

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) MPE:

For BT: The maximum output power is 8.34dBm (6.82mW) at 2402MHz,
2dBi antenna gain(with 1.58 numeric antenna gain.)

For BLE: The maximum output power is 6.82dBm (4.81mW) at 2402MHz,
2dBi antenna gain(with 1.58 numeric antenna gain.)

For 2.4G WIFI: The maximum output power is 15.63dBm (36.56mW) at 2462MHz,
4dBi antenna gain(with 2.51 numeric antenna gain.)

For 5G WIFI:

For Band 1: The maximum output power is 8.48dBm (7.05mW) at 5200MHz,
4dBi antenna gain(with 2.51 numeric antenna gain.)

For Band 3: The maximum output power is 9.82dBm (9.59mW) at 5795MHz,
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: $S=0.000199 \times P \times G$

MPE:

Mode	Power(mW)	numeric antenna gain	Power density (mW/cm²)
BT	6.82	1.58	0.002144
BLE	4.81	1.58	0.001512
2.4G WIFI	36.56	2.51	0.018261
Band 1	7.05	2.51	0.003521
Band 3	9.59	2.51	0.004790