



## Test Report

Date : 2020-05-22  
No. : HMD20050006

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**Applicant** : RMS International (USA) Inc.  
4 Gill Street, STE A Woburn, MA 01801 United States

**Supplier / Manufacturer** : RMS International (USA) Inc.  
4 Gill Street, STE A Woburn, MA 01801 United States

**Description of Sample(s)** : Submitted sample(s) said to be  
Product: X-TREME BEASTS RC  
Brand Name: RMS  
Model No.: US72-0400/GS, US72-0400/GSRTR  
FCC ID: 2ATYA27US720400

**Date Samples Received** : 2020-05-16

**Date Tested** : 2020-05-21

**Investigation Requested** : Perform ElectroMagnetic Interference measurement in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15 and ANSI C63.10: 2013 for FCC Certification.

**Conclusions** : The submitted product COMPLIED with the requirements of Federal Communications Commission [FCC] Rules and Regulations Part 15. The tests were performed in accordance with the standards described above and on Section 2.2 in this Test Report.

**Remarks** : ---

  
  
LEUNG Kwun Hang, Joey  
Authorized Signatory



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### **1.0 General Details**

#### **1.1 Equipment Under Test [EUT]**

##### **Description of Sample(s)**

Product: X-TREME BEASTS RC  
Manufacturer: RMS International (USA) Inc.  
4 Gill Street, STE A Woburn, MA 01801 United States  
Brand Name: RMS  
Model Number: US72-0400/GS, US72-0400/GSRTR  
Rating: 3.0Vd.c. (AA battery\*2)

#### **1.1.1 Description of EUT Operation**

The Equipment Under Test (EUT) is a Remote control. Operating at 27.145MHz. Test was conducted under Tx mode.

### **1.2 RF Module Details**

Module Model Number: N/A  
Module FCC ID: N/A  
Modulation: ASK  
Frequency Range: 27.145MHz

### **1.3 Antenna Details**

Antenna Type: Line antenna  
Antenna Gain: 0dBi

### **1.4 Date of Order**

2020-05-16

### **1.5 Submitted Sample(s):**

1 Sample

### **1.6 Test Duration**

2020-05-21

### **1.7 Country of Origin**

China



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### 2.0 Technical Details

#### **2.1 Investigations Requested**

Perform Electromagnetic Interference measurements in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15 Regulations and ANSI C63.10: 2013 for FCC Certification.  
The device was realized by test software.

#### **2.2 Test Standards and Results Summary Tables**

<b>EMISSION Results Summary</b>						
Test Condition	Test Requirement	Test Method	Class / Severity	Test Result		
				Pass	Failed	N/A
Field Strength of Fundamental & Harmonics Emissions	FCC 47CFR 15.227, 15.209, 15.205	ANSI C63.10: 2013	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Radiated Emissions	FCC 47CFR 15.209	ANSI C63.10: 2013	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Antenna requirement	FCC 47CFR 15.203	N/A	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20dB Emission bandwidth	FCC 47CFR 15.215(c)	ANSI C63.10: 2013	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Note: N/A - Not Applicable

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### **3.0 Test Results**

#### **3.1 Emission**

##### **3.1.1 Radiated Emissions (30 – 1000MHz)**

Test Requirement:	FCC 47CFR 15.227
Test Method:	ANSI C63.10:2013
Test Date:	2020-05-21
Mode of Operation:	Tx mode

#### **Test Method:**

For emission measurements at or below 1 GHz, the sample was placed 0.8m above the ground plane of semi-anechoic Chamber\*. For emission measurements above 1 GHz, the sample was placed 1.5m above the ground plane of semi-anechoic Chamber\*. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

\* Semi-Anechoic chamber located on the G/F of The Hong Kong Standards and Testing Centre Ltd. with a metal ground plane filed with the FCC pursuant to section 2.948 of the FCC rules, with Registration Number: 607756.

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## Test Report

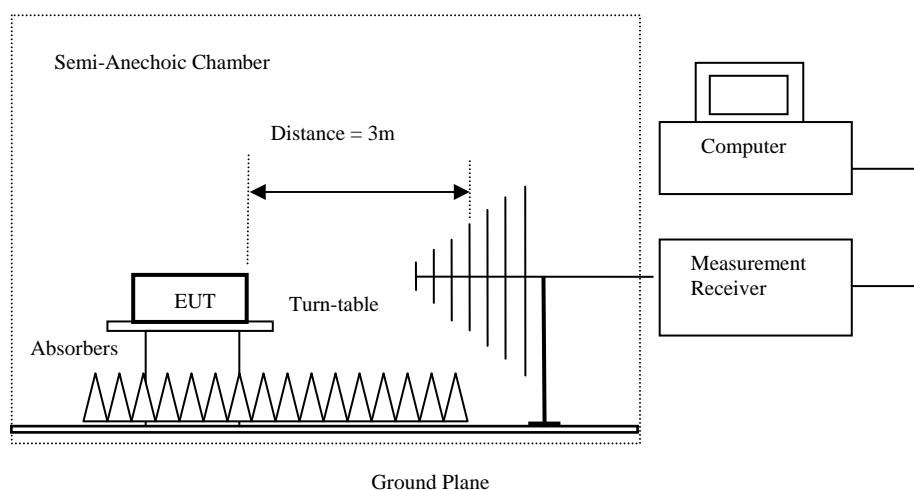
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### Spectrum Analyzer Setting:

9KHz – 30MHz (Pk & Av)	RBW: 10kHz
	VBW: 30kHz
	Sweep: Auto
	Span: Fully capture the emissions being measured
	Trace: Max. hold
30MHz – 1GHz (QP)	RBW: 120kHz
	VBW: 120kHz
	Sweep: Auto
	Span: Fully capture the emissions being measured
	Trace: Max. hold

### Test Setup:



- Absorbers placed on top of the ground plane are for measurements above 1000MHz only.
- Measurements between 30MHz to 1000MHz made with Bi-log antennas, above 1000MHz horn antennas are used, 9kHz to 30MHz loop antennas are used.

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**Limits for Field Strength of Fundamental Emissions [FCC 47CFR 15.227]:**

Frequency Range of Fundamental [MHz]	Field Strength of Fundamental Emission [Peak] [ $\mu\text{V}/\text{m}$ ]	Field Strength of Fundamental Emission [Average] [ $\mu\text{V}/\text{m}$ ]
26.96-27.28	100,000	10,000

**Results of Tx mode(30MHz-1GHz): PASS**

<b>Field Strength of Fundamental Emissions Peak Value</b>						
Frequency MHz	Measured Level @3m dB $\mu\text{V}$	Correction Factor dB/m	Field Strength dB $\mu\text{V}/\text{m}$	Field Strength $\mu\text{V}/\text{m}$	Limit @3m $\mu\text{V}/\text{m}$	E-Field Polarity
27.15	54.9	19.1	74.0	5,029.2	100,000	Vertical
27.15	43.7	21.1	64.8	1,737.8	100,000	Horizontal

<b>Field Strength of Fundamental Emissions Average</b>						
Frequency MHz	Measured Level @3m dB $\mu\text{V}$	Correction Factor dB/m	Field Strength dB $\mu\text{V}/\text{m}$	Field Strength $\mu\text{V}/\text{m}$	Limit @3m $\mu\text{V}/\text{m}$	E-Field Polarity
27.15	51.0	19.1	70.1	3,202.6	10,000	Vertical
27.15	39.8	21.1	60.9	1,107.9	10,000	Horizontal

According to FCC 47CFR15.35, the limit on the radio frequency emissions as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

Remarks:

Correction Factor includes Antenna Factor and Cable Attenuation.



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### Limits for Radiated Emissions [FCC 47 CFR 15.209]:

Frequency Range [MHz]	Quasi-Peak Limits [ $\mu$ V/m]
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

### Remarks:

Correction Factor includes Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty: (9kHz -30MHz): 2.0dB  
(30MHz -1GHz): 4.9dB  
(1GHz -6GHz): 4.02dB  
(6GHz -26.5GHz): 4.03dB

Emissions in the vertical and horizontal polarizations have been investigated and the worst-case test results are recorded in this report.

### Results of TX mode (9kHz – 30MHz): PASS

Emissions detected are more than 20 dB below the limit line(s), it were not reported.

### Results of TX mode (30MHz – 1GHz): PASS

Radiated Emissions Quasi-Peak					
Emission Frequency MHz	E-Field Polarity	Level @3m dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Level @3m $\mu$ V/m	Limit @3m $\mu$ V/m
31.0	Horizontal	32.7	40.0	42.9	100
64.8	Horizontal	24.2	40.0	16.2	100
119.5	Horizontal	23.2	43.5	14.4	150
207.7	Horizontal	26.8	43.5	21.9	150
457.5	Horizontal	34.5	46.0	53.0	200
45.1	Vertical	33.2	40.0	45.7	100
81.4	Vertical	26.3	40.0	20.7	100
108.5	Vertical	25.8	43.5	19.4	150
162.9	Vertical	26.9	43.5	22.1	150
340.6	Vertical	30.6	46.0	33.7	200

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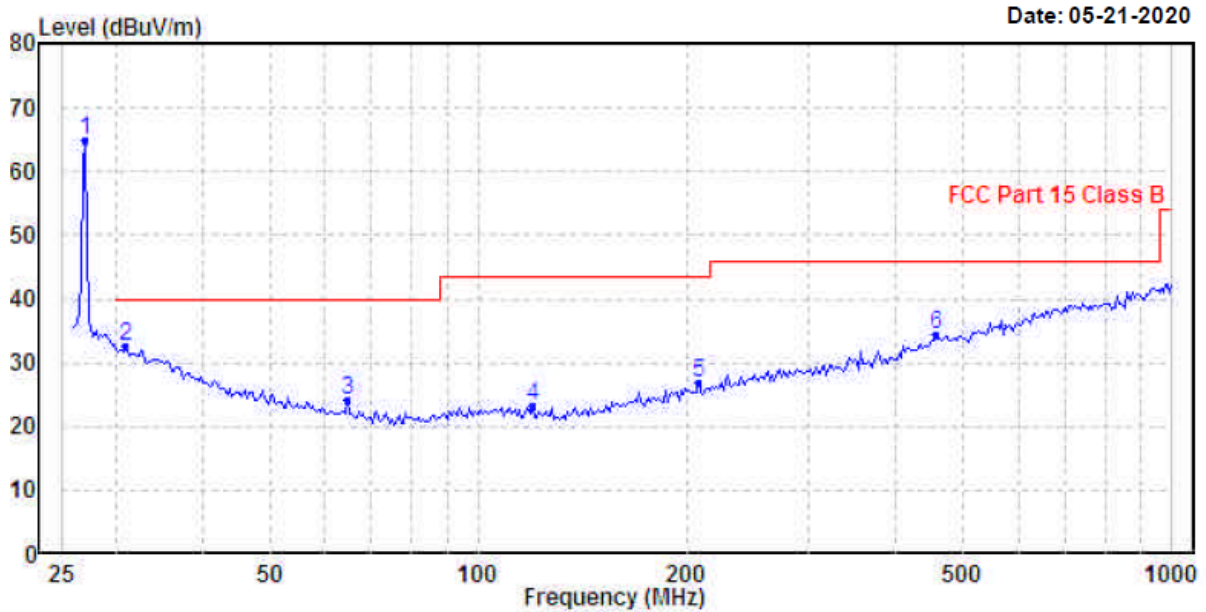


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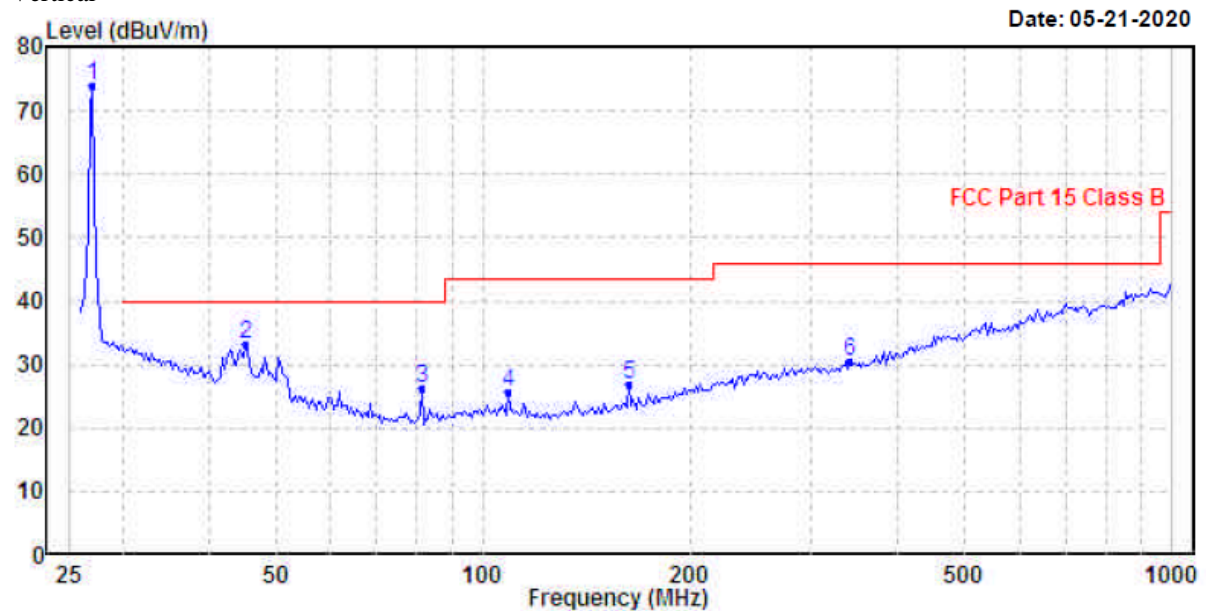
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Horizontal



Vertical



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### 3.1.2 Antenna Requirement

Test Requirements: § 15.203

#### Test Specification:

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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

#### Test Results:

This is Line antenna. The antenna gain =0dBi. User is unable to remove or changed the Antenna.

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### 3.2 20dB Bandwidth of Fundamental Emission

Test Requirement:	FCC 47 CFR 15.227
Test Method:	ANSI C63.10: 2013 (Section 13.1.7)
Test Date:	2020-05-21
Mode of Operation:	Tx mode

#### Test Method:

The bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.

#### Test Setup:

As Test Setup of clause 3.1.1 in this test report.

#### Spectrum Analyzer Setting:

RBW:	3kHz
VBW:	10kHz
Sweep:	Auto
Trace:	Max. hold

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### Appendix A

#### List of Measurement Equipment

##### Radiated Emission

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL	DUE CAL
EM215	MULTIDEVICE CONTROLLER	EMCO	2090	00024676	N/A	N/A
EM217	ELECTRIC POWERED TURNTABLE	EMCO	2088	00029144	N/A	N/A
EM218	ANECHOIC CHAMBER	ETS-LINDGREN	FACT-3	--	2020/04/20	2021/04/20
EM356	ANTENNA POSITIONING TOWER	ETS-LINDGREN	2171B	00150346	N/A	N/A
EM336	PRECISION CONICAL DIPOLE	SEIBERSDORF LABORATORIES	PCD 3100	6236/M	2018/06/28	2020/06/28
EM229	EMI TEST RECEIVER	R&S	ESIB40	100248	2020/05/13	2021/05/13
EM276	BROADBAND HORN ANTENNA	A-INFOMW	JTXLB- 10180-SF	J203109090300 7	2019/03/20	2021/03/29
EM300	PYRAMIDAL STANDARD GAIN HORN ANTENNA	ETS-LINDGREN	3160-09	00130130	2020/04/28	2022/04/28
EM301	PYRAMIDAL STANDARD GAIN HORN ANTENNA	ETS-LINDGREN	3160-10	00130988	2020/04/28	2022/04/28
EM022	LOOP ANTENNA	ETS_LINDGREN	6502	00206533	2019/11/30	2021/11/30
EM045	POWER METER	ROHDE & SCHWARZ	NRVD	843246/028	2018/06/01	2020/06/01

Remarks:-

CM Corrective Maintenance  
N/A Not Applicable  
TBD To Be Determined

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### Appendix B

#### Duty Cycle Correction During 100msec

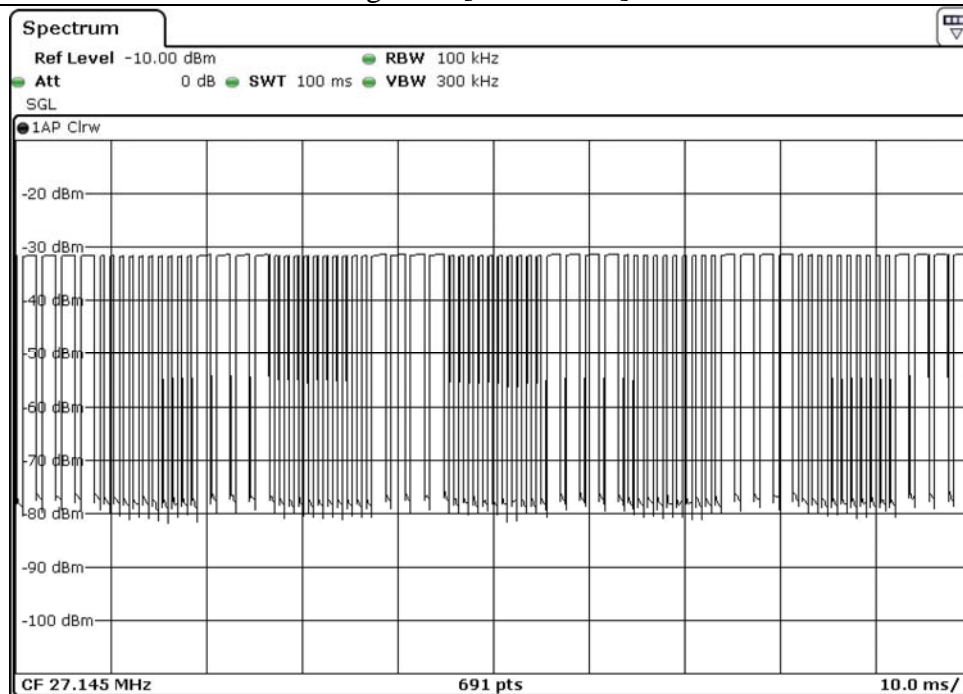
Each packet period (100msec) never exceeds a series of 24 (1.5652msec) long and 50 (0.5217msec) short pulses. Assuming any combination of short and long pulses may be obtained due to encoding the worst case transmit duty cycle would be considered  $(1.5652*24+0.5217*50)$  msec per 100msec = 63.65% duty cycle. Figure A through C shows the characteristics of the pulses train for one of these functions.

Remarks:

Duty cycle factor =  $20\text{Log} [(24*1.5652+50*0.5217)/100] = - 3.92\text{dB}$

The following figures [Figure A to Figure C] showed the characteristics of the pulse train for one of these functions.

Figure A [Pulse Train]



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Figure B [Long Pulse]

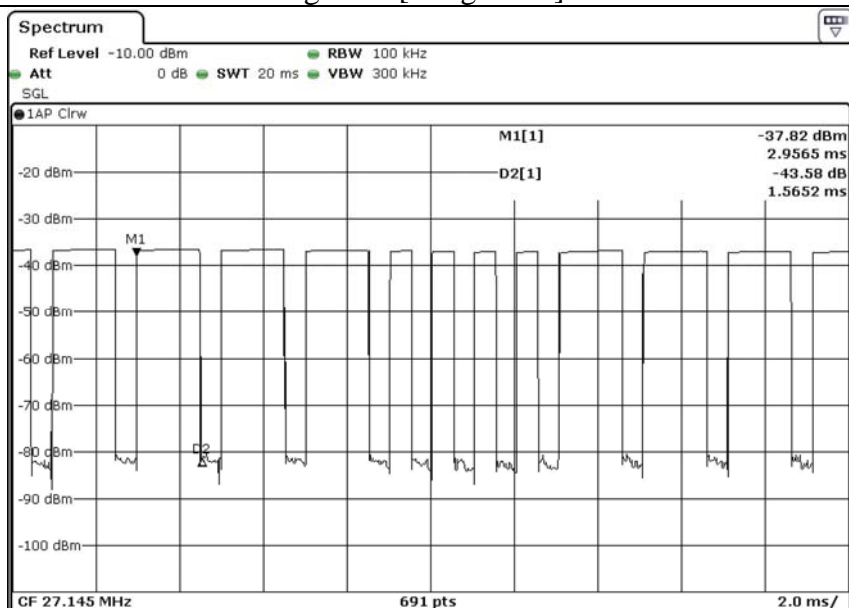
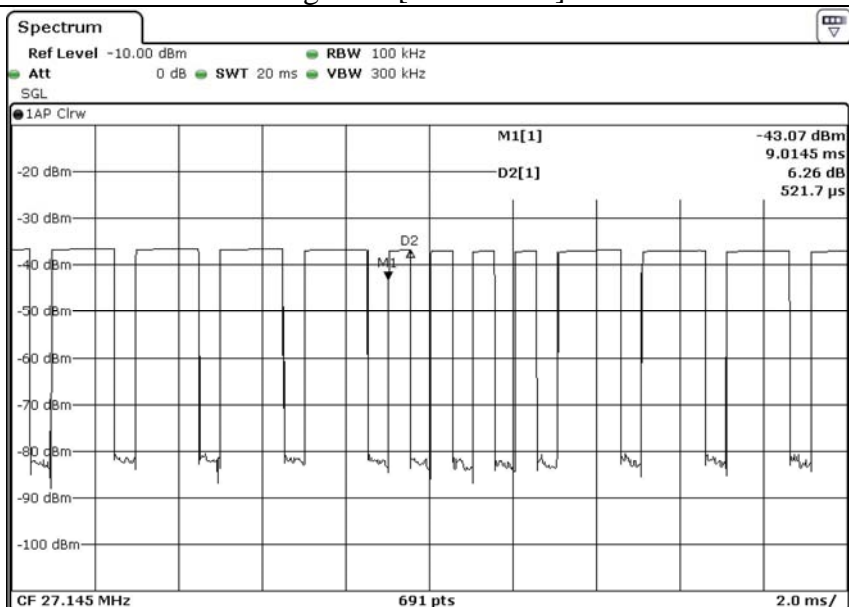


Figure C [Short Pulse]





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### Appendix C

#### Photographs of EUT

**Front View of the product**



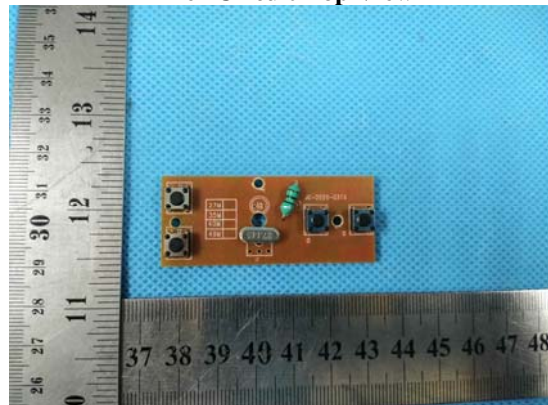
**Rear View of the product**



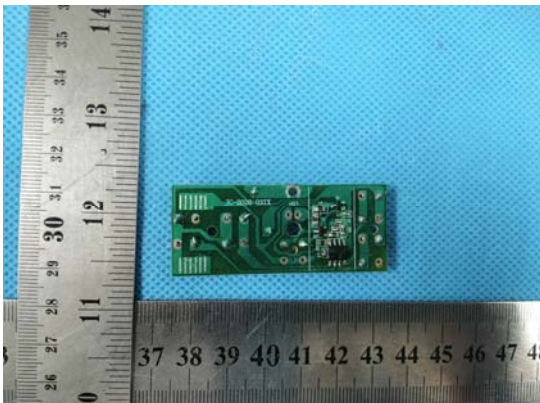
**Inside View of the product**



**Inner Circuit Top View**



**Inner Circuit Bottom View**





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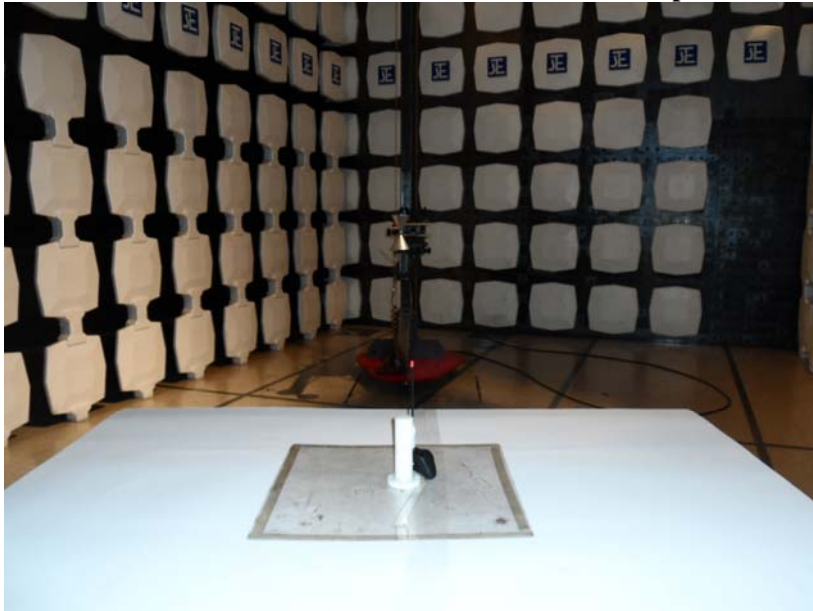
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### Photographs of EUT

**Measurement of Radiated Emission Test Set Up**



**Measurement of Radiated Emission Test Set Up**



**\*\*\*\*\* End of Test Report \*\*\*\*\***

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5. The results in Report apply only to the sample as received and do not apply to the bulk, unless the sampling has been carried out by the Company and is stated as such in the Report.
6. When a statement of conformity to a specification or standard is provided, the ILAC-G8 Guidance document (and/or IEC Guide 115 in the electrotechnical sector) will be adopted as a decision rule for the determination of conformity unless it is inherent in the requested specification or standard, or otherwise specified in the Report.
7. In the event of the improper use the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.
8. Sample submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.
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10. Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.
11. Subject to the variable length of retention time for test data and report stored hereinto as to otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of this test report for a period of three years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after the retention period. Under no circumstances shall we be liable for damages of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.
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