

POWER DENSITY ESTIMATIONS BASED ON POWER OUTPUT, ANTENNA GAIN, AND DISTANCE FROM ANTENNA

$$(P G) / (4 R^2 \pi) = S$$

where: S = maximum power density (mW/cm ²)		transmitter operating variables:		must be blank if dB values are entered	
P =	power input to the antenna ----->>	=	23.87 (dBm) - or -		(mW)
G =	gain of the antenna - worst case ----->>	=	1.9 (dBi) - or -		(numeric gain)
R =	distance to the center of the radiation of the antenna -->>	=	20		(cm)

$$(P G) / (4 * R^2 * \pi) = S \text{ (mW/cm}^2\text{)}$$

$$\left(\frac{243.781082 \text{ (mw)}}{1.54882 \text{ (gain)}} \right) / \left(4 * \frac{20^2 \text{ (cm)}}{\pi} \right) = S \text{ (mW/cm}^2\text{)}$$

$$\left(\frac{377.5721909}{400} \right) / \left(4 * \frac{400}{\pi} \right) = S \text{ (mW/cm}^2\text{)}$$

$$\left(\frac{377.5721909}{5026.548246} \right) = 0.075116 \text{ (mW/cm}^2\text{)}$$

Note: The power input to the antenna is the maximum target level plus a 1.0 dB tune up tolerance

$$0.0751156 < 1.0 \text{ (mW/cm}^2\text{)}$$

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f ²	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f ²	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30