

## MPE Calculation (20 cm, category Mobile)

FCC ID: APIONYXTC

Remark: Average  $\leq$  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.

### **11bg:**

Frequency range: **2412-2462** MHz Typical use distance:  $d \geq 20$  cm

Power density limit for mobile devices at 2.4 GHz:  $S \leq 1$  mW/cm<sup>2</sup>

Maximum measured conducted power (Peak):  $P_{\text{conducted}} = 15.32$  dBm = 34.04 mW

Antenna Gain:  $G = 3.0$  dBi = 2 on the linear scale

Calculation:  $P_{\text{radiated}} = P_{\text{conducted}} + G_{\text{linear}} = 15.32$  dBm + 3 dBi = 18.32 dBm = 67.92 mW

Power density  $S = (P_{\text{radiated}}) / (4\pi \times d^2) = 67.92 / 5026 = 0.0135$  mW/cm<sup>2</sup> < 1 => below limit

### **Bluetooth:**

Frequency range: **2402-2480** MHz Typical use distance:  $d \geq 20$  cm

Power density limit for mobile devices at 2.4 GHz:  $S \leq 1$  mW/cm<sup>2</sup>

Maximum measured conducted power (Peak):  $P_{\text{conducted}} = 5.8$  dBm = 3.8 mW

Antenna Gain:  $G = 3.0$  dBi = 2 on the linear scale

Calculation:  $P_{\text{radiated}} = P_{\text{conducted}} + G_{\text{linear}} = 5.8$  dBm + 3 dBi = 8.8 dBm = 7.59 mW

Power density  $S = (P_{\text{radiated}}) / (4\pi \times d^2) = 7.59 / 5026 = 0.0015$  mW/cm<sup>2</sup> < 1 => below limit

I. The sum of powers is 34.04 (11bg) + 3.8 (Bluetooth) = 37.84mW and this is below the limit of 1W for rule part 15.247.

II. The sum of power density is 0.0135 (11bg) + 0.0015 (Bluetooth) = 0.0150 and this is below the limit of 1 mW/cm<sup>2</sup>