

## MPE CALCULATIONS

The following MPE calculations are based on a inverted-F PCB board trace antenna, with a measured ERP of 91.9 dBμV/m, at 3 meters, and conducted RF power of +3.6 dBm as presented to the antenna. The calculated gain of this antenna, based on the ERP measurements is -6.93 dB.

| <b>Prediction of MPE limit at a given distance</b>      |                                                                                              |          |                       |
|---------------------------------------------------------|----------------------------------------------------------------------------------------------|----------|-----------------------|
| 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:                                         | 3.60     | (dBm)                 |
|                                                         | Maximum peak output power at antenna input terminal:                                         | 2.291    | (mW)                  |
|                                                         | Antenna gain(typical):                                                                       | -6.93    | (dBi)                 |
|                                                         | Maximum antenna gain:                                                                        | 0.203    | (numeric)             |
|                                                         | Prediction distance:                                                                         | 20       | (cm)                  |
|                                                         | Prediction frequency:                                                                        | 2480     | (MHz)                 |
|                                                         | MPE limit for uncontrolled exposure at prediction frequency:                                 | 1        | (mW/cm <sup>2</sup> ) |
|                                                         | Power density at prediction frequency:                                                       | 0.000092 | (mW/cm <sup>2</sup> ) |
|                                                         | Maximum allowable antenna gain:                                                              | 33.4     | (dBi)                 |
|                                                         | Margin of Compliance at                                                                      | 20       | cm =                  |
|                                                         |                                                                                              |          | 40.3 dB               |