

FCC ID : WLQOMNIA1AMPLF

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/cm²)	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: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

Where

P_d = Power density in mW/cm²

P_{out} =output power to antenna in mW

G = Numeric gain of the antenna relative to isotropic antenna

π =3.1416

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

P_d the limit of MPE, 1mW/cm². If we know the maximum gain of the antenna and 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: 2.0dBi

802.11b: Antenna A

Channel	Channel Freq. (MHz)	Measured power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
1	2412	17.62	18.0±1	19.0	1.5849	0.025	1
6	2437	17.73	18.0±1	19.0	1.5849	0.025	1
11	2462	18.18	18.0±1	19.0	1.5849	0.025	1

802.11b: Antenna B

Channel	Channel Freq. (MHz)	Measured power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
1	2412	17.63	18.0±1	19.0	1.5849	0.025	1
6	2437	17.74	18.0±1	19.0	1.5849	0.025	1
11	2462	18.19	18.0±1	19.0	1.5849	0.025	1

802.11g: Antenna A

Channel	Channel Freq. (MHz)	Measured power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
1	2412	19.20	19.0±1	20.0	1.5849	0.0315	1
6	2437	19.14	19.0±1	20.0	1.5849	0.0315	1
11	2462	19.73	19.0±1	20.0	1.5849	0.0315	1

802.11g: Antenna B

Channel	Channel Freq. (MHz)	Measured power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
1	2412	19.22	19.0±1	20.0	1.5849	0.0315	1
6	2437	19.17	19.0±1	20.0	1.5849	0.0315	1
11	2462	19.77	19.0±1	20.0	1.5849	0.0315	1

802.11n HT20: Antenna A

Channel	Channel Freq. (MHz)	Measured power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
1	2412	19.44	20.0±1	21.0	1.5849	0.0397	1
6	2437	19.38	20.0±1	21.0	1.5849	0.0397	1
11	2462	20.16	20.0±1	21.0	1.5849	0.0397	1

802.11n HT20: Antenna B

Channel	Channel Freq. (MHz)	Measured power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
1	2412	19.48	20.0±1	21.0	1.5849	0.0397	1
6	2437	19.41	20.0±1	21.0	1.5849	0.0397	1
11	2462	20.20	20.0±1	21.0	1.5849	0.0397	1

802.11n HT40 : Antenna A

Channel	Channel Freq. (MHz)	Measured power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
3	2422	20.15	20.0±1	21.0	1.5849	0.0397	1
6	2437	20.06	20.0±1	21.0	1.5849	0.0397	1
9	2452	19.86	20.0±1	21.0	1.5849	0.0397	1

802.11n HT40 : Antenna B

Channel	Channel Freq. (MHz)	Measured power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
3	2422	20.18	20.0±1	21.0	1.5849	0.0397	1
6	2437	20.10	20.0±1	21.0	1.5849	0.0397	1
9	2452	19.92	20.0±1	21.0	1.5849	0.0397	1

802.11a : Antenna A

Channel	Channel Freq. (MHz)	Measured power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
36	5180	13.52	14.0±1	15.0	1.5849	0.0100	1
42	5210	13.59	14.0±1	15.0	1.5849	0.0100	1
48	5240	14.05	14.0±1	15.0	1.5849	0.0100	1

802.11a : Antenna B

Channel	Channel Freq. (MHz)	Measured power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
36	5180	13.58	14.0±1	15.0	1.5849	0.0100	1
42	5210	13.62	14.0±1	15.0	1.5849	0.0100	1
48	5240	14.50	14.0±1	15.0	1.5849	0.0100	1

802.11n HT20 : Antenna A

Channel	Channel Freq. (MHz)	Measured power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
36	5180	14.35	14.0±1	15.0	1.5849	0.0100	1
42	5210	14.50	14.0±1	15.0	1.5849	0.0100	1
48	5240	14.36	14.0±1	15.0	1.5849	0.0100	1

802.11n HT20 : Antenna B

Channel	Channel Freq. (MHz)	Measured power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
36	5180	14.52	14.0±1	15.0	1.5849	0.0100	1
42	5210	14.55	14.0±1	15.0	1.5849	0.0100	1
48	5240	14.03	14.0±1	15.0	1.5849	0.0100	1

802.11n HT40 : Antenna A

Channel	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)
38	5190	13.20	13.0±1	14.0	1.5849	0.0079	1
46	5230	13.25	13.0±1	14.0	1.5849	0.0079	1

802.11n HT40 : Antenna B

Channel	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)
38	5190	13.16	13.0±1	14.0	1.5849	0.0079	1
46	5230	13.20	13.0±1	14.0	1.5849	0.0079	1