

Maximum Permissible Exposure, MPE Calculation

Antennas with gain are mounted at remote locations at distances much greater than those used in the calculations. The user manual provides instructions for mounting all antennas and directs mounting the high gain antennas outdoors maintaining a separation distance of 2 meters from people. The additional length of cable required for outdoor remote locations would further reduce the power density.

MPE Calculator

MPE uses EIRP for calculation. EIRP is based on TX power added to the antenna gain in dBi.

dBi = dB gain compared to an isotropic radiator.

S = power density in mW/cm²

		Output Power	dBd + 2.17 = dBi	Antenna Gain (dBi)	14
		(Watts)		dBi to dBd	2.17
Tx Frequency (MHz)	902	2.0000		Antenna Gain (dBd)	11.83
Cable Loss (dB)	0.0			Antenna minus cable (dBi)	14.00

Calculated ERP (mw) 30481.055

Calculated EIRP (mw) 50237.729

EIRP = Po(dBm) + Gain (dB)

Radiated (EIRP) dBm 47.010

ERP = EIRP - 2.17 dB

Radiated (ERP) dBm 44.840

Occupational Limit	Power density
3.00667	mW/cm ² (S)
	EIRP
General Public Limit	----- =
0.60133	mW/cm ²
	4 π r ²

FCC radio frequency radiation exposure limits per 1.1310		
Frequency (MHz)	Occupational Limit	Public Limit
300-1,500	1/300	1/1500
1,500-10,000	5	1

FCC radio frequency radiation exposure limits per 1.1310		
Frequency (MHz)	Occupational Limit @ Tx Freq (mW/cm ²)	Public Limit @ Tx Freq (mW/cm ²)
300-1,500	3.00666667	0.60133333
1,500-10,000	5	1

EIRP	Distance	Distance	S
milliwatts	cm	inches	mW/cm ²
50237.729	250.00	98.43	0.06396
50237.729	200.00	78.74	0.09994
50237.729	150.00	59.06	0.17768
50237.729	100.00	39.37	0.39978
50237.729	90.00	35.43	0.49355
50237.729	85.00	33.46	0.55333
50237.729	82.00	32.28	0.59456
50237.729	81.00	31.89	0.60933
50237.729	80.00	31.50	0.62465
50237.729	75.00	29.53	0.71072
50237.729	70.00	27.56	0.81588
50237.729	65.00	25.59	0.94622
50237.729	60.00	23.62	1.11050
50237.729	55.00	21.65	1.32158
50237.729	50.00	19.69	1.59912
50237.729	45.00	17.72	1.97422
50237.729	40.00	15.75	2.49862
50237.729	39.00	15.35	2.62840
50237.729	38.00	14.96	2.76855
50237.729	37.00	14.57	2.92023
50237.729	36.50	14.37	3.00078
50237.729	36.00	14.17	3.08472
50237.729	35.00	13.78	3.26350
50237.729	34.00	13.39	3.45830
50237.729	33.00	12.99	3.67107
50237.729	32.00	12.60	3.90409
50237.729	31.00	12.20	4.16003
50237.729	30.00	11.81	4.44199
50237.729	25.00	9.84	6.39647
50237.729	20.00	7.87	9.99448
50237.729	15.00	5.91	17.76796

Frequency (MHz)	Occupational Limit minimum Distance (cm)	Public Limit minimum distance (cm)
300-1,500	36.50	81.00
1,500-10,000	N/A	N/A

ROGERS LABS, INC.
4405 W. 259th Terrace
Louisburg, KS 66053
Phone/Fax: (913) 837-3214

TRANSCORE AMTECH TECHNOLOGY CENTER
MODEL: MPI 6000
Test #: 051027 FCC ID#: FIH MPI6000
Test to: FCC Parts 2 and 90