Maximum Permissible Exposure

Applicable Standard

According to §1.1307(b), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

Remark: 1) **For 2.4 WIFI:** The maximum output power for antenna is 16.23dBm (41.98mW) at 2437MHz, 1.5dBi antenna gain(with 1.41 numeric antenna gain.)

For 5G WIFI Band 1 (5150 - 5250 MHz): The maximum output power for antenna is 11.78dBm (15.07mW) at 36MHz, 1.5dBi antenna gain(with 1.41 numeric antenna gain.)

For 5G WIFI Band 3 (5725 - 5850 MHz): The maximum output power for antenna is 3.99dBm (2.51mW) at 5.745MHz, 1.5dBi antenna gain(with 1.41 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

Given $\quad E = \dfrac{\sqrt{30 \times P \times G}}{d} \quad \& \quad S = \dfrac{E^2}{3770}$

Where $\quad E$ = 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 2.4 WIFI:

Maximum Permissible Exposure

output power= 41.98mW

Numeric Antenna gain= 1.41

Substituting the MPE safe distance using d=20cm into above equation.

For 5G WIFI Band 1 (5150 - 5250 MHz):

Maximum Permissible Exposure

output power= 15.07mW

Numeric Antenna gain= 1.41

Substituting the MPE safe distance using d=20cm into above equation.

For 5G WIFI Band 3 (5725 - 5850 MHz):

Maximum Permissible Exposure

output power= 2.51mW

Numeric Antenna gain= 1.41

Substituting the MPE safe distance using d=20cm 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

For 2.4 WIFI:

<u>*Power density= 0.011779mW/cm^2*</u>

For 5G WIFI Band 1 (5150 - 5250 MHz):

<u>*Power density= 0.004228mW/cm^2*</u>

For 5G WIFI Band 3 (5725 - 5850 MHz):

<u>*Power density= 0.000704mW/cm^2*</u>

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