



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

Where

**Pd** = power density in mW/cm<sup>2</sup>, **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/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.

### 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

Mode	Output power to antenna (dBm)	Tune UP tolerance (dBm)	Max Tune UP power (dBm)	Max Tune UP power (mW)	Power Density at R=20cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Result
802.11b	14.795	14±1	15	31.62	0.00553	1.0	PASS
802.11g	14.379	14±1	15	31.62	0.00553	1.0	PASS
802.11n20	13.743	14±1	15	31.62	0.00553	1.0	PASS

Antenna gain for 2.4GWIFI: -0.56dBi



5.8G WI-FI Mode							
Mode	Frequency (MHz)	Output power to antenna (dBm)	Output power to antenna (mW)	Antenna Gain (dBi)	Power Density at R=20cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Result
802.11a	5785	12.475	17.68	0.56	0.00400	1.0	PASS
802.11n20	5785	12.629	18.32	0.56	0.00415	1.0	PASS
802.11n40	5795	12.089	16.18	0.56	0.00366	1.0	PASS
802.11ac20	5785	12.147	16.39	0.56	0.00371	1.0	PASS
802.11ac40	5795	11.784	15.08	0.56	0.00341	1.0	PASS
802.11ac80	5775	11.171	13.09	0.56	0.00296	1.0	PASS

Conclusion:

For the max result :  $0.01254 \leq 1.0$ , compliance with FCC's RF Exposure

The Product unsupported at the same time to Transmitting.