Maximum Permissible Exposure

Applicable Standard

According to §1.1307(b)(5), 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 WIFI: The target output power is 21.62dBm (145.21mW) at 2412MHz, 3dBi antenna gain(with 2.00 numeric antenna gain.)

For BT4.0: The target output power is -1.42dBm (0.72mW) at 2480MHz, 3dBi antenna gain(with 2.00 numeric antenna gain.)

For BT3.0+EDR: The target output power is 6.72dBm (4.70mW) at 2480MHz, 3dBi antenna gain(with 2.00 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 $E = \dfrac{\sqrt{30 \times P \times G}}{d}$ & $S = \dfrac{E^2}{3770}$

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=145.21mW

Numeric Antenna gain=2.00

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

Yields:

$S=0.000199*P*G$

Where $P=Power\ in\ mW$
  $G=Numeric\ antenna\ gain$
  $S=Power\ density\ in\ mW/cm^2$

Power density=0.058mW/cm^2

For BT4.0:

Maximum Permissible Exposure

output power=0.72mW

Numeric Antenna gain=2.00

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

Power density=0.0003mW/cm^2

For BT3.0+EDR:

Maximum Permissible Exposure

   output power=4.70mW

   Numeric Antenna gain=2.00

   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

Power density=0.002mW/cm^2

 (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.)