

FCC 47 CFR MPE
Report

FCC ID:2BMMP-T9

RF Exposure Report

FCC 47 CFR MPE

Maximum Permissible Exposure

1. Maximum Permissible Exposure Applicable Standards

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.

1.1. Limits for Maximum Permissible Exposure (MPE)

(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
1500-10000			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
1500-10000			1.0	30

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

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1.2. Maximum Permissible Exposure Calculation Method

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \quad \text{Power Density: } P_d \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

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

$$P_d = \frac{30 \times P \times G}{377 \times d^2}$$

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

2. Conducted Power Result

2.4G Wi-Fi							
Mode/Type	Frequency	Peak Output Power	Peak Output Power	Max Tune-up Power		Antenna Gain	
	(MHz)	(dBm)	(mW)	(dBm)		(dBi)	(Linear)
IEEE 802.11b	2412	13.28	21.281	13	±1	2.73	1.875
	2437	13.73	23.605	13	±1	2.73	1.875
	2462	14.12	25.823	14	±1	2.73	1.875
IEEE 802.11g	2412	12.63	18.323	12	±1	2.73	1.875
	2437	13.17	20.749	13	±1	2.73	1.875
	2462	13.42	21.979	13	±1	2.73	1.875
IEEE 802.11n HT20	2412	11.85	15.311	11	±1	2.73	1.875
	2437	12.29	16.943	12	±1	2.73	1.875
	2462	12.50	17.783	12	±1	2.73	1.875
IEEE 802.11n HT40	2422	11.47	14.028	11	±1	2.73	1.875
	2437	11.86	15.346	11	±1	2.73	1.875
	2452	12.06	16.069	12	±1	2.73	1.875

Remark: The Peak Output Power data is derived from the RF test report number mentioned in the title of this document.

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3. Calculated Result and Limit

2.4G Wi-Fi						
Mode/Type	Max Tune-up Power	Antenna Gain		Power Density	Limited of Power Density	Result
	(dBm)	(dBi)	(Linear)	(S) (mW/cm ²)	(S) (mW/cm ²)	
2.4G Band						
IEEE 802.11b	15	2.73	1.875	0.01180	1.0	Complies
IEEE 802.11g	14	2.73	1.875	0.00937	1.0	Complies
IEEE 802.11n HT20	13	2.73	1.875	0.00744	1.0	Complies
IEEE 802.11n HT40	13	2.73	1.875	0.00744	1.0	Complies

Conclusion: So, SAR test is not required

-----End of RF Exposure Evaluation -----

