MPE Calculation for FCC ID: 2AD9PACN1400 PRC

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

#1: WIFI 11bgn(HT20/40) radio, worst case:

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): $P_{conducted}$ = **14.55** dBm = 28.51 mW

Antenna Gain: G = **0.88** dBi = 1.22 on the linear scale

Calculation: $P_{radiated} = P_{conducted} + G_{linear}$ = 14.55 dBm + 0.88 dBi = 15.43 dBm = 34.91 mW

Power density S = $(P_{radiated}) / (4\pi \times d^2)$ = 34.91 / 5026 = 0.0069 mW/cm^2 < 1 => below limit

#2: BLE (40Ch) radio under rule part 15.247, worst case:

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): $P_{conducted}$ = **-1.19** dBm = 0.76 mW

Antenna Gain: G = **0.88** dBi = 1.22 on the linear scale

Calculation: $P_{radiated} = P_{conducted} + G_{linear}$ = -1.19 dBm + 0.88 dBi = -0.31 dBm = 0.93 mW

Power density S = $(P_{radiated}) / (4\pi \times d^2)$ = 0.93 / 5026 = 0.0002 mW/cm^2 < 1 => below limit

#3: BT (79 Ch) radio under rule part 15.247, worst case:

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): $P_{conducted}$ = **2.15** dBm = 1.64 mW

Antenna Gain: G = **0.88** dBi = 1.22 on the linear scale

Calculation: $P_{radiated} = P_{conducted} + G_{linear}$ = 2.15 dBm + 0.88 dBi = 3.03 dBm = 2.01 mW

Power density S = $(P_{radiated}) / (4\pi \times d^2)$ = 2.01 / 5026 = 0.0004 mW/cm^2 < 1 => below limit

#4: RFID 13.56 MHz radio, worst case:
Tested under 15.225, with a max. emission of 96.93 dBµV/m, RF exposure is not applicable.

#5: Single Modular Module under 15.247 with FCC ID: QOQWT32AE (BT (79 Ch) radio), worst case:

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): $P_{conducted}$ = **1.93** dBm = 1.56 mW

Antenna Gain: G = **2.05** dBi = 1.6 on the linear scale (= 2.05 dBi ceramic on-board antenna)

Calculation: $P_{radiated} = P_{conducted} + G_{linear}$ = 1.93 dBm + 2.05 dBi = 3.98 dBm = 2.5 mW

Power density S = $(P_{radiated}) / (4\pi \times d^2)$ = 2.5 / 5026 = 0.0005 mW/cm^2 < 1 => below limit

#6: Single Modular Module with FCC ID: UYI24 (2.4GHz GFSK modulated), worst case:
Tested under 15.249, with a max. emission of 92.08 dBµV/m, RF exposure is not applicable.

Conclusion: At 20 cm, the sum of powers and the sum of power densities both remain far under the maximum power allowed in 15.247 (1W) and also remain also far below 1 mW/cm^2.