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 24.65dBm (291.74mW) at 2462MHz, 3dBi antenna gain(with 2.00 numeric antenna gain.)
The maximum output power for antenna 1 is 24.87dBm (306.90mW) at 2412MHz, 3dBi antenna gain(with 2.00 numeric antenna gain.)
The maximum output power for antenna 2 is 24.74dBm (297.85mW) at 2437MHz, 3dBi antenna gain(with 2.00 numeric antenna gain.)

For Band 1: The maximum output power for antenna 0 is 17.89dBm (61.52mW) at 5240MHz, 3dBi antenna gain(with 2.00 numeric antenna gain.)
The maximum output power for antenna 1 is 17.69dBm (58.75mW) at 5230MHz, 3dBi antenna gain(with 2.00 numeric antenna gain.)
The maximum output power for antenna 2 is 18.25dBm (66.83mW) at 5240MHz, 3dBi antenna gain(with 2.00 numeric antenna gain.)

For Band 2A: The maximum output power for antenna 0 is 17.98dBm (62.81mW) at 5260MHz, 3dBi antenna gain(with 2.00 numeric antenna gain.)
The maximum output power for antenna 1 is 18.68dBm (73.79mW) at 5320MHz, 3dBi antenna gain(with 2.00 numeric antenna gain.)
The maximum output power for antenna 2 is 18.13dBm (65.01mW) at 5300MHz, 3dBi antenna gain(with 2.00 numeric antenna gain.)

For Band 2C: The maximum output power for antenna 0 is 18.37dBm (68.71mW) at 5600MHz, 3dBi antenna gain(with 2.00 numeric antenna gain.)
The maximum output power for antenna 1 is 18.01dBm (63.24mW) at 5600MHz, 3dBi antenna gain(with 2.00 numeric antenna gain.)
The maximum output power for antenna 2 is 18.01dBm (63.24mW) at 5500MHz, 3dBi antenna gain(with 2.00 numeric antenna gain.)

For Band 3: The maximum output power for antenna 0 is 20.02dBm (100.46mW) at 5785MHz, 3dBi antenna gain(with 2.00 numeric antenna gain.)
The maximum output power for antenna 1 is 19.93dBm (98.40mW) at 5785MHz, 3dBi antenna gain(with 2.00 numeric antenna gain.)
The maximum output power for antenna 2 is 19.55dBm (90.16mW) at 5745MHz, 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	291.74	2.00	0.116113
Band 1	61.52	2.00	0.024485
Band 2A	62.81	2.00	0.024998
Band 2C	68.71	2.00	0.027347
Band 3	100.46	2.00	0.039983

MPE 1:

Mode	Power(mW)	numeric antenna gain	Power density (mW/cm2)
2.4G WIFI	306.90	2.00	0.122146
Band 1	58.75	2.00	0.023383
Band 2A	73.79	2.00	0.029368
Band 2C	63.24	2.00	0.025170
Band 3	98.40	2.00	0.039163

MPE 2:

Mode	Power(mW)	numeric antenna gain	Power density (mW/cm2)
2.4G WIFI	297.85	2.00	0.118544
Band 1	66.83	2.00	0.026598
Band 2A	65.01	2.00	0.025874
Band 2C	63.24	2.00	0.025170
Band 3	90.16	2.00	0.035884

Total MPE:

Maximum Emissions Level						
Mode	**MPE 0**	**MPE 1**	**MPE 2**	**Total MPE**	**Limit (mW/cm2)**	**Result**
2.4G WIFI	0.116113	0.122146	0.118544	0.356803	1.0	PASS
Band 1	0.024485	0.023383	0.026598	0.074466		
Band 2A	0.024998	0.029368	0.025874	0.080240		
Band 2C	0.027347	0.025170	0.025170	0.077687		
Band 3	0.039983	0.039163	0.035884	0.115030		