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)

MIMO MPE:

For 2.4G WIFI: The maximum output power for antenna 0 is 24.88dBm (307.61mW) at 2412MHz, 3dBi antenna gain(with 2.00 numeric antenna gain.)
The maximum output power for antenna 1 is 25.89dBm (388.15mW) at 2412MHz, 3dBi antenna gain(with 2.00 numeric antenna gain.)
The maximum output power for antenna 2 is 26.45dBm (441.57mW) at 2412MHz, 3dBi antenna gain(with 2.00 numeric antenna gain.)

For Band 1: The maximum output power for antenna 0 is 19.55dBm (90.16mW) at 5190MHz, 3dBi antenna gain(with 2.00 numeric antenna gain.)
The maximum output power for antenna 1 is 19.52dBm (89.54mW) at 5200MHz, 3dBi antenna gain(with 2.00 numeric antenna gain.)
The maximum output power for antenna 2 is 18.88dBm (77.27mW) at 5240MHz, 3dBi antenna gain(with 2.00 numeric antenna gain.)

For Band 2A: The maximum output power for antenna 0 is 18.95dBm (78.52mW) at 5260MHz, 3dBi antenna gain(with 2.00 numeric antenna gain.)
The maximum output power for antenna 1 is 18.88dBm (77.27mW) at 5260MHz, 3dBi antenna gain(with 2.00 numeric antenna gain.)
The maximum output power for antenna 2 is 19.23dBm (83.75mW) at 5260MHz, 3dBi antenna gain(with 2.00 numeric antenna gain.)

For Band 2C: The maximum output power for antenna 0 is 19.84dBm (96.38mW) at 5720MHz, 3dBi antenna gain(with 2.00 numeric antenna gain.)
The maximum output power for antenna 1 is 19.74dBm (94.19mW) at 5600MHz, 3dBi antenna gain(with 2.00 numeric antenna gain.)
The maximum output power for antenna 2 is 20.12dBm (102.80mW) at 5720MHz, 3dBi antenna gain(with 2.00 numeric antenna gain.)

For Band 3: The maximum output power for antenna 0 is 20.77dBm (119.40mW) at 5745MHz, 3dBi antenna gain(with 2.00 numeric antenna gain.)
The maximum output power for antenna 1 is 20.57dBm (114.02mW) at 5785MHz, 3dBi antenna gain(with 2.00 numeric antenna gain.)
The maximum output power for antenna 2 is 20.16dBm (103.75mW) at 5795MHz, 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 $E = \frac{\sqrt{30 \times P \times G}}{d}$ & $S = \frac{E^2}{3770}$

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*

Substituting the MPE safe distance using d=20cm into above equation.
Yields: *S=0.000199*P*G*

MPE 0:

Mode	Power(mW)	numeric antenna gain	Power density (mW/cm2)
2.4G WIFI	307.61	2.00	0.122429
Band 1	90.16	2.00	0.035884
Band 2A	78.52	2.00	0.031251
Band 2C	96.38	2.00	0.038359
Band 3	119.40	2.00	0.047521

MPE 1:

Mode	Power(mW)	numeric antenna gain	Power density (mW/cm2)
2.4G WIFI	388.15	2.00	0.154484
Band 1	89.54	2.00	0.035637
Band 2A	77.27	2.00	0.030753
Band 2C	94.19	2.00	0.037488
Band 3	114.02	2.00	0.045380

MPE 2:

Mode	Power(mW)	numeric antenna gain	Power density (mW/cm2)
2.4G WIFI	441.57	2.00	0.175745
Band 1	77.27	2.00	0.030753
Band 2A	83.75	2.00	0.033333
Band 2C	102.80	2.00	0.040914
Band 3	103.75	2.00	0.041293

Total MPE:

Maximum Emissions Level						
Mode	**MPE 0**	**MPE 1**	**MPE 2**	**Total MPE**	**Limit (mW/cm2)**	**Result**
2.4G WIFI	0.122429	0.154484	0.175745	0.452658	1.0	PASS
Band 1	0.035884	0.035637	0.030753	0.102274		
Band 2A	0.031251	0.030753	0.033333	0.095337		
Band 2C	0.038359	0.037488	0.040914	0.116761		
Band 3	0.047521	0.045380	0.041293	0.134194		