

FCC ID: 2AGB6SWPRO51

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.

11.2 Measurement Result

Operation Frequency: 2402-2480MHz,

Power density limited: 1mW/ cm²

Antenna gain: 1dBi

Bluetooth

Channel Freq. (MHz)	modulation	conducted power (mW)	conducted power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Power density at 20cm (mW/cm ²)	Power density Limits (mW/cm ²)
2402	GFSK	1.94	2.889	3.0±1	4	1.58	0.000792	1
2441		2.05	3.124	3.0±1	4	1.58	0.000792	1
2480		1.78	2.500	3.0±1	4	1.58	0.000792	1
2402	pi/4-DQPSK	1.87	2.713	2.0±1	3	1.58	0.000629	1
2441		1.90	2.796	2.0±1	3	1.58	0.000629	1
2480		1.63	2.128	2.0±1	3	1.58	0.000629	1
2402	8DPSK	1.99	2.981	3.0±1	4	1.58	0.000792	1
2441		2.08	3.183	3.0±1	4	1.58	0.000792	1
2480		1.82	2.599	3.0±1	4	1.58	0.000792	1

Operation Frequency: WIFI 5.8G 5736MHz~ 5814MHz
Power density limited: 1mW/ cm²
Antenna gain: Chain A: 2dBi, Chain B: 2dBi,
Chain A:

Channel Frequency (MHz)	Output power (mW)	Output power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Power density at 20cm(mW/cm ²)	Power density Limits (mW/cm ²)
5736	10.86	10.36	11.2±1	12.2	1.58	0.0052	1
5762	10.59	10.25	11.2±1	12.2	1.58	0.0052	1
5814	16.26	12.11	11.2±1	12.2	1.58	0.0052	1

Chain B:

Channel Frequency (MHz)	Output power (mW)	Output power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Power density at 20cm(mW/cm ²)	Power density Limits (mW/cm ²)
5736	15.45	11.89	12.0±1	13	1.58	0.0063	1
5762	13.52	11.31	12.0±1	13	1.58	0.0063	1
5814	16.90	12.28	12.0±1	13	1.58	0.0063	1