ATTACHMENT

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/ f²)	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:

$S = PG/(4R^2 \pi)$ $S = (4.47 * 0.32) / (4 * 5^2 * \pi)$ $S = 0.46 \text{ mW/cm}^2$	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)

ATTACHMENT

1.3 MAXIMUM PERMISSIBLE EXPOSURE Prediction

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

(Measured power 6.5 dBm ± 0.5dB)

<u>3-1. 2.4 GHz Zigbee Mode</u>

Max Peak output Power at antenna input terminal	6.51	dBm
Max Peak output Power at antenna input terminal	4.47	mW
Prediction distance	5	cm
Prediction frequency	2,405	MHz
Antenna Gain(typical)	-4.91	dBi
Antenna Gain(numeric)	0.32	-
Power density at prediction frequency(S)	0.46	mW/cm^2
MPE limit for uncontrolled exposure at prediction frequency	0.23	mW/cm^2

WLAN

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

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

= [4.47 / 5] * [$\sqrt{2.405}$] = 0.89 ≤ 7.5, for 1g SAR

Thus, SAR for this device is not required.