

RF EXPOSURE EVALUATION

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency(RF) Radiation as specified in §1.1307(b)

Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f ²	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
(B) 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
300-1,500			f/1500	30
1,500-100,000			1.0	30

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

MPE Calculation Method

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

E = Electric field (V/m)

P = Average 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

$$Pd = \frac{30 * P * G}{377 * D^2}$$

From the 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.

Measurement Result

2.4G WIFI:

Operation Frequency: WIFI 802.11b/g/n HT20: 2412-2462MHz,
WIFI 802.11n HT40:2422-2452MHz
Power density limited: 1mW/ cm²

Power density limited: 1mW/cm
Antenna Type: Ceramic Antenna
2.4G WIFI Antenna :3.19dBi;
R=20cm
mW=10^(dBm/10)

WLAN2.4G SISO Max power MODE

Antenna	Channel Freq. (MHz)	modulation	conducted pow er	Tune-up pow er (dBm)	Max		Antenna		Evaluation result
			(dBm)		tune-up pow er		Gain		(mW/cm2)
					(dBm)	(mW)	(dBi)	Numeric	
Ant 1	2412	802.11b	17.51	18±1	19	79.433	3.19	2.08	0.0329
Ant 1	2437		17.74	18±1	19	79.433	3.19	2.08	0.0329
Ant 1	2462		18.19	18±1	19	79.433	3.19	2.08	0.0329
Ant 1	2412	802.11g	17.22	18±1	19	79.433	3.19	2.08	0.0329
Ant 1	2437		17.99	18±1	19	79.433	3.19	2.08	0.0329
Ant 1	2462		17.99	18±1	19	79.433	3.19	2.08	0.0329
Ant 1	2412	802.11n H20	15.25	16±1	17	50.119	3.19	2.08	0.0208
Ant 1	2437		15.72	16±1	17	50.119	3.19	2.08	0.0208
Ant 1	2462		15.95	16±1	17	50.119	3.19	2.08	0.0208
Ant 1	2422	802.11n H40	19.43	19±1	20	100.000	3.19	2.08	0.0415
Ant 1	2437		19.82	19±1	20	100.000	3.19	2.08	0.0415
Ant 1	2452		19.72	19±1	20	100.000	3.19	2.08	0.0415

Signature:

Date: 2025-02-10

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