

## 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 Range (MHz)                               | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density (mW/cm <sup>2</sup> ) | Averaging Time (Minutes) |
| 0.3-1.34  | 614                           | 1.63                          | *(100)                              | 30                       |
| 1.34-30   | 824/f                         | 2.19/f                        | *(180/f <sup>2</sup> )              | 30                       |
| 30-300  | 27.5                          | 0.073                         | 0.2                                 | 30                       |
| 300-1500  | /                             | /                             | f/1500                              | 30                       |
| 1500-100,000  | /                             | /                             | 1.0                                 | 30                       |

f = frequency in MHz

\* = Plane-wave equivalent power density

### Result

#### Calculated Formulary:

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

S = power density (in appropriate units, e.g. mW/cm<sup>2</sup>)

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.

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

| Frequency Range (MHz) | Antenna Gain |           | Conducted Power |        | Evaluation Distance (cm) | Power Density (mW/cm <sup>2</sup> ) | MPE Limit (mW/cm <sup>2</sup> ) |
|-----------------------|--------------|-----------|-----------------|--------|--------------------------|-------------------------------------|---------------------------------|
|                       | (dBi)        | (numeric) | (dBm)           | (mW)   |                          |                                     |                                 |
| 2407.5 - 2471.5       | 2            | 1.58      | 25              | 316.23 | 20                       | 0.100                               | 1.00                            |
| 2412.5 - 2462.5       | 2            | 1.58      | 24              | 251.19 | 20                       | 0.079                               | 1.00                            |
| 909 - 921             | 1            | 1.26      | 24              | 251.19 | 20                       | 0.063                               | 0.61                            |
| 914 - 916             | 1            | 1.26      | 25              | 316.23 | 20                       | 0.079                               | 0.61                            |

Note: The conducted power is the tune-up power of the Max Conducted Peak Output Power.

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