

## FCC §15.247 (I) & §1.1310 & §2.1091 - MAXIMUM PERMISSIBLE EXPOSURE (MPE)

### Applicable Standard

According to subpart 15.247 (i) and subpart 1.1310 (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 |                               |                               |                                     |                          |
|-----------------------------------------------------|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| 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

### Calculated Formulary:

Predication of MPE limit at a given distance

$S = PG/4\pi R^2$  = 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)

### Calculated Data:

| Frequency Range (MHz) | Antenna Gain |           | Tune-up Conducted Power |      | Evaluation Distance (cm) | Power Density (mW/cm <sup>2</sup> ) | MPE Limit (mW/cm <sup>2</sup> ) |
|-----------------------|--------------|-----------|-------------------------|------|--------------------------|-------------------------------------|---------------------------------|
|                       | (dBi)        | (numeric) | (dBm)                   | (mW) |                          |                                     |                                 |
| 2402                  | 0            | 1         | 9.57                    | 9.06 | 20                       | 0.0018                              | 1.0000                          |
| 2440                  | 0            | 1         | 9.11                    | 8.15 | 20                       | 0.0016                              | 1.0000                          |
| 2480                  | 0            | 1         | 6.96                    | 4.97 | 20                       | 0.0010                              | 1.0000                          |

**Conclusion:** The EUT meets exemption requirement - RF exposure evaluation greater than 20cm distance specified in § 2.1091. If the device built into a host as a portable usage, the additional RF exposure evaluation may be required as specified by § 2.1093.