

FCC§1.1310 & §2.1091 - MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart 1.1310, 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
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
1500-100,000	/		1.0	30

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

Calculated Formulary:

Predication of MPE limit at a given distance

S = PG/4πR² = power density (in appropriate units, e.g. mW/cm²);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

Calculated Data:

Mode	Frequency Range (MHz)	Antenna Gain		Tune-up Output Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)	(dBm)	(mW)			
802.11b	2412~2462	0.0	1.00	21.00	125.89	20	0.0250	1.0
802.11g		0.0	1.00	22.00	158.49	20	0.0315	1.0
802.11n-HT20		0.0	1.00	21.00	125.89	20	0.0250	1.0
802.11n-HT40	2422~2452	0.0	1.00	21.50	141.25	20	0.0281	1.0
802.11a	5150~5250	0.0	1.00	15.00	31.62	20	0.0063	1.0
	5725~5850	0.0	1.00	15.00	31.62	20	0.0063	1.0
802.11n-HT20	5150~5250	0.0	1.00	15.50	35.48	20	0.0071	1.0
	5725~5850	0.0	1.00	15.50	35.48	20	0.0071	1.0
802.11n-HT40	5150~5250	0.0	1.00	16.00	39.81	20	0.0079	1.0
	5725~5850	0.0	1.00	15.50	35.48	20	0.0071	1.0

Note:

- (1) The tune-up output power was declared by the manufacturer.
- (2) 2.4GWi-Fi and 5G Wi-Fi cannot transmit simultaneously.

Conclusion: The EUT meets exemption requirement - RF exposure evaluation greater than 20cm distance specified in § 2.1091. If the device built into a host as a portable usage, the additional RF exposure evaluation may be required as specified by § 2.1093.