

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/cm<sup>2</sup>

Antenna Gain (dBi) **14**

Output Power (Watts) **1.7800**      dBd + 2.17 = dBi      dBi to dBd      2.17

Tx Frequency (MHz) **902**      Antenna Gain (dBd) **11.83**

Cable Loss (dB) **3.0**      (dBm)      32.50      Antenna minus cable (dBi)      11.00

Calculated ERP (mw) 13596.277

EIRP = Po(dBm) + Gain (dB)

Calculated EIRP (mw) 22408.872

Radiated (EIRP) dBm 43.504

ERP = EIRP - 2.17 dB

Radiated (ERP) dBm 41.334

**Occupational Limit**  
**3.00667 mW/cm<sup>2</sup>**  
 Power density (S)  
 EIRP  
 ----- = mW/cm<sup>2</sup>  
**General Public Limit**  
**0.60133 mW/cm<sup>2</sup>**  
 $4 \text{ p r}^2$   
 r (cm) EIRP (mW)

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

| FCC radio frequency radiation exposure limits per 1.1310 |  |  |
|--|--|--|
| Frequency (MHz)  | Occupational Limit @ Tx Freq (mW/cm <sup>2</sup> ) | Public Limit @ Tx Freq (mW/cm <sup>2</sup> ) |
| 300-1,500  | 3.00666667   | 0.601333333                                  |
| 1,500-10,000   | 5  | 1  |

| EIRP       | Distance     | Distance | S                  |
|------------|--------------|----------|--------------------|
| milliwatts | cm           | inches   | mW/cm <sup>2</sup> |
| 22408.872  | 250.00       | 98.43    | 0.02853            |
| 22408.872  | 200.00       | 78.74    | 0.04458            |
| 22408.872  | 150.00       | 59.06    | 0.07926            |
| 22408.872  | 100.00       | 39.37    | 0.17832            |
| 22408.872  | 75.00        | 29.53    | 0.31702            |
| 22408.872  | <b>55.00</b> | 21.65    | <b>0.58950</b>     |
| 22408.872  | 50.00        | 19.69    | 0.71330            |
| 22408.872  | 45.00        | 17.72    | 0.88061            |
| 22408.872  | 43.00        | 16.93    | 0.96444            |
| 22408.872  | 40.00        | 15.75    | 1.11453            |
| 22408.872  | 25.00        | 9.84     | 2.85319            |
| 22408.872  | 24.75        | 9.74     | 2.91112            |
| 22408.872  | <b>24.50</b> | 9.65     | <b>2.97083</b>     |
| 22408.872  | 24.25        | 9.55     | 3.03240            |
| 22408.872  | 24.00        | 9.45     | 3.09591            |
| 22408.872  | 20.00        | 7.87     | 4.45810            |
| 22408.872  | 19.75        | 7.78     | 4.57168            |
| 22408.872  | 19.50        | 7.68     | 4.68966            |
| 22408.872  | 19.25        | 7.58     | 4.81226            |
| 22408.872  | 19.00        | 7.48     | 4.93973            |
| 22408.872  | 18.75        | 7.38     | 5.07233            |
| 22408.872  | 18.50        | 7.28     | 5.21035            |
| 22408.872  | 18.25        | 7.19     | 5.35407            |
| 22408.872  | 18.00        | 7.09     | 5.50383            |
| 22408.872  | 17.75        | 6.99     | 5.65996            |
| 22408.872  | 17.50        | 6.89     | 5.82283            |
| 22408.872  | 17.25        | 6.79     | 5.99283            |
| 22408.872  | 17.00        | 6.69     | 6.17039            |
| 22408.872  | 16.75        | 6.59     | 6.35595            |
| 22408.872  | 16.50        | 6.50     | 6.55001            |
| 22408.872  | 16.25        | 6.40     | 6.75310            |

| Frequency (MHz) | Occupational Limit minimum Distance (cm) | Public Limit minimum distance (cm) |
|-----------------|--|------------------------------------|
| 300-1,500       | 24.25                                    | 55.00                              |
| 1,500-10,000    | N/A                                      | N/A                                |