

Maximum Permissible Exposure

Applicable Standard

According to §1.1307(b), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

Remark: 1) **For BT:** The maximum output power for antenna is 8.51dBm (7.10mW) at 2480MHz,

1dBi antenna gain(with 1.26 numeric antenna gain.)

For BLE(1M): The maximum output power for antenna is 4.35dBm (2.72mW) at 2480MHz,

1dBi antenna gain(with 1.26 numeric antenna gain.)

For BLE(2M): The maximum output power for antenna is 4.37dBm (2.74mW) at 2480MHz,

1dBi antenna gain(with 1.26 numeric antenna gain.)

MIMO MPE:

For 2.4G WIFI: The maximum output power for antenna 0 is 15.28dBm (33.73mW) at 2462MHz,

3dBi antenna gain(with 2.00 numeric antenna gain.)

The maximum output power for antenna 1 is 16.13dBm (41.02mW) at 2437MHz,

3dBi antenna gain(with 2.00 numeric antenna gain.)

For Band 1: The maximum output power for antenna 0 is 14.86dBm (30.62mW) at 5200MHz,

4dBi antenna gain(with 2.51 numeric antenna gain.)

The maximum output power for antenna 1 is 14.26dBm (26.67mW) at 5180MHz,

4dBi antenna gain(with 2.51 numeric antenna gain.)

For Band 2A: The maximum output power for antenna 0 is 15.30dBm (33.88mW) at 5320MHz,

4dBi antenna gain(with 2.51 numeric antenna gain.)

The maximum output power for antenna 1 is 13.05dBm (20.18mW) at 5260MHz,

4dBi antenna gain(with 2.51 numeric antenna gain.)

For Band 2C: The maximum output power for antenna 0 is 14.43dBm (27.73mW) at 5500MHz,

4dBi antenna gain(with 2.51 numeric antenna gain.)

The maximum output power for antenna 1 is 13.99dBm (25.06mW) at 5500MHz,

4dBi antenna gain(with 2.51 numeric antenna gain.)

For Band 3: The maximum output power for antenna 0 is 13.68dBm (23.33mW) at 5785MHz,

4dBi antenna gain(with 2.51 numeric antenna gain.)

The maximum output power for antenna 1 is 12.83dBm (19.19mW) at 5745MHz,

4dBi antenna gain(with 2.51 numeric antenna gain.)

2) For mobile or fixed location transmitters, no SAR consideration applied. The minimum separation generally be used is at least 20cm, even if the calculation indicate that the MPE distance would be lesser.

Calculation

$$\text{Given } E = \frac{\sqrt{30 \times P \times G}}{d} \quad \& \quad S = \frac{E^2}{3770}$$

Where E = Field Strength in Volts / meter

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power Density in milliwatts / square centimeter

Substituting the MPE safe distance using $d=20\text{cm}$ into above equation.

Yields: $S=0.000199 \times P \times G$

Maximum Emissions Level					
Mode	Power(mW)	numeric antenna gain	Power density (mW/cm ²)	Limit (mW/cm ²)	Result
BT	7.10	1.26	0.001780	1.0	PASS
BLE(1M)	2.72	1.26	0.000682		
BLE(2M)	2.74	1.26	0.000687		

MPE ANT0:

Mode	Power(mW)	numeric antenna gain	Power density (mW/cm ²)
2.4G WIFI	33.73	2.00	0.013425
Band 1	30.62	2.51	0.015294
Band 2A	33.88	2.51	0.016923
Band 2C	27.73	2.51	0.0138510
Band 3	23.33	2.51	0.011653

MPE ANT1:

Mode	Power(mW)	numeric antenna gain	Power density (mW/cm ²)
2.4G WIFI	41.02	2.00	0.016326
Band 1	26.67	2.51	0.013321
Band 2A	20.18	2.51	0.010080
Band 2C	25.06	2.51	0.012517
Band 3	19.19	2.51	0.009585

Total MPE:

Maximum Emissions Level					
Mode	MPE ANT0	MPE ANT1	Total MPE	Limit (mW/cm ²)	Result
2.4G WIFI	0.013425	0.016326	0.029751	1.0	PASS
Band 1	0.015294	0.013321	0.028615		
Band 2A	0.016923	0.010080	0.027003		
Band 2C	0.0138510	0.012517	0.026368		
Band 3	0.011653	0.009585	0.021238		
/	BT	WIFI	/		
BT+WIFI	0.001780	0.029751	0.031531		