



**CENTRE OF TESTING SERVICE
INTERNATIONAL**

OPERATE ACCORDING TO ISO/IEC 17025

FCC ID TEST REPORT

TEST REPORT NUMBER : CGZ3160822-01554-EF



CENTRE OF TESTING SERVICE CO., LTD.

A101, No.65, Zhuji Highway, Tianhe District, Guangzhou, China



TEST REPORT For FCC ID 47 CFR PART 15 OCT, 2015	
Report Reference No. CGZ3160822-01554-EF	
Date of issue..... 29 September 2016	
Testing Laboratory Name CENTRE OF TESTING SERVICE CO., LTD.	
Address..... A101, No.65, Zhuji Highway, Tianhe District, Guangzhou, China	
Testing location/ procedure Full application of Harmonised standards ☒	
Partial application of Harmonised standards ☐	
Other standard testing method ☐	
Applicant's name Venture Global Ltd.	
Address..... Room 2506, 25/F, Star Centre, 443-451 Castle Peak Road, Kwai Chung, N.T. Hong Kong.	
Test specification	
Standard 47 CFR PART 15 OCT, 2015	
Test Report Form No. CTSEMC-1.0	
TRF Originator CENTRE OF TESTING SERVICE CO., LTD	
Master TRF Dated 2009-01	
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Test item description Wireless Door / Window Sensor	
Trade Mark VenGuard	
Manufacturer..... Venture Global Ltd.	
Model/Type reference..... HAX-120	
Ratings..... Battery 3V	
Operating Frequency..... 915MHz	
Result Positive	

Compiled by:

Kate zhang / File administrators

Supervised by:

Duke yang / Technique principal

Approved by:

Vincent yao / Manager

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CENTRE OF TESTING SERVICE CO., LTD.

A101, No.65, Zhuji Highway, Tianhe District, Guangzhou, China

Tel: +86-20-85543113 (32 lines)

Fax: +86-20-38780406

Complaint line: +86-20-85533471

E-mail: cts@cts-lab.com.cn

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FCC ID -- TEST REPORT

Test Report No. : CGZ3160822-01554-EF
29 September 2016
Date of issue

Type / Model..... HAX-120

EUT..... Wireless Door / Window Sensor

Applicant..... Venture Global Ltd.

Address..... Room 2506, 25/F, Star Centre, 443-451 Castle Peak Road, Kwai
Chung,N.T. Hong Kong.

Telephone..... +852-3529 1206

Fax..... +852-3692 5980

Contact..... Liao Weihuang

Manufacturer..... Venture Global Ltd.

Address..... Room 2506, 25/F, Star Centre, 443-451 Castle Peak Road, Kwai
Chung,N.T. Hong Kong.

Telephone..... +852-3529 1206

Fax..... +852-3692 5980

Contact..... Liao Weihuang

Factory..... Venture Global Ltd.

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Telephone..... +852-3529 1206

Fax..... +852-3692 5980

Contact..... Liao Weihuang

Test Result according to the standards on page 1:

PASSED

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.



TABLE OF CONTENTS

Description	Page
1.TEST STANDARDS.....	5
2.SUMMARY.....	5
2.1 GENERAL REMARKS.....	5
2.2 FINAL ASSESSMENT	5
3.EQUIPMENT UNDER TEST	5
3.1 POWER SUPPLY SYSTEM UTILISED	5
3.2 SHORT DESCRIPTION OF THE EQUIPMENT UNDER TEST (EUT)	5
3.3 EUT OPERATION MODE.....	5
3.4 EUT CONFIGURATION	6
4.TEST ENVIRONMENT	7
4.1 ADDRESS OF THE TEST LABORATORY	7
4.2 TEST FACILITY	7
4.3 ENVIRONMENTAL CONDITIONS.....	7
4.4 DEFINITIONS OF SYMBOLS USED IN THIS TEST REPORT.....	7
4.5 STATEMENT OF THE MEASUREMENT UNCERTAINTY	7
4.6 MEASUREMENT UNCERTAINTY	8
5.SUMMARY OF STANDARDS AND RESULTS	8
5.1.DESRIPTION OF STANDARDS AND RESULTS.....	8
6.TEST CONDITIONS AND RESULTS	9
6.1 POWER LINE CONDUCTED EMISSION TEST	9
7.TRANSMITTER OUPUT POWER AND SPURIOUS EMISSION (ELECTRIC FIELD)	11
7.1.TEST EQUIPMENT	11
7.2.BLOCK DIAGRAM OF TEST SETUP	11
7.3. TRANSMITTER OUTPUT POWER AND SPURIOUS EMISSIONS LIMIT :	12
7.4.TEST PROCEDURE.....	12
7.5.RADIATED EMISSION TEST RESULTS	13
8.BAND EDGE COMPLIANCE TEST	19
8.1. TEST EQUIPMENT	19
8.2. TEST INFORMATION	19
8.3. TEST PROCEDURE	19
8.4. TEST RESULTS.....	19
9 20 DB BANDWIDTH TEST.....	22
9.1. TEST EQUIPMENT	22

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A101, No.65, Zhuji Highway,Tianhe District, Guangzhou, China

Tel: +86-20-85543113 (32 lines)

Fax: +86-20-38780406

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9.2. TEST INFORMATION22

9.3. TEST RESULTS22

10.0 ANTENNA REQUIREMENTS24

10.1 STANDARD APPLICABLE24

10.2 ANTENNA CONSTRUCTION AND DIRECTIONAL GAIN24

11.0.DEVIATION TO TEST SPECIFICATIONS24

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1 . TEST STANDARDS

The tests were performed according to following standards:

- 47 CFR PART 15 OCT, 2015
- ANSI C63.10-2013

2 . SUMMARY

2.1 GENERAL REMARKS

Date of receipt of test sample	22 August 2016
Testing commenced on	22 August ~ 28 September 2016
Testing concluded on	29 September 2016

2.2 FINAL ASSESSMENT

The FCC requirements pertaining to the technical standards and tested operation modes are

- - fulfilled.
- ☐ - **not** fulfilled.

The equipment under test

- - fulfils the FCC requirements cited on page 1.
- ☐ - **does not** fulfil the FCC requirements cited on page 1.

3 . EQUIPMENT UNDER TEST

3.1 Power supply system utilised

Power supply voltage : ■ **Battery 3V**

3.2 Short description of the Equipment under Test (EUT)

Number of tested samples: **1**
Serial number: Prototype

3.3 EUT operation mode

The equipment under test was operated during the measurement under the following conditions:

- ☐ TX- Y position
- ☐ TX- Z position
- TX- X position

TX-X position: TX-X Position

Note: TX -X position of EUT is the worst case, so only these test results be recorded in the test report.



3.4 EUT configuration

3.4.1. Description of configuration (EUT)

Description	:	Wireless Door / Window Sensor
Model Number	:	HAX-120
Operation frequency	:	915.00MHz
Radio Technology	:	FSK
Modulation Technology	:	FSKmodulation
Antenna	:	Integral antenna

3.4.2. Tested Supporting System Details

N/A

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4 . TEST ENVIRONMENT

4.1 Address of the test laboratory

A101, No.65, Zhuji Highway, Tianhe District, Guangzhou, China

Tel: +86-20-85543113 (32 lines)

Fax: +86-20-38780406

4.2 Test facility

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

CNAS-Lab Code: L3394

CENTRE OF TESTING SERVICE CO., LTD has been assessed and proved to be in compliance with CNAS-CL01: 2006 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

IC-Registration No.: 8374A

The 3m Alternate Test Site of CENTRE OF TESTING SERVICE CO., LTD has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 8374A on May 22, 2014.

FCC-Registration No.: 971995

CENTRE OF TESTING SERVICE CO., LTD, EMC Laboratory 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 No. 971995, July 13, 2012.

4.3 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15~35 ° C
Humidity:	25~75 %
Atmospheric pressure:	86~106 kPa

4.4 Definitions of symbols used in this test report

- - The black square indicates that the listed condition, standard or equipment is applicable for this report.
- - The empty square indicates that the listed condition, standard or equipment is **not** applicable for this report.

4.5 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the CTS quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

4.6 Measurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Conduction disturbance	150kHz~30MHz	$\pm 1.22\text{dB}$	(1)
Power disturbance	30MHz~300MHz	$\pm 1.38\text{dB}$	(1)
Radiation emission (3m)	30MHz~300MHz	$\pm 3.14\text{dB}$	(1)
	300MHz~1000MHz	$\pm 3.18\text{dB}$	(1)
	1GHz~18GHz	$\pm 3.54\text{dB}$	(1)

(1). This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

5 . SUMMARY OF STANDARDS AND RESULTS

5.1.Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION		
Description of Test Item	Standard	Results
Conducted Emission Test	FCC Part 15 : 15.207 ANSI C63.10-2013	N/A
Transmitter Output power and Spurious Emissions	FCC Part 15 C: 15.249 FCC Part 15 C: 15.209 ANSI C63.10-2013	PASSED
Band Edge Compliance Test	FCC Part 15 C: 15.249 ANSI C63.10-2013	PASSED
20 dB Bandwidth	FCC Part 15 C: 15.215 ANSI C63.10:2013	PASSED
Antenna Requirement	FCC Part 15 C: 15.203 ANSI C63.10:2013	PASSED
N/A is an abbreviation for Not Applicable.		

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6 . TEST CONDITIONS AND RESULTS

6.1 Power Line Conducted Emission Test

For test instruments and accessories used see section 6.1.5

6.1.1 Description of the test location

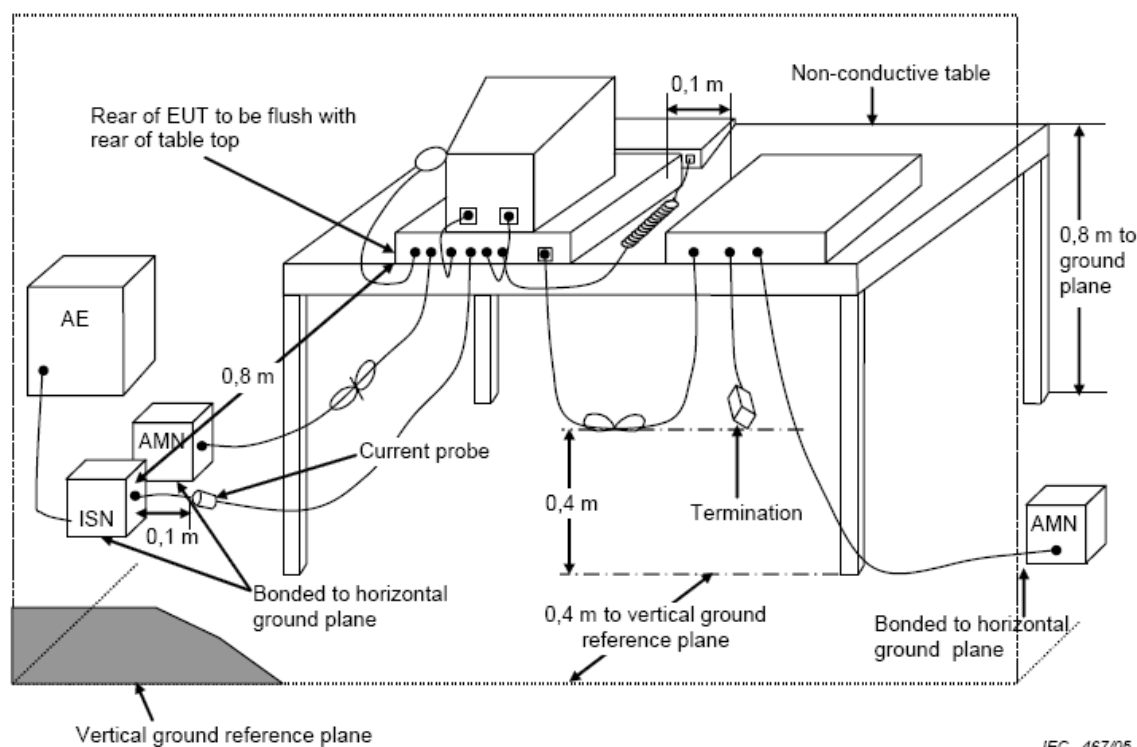
Test location : Shielding Room

6.1.2 Description of the test set-up

6.1.2.1 Operating Condition

The EUT is engraving during the test, and the results of the maximum emanation are recorded

6.1.2.2 Block Diagram of Test Setup



6.1.3 Limits of disturbance (Class B)

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level dB(μ V)	Average Level dB(μ V)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

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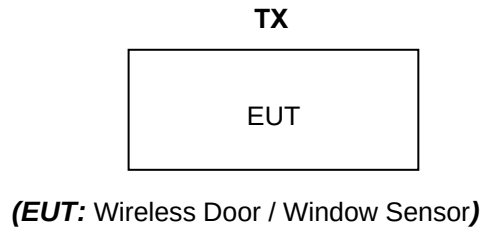
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6.1.4. Block Diagram of Test Setup

6.1.4.1 Block Diagram of connection between EUT and simulators



6.1.5. Conducted disturbance Test Equipment

Conducted Disturbance					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESHS10	842884/012	2015/11
2	Artificial Mains	ROHDE & SCHWARZ	ESH3-Z5	832479/025	2015/11
3	Pulse Limiter	ROHDE & SCHWARZ	ESHSZ2	100301	2015/11
4	EMI Test Software	ROHDE & SCHWARZ	ESK1	N/A	2015/11

6.1.6 Test result

The requirements are	Fulfilled
Band width	9kHz
Frequency range	0.15kHz - 30 MHz
Min. limit margin	>N/A at 0.15MHz - 30 MHz

Remarks: The EUT power supply by battery, Not applicable.

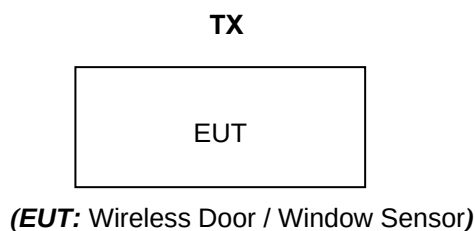
7 . TRANSMITTER OUPUT POWER AND SPURIOUS EMISSION (Electric field)

7.1.Test Equipment

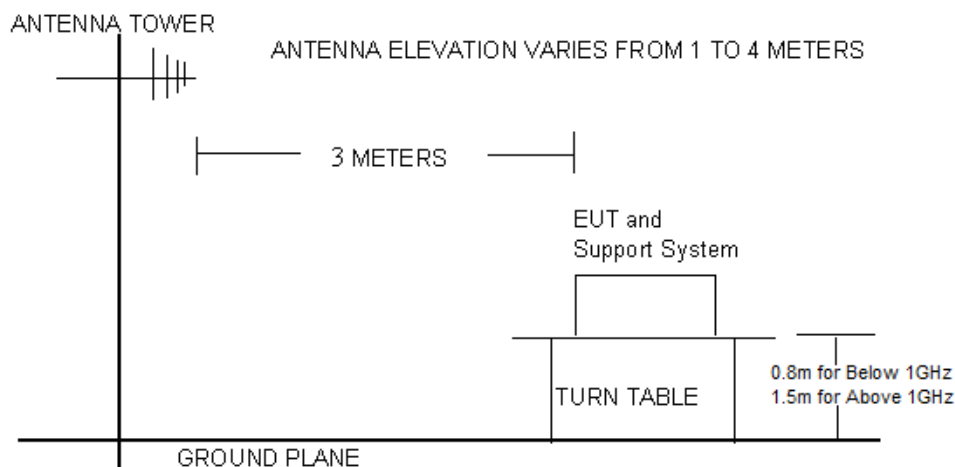
Radiated disturbance (electric field)					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	100868	2015/11
2	Biconical Antenna	ROHDE & SCHWARZ	HK116	100221	2016/03
3	Log per Antenna	ROHDE & SCHWARZ	HL223	100226	2016/03
4	Log per Antenna	ROHDE & SCHWARZ	HL050	100186	2016/03
5	Signal analyzer	ROHDE & SCHWARZ	FSIQ26	100311	2016/03
6	Loop Antenna	A.R.A	PLA-1030/B	1030	2015/11

7.2.Block Diagram of Test Setup

7.2.1 Block Diagram of connection between EUT and simulators



7.2.2 Anechoic Chamber Setup Diagram



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7.3. Transmitter Output power and Spurious Emissions Limit :

Standard: FCC Part 15:249.

Except as provided in paragraph (a) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency (MHz)	Field Strength of Fundamental (mV/m)	Field Strength of Harmonics (μV/m)
902-928	50	500
2400-2483.5	50	500
5725-5875	50	500
24000-24250	250	2500

Frequency (Hz)	Field Strength (μV/m at meter)	Measurement Distance (meter)
0.009 – 0.490	2400 / F (kHz)	300
0.490 – 1.705	24000 / F (kHz)	30
1.705 – 30.0	30	30
30 - 88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

- Remark: (1) Emission level $\text{dB}\mu\text{V} = 20 \log \text{Emission level } \mu\text{V/m}$
 (2) The smaller limit shall apply at the cross point between two frequency bands.
 (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

7.4. Test Procedure

The EUT and its simulators are placed on a turn table, which is 0.8 meter (1.5m for Above 1GHz) high above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on Test. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4-2009 on radiated emission Test.

The frequency range from 30MHz to 1000MHz and above 1GHz. is investigated. Please see the following pages.

All measurements for radiated emissions within the restricted bands were performed using a Quasi-Peak detector with 120kHz RBW below 1GHz and a Peak and Average detector with 1MHz RBW above 1GHz,

All measurements for radiated emissions within the restricted bands were performed using a Quasi-Peak detector with 300kHz VBW below 1GHz and a Peak detector with 1MHz VBW above 1GHz, A average detector with 10Hz VBW above 1GHz.

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Pretest x, y, z position of EUT, final, select the worst case x position test and record the test results in the report.

The test modes (TX Mode) is tested in Anechoic Chamber and all the scanning waveforms are reported on section 7.5

7.5.Radiated Emission Test Results

PASSED.

The frequency range from 9KHz~30MHz, 30MHz to 230MHz, 230MHz to 1000MHz and above 1GHz. is investigated. Please see the following pages.

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Test Mode:	TX –X Position Mode	Result:	☒ - passed
Frequency range:	9KHz~30MHz		☐ - not passed

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
Remark:Other frequency no specific emission form the EUT (Margin > 6dB form the applicable Limit)							

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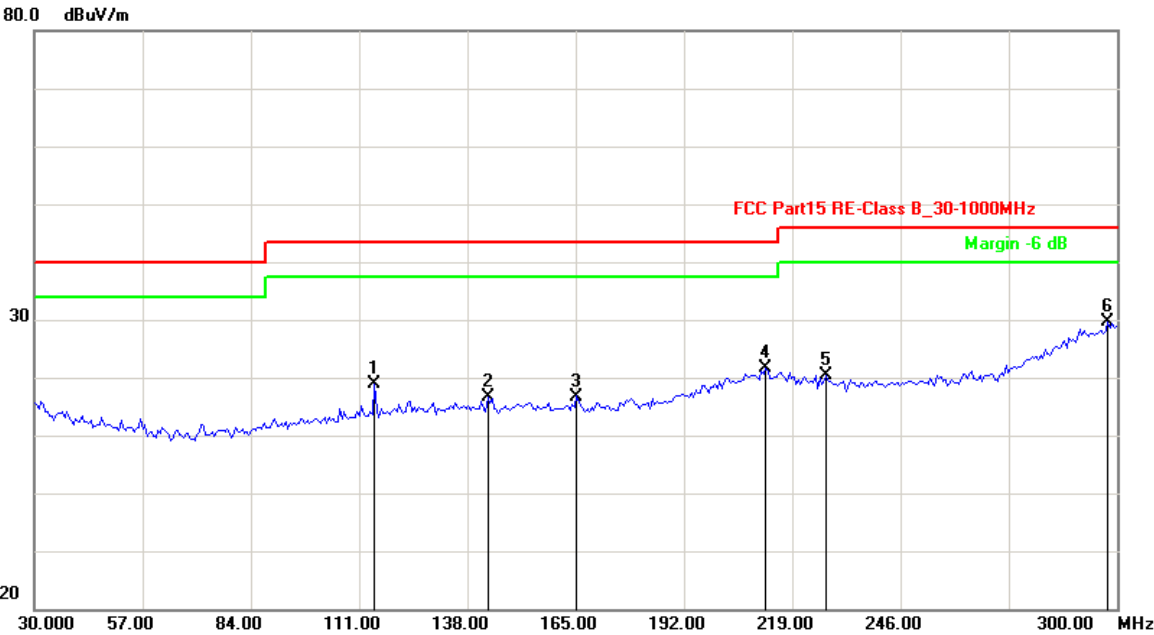
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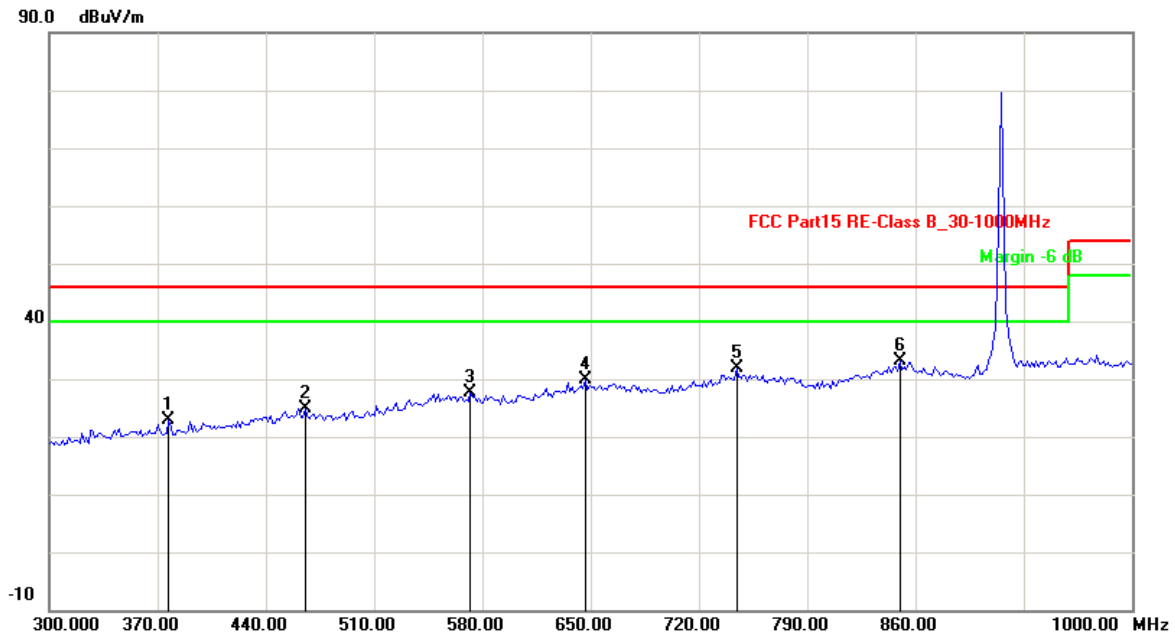


Test Model:	TX -X	Result:	☒ - passed
Test point:	Horizontal		☐ - not passed
Frequency range:	30MHz~18GHz		

EUT	Wireless Door / Window Sensor
Firm Name	Venture Global Ltd.
Operating Condition	Battery 3V
Test Condition	Ambient Temperature: 25°C Humidity: 56%
Test distance	3 Meter
Operator	Duke



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	114.9498	-17.01	35.94	18.93	43.50	-24.57	QP
2	143.0861	-16.02	32.71	16.69	43.50	-26.81	QP
3	165.2705	-15.98	32.73	16.75	43.50	-26.75	QP
4	212.3446	-10.36	31.90	21.54	43.50	-21.96	QP
5	227.4949	-11.47	31.85	20.38	46.00	-25.62	QP
6	297.8356	-1.99	31.66	29.67	46.00	-16.33	QP



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	915.0000	-1.09	80.70	79.61	114.00	-34.39	Peak
2	915.0000	-1.09	80.67	79.58	94.00	-14.42	AVG

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	377.1543	-10.89	33.65	22.76	46.00	-23.24	QP
2	465.5311	-8.35	33.20	24.85	46.00	-21.15	QP
3	572.1443	-5.62	33.17	27.55	46.00	-18.45	QP
4	646.4930	-3.39	33.20	29.81	46.00	-16.19	QP
5	744.6894	-1.82	33.78	31.96	46.00	-14.04	QP
6	849.8998	-0.30	33.50	33.20	46.00	-12.80	QP

Above 1GHz

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1312.000	0.10	39.29	39.39	74.00	-34.61	peak
2	1312.000	0.10	26.48	26.58	54.00	-27.42	AVG
3	2238.000	6.08	38.08	44.16	74.00	-29.84	peak
4	2238.000	6.08	25.17	31.25	54.00	-22.75	AVG

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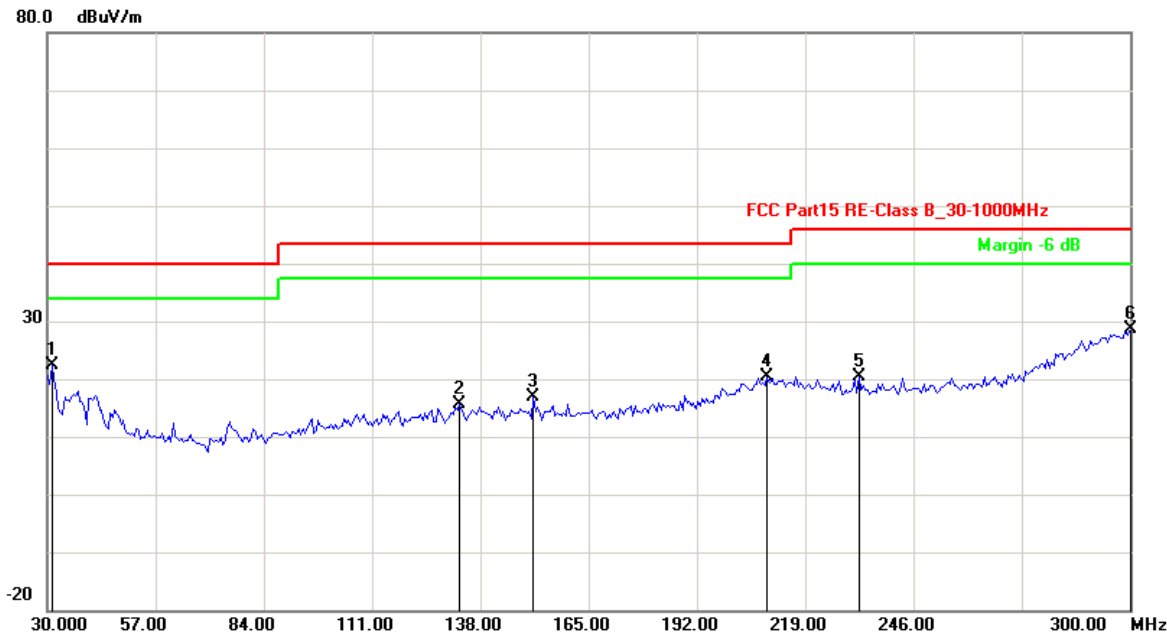
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Test Model:	TX -X	Result:	■ - passed
Test point:	Vertical		□ - not passed
Frequency range:	30MHz~18GHz		

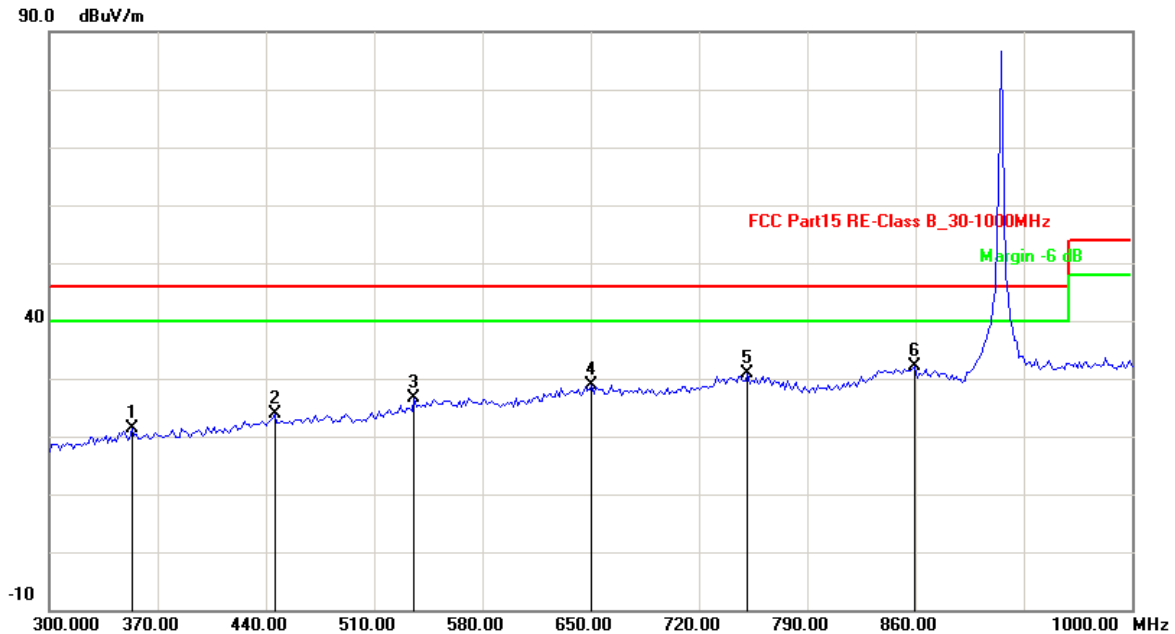


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	31.0822	-16.18	38.53	22.35	40.00	-17.65	QP
2	132.8056	-16.11	31.67	15.56	43.50	-27.94	QP
3	151.2024	-15.96	32.85	16.89	43.50	-26.61	QP
4	209.6393	-10.27	30.64	20.37	43.50	-23.13	QP
5	232.3647	-11.63	32.09	20.46	46.00	-25.54	QP
6	300.0000	-1.42	30.08	28.66	46.00	-17.34	QP

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No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	915.0000	-1.09	88.59	87.50	114.00	-26.50	Peak
2	915.0000	-1.09	88.56	87.47	94.00	-6.53	AVG

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	353.3066	-11.29	32.63	21.34	46.00	-24.66	QP
2	445.8917	-8.63	32.40	23.77	46.00	-22.23	QP
3	535.6713	-6.38	32.95	26.57	46.00	-19.43	QP
4	650.7014	-3.24	32.02	28.78	46.00	-17.22	QP
5	751.7034	-1.66	32.56	30.90	46.00	-15.10	QP
6	859.7194	-0.58	32.82	32.24	46.00	-13.76	QP

Above 1GHz

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1830.000	3.73	41.84	45.57	74.00	-28.43	peak
2	1830.000	3.73	28.68	32.41	54.00	-21.59	AVG
3	2360.000	6.78	38.78	45.56	74.00	-28.44	peak
4	2360.000	6.78	25.50	32.28	54.00	-21.72	AVG

Note: Level=Reading+Factor. Margin=Level-Limit.

Remark: Others frequency test result margin all >6dB of the limit.

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CENTRE OF TESTING SERVICE CO., LTD.

A101, No.65, Zhuji Highway, Tianhe District, Guangzhou, China

Tel: +86-20-85543113 (32 lines)

Fax: +86-20-38780406

Complaint line: +86-20-85533471

E-mail: cts@cts-lab.com.cn

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8 . BAND EDGE COMPLIANCE TEST

8.1. Test Equipment

Band Edge Compliance test					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	10868	2015/11
2	Log per Antenna	ROHDE & SCHWARZ	HL050	100186	2016/03
3	Signal analyzer	ROHDE & SCHWARZ	FSIQ26	100311	2016/03
4	Log per Antenna	ROHDE & SCHWARZ	HL223	100226	2016/03

8.2. Test Information

EUT	Wireless Door / Window Sensor
Firm Name	Venture Global Ltd.
Test Condition	Ambient Temperature: 25°C Humidity: 56%
Test distance	3 Meter
Operator	Duke

8.3. Test procedure

- 1、 The EUT operates at TX mode. The transmitter channel are tested to verify the largest transmission and spurious emissions power at the continuous transmission mode.
- 2、 Max hold the trace of the setp 1,and the EUT operates at Normal test mode to verify the largest spurious emissions power.

8.4. Test Results

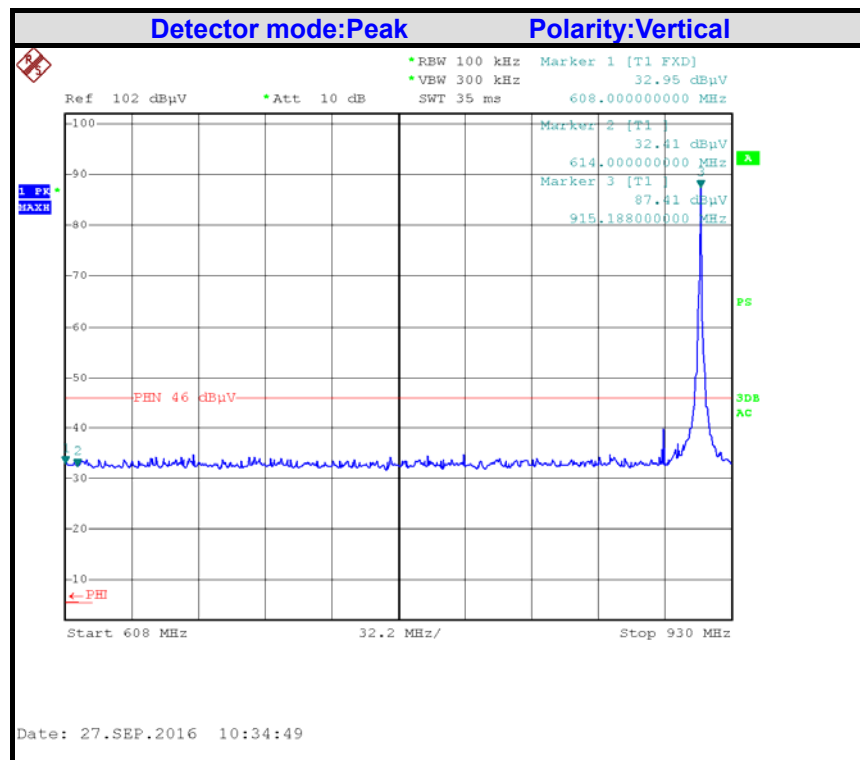
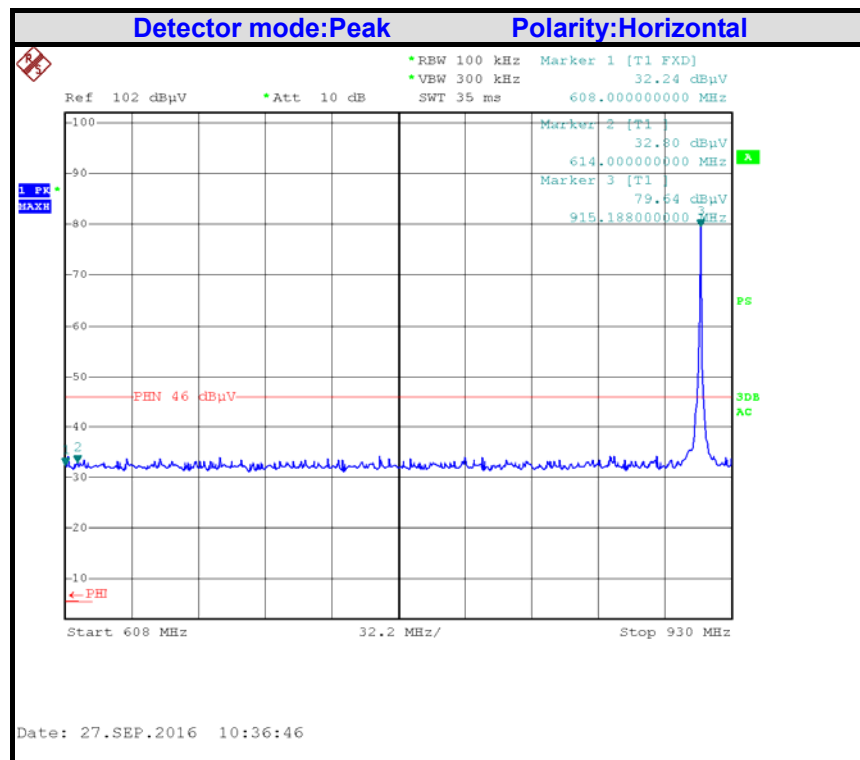
PASSED.

The EUT operates at TX test mode. The transmitter channel are tested to verify the band edge emissions.

Test Mode	Channel Marked Frequency	Test Result Highest Emission (dBuV/m)			
		Horizontal		Vertical	
		Peak	Limit	Peak	Limit
TX	614MHz	32.80	46	32.41	46
	960MHz	33.74	54	32.28	54
Remark: Other Spurious Emissions mini margin all >6 dB of Limit.					



Band Edges (Low)



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Tel: +86-20-85543113 (32 lines)

Fax: +86-20-38780406

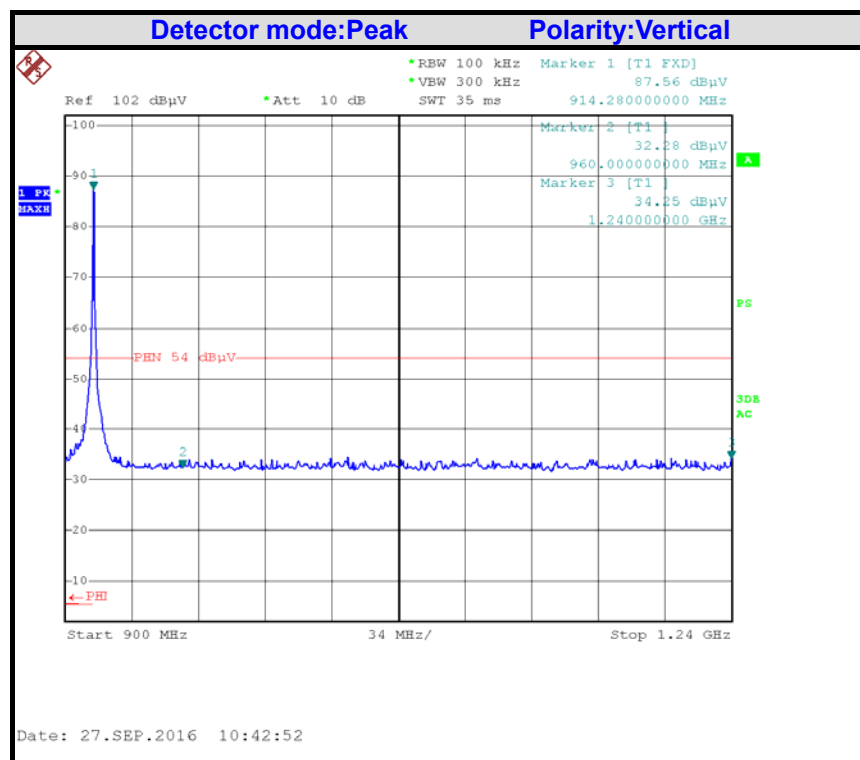
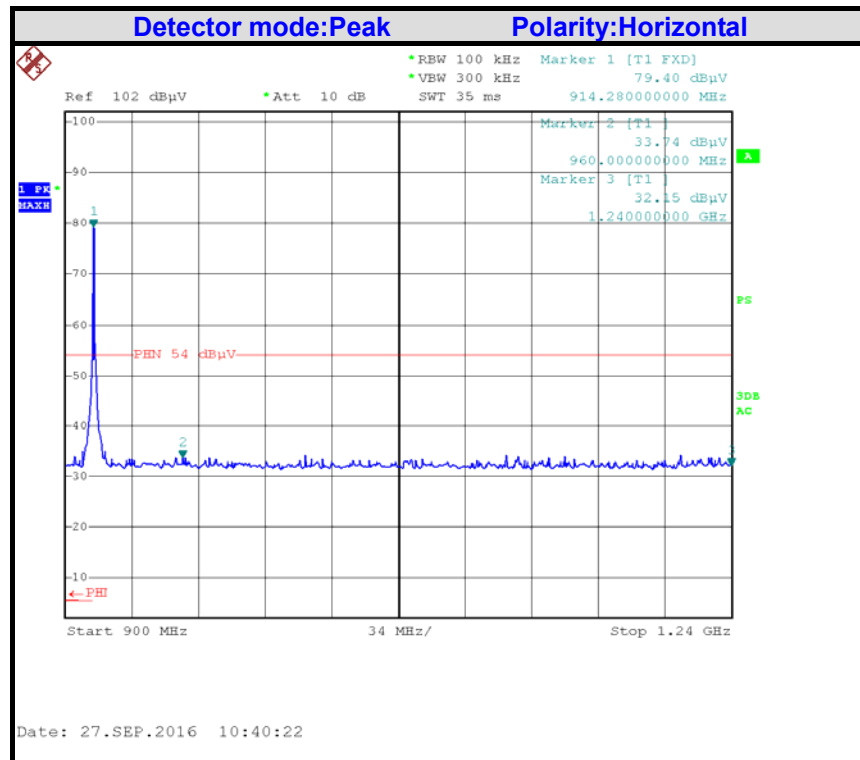
Complaint line: +86-20-85533471

E-mail: cts@cts-lab.com.cn

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Band Edges (High)



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Tel: +86-20-85543113 (32 lines)

Fax: +86-20-38780406

Complaint line: +86-20-85533471

E-mail: cts@cts-lab.com.cn

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9 20 dB Bandwidth test

9.1. Test Equipment

20 dB Bandwidth test					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	10868	2015/10
2	Log per Antenna	ROHDE & SCHWARZ	HL050	100186	2016/03
3	Signal analyzer	ROHDE & SCHWARZ	FSIQ26	100311	2016/03

9.2. Test Information

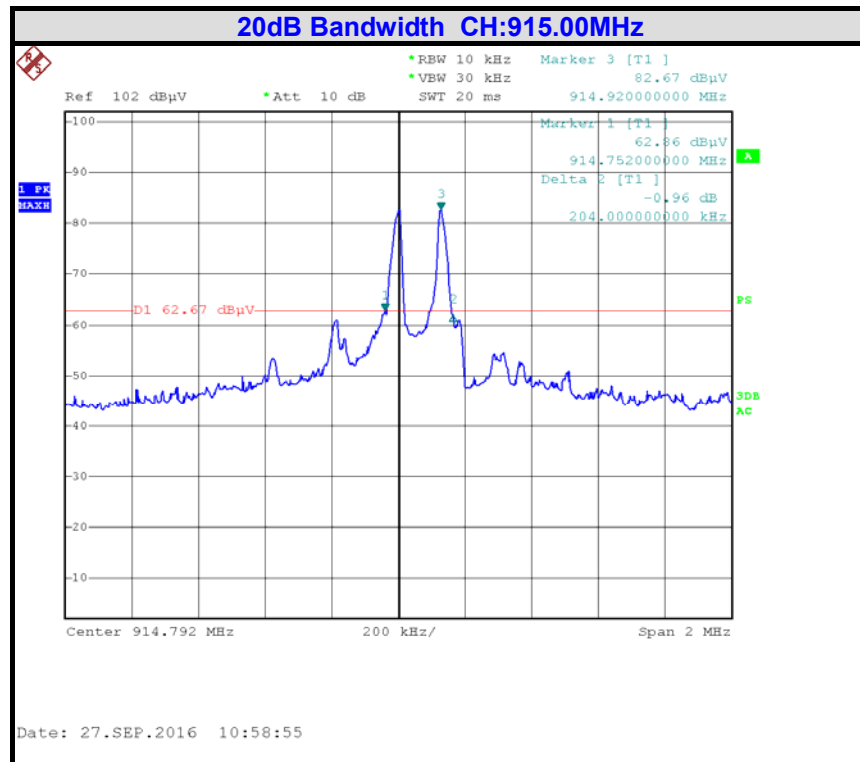
EUT	Wireless Door / Window Sensor
Firm Name	Venture Global Ltd.
Operating Condition	Battery 3V
Test Condition	Ambient Temperature: 25°C Humidity: 56%
Test distance	3 Meter
Operator	Duke

9.3. Test Results

PASSED.

The testing data was attached in the next pages.

Channel (MHz)	20dB Bandwidth (MHz)	Limit (MHz)	Test Result
915.00	0.204	---	PASSED

Test Plot:

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10.0 Antenna Requirements

10.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

10.2 Antenna Construction and Directional Gain

Antenna type: Integral antenna

Antenna Gain: 0dBi

11.0 . DEVIATION TO TEST SPECIFICATIONS

The following identical model(s):

N/A

Belong to the tested device:

Product description: **Wireless Door / Window Sensor**

Model name: **HAX-120**

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E-mail: cts@cts-lab.com.cn

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