

MPE Calculation for FCC ID: TTUPLAYMAKER

The FCC requires that the calculated MPE be equal to or less than a given limit dependent on frequency at a distance of 20 cm from the device to the body of the user. The equation for the calculation is given in OET Bulletin 65, page 19 as:

$$S = \text{EIRP} / 4 \pi R^2$$

Where S = Power density
 EIRP = Effective Isotropically Radiated Power
 R = distance to the centre of radiation of the antenna

For 2.4GHz band:

Values S = 1.0 mW/cm² for General population uncontrolled exposure (FCC Part 1.1310, Table 1(B) Radiofrequency radiation exposure limits)

$$S = 1.0 \text{mW/cm}^2$$

$$P_c = 21.9 \text{dBm (155mW)}$$

Maximum measured conducted peak power

$$G = \text{Declared Antenna gain} = 2.0 \text{dBi}$$

$$\text{EIRP} = P_c + G$$

$$R = 20 \text{ cm}$$

Calculation:

$$\text{EIRP} = 21.9 + 2 = 23.9 \text{dBm (245mW)}$$

$$S = 245 / 12.56 \times (20)^2$$

$$S = 245 / 5026$$

$$S = 0.049 \text{ mW}^2$$

Conclusion

This confirms compliance to the required FCC Part 1.1310 Radio frequency radiation exposure limit of 1.0mW/cm² at 20cm operation.