# MPE Calculation page

| MPE Calculator | Garmin | | Test Number | | 090610 | |
|---|---|---|---|---|---|---|
| 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^2 | | | Antenna Gain (dBi) | 2.2 | |
| | | Output Power | dBd + 2.17 = dBi | | dBi to dBd | 2.17 |
| Tx Frequency (MHz) | 2457 | (Watts) | 0.000486 | | | 0.03 |
| | | | | Antenna minus cable (dBi) | 2.20 | |
| Cable Loss (dB) | 0.0 | (dBm) | -3.13 | | | |

| Calculated ERP (mw) | 0.489 | | Radiated (EIRP) dBm | -0.934 |
|---|---|---|---|---|
| Calculated EIRP (mw) | 0.807 | | | |
| | | | Radiated (ERP) dBm | -3.104 |

**Occupational Limit**
5.00000 mW/cm$^2$

Power density (S) =
$$S = \frac{EIRP}{4\,p\,r^2} = mW/cm^2$$
[ r (cm), EIRP (mW) ]

**General Public Limit**
1.00000 mW/cm$^2$

### 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^2) | Public Limit @ Tx Freq (mW/cm^2) |
|---|---|---|
| 300-1,500 | 8.19 | 1.638 |
| 1,500-10,000 | 5 | 1 |

| EIRP milliwatts | Distance cm | Distance inches | S mW/cm$^2$ |
|---|---|---|---|
| 0.807 | 10.00 | 3.94 | 0.00064 |
| 0.807 | 9.00 | 3.54 | 0.00079 |
| 0.807 | 8.00 | 3.15 | 0.00100 |
| 0.807 | 7.00 | 2.76 | 0.00131 |
| 0.807 | 6.00 | 2.36 | 0.00178 |
| 0.807 | 5.00 | 1.97 | 0.00257 |
| 0.807 | 4.00 | 1.57 | 0.00401 |
| 0.807 | 3.00 | 1.18 | 0.00713 |
| 0.807 | 2.00 | 0.79 | 0.01605 |
| 0.807 | 1.00 | 0.39 | 0.06418 |
| 0.807 | 0.50 | 0.20 | 0.25674 |
| 0.807 | 0.40 | 0.16 | 0.40115 |
| 0.807 | 0.28 | 0.11 | 0.81867 |
| 0.807 | 0.25 | 0.10 | 1.02694 |
| 0.807 | 0.20 | 0.08 | 1.60460 |

| Frequency (MHz) | Occupational Limit minimum Distance (cm) | Public Limit minimum distance (cm) |
|---|---|---|
| 300-1,500 | N/A | N/A |
| 1,500-10,000 | N/A | 0.28 |