



## EMC CONFORMITY TEST REPORT

**Product Name** : Coin type vibrator motor  
**Trade Name** : kotl  
**Model Number** :  $\Phi 8-\Phi 12\text{mm}$   
**Serial Number** : Not Applicable  
**Technical Data** : DC 1.3V-3V  
**Report Number** : SHEE080704310901  
**Date** : Jul. 09, 2008  
**Regulations** : See below

Standards	Results
<input checked="" type="checkbox"/> EN 61000-6-3:2007	PASS
<input checked="" type="checkbox"/> EN 61000-3-2:2006	Not Applicable
<input checked="" type="checkbox"/> EN 61000-3-3:1995 + A1: 2001 + A2: 2005	Not Applicable
<input checked="" type="checkbox"/> EN 61000-6-1:2007	PASS
<input checked="" type="checkbox"/> IEC 61000-4-2: 2001	PASS
<input checked="" type="checkbox"/> IEC 61000-4-3: 2006	PASS
<input checked="" type="checkbox"/> IEC 61000-4-4: 2004	Not Applicable
<input checked="" type="checkbox"/> IEC 61000-4-5: 2005	Not Applicable
<input checked="" type="checkbox"/> IEC 61000-4-6: 2006	Not Applicable
<input checked="" type="checkbox"/> IEC 61000-4-11: 2004	Not Applicable

Prepared for:

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## 1. VERIFICATION OF CONFORMITY

**Equipment Under Test:** Coin type vibrator motor  
**Trade Name:** kotl  
**Model Number:** Φ8-Φ12mm  
**Serial Number:** Not Applicable  
**Applicant & Address:** Jinlong machinery electronics co., ltd China  
jinlong Science&Technolony park,  
Jin Gang Avenue, Bei Baixiang, yueqing  
Jinlong machinery electronics co., ltd China  
**Manufacturer Site:** jinlong Science&Technolony park,  
Jin Gang Avenue, Bei Baixiang, yueqing  
**Type of Test:** EMC Directive 2004/108/EC for CE Marking  
**Report Number:** SHEE080704310901  
**Date of test:** Jul.04, 2008 to Jul.09, 2008  
**Deviation:** None  
**Condition of Test Sample:** Normal

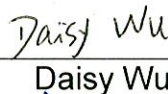
The above equipment was tested by Centre Testing International for compliance with the requirements set forth in EMC Directive 2004/108/EC and the Technical Standards mentioned above. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment and the level of the immunity endurance of the equipment are within the compliance requirements.

The test results of this report relate only to the tested sample identified in this report.

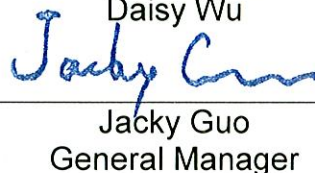
Prepared by :

  
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Reviewed by :

  
Daisy Wu

Approved by :

  
Jacky Guo  
General Manager



Date :

Jul.09, 2008

## 2. SYSTEM DESCRIPTION

### Describe the Sequence:

1. Power on the EUT.
2. Make sure the EUT work normally during the whole test.

## 3. PRODUCT INFORMATION

Technical Data: DC 1.3V-3V

## 4. EXTERNAL PERIPHERAL DEVICES

Device Type	Manufacturer	Model Name	Serial No.	Data Cable	Power Cable
--	--	--	--	--	--

**\*\*Note:** All the above equipment/cables were placed in worse case positions to maximize emission signals during emission test.

**Grounding:** Grounding was in accordance with the manufacturer's requirements and conditions for the intended use.

## 5. TEST FACILITY

**Location:** 1F., Building C, Hongwei Industrial Zone, Baoan 70 District, Shenzhen, China

**Description:** There is one 3m semi-anechoic chamber and two line conducted labs for final test.

**Instrument Tolerance:** All measuring equipment is in accord with CISPR 22 requirements.

**Ground Plane:** Two conductive reference ground planes were used during the Conducted Emission, one in vertical and the other in horizontal. The dimensions of these ground planes are as below. The vertical ground plane was placed distancing 40 cm to the rear of the wooden test table on where the EUT and the support equipment were placed during test. The horizontal ground plane projected 50 cm beyond the footprint of the EUT system and distanced 80 cm to the wooden test table. For Radiated Emission Test, one horizontal conductive ground plane extended at least 1m beyond the periphery of the EUT and the largest measuring antenna, and covered the entire area between the EUT and the antenna. It has no holes or gaps having longitudinal dimensions larger than one-tenth of a wavelength at the highest frequency of measurement up to 1GHz.

## 6. TEST EQUIPMENT LIST

**Instrumentation:** The following list contains equipment used at CTI for testing. The equipment conforms to the CISPR 16-1 / ANSI C63.4 Specifications for Electromagnetic Interference and Field Strength Instrumentation from 10 kHz to 1.0GHz or above.

### Equipment used during the tests:

<b>3M Semi-anechoic Chamber — Radiation Test Site</b>				
<b>Equipment Type</b>	<b>Manufacturer</b>	<b>Model Number</b>	<b>Serial Number</b>	<b>Calibration Date</b>
Spectrum Analyzer	Agilent	E4443A	MY46185649	06/28/2008
Biconilog Antenna	ETS	3142C	920250	05/29/2008
Multi device Controller	ETS	2090	00057230	06/06/2008

The calibrations of the measuring instruments, including any accessories that may effect such calibration, are checked frequently to assure their accuracy. Adjustments are made and correction factors applied in accordance with instructions contained in the manual for the measuring instrument.

<b>Shielding Room No. 2 — ESD Test (IEC 61000-4-2)</b>				
<b>Equipment Type</b>	<b>Manufacturer</b>	<b>Model Number</b>	<b>Serial Number</b>	<b>Calibration Date</b>
ESD Simulator	EM-Test	ESD 30C/P30C	V0603101091	06/06/2008

<b>3M Full-anechoic Chamber — (IEC 61000-4-3)</b>				
<b>Radiated Electromagnetic Field Immunity Measurement</b>				
<b>Equipment Type</b>	<b>Manufacturer</b>	<b>Model Number</b>	<b>Serial Number</b>	<b>Calibration Date</b>
Signal Generator	IFA	2023B	202307/883	01/18/2008
Power Amplifier	AR	150W1000	0322288	01/18/2008
Power Amplifier	AR	25S1G4A	321112	01/18/2008

## 7. EN 61000-6-3 RADIATION EMISSION TEST

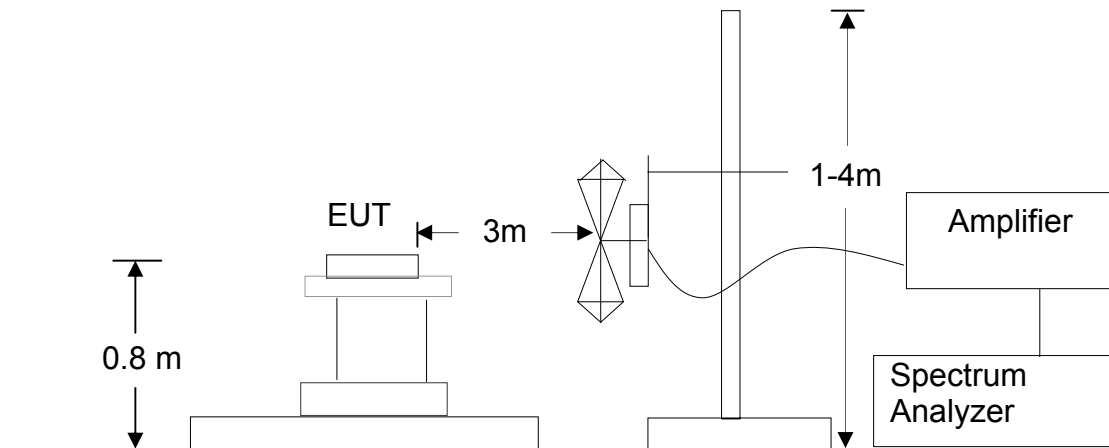
### 7.1 LIMITS OF RADIATED DISTURBANCES AT 3M DISTANCES

Frequency (MHz)	Distance (m)	Maximum Field Strength Limit (dBuV/m Q.P.)
30-230	3	40.00
230-1000	3	47.00

**Note:** The lower limit shall apply at the transition frequency.

### 7.2 BLOCK DIAGRAM OF TEST SETUP

#### System Diagram of Connections between EUT and Simulators



### 7.3 PROCEDURE OF RADIATED EMISSION TEST

The EUT and support equipment were set up on the turntable.

The Receiver scanned from 30MHz to 1000MHz. Emissions were scanned and measured rotating the EUT to 360 degrees, varying cable placement and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

Record at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and Q.P./Peak reading is presented.

The test data of the worst condition(s) was reported on the Summary Data page.

## 7.4 TEST RESULT OF RADIATED EMISSION TEST

**Limit** : EN 61000-6-3 Radiation      **Voltage** : DC 3V  
**M/N** :  $\Phi 8\text{-}\Phi 12\text{mm}$                       **Temperature** : 26°C  
**Mode** : Normal                                      **Humidity** : 60%

(The chart below shows the highest readings taken from the final data)

Radiated Emission Test Result													
Frequency (MHz)	Reading Level (dBuV/m)			Correct Factor (dB)	Measurement (dBuV/m)			Limit (dBuV/m)		Margin (dB)		Result (P/F)	Remarks (H/V)
	Peak	Q.P.	Avg.		Peak	Q.P.	Avg.	Q.P.	Avg.	Q.P.	Avg.		
68.8000	23.59	--	--	8.03	31.62	--	--	40.00	--	<-10	--	P	H
89.8167	21.81	19.35	--	9.96	31.77	29.31	--	40.00	--	-10.69	--	P	H
165.8000	26.22	22.34	--	11.24	37.46	33.58	--	40.00	--	-6.42	--	P	H
309.6833	22.71	--	--	16.23	38.94	--	--	47.00	--	<-10	--	P	H
482.6667	16.61	--	--	20.05	36.66	--	--	47.00	--	<-10	--	P	H
599.0667	16.40	--	--	22.16	38.56	--	--	47.00	--	<-10	--	P	H
57.4833	25.13	23.12	--	8.54	33.67	31.66	--	40.00	--	-8.34	--	P	V
84.9667	24.36	19.35	--	9.46	33.82	28.81	--	40.00	--	-11.19	--	P	V
267.6500	16.92	--	--	14.61	31.53	--	--	47.00	--	<-10	--	P	V
380.8167	17.46	--	--	18.14	35.60	--	--	47.00	--	<-10	--	P	V
476.2000	17.18	--	--	20.09	37.27	--	--	47.00	--	<-10	--	P	V
574.8167	13.42	--	--	21.43	34.85	--	--	47.00	--	<-10	--	P	V

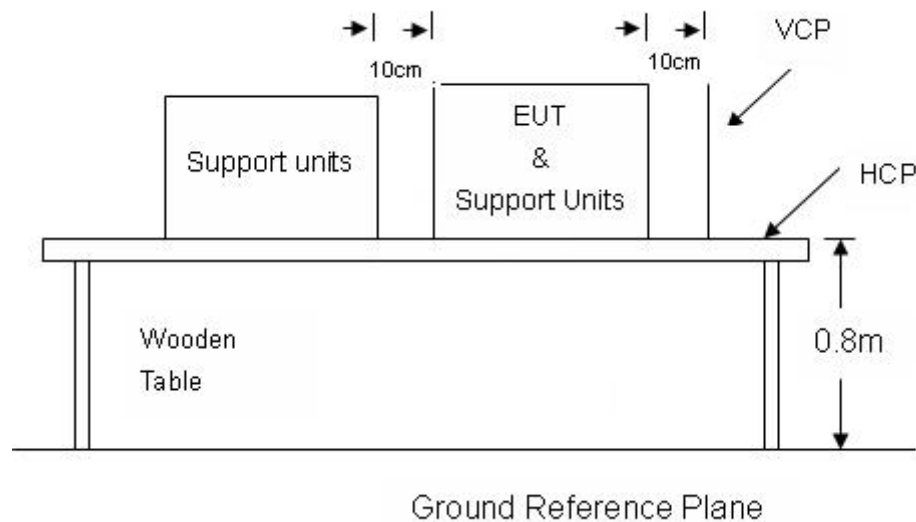
Freq. = Emission frequency in MHz  
 Reading level = Uncorrected Analyzer/Receiver reading  
 Factor = Cable loss + LISN inserting loss  
 Emission level = Reading level + Factor  
 Limit = Limit stated in standard  
 Margin = Reading in reference to limit  
 "--" = No necessary reading level

## 8. IEC 61000-4-2 TEST ELECTROSTATIC DISCHARGE (ESD) IMMUNITY TEST

<b>Basic Standard</b>	: IEC 61000-4-2: 2001
<b>Test Level</b>	: $\pm 8$ kV (Air Discharge) $\pm 4$ kV (Contact Discharge) $\pm 4$ kV (Indirect Discharge)
<b>The Performance Level Required</b>	: B
<b>Temperature/Humidity</b>	: $25^{\circ}\text{C}/55\%$

### 8.1 BLOCK DIAGRAM OF TEST SETUP

*(The 470 k ohm resistors are installed per standard requirement)*



## 8.2 TEST PROCEDURE

The EUT was located 0.1 m minimum from all side of the HCP.

The support units were located 0.1 m minimum away from the EUT.

Make sure the EUT work normally.

As per the requirement of EN 55014-2; applying direct contact discharge at the sides other than front of the EUT at minimum 20 discharges (10 positive and 10 negative) if applicable, can't be applied direct contact discharge side of the EUT then the indirect discharge shall be applied. One of the test points shall be subjected to at least 20 indirect discharges (contact) to the front edge of horizontal coupling plane.

Other parts of the EUT where it is not possible to perform contact discharge then selecting appropriate points of the EUT for air discharge, a minimum of 10 single air discharges shall be applied.

The following test condition was followed during the tests.

The electrostatic discharges were applied as follows:

Amount of Discharges	Voltage	Coupling	Result
Mini 10 /Point	±4kV	Direct Contact Discharge	Pass
Mini 10 /Point	±4kV	Indirect Discharge HCP	Pass
Mini 10 /Point	±4kV	Indirect Discharge VCP	Pass
Mini 10 /Point	±8kV	Direct Air Discharge	No air discharge point

## 8.3 PERFORMANCE & RESULT

**Criteria A:** The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.

**Criteria B:** The apparatus continues to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

**Criteria C:** Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.

**PASS**

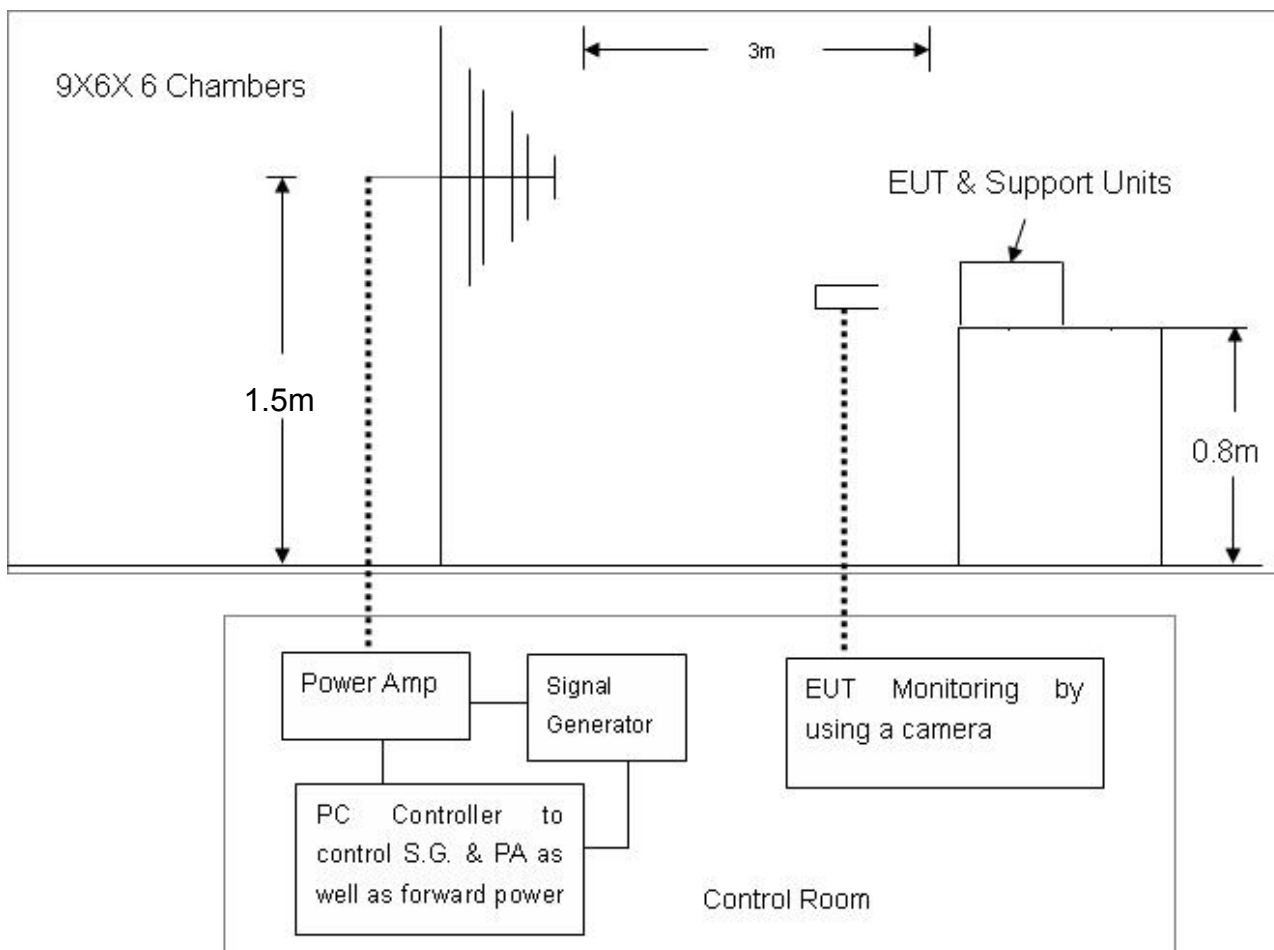
**FAIL**

## 9. IEC 61000-4-3 TEST

### RADIATED ELECTROMAGNETIC FIELD IMMUNITY TEST

<b>Basic Standard</b>	: IEC 61000-4-3:2006
<b>Requirements</b>	: 3 V/m with 80% AM. 1 kHz Modulation.
<b>Standard require</b>	: A
<b>Temperature</b>	: 25°C
<b>Humidity</b>	: 56%

#### 9.1 BLOCK DIAGRAM OF TEST SETUP



## 9.2 TEST PROCEDURE

The EUT was located at the edge of supporting table keep 3 meter away from transmitting antenna, it just the calibrated square area of field uniformity. The support units were located outside of the uniformity area, but the cable(s) connected with EUT were exposed to the calibrated field as per IEC 61000-4-3.

Make sure the EUT work normally.

Set the testing parameters of RS test software per IEC 61000-4-3.

Choose the worst side of the EUT for final test from 80 MHz to 1000 MHz at 1% steps.

Record the test result in following table.

### IEC 61000-4-3 test conditions:

Test level : 3V/m  
Steps : 1 %  
Dwell Time : 1 sec  
Modulation : 1 KHz 80% AM

Range (MHz)	Field	Modulation	Polarity	Position (°)	Result
80-1000	3V/m	Yes	H	Front	Pass
80-1000	3V/m	Yes	H	Left	Pass
80-1000	3V/m	Yes	H	Back	Pass
80-1000	3V/m	Yes	H	Right	Pass
80-1000	3V/m	Yes	V	Front	Pass
80-1000	3V/m	Yes	V	Left	Pass
80-1000	3V/m	Yes	V	Back	Pass
80-1000	3V/m	Yes	V	Right	Pass

### 9.3 PERFORMANCE & RESULT

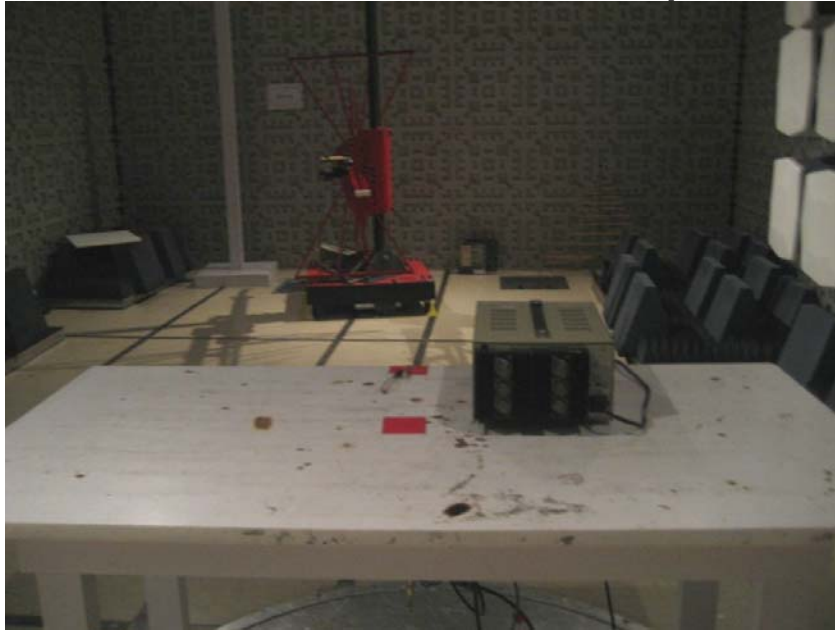
- Criteria A:** The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.
- Criteria B:** The apparatus continues to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.
- Criteria C:** Temporary loss of function is allowed, provided the functions self-recoverable or can be restored by the operation of controls.

**PASS**

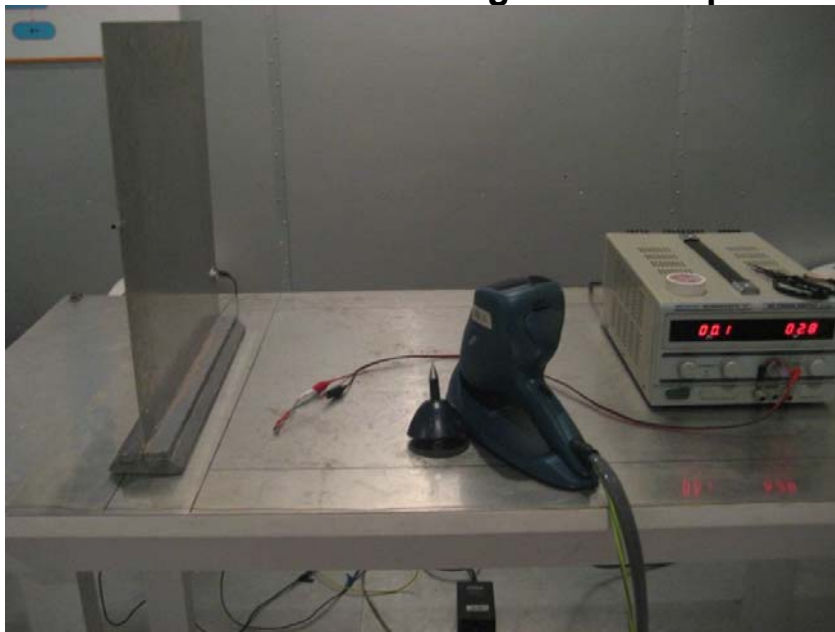
**FAIL**

## **APPENDIX 1 PHOTOGRAPHS OF TEST SETUP**

### Radiated Emission Test Setup



### Electrostatic Discharge Test Setup



## Radiated, Radio-frequency, Electromagnetic Field Immunity Test Setup



## **APPENDIX 2 PHOTOGRAPHS OF EUT**



Top view of EUT



Bottom view of EUT

----- End of report -----