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 802.11b: The maximum output power for antenna is 25.89dBm (388.15mW) at 2412MHz, 7dBi antenna gain(with 5.01 numeric antenna gain.)

For 802.11g: The maximum output power for antenna is 23.06dBm (202.30mW) at 2437MHz, 7dBi antenna gain(with 5.01 numeric antenna gain.)

For 802.11n20(HT20) ANT0: The maximum output power for antenna is 22.30dBm (169.82mW) at 2437MHz, 7dBi antenna gain(with 5.01 numeric antenna gain.)

For 802.11n20(HT20) ANT1: The maximum output power for antenna is 23.84dBm (242.10mW) at 2437MHz, 7dBi antenna gain(with 5.01 numeric antenna gain.)

For 802.11n40(HT40) ANT0: The maximum output power for antenna is 21.95dBm (156.68mW) at 2422MHz, 7dBi antenna gain(with 5.01 numeric antenna gain.)

For 802.11n40(HT40) ANT1: The maximum output power for antenna is 22.64dBm (183.65mW) at 2452MHz, 7dBi antenna gain(with 5.01 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
802.11b	388.15	5.01	0.386982	1.0	PASS
802.11g	202.30	5.01	0.201691		
802.11n(HT20) ANT0	169.82	5.01	0.169309		
802.11n(HT20) ANT1	242.10	5.01	0.241371		
802.11n(HT40) ANT0	156.68	5.01	0.156208		
802.11n(HT40) ANT1	183.65	5.01	0.183097		

For MIMO mode,

Maximum Emissions Level					
Mode	Power density (mW/cm^2) ANT0	Power density (mW/cm^2) ANT1	Power density (mW/cm^2)	Limit (mW/cm^2)	Result
802.11n(HT20)	0.169309	0.241371	0.410680	1.0	PASS
802.11n(HT40)	0.156208	0.183097	0.339305		