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

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1 Cover Page

RF MPE REPORT

Application No.:	SHEM1706003501CR
Applicant:	Shanghai PartnerX Robotics Co., Ltd.
FCC ID:	2AJ5L-K0
IC:	22130-K0
Equipment Under Test (EUT): **NOTE:** The following sample(s) was/were submitted and identified by the client as	
Product Name:	Abilix Educational Robot Brick Series
Model No.(EUT):	Krypton 2
Add Model No.:	Krypton 0, Krypton1,
Standards:	FCC Rules 47 CFR §2.1091 KDB447498 D01 General RF Exposure Guidance v06 RSS-102 Issue 5 (March 2015)
Date of Receipt:	2017-06-07
Date of Test:	2017-07-03 to 2017-07-06
Date of Issue:	2017-07-08
Test Result:	**Pass***

* In the configuration tested, the EUT detailed in this report complied with the standards specified above.

Parlam Zhan
E&E Section Manager
SGS-CSTC (Shanghai) Co., Ltd.

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.

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
00	/	2017-07-08	/	Original

Authorized for issue by:				
Tested By		Leon wu **Leon_wu /Project Engineer**		2017-07-10 **Date**
Checked By		Parlam Zhan **Parlam Zhan /Reviewer**		2017-07-10 **Date**

2 Contents

3 General Information

3.1 Client Information

Applicant:	Shanghai PartnerX Robotics Co., Ltd.
Address of Applicant:	8thFloor, Building90, No.1122 North Qinzhou Rd.Shanghai,China 200233
Manufacturer:	Shanghai PartnerX Robotics Co., Ltd.
Address of Manufacturer:	8thFloor, Building90, No.1122 North Qinzhou Rd.Shanghai,China 200233
Factory:	Speaker Electronic (Jia Shan) CO,.Ltd
Address of Factory:	No,8,Development,ZoneRoad,Huimin,Sub-district,Jiashan,Country,Zhejiang 314112,P,R,China

3.1 General Description of E.U.T.

Product Description:	Fixed product with 2.4G WiFi function		
Rated Input:	DC 9V , 6 * AA size batteries or AC 230V, 50Hz by adapter		
Adapter	Manufacturer:	Xinsu Global Electronic Co.,Ltd	
	Model No.:	XSG0841000EU	
	Rated Input:	AC 100-240V 50/60Hz 50VA	
	Cable length	AC port:	0 cm (2wires)
		DC port:	100 cm

3.2 Technical Specifications

Operation Frequency:	802.11 b/g/n(HT20): 2412MHz-2462MHz
Modulation Technique:	802.11 b DSSS(CCK, DQPSK, DBPSK) 802.11 g/n(HT20) OFDM(64QAM, 16QAM, QPSK, BPSK)
Number of Channel:	802.11 b/g/n(HT20): 11
Antenna Type:	PCB Antenna
Antenna Gain:	2 dBi

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.

- **FCC – Registration No.: 402683**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered and fully described in a report filed with the Federal Communications Commission (FCC). The acceptance letter from the FCC is maintained in our files. Registration No.: 402683.

- **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-3868, C-4336, T-2221, G-830 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

4.2 IC Radiofrequency radiation exposure limits:

According to RSS-102 section 2.5.2, RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

below 20 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);

• at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $4.49/f^{0.5}$ W (adjusted for tune-up tolerance), where f is in MHz;

• at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);

• at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2} f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;

• at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

For 2.4G device, the limit of worse case is 2.68 W

5 Measurement and Calculation

5.1 Maximum transmit power

The Power Data is based on the RF Test Report SHEM170600350101

Test Mode	Test Channel	Power[dBm]	Limit[dBm]	Verdict
11B	2412	19.76	30	PASS
11B	2437	19.37	30	PASS
11B	2462	20.55	30	PASS
11G	2412	21.71	30	PASS
11G	2437	21.46	30	PASS
11G	2462	**21.94**	30	PASS
11N20SISO	2412	20.10	30	PASS
11N20SISO	2437	19.75	30	PASS
11N20SISO	2462	20.28	30	PASS

5.2 MPE Calculation

The Max Conducted Peak Output Power is 21.94dBm (156.31mW);

The best case gain of the antenna is 2dBi. 2dB logarithmic terms convert to numeric result is nearly 1.58.

For FCC:

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

Note:

1) P (Watts) =Power Input to antenna =$10^{\frac{dBm}{10}}$ / 1000

2) G (Antenna gain in numeric) = 10^ (Antenna gain in dBi /10)

3) R = distance to the center of radiation of antenna (in meter) = 20cm

4) MPE limit = 1mW/cm²

S= $\frac{PG}{4R^2\pi}$ =$\frac{156.31\times1.58}{4\times400\times3.14}$ =0.049mW/cm^2

For IC:

E.I.R.P.= P*G= 0.156×1.58=0.247W＜2.68W

So the device is exclusion from SAR test.

6 EUT Constructional Details

Refer to the < External Photos > & < Internal Photos >.

--End of the Report--