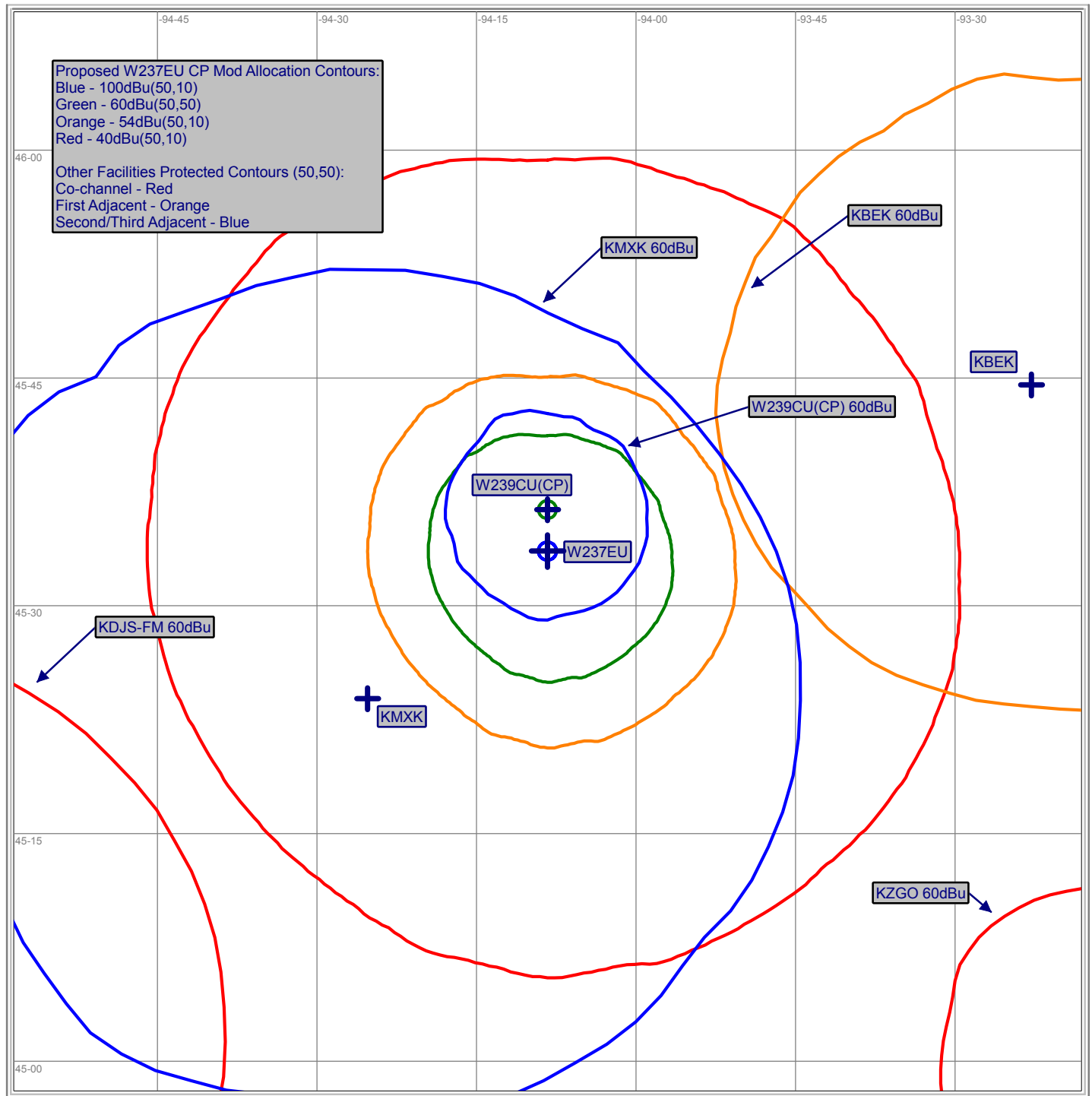
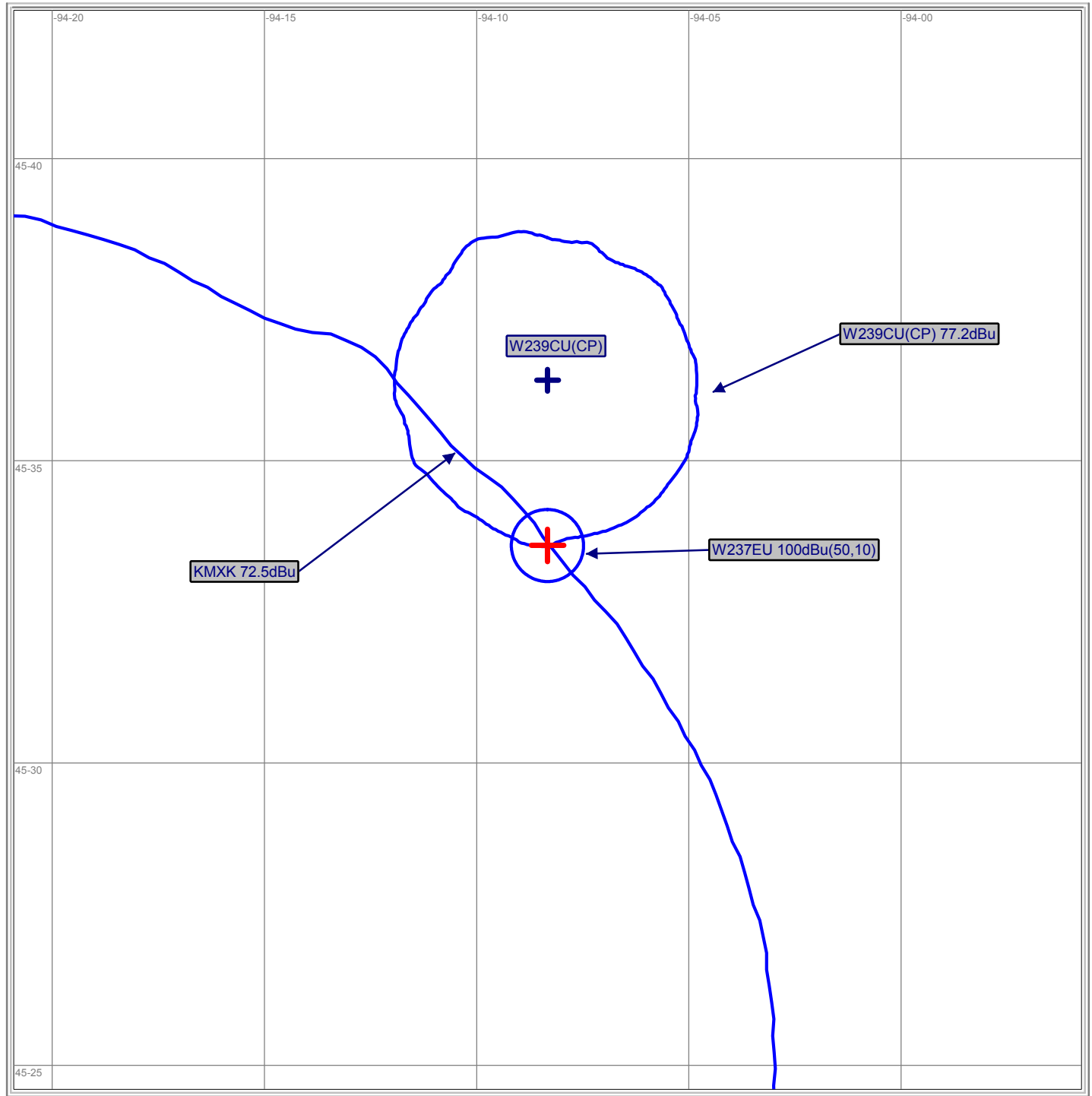


Exhibit #13a - W237EU CP Mod - Allocation Study



Lat/Lon Grid

Exhibit #13b - W237EU CP Mod - Living Way Waiver Contours



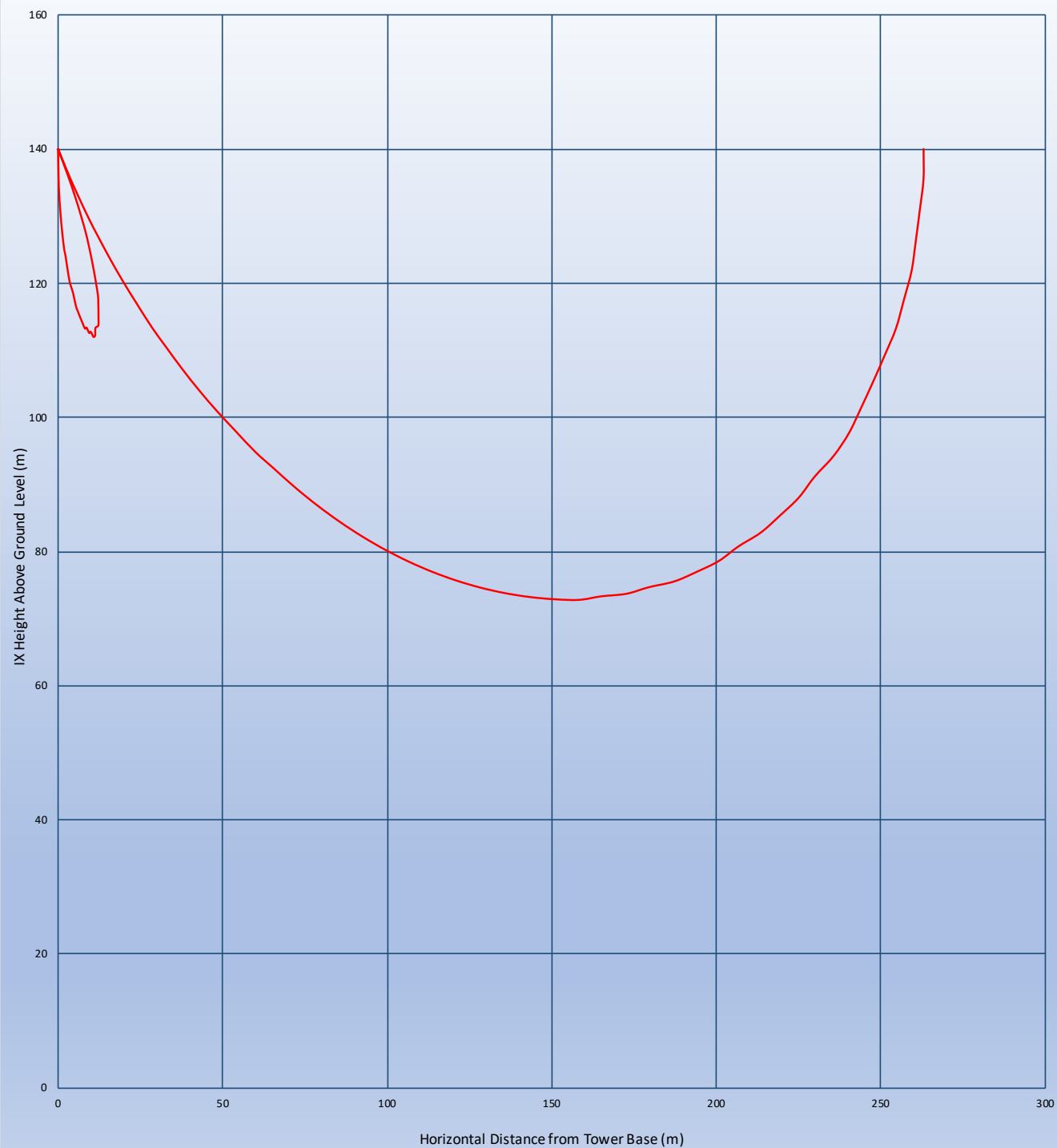
Lat/Lon Grid

Interference Calculation with respect to KMXK Cold Spring, MN

Proposed Facility: W237EU
 Proposed Antenna: Shively 6832-2 0.5 Wavelength
 Proposed Max ERP (W): 250
 Proposed COR AGL (m): 140
 Protected Adjacent Station: KMXK - Channel 235C2
 Signal level of protected station at proposed site (dBu): 72.5
 Proposed +40dB Interference Contour Level (dBu): 112.5

Downward Angle (degrees)	Relative Vertical Field	ERP(W)	Distance to IX Contour along Depression Angle (m)	Distance to IX contour from tower base (m)	IX Height Above Ground Level (m)	Downward Angle (degrees)	Relative Vertical Field	ERP(W)	Distance to IX Contour along Depression Angle (m)	Distance to IX contour from tower base (m)	IX Height Above Ground Level (m)
0	1.000	250.0	263	263	140	46	0.088	1.9	23	16	123
1	0.999	249.5	263	263	135	47	0.069	1.2	18	12	127
2	0.997	248.5	262	262	131	48	0.052	0.7	14	9	130
3	0.993	246.5	261	261	126	49	0.036	0.3	9	6	133
4	0.988	244.0	260	259	122	50	0.020	0.1	5	3	136
5	0.981	240.6	258	257	118	51	0.005	0.0	0	0	140
6	0.973	236.7	256	255	113	52	0.009	0.0	0	0	140
7	0.963	231.8	253	251	109	53	0.021	0.1	5	3	136
8	0.952	226.6	250	248	105	54	0.033	0.3	9	5	133
9	0.940	220.9	247	244	101	55	0.045	0.5	12	7	130
10	0.926	214.4	244	240	98	56	0.055	0.8	15	8	128
11	0.911	207.5	240	236	94	57	0.064	1.0	17	9	126
12	0.895	200.3	235	230	91	58	0.073	1.3	19	10	124
13	0.877	192.3	231	225	88	59	0.080	1.6	21	11	122
14	0.859	184.5	226	219	85	60	0.087	1.9	23	12	120
15	0.839	176.0	221	213	83	61	0.093	2.2	25	12	118
16	0.819	167.7	215	207	81	62	0.098	2.4	26	12	117
17	0.797	158.8	210	201	79	63	0.103	2.7	27	12	116
18	0.775	150.2	204	194	77	64	0.106	2.8	28	12	115
19	0.752	141.4	198	187	76	65	0.109	3.0	29	12	114
20	0.728	132.5	191	179	75	66	0.111	3.1	29	12	114
21	0.703	123.6	185	173	74	67	0.112	3.1	29	11	113
22	0.678	114.9	178	165	73	68	0.113	3.2	30	11	112
23	0.653	106.6	172	158	73	69	0.113	3.2	30	11	112
24	0.627	98.3	165	151	73	70	0.112	3.1	29	10	113
25	0.601	90.3	158	143	73	71	0.110	3.0	29	9	113
26	0.574	82.4	151	136	74	72	0.108	2.9	28	9	113
27	0.547	74.8	144	128	75	73	0.106	2.8	28	8	113
28	0.521	67.9	137	121	76	74	0.103	2.7	27	7	114
29	0.494	61.0	130	114	77	75	0.099	2.5	26	7	115
30	0.467	54.5	123	107	79	76	0.095	2.3	25	6	116
31	0.440	48.4	116	99	80	77	0.090	2.0	24	5	117
32	0.413	42.6	109	92	82	78	0.085	1.8	22	5	118
33	0.387	37.4	102	86	84	79	0.080	1.6	21	4	119
34	0.361	32.6	95	79	87	80	0.074	1.4	20	3	120
35	0.335	28.1	88	72	90	81	0.068	1.2	18	3	122
36	0.309	23.9	81	66	92	82	0.061	0.9	16	2	124
37	0.284	20.2	75	60	95	83	0.055	0.8	15	2	125
38	0.260	16.9	68	54	98	84	0.048	0.6	13	1	127
39	0.236	13.9	62	48	101	85	0.040	0.4	11	1	129
40	0.213	11.3	56	43	104	86	0.033	0.3	9	1	131
41	0.190	9.0	50	38	107	87	0.025	0.2	7	0	133
42	0.168	7.1	44	33	111	88	0.017	0.1	5	0	135
43	0.147	5.4	39	29	113	89	0.009	0.0	0	0	140
44	0.126	4.0	33	24	117	90	0.000	0.0	0	0	140
45	0.107	2.9	28	20	120						

Interference Calculation with respect to 2nd-channel adjacent station KMXK

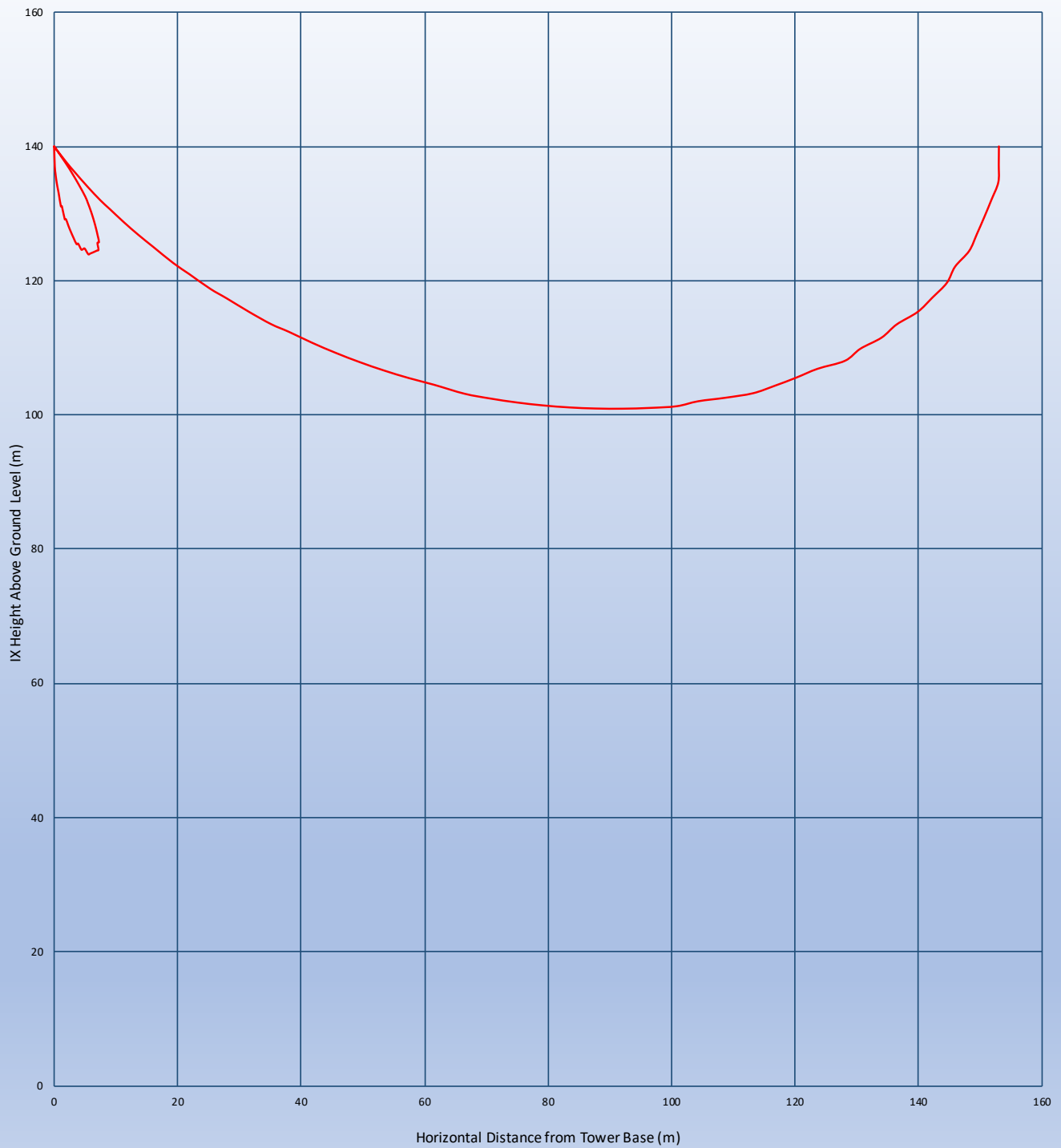


Interference Calculation with respect to W239CU(CP) Sauk Rapids, MN

Proposed Facility: W237EU
 Proposed Antenna: Shively 6832-2 0.5 Wavelength
 Proposed Max ERP (W): 250
 Proposed COR AGL (m): 140
 Protected Adjacent Station: W239CU (Construction Permit)
 Signal level of protected station at proposed site (dBu): 77.2
 Proposed +40dB Interference Contour Level (dBu): 117.2

Downward Angle (degrees)	Relative Vertical Field	ERP(W)	Distance to IX Contour along Depression Angle (m)	Distance to IX contour from tower base (m)	IX Height Above Ground Level (m)	Downward Angle (degrees)	Relative Vertical Field	ERP(W)	Distance to IX Contour along Depression Angle (m)	Distance to IX contour from tower base (m)	IX Height Above Ground Level (m)
0	1.000	250.0	153	153	140	46	0.088	1.9	13	9	131
1	0.999	249.5	153	153	137	47	0.069	1.2	11	8	132
2	0.997	248.5	153	153	135	48	0.052	0.7	8	5	134
3	0.993	246.5	152	152	132	49	0.036	0.3	5	3	136
4	0.988	244.0	151	151	129	50	0.020	0.1	3	2	138
5	0.981	240.6	150	149	127	51	0.005	0.0	0	0	140
6	0.973	236.7	149	148	124	52	0.009	0.0	0	0	140
7	0.963	231.8	147	146	122	53	0.021	0.1	3	2	138
8	0.952	226.6	146	145	120	54	0.033	0.3	5	3	136
9	0.940	220.9	144	142	117	55	0.045	0.5	7	4	134
10	0.926	214.4	142	140	115	56	0.055	0.8	9	5	133
11	0.911	207.5	139	136	113	57	0.064	1.0	10	5	132
12	0.895	200.3	137	134	112	58	0.073	1.3	11	6	131
13	0.877	192.3	134	131	110	59	0.080	1.6	12	6	130
14	0.859	184.5	132	128	108	60	0.087	1.9	13	7	129
15	0.839	176.0	128	124	107	61	0.093	2.2	14	7	128
16	0.819	167.7	125	120	106	62	0.098	2.4	15	7	127
17	0.797	158.8	122	117	104	63	0.103	2.7	16	7	126
18	0.775	150.2	119	113	103	64	0.106	2.8	16	7	126
19	0.752	141.4	115	109	103	65	0.109	3.0	17	7	125
20	0.728	132.5	111	104	102	66	0.111	3.1	17	7	124
21	0.703	123.6	108	101	101	67	0.112	3.1	17	7	124
22	0.678	114.9	104	96	101	68	0.113	3.2	17	6	124
23	0.653	106.6	100	92	101	69	0.113	3.2	17	6	124
24	0.627	98.3	96	88	101	70	0.112	3.1	17	6	124
25	0.601	90.3	92	83	101	71	0.110	3.0	17	6	124
26	0.574	82.4	88	79	101	72	0.108	2.9	16	5	125
27	0.547	74.8	84	75	102	73	0.106	2.8	16	5	125
28	0.521	67.9	80	71	102	74	0.103	2.7	16	4	125
29	0.494	61.0	76	66	103	75	0.099	2.5	15	4	126
30	0.467	54.5	71	61	105	76	0.095	2.3	15	4	125
31	0.440	48.4	67	57	105	77	0.090	2.0	14	3	126
32	0.413	42.6	63	53	107	78	0.085	1.8	13	3	127
33	0.387	37.4	59	49	108	79	0.080	1.6	12	2	128
34	0.361	32.6	55	46	109	80	0.074	1.4	11	2	129
35	0.335	28.1	51	42	111	81	0.068	1.2	11	2	129
36	0.309	23.9	47	38	112	82	0.061	0.9	9	1	131
37	0.284	20.2	44	35	114	83	0.055	0.8	9	1	131
38	0.260	16.9	40	32	115	84	0.048	0.6	7	1	133
39	0.236	13.9	36	28	117	85	0.040	0.4	6	1	134
40	0.213	11.3	33	25	119	86	0.033	0.3	5	0	135
41	0.190	9.0	29	22	121	87	0.025	0.2	4	0	136
42	0.168	7.1	26	19	123	88	0.017	0.1	3	0	137
43	0.147	5.4	22	16	125	89	0.009	0.0	0	0	140
44	0.126	4.0	19	14	127	90	0.000	0.0	0	0	140
45	0.107	2.9	16	11	129						




Interference Calculation with respect to 2nd-channel adjacent station W239CU(CP)

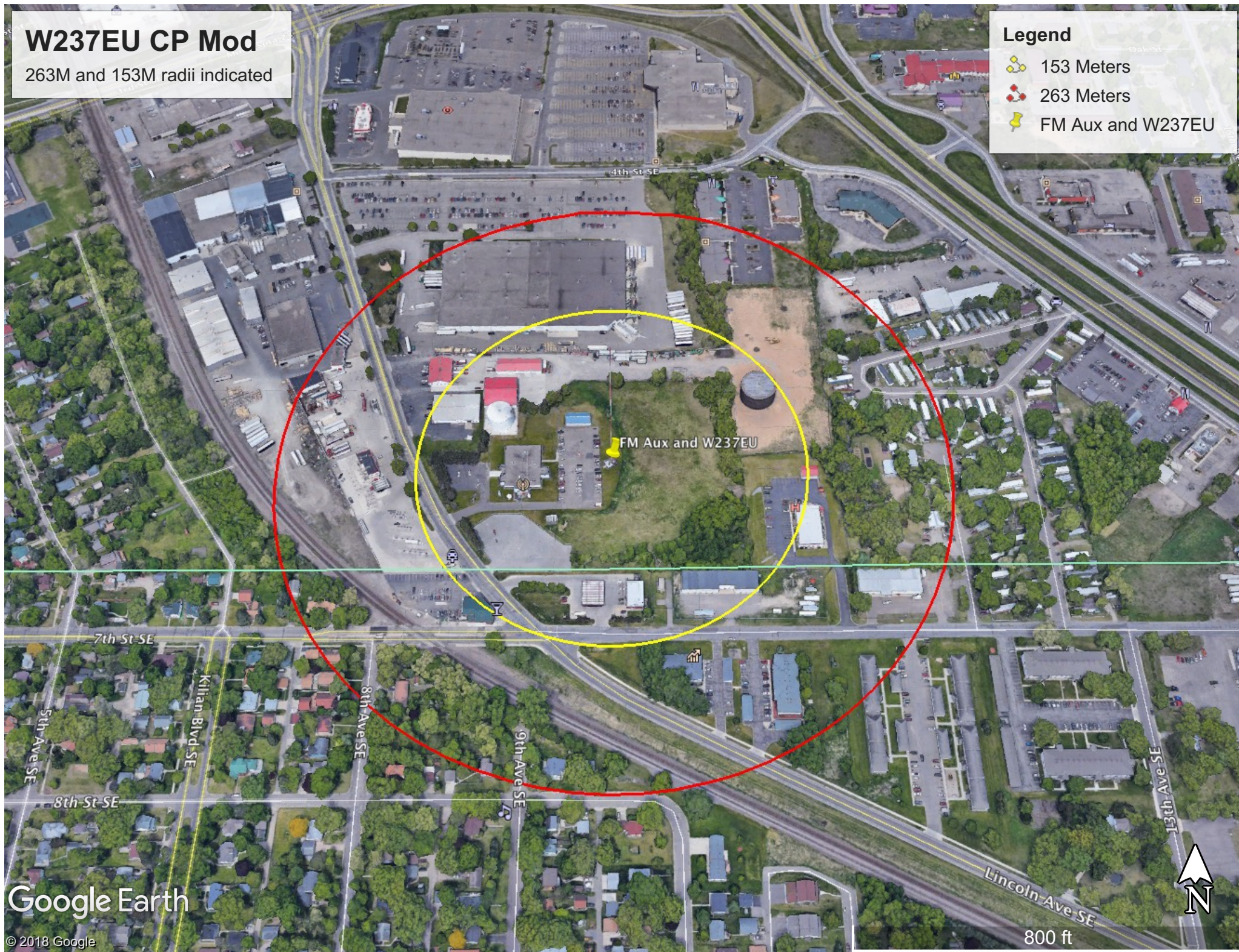


W237EU CP Mod

263M and 153M radii indicated

Legend

-  153 Meters
-  263 Meters
-  FM Aux and W237EU



Google Earth

© 2018 Google