

# CENTRE OF TESTING SERVICE INTERNATIONAL

**OPERATE ACCORDING TO ISO/IEC 17025** 

# FCC ID TEST REPORT

TEST REPORT NUMBER: CGZ3150617-00685-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, 2014
Report Reference No	CGZ3150617-00685-EF
Date of issue	29 June 2015
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 $\square$
	Other standard testing method $\square$
Applicant's name	Venture Global Limited
Address	Room 1102,11/F.,Fabrico Industrial Building,78-84 Kwai Cheong Road,Kwai Chung,N.T., HongKong
Test specification	
Standard	47 CFR PART 15 OCT, 2014
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	Multi-functional Alarm Transmitter
Trade Mark	GUARDMAN

Compiled by: Supervised by:

Manufacturer..... Venture Global Limited

1 wee

Kate zhang / File administrators Duke yang / Technique principal

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Approved by:

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# FCCID -- TEST REPORT

 Test Report No. :
 CGZ3150617-00685-EF
 29 June 2015 Date of issue

Turne / Marshall	HAY 000 500
Type / Model	HAX-300-500
	AA 100 A 10 A 10 T
EUT	Multi-functional Alarm Transmitter
Applicant	Venture Global Limited
Address	Room 1102,11/F.,Fabrico Industrial Building,78-84 Kwai Cheong
Address	Road,Kwai Chung,N.T., HongKong
Telephone	
Fax	+852-3692 5980
Contact	CHOW.HING SANG ADAM
Manufacturer	Venture Global Limited
Address	Room 1102,11/F.,Fabrico Industrial Building,78-84 Kwai Cheong
Address	Road,Kwai Chung,N.T., HongKong
Telephone	+852-3529 1206
Fax	+852-3692 5980
Contact	CHOW.HING SANG ADAM
Factory	1
Address	1
Telephone	1
Fax	1
Contact	

Test Result according to the standards on page 1:	PASSED
rest result according to the standards on page 1.	I AUULD

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.

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#### 1. TEST STANDARDS

The tests were performed according to following standards:

- 47 CFR PART 15 OCT, 2014
- ANSI C63.4-2009

#### 2. SUMMARY

#### 2.1 GENERAL REMARKS

Date of receipt of test sample	16 June 2015
Testing commenced on	16~27 June 2015
-	
Testing concluded on	29 June 2015

#### 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 1.5V\*3

#### 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- Zposition

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.

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#### 3.4 EUT configuration

# 3.4.1. Description of configuration (EUT)

Description	:	Multi-functional Alarm Transmitter
Model Number	:	HAX-300-500
Operation frequency	:	914.8 MHz
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.791995, 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.

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#### 4.6 Measurement Uncertainty

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

<sup>(1).</sup> 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		
Standard	Results	
FCC Part 15 : 15.207 ANSI C63.4-2009	N/A	
FCC Part 15 C: 15.249 FCC Part 15 C: 15.209 ANSI C63.4-2009	PASSED	
FCC Part 15 C: 15.249 ANSI C63.4-2009	PASSED	
-	Standard  FCC Part 15: 15.207 ANSI C63.4-2009  FCC Part 15 C: 15.249 FCC Part 15 C: 15.209 ANSI C63.4-2009  FCC Part 15 C: 15.249	

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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

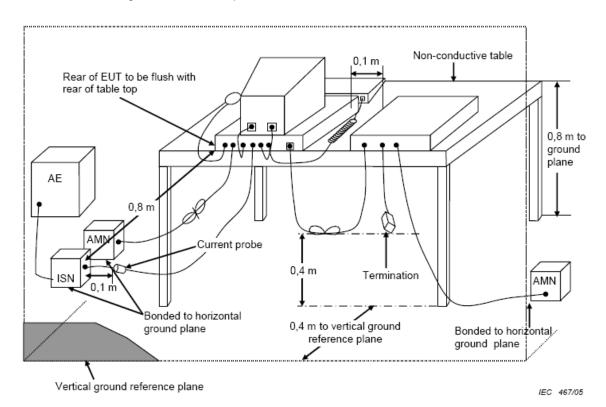
Test location : Shielding Room

#### 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)

Maximum RF Line Voltage		ine Voltage	
Frequ	uency	Quasi-Peak Level	Average Level
		dB(μV)	dB(μV)
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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#### 6.1.4.Block Diagram of Test Setup

#### 6.1.4.1 Block Diagram of connection between EUT and simulators

**TX**EUT

(EUT: Multi-functional Alarm Transmitter)

#### **6.1.5.Conduced disturbance Test Equipment**

Condu	ucted Disturbance				
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESHS10	842884/012	2014/11
2	Artificial Mains	ROHDE & SCHWARZ	ESH3-Z5	832479/025	2014/11
3	Pulse Limiter	ROHDE & SCHWARZ	ESHSZ2	100301	2014/11
4	EMI Test Software	ROHDE & SCHWARZ	ESK1	N/A	2014/11

#### 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.

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

#### 7.1.Test Equipment

Radia	Radiated disturbance (electric field)										
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.						
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	100868	2014/11						
2	Biconical Antenna	ROHDE & SCHWARZ	HK116	100221	2015/03						
3	Log per Antenna	ROHDE & SCHWARZ	HL223	100226	2015/03						
4	Log per Antenna	ROHDE & SCHWARZ	HL050	100186	2015/03						
5	Signal analyzer	ROHDE & SCHWARZ	FSIQ26	100311	2015/03						
6	Loop Antenna	A.R.A	PLA-1030/B	1030	2014/11						

## 7.2.Block Diagram of Test Setup

#### 6.2.1 Block Diagram of connection between EUT and simulators

EUT

(EUT: Multi-functional Alarm Transmitter)

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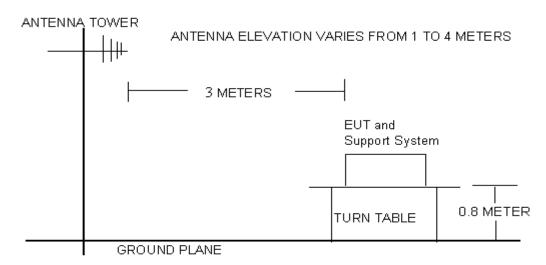
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#### 7.2.2 Anechoic Chamber Setup Diagram



#### 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  $dB\mu V = 20 \log Emission level \mu V/m$ 
  - (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.

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#### 7.4.Test Procedure

The EUT and its simulators are placed on a turn table, which is 0.8 meter 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 C63.4-2009on 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

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 □ - not passed

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
Rema Limit)	ark:Other frequ )	iency no spe	cific emission	form the EU	T (Margin >	6dB form the	applicable

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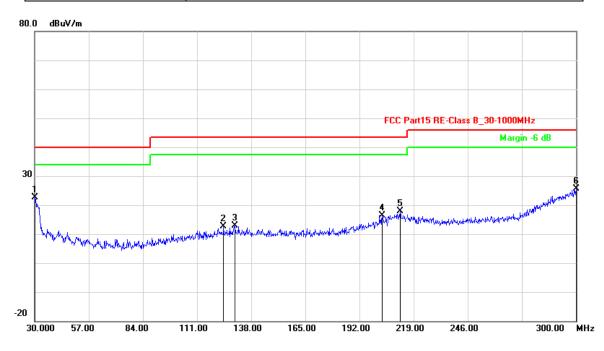
#### **CENTRE OF TESTING SERVICE**





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

EUT	/lulti-functional Alarm Transmitter		
Firm Name	Venture Global Ltd.		
Operating Condition	Battery 1.5V*3		
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	30.2700	-16.07	38.74	22.67	40.00	-17.33	QP
2	124.2300	-16.47	29.18	12.71	43.50	-30.79	QP
3	129.9000	-16.15	29.03	12.88	43.50	-30.62	QP
4	203.3400	-11.59	28.04	16.45	43.50	-27.05	QP
5	212.2500	-10.35	28.11	17.76	43.50	-25.74	QP
6	300.0000	-1.42	27.17	25.75	46.00	-20.25	QP

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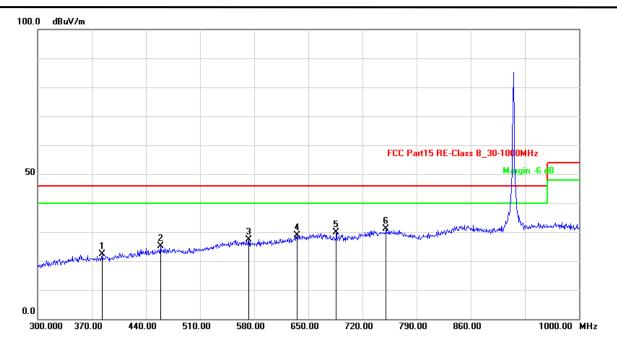
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No	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	914.8.0000	-1.11	92.83	91.72	114.00	-22.28	Peak
2	914.8.0000	-1.11	88.70	87.59	94.00	-6.41	AVG

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	383.3000	-10.79	33.26	22.47	46.00	-23.53	QP
2	458.8999	-8.40	33.42	25.02	46.00	-20.98	QP
3	573.0000	-5.62	32.99	27.37	46.00	-18.63	QP
4	635.2999	-3.91	32.80	28.89	46.00	-17.11	QP
5	686.3999	-3.58	33.53	29.95	46.00	-16.05	QP
6	750.7999	-1.63	32.72	31.09	46.00	-14.91	QP

#### Above 1GHz

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1830.000	-10.35	55.67	45.32	74.00	-28.68	peak
2	1830.000	-10.35	41.61	31.26	54.00	-22.74	AVG
3	2746.000	-4.93	42.09	37.16	74.00	-36.84	peak
4	2746.000	-4.93	28.67	23.74	54.00	-30.26	AVG

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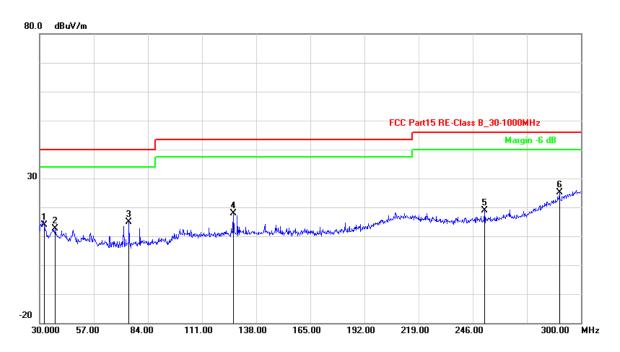
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No.	Frequency	Factor	Reading	Level	Limit	Margin	Det.
	(MHz)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	32.4300	-16.35	30.31	13.96	40.00	-26.04	QP
2	37.8300	-17.05	29.64	12.59	40.00	-27.41	QP
3	74.5500	-20.39	35.32	14.93	40.00	-25.07	QP
4	126.6600	-16.33	34.17	17.84	43.50	-25.66	QP
5	251.9400	-11.34	30.22	18.88	46.00	-27.12	QP
6	289.2000	-4.31	29.42	25.11	46.00	-20.89	QP

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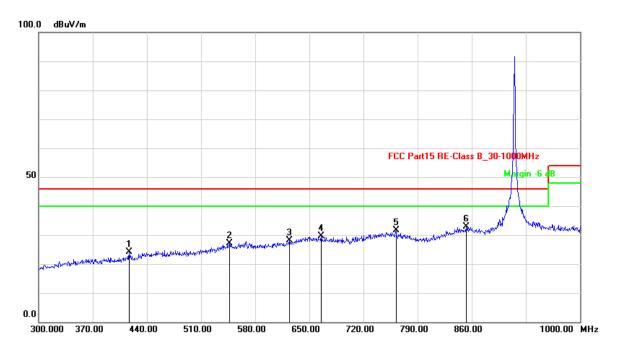
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No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	914.8.0000	-1.11	85.32	84.21	114.00	-29.79	Peak
2	914.8.0000	-1.11	81.53	80.42	94.00	-13.58	AVG

No.	Frequency	Factor	Reading	Level	Limit	Margin	Det.
	(MHz)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	416.9000	-9.82	33.87	24.05	46.00	-21.95	QP
2	546.4000	-5.86	33.03	27.17	46.00	-18.83	QP
3	624.1000	-4.43	32.44	28.01	46.00	-17.99	QP
4	665.4000	-3.38	32.90	29.52	46.00	-16.48	QP
5	762.0000	-2.00	33.57	31.57	46.00	-14.43	QP
6	853.0000	-0.38	33.25	32.87	46.00	-13.13	QP

#### Above 1GHz

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1732.000	-11.00	58.15	47.15	74.00	-26.85	peak
2	1732.000	-11.00	43.58	32.58	54.00	-21.42	AVG
3	1830.000	-10.35	53.40	43.05	74.00	-30.95	peak
4	1830.000	-10.35	39.04	28.69	54.00	-25.31	AVG

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

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

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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	2014/11	
2	Log per Antenna	ROHDE & SCHWARZ	HL050	100186	2015/03	
3	Signal analyzer	ROHDE & SCHWARZ	FSIQ26	100311	2015/03	
4	Log per Antenna	ROHDE & SCHWARZ	HL223	100226	2015/03	

#### 8.2. Test Information

EUT	Multi-functional Alarm Transmitter	
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	26.79	46	26.79	46	
	960MHz	32.65	54	32.70	54	
Remark: Other Spurious Emissions mini margin all >6 dB of Limit.						

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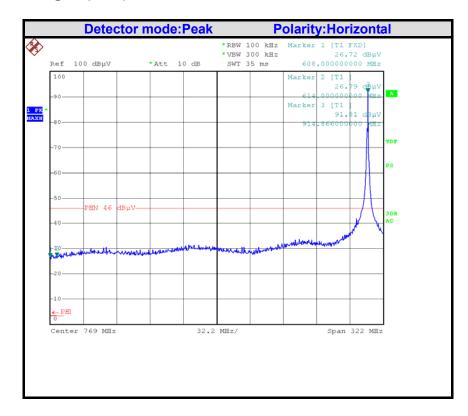
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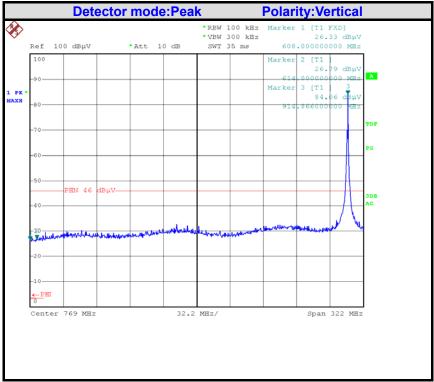
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#### **Band Edges (Low)**





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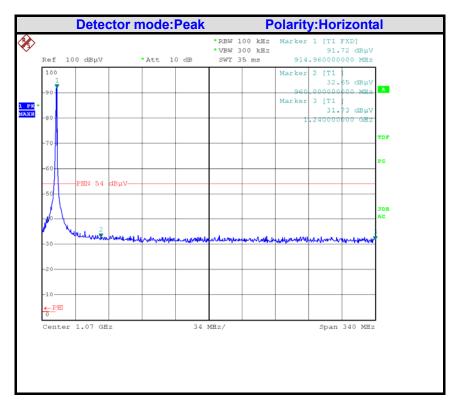
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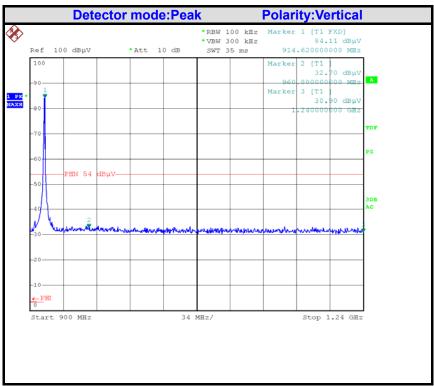
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#### Band Edges (High)





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## 9. DEVIATION TO TEST SPECIFICATIONS

The following identical model(s):

**HAX-500** 

Belong to the tested device:

Product description: Multi-functional Alarm Transmitter

Model name: HAX-300-500

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