

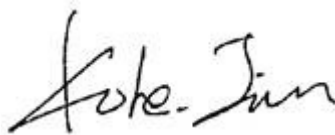
# ***RF EXPOSURE EVALUATION REPORT***

**Application No.:** GZEM2101000686CR  
**Applicant:** GUANGDONG PIEBOT ROBOTICS TECHNOLOGY CO., LTD  
**Address of Applicant:** Room302, Building 3 No.38, Dongke Road, Dongcheng Street, Dongguan City, Guangdong Province  
**Manufacturer:** GUANGDONG PIEBOT ROBOTICS TECHNOLOGY CO., LTD  
**Address of Manufacturer:** Room302, Building 3 No.38, Dongke Road, Dongcheng Street, Dongguan City, Guangdong Province  
**Factory:** GUANGDONG PIEBOT ROBOTICS TECHNOLOGY CO., LTD  
**Address of Factory:** Room302, Building 3 No.38, Dongke Road, Dongcheng Street, Dongguan City, Guangdong Province  
**Equipment Under Test (EUT):**  
**EUT Name:** Floor sweeping robot; Self-Emptying Dustbin  
**Model No.:** Floor sweeping robot: C1-01  
 Self-Emptying Dustbin: C1JCB001  
**Trade Mark:** PIEPOT  
**Standard(s) :** 47 CFR Part 2.1091  
 47 CFR Part 1.1307  
 KDB447498D01 General RF Exposure Guidance v06  
**Date of Receipt:** 2021-01-29  
**Date of Evaluation:** 2021-04-08  
**Date of Issue:** 2021-05-07

**Evaluation Result:**

**Pass\***

\* In the configuration tested, the EUT complied with the standards specified above.



Kobe Jian  
EMC Laboratory Manager



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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2021-05-07		Original

Authorized for issue by				
Tested By		Kevin Zhang		
		Kevin Zhang /Project Engineer		
Reviewed By		Ricky Liu		
		Ricky Liu/Reviewer		



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### 3 General Information

#### 3.1 Details of E.U.T.

Power supply: AC 120 V, 60Hz for Self-Emptying Dustbin\*  
 DC 14.52 V powered by built-in battery for Robot Vacuum\* as below:  
 Option 1:  
 Model: N016-4S2P  
 Rated: DC 14.4V, 5200mAh  
 Option 2:  
 Model: C433-A3-4S2P  
 Rated: DC 14.52V, 5000mAh  
 Cable(s): AC mains (unshielded, 1.2 m)  
 Wi-Fi characterize: Refer to test report GZEM210100068602  
 Bluetooth characterize: Refer to FCC ID: 2AMM6-825X1CA  
 \*Remark: There is no any RF parts in this unit and please refer to the SDoC report GZEM210100068601

#### 3.2 Evaluation Location

All tests were performed at:  
 SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch  
 No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China.  
 518057.  
 Tel: +86 755 2601 2053 Fax: +86 755 2671 0594



### 3.3 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **NVLAP (Lab Code: 200611-0)**

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

- **ACMA**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian/New Zealand Regulatory Compliance Mark (RCM).

- **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

- **CNAS (Lab Code: L0167)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2018 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2017 General Requirements) for the Competence of Testing Laboratories.

- **FCC Recognized Accredited Test Firm(Registration No.: 486818)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: CN5016, Test Firm Registration Number: 486818.

- **ISED (Registration No.: 4620B, CAB identifier: CN0052)**

SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Innovation Science and Economic Development Canada for Wireless Device Testing laboratories to test to Canadian radio equipment requirements. Registration No. 4620B, CAB identifier: CN0052.

- **VCCI (Registration No.: R-12460, C-12584, G-20107 and T-11179)**

The 10m Semi-anechoic chamber, 966 Anechoic Chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-12460, C-12584, G-20107 and T-11179 respectively.

- **CBTL (Lab Code: TL129)**

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2017, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.

### 3.4 Deviation from Standards

None

### 3.5 Abnormalities from Standard Conditions

None



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SGS-CSTC Standards Technical Services Co., Ltd.  
Guangzhou Branch EMC Laboratory

No. 198 Kezhu Road, Science Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075058 www.sgs.com.cn  
中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075058 sgs.china@sgs.com



## 4 Technical Requirements Specification

### 4.1 General Description of Applied Standards

### 4.2 RF Exposure Evaluation

#### 4.2.1 Limit & Test Method

According to FCC Part1.1310: 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 Part1.1307(b)

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
<b>(A) Limits for Occupational/Controlled Exposure</b>				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f <sup>2</sup>	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
<b>(B) Limits for General Population/Uncontrolled Exposure</b>				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f <sup>2</sup>	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				

According to IEEE C95.3:2002 section 5.5.1.1, The power density S at a point on the axis at a distance d from a transmitting antenna is given by the Friis free-space transmission formula

$$S = \frac{PG}{4\pi d^2}$$

*S* = power density (mW/cm<sup>2</sup>)  
*P* = the net power delivered to the antenna (mW)  
*G* = gain of the antenna in linear scale  
*d* = distance between observation point and center of the radiator (cm)



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#### 4.2.2 Conclusion

Normal use  
condition for  
Distance between 20cm declared by applicant  
antenna and body:

For Bluetooth BLE from certificate of FCC ID: 2AMM6-825X1CA

Antenna Gain (Numeric)	Peak Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
1.122	6.6	0.00147	1	Complies

For 2.4 GHz Wi-Fi

Frequency (MHz)	Antenna Gain (Numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
11B						
2412	2.965	9.62	9.162	0.00540	1	Complies
2442	2.965	10.42	11.015	0.00650	1	Complies
2462	2.965	10.05	10.116	0.00597	1	Complies
11G						
2412	2.965	5.11	3.243	0.00191	1	Complies
2442	2.965	5.86	3.855	0.00227	1	Complies
2462	2.965	6	3.981	0.00235	1	Complies
11N20						
2412	2.965	5.25	3.350	0.00198	1	Complies
2442	2.965	6.33	4.295	0.00253	1	Complies
2462	2.965	6.38	4.345	0.00256	1	Complies
11N40						
2422	2.965	6.43	4.395	0.00259	1	Complies
2442	2.965	6.79	4.775	0.00282	1	Complies
2452	2.965	6.18	4.150	0.00245	1	Complies

2.965

The Bluetooth and Wi-Fi can be transmitted together, the result is

$$0.00147/1 + 0.00650/1 = 0.00797 < 1.0$$

So SAR report is not required.

## 5 EUT Constructional Details (EUT Photos)

Refer to Appendix - Photographs of EUT Constructional Details for GZEM2101000686CR

- End of the Report -