**Shenzhen Centre Quality Accreditation Technology Co., Ltd.**

Address:1 F., Block B of Complex Building, Baisha Logistics Park, No.3011
Shahe West Road, Nanshan District, Shenzhen, China

Telephone: +86-755-26648640
Fax: +86-755-26648637
Website: www.cqa-cert.com

Report No.: CQASZ1600801327E-02
Report Version: V01

# MEASUREMENT REPORT
# MPE Report

| | |
|---|---|
| **Applicant:** | Shenzhen Jisiwei Intelligent Technology Co., Ltd |
| **Address of Applicant:** | 7010, B2 District, Wan Zhong Cheng Home Square, Minzhi Street, Longhua New District, Shenzhen City, Guangdong Province, P. R. China |
| **Manufacturer:** | Shenzhen Jisiwei Intelligent Technology Co., Ltd |
| **Address of Manufacturer:** | 7010, B2 District, Wan Zhong Cheng Home Square, Minzhi Street, Longhua New District, Shenzhen City, Guangdong Province, P. R. China |
| **Equipment Under Test (EUT):** | |
| **Product:** | Smart Vacuum Cleaning Robot |
| **Model No.:** | i3 |
| **Brand Name:** | JISIWEI |
| **FCC ID:** | 2AILE-I3 |
| **Standards:** | 47 CFR Part 1.1307<br>47 CFR Part 1.1310 |
| **Date of Test:** | 2016-09-01 to 2016-09-09 |
| **Date of Issue:** | 2016-09-09 |
| **Test Result :** | **PASS*** |

***Reviewed By:*** _____
***(Aaron Ma)***

***Approved By:*** _____
***( Owen Zhou)***

Shenzhen Centre Quality Accreditation Technology Co., Ltd.

.

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

# 2 Version

**Revision History Of Report**

| Report No. | Version | Description | Issue Date |
|---|---|---|---|
| CQASZ160801327E-02 | Rev.01 | Initial report | 2016-09-09 |

# 3 Contents

# 4 General Information

## 4.1 Client Information

| | |
|---|---|
| Applicant: | Shenzhen Jisiwei Intelligent Technology Co., Ltd |
| Address of Applicant: | 7010, B2 District, Wan Zhong Cheng Home Square, Minzhi Street, Longhua New District, Shenzhen City, Guangdong Province, P. R. China |
| Manufacturer: | Shenzhen Jisiwei Intelligent Technology Co., Ltd |
| Address of Manufacturer: | 7010, B2 District, Wan Zhong Cheng Home Square, Minzhi Street, Longhua New District, Shenzhen City, Guangdong Province, P. R. China |

## 4.2 General Description of EUT

| | | |
|---|---|---|
| Product Name: | Smart Vacuum Cleaning Robot | |
| Model No.: | i3 | |
| Trade Mark: | JISIWEI | |
| Hardware version: | V1.0 | |
| Software version: | V1.0 | |
| Operation Frequency: | IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz<br>IEEE 802.11n(HT40): 2422MHz to 2452MHz | |
| Channel Numbers: | IEEE 802.11b/g, IEEE 802.11n HT20: 11 Channels<br>IEEE 802.11n HT40: 7 Channels | |
| Channel Separation: | 5MHz | |
| Type of Modulation: | IEEE for 802.11b: DSSS(CCK,DQPSK,DBPSK)<br>IEEE for 802.11g : OFDM(64QAM, 16QAM, QPSK, BPSK)<br>IEEE for 802.11n(HT20 and HT40) : OFDM (64QAM, 16QAM, QPSK,BPSK) | |
| Sample Type: | mobile production | |
| Test Software of EUT: | RF test tool (manufacturer declare ) | |
| Antenna Type and Gain: | Type: internal antenna with ipex connector<br>Gain:5.0dBi | |
| Power Supply: | Adapter: | Mode : DSS12-2400500-H<br>Input: AC100V-240V 50/60Hz 1.0A<br>Output: DC 24V ⎓ 0.5A |
| | Lithium-ion Battery: | Model: FTD-4S1P<br>DC14.8V, 2200 mAh |

## 4.3 Test Location

All tests were performed at:

Shenzhen CTL Testing Technology Co., Ltd., Shenzhen EMC Laboratory,

1/F.-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, Shenzhen, Guangdong, China

## 4.4 Test Facility

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

**FCC – Registration No.: 970318**

Shenzhen CTL Testing Technology Co., Ltd. has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 970318

## 4.5 Deviation from Standards

None.

## 4.6 Abnormalities from Standard Conditions

None.

## 4.7 Other Information Requested by the Customer

None.

# 5 RF Exposure Evaluation

## 5.1 RF Exposure Compliance Requirement

### 5.1.1 Limits

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 ($mW/cm^2$) | Averaging time (minutes) |
|---|---|---|---|---|
| **(A) Limits for Occupational/Controlled Exposures** | | | | |
| 0.3–3.0 | 614 | 1.63 | *(100) | 6 |
| 3.0–30 | 1842/f | 4.89/f | *(900/$f^2$) | 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** | | | | |
| 0.3–1.34 | 614 | 1.63 | *(100) | 30 |
| 1.34–30 | 824/f | 2.19/f | *(180/$f^2$) | 30 |
| 30–300 | 27.5 | 0.073 | 0.2 | 30 |
| 300–1500 | ..... | ..... | f/1500 | 30 |
| 1500–100,000 | ..... | ..... | 1.0 | 30 |

F= Frequency in MHz

Friis Formula

Friis transmission formula: $Pd = (Pout*G)/(4* Pi * R^2)$

Where

Pd = power density in mW/cm2

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in cm

Pd id the limit of MPE, 1 mW/cm2 . If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

### 5.1.2 Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

### 4.1.3 EUT RF Exposure Evaluation

Antenna Gain: 5dBi
Antenna Gain: The maximum Gain measured in fully anechoic chamber is 3.16 in linear scale.
Output Power Into Antenna & RF Exposure Evaluation Distance:

802.11b(worst case)

| Channel | Frequency (MHz) | Max Conducted average Output Power (dBm) | Output Power to Antenna (mW) | Power Density at R = 20 cm ($mW/cm^2$) | Limit | Result |
|---|---|---|---|---|---|---|
| Highest | 2462 | 16.98 | 49.89 | 0.031 | 1.0 | PASS |

Note: Refer to report No. CQASZ160801327E-01 for EUT test Max Conducted Average Output Power value.