FCC ID : 2AM4L1

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 20cm

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

WIFI 5G antenna A:

Channel Freq. (MHz)	modulation	conducted power (mW)	conducted power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Max Antenna Gain Numeric	Evaluation result (mW/cm2)	Power density Limits (mW/cm2)
5180	11a	23.9	13.79	12dBm to 14dBm	14	3.98	0.01989	<1
5220	11a	23.2	13.66	12dBm to 14dBm	14	3.98	0.01989	<1
5240	11a	23.2	13.65	12dBm to 14dBm	14	3.98	0.01989	<1
5180	11n(VHT20)	21.2	13.26	12dBm to 14dBm	14	3.98	0.01989	<1
5220	11n(VHT20)	21.3	13.29	12dBm to 14dBm	14	3.98	0.01989	<1
5240	11n(VHT20)	21.1	13.25	12dBm to 14dBm	14	3.98	0.01989	<1
5190	11n(VHT40)	23.4	13.70	12dBm to 14dBm	14	3.98	0.01989	<1
5230	11n(VHT40)	22.2	13.47	12dBm to 14dBm	14	3.98	0.01989	<1
5745	11a	12.5	10.96	10dBm to 12dBm	12	3.98	0.01255	<1
5785	11a	13.3	11.24	10dBm to 12dBm	12	3.98	0.01255	<1
5825	11a	10.1	10.06	10dBm to 12dBm	12	3.98	0.01255	<1
5745	11n(VHT20)	11.9	10.77	10dBm to 12dBm	12	3.98	0.01255	<1
5785	11n(VHT20)	13.0	11.15	10dBm to 12dBm	12	3.98	0.01255	<1
5825	11n(VHT20)	9.7	9.89	9dBm to 11dBm	11	3.98	0.00997	<1
5755	11n(VHT40)	9.7	9.88	9dBm to 11dBm	11	3.98	0.00997	<1
5795	11n(VHT40)	12.1	10.81	9dBm to 11dBm	11	3.98	0.00997	<1

WIFI 5G antenna 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/cm2)	Power density Limits (mW/cm2)
5180	11a	23.5	13.71	12dBm to 14dBm	14	3.98	0.01989	<1
5220	11a	23.4	13.70	12dBm to 14dBm	14	3.98	0.01989	<1
5240	11a	22.6	13.55	12dBm to 14dBm	14	3.98	0.01989	<1
5180	11n(VHT20)	20.8	13.18	12dBm to 14dBm	14	3.98	0.01989	<1
5220	11n(VHT20)	20.8	13.18	12dBm to 14dBm	14	3.98	0.01989	<1
5240	11n(VHT20)	21.6	13.35	12dBm to 14dBm	14	3.98	0.01989	<1
5190	11n(VHT40)	23.5	13.71	12dBm to 14dBm	14	3.98	0.01989	<1
5230	11n(VHT40)	22.1	13.44	12dBm to 14dBm	14	3.98	0.01989	<1
5745	11a	12.5	10.98	10dBm to 12dBm	12	3.98	0.01255	<1
5785	11a	12.9	11.10	10dBm to 12dBm	12	3.98	0.01255	<1
5825	11a	10.5	10.20	10dBm to 12dBm	12	3.98	0.01255	<1
5745	11n(VHT20)	12.5	10.96	10dBm to 12dBm	12	3.98	0.01255	<1
5785	11n(VHT20)	13.7	11.36	10dBm to 12dBm	12	3.98	0.01255	<1
5825	11n(VHT20)	10.3	10.12	9dBm to 11dBm	11	3.98	0.00997	<1
5755	11n(VHT40)	9.7	9.86	9dBm to 11dBm	11	3.98	0.00997	<1
5795	11n(VHT40)	12.3	10.91	9dBm to 11dBm	11	3.98	0.00997	<1

WIFI 5G antenna A+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/cm2)	Power density Limits (mW/cm2)
5180	11n(VHT20)	42.0	16.23	16dBm to 18dBm	18	3.98	0.04996	<1
5200	11n(VHT20)	42.2	16.25	16dBm to 18dBm	18	3.98	0.04996	<1
5240	11n(VHT20)	42.8	16.31	16dBm to 18dBm	18	3.98	0.04996	<1
5190	11n(VHT40)	24.4	13.88	13dBm to 15dBm	15	3.98	0.02504	<1
5230	11n(VHT40)	26.7	14.27	13dBm to 15dBm	15	3.98	0.02504	<1
5745	11n(VHT20)	20.0	13.02	13dBm to 15dBm	15	3.98	0.02504	<1
5785	11n(VHT20)	47.0	16.72	16dBm to 18dBm	18	3.98	0.04996	<1
5825	11n(VHT20)	44.4	16.47	16dBm to 18dBm	18	3.98	0.04996	<1
5755	11n(VHT40)	19.4	12.88	12dBm to 14dBm	14	3.98	0.01989	<1
5895	11n(VHT40)	24.4	13.87	12dBm to 14dBm	14	3.98	0.01989	<1

WIFI 2.4G antenna 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/cm2)	Power density Limits (mW/cm2)
2.412	11b	68.4	18.35	18dBm to 20dBm	20	3.98	0.05428	<1
2.437	11b	76.0	18.81	18dBm to 20dBm	20	3.98	0.05428	<1
2.462	11b	81.1	**19.09**	18dBm to 20dBm	20	3.98	0.05428	<1
2.412	11g	73.8	18.68	18dBm to 20dBm	20	3.98	0.05428	<1
2.437	11g	78.5	18.95	18dBm to 20dBm	20	3.98	0.05428	<1
2.462	11g	75.5	18.78	18dBm to 20dBm	20	3.98	0.05428	<1
2.412	11n HT20	73.6	18.67	18dBm to 20dBm	20	3.98	0.05428	<1
2.437	11n HT20	77.4	18.89	18dBm to 20dBm	20	3.98	0.05428	<1
2.462	11n HT20	76.4	18.83	18dBm to 20dBm	20	3.98	0.05428	<1
2.422	11n HT40	67.5	18.29	18dBm to 20dBm	20	3.98	0.05428	<1
2.437	11n HT40	70.0	18.45	18dBm to 20dBm	20	3.98	0.05428	<1
2.452	11n HT40	67.9	18.32	18dBm to 20dBm	20	3.98	0.05428	<1

WIFI antenna 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/cm2)	Power density Limits (mW/cm2)
2.412	11b	68.5	18.36	18dBm to 20dBm	20	3.98	0.05428	<1
2.437	11b	76.2	18.82	18dBm to 20dBm	20	3.98	0.05428	<1
2.462	11b	81.3	19.10	18dBm to 20dBm	20	3.98	0.05428	<1
2.412	11g	74.3	18.71	18dBm to 20dBm	20	3.98	0.05428	<1
2.437	11g	79.1	18.98	18dBm to 20dBm	20	3.98	0.05428	<1
2.462	11g	75.9	18.80	18dBm to 20dBm	20	3.98	0.05428	<1
2.412	11n HT20	74.6	18.73	18dBm to 20dBm	20	3.98	0.05428	<1
2.437	11n HT20	78.0	18.92	18dBm to 20dBm	20	3.98	0.05428	<1
2.462	11n HT20	77.4	18.89	18dBm to 20dBm	20	3.98	0.05428	<1
2.422	11n HT40	68.1	18.33	18dBm to 20dBm	20	3.98	0.05428	<1
2.437	11n HT40	70.5	18.48	18dBm to 20dBm	20	3.98	0.05428	<1
2.452	11n HT40	68.4	18.35	18dBm to 20dBm	20	3.98	0.05428	<1

WIFI antenna A+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/cm2)	Power density Limits (mW/cm2)
2.412	11n HT20	148.3	21.71	20dBm to 22dBm	22	3.98	0.12549	<1
2.437	11n HT20	155.6	21.92	20dBm to 22dBm	22	3.98	0.12549	<1
2.462	11n HT20	153.8	21.87	20dBm to 22dBm	22	3.98	0.12549	<1
2.422	11n HT40	135.5	21.32	20dBm to 22dBm	22	3.98	0.12549	<1
2.437	11n HT40	140.6	21.48	20dBm to 22dBm	22	3.98	0.12549	<1
2.452	11n HT40	136.5	21.35	20dBm to 22dBm	22	3.98	0.12549	<1

WIFI 5G +WIFI 2.4G MAX RF EXPOSURE EVALUATION

Max WIFI 2.4G band Evaluation result (mW/cm2)	Max WIFI 5G band Evaluation result (mW/cm2)	Summation of Evaluation result (mW/cm2)	Power density Limits (mW/cm2)
0.12549	0.04996	0.17545	<1