



RF EXPOSURE Test Report

Report No.: MTi220819018-15E3

Date of issue: 2022-11-28

Applicant: Guangdong Wangjia Intelligent Robot Co., Ltd.

Product name: Robotic Vacuum Cleaner

Model(s): T100

FCC ID: 2AVYJ-T100

Shenzhen Microtest Co., Ltd.

<http://www.mtitest.com>



Instructions

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2. The test results of this report are only responsible for the samples submitted;
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5. Any objection to this report shall be submitted to the laboratory within 15 days from the date of receipt of the report.



TEST RESULT CERTIFICATION	
Applicant's name	Guangdong Wangjia Intelligent Robot Co., Ltd.
Address	Room 301, The Fifth Building No.1 Junma Road, Humen Town 523900 Dongguan, Guangdong PEOPLE'S REPUBLIC OF CHINA
Manufacturer's Name	Guangdong Wangjia Intelligent Robot Co., Ltd.
Address	Room 301, The Fifth Building No.1 Junma Road, Humen Town 523900 Dongguan, Guangdong PEOPLE'S REPUBLIC OF CHINA
Product description	
Product name	Robotic Vacuum Cleaner
Trademark	N/A
Model Name	T100
Serial Model	N/A
Standards	N/A
Test procedure	KDB 447498 D01 v06
Date of Test	
Date (s) of performance of tests	2022-08-30 ~ 2022-09-22
Test Result	Pass
This device described above has been tested by Shenzhen Microtest Co., Ltd. and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.	

Testing Engineer

:

Yanice Xie

(Yanice Xie)

Technical Manager

:

Leon Chen

(Leon Chen)

Authorized Signatory

:

Tom Xue

(Tom Xue)



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)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f ²	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f ²	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

f = frequency in MHz * = Plane-wave equivalent power density

MPE Calculation Method

Friis transmission formula: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

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 = 3.1415926

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.



Measurement Result

BLE:

Operation Frequency: 2402-2480MHz,

Power density limited: 1mW/ cm²

2.4GWiFi:

Operation Frequency: WIFI 802.11b/g/n HT20: 2412-2462MHz,

Power density limited: 1mW/ cm²

Antenna Type: PCB Antenna;

WIFI antenna gain: 3.02 dBi

R=20cm

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

antenna gain Numeric= $10^{(dBi/10)}=10^{(3/10)}=2$

BLE:

Channe l Freq. (MHz)	modulation	conducted power	Tune- up power (dBm)	Max		Antenna		Evaluation result	Power density Limits
		(dBm)		tune-up power		Gain		(mW/cm2)	(mW/cm 2)
				(dBm)	(mW)	(dBi)	Num eric		
2402	GFSK	5.06	5±1	6	3.981	3.02	2.00	0.0016	1
2440		5.13	5±1	6	3.981	3.02	2.00	0.0016	1
2480		4.37	5±1	6	3.981	3.02	2.00	0.0016	1



2.4G WiFi:

Channel Freq. (MHz)	modulation	conducted power	Tune-up power	Max		Antenna	Evaluation result at 20cm	Power density Limits
		(dBm)	(dBm)	tune-up power		Gain	Power density(mW/cm2)	(mW/cm2)
				(dBm)	(mW)	Numeric		
		Ant A	Ant A	Ant A	Ant A	Ant A	Ant A	
2412	802.11b	16.63	17±1	18	63.096	2.00	0.02510	1
2437		17.55	17±1	18	63.096	2.00	0.02510	1
2462		16.31	17±1	18	63.096	2.00	0.02510	1
2412	802.11g	19.16	19±1	20	100.000	2.00	0.03979	1
2437		19.11	19±1	20	100.000	2.00	0.03979	1
2462		19.28	19±1	20	100.000	2.00	0.03979	1
2412	802.11n H20	19.94	19±1	20	100.000	2.00	0.03979	1
2437		19.19	19±1	20	100.000	2.00	0.03979	1
2462		19.56	19±1	20	100.000	2.00	0.03979	1

Conclusion:

Simultaneous transmit:

BLE+2.4G WIFI=0.0016+0.03979=0.04139

For the max result: $0.04139 \leq 1.0$ SAR, No SAR is required.

----END OF REPORT----