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	DSSS
802.11g	2412 – 2462(DTS)	11	7 dBm	OFDM
802.11n	HT20 2412 – 2462(DTS)	11	7 dBm	
	HT40 2422 – 2452(DTS)	7	7 dBm	
Power Tolerance:		+/- 1.5 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

	CH 1-11	
Tune-Up power at antenna input	13.00	(dBm)
Tune-Up power at antenna input	19.95	(mW)
Tune-Up power Tolerance:	1.50	dB
Duty cycle:	99.00	(%)
Maximum Pav :	27.90	(mW)
Antenna gain (typical):	-9.86	(dBi)
Maximum antenna gain:	0.10	(numeric)
Prediction distance:	20.00	(cm)
MPE limit for uncontrolled exposure	1.00	(mW/cm^2)
Power density at predication	0.0006	(mW/cm^2)

Measurement Result:

The worst power density is 0.0007 mW/cm^2 which is less than 1 mW/cm^2.

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