
FCC ID : 2AHVHWR3005

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: $P_d = \frac{P_{out} \cdot G}{4 \cdot \pi \cdot R^2}$

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

Pd the limit of MPE, 1mW/cm². 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

WIFI ANT A:

Channel Freq. (MHz)	modulation	conducted power (mW)	conducted 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)
2.412	11b	110.15	20.42	19dBm to 21dBm	21	1.58	0.03978	1
2.437	11b	90.16	19.55	19dBm to 21dBm	21	1.58	0.03978	1
2.462	11b	99.77	19.99	19dBm to 21dBm	21	1.58	0.03978	1
2.412	11g	98.86	19.95	19dBm to 21dBm	21	1.58	0.03978	1
2.437	11g	85.11	19.30	19dBm to 21dBm	21	1.58	0.03978	1
2.462	11g	87.70	19.43	19dBm to 21dBm	21	1.58	0.03978	1
2.412	11n HT20	103.51	20.15	19dBm to 21dBm	21	1.58	0.03978	1
2.437	11n HT20	84.72	19.28	19dBm to 21dBm	21	1.58	0.03978	1
2.462	11n HT20	90.57	19.57	19dBm to 21dBm	21	1.58	0.03978	1
2.422	11n HT40	94.19	19.74	18dBm to 20dBm	20	1.58	0.03160	1
2.437	11n HT40	78.52	18.95	18dBm to 20dBm	20	1.58	0.03160	1
2.452	11n HT40	78.16	18.93	18dBm to 20dBm	20	1.58	0.03160	1

WIFI ANT B:

Channel Freq. (MHz)	modulation	conducted power (mW)	conducted 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)
2.412	11b	100.23	20.01	19dBm to 21dBm	21	1.58	0.03978	1
2.437	11b	123.59	20.92	19dBm to 21dBm	21	1.58	0.03978	1
2.462	11b	123.31	20.91	19dBm to 21dBm	21	1.58	0.03978	1
2.412	11g	87.30	19.41	19dBm to 21dBm	21	1.58	0.03978	1
2.437	11g	97.72	19.90	19dBm to 21dBm	21	1.58	0.03978	1
2.462	11g	104.71	20.20	19dBm to 21dBm	21	1.58	0.03978	1
2.412	11n HT20	82.04	19.14	19dBm to 21dBm	21	1.58	0.03978	1
2.437	11n HT20	85.51	19.32	19dBm to 21dBm	21	1.58	0.03978	1
2.462	11n HT20	96.16	19.83	19dBm to 21dBm	21	1.58	0.03978	1
2.422	11n HT40	76.74	18.85	18dBm to 20dBm	20	1.58	0.03160	1
2.437	11n HT40	85.31	19.31	18dBm to 20dBm	20	1.58	0.03160	1
2.452	11n HT40	85.90	19.34	18dBm to 20dBm	20	1.58	0.03160	1

A+B

Channel Freq. (MHz)	modulation	Sum power (mW)	SUM A+B (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
2.412	11b	210.38	23.23	22dBm to 24dBm	24	1.58	0.07938	1
2.437	11b	213.75	23.30	22dBm to 24dBm	24	1.58	0.07938	1
2.462	11b	223.08	23.48	22dBm to 24dBm	24	1.58	0.07938	1
2.412	11g	186.15	22.70	22dBm to 24dBm	24	1.58	0.07938	1
2.437	11g	182.84	22.62	22dBm to 24dBm	24	1.58	0.07938	1
2.462	11g	192.41	22.84	22dBm to 24dBm	24	1.58	0.07938	1
2.412	11n HT20	185.55	22.68	22dBm to 24dBm	24	1.58	0.07938	1
2.437	11n HT20	170.23	22.31	22dBm to 24dBm	24	1.58	0.07938	1
2.462	11n HT20	186.73	22.71	22dBm to 24dBm	24	1.58	0.07938	1
2.422	11n HT40	170.93	22.33	22dBm to 24dBm	24	1.58	0.07938	1
2.437	11n HT40	163.83	22.14	22dBm to 24dBm	24	1.58	0.07938	1
2.452	11n HT40	164.06	22.15	22dBm to 24dBm	24	1.58	0.07938	1