

FCC ID: 2AWE8-S5-WIFI

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

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.

$mW = 10^{(dBm/10)}$

11.2 Measurement Result

Operation Frequency: 5150 MHz-5250 MHz; 5725 MHz-5850 MHz

Antenna gain: -0.69 dBi;

R=20cm

WIFI 5G

Channel Freq. (MHz)	modulation	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)
5180	A	9.73	9±1	13	0.85	0.003386329	1
5200		9.62	9±1	12	0.85	0.002689857	1
5240		10.02	10±1	11	0.85	0.002136629	1
5745		7.45	7±1	8	0.85	0.001070851	1
5785		5.86	5±1	6	0.85	0.000675661	1
5825		4.64	4±1	5	0.85	0.000536697	1
5180	N20	9.46	12±1	13	0.85	0.003386329	1
5200		9.40	12±1	13	0.85	0.003386329	1
5240		10.06	11±1	11	0.85	0.002136629	1
5745		7.18	7±1	8	0.85	0.001070851	1
5785		5.48	5±1	6	0.85	0.000675661	1
5825		4.98	4±1	5	0.85	0.000536697	1
5190	N40	9.50	12±1	13	0.85	0.003386329	1
5230		10.13	11±1	12	0.85	0.002689857	1
5755		7.23	7±1	8	0.85	0.001070851	1
5795		5.26	5±1	6	0.85	0.000675661	1

Operation Frequency: 2412 MHz-2462 MHz;
 Antenna gain: -0.37 dBi;
 R=20cm

WIFI 2.4G

Channel Freq. (MHz)	modulation	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)
2412	802.11b	16.16	16±1	17	0.92	0.009156492	1
2437		16.67	16±1	17	0.92	0.009156492	1
2462		16.72	16±1	17	0.92	0.009156492	1
2412	802.11g	15.24	15±1	16	0.92	0.007273260	1
2437		16.21	16±1	17	0.92	0.009156492	1
2462		15.99	15±1	16	0.92	0.007273260	1
2412	802.11n20	13.77	13±1	14	0.92	0.004589117	1
2437		14.58	14±1	15	0.92	0.005777356	1
2462		14.54	14±1	15	0.92	0.005777356	1
2422	802.11n40	12.27	12±1	13	0.92	0.003645265	1
2437		12.38	12±1	13	0.92	0.003645265	1
2452		12.52	12±1	13	0.92	0.003645265	1

Operation Frequency: 2402MHz-2480MHz;
 Antenna gain: -0.37 dBi;
 R=20cm

BLE

Channel Freq. (MHz)	modulation	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)
2402	BLE 1M	9.12	9±1	10	0.92	0.001826960	1
2440		9.37	9±1	10	0.92	0.001826960	1
2480		9.68	9±1	10	0.92	0.001826960	1
2402	BLE 2M	9.32	9±1	10	0.92	0.001826960	1
2440		7.79	7±1	8	0.92	0.001152734	1
2480		7.82	7±1	8	0.92	0.001152734	1

*** End of Report ***