## FCC §15.247 (i) \& §1.1307 (b) (1) \& §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

## Applicable Standard

According to subpart 15.247 (i) and subpart 1.1307 (b)(1), 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

Limits for General Population/Uncontrolled Exposure

| Limits for General Population/Uncontrolled Exposure |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Frequency <br> Range <br> (MHz) | Electric Field <br> Strength <br> $(\mathbf{V} / \mathbf{m})$ | Magnetic Field <br> Strength <br> $(\mathbf{A} / \mathbf{m})$ | Power <br> Density <br> $\left(\mathbf{m W} / \mathbf{c m}^{2}\right)$ | Averaging <br> Time <br> (Minutes) |
| $0.3-1.34$ | 614 | 1.63 | $*(100)$ | 30 |
| $1.34-30$ | $824 / \mathrm{f}$ | $2.19 / \mathrm{f}$ | $*\left(180 / \mathrm{f}^{2}\right)$ | 30 |
| $30-300$ | 27.5 | 0.073 | 0.2 | 30 |
| $300-1500$ | $/$ | $/$ | $\mathrm{f} / 1500$ | 30 |
| $1500-100,000$ | $/$ | $/$ | 1.0 | 30 |

$\mathrm{f}=$ frequency in MHz

* = Plane-wave equivalent power density


## Result

## Calculated Formulary:

Predication of MPE limit at a given distance

$$
\mathrm{S}=\frac{P G}{4 \pi R^{2}}
$$

S = power density (in appropriate units, e.g. mW/cm2)
$\mathrm{P}=$ power input to the antenna (in appropriate units, e.g., mW).
$G=$ power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.
$\mathrm{R}=$ distance to the center of radiation of the antenna (appropriate units, e.g., cm)

| Frequency <br> $\mathbf{( M H z )}$ | Antenna Gain |  | Max. tune-up <br> conducted Power |  | Evaluation <br> Distance <br> $(\mathbf{c m})$ | Power <br> Density <br> $\left(\mathbf{m W} / \mathbf{c m}^{2}\right)$ | MPE Limit <br> $\left(\mathbf{m W} / \mathbf{c m}^{2}\right)$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\mathbf{( d B i )}$ | (numeric) | $\mathbf{( d B m )}$ | $\mathbf{( m W )}$ |  |  |  |
| $2402-2480$ | 0 | 1 | 6.0 | 3.98 | 20 | 0.001 | 1.0 |
| $2412-2462$ | 0 | 1 | 22.5 | 177.83 | 20 | 0.035 | 1.0 |
| $2422-2452$ | 0 | 1 | 15.0 | 31.62 | 20 | 0.006 | 1.0 |

Note: To maintain compliance with the FCC’s RF exposure guidelines, place the equipment at least 20 cm from nearby persons.

## Result: Compliance

