



FCC ID:2BOM3-X1

RF EXPOSURE EVALUATION

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: $Pd = (Pout \cdot G) / (4 \cdot \pi \cdot r^2)$

Where

Pd = power density in mW/cm², **Pout** = 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

Pd 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.

Test Procedure

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



Test Result of RF Exposure Evaluation

BT								
Mode	Frequency (MHz)	Output power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Max tune-up power (mW)	Power Density at R=20cm (mW/cm ²)	Limit (mW/cm ²)	Result
GFSK	2441	8.779	8±1	9	7.94	0.003248	1.0	PASS
π /4-DQPSK	2441	6.429	6±1	7	5.01	0.002050	1.0	PASS
8-DPSK	2441	6.505	6±1	7	5.01	0.002050	1.0	PASS

Note: Antenna Gain = 3.13dBi

2.4G WIFI								
Mode	Frequency (MHz)	Output power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Max tune-up power (mW)	Power Density at R=20cm (mW/cm ²)	Limit (mW/cm ²)	Result
802.11b	2412	14.216	14±1	15	31.62	0.012933	1.0	PASS
802.11g	2412	15.807	15±1	16	39.81	0.016283	1.0	PASS
802.11n20	2412	15.756	15±1	16	39.81	0.016283	1.0	PASS
802.11n40	2437	16.202	16±1	17	50.12	0.020499	1.0	PASS

Note: Antenna Gain = 3.13dBi

5.2G WIFI								
Mode	Frequency (MHz)	Output power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Max tune-up power (mW)	Power Density at R=20cm (mW/cm ²)	Limit (mW/cm ²)	Result
802.11 a	5180	13.252	13±1	14	25.12	0.009700	1.0	PASS
802.11 n20	5180	13.125	13±1	14	25.12	0.009699	1.0	PASS
802.11 n40	5230	14.082	14±1	15	31.62	0.012210	1.0	PASS
802.11 ac20	5180	13.059	13±1	14	25.12	0.009699	1.0	PASS
802.11 ac40	5230	14.273	14±1	15	31.62	0.012210	1.0	PASS
802.11 ac80	5210	13.579	13±1	14	25.12	0.009699	1.0	PASS

Note: Antenna Gain = 2.88dBi



5.8G WIFI								
Mode	Frequency (MHz)	Output power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Max tune-up power (mW)	Power Density at R=20cm (mW/cm ²)	Limit (mW/cm ²)	Result
802.11 a	5825	14.977	14±1	15	31.62	0.013954	1.0	PASS
802.11 n20	5825	14.889	14±1	15	31.62	0.013955	1.0	PASS
802.11 n40	5795	16.111	16±1	17	50.12	0.022117	1.0	PASS
802.11 ac20	5825	14.886	14±1	15	31.62	0.013955	1.0	PASS
802.11 ac40	5795	16.121	16±1	17	50.12	0.022117	1.0	PASS
802.11 ac80	5775	16.400	16±1	17	50.12	0.022117	1.0	PASS
Note: Antenna Gain = 3.46dBi								

Note: The device can not transmit with BT and 2.4G WIFI and 5.2G WIFI and 5.8G WIFI simultaneously.