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:

	Where,
$S = PG/(4R^2 \pi)$	S = Maximum power density (mW/cm^2)
$S = (3.95 * 0.3) / (4 * 5^2 * \pi)$	P = Power input to the antenna (mW)
	G = Numeric power gain of the antenna
$S = 0.004$ mW/cm^2	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 5.97 dBm ± 0.5dB)

3-1. Zigbee

Max Peak output Power at antenna input terminal	5.97	dBm
Max Peak output Power at antenna input terminal	3.95	mW
Prediction distance	5	mm
Prediction frequency	2,405	MHz
Antenna Gain(typical)	-5.27	dBi
Antenna Gain(numeric)	0.30	-
Power density at prediction frequency(S)	0.374	mW/cm^2
MPE limit for uncontrolled exposure at prediction frequency	0.017	mW/cm^2

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)] * [√f(GHz)]

= [3.95 / 5] * [√2.405] = 1.05 ≤ 3.0, for 1g SAR

Thus, SAR for this device is not required.