

FCC ID : 2AWLO-NIO-POE

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.

RF Exposure Information: The radiated output power of this device meets the limits of FCC/IC radio frequency exposure limits. This device should be operated with a minimum separation distance of 20cm (8 inches) between the equipment and a person's body.

11.2 Measurement Result

WIFI2.4G and WIFI5G cannot support MIMO.

BLE

Antenna gain: 2.4 dBi

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)
7.11	6 to 8	8	1.74	0.00218	1

Wifi 2.4G

Antenna gain: 2.79 dBi

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)
18.33	17 to 19	19	1.9	0.03004	1

Wifi 5G

Antenna gain: 2.83 dBi

Frequency band	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)
5150MHz-5250MHz	15.82	14 to 16	16	1.92	0.01520	1
5250MHz-5350MHz	14.85	13 to 15	15	1.92	0.01207	1
5470MHz-5725MHz	14.39	13 to 15	15	1.92	0.01207	1
5725MHz-5850MHz	14.07	13 to 15	15	1.92	0.01207	1

MAX RF EXPOSURE EVALUATION

Wifi 5G	BLE	Summation of Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
0.01520	0.00218	0.01738	<1

Wifi 2.4G	BLE	Summation of Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
0.03004	0.00218	0.03222	<1