

## FCC ID : 2A293M926GB915

### 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 <sup>2</sup> )	Average Time
<b>(A) Limits for Occupational/Control Exposures</b>				
300-1500	--	--	F/300	6
1500-100000	--	--	5	6
<b>(B) Limits for General Population/Uncontrol Exposures</b>				
300-1500	--	--	F/1500	6
1500-100000	--	--	1	30

**11.1 Friis transmission formula:  $P_d = \frac{P_{out} \cdot G}{4 \cdot \pi \cdot R^2}$**

Where

$P_d$ = Power density in mW/cm<sup>2</sup>

$P_{out}$ =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<sup>2</sup>,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.

RF Exposure Information: The radiated output power of this device meets the limits of FCC/IC radio frequency exposure limits.This device should be operated with a minimum separation distance of 20cm (8 inches) between the equipment and a person's body.

### 11.2 Measurement Result

WIFI and BT cannot transmit at the same time

Wifi 2.4G

Antenna gain: 4 dBi

modulation	Channel Freq. (MHz)	Measured power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm <sup>2</sup> )	Power density Limits (mW/cm <sup>2</sup> )
11b	2412	11.57	10 to 12	12	2.51	0.0792	1
	2437	11.28	10 to 12	12	2.51	0.0792	1
	2462	11.92	10 to 12	12	2.51	0.0792	1
11g	2412	14.77	12 to 15	15	2.51	0.1580	1
	2437	14.36	12 to 15	15	2.51	0.1580	1
	2462	14.13	12 to 15	15	2.51	0.1580	1
11n HT20	2412	16.81	14 to 17	17	2.51	0.2504	1
	2437	16.46	14 to 17	17	2.51	0.2504	1
	2462	16.24	14 to 17	17	2.51	0.2504	1
11n HT40	2422	11.57	10 to 12	12	2.51	0.0792	1
	2437	11.53	10 to 12	12	2.51	0.0792	1
	2452	11.03	10 to 12	12	2.51	0.0792	1

## BLE

Antenna gain: 4 dBi

modulation	Channel Freq. (MHz)	Measured power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm <sup>2</sup> )	Power density Limits (mW/cm <sup>2</sup> )
GFSK (BLE)	2402	-1.61	-2 to -1	-1	2.51	0.0040	1
	2440	-1.64	-2 to -1	-1	2.51	0.0040	1
	2480	-2.32	-3 to -2	-2	2.51	0.0032	1

## Wifi 5G

Antenna gain: 4.0 dBi

modulation	Measured power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm <sup>2</sup> )	Power density Limits (mW/cm <sup>2</sup> )
UNII-1	7.16	6 to 8	8	2.51	0.0315	1
UNII-2A	7.26	6 to 8	8	2.51	0.0315	1
UNII-2C	7.78	6 to 8	8	2.51	0.0315	1
UNII-3	5.75	5 to 6	6	2.51	0.0199	1

## 915M

Antenna gain: 3 dBi

modulation	Channel Freq. (MHz)	E.I.R.P (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Evaluation result (mW/cm <sup>2</sup> )	Power density Limits (mW/cm <sup>2</sup> )
DTS	903	24.89	±1	25	0.6290	1
Hopping	902.3	21.77	±1	22	0.3153	1
1	903.9	16.62	±1	17	0.0997	1

CONCLUSION of simultaneous transmitter

Both of the module 1 and module 2 can transmit simultaneously, the formula of calculated the MPE is:

$$\text{CPD1/LPD1} + \text{CPD2/LPD2} + \dots \text{etc.} < 1$$

CPD = Calculation power density

LPD = Limit of power density

Therefore the worst-case situation is  $0.2504 / 1.00 + 0.6290 / 1.00 = 0.8974$ , which is less than "1",  
This confirmed that the device comply with FCC 1.1310 MPE limit.

THE END