000.1907	0106.4	004.7	76.95
098.0	000.0800	0070.9	008.2	181.1	000.1915	0106.5	004.9	76.51
099.0	000.0800	0071.7	008.2	180.7	000.1902	0106.4	005.0	75.99
100.0	000.0800	0073.0	008.3	180.1	000.1879	0106.1	005.2	75.42
101.0	000.0800	0074.5	008.4	179.5	000.1841	0105.8	005.3	74.81
102.0	000.0800	0076.1	008.5	178.8	000.1799	0105.6	005.5	74.17
103.0	000.0800	0077.3	008.6	178.4	000.1775	0105.4	005.6	73.59
104.0	000.0800	0078.5	008.6	178.2	000.1759	0105.3	005.8	73.05
105.0	000.0800	0079.1	008.7	178.2	000.1764	0105.3	006.0	72.61
106.0	000.0800	0079.1	008.7	178.7	000.1790	0105.5	006.1	72.26
107.0	000.0800	0079.0	008.7	179.1	000.1821	0105.7	006.2	71.94
108.0	000.0800	0078.9	008.7	179.6	000.1851	0105.9	006.4	71.63
109.0	000.0800	0079.0	008.7	180.0	000.1874	0106.1	006.5	71.29
110.0	000.0800	0079.5	008.7	180.2	000.1883	0106.2	006.7	70.90
111.0	000.0800	0079.8	008.7	180.5	000.1893	0106.3	006.8	70.53
112.0	000.0800	0080.0	008.7	180.9	000.1907	0106.4	007.0	70.19
113.0	000.0800	0079.8	008.7	181.4	000.1928	0106.7	007.1	69.90
114.0	000.0800	0079.2	008.7	182.1	000.1955	0106.7	007.2	69.64
115.0	000.0800	0078.8	008.7	182.7	000.1979	0106.9	007.4	69.37
116.0	000.0800	0078.7	008.7	183.2	000.1996	0107.0	007.5	69.08
117.0	000.0800	0079.1	008.7	183.5	000.2008	0107.1	007.7	68.77
118.0	000.0800	0079.7	008.7	183.7	000.2017	0107.1	007.8	68.44
119.0	000.0800	0080.4	008.7	183.9	000.2024	0107.1	008.0	68.12
120.0	000.0800	0081.1	008.8	184.1	000.2033	0107.2	008.1	67.82
121.0	000.0800	0081.7	008.8	184.4	000.2042	0107.2	008.3	67.54
122.0	000.0800	0082.4	008.9	184.6	000.2051	0107.3	008.4	67.25
123.0	000.0800	0083.2	008.9	184.9	000.2060	0107.4	008.6	66.96
124.0	000.0800	0083.9	008.9	185.1	000.2071	0107.5	008.7	66.68
125.0	000.0800	0084.4	009.0	185.5	000.2085	0107.6	008.9	66.43

12-07-2015 Terrain Data: FCC NGDC 30 Sec FMOver Analysis

636323 BNPFT20030313AJO	636762
Channel = 235D	Channel = 233D
Max ERP = 0.25 kW	Max ERP = 0.08 kW
RCAMSL = 299 m	RCAMSL = 287 m
N. Lat. 41 41 10.0	N. Lat. 41 39 10.0
W. Lng. 91 30 47.0	W. Lng. 91 36 42.0
Protected	Interfering
60 dBu	100 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
186.0	000.2105	0107.7	012.8	142.7	000.0800	0086.2	011.3	56.07	
187.0	000.2145	0107.9	012.9	143.8	000.0800	0086.8	011.2	56.30	
188.0	000.2185	0108.0	012.9	144.8	000.0800	0087.6	011.1	56.55	
189.0	000.2225	0107.4	012.9	145.8	000.0800	0088.4	011.0	56.85	
190.0	000.2266	0105.7	012.9	146.5	000.0800	0089.0	010.8	57.22	
191.0	000.2289	0103.7	012.8	147.0	000.0800	0089.4	010.6	57.63	
192.0	000.2312	0102.1	012.8	147.7	000.0800	0089.9	010.4	58.01	
193.0	000.2335	0100.9	012.7	148.4	000.0800	0090.3	010.2	58.37	
194.0	000.2358	0100.1	012.7	149.2	000.0800	0090.5	010.0	58.70	
195.0	000.2381	0099.2	012.7	150.0	000.0800	0090.8	009.8	59.03	
196.0	000.2405	0098.1	012.6	150.7	000.0800	0091.1	009.7	59.39	
197.0	000.2429	0096.7	012.6	151.4	000.0800	0091.2	009.5	59.76	
198.0	000.2452	0095.0	012.5	152.0	000.0800	0091.2	009.3	60.15	
199.0	000.2476	0093.5	012.4	152.6	000.0800	0091.1	009.0	60.52	
200.0	000.2500	0092.6	012.4	153.5	000.0800	0090.4	008.9	60.78	
201.0	000.2476	0092.2	012.3	154.2	000.0800	0089.4	008.7	61.06	
202.0	000.2452	0091.7	012.3	154.9	000.0800	0088.2	008.5	61.31	
203.0	000.2429	0091.0	012.2	155.5	000.0800	0086.7	008.3	61.56	
204.0	000.2405	0090.2	012.1	156.1	000.0800	0085.3	008.1	61.82	
205.0	000.2381	0088.8	012.0	156.5	000.0800	0084.3	007.8	62.20	
206.0	000.2358	0087.4	011.9	156.9	000.0800	0083.3	007.6	62.61	
207.0	000.2335	0086.8	011.8	157.5	000.0800	0081.8	007.4	62.92	
208.0	000.2312	0086.7	011.8	158.4	000.0800	0080.1	007.2	63.15	
209.0	000.2289	0086.7	011.8	159.2	000.0800	0079.0	007.0	63.48	
210.0	000.2266	0086.5	011.7	160.1	000.0800	0078.1	006.9	63.84	
211.0	000.2225	0086.3	011.7	160.8	000.0800	0077.2	006.7	64.27	
212.0	000.2185	0086.1	011.6	161.5	000.0800	0076.3	006.5	64.70	
213.0	000.2145	0085.6	011.5	162.1	000.0800	0075.6	006.3	65.20	
214.0	000.2105	0085.2	011.4	162.7	000.0800	0075.0	006.1	65.73	
215.0	000.2066	0085.1	011.4	163.5	000.0800	0074.6	005.9	66.27	
216.0	000.2027	0085.0	011.3	164.2	000.0800	0074.4	005.7	66.85	
217.0	000.1988	0084.8	011.3	165.0	000.0800	0074.1	005.5	67.45	
218.0	000.1950	0084.5	011.2	165.7	000.0800	0073.7	005.3	68.06	

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
219.0	000.1912	0084.0	011.1	166.2	000.0800	0073.3	005.1	68.70
220.0	000.1875	0083.1	011.0	166.5	000.0800	0073.0	004.9	69.42
221.0	000.1811	0082.0	010.8	166.4	000.0800	0073.2	004.6	70.30
222.0	000.1749	0081.2	010.7	166.3	000.0800	0073.2	004.4	71.18
223.0	000.1688	0080.6	010.6	166.2	000.0800	0073.3	004.1	72.09
224.0	000.1627	0079.8	010.4	165.9	000.0800	0073.5	003.9	73.08
225.0	000.1568	0078.9	010.3	165.4	000.0800	0073.9	003.7	74.14
226.0	000.1510	0078.2	010.1	164.9	000.0800	0074.1	003.5	75.21
227.0	000.1453	0077.8	010.0	164.5	000.0800	0074.3	003.2	76.24
228.0	000.1397	0077.9	009.9	164.5	000.0800	0074.3	003.1	77.27
229.0	000.1342	0078.0	009.8	164.4	000.0800	0074.3	002.9	78.40
230.0	000.1289	0078.2	009.7	164.2	000.0800	0074.4	002.7	79.63
231.0	000.1222	0078.6	009.6	163.5	000.0800	0074.6	002.5	81.01
232.0	000.1156	0079.2	009.5	162.8	000.0800	0074.9	002.3	82.46
233.0	000.1092	0079.9	009.4	161.9	000.0800	0075.7	002.1	83.97
234.0	000.1030	0080.4	009.3	160.5	000.0800	0077.6	001.9	85.62
235.0	000.0970	0080.8	009.2	158.0	000.0800	0080.6	001.7	87.34
236.0	000.0912	0081.0	009.1	154.4	000.0800	0089.2	001.5	89.27
237.0	000.0856	0080.8	008.9	148.7	000.0800	0090.4	001.4	93.29
238.0	000.0801	0080.5	008.8	140.8	000.0800	0085.9	001.2	94.28
239.0	000.0748	0080.2	008.6	130.5	000.0800	0084.3	001.1	95.10
240.0	000.0697	0079.9	008.4	118.6	000.0800	0080.1	001.0	95.59
241.0	000.0645	0079.2	008.2	104.6	000.0800	0078.9	001.1	95.41
242.0	000.0596	0077.9	007.9	091.2	000.0800	0066.8	001.2	94.51
243.0	000.0548	0076.6	007.7	081.2	000.0800	0058.5	001.3	93.38
244.0	000.0503	0075.6	007.5	073.9	000.0800	0060.9	001.5	87.75
245.0	000.0459	0075.3	007.3	068.6	000.0800	0062.1	001.7	86.35
246.0	000.0417	0074.8	007.1	064.4	000.0800	0069.8	001.9	85.25
247.0	000.0378	0074.4	006.9	061.2	000.0800	0067.6	002.1	83.41
248.0	000.0340	0074.1	006.7	058.8	000.0800	0063.6	002.3	81.48
249.0	000.0304	0074.5	006.6	056.7	000.0800	0061.0	002.5	79.83
250.0	000.0271	0075.4	006.4	055.0	000.0800	0059.7	002.6	78.45
251.0	000.0248	0076.1	006.3	053.3	000.0800	0059.9	002.8	77.59
252.0	000.0227	0076.9	006.2	051.9	000.0800	0059.8	002.9	76.70
253.0	000.0206	0077.8	006.1	050.7	000.0800	0059.4	003.0	75.82
254.0	000.0187	0078.5	006.0	049.8	000.0800	0059.2	003.2	74.94
255.0	000.0168	0078.9	005.9	049.1	000.0800	0059.2	003.3	74.13
256.0	000.0151	0078.6	005.7	048.8	000.0800	0059.3	003.5	73.21
257.0	000.0134	0078.1	005.5	048.7	000.0800	0059.3	003.7	72.25
258.0	000.0119	0078.0	005.4	048.7	000.0800	0059.4	003.9	71.40
259.0	000.0104	0077.7	005.2	048.8	000.0800	0059.3	004.1	70.50
260.0	000.0090	0077.3	005.0	049.1	000.0800	0059.2	004.3	69.61
261.0	000.0085	0077.0	004.9	048.7	000.0800	0059.3	004.5	69.17
262.0	000.0080	0077.2	004.8	048.3	000.0800	0059.5	004.6	68.80
263.0	000.0075	0077.8	004.8	047.9	000.0800	0059.7	004.7	68.47
264.0	000.0070	0078.6	004.7	047.5	000.0800	0059.9	004.8	68.15
265.0	000.0066	0079.1	004.6	047.2	000.0800	0060.1	004.9	67.82
266.0	000.0061	0079.9	004.6	046.9	000.0800	0060.3	005.0	67.50
267.0	000.0057	0081.0	004.5	046.6	000.0800	0060.4	005.1	67.19
268.0	000.0053	0081.9	004.5	046.4	000.0800	0060.5	005.1	66.86
269.0	000.0049	0082.2	004.4	046.4	000.0800	0060.5	005.3	66.48

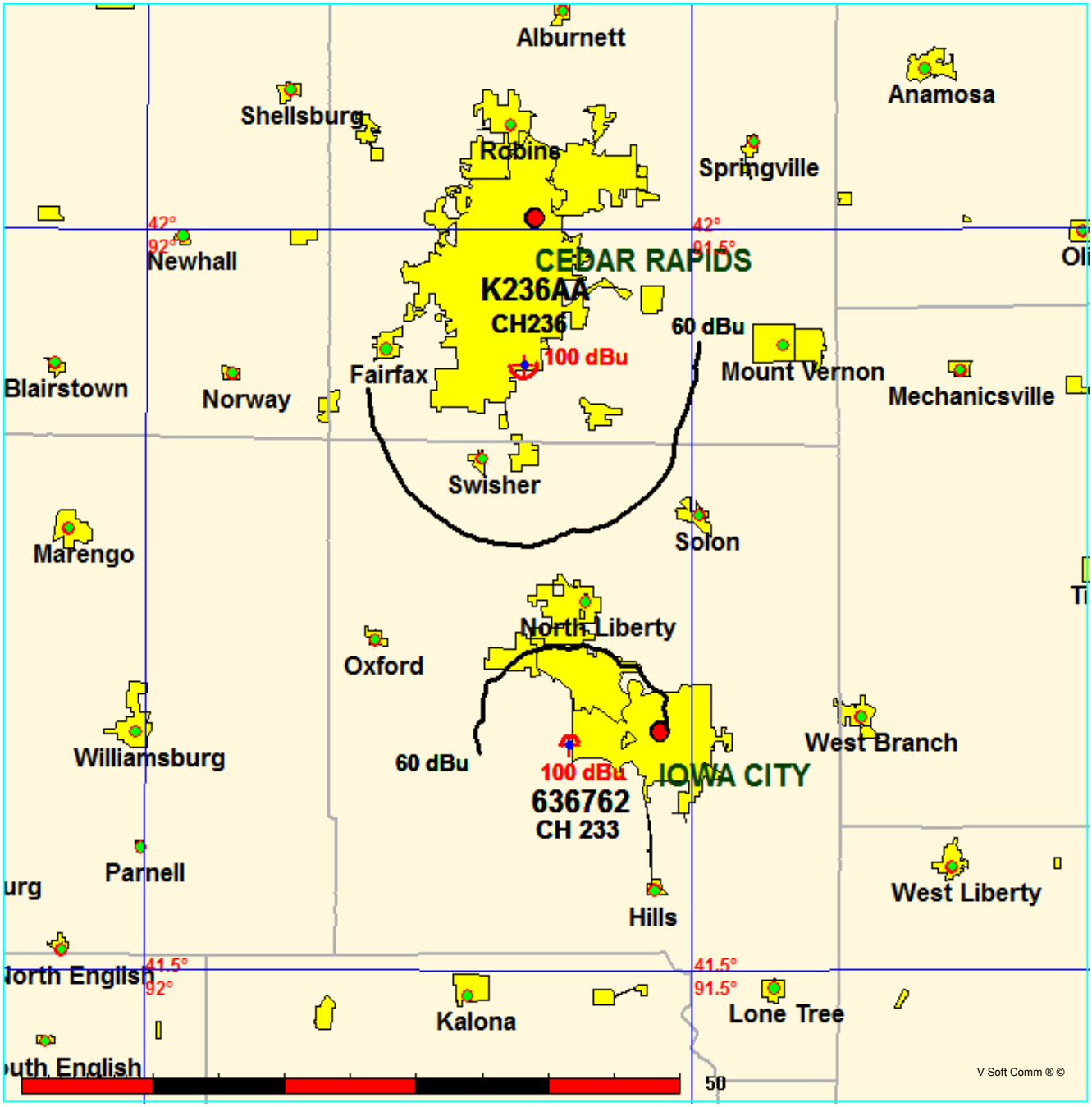
Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
270.0	000.0045	0081.0	004.3	046.7	000.0800	0060.4	005.4	65.99
271.0	000.0045	0079.8	004.2	046.3	000.0800	0060.6	005.5	65.79
272.0	000.0046	0078.6	004.2	045.9	000.0800	0060.8	005.5	65.60
273.0	000.0047	0078.4	004.2	045.3	000.0800	0061.1	005.6	65.48
274.0	000.0047	0079.9	004.3	044.4	000.0800	0061.8	005.6	65.50
275.0	000.0048	0081.1	004.3	043.5	000.0800	0062.5	005.6	65.50
276.0	000.0048	0082.0	004.4	042.8	000.0800	0063.1	005.7	65.45
277.0	000.0049	0081.7	004.4	042.3	000.0800	0063.2	005.7	65.28
278.0	000.0049	0081.0	004.4	041.9	000.0800	0063.2	005.8	65.06
279.0	000.0050	0079.9	004.3	041.6	000.0800	0063.1	005.9	64.82
280.0	000.0050	0079.5	004.3	041.2	000.0800	0063.0	005.9	64.60
281.0	000.0051	0079.3	004.4	040.7	000.0800	0062.5	006.0	64.37
282.0	000.0053	0078.7	004.4	040.3	000.0800	0062.1	006.0	64.11
283.0	000.0054	0077.5	004.4	040.0	000.0800	0061.8	006.1	63.85
284.0	000.0055	0075.6	004.3	040.0	000.0800	0061.7	006.2	63.60
285.0	000.0056	0074.0	004.3	039.9	000.0800	0061.6	006.3	63.35
286.0	000.0057	0072.7	004.3	039.7	000.0800	0061.3	006.4	63.11
287.0	000.0058	0072.1	004.3	039.4	000.0800	0060.8	006.4	62.85
288.0	000.0059	0071.7	004.3	039.1	000.0800	0060.2	006.5	62.58
289.0	000.0060	0071.2	004.3	038.8	000.0800	0059.6	006.6	62.32
290.0	000.0062	0070.6	004.3	038.6	000.0800	0059.2	006.6	62.07
291.0	000.0064	0070.0	004.3	038.2	000.0800	0058.5	006.7	61.80
292.0	000.0065	0069.7	004.4	037.9	000.0800	0057.9	006.8	61.53
293.0	000.0067	0069.5	004.4	037.5	000.0800	0057.2	006.8	61.26
294.0	000.0069	0069.3	004.4	037.1	000.0800	0056.6	006.9	60.99
295.0	000.0071	0068.9	004.4	036.8	000.0800	0056.1	007.0	60.74
296.0	000.0073	0068.4	004.4	036.6	000.0800	0055.7	007.0	60.49
297.0	000.0076	0067.8	004.5	036.4	000.0800	0055.4	007.1	60.26
298.0	000.0078	0067.2	004.5	036.2	000.0800	0055.1	007.2	60.04
299.0	000.0080	0066.7	004.5	036.0	000.0800	0054.8	007.3	59.81
300.0	000.0082	0066.5	004.5	035.7	000.0800	0054.5	007.3	59.59
301.0	000.0082	0066.4	004.5	035.6	000.0800	0054.4	007.4	59.39
302.0	000.0083	0066.5	004.5	035.5	000.0800	0054.3	007.5	59.19
303.0	000.0084	0066.6	004.5	035.4	000.0800	0054.1	007.6	58.99
304.0	000.0084	0066.5	004.5	035.3	000.0800	0054.0	007.7	58.81
305.0	000.0085	0066.3	004.5	035.3	000.0800	0054.0	007.7	58.64

CH 233, Iowa City Application -Contour to Contour - K236AA
University Of Northern Iowa

FMCommander Single Allocation Study - 12-07-2015 - FCC NGDC 30 Sec
636762's Overlaps (In= 20.31 km, Out= 14.48 km)

636762 CH 233 D
Lat= 41 39 10.0, Lng= 91 36 42.0
0.08 kW 64.9 m HAAT, 287 m COR
Prot.= 60 dBu, Intef.= 100 dBu

K236AA CH 236 D BLFT19930722TB
Lat= 41 54 33.0, Lng= 91 39 17.0
0.205 kW 116 m HAAT, 357 m COR
Prot.= 60 dBu, Intef.= 100 dBu



12-07-2015 Terrain Data: FCC NGDC 30 Sec FMOver Analysis

K236AA BLFT19930722TB 636762

Channel = 236D
Max ERP = 0.205 kW
RCAMSL = 357 m
N. Lat. 41 54 33.0
W. Lng. 91 39 17.0
Protected
60 dBu

Channel = 233D
Max ERP = 0.08 kW
RCAMSL = 287 m
N. Lat. 41 39 10.0
W. Lng. 91 36 42.0
Interfering
100 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
113.0	000.2050	0108.0	012.7	019.1	000.0800	0058.9	024.9	40.04	
114.0	000.2050	0108.3	012.7	019.1	000.0800	0058.9	024.7	40.20	
115.0	000.2050	0109.2	012.8	019.2	000.0800	0058.9	024.5	40.36	
116.0	000.2050	0110.4	012.9	019.3	000.0800	0058.8	024.2	40.52	
117.0	000.2050	0111.7	012.9	019.4	000.0800	0058.8	024.0	40.68	
118.0	000.2050	0112.9	013.0	019.4	000.0800	0058.8	023.8	40.85	
119.0	000.2050	0114.3	013.1	019.5	000.0800	0058.7	023.5	41.02	
120.0	000.2050	0116.4	013.2	019.7	000.0800	0058.7	023.3	41.20	
121.0	000.2050	0118.7	013.3	019.9	000.0800	0058.6	023.0	41.39	
122.0	000.2050	0120.8	013.4	020.1	000.0800	0058.6	022.8	41.57	
123.0	000.2050	0122.4	013.5	020.1	000.0800	0058.6	022.5	41.76	
124.0	000.2050	0123.7	013.6	020.2	000.0800	0058.6	022.3	41.95	
125.0	000.2050	0124.5	013.6	020.1	000.0800	0058.6	022.0	42.14	
126.0	000.2050	0124.9	013.6	020.0	000.0800	0058.6	021.8	42.33	
127.0	000.2050	0125.0	013.6	019.9	000.0800	0058.6	021.6	42.52	
128.0	000.2050	0125.0	013.6	019.7	000.0800	0058.7	021.3	42.70	
129.0	000.2050	0125.2	013.7	019.5	000.0800	0058.7	021.1	42.90	
130.0	000.2050	0125.5	013.7	019.3	000.0800	0058.8	020.9	43.09	
131.0	000.2050	0125.5	013.7	019.1	000.0800	0058.9	020.7	43.29	
132.0	000.2050	0125.5	013.7	018.8	000.0800	0059.1	020.4	43.49	
133.0	000.2050	0125.5	013.7	018.5	000.0800	0059.3	020.2	43.69	
134.0	000.2050	0125.6	013.7	018.3	000.0800	0059.4	020.0	43.89	
135.0	000.2050	0125.5	013.7	017.9	000.0800	0059.6	019.8	44.09	
136.0	000.2050	0125.3	013.7	017.6	000.0800	0059.7	019.6	44.27	
137.0	000.2050	0125.3	013.7	017.2	000.0800	0059.7	019.4	44.45	
138.0	000.2050	0125.2	013.7	016.9	000.0800	0059.6	019.2	44.61	
139.0	000.2050	0124.9	013.6	016.4	000.0800	0059.4	019.0	44.75	
140.0	000.2050	0124.5	013.6	016.0	000.0800	0059.1	018.8	44.86	
141.0	000.2050	0124.4	013.6	015.6	000.0800	0058.7	018.6	44.97	
142.0	000.2050	0124.4	013.6	015.1	000.0800	0058.5	018.4	45.10	
143.0	000.2050	0124.2	013.6	014.7	000.0800	0058.3	018.2	45.23	
144.0	000.2050	0123.9	013.6	014.2	000.0800	0058.2	018.1	45.36	
145.0	000.2050	0123.6	013.6	013.6	000.0800	0058.1	017.9	45.50	
146.0	000.2050	0123.6	013.6	013.1	000.0800	0058.2	017.7	45.66	

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
147.0	000.2050	0123.8	013.6	012.6	000.0800	0058.4	017.5	45.84
148.0	000.2050	0124.5	013.6	012.1	000.0800	0058.6	017.3	46.03
149.0	000.2050	0125.1	013.6	011.6	000.0800	0058.8	017.2	46.23
150.0	000.2050	0125.4	013.7	011.1	000.0800	0059.1	017.0	46.42
151.0	000.2050	0125.3	013.7	010.4	000.0800	0059.4	016.8	46.58
152.0	000.2050	0125.0	013.6	009.8	000.0800	0059.6	016.7	46.72
153.0	000.2050	0124.4	013.6	009.1	000.0800	0059.7	016.6	46.84
154.0	000.2050	0123.6	013.6	008.3	000.0800	0059.7	016.5	46.93
155.0	000.2050	0122.7	013.5	007.5	000.0800	0059.7	016.4	47.01
156.0	000.2050	0122.1	013.5	006.8	000.0800	0059.3	016.3	47.04
157.0	000.2050	0121.6	013.5	006.0	000.0800	0058.3	016.2	46.98
158.0	000.2050	0121.2	013.4	005.2	000.0800	0057.1	016.1	46.89
159.0	000.2050	0120.7	013.4	004.4	000.0800	0055.7	016.0	46.75
160.0	000.2050	0119.9	013.4	003.6	000.0800	0055.2	016.0	46.72
161.0	000.2050	0118.3	013.3	002.7	000.0800	0055.0	016.0	46.70
162.0	000.2050	0115.7	013.2	001.8	000.0800	0055.1	016.0	46.67
163.0	000.2050	0113.3	013.0	000.8	000.0800	0055.2	016.1	46.65
164.0	000.2050	0113.0	013.0	000.1	000.0800	0054.8	016.0	46.62
165.0	000.2050	0113.8	013.0	359.3	000.0800	0054.4	015.9	46.65
166.0	000.2050	0114.7	013.1	358.5	000.0800	0054.0	015.8	46.67
167.0	000.2050	0115.4	013.1	357.8	000.0800	0054.4	015.7	46.80
168.0	000.2050	0116.4	013.2	357.0	000.0800	0055.1	015.6	47.00
169.0	000.2050	0118.2	013.3	356.2	000.0800	0055.8	015.5	47.23
170.0	000.2050	0119.5	013.4	355.3	000.0800	0056.4	015.4	47.41
171.0	000.2050	0120.2	013.4	354.5	000.0800	0056.7	015.3	47.49
172.0	000.2050	0121.0	013.4	353.6	000.0800	0057.0	015.3	47.59
173.0	000.2050	0121.9	013.5	352.7	000.0800	0057.5	015.2	47.71
174.0	000.2050	0122.8	013.5	351.9	000.0800	0058.0	015.2	47.82
175.0	000.2050	0123.8	013.6	350.9	000.0800	0058.3	015.2	47.90
176.0	000.2050	0124.9	013.6	350.0	000.0800	0058.5	015.1	47.96
177.0	000.2050	0125.8	013.7	349.1	000.0800	0058.6	015.1	47.99
178.0	000.2050	0126.1	013.7	348.2	000.0800	0058.7	015.1	47.99
179.0	000.2050	0125.6	013.7	347.3	000.0800	0058.9	015.2	47.94
180.0	000.2050	0124.8	013.6	346.5	000.0800	0058.9	015.3	47.86
181.0	000.2050	0124.1	013.6	345.7	000.0800	0058.9	015.4	47.78
182.0	000.2050	0123.8	013.6	344.9	000.0800	0058.8	015.5	47.70
183.0	000.2050	0123.6	013.6	344.0	000.0800	0058.7	015.6	47.61
184.0	000.2050	0123.5	013.6	343.2	000.0800	0058.7	015.6	47.52
185.0	000.2050	0123.4	013.6	342.4	000.0800	0058.8	015.7	47.47
186.0	000.2050	0123.5	013.6	341.6	000.0800	0059.1	015.8	47.43
187.0	000.2050	0123.9	013.6	340.8	000.0800	0059.5	015.9	47.41
188.0	000.2050	0124.1	013.6	340.1	000.0800	0059.8	016.0	47.36
189.0	000.2050	0124.1	013.6	339.3	000.0800	0060.1	016.1	47.29
190.0	000.2050	0123.9	013.6	338.6	000.0800	0060.2	016.3	47.19
191.0	000.2050	0123.6	013.6	337.9	000.0800	0060.2	016.4	47.08
192.0	000.2050	0123.5	013.6	337.3	000.0800	0060.3	016.5	46.97
193.0	000.2050	0123.4	013.6	336.6	000.0800	0060.4	016.7	46.86
194.0	000.2050	0123.6	013.6	335.9	000.0800	0060.6	016.8	46.77
195.0	000.2050	0123.4	013.6	335.3	000.0800	0060.7	017.0	46.65
196.0	000.2050	0122.9	013.5	334.8	000.0800	0060.8	017.1	46.51
197.0	000.2050	0122.4	013.5	334.3	000.0800	0060.9	017.3	46.36

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
198.0	000.2050	0122.0	013.5	333.8	000.0800	0060.9	017.5	46.21
199.0	000.2050	0121.9	013.5	333.2	000.0800	0060.9	017.7	46.07
200.0	000.2050	0121.8	013.5	332.7	000.0800	0060.9	017.8	45.92
201.0	000.2050	0121.3	013.4	332.3	000.0800	0060.9	018.0	45.75
202.0	000.2050	0120.5	013.4	331.9	000.0800	0060.8	018.2	45.57
203.0	000.2050	0119.3	013.3	331.6	000.0800	0060.8	018.4	45.38
204.0	000.2050	0118.2	013.3	331.3	000.0800	0060.8	018.7	45.19
205.0	000.2050	0117.5	013.2	330.9	000.0800	0060.7	018.9	45.01
206.0	000.2050	0116.9	013.2	330.6	000.0800	0060.7	019.1	44.83
207.0	000.2050	0116.6	013.2	330.3	000.0800	0060.5	019.3	44.64
208.0	000.2050	0116.2	013.2	330.0	000.0800	0060.4	019.5	44.46
209.0	000.2050	0115.5	013.1	329.7	000.0800	0060.3	019.7	44.26
210.0	000.2050	0114.8	013.1	329.5	000.0800	0060.2	019.9	44.07
211.0	000.2050	0114.3	013.1	329.2	000.0800	0060.1	020.1	43.88
212.0	000.2050	0114.1	013.1	329.0	000.0800	0060.0	020.3	43.70
213.0	000.2050	0114.2	013.1	328.7	000.0800	0059.9	020.5	43.52
214.0	000.2050	0114.2	013.1	328.4	000.0800	0059.9	020.8	43.34
215.0	000.2050	0114.0	013.1	328.2	000.0800	0059.8	021.0	43.17
216.0	000.2050	0113.8	013.0	328.0	000.0800	0059.8	021.2	42.99
217.0	000.2050	0113.5	013.0	327.8	000.0800	0059.8	021.4	42.81
218.0	000.2050	0112.7	013.0	327.7	000.0800	0059.8	021.6	42.63
219.0	000.2050	0111.7	012.9	327.6	000.0800	0059.8	021.9	42.44
220.0	000.2050	0111.5	012.9	327.5	000.0800	0059.8	022.1	42.27
221.0	000.2050	0112.0	012.9	327.2	000.0800	0059.8	022.3	42.11
222.0	000.2050	0112.4	013.0	327.0	000.0800	0059.7	022.5	41.94
223.0	000.2050	0112.1	012.9	326.9	000.0800	0059.7	022.7	41.77
224.0	000.2050	0111.4	012.9	326.9	000.0800	0059.7	022.9	41.59
225.0	000.2050	0110.6	012.9	326.9	000.0800	0059.7	023.2	41.42
226.0	000.2050	0109.8	012.8	326.9	000.0800	0059.7	023.4	41.24
227.0	000.2050	0109.0	012.8	326.9	000.0800	0059.7	023.6	41.07
228.0	000.2050	0108.2	012.7	326.9	000.0800	0059.7	023.9	40.90
229.0	000.2050	0107.2	012.7	327.0	000.0800	0059.7	024.1	40.73
230.0	000.2050	0105.8	012.6	327.1	000.0800	0059.7	024.3	40.57
231.0	000.2050	0104.6	012.5	327.2	000.0800	0059.8	024.5	40.41
232.0	000.2050	0103.9	012.5	327.2	000.0800	0059.8	024.8	40.25