

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

$$E \text{ (V/m)} = \frac{\sqrt{30 * P * G}}{d}$$

$$\text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

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: FPC Antenna
2.4G WIFI Antenna :2.65dBi;
R=20cm
mW=10^(dBm/10)

WLAN2.4G SISO Max power MODE

Antenna	Channel Freq. (MHz)	modulation	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result
			(dBm)		tune-up power		Gain		(mW/cm2)
					(dBm)	(mW)	(dBi)	Numeric	
Ant 1	2412	802.11b	11	11±1	12	15.849	2.65	1.84	0.0058
Ant 1	2437		10.45	11±1	12	15.849	2.65	1.84	0.0058
Ant 1	2462		11.16	11±1	12	15.849	2.65	1.84	0.0058
Ant 1	2412	802.11g	10.95	10±1	11	12.589	2.65	1.84	0.0046
Ant 1	2437		9.97	10±1	11	12.589	2.65	1.84	0.0046
Ant 1	2462		10.62	10±1	11	12.589	2.65	1.84	0.0046
Ant 1	2412	802.11n H20	10.89	10±1	11	12.589	2.65	1.84	0.0046
Ant 1	2437		10.4	10±1	11	12.589	2.65	1.84	0.0046
Ant 1	2462		10.68	10±1	11	12.589	2.65	1.84	0.0046

Signature:

Date: 2024-12-19

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