

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.....			<u>1.0</u>	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(Zigbee):

$S = PG/(4R^2 \pi)$ $S = (0.84 * 2.71) / (4 * 20^2 * \pi)$ $S = 0.0005 \text{ mW/cm}^2$	Where, S = Maximum power density (mW/cm²) P = Power input to the antenna (mW) G = Numeric power gain of the antenna R = Distance to the center of the radiation of the antenna (20 cm = limit for MPE)
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1.3 MAXIMUM PERMISSIBLE EXPOSURE Prediction

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

(Measured power 16.78 dBm $\pm$ 0.5dB)

BLE Mode

Max Peak output Power at antenna input terminal	-0.78	dBm
Max Peak output Power at antenna input terminal	0.84	mW
Prediction distance	5	cm
Prediction frequency	2440	MHz
Antenna Gain(typical)	4.33	dBi
Antenna Gain(numeric)	2.71	-

For 100 MHz to 6 GHz and *test separation distances* $\leq$ 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following : (also illustrated in Appendix A)

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

$$[\sqrt{f_{\text{(GHz)}}}] = [0.84 / 50] * [\sqrt{2402}] = 0.823 < 96$$

Thus, SAR for this device is not required.