TEST REPORT

Report No. : AU0049570(3) Date : 22 Dec 2014

Application No. : LS040587(2)

Applicant : SHENZHEN QIAOHUA INDUSTRIES LIMITED
Qiaohua Industrial Zone, Luo Tian Forestry Center, Song Gang Town, Bao An District, Shenzhen, China, 518105

Sample Description : One(1) item of submitted sample stated to be:

Sample Description	Model number
433MHz Wireless Receiver	QH-830 / QH-830A / QH-851A / QH-854A / QH-856A / QH-719 / QH-827 / QH-827A / QH-827AM / QH-912 / 4900333 / QH-912-2(4900333) / QH-913 / QH-915 / QH-915-2 / QH-916 / QH-916DC / QH-917 / QH-917DC / QH-918 / QH-918DC / QH-918M / QH-919 / QH-919M / QH-919-2 / QH-919DC / QH-926 / QH-858S / QH-858A / QH-862A / QH-862A-2T / QH-862A-2R / QH-865A / QH-868A / QH-869A / QH-860 / QH-860A / QH-863A / QH-859A / QH-859A-2R / QH-859A-2T / QH-866A / QH-866B / QH-866BK / QH-824A / QH-824AM / QH-825A / QH-825AM / QH-826A / QH-826AM / QH-828A / QH-828AM / QH-829A / QH-829AM / QH-844A / QH-843A / QH-835A / QH-836A / QH-837A / QH-838A / QH-839A / QH-840A / QH-841A / QH-842A / QH-843A / QH-844A / QH-845A / QH-846A / QH-847 / QH-847A / QH-849A / QH-835A / QH-832A / QH-833A / QH-0810A / QH-0811A / QK-6001 / QH-818 / QH-818A / QH-819 / QH-819A / QH-820 / QH-820A / QH-821 / QH-821A / QH-1085 / QH-1086 / QH-1087 / QH-1087M / QH-1088M / QH-1088 / QH-1088M / QH-1089 / QH-1090 / QH-923 / QH-923M / QH-923DC / QH-198 / QH-368 / QH-922 / QH-0953 / QH-9820 / QH-9820A / QH-9820B / QH-9821 / QH-9821A / QH-9821B / QH-9822 / QH-9822A / QH-9822B / QH-9825U / QH-9825T / QH-9901 / QH-9902 / QH-9802 / QH-9806 / QH-9823 / QH-9824 / QH-9811 / QH-9810 / QH-9826 / QH-834A / QH-834B / QH-831A / QH-831AM / QH-822A / QH-822M / QH-822AM / QH-822C / QH-823A / QH-823AM / QH-727 / QH-727DC / QH-939A / QH-939B / QH-939C / QH-939D / QH-0955 / D642/L2 / D642/L1 / 094224 / 041610 / 094219 / 041611 / 393004N / 393005N / 041613 / 094222 / WD-001 / WD-002 / WD-003 / WD-007 / WD-008 / WD-009 / BD-009 / BD-010 / BD-011 / BD-012

Radio Frequency : 433.92 MHz Receiver
Rating : 2 x 1.5V AA size batteries
No. of submitted sample : Four (4) piece (s)

Date Received : 04 Aug 2016.

Test Period : 08 Aug 2016 to 11 Aug 2016.

Test Requested : FCC Part 15 Certification.

Test Method : 47 CFR Part 15 (10-1-15 Edition), ANSI C63.4 – 2014

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____ Page 1 of 20

Mr. WONG Lap-pong, Andrew
Manager
Electrical Division

FCC ID: 2AAV8QH-912-2R

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Test Result : See attached sheet(s) from page 2 to 20.

Conclusion : The submitted sample was found to comply with requirement of FCC Part 15 Subpart B.

Remark : All One hundred and fifty-eight models are same in circuitry and components and construction, and therefore model QH-912-2 was chosen to be representative of the test sample. The difference(s) between the tested model and the declared model(s) is/are Model no., and Outlook.

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____

Mr. WONG Lap-pong, Andrew
Manager
Electrical Division

FCC ID: 2AAV8QH-912-2R

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1 General Information

1.1 General Description

The equipment under test (EUT) is a receiver for doorbell. It operates at 433.95MHz and the oscillation of radio receiving circuit is generated by a crystal. The EUT is powered by DC 3V. When the EUT received the radio signal from transmitter, it will decode the signal and play the sound..

The brief circuit description is listed as follows:

- IC1 and its associated circuit act as RF circuit
- X1 and its associated circuit act as oscillator
- IC2 and its associated circuit act as MCU
- IC3, IC4 and its associated circuit act as sound amplifier

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1.2 Location of the test site

FCC Registration Number: 552221

Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2014. A Semi-Anechoic Chamber Testing Site is set up for investigation and located at:

Ground Floor, Yan Hing Centre,
9 – 13 Wong Chuk Yeung Street,
Fo Tan, Shatin,
New Territories,
Hong Kong.

Conducted emissions measurements are investigated and also taken pursuant to the procedures of ANSI C63.4 – 2014. A shielded room is located at :

Ground Floor, Yan Hing Centre,
9 – 13 Wong Chuk Yeung Street,
Fo Tan, Shatin,
New Territories,
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1.3 List of measuring equipment

Equipment	Manufacturer	Model No.	Serial No.	Calibration Due Date	Calibration Period
EMI Test Receiver	R&S	ESCI	100152	27 Sep 2016	1Year
Broadband Antenna	Schaffner	CBL6112B	2718	15 Mar 2017	1Year
Coaxial Cable	Schaffner	RG 213/U	N/A	18 May 2017	1Years
Coaxial Cable	Suhner	RG 214/U	N/A	18 May 2017	1Years

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1.4 Measurement Uncertainty

The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%.

Radiated emissions

Frequency	Uncertainty (U_{lab})
30MHz ~ 200MHz (Horizontal)	4.83dB
30MHz ~ 200MHz (Vertical)	4.84dB
200MHz ~1000MHz (Horizontal)	4.87dB
200MHz ~1000MHz (Vertical)	5.94dB
1GHz ~6GHz	4.41dB
6GHz ~18GHz	4.64dB

Conducted emissions

Frequency	Uncertainty (U_{lab})
150kHz ~ 30MHz	2.64dB

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2 Description of the radiated emission test

2.1 Test Procedure

Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2014.

The equipment under test (EUT) was placed on a non-conductive turntable with dimensions of 1.5m x 1m and 0.8m high above the ground. 3m from the EUT, a broadband antenna mounting on the mast received the signal strength. The turntable was rotated to maximize the emission level. The antenna was then moving along the mast from 1m up to 4m until no more higher value was found. Both horizontal and vertical polarization of the antenna were placed and investigated.

For below 30MHz, a loop antenna with its vertical plane is placed 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1 m above the ground.

The device was rotated through three orthogonal axes to determine which attitude and configuration produce the highest emission during measurement.

A signal generator was used to radiate an unmodulated continuous wave (CW) signal to the EUT (super-regenerative receiver) at its operating frequency in order to “cohere” the characteristic broadband emissions from the receiver.

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2.2 Test Result

Quasi-Peak Detector data was measured unless otherwise stated.

"#" means emissions appearing within the restricted bands shall follow the requirement of section 15.205.

The emissions meeting the requirement of section 15.109 are based on measurements employing the CISPR quasi-peak detector below 1000MHz and average detector for frequencies above 1000MHz

The frequencies from 30MHz to 1000MHz were investigated, and emission more than 20dB below limit were not reported. Thus thos highest emission were present in next page (section 2.3)

It was found that the EUT meet the FCC requirement.

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2.3 Radiated Emission Measurement Data

Radiated emission

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	24	° C
Relative humidity:	68	%

Detector: Quasi-Peak RBW: 100kHz VBW: 300kHz Operation mode: Receiving

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBµV)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
32.977	H	9.2	20.6	29.8	40.0	- 10.2
37.053	H	8.9	18.7	27.6	40.0	- 12.4
41.209	H	9.5	15.4	24.9	40.0	- 15.1
45.325	H	10.2	12.8	23.0	40.0	- 17.0
49.481	H	6.0	12.8	18.8	40.0	- 21.2
61.748	H	7.9	7.6	15.5	40.0	- 24.5
65.864	H	8.0	7.6	15.6	40.0	- 24.4

Remark: Other emission more than 20dB below the limit are not reported.

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3 Description of the Line-conducted Test

3.1 Test Procedure

Conducted emissions measurements are investigated and also taken pursuant to the procedures of ANSI C63.4 – 2014. The EUT was setup as described in the procedures, and both lines were measured.

3.2 Test Result

No measurement is required as the EUT is a battery-operated product.

3.3 Graph and Table of Conducted Emission Measurement Data

Not Applicable

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4 Photograph

4.1 Photographs of the Test Setup for Radiated Emission and Conducted Emission

For electronic filing, the photos are saved with filename 2AAV8QH-912-2R TSup.pdf.

4.2 Photographs of the External and Internal Configurations of the EUT

For electronic filing, the photos are saved with filename 2AAV8QH-912-2R ExPho.pdf and 2AAV8QH-912-2R InPho.pdf.

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5 Supplementary document

The following document were submitted by applicant, and for electronic filing, the document are saved with the following filenames:

Document	Filename
ID Label/Location	LabelSmp.jpg
Block Diagram	BlkDia.pdf
Schematic Diagram	Schem.pdf
Users Manual	UserMan.pdf
Operational Description	OpDes.pdf

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6 Appendices

A1	Photos of the set-up of Radiated Emissions	1	page
A2	Photos of External Configurations	2	pages
A3	Photos of Internal Configurations	2	pages
A4	ID Label/Location	1	page

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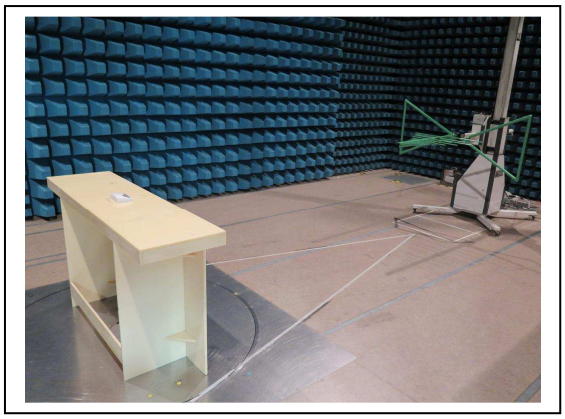
A1. Photos of the set-up of Radiated Emissions



Tested by: Mr. LEUNG Shu-kan, Ken

Reviewed by: Mr. WONG Lap-pong, Andrew

FCC ID: 2AAV8QH-912-2R

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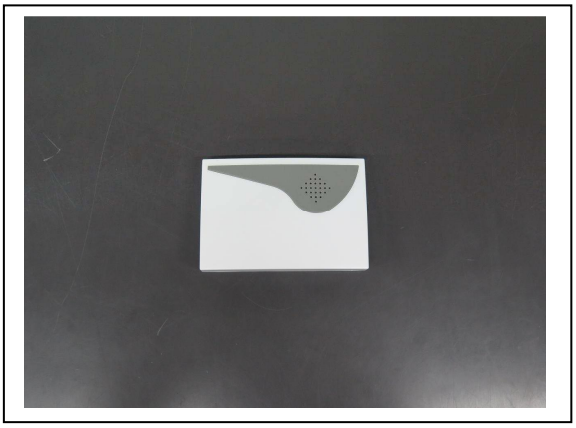
A2. Photos of External Configurations



External Configuration 1

External Configuration 2

Tested by: Mr. LEUNG Shu-kan, Ken

Reviewed by: Mr. WONG Lap-pong, Andrew

FCC ID: 2AAV8QH-912-2R

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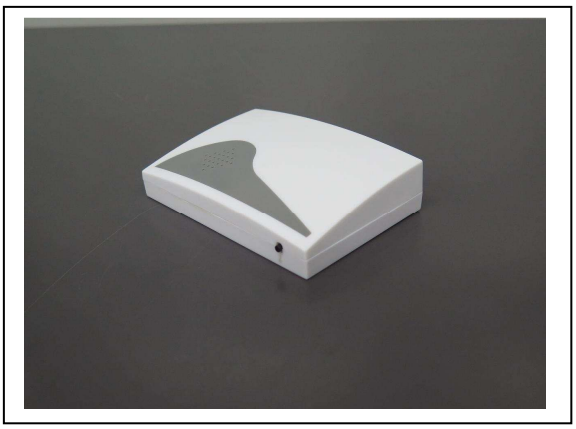
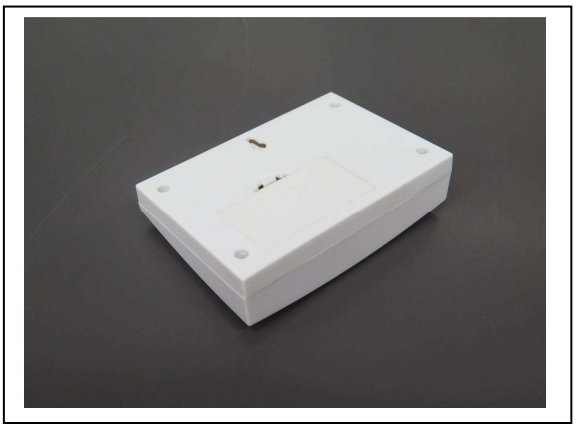
A2. Photos of External Configurations



External Configuration 3



External Configuration 4

Tested by: Mr. LEUNG Shu-kan, Ken

Reviewed by: Mr. WONG Lap-pong, Andrew

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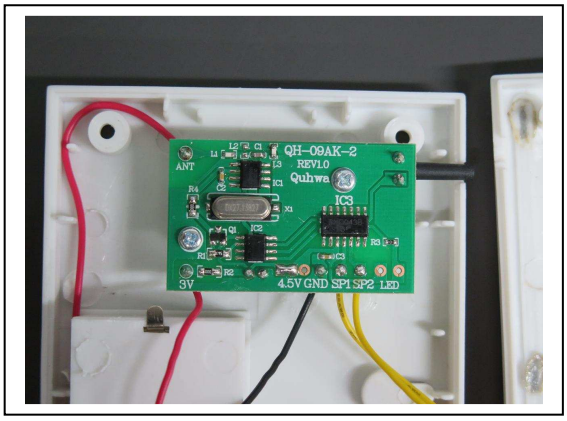
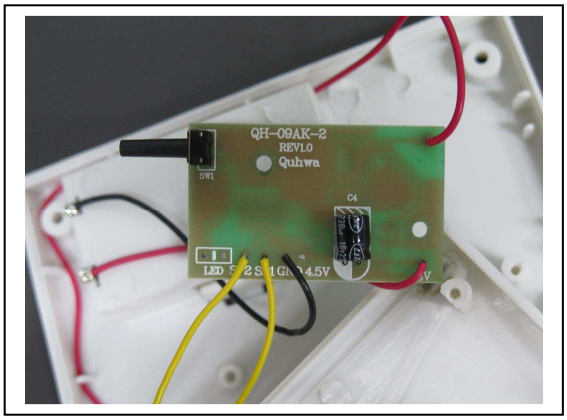
A3. Photos of Internal Configurations



Internal Configuration 1



Internal Configuration 2

Tested by: Mr. LEUNG Shu-kan, Ken

Reviewed by: Mr. WONG Lap-pong, Andrew

FCC ID: 2AAV8QH-912-2R

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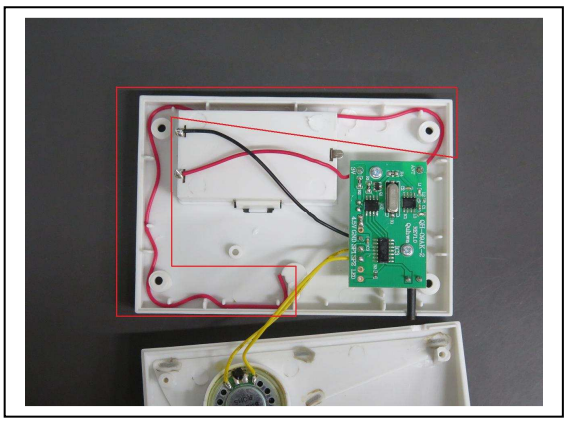
A3. Photos of Internal Configurations



EUT Antenna

Tested by: Mr. LEUNG Shu-kan, Ken

Reviewed by: Mr. WONG Lap-pong, Andrew

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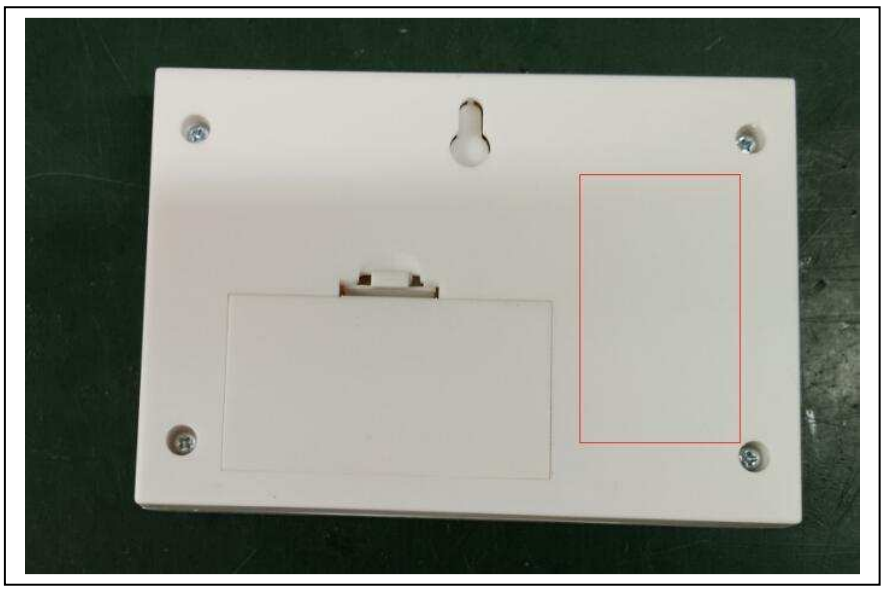
A4. ID Label / Location



ID Label 1

ID Label 2

***** End of Report *****

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Reviewed by: Mr. WONG Lap-pong, Andrew

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