

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 Strength | Magnetic field Strength | Power density | Averaging time |
|-----------------------|----------------------------|----------------------------|-------------------------|-------------------|
| 1.34 - 30..... | 824/f | 2.19/f | *(180/ f ²) | 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

1.2 MAXIMUM PERMISSIBLE EXPOSURE Prediction

Prediction of MPE limit at a given distance

Power density at the specific separation:

| | |
|--|--|
| $S = PG/(4R^2 \pi)$ $S = (6.67 * 0.32) / (4 * 5^2 * \pi)$ $S = 0.07 \text{ mW/cm}^2$ | <p>Where,</p> <p>S = Maximum power density (mW/cm²)</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 (20 cm = limit for MPE)</p> |
|--|--|

1.3 MAXIMUM PERMISSIBLE EXPOSURE Prediction

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

(Measured power 2.19 dBm \pm 0.5dB)

3-1. 2.4 GHz Mode

| | | |
|---|-------|--------------------|
| Max Peak output Power at antenna input terminal | 2.19 | dBm |
| Max Peak output Power at antenna input terminal | 1.66 | mW |
| Prediction distance | 5 | mm |
| Prediction frequency | 2,442 | MHz |
| Antenna Gain(typical) | -1.61 | dBi |
| Antenna Gain(numeric) | 0.69 | - |
| Power density at prediction frequency(S) | 0.05 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 0.016 | mW/cm ² |

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

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

$= [1.66 / 5] * [\sqrt{2.442}] = 0.44 \leq 3.0$, for 1g SAR

Thus, SAR for this device is not required.