MPE Calculation

FCC ID: 2AEH7-EM12

Remark: Average ≤ Peak, which means that calculating the power density applying Peak power is worst case. The worst case operation mode generating the highest power in each frequency range is taken for calculation.

For WiFi:

Frequency range: **2412-2462** MHz Typical use distance: d ≥ 20 cm

Power density limit for mobile devices at 2.4 GHz: S ≤ 1 mW/cm^2

Maximum measured conducted power (Peak): $P_{conducted}$ = **15.73** dBm = 37.41 mW

Antenna Gain: G = **2.0** dBi = 1.58 on the linear scale

Calculation: $P_{radiated} = P_{conducted} + G_{linear}$ = 15.73 dBm + 2 dBi = 17.73 dBm = 59.29 mW

Power density S = $(P_{radiated}) / (4\pi \times d^2)$ = 59.29 / 5026 = 0.0118 mW/cm^2 < 1 => below limit

For BLE (BT4.0):

Frequency range: **2402-2480** MHz Typical use distance: d ≥ 20 cm

Power density limit for mobile devices at 2.4 GHz: S ≤ 1 mW/cm^2

Maximum measured conducted power (Peak): $P_{conducted}$ = **-4.97** dBm = 1 mW

Antenna Gain: G = **2.0** dBi = 1.58 on the linear scale

Calculation: $P_{radiated} = P_{conducted} + G_{linear}$ = 0 dBm + 2 dBi = 2 dBm = 1.58 mW

Power density S = $(P_{radiated}) / (4\pi \times d^2)$ = 1.58 / 5026 = 0.0003 mW/cm^2 < 1 => below limit

For BLE (BT3.0):

Frequency range: **2402-2480** MHz Typical use distance: d ≥ 20 cm

Power density limit for mobile devices at 2.4 GHz: S ≤ 1 mW/cm^2

Maximum measured conducted power (Peak): $P_{conducted}$ = **1.587** dBm = 1.44 mW

Antenna Gain: G = **2.0** dBi = 1.58 on the linear scale

Calculation: $P_{radiated} = P_{conducted} + G_{linear}$ = 1.59 dBm + 2 dBi = 3.59 dBm = 2.28 mW

Power density S = $(P_{radiated}) / (4\pi \times d^2)$ = 2.28 / 5026 = 0.0005 mW/cm^2 < 1 => below limit

Note: WiFi and BT transmitters cannot transmit simultaneously. BLE (BT4.0) and BT30 cannot transmit simultaneously either.