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 BT:** The maximum output power for antenna is 4.06dBm (2.55mW) at 2480MHz, 2dBi antenna gain(with 1.58 numeric antenna gain.)

For BLE: The maximum output power for antenna is 2.89dBm (1.95mW) at 2480MHz, 2dBi antenna gain(with 1.58 numeric antenna gain.)

For 2.4G WIFI: The maximum output power for antenna is 18.75dBm (74.99mW) at 2437MHz, 2dBi antenna gain(with 1.58 numeric antenna gain.)

For 2.4G WIFI: The maximum output power for N40 antenna 0 is 16.00Bm (39.81mW) at 2437MHz, 2dBi antenna gain(with 1.58 numeric antenna gain.)

For 2.4G WIFI: The maximum output power for N40 antenna 1 is 15.55dBm (35.89mW) at 2452MHz, 2dBi antenna gain(with 1.58 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

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

Yields: *S=0.000199*P*G*

Maximum Emissions Level					
Mode	Power(mW)	numeric antenna gain	Power density (mW/cm^2)	Limit (mW/cm^2)	Result
BT	2.55	1.58	0.000802	1.0	PASS
BLE	1.95	1.58	0.000613		
2.4G WIFI(MAX)	74.99	1.58	0.023578		
2.4G WIFI(S_0)	39.81	1.58	0.012574		PASS
2.4G WIFI(S_1)	35.89	1.58	0.011336		PASS

$S_{0+}\ S_{1=}.0.023910\ mW/cm^2 < 1.0\ mW/cm^2$

(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.)