

## MPE Prediction

FCC Rule: 15.247(b)(5)

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See §1.1307(b)(1) of this Chapter.

### LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

| Frequency Range (MHz)                                           | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density (mW/cm <sup>2</sup> ) | Average time (minutes) |
|-----------------------------------------------------------------|-------------------------------|-------------------------------|-------------------------------------|------------------------|
| <b>(A)Limits For Occupational / Control Exposures</b>           |                               |                               |                                     |                        |
| 30-300                                                          | 61.4                          | 0.613                         | 1.0                                 | 6                      |
| 300-1500                                                        | ...                           | ...                           | F/300                               | 6                      |
| 1500-100,000                                                    | ...                           | ...                           | 5                                   | 6                      |
| <b>(B)Limits For General Population / Uncontrolled Exposure</b> |                               |                               |                                     |                        |
| 30-300                                                          | 27.5                          | 0.073                         | 0.2                                 | 30                     |
| 300-1500                                                        | ...                           | ...                           | F/1500                              | 30                     |
| 1500-100,000                                                    | ...                           | ...                           | 1.0                                 | 30                     |

F = Frequency in MHz

### Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

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

where:

S = power density

P = power input to the antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

|                                                              |                                |
|--------------------------------------------------------------|--------------------------------|
| Maximum peak output power at antenna input terminal:         | 25.02 (dBm)                    |
| Maximum peak output power at antenna input terminal:         | 317.68741 (mW)                 |
| Antenna gain(maximal):                                       | 2.0 (dBi)                      |
| Prediction distance:                                         | 20 (cm)                        |
| Prediction frequency:                                        | 2412 (MHz)                     |
| MPE limit for uncontrolled exposure at prediction frequency: | 1.0 (mW/cm <sup>2</sup> )      |
| Power density at prediction frequency:                       | 0.101122 (mW/cm <sup>2</sup> ) |

The manual instruct the user to install and operate the device in a minimum distance of 20 cm between antenna and the users body.