

Maximum Permissible Exposure (MPE)

Standard Applicable

According to §1.1307(b)(1), 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.

This is a Mobile device, the MPE is required.

FCC: According to §1.1310 and §2.1091 RF exposure is calculated.

Limits for Maximum Permissive Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	F/1500	30
1500-15000	/	/	1.0	30

F = frequency in MHz

* = Plane-wave equipment power density

FCC: 2.4GHz mode: 802.11b mode (the worst case)

Maximum Permissible Exposure (MPE) Evaluation: The worst case of Average power

Tune-Up Power and Tolerance:

WLAN: 1TX, 1RX

Wi-Fi	Frequency Range (MHz)	Channels	Average Tune-Up Power	Modulation Technology
802.11b	2412 – 2462(DTS)	11	13 dBm	OFDM
802.11g	2412 – 2462(DTS)	11	13 dBm	
802.11n	HT20 2412 – 2462(DTS)	11	13 dBm	
	HT40 2422 – 2452(DTS)	7	12 dBm	
Power Tolerance:		+/- 1.0 dBm		

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = PG/4\pi R^2$$

Where: S = Power density

P = Power input to antenna

G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

802.11 b mode(worst case)	CH 1-11
Tune-Up power at antenna input terminal:	13.00 (dBm)
Tune-Up power at antenna input terminal:	19.95 (mW)
Tune-Up power Tolerance:	1.00 dB
Duty cycle:	99.00 (%)
Maximum Pav :	24.87 (mW)
Antenna gain (typical):	3.32 (dBi)
Maximum antenna gain:	2.15 (numeric)
Prediction distance:	20.00 (cm)
MPE limit for uncontrolled exposure at prediction	1.00 (mW/cm^2)
Power density at predication frequency at 20 (cm)	0.0106 (mW/cm^2)

Measurement Result:

The worst power density is 0.0106 mW/cm^2 which is less than 1 mW/cm^2.

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