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Report No.: SHEM170300118403
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1 Cover Page

RF MPE REPORT

Application No.:	SHEM1703001184CR
Applicant:	Beijing AIQI Technology Co., Ltd.
FCC ID:	2ALJ6-JMJQR01
Equipment Under Test (EUT):	
NOTE: The following sample(s) was/were submitted and identified by the client as	
Product Name:	Mi Robot Builder
Model No.(EUT):	JMJQR01IQI
Standards:	FCC Rules 47 CFR §2.1091 KDB447498 D01 General RF Exposure Guidance v06
Date of Receipt:	2017-03-10
Date of Test:	2017-04-11
Date of Issue:	2017-05-16
Test Result:	Pass*

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

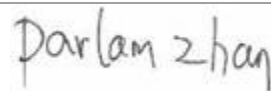
Parlam Zhan
E&E Section Manager
SGS-CSTC (Shanghai) Co., Ltd.

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.

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2 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
00	/	2017-05-16	/	Original

Authorized for issue by:			
Engineer	Eddy Zong		
	Print Name		
Clerk	Susie Liu		
	Print Name		
Reviewer	Parlam Zhan		
	Print Name		

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4 General Information

4.1 Client Information

Applicant:	Beijing AIQI Technology Co., Ltd.
Address of Applicant:	Room.1203, Block D, Jinyu Jiahua Mansion, No.9 Shangdi 3rd St., Haidian District, Beijing, China
Manufacturer:	Beijing AIQI Technology Co., Ltd.
Address of Manufacturer:	Room.1203, Block D, Jinyu Jiahua Mansion, No.9 Shangdi 3rd St., Haidian District, Beijing, China
Factory:	TianJin Zowee Technology Development Co., Limited
Address of Factory:	NO.71 South Street XinHuan. West Zone. Economic Development Zone of Tianjin

4.1 General Description of E.U.T.

Product Description:	Fixed product with 2.4GHz wireless function
Brand Name:	MITU, Mi
Battery:	DC 11.4V 1650mAh rechargeable Li-ion battery

4.2 Technical Specifications

Operation Frequency:	2402MHz-2480MHz
Modulation Type:	GFSK
Number of Channel:	79
Antenna Type	PCB Antenna
Antenna Gain	0 dBi

4.3 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

4.4 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.

5 Test Standards and Limits

5.1 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

5.2 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

6 Measurement and Calculation

6.1 Maximum transmit power

The Power Data is based on the RF Test Report SHEM170300118401 & SHEM170300118402

Test Mode	Test Channel	Ant	Power[dBm]	Limit[dBm]	Power[mW]
BLE	2402	Ant1	-1.179	30	0.76
BLE	2440	Ant1	-1.791	30	0.66
BLE	2480	Ant1	-2.268	30	0.59

6.2 MPE Calculation

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

For BT 4.0:

The Max Conducted Peak Output Power is 0.76mW;

The best case gain of the antenna is 0dBi. 0dB logarithmic terms convert to numeric result is nearly 1.

$$\text{So, } S = \frac{PG}{4R^2\pi} = \frac{0.76 \times 1}{4 \times 400 \times 3.14} = 0.00015 \text{ mW/cm}^2$$

For 2.4G:

According the KDB 412172 D01 v01r01, Field strength shall be computed to EIRP as follows:

$E[\text{dB } \mu\text{V/m}] = \text{EIRP}[\text{dBm}] - 20 \log(d[\text{meters}]) + 104.77$, where E = field strength and d = distance at which field strength limit is specified in the rules.

$$E[\text{dB } \mu\text{V/m}] = \text{EIRP}[\text{dBm}] + 95.2, \text{ for } d = 3 \text{ meters}$$

$$\text{So, } \text{EIRP}[\text{dBm}] = 90.99 - 95.2 = -4.21[\text{dBm}]$$

$$\text{So, } S = \frac{PG}{4R^2\pi} = \frac{0.38}{4 \times 400 \times 3.14} = 0.00008 \text{ mW/cm}^2$$

The BT and the DTS modules can simultaneous transmitting at frequency 2.4GHz band. But the maximum rate of MPE is $\frac{0.00015}{1.0} + \frac{0.00008}{1.0} = 0.00023 \leq 1.0$. according to the KDB447498 section 7.2 determine the device is exclusion from SAR test.

7 EUT Constructional Details

Refer to the < JMQR01IQI _External Photos > & < JMQR01IQI _Internal Photos >.

--End of the Report--