

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 ²)	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 ²)	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 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

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

Where

P_d = power density in mW/cm², **P_{out}** = 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_d is the limit of MPE, 1 mW/cm². 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. The 2.4G and 5G can not operate at the same time.□□

1.3. Test Result of RF Exposure Evaluation

	Channel Frequency (MHz)	Target power W/ tolerance (dBm)	Max tune up power tolerance(dBm)	Max Output power to antenna (mW)	Power Density at R=20cm (mW/cm ²)	Limit (mW/cm ²)	Result
802.11b	2412MHz	15±1	16	39.81	0.01693	1.0	Pass
802.11g	2412MHz	14±1	15	31.62	0.01345	1.0	Pass
802.11n (HT20)	2412MHz	13±1	14	25.12	0.01068	1.0	Pass
802.11n(HT40)	2422MHz	12±1	13	19.95	0.00849	1.0	Pass

	Channel Frequency (MHz)	Target power W/ tolerance (dBm)	Max tune up power tolerance(dBm)	Max Output power to antenna (mW)	Power Density at R=20cm (mW/cm ²)	Limit (mW/cm ²)	Result
802.11a	5180MHz	13±1	14	25.12	0.01068	1.0	Pass
802.11n (HT20)	5180MHz	12±1	13	19.95	0.00849	1.0	Pass
802.11n(HT40)	5190MHz	11±1	12	15.84	0.00674	1.0	Pass

	Channel Frequency (MHz)	Target power W/ tolerance (dBm)	Max tune up power tolerance(dBm)	Max Output power to antenna (mW)	Power Density at R=20cm (mW/cm ²)	Limit (mW/cm ²)	Result
802.11a	5745MHz	12±1	13	15.84	0.00674	1.0	Pass
802.11n (HT20)	5745MHz	12±1	13	15.84	0.00674	1.0	Pass
802.11n(HT40)	5755MHz	11±1	12	12.59	0.00536	1.0	Pass