

## 1. RF EXPOSURE EVALUATION

### 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**

**Friis transmission formula:  $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$**

Where

**P<sub>d</sub>** = power density in mW/cm<sup>2</sup>, **P<sub>out</sub>** = output power to antenna in mW;

**G** = gain of antenna in linear scale, **Pi** = 3.1416;

**R** = distance between observation point and center of the radiator in cm

P<sub>d</sub> is the limit of MPE, 1 mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

## 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 of RF Exposure Evaluation

2.4G

	Target power W/ tolerance (dBm)	Max tune up power tolerance(dBm)	Max Output power to antenna (mW)	Power Density at R=20cm (mW/cm <sup>2</sup> )	Limit (mW/c m <sup>2</sup> )	Result
802.11b	12±1	13	19.95	0.00849	1.0	Pass
802.11g	11±1	12	15.84	0.00674	1.0	Pass
802.11n (HT20)	10±1	11	12.59	0.00536	1.0	Pass
802.11 n(HT40)	9±1	10	10.00	0.00425	1.0	Pass

5.2G

	Target power W/ tolerance (dBm)	Max tune up power tolerance(dBm)	Max Output power to antenna (mW)	Power Density at R=20cm (mW/cm <sup>2</sup> )	Limit (mW/c m <sup>2</sup> )	Result
802.11a	13±1	14	25.12	0.01056	1.0	Pass
802.11n (HT20)	12±1	13	19.95	0.00839	1.0	Pass
802.11 n(HT40)	11±1	12	15.84	0.00666	1.0	Pass

5.8G

	Target power W/ tolerance (dBm)	Max tune up power tolerance(dBm)	Max Output power to antenna (mW)	Power Density at R=20cm (mW/cm <sup>2</sup> )	Limit (mW/c m <sup>2</sup> )	Result
802.11a	12±1	13	15.84	0.00839	1.0	Pass
802.11n (HT20)	12±1	13	15.84	0.00839	1.0	Pass
802.11 n(HT40)	11±1	12	12.59	0.00666	1.0	Pass

Note: The gain of the antenna is 3.3dBi(2.4G) and 3.25dBi(5G)