



## STC Test Report

Date : 2010-04-01  
No. : HM165022

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**Applicant (ARE003):** Artlight Electrical Manufacturing Co Ltd  
Unit 301, 3/F, Eastern Centre 1065 King's Road, Hong Kong

**Manufacturer:** Artlight Electrical Manufacturing Co Ltd  
Unit 301, 3/F, Eastern Centre 1065 King's Road, Hong Kong

**Description of Sample(s):** Submitted Sample(s) said to be:  
Product: Walkie Talkie  
Brand Name: N/A  
Model Number: AL30383  
FCC ID: CIXAL30383

**Date Sample(s) Received:** 2010-03-10, 2010-03-18

**Date Tested:** 2010-03-16 to 2010-04-01

**Investigation Requested:** Perform ElectroMagnetic Interference measurement in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2009 and ANSI C63.4:2003 for FCC Certification.

**Conclusion(s):** 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.

**Remark(s):** ---



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Dr. LEE Kam Chuen,  
Authorized Signatory  
ElectroMagnetic Compatibility Department  
For and on behalf of  
The Hong Kong Standards and Testing Centre Ltd.



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### **1.0 General Details**

#### **1.1 Test Laboratory**

The Hong Kong Standards and Testing Centre Ltd.  
EMC Laboratory  
10 Dai Wang Street, Taipo Industrial Estate  
New Territories, Hong Kong

Telephone: 852 2666 1888  
Fax: 852 2664 4353

#### **1.2 Applicant Details**

##### **Applicant**

Artlight Electrical Manufacturing Co Ltd  
Unit 301, 3/F, Eastern Centre 1065 King's Road, Hong Kong

##### **Manufacturer**

Artlight Electrical Manufacturing Co Ltd  
Unit 301, 3/F, Eastern Centre 1065 King's Road, Hong Kong

##### **The Hong Kong Standards and Testing Centre Ltd.**

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

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

Submitted sample(s) said to be:

Product:

Walkie Talkie

Manufacturer:

Artlight Electrical Manufacturing Co Ltd

Brand Name:

N/A

Model Number:

AL30383

Additional Model Number:

AL6211

Input Voltage:

6Vd.c. ("AAA" size battery x 4)

#### **1.3.1 Description of EUT Operation**

The Equipment Under Test (EUT) is a ARTLIGHT ELECTRICAL MFG CO LTD., Walkie Talkie. The transmitter is a button transmitter. The EUT continues to transmit while button is being pressed. It is voice transmission, Modulation by microphone, and type is amplitude modulation.

### **1.4 Date of Order**

2010-03-10, 2010-03-18

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

3 samples

### **1.6 Test Duration**

2010-03-16 to 2010-04-01

### **1.7 Country of Origin**

China

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### **2.0 Technical Details**

#### **2.1 Investigations Requested**

Perform ElectroMagnetic Interference measurement in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15:2009 and ANSI C63.4:2003 for FCC Certification.

#### **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
Field Strength of Fundamental Emissions & Spurious Emissions	FCC 47CFR 15.235	ANSI C63.4:2003	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Radiated Emissions, 30MHz to 1GHz	FCC 47CFR 15.209	ANSI C63.4:2003	N/A	<input checked="" 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)**

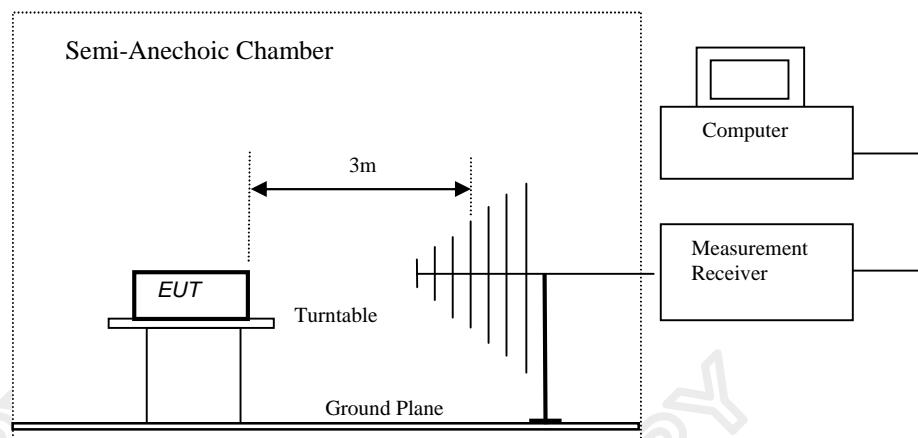
Test Requirement:	FCC 47CFR 15.209
Test Method:	ANSI C63.4:2003
Test Date:	2010-04-01
Mode of Operation:	Tx mode

#### **Test Method:**

The sample was placed 0.8m above the ground plane on a standard radiated emission test site. 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. In the frequency range of 9kHz to 30MHz, The center of the loop antenna shall be 1 meter above the ground and rotated loop axis for maximum reading. 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.

#### **Test Setup:**



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### Limits for Field Strength of Fundamental Emissions [FCC 47CFR 15.235]:

Frequency Range of Fundamental [MHz]	Field Strength of Fundamental Emission [Peak] [ $\mu$ V/m]	Field Strength of Fundamental Emission [Average] [ $\mu$ V/m]
49.82-49.90	100,000	10,000

Results of Tx Mode: PASS

Field Strength of Fundamental Emissions Peak Value						
Frequency MHz	Measured Level @3m dB $\mu$ V	Correction Factor dB/m	Field Strength dB $\mu$ V/m	Field Strength $\mu$ V/m	Limit @3m $\mu$ V/m	E-Field Polarity
49.85	32.5	9.4	41.9	124.5	100,000	Vertical

Field Strength of Fundamental Emissions Avrage Value						
Frequency MHz	Measured Level @3m dB $\mu$ V	Correction Factor dB/m	Field Strength dB $\mu$ V/m	Field Strength $\mu$ V/m	Limit @3m $\mu$ V/m	E-Field Polarity
49.85	26.4	9.4	35.8	61.7	10,000	Vertical

#### Remarks:

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.

For effective averaging, the bandwidth of the video filter must be greater than the resolution bandwidth. The higher the ratio of resolution bandwidth to video bandwidth, the greater the averaging will be recorded. Below setting for HP8572A EMI Receiver.

Resolution Bandwidth =100kHz  
Video Bandwidth =300kHz

No additional spurious emissions found between lowest internal used/generated frequency and 30 MHz. Correction Factor includes Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty: 30MHz to 1GHz 5.1dB

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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
Above 960	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.

### **Results of Tx Mode: PASS**

Radiated Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dB $\mu$ V	Correction Factor dB/m	Field Strength dB $\mu$ V/m	Field Strength $\mu$ V/m	Limit @3m $\mu$ V/m	E-Field Polarity
99.72	< 1.0	9.2	< 10.2	< 3.2	150	Vertical
149.58	18.8	9.4	28.2	25.7	150	Vertical
199.44	22.1	11.7	33.8	49.0	150	Vertical
249.30	17.8	13.9	31.7	38.5	200	Vertical
299.16	< 1.0	15.2	< 16.2	< 6.5	200	Vertical
349.02	8.2	16.7	24.9	17.6	200	Vertical
398.88	< 1.0	18.8	< 19.8	< 9.8	200	Vertical
448.74	< 1.0	19.1	< 20.1	< 10.1	200	Vertical
498.60	< 1.0	20.6	< 21.6	< 12.0	200	Vertical
548.40	14.4	21.4	35.8	61.7	200	Vertical

#### Remarks:

No additional spurious emissions found between lowest internal used/generated frequency and 30 MHz  
Correction Factor includes Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty: 30MHz to 1GHz 5.1dB

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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
Above 960	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.

### Results of Rx Mode: PASS

Radiated Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dBmV	Correction Factor dB/m	Field Strength dBmV/m	Field Strength mV/m	Limit @3m mV/m	E-Field Polarity
30.6	0.1	18.2	18.3	8.2	100	Horizontal
49.0	6.7	9.6	16.3	6.5	100	Vertical
99.72	< 1.0	9.2	< 10.2	< 3.2	150	Vertical
149.58	< 1.0	11.5	< 12.5	< 4.2	150	Vertical
199.44	< 1.0	15.9	< 16.9	< 7.0	200	Vertical
212.20	0.2	12.1	12.3	4.1	150	Horizontal
249.30	< 1.0	17.4	< 18.4	< 8.3	200	Vertical
299.16	< 1.0	17.2	< 18.2	< 8.1	200	Vertical
349.02	< 1.0	18.8	< 19.8	< 9.8	200	Vertical
398.88	< 1.0	19.7	< 20.7	< 10.8	200	Vertical
448.74	< 1.0	20.6	< 21.6	< 12.0	200	Vertical
498.60	< 1.0	21.4	< 22.4	< 13.2	200	Vertical
564.20	3.7	21.2	24.9	17.6	200	Vertical
798.10	0.1	24.8	24.9	17.6	200	Horizontal
959.60	0.5	26.8	27.3	23.2	200	Horizontal

#### Remarks:

No additional spurious emissions found between lowest internal used/generated frequency and 30 MHz  
Correction Factor includes Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty: 30MHz to 1GHz 5.1dB

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### **3.2 20dB Bandwidth of Fundamental Emission**

Test Requirement:	FCC 47 CFR 15.235
Test Method:	ANSI C63.4:2003 (Section 13.1.7)
Test Date:	2010-04-01
Mode of Operation:	On 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.

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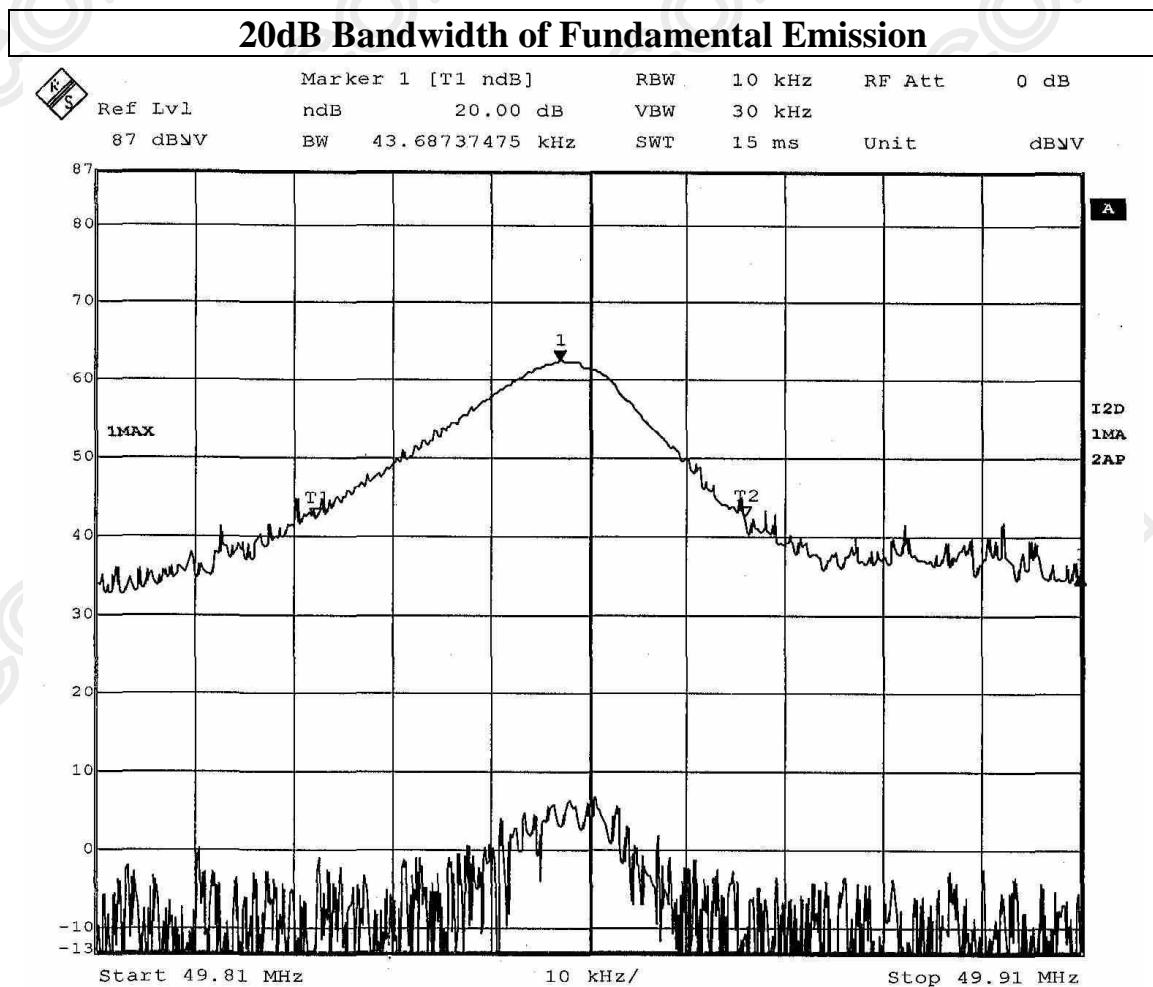
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### Limits for 20dB Bandwidth of Fundamental Emission:

Frequency Range [MHz]	20dB Bandwidth [kHz]	FCC Limits [MHz]
49.85	43.687	within 49.82-49.90



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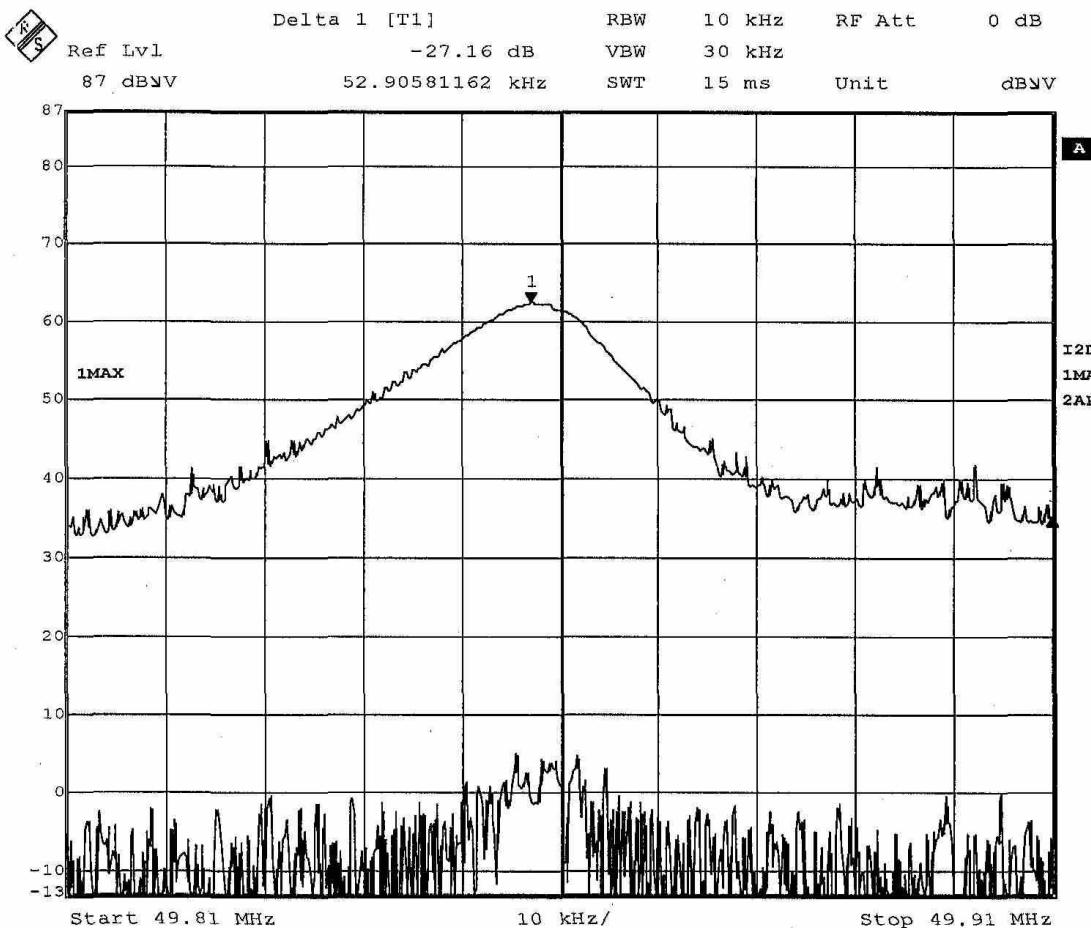
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**Attenuation from peak to 10kHz below band edge = 27.16dB > 26dB**



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### Appendix A

#### List of Measurement Equipment

##### Radiated Emission

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL	DUE CAL
EM020	HORN ANTENNA	EMCO	3115	4032	2009/09/02	2010/09/02
EM215	MULTIDEVICE CONTROLLER	EMCO	2090	00024676	N/A	N/A
EM216	MINI MAST SYSTEM	EMCO	2075	00026842	N/A	N/A
EM217	ELECTRIC POWERED TURNTABLE	EMCO	2088	00029144	N/A	N/A
EM218	ANECHOIC CHAMBER	ETS-Linggren	FACT-3	--	2008/12/01	2011/12/01
EM083	STCOATS	--	--	--	2008/12/08	2011/12/08
EM194	BICONILOG ANTENNA	EMCO	3142B	1795	2008/09/08	2010/09/08
EM229	EMI Test Receiver	R&S	ESIB40	100248	2009/09/27	2010/09/27
EM022	LOOP ANTENNA	EMCO	6502	1189-2424	2009/07/26	2011/07/26

##### Remarks:-

CM Corrective Maintenance

N/A Not Applicable or Not Available

TBD To Be Determined

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### Appendix B

#### Photographs of EUT

Front View of the product



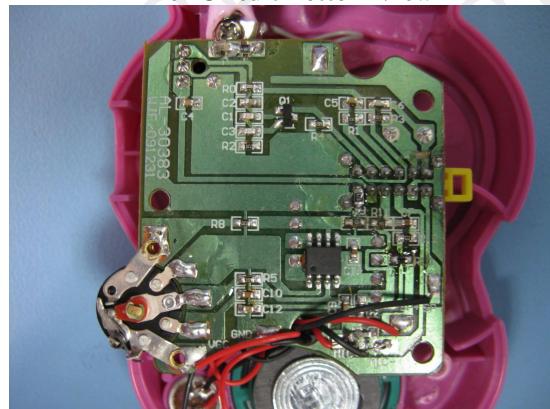
Rear View of the product



Inner Circuit Top View



Inner Circuit Bottom View



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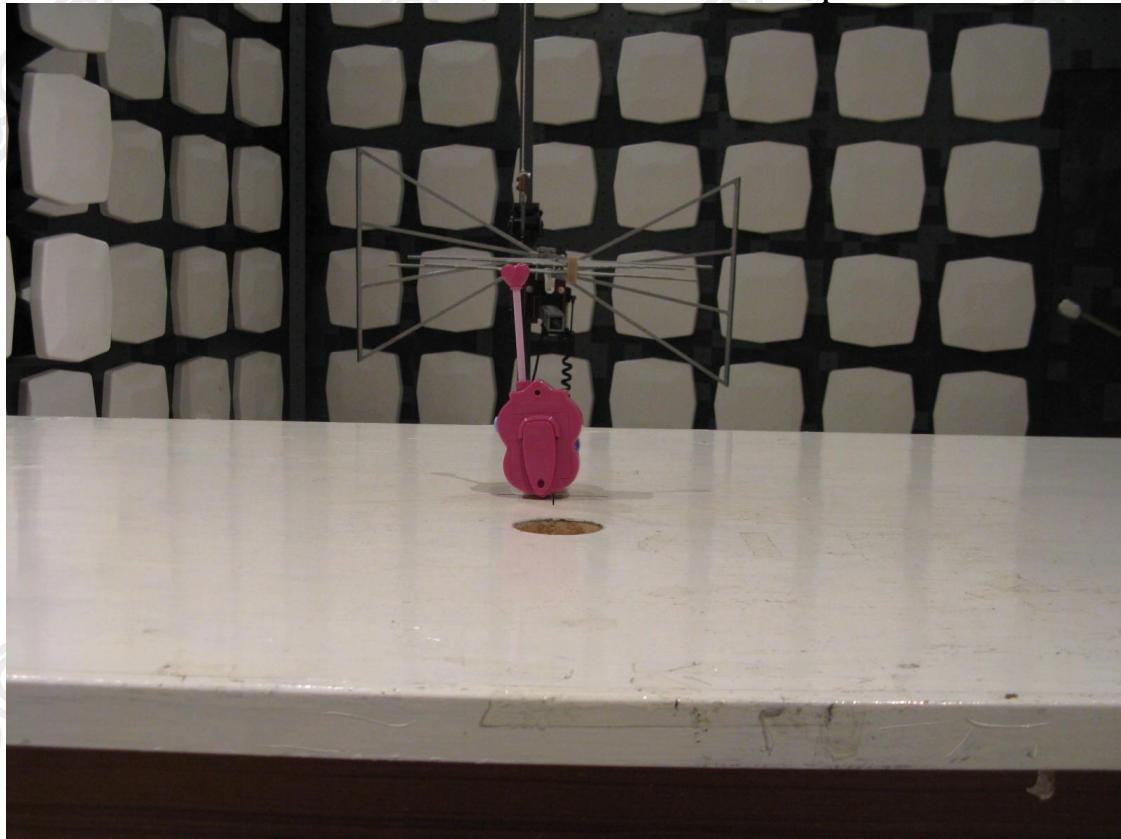
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### **Photographs of EUT**

**Measurement of Radiated Emission Test Set Up**



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

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