FCC ID : 2ABT4TC100KU

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

Pd the limit of MPE, $1mW/cm^2$. If we know the maximum gain of the nd total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

11.2 Measurement Result

Bluetooth 4.0 with BLE model: 1.97dBi;
Wifi 2.4G Device: 3.31dBi

802.11b: Antenna A

Channel	Channel Freq. (MHz)	Measured power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm2)	Power density Limits (mW/cm2)
1	2412	17.51	17.0±1	18.0	2.1429	0.0269	1
6	2437	17.50	17.0±1	18.0	2.1429	0.0269	1
11	2462	17.90	17.0±1	18.0	2.1429	0.0269	1

802.11g: Antenna A

Channel	Channel Freq. (MHz)	Measured power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm2)	Power density Limits (mW/cm2)
1	2412	18.87	19.0±1	20.0	2.1429	0.0426	1
6	2437	19.44	19.0±1	20.0	2.1429	0.0426	1
11	2462	19.08	19.0±1	20.0	2.1429	0.0426	1

802.11n HT20: Antenna A

Channel	Channel Freq. (MHz)	Measured power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm2)	Power density Limits (mW/cm2)
1	2412	19.44	20.0±1	21.0	2.1429	0.0537	1
6	2437	19.38	20.0±1	21.0	2.1429	0.0537	1
11	2462	20.16	20.0±1	21.0	2.1429	0.0537	1

Mode	Channel Freq. (MHz)	Measured power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm2)	Power density Limits (mW/cm2)
GFSK	2402	-3.367	-2.0±2	0	1.5740	0.0003	1
GFSK	2441	-1.993	-2.0±2	0	1.5740	0.0003	1
GFSK	2480	-0.703	-2.0±2	0	1.5740	0.0003	1

BT and Wifi transmit together

BT Channel Freq. (MHz)	WIFI Channel Freq. (MHz)	Evaluation result (mW/cm2)	Power density Limits (mW/cm2)
2402	2412	0.0540	1
2441	2437	0.0540	1
2480	2462	0.0540	1