



# FCC TEST REPORT

## FCC ID: 2AYSA680

Product	:	Robotic Vacuum Cleaner
Model Name	:	M680GMA2
Additional model	:	N/A
Brand	:	MATSUYAN
Report No.	:	PTC21091003402E-FC02
<b>Prepared for</b>		
SIMA GROUP LLC		
398 Lemon Creek Drive, Suite H, Walnut, CA 91789, USA		
<b>Prepared by</b>		
Precise Testing & Certification Co., Ltd		
Building 1, No. 6, Tongxin Road, Dongcheng Street, Dongguan, Guangdong, China		



## TEST RESULT CERTIFICATION

Applicant's name : SIMA GROUP LLC  
Address : 398 Lemon Creek Drive, Suite H, Walnut, CA 91789, USA  
Manufacture's name : Matsutek Enterprises Co., Ltd.  
Address : 2F, No. 2, Lane 15, Ziqiang St., Tu Cheng Dist., New Taipei City, Taiwan 23678  
Product name : Robotic Vacuum Cleaner  
Model name : M680GMA2  
Test procedure : ANSI C63.10:2013  
Test Date : Sep. 14, 2021 to Sep. 26, 2021  
Date of Issue : Sep. 26, 2021  
Test Result : Pass

This device described above has been tested by PTC, 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.

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Test Engineer:

A handwritten signature in black ink that reads "Leo Yang".

Leo Yang / Engineer

Technical Manager:

A handwritten signature in black ink that reads "Henry Wang".

Henry Wang / Manager



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## 2 Test Summary

Test Items	Test Requirement	Result
Maximum Permissible Exposure (Exposure of Humans to RF Fields)	1.1307(b)(1)	PASS
Remark:		
N/A: Not Applicable		



### 3 General Information

#### 3.1 General Description of E.U.T.

Product Name	:	Robotic Vacuum Cleaner
Model Name	:	M680GMA2
Additional model	:	N/A
Specification	:	802.11b/g/n HT20
Operation Frequency	:	2412-2462MHz for 802.11b/g; n(HT20)
Number of Channel	:	11 channels for 802.11b/g; n(HT20)
Type of Modulation	:	DSSS with DBPSK/DQPSK/CCK for 802.11b; OFDM with BPSK/QPSK/16QAM/64QAM for 802.11g/n;
Antenna installation	:	PCB antenna
Antenna Gain	:	0 dBi
Power supply	:	Adapter model:PA-1240-18VN AC100-120V 50/60HZ 0.8A Output:20V 1200mA  Adapter model:ZD24W200120US AC100-120V 50/60HZ 0.8A Output:20V 1200mA  (battery 14.6v 2500mAh)
Hardware Version	:	N/A
Software Version	:	N/A



## 4 RF Exposure

Test Requirement : FCC Part 1.1307(b)(1)

Evaluation Method : FCC Part 2.1091

### 4.1 Requirements

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2 m normally can be maintained between the user and the device.

### 4.2 The procedures / limit

(A) Limits for Occupational / Controlled Exposure

Frequency Range	Electric Field	Magnetic Field	Power Density (S)	Averaging Time
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100,000			5	6

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range	Electric Field	Magnetic Field	Power Density (S)	Averaging Time
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1.0	30

Note: f = frequency in MHz ; \*Plane-wave equivalent power density



### 4.3 MPE Calculation Method

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \qquad \text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

E = Electric field (V/m)

P = Peak RF output power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained

### 4.4 Test Result

Item	Antenna Gain (numeric)	Max. Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (mW/cm <sup>2</sup> )	Limit of Power Density (mW/cm <sup>2</sup> )	Result
WIFI	1	18.67	73.62	0.0146	1	Pass

\*\*\*\*\*THE END REPORT\*\*\*\*\*