

RF EXPOSURE EVALUATION

EUT Specification

EUT	Wireless Module
Test No.:	PIOT-V3(GA)
FCC ID	ACJ-V3GA
Antenna gain (Max)	BLE: ANT Left: 2.59dBi, ANT Right: 2.30dBi 2.4GWIFI: ANT Left: 2.20dBi, ANT Right: 1.80dBi 5GWIFI: ANT Left: 5.71dB, ANT Right: 3.63dBi
Operation Frequency	2.4GWIFI:2412-2462MHz 5GWIFI:802.11a//802.11n(HT20): 5180-5240MHz, 5260-5320MHz, 5500-5700MHz, 5745-5825MHz 802.11n(HT40): 5190-5230MHz, 5270-5310MHz, 5510-5670MHz, 5755-5795MHz
Input Rating	DC 4.5-5.5V
Power Supply	DC 5V from PC

Test Requirement:

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)

KDB Test Methodology: KDB 447498 D01v06

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 =3.14

R = distance between observation point and center of the radiator in cm=20cm

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

Mode	Frequency (MHz)	Prediction distance (cm)	Max measured power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power (dBm)	Antenna Gain (Numeric)	Evaluation result (mW/cm ²)	Limit (mW/cm ²)	Result
2.4G WIFI(ANT Left)	2412-2462	20	19.31	20	20	1.66	0.033033	1	Pass
2.4G WIFI(ANT Right)	2412-2462	20	18.72	20	20	1.51	0.030127	1	Pass
BLE(ANT Left)	2402-2480	20	7.88	9	20	1.82	0.002870	1	Pass
BLE(ANT Right)	2402-2480	20	7.20	8	20	7.70	0.002133	1	Pass
5G WIFI (ANT Left)	5180-5825	20	19.32	20	20	3.72	0.074123	1	Pass
5G WIFI (ANT Right)	5180-5825	20	18.90	20	20	2.31	0.045915	1	Pass

Note: 2.4 G WiFi and 5 GHz WiFi & BLE not simultaneously transmission,

Signature:



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