FCC ID : 2AATV-FIP11WP

RF EXPOSURE EVALUATION

According to FCC 1.1310: 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)	Average Time
(A) Limits for Occupational/Control Exposures				
300-1500	--	--	F/300	6
1500-100000	--	--	5	6
(B) Limits for General Population/Uncontrol Exposures				
300-1500	--	--	F/1500	6
1500-100000	--	--	1	30

11.1 Friis transmission formula: Pd= (Pout*G)\ (4*pi*R^2)

Where

Pd= Power density in mW/cm^2

Pout=output power to antenna in mW

G= Numeric gain of the antenna relative to isotropic antenna

Pi=3.1416

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

Pd the limit of MPE, 1mW/cm^2. If we know the maximum gain of the nd total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

11.2 Measurement Result

Antenna gain: WIFI antenna A: 2.5dBi   WIFI antenna B: 2.5dBi

Array gain: ≈5.51dBi

Tune up power

Mode	Ant. A	Ant.B
80.22b	16±1	16±1
802.11g	16±1	16±1
802.11n (ht20)	16±1	16±1
802.11n (ht40)	15±1	15±1

Antenna A

Mode	Channel Freq. (MHz)	Measured power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm2)	Power density Limits (mW/cm2)
802.11b	2412	15.41	16±1	17	1.778	0.0177	1
	2437	15.68	16±1	17	1.778	0.0177	1
	2462	15.11	16±1	17	1.778	0.0177	1
80.11g	2412	15.72	16±1	17	1.778	0.0177	1
	2437	16.06	16±1	17	1.778	0.0177	1
	2462	15.55	16±1	17	1.778	0.0177	1
802.11n (ht20)	2412	15.77	16±1	17	1.778	0.0177	1
	2437	15.86	16±1	17	1.778	0.0177	1
	2462	15.41	16±1	17	1.778	0.0177	1
802.11n (ht40)	2422	15.56	15±1	16	1.778	0.0141	1
	2437	15.63	15±1	16	1.778	0.0141	1
	2452	15.57	15±1	16	1.778	0.0141	1

Antenna B

Mode	Channel Freq. (MHz)	Measured power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm2)	Power density Limits (mW/cm2)
802.11b	2412	15.40	16±1	17	1.778	0.0177	1
	2437	15.58	16±1	17	1.778	0.0177	1
	2462	15.05	16±1	17	1.778	0.0177	1
80.11g	2412	15.69	16±1	17	1.778	0.0177	1
	2437	16.00	16±1	17	1.778	0.0177	1
	2462	15.51	16±1	17	1.778	0.0177	1
802.11n (ht20)	2412	15.71	16±1	17	1.778	0.0177	1
	2437	15.67	16±1	17	1.778	0.0177	1
	2462	15.71	16±1	17	1.778	0.0177	1
802.11n (ht40)	2422	15.30	15±1	16	1.778	0.0141	1
	2437	15.54	15±1	16	1.778	0.0141	1
	2452	15.38	15±1	16	1.778	0.0141	1

802.11n HT20: Antenna A+B

Evaluation result (mW/cm2) Ant A	Evaluation result (mW/cm2) Ant B	Evaluation result (mW/cm2) Ant A+B	Power density Limits (mW/cm2)
0.0177	0.0177	0.0355	1

802.11n HT40 : Antenna A+B

Evaluation result (mW/cm2) Ant A	Evaluation result (mW/cm2) Ant B	Evaluation result (mW/cm2) Ant A+B	Power density Limits (mW/cm2)
0.0141	0.0141	0.082	1