FCC ID: 2AKWRTP-1N

RF EXPOSURE EVALUATION

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency(RF) Radiation as specified in §1.1307(b)

Limits for Maximum Permissible Exposure (MPE)

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density(mW/cm^2)	Average Time
(A) Limits for Occupational/Control Exposures				
300-1500	**--**	**--**	**F/300**	**6**
1500-100000	**--**	**--**	**5**	**6**
(B) Limits for General Population/Uncontrol Exposures				
300-1500	**--**	**--**	**F/1500**	**6**
1500-100000	**--**	**--**	**1**	**30**

11.1 Friis transmission formula: Pd= (Pout*G)\ (4*pi*R^2)

Where
Pd= Power density in mW/cm^2
Pout=output power to antenna in mW
G= Numeric gain of the antenna relative to isotropic antenna
Pi=3.1416
R= distance between observation point and center of the radiator in cm(20cm)
Pd the limit of MPE, $1mW/cm^2$. If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.
mW=10^(dBm/10)

11.2 Measurement Result

Operation Frequency: ZigBee 2405-2480MHz

Modulation Standard	Frequency (MHz)	Maximum Conducted Output Power(PK) (dBm)
O-QPSK	2405	15.48
	2440	15.35
	2480	15.42

Zigbee max possible output power (PK,conducted) : 14.5±1dbm

Pout=15.5dBm=35.48mW

Antenna Gain=2.58dBi, numeric gain result =1.81=G

R=20cm

Pd=(Pout*G)\ (4*pi*R^2)=0.0128 (mW/cm²)

Conclusion:

For the max result : 0.0128≤ 1.0 for 1g SAR, No SAR is required.