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Report No.: SHEM180900833103

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1 Cover Page

RF Exposure Evaluation Report

Application No.:	SHEM1809008331CR
Applicant:	Ningbo Klinsmann Intelligent Technology Co., Ltd.
FCC ID:	2AREWKLSM
Equipment Under Test (EUT): NOTE: The following sample(s) submitted was/were identified on behalf of the client as	
Product Name:	Robot Vacuum Cleaner
Model No.:	KRV310
Ad Model No.:	KRV309, KRV209, KRV208, KRV210, K185, K186, K187
Standards:	FCC Rules 47 CFR §2.1091 KDB447498 D01 General RF Exposure Guidance v06
Date of Receipt:	2018-09-21
Date of Test:	2018-10-08 to 2018-10-14
Date of Issue:	2018-10-24
Test Result:	Pass*

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



Parlam Zhan
E&E Section Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

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Revision Record			
Version	Description	Date	Remark
00	Original	2018-10-25	/

Authorized for issue by:				
				
		Bill Wu / Project Engineer		
				
		Parlam Zhan / Reviewer		



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3 General Information

3.1 Client Information

Applicant:	Ningbo Klinsmann Intelligent Technology Co., Ltd.
Address of Applicant:	377, Yayuan South Road, Shiqi Street, Haishu, 315000 Ningbo, Zhejiang, China
Manufacturer:	Ningbo Klinsmann Intelligent Technology Co., Ltd.
Address of Manufacturer:	377, Yayuan South Road, Shiqi Street, Haishu, 315000 Ningbo, Zhejiang, China
Factory:	Ningbo Klinsmann Intelligent Technology Co., Ltd.
Address of Factory:	377, Yayuan South Road, Shiqi Street, Haishu, 315000 Ningbo, Zhejiang, China

3.2 General Description of E.U.T.

Power supply:	Remoter: DC 3V by 2*AAA size batteries robot vacuum cleaner: DC 14.8V 2000mAH rechargeable Li-ion battery Adapter: Model NO. JYH37-1900600-BA Input 100-240V~50/60Hz 0.5A Output 19V 0.6A
Test voltage:	AC 120V/60Hz
Cable:	DC Cable 1.2m
Internal source:	125MHz
Antenna Gain	2.5dBi
Antenna Type	PIFA Antenna
Channel Spacing	5MHz
Modulation Type	802.11b: DSSS (CCK, DQPSK, DBPSK) 802.11g/n: OFDM (64QAM, 16QAM, QPSK, BPSK)
Number of Channels	802.11b/g/n(HT20):11
Operation Frequency	802.11b/g/n(HT20): 2412MHz to 2462MHz



3.3 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China.

Tel: +86 21 6191 5666

Fax: +86 21 6191 5678

3.4 Test Facility

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

- **CNAS (No. CNAS L0599)**

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **NVLAP (Certificate No. 201034-0)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP). Certificate No. 201034-0.

- **FCC –Designation Number: CN5033**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been recognized as an accredited testing laboratory.

Designation Number: CN5033. Test Firm Registration Number: 479755.

- **Industry Canada (IC) – IC Assigned Code: 8617A**

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 8617A-1.

- **VCCI (Member No.: 3061)**

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-13868, C-14336, T-12221, G-10830 respectively.



4 Test Standards and Limits

4.1 FCC Radiofrequency radiation exposure limits:

According to §1.1310, the limit for general population/uncontrolled exposures

Frequency	Power density(mW/cm ²)	Averaging time(minutes)
300MHz~1.5GHz	f/1500	30
1.5GHz~100GHz	1.0	30

5 Measurement and Calculation

5.1 Maximum transmit power

The Power Data is based on the RF Test Report SHEM180900833102

Test Mode	Test Channel	Power [dBm]	Power [mW]
11B	2412	12.97	19.82
11B	2442	13.73	23.60
11B	2472	14.16	26.06
11G	2412	13.02	20.04
11G	2442	13.73	23.60
11G	2472	14.13	25.88
11N20SISO	2412	12.96	19.77
11N20SISO	2442	13.63	23.07
11N20SISO	2472	14.03	25.29



5.2 MPE Calculation

The Max Conducted Peak Output Power is 26.06mW;

The best case gain of the antenna is 2.5dBi. 2.5dB logarithmic terms convert to numeric result is nearly 1.778

For FCC:

According to the formula $S = \frac{PG}{4R^2\pi}$, we can calculate S which is MPE.

Note:

- 1) P (Watts)
- 2) G (Antenna gain in numeric)
- 3) R = distance to the center of radiation of antenna (in meter) = 20cm
- 4) MPE limit = 1mW/cm²

$$S = \frac{PG}{4R^2\pi} = \frac{26.06 \times 1.778}{4 \times 400 \times 3.14} = 0.01 \text{ mW/cm}^2 < 1 \text{ mW/cm}^2$$

So the device is exclusion from SAR test.

--End of the Report--