FCC ID : 2AD7D-VD01A0

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:

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	33.27	15.22	14dBm to 16dBm	16	2.04	0.01616	<1
5200	11a	26.67	14.26	14dBm to 16dBm	16	2.04	0.01616	<1
5240	11a	17.62	12.46	12dBm to 14dBm	14	2.04	0.01019	<1
5260	11a	14.89	11.73	11dBm to 13dBm	13	2.04	0.00810	<1
5280	11a	15.70	11.96	11dBm to 13dBm	13	2.04	0.00810	<1
5320	11a	18.11	12.58	11dBm to 13dBm	13	2.04	0.00810	<1
5500	11a	13.49	11.30	10dBm to 12dBm	12	2.04	0.00643	<1
5600	11a	15.31	11.85	10dBm to 12dBm	12	2.04	0.00643	<1
5700	11a	11.56	10.63	10dBm to 12dBm	12	2.04	0.00643	<1
5745	11a	15.31	11.85	11dBm to 13dBm	13	2.04	0.00810	<1
5785	11a	16.63	12.21	11dBm to 13dBm	13	2.04	0.00810	<1
5825	11a	8.67	9.38	9dBm to 11dBm	11	2.04	0.00511	<1
5180	11n(VHT20)	35.56	15.51	14dBm to 16dBm	16	2.04	0.01616	<1
5200	11n(VHT20)	35.73	15.53	14dBm to 16dBm	16	2.04	0.01616	<1
5240	11n(VHT20)	24.04	13.81	12dBm to 14dBm	14	2.04	0.01019	<1
5260	11n(VHT20)	21.68	13.36	13dBm to 15dBm	15	2.04	0.01283	<1
5280	11n(VHT20)	23.07	13.63	13dBm to 15dBm	15	2.04	0.01283	<1
5320	11n(VHT20)	26.55	14.24	13dBm to 15dBm	15	2.04	0.01283	<1
5500	11n(VHT20)	13.30	11.24	10dBm to 12dBm	12	2.04	0.00643	<1
5600	11n(VHT20)	15.31	11.85	10dBm to 12dBm	12	2.04	0.00643	<1
5700	11n(VHT20)	11.97	10.78	10dBm to 12dBm	12	2.04	0.00643	<1
5745	11n(VHT20)	15.52	11.91	11dBm to 13dBm	13	2.04	0.00810	<1
5785	11n(VHT20)	16.60	12.20	11dBm to 13dBm	13	2.04	0.00810	<1
5825	11n(VHT20)	8.85	9.47	9dBm to 11dBm	11	2.04	0.00511	<1
5180	11ac(VHT20)	34.51	15.38	14dBm to 16dBm	16	2.04	0.01616	<1
5200	11ac(VHT20)	31.55	14.99	14dBm to 16dBm	16	2.04	0.01616	<1
5240	11ac(VHT20)	22.08	13.44	12dBm to 14dBm	14	2.04	0.01019	<1
5260	11ac(VHT20)	19.23	12.84	12dBm to 14dBm	14	2.04	0.01019	<1
5280	11ac(VHT20)	20.18	13.05	13dBm to 15dBm	15	2.04	0.01283	<1
5320	11ac(VHT20)	23.99	13.80	13dBm to 15dBm	15	2.04	0.01283	<1
5500	11ac(VHT20)	16.79	12.25	12dBm to 14dBm	14	2.04	0.01019	<1
5600	11ac(VHT20)	19.91	12.99	12dBm to 14dBm	14	2.04	0.01019	<1
5700	11ac(VHT20)	15.60	11.93	10dBm to 12dBm	12	2.04	0.00643	<1
5745	11ac(VHT20)	14.16	11.51	11dBm to 13dBm	13	2.04	0.00810	<1
5785	11ac(VHT20)	15.92	12.02	11dBm to 13dBm	13	2.04	0.00810	<1
5825	11ac(VHT20)	8.04	9.05	9dBm to 11dBm	11	2.04	0.00511	<1
							0.00041	
5190	11n(VHT40)	20.75	13.17	12dBm to 14dBm	14	2.04	0.01019	<1
5230	11n(VHT40)	22.49	13.52	12dBm to 14dBm	14	2.04	0.01019	<1
5270	11n(VHT40)	16.56	12.19	12dBm to 14dBm	14	2.04	0.01019	<1
5310	11n(VHT40)	14.79	11.70	10dBm to 12dBm	12	2.04	0.00643	<1
5510	11n(VHT40)	12.22	10.87	10dBm to 12dBm	12	2.04	0.00643	<1
5590	11n(VHT40)	9.14	9.61	8dBm to 10dBm	10	2.04	0.00406	<1
5670	11n(VHT40)	7.64	8.83	8dBm to 10dBm	10	2.04	0.00406	<1
5755	11n(VHT40)	7.94	9.00	8dBm to 10dBm	10	2.04	0.00406	<1
5795	11n(VHT40)	9.12	9.60	8dBm to 10dBm	10	2.04	0.00406	<1
5190	11ac(VHT40)	20.28	13.07	12dBm to 14dBm	14	2.04	0.01019	<1
5230	11ac(VHT40)	21.28	13.28	12dBm to 14dBm	14	2.04	0.01019	<1
5270	11ac(VHT40)	16.26	12.11	12dBm to 14dBm	14	2.04	0.01019	<1
5310	11ac(VHT40)	14.29	11.55	10dBm to 12dBm	12	2.04	0.00643	<1
5510	11ac(VHT40)	11.80	10.72	10dBm to 12dBm	12	2.04	0.00643	<1
5590	11ac(VHT40)	9.53	9.79	8dBm to 10dBm	10	2.04	0.00406	<1
5670	11ac(VHT40)	8.18	9.13	8dBm to 10dBm	10	2.04	0.00406	<1
5755	11ac(VHT40)	8.47	9.28	8dBm to 10dBm	10	2.04	0.00406	<1
5795	11ac(VHT40)	8.61	9.35	8dBm to 10dBm	10	2.04	0.00406	<1
							0.00041	
5210	11ac(VHT80)	16.87	12.27	11dBm to 13dBm	13	2.04	0.00810	<1
5290	11ac(VHT80)	12.11	10.83	9dBm to 11dBm	13	2.04	0.00810	<1
5530	11ac(VHT80)	9.23	9.65	8dBm to 10dBm	10	2.04	0.00406	<1
5610	11ac(VHT80)	9.64	9.84	8dBm to 10dBm	10	2.04	0.00406	<1
5775	11ac(VHT80)	6.87	8.37	8dBm to 10dBm	10	2.04	0.00406	<1

WIFI 2.4G:

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	13.71	11.37	11dBm to 13dBm	13	1.62	0.00643	<1
2.437	11b	65.92	18.19	18dBm to 20dBm	20	1.62	0.03223	<1
2.462	11b	14.52	11.62	11dBm to 13dBm	13	1.62	0.00643	<1
2.412	11g	68.87	18.38	18dBm to 20dBm	20	1.62	0.03223	<1
2.437	11g	363.92	25.61	25dBm to 27dBm	27	1.62	0.16153	<1
2.462	11g	85.51	19.32	18dBm to 20dBm	20	1.62	0.03223	<1
2.412	11n HT20	67.30	18.28	18dBm to 20dBm	20	1.62	0.03223	<1
2.437	11n HT20	351.56	25.46	25dBm to 27dBm	27	1.62	0.16153	<1
2.462	11n HT20	72.78	18.62	18dBm to 20dBm	20	1.62	0.03223	<1

BT DTS

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)
2402	GFSK	2.30	3.62	3dBm to 5dBm	5	1.62	0.00102	1
2440	GFSK	2.56	4.09	3dBm to 5dBm	5	1.62	0.00102	1
2480	GFSK	2.72	4.35	3dBm to 5dBm	5	1.62	0.00102	1

WIFI 5G +WIFI 2.4G+BT MAX RF EXPOSURE EVALUATION

Max WIFI 2.4G band Evaluation result (mW/cm2)	Max WIFI 5G band Evaluation result (mW/cm2)	Max BT Evaluation result (mW/cm2)	Summation of Evaluation result (mW/cm2)	Power density Limits (mW/cm2)
0.14126	0.16153	0.00102	0.30381	<1