

## **FCC §15.247 (i) & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)**

### **Applicable Standard**

According to subpart 15.247 (i) and subpart 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**

| <b>Limits for General Population/Uncontrolled Exposure</b> |                                      |                                      |  |                                 |
|--|--------------------------------------|--------------------------------------|--|---------------------------------|
| <b>Frequency Range (MHz)</b>                               | <b>Electric Field Strength (V/m)</b> | <b>Magnetic Field Strength (A/m)</b> | <b>Power Density (mW/cm<sup>2</sup>)</b> | <b>Averaging Time (Minutes)</b> |
| 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)

For worst case:

| Frequency<br>(MHz) | Maximum Antenna<br>Gain |           | Tune up conducted<br>power |        | Evaluation<br>Distance<br>(cm) | Power<br>Density<br>(mW/cm <sup>2</sup> ) | MPE Limit<br>(mW/cm <sup>2</sup> ) |
|--------------------|-------------------------|-----------|----------------------------|--------|--------------------------------|---|------------------------------------|
|                    | (dBi)                   | (numeric) | (dBm)                      | (mW)   |                                |   |                                    |
| 2412-2462          | 5.7                     | 3.72      | 22.0                       | 158.49 | 20                             | 0.1174                                    | 1                                  |

Note: 1. The tune up conducted power was declared by the applicant.

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

**Result: Compliant.**