Maximum Permissible Exposure

FCC ID: 2AGNTLDK240958A

Applicable Standard

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2m normally can be maintained between the user and the device.

(a) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Times $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100000			5	6

(b) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Times $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100000			1.0	30

Note: f=frequency in MHz; *Plane-wave equivalent power density

MPE Calculation Method

$E (V/m) = (30*P*G)^{0.5}/d$ Power Density: $Pd (W/m^2) = E^2/377$

E = Electric Field (V/m)

P = Peak RF output Power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

Pd = $(30*P*G) / (377*d^2)$

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained.

Calculated Result and Limit

904-926M Band

Antenna Gain: 2.2dBi

Assembly Antenna Gain: 5.21

Assembly Antenna Gain (Numeric)	Frequency (MHz)	Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm^2)	Limit of Power Density (S) (mW/cm^2)	Test Result
3.32	904	27.41	550.808	0.36380	0.602	Compiles
3.32	915	27.57	571.479	0.37745	0.610	Compiles
3.32	926	27.49	561.048	0.37056	0.617	Compiles

2.4G Band (2403.5-2475.5MHz)

Antenna Gain: 4.7dBi

Assembly Antenna Gain: 7.71

Assembly Antenna Gain (Numeric)	Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm^2)	Limit of Power Density (S) (mW/cm^2)	Test Result
5.90	27.52	564.937	0.66309	1	Compiles

QPSK was the worst Case

WIFI 2.4G Band

Antenna Gain: 2.3dBi

Assembly Antenna Gain (Numeric)	Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm^2)	Limit of Power Density (S) (mW/cm^2)	Test Result
1.70	26.75	473.151	0.160018	1	Compiles

802.11b was the worst Case

5G Band (5728-5874MHz)

Antenna Gain: 2.9dBi

Assembly Antenna Gain: 5.91

Assembly Antenna Gain (Numeric)	Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm^2)	Limit of Power Density (S) (mW/cm^2)	Test Result
3.90	27.73	592.925	0.46003	1	Compiles

QPSK was the worst Case

WIFI 5G Band

Antenna Gain: 4.7dBi

Assembly Antenna Gain (Numeric)	Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm^2)	Limit of Power Density (S) (mW/cm^2)	Test Result
2.95	12.65	18.408	0.01080	1	Compiles

802.11a was the worst Case