

Maximum Permissible Exposure

Applicable Standard

According to §1.1310, the limits for maximum permissible exposure (MPE) may be used to evaluate the environmental impact of human exposure to RF radiation as specified in §1.1307(b).

Remark: 1) For WIFI: The output power is 16.69dBm (46.67mW) at 2412MHz, 2.5dBi antenna gain(with 1.78 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

For WIFI:

Maximum Permissible Exposure

output power=46.67mW

Numeric Antenna gain=1.78

Substituting the MPE safe distance using $d=20\text{cm}$ into above equation.

Yields:

$$S = 0.000199 * P * G$$

Where P = Power in mW

G = Numeric antenna gain

S = Power density in mW/cm^2

$$\underline{\text{Power density} = 0.017 \text{mW}/\text{cm}^2}$$

(For mobile or fixed location transmitters, the maximum power density is $1.0 \text{mW}/\text{cm}^2$ even if the calculation indicates that the power density would be larger.)