FCC ID : JVPQS01

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

1. BT/BLE (MAX power), antenna gain: 3.39 dBi.

	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)
BT	2402	4.876	3 to 5	5	2.18	0.0014	1
	2441	3.830	3 to 5	5	2.18	0.0014	1
	2480	4.395	3 to 5	5	2.18	0.0014	1
BLE	2402	0.256	0 to 1	1	2.18	0.0005	1
	2440	-0.661	-0.7 to 0	0	2.18	0.0004	1
	2480	-0.137	-0.2 to 0	0	2.18	0.0004	1

2. Wifi 2.4G (MAX power), antenna gain: 3.39 dBi.

modulation	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)
11b	2412	18.30	18 to 20	20	2.18	0.0434	1
	2437	19.26	18 to 20	20	2.18	0.0434	1
	2462	18.98	18 to 20	20	2.18	0.0434	1
11g	2412	16.99	16 to 18	18	2.18	0.0274	1
	2437	17.46	16 to 18	18	2.18	0.0274	1
	2462	17.32	16 to 18	18	2.18	0.0274	1
11n (HT20)	2412	15.39	15 to 17	17	2.18	0.0218	1
	2437	16.45	15 to 17	17	2.18	0.0218	1

	2462	16.37	15 to 17	17	2.18	0.0218	1
802.11n (HT40)	2422	15.62	15 to 17	17	2.18	0.0218	1
	2437	16.59	15 to 17	17	2.18	0.0218	1
	2452	16.58	15 to 17	17	2.18	0.0218	1

2. Wifi 5G (MAX power), antenna gain: 4.49 dBi.

modulation	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)
U-NII - 1	5180	17.93	17 to 19	19	2.81	0.0444	1
	5200	17.91	17 to 19	19	2.81	0.0444	1
	5240	18.49	17 to 19	19	2.81	0.0444	1
U-NII – 2A	5260	18.45	17 to 19	19	2.81	0.0444	1
	5280	17.99	17 to 19	19	2.81	0.0444	1
	5320	17.34	17 to 19	19	2.81	0.0444	1
U-NII – 2C	5500	13.78	13 to 15	15	2.81	0.0177	1
	5600	13.19	13 to 15	15	2.81	0.0177	1
	5700	13.26	13 to 15	15	2.81	0.0177	1
U-NII – 3	5745	13.36	13 to 15	15	2.81	0.0177	1
	5785	12.35	13 to 15	15	2.81	0.0177	1
	5825	13.70	13 to 15	15	2.81	0.0177	1