

**RF EXPOSURE EVULATION****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:**

|                     |                                                                                                                                                                                                                                                             |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $S = PG/(4R^2 \pi)$ | <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</p> <p>(20 cm = limit for MPE)</p> |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| Mode             | Frequency<br>Range<br>(MHz) | Antenna Gain |           | Target Output<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)   |                                |                                           |                                    |
| 802.11b          | 2412~2462                   | 3.4          | 2.19      | 26.0                   | 398.11 | 20                             | 0.1734                                    | 1.0                                |
| 802.11g          |                             | 3.4          | 2.19      | 25.5                   | 354.81 | 20                             | 0.1546                                    | 1.0                                |
| 802.11<br>n-HT20 |                             | 3.4          | 2.19      | 25.5                   | 354.81 | 20                             | 0.1546                                    | 1.0                                |
| 802.11<br>n-HT40 | 2422~2452                   | 3.4          | 2.19      | 26.0                   | 398.11 | 20                             | 0.1734                                    | 1.0                                |
| BLE              | 2402~2480                   | 3.4          | 2.19      | 8.0                    | 6.31   | 20                             | 0.0027                                    | 1.0                                |
| BT               | 2402~2480                   | 3.4          | 2.19      | 10.0                   | 10.00  | 20                             | 0.0044                                    | 1.0                                |

**Simultaneous transmission operations**

For 100 MHz to 6 GHz and test separation distances > 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following (also illustrated in Appendix B)

{[Power allowed at numeric threshold for 50 mm in step a)] + [(test separation distance – 50 mm)·10]} mW = 96 + 1500 = 1596 mW, for > 1500 MHz and ≤ 6 GHz

Thus, SAR for this device is not required.