

# Michigan Community Radio Exhibit E-13

## Freespace Interference Study for a given antenna based on Vertical Radiation Pattern

Antenna Make: ETC

Antenna Model: FM-1CP

<u>Depression Angle from Antenna</u>	<u>Antenna Relative Field</u>	<u>ERP Watts</u>	<u>ERP dBk</u>	<u>Distance to Ground from Antenna (km)</u>	<u>Free Space Signal (dBu)</u>	<u>2.5 dB Loss for Reflection</u>	<u>Signal Strength at Ground (dBu)</u>	<u>Circular Distance From Tower (m)</u>
90	0.010	0.001	-60.00	0.1160	65.6	2.5	63.1	0.00
85	0.100	0.100	-40.00	0.1164	85.6	2.5	83.1	10.15
80	0.180	0.324	-34.89	0.1178	90.6	2.5	88.1	20.45
75	0.250	0.625	-32.04	0.1201	93.3	2.5	90.8	31.08
70	0.340	1.156	-29.37	0.1234	95.7	2.5	93.2	42.22
65	0.430	1.849	-27.33	0.1280	97.4	2.5	94.9	54.09
60	0.500	2.500	-26.02	0.1339	98.4	2.5	95.9	66.97
55	0.570	3.249	-24.88	0.1416	99.0	2.5	96.5	81.22
50	0.640	4.096	-23.88	0.1514	99.4	2.5	96.9	97.34
45	0.700	4.900	-23.10	0.1640	99.5	2.5	97.0	116.00
40	0.770	5.929	-22.27	0.1805	99.5	2.5	97.0	138.24
35	0.820	6.724	-21.72	0.2022	99.1	2.5	96.6	165.67
30	0.870	7.569	-21.21	0.2320	98.4	2.5	95.9	200.92
25	0.900	8.100	-20.92	0.2745	97.2	2.5	94.7	248.76
20	0.940	8.836	-20.54	0.3392	95.8	2.5	93.3	318.71
15	0.970	9.409	-20.26	0.4482	93.6	2.5	91.1	432.92
10	0.980	9.604	-20.18	0.6680	90.2	2.5	87.7	657.87
5	0.990	9.801	-20.09	1.3310	84.3	2.5	81.8	1325.89

Distance to Ground Level assumes flat ground or a site where the ground level is above average terrain in all azimuths.

Maximum ERP  
Radiation Center AG  
Radiation Center AG

10 watts  
0.116 km  
380.577 ft.

Max dBu to Ground Level

97.02