

**RF EXPOSURE EVALUATION****1.1 Limit**

According to §1.1310 and §2.1091 RF exposure is calculated.

**(B) Limits for General Population/Uncontrolled Exposures**

| Frequency range (MHz) | Electric field<br>Strength | Magnetic field<br>Strength | Power<br>density        | Averaging<br>time |
|-----------------------|----------------------------|----------------------------|-------------------------|-------------------|
| 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.....   | .....                      | .....                      | <b>1.0</b>              | 30                |

F = frequency in MHz

\* = Plane-wave equivalent power density

**1.2 MAXIMUM PERMISSIBLE EXPOSURE Prediction**

Prediction of MPE limit at a given distance

**Power density at the specific separation:**

|                                                                                      |                                                                                                                                                                                                                                                          |
|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $S = PG/(4R^2 \pi)$ $S = (9.51 * 0.59) / (4 * 5^2 * \pi)$ $S = 0.11 \text{ mW/cm}^2$ | <p>Where,</p> <p>S = Maximum power density (mW/cm<sup>2</sup>)</p> <p>P = Power input to the antenna (mW)</p> <p>G = Numeric power gain of the antenna</p> <p>R = Distance to the center of the radiation of the antenna<br/>(20 cm = limit for MPE)</p> |
|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**1.3 MAXIMUM PERMISSIBLE EXPOSURE Prediction**

- Calculated under the worst-case conditions of each mode.

(Measured power 11 dBm  $\pm$  0.5dB)

**3-1. 2.4 GHz Mode**

|                                                             |       |                    |
|-------------------------------------------------------------|-------|--------------------|
| Max Peak output Power at antenna input terminal             | 9.78  | dBm                |
| Max Peak output Power at antenna input terminal             | 9.51  | mW                 |
| Prediction distance                                         | 5     | mm                 |
| Prediction frequency                                        | 2,441 | MHz                |
| Antenna Gain(typical)                                       | -2.27 | dBi                |
| Antenna Gain(numeric)                                       | 0.59  | -                  |
| Power density at prediction frequency( S)                   | 0.11  | mW/cm <sup>2</sup> |
| MPE limit for uncontrolled exposure at prediction frequency | 0.037 | mW/cm <sup>2</sup> |

SAR Test exclusion thresholds for 100MHz to 6GHz at test separation distance  $\leq$  50 mm = **Used**

$[(\text{max.power of channel, including tune-up torelance, mW})/(\text{min. test separation distance, mm})] * [\sqrt{f}(\text{GHz})]$

$= [9.51 / 5] * [\sqrt{2.441}] = 2.97 \leq 3.0$ , for 1g SAR

**Thus, SAR for this device is not required.**