

# 1. Maximum Permissible Exposure

## 1.1 Limits

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 <sup>2</sup> )	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f <sup>2</sup> )	6
30–300	61.4	0.163	1.0	6
300–1500			f/300	6
1500–100,000			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 <sup>2</sup> )	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

MPE Calculation Method

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

E = Electric field (V/m)

P = Peak 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

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

From the peak 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.

## 1.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

## 1.3. Test Result

Mode	Channel	Output power to antenna (mW)	Power Density at R=20cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Result
802.11b	Lowest	285.7591	0.1798	1.0	PASS
	Middle	237.6840	0.1495	1.0	PASS
	Highest	240.4363	0.1513	1.0	PASS
802.11g	Lowest	228.5599	0.1438	1.0	PASS
	Middle	220.2926	0.1386	1.0	PASS
	Highest	194.5360	0.1224	1.0	PASS
802.11n-H20	Lowest	178.6488	0.1124	1.0	PASS
	Middle	194.9845	0.1227	1.0	PASS
	Highest	174.5822	0.1098	1.0	PASS
802.11n-H40	Lowest	140.9289	0.0887	1.0	PASS
	Middle	133.0454	0.0837	1.0	PASS
	Highest	129.7179	0.0816	1.0	PASS

Remark: antenna gain=5.0dBi