

MPE ESTIMATION

FCC ID: 2A12O-OPR01

1. Limit for General Population/Uncontrolled Exposures

Frequency	Power Density(mW/cm2)	Averaging Time(minutes)
300MHz-1.5GHz	F/1500	30
1.5GHz-100GHz	1.0	30

Note: F= Frequency in MHz

2. Estimation Result

BLE:

Frequency	Reading result(dBμV)	EIRP (dBm)	Tune Up Power (dBm)	Max Tune Up Power(mW)	MPE (mW/cm ²)	Power Density(mW/cm ²) Limit	Result
GFSK 2402 MHz	104.08	8.88	9±1(10)	10	0.004996	1.0	PASS

$$Pd = \frac{Pout * G}{4\pi r^2}$$

Note:

Note: The estimation distance is 20cm.

Note: Reading result see the test report ZKT23042503ER-61.

EIRP = Reading result - 95.2

2.4G WIFI:

Mode	Max PK Output Power(dBm)	Tune Up Power(dBm)	Max Tune Up Power(mW)	Antenna Gain(dBi)	Antenna Gain (linear)	MPE (mW/cm ²)
11b	13.76	14±1(15)	31.62	2.51	1.7824	0.015799
11g	11.72	12±1(13)	19.95	2.51	1.7824	0.009969
11n/HT20	9.52	10±1(11)	12.59	2.51	1.7824	0.006289
11n/HT40	8.88	9±1(10)	10.00	2.51	1.7824	0.004996

$$Pd = \frac{Pout * G}{4\pi r^2}$$

Note:

Note: The estimation distance is 20cm.

Note: PK Output power=conducted power.

Conducted power see the test report ZKT23042503ER-62, antenna gain=2.51dBi.

5.8GHz:

Frequency (MHz)	Reading result(dBμV)	Conducted power(dBm)	Tune Up Power(dBm)	Max Tune Up Power(mW)	Antenna Gain(dBi)	Antenna Gain (linear)	MPE (mW/cm ²)	Power Density(mW/cm ²) Limit	Result
5800	106.80	11.60	12±1(13)	19.953	0	1.0	0.003972	1.0	PASS

$$Pd = \frac{Pout * G}{4\pi r^2}$$

Note:

Note: The estimation distance is 20cm.

Note: Conducted power see the test report ZKT23042503ER-63, antenna gain=0dBi.

The Bluetooth cannot transmit simultaneously with WIFI.

So the worst simultaneous transmitting consideration:

The ratio=MPE_{E2.4G WIFI}/Limit +MPE_{E5.8GHz}/Limit

=0.015799/1.00+0.003972/1.00=0.019771 < 1.00

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