

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

Where

P_d = power density in mW/cm², **P_{out}** = output power to antenna in mW;

G = gain of antenna in linear scale, **π** = 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.

1.3. Test Result of RF Exposure Evaluation

	Channel Frequency (MHz)	Output power to antenna (mW)	Antenna Gain(dBi)	Power Density at R=20cm (mW/cm ²)	Limit (mW/cm ²)	Result
2.4G	2403.5	21.68	3.25	0.00910	1.0	Pass
	2440.4	21.43	3.25	0.00900	1.0	Pass
	2477.3	21.23	3.25	0.00891	1.0	Pass
802.11b	2412	14.55	3.3	0.00619	1.0	Pass
	2437	14.03	3.3	0.00597	1.0	Pass
	2462	14.22	3.3	0.00605	1.0	Pass
802.11g	2412	10.50	3.3	0.00447	1.0	Pass
	2437	10.35	3.3	0.00441	1.0	Pass
	2462	10.47	3.3	0.00446	1.0	Pass
802.11n (HT20)	2412	9.93	3.3	0.00423	1.0	Pass
	2437	9.51	3.3	0.00405	1.0	Pass
	2462	9.62	3.3	0.00410	1.0	Pass
802.11n (HT40)	2422	9.23	3.3	0.00393	1.0	Pass
	2437	9.06	3.3	0.00386	1.0	Pass
	2452	9.14	3.3	0.00389	1.0	Pass
802.11a	5180	6.67	3.3	0.00284	1.0	Pass
	5200	6.87	3.3	0.00292	1.0	Pass
	5240	6.79	3.3	0.00289	1.0	Pass
	5745	6.55	3.3	0.00279	1.0	Pass
	5765	6.62	3.3	0.00282	1.0	Pass
	5805	6.81	3.3	0.00290	1.0	Pass
802.11n (HT20)	5180	6.37	3.3	0.00271	1.0	Pass
	5200	6.58	3.3	0.00280	1.0	Pass
	5240	6.40	3.3	0.00272	1.0	Pass
	5745	6.38	3.3	0.00272	1.0	Pass
	5765	6.47	3.3	0.00275	1.0	Pass
	5805	6.37	3.3	0.00271	1.0	Pass
802.11n (HT40)	5190	6.22	3.3	0.00265	1.0	Pass
	5230	6.47	3.3	0.00275	1.0	Pass
	5755	6.15	3.3	0.00262	1.0	Pass
	5795	6.24	3.3	0.00266	1.0	Pass
Max 2.4G+ WIFI(2.4G)				0.01529	1.0	Pass
Max 2.4G+ WIFI(5G)				0.01202	1.0	Pass