



# *EMC TEST REPORT*



**Reference No.:** ET14065144-EMC

**Applicant :** KELI Sensing Technology (Ningbo) Co., Ltd  
**Address :** NO. 199 Changxing Road, Jiangbei District, Ningbo, China

**Equipment Under Test (EUT) :**

**Product Name:** Crane scale

**Models No.:** OCS-AP Series(50kg-1000kg), OCS-AH Series(1000kg-20000kg),  
OCS-AL Series(1000kg-20000kg), OCS-A series(1000kg-20000kg),  
OCS-AZ Series(20000kg-50000kg), OCS-AW6 Series(1000kg-50000kg),  
OCS-AW2 Series(1000kg-50000kg), OCS-AX Series(1000kg-20000kg),  
OCS-AF Series(30kg-300kg)

**Test Standards:**

**EN 61000-6-3:2007+A1:2011;**  
**EN 61000-6-1:2007;**  
**EN 55022:2010/AC: 2011;**  
**EN 61000-3-2:2006+A1:2009+A2:2009;**  
**EN 61000-3-3:2008.**

**Date of Test:** May 27, 2014 to June 05, 2014

**Date of Issue:** June 05, 2014

**Tested By:** Mike Chen

**Reviewed By:** .....

<b>Test Result :</b>	<b>PASS *</b>
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\* The sample detailed above has been tested to the requirements of Council Directives 2004/108/EC. The test results have been reviewed against the Directives above and found to meet their essential requirement.



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## 1 Test Summary

### 1.1 Disturbance Test Items

Test Item	Test Required	Test Results
Radiated Disturbance	EN 61000-6-3:2007+A1:2011 EN 55022:2010/AC: 2011	PASS
Conducted Disturbance	EN 61000-6-3:2007+A1:2011 EN 55022:2010/AC: 2011	PASS
Harmonic Current Emissions	EN 61000-3-2:2006+A1:2009+A2:2009	N/A
Flicker and Voltage Fluctuations	EN 61000-3-3:2008	PASS

### 1.2 Immunity Test Items

Test Item	Test Required	Test Results
Electrostatic Discharges (ESD)	EN 61000-6-1:2007 EN 61000-4-2:2009	PASS
Radio-Frequency Electromagnetic Field(RS)	EN 61000-6-1:2007 EN 61000-4-3:2006	PASS
Electrical Fast Transients (EFT)	EN 61000-6-1:2007 EN 61000-4-4:2004	PASS
Surges	EN 61000-6-1:2007 EN 61000-4-5:2006	PASS
Conducted Immunity	EN 61000-6-1:2007 EN 61000-4-6:2009	PASS
Voltage Dips and Interruptions	EN 61000-6-1:2007 EN 61000-4-11:2004	PASS

Note:

PASS: Indicates that the test is applicable.

N/A: Indicates that the test is not applicable.

### 1.3 Test Uncertainty

**Radiated Disturbance:  $\pm 3.0$ dB**

**Conducted Disturbance:  $\pm 3.0$ dB**



#### 1.4 Test Location

All tests were performed by Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory (SMQ) at Bldg. of Metrology & Quality Inspection, Longzhu Road, Nanshan District, Shenzhen, Guangdong, China. At the time of testing, the following bodies accredited the Laboratory.

IC – Registration No.: IC4174

Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory (Guangdong EMC compliance testing center) has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in SMQ files. Registration IC4174.

FCC – Registration No.: 979748

Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory (Guangdong EMC compliance testing center) 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 SMQ files. Registration 979748.



## 2 General Information

### 2.1 Client Information

Applicant : KELI Sensing Technology (Ningbo) Co., Ltd

Address : NO. 199 Changxing Road, Jiangbei District, Ningbo, China

Manufacturer : Anyweight Technology HK Co.,Ltd.

Address : Rm 1519, Tower A, Fuli Technology Mansion, No.328, Wen'er Road, Hangzhou,China

### 2.2 Detail of EUT

Product : Crane scale

Models No. : OCS-AP Series(50kg-1000kg), OCS-AH Series(1000kg-20000kg), OCS-AL Series(1000kg-20000kg), OCS-A series(1000kg-20000kg), OCS-AZ Series(20000kg-50000kg), OCS-AW6 Series(1000kg-50000kg), OCS-AW2 Series(1000kg-50000kg), OCS-AX Series(1000kg-20000kg), OCS-AF Series(30kg-300kg)

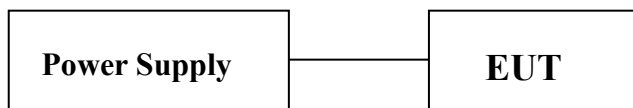
Technical Data : Adapter Input:230V, 50Hz  
Adapter Output: DC 9.0V,1000mA

### 2.3 Principle of Configuration Selection

**Disturbance Test:** The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the Operating Instructions.

**Immunity Test:** The equipment under test (EUT) was configured to the representative operating mode and conditions.

### 2.4 Block Diagram of EUT Configuration During the Test



### 2.5 Test Instruction

All the tests were performed in the condition of AC 230V, 50Hz input.

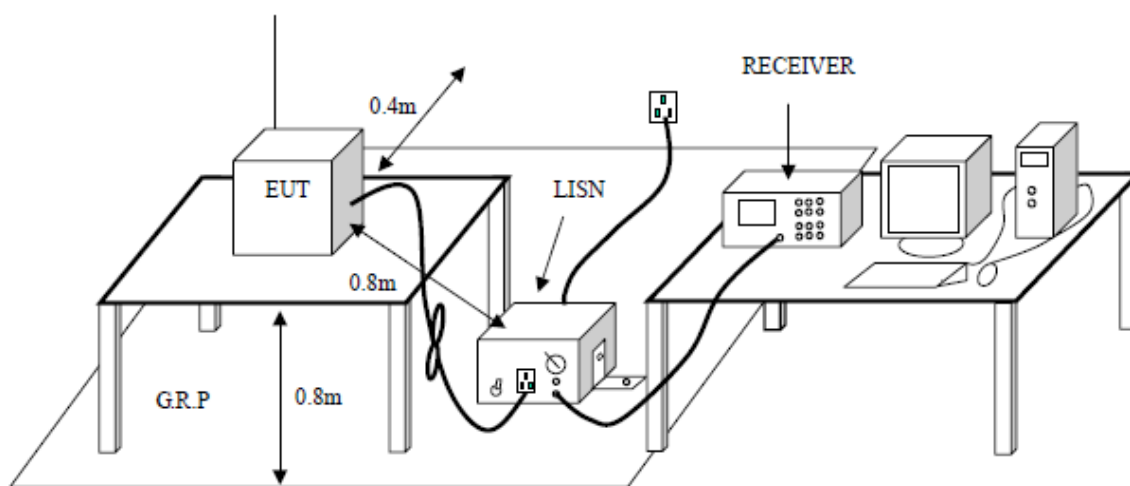


### 3 Conducted Disturbance Test

#### 3.1 Test Standard

EN 61000-6-3:2007+A1:2011  
 EN 55022:2010/AC: 2011

#### 3.2 Diagram Test Setup



#### 3.3 Test Equipments Used

Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
EMI Test Receiver	Rohde & Schwarz	ESPI	2013-12	1 Year
AMN	Rohde & Schwarz	ESH3-Z5	2013-12	1 Year
Computer	Lenovo	A6900R	N/A	N/A
Software	Rohde & Schwarz	ESK1	N/A	N/A

#### 3.4 Test Description

##### 3.4.1 Equipment Test Setup

EMI Test Receiver Setting:

Detector: Quasi-Peak and Average

Band Width: 9 KHz

Frequency Range: 150 KHz to 30MHz



### 3.4.2 EUT Operation

Turn on the EUT.

Let the EUT work in normal operation mode with Adapter.

### 3.5 Test Procedure

During the test the EUT was placed on a non-conductive table which is 0.8 meter above the grounded reference plane. Connected the power line of the LISN and connected the receiver to LISN by coaxial line. Detected the disturbance signals of the live line and neutral line.

### 3.6 Conducted Disturbance Limit

Frequency Range MHz	Limit(dBuV)	
	Quasi-peak	Average
0.15 to 0.5	66 to 56	56 to 46
0.5 to 5	56	46
5 to 30	60	50

NOTE 1 The lower limit shall apply at the transition frequencies.  
NOTE 2 The limit decreases linearly with the logarithm of the frequency in the range 0,15 MHz to 0,50 MHz.

### 3.7 Test Result and Test Data

**Test Result: PASS**

**Test Data:**

Test data refer to see following pages.

Remark: When PK reading is less than relevant limit 20dB, the QP reading and AV reading will not be recorded.

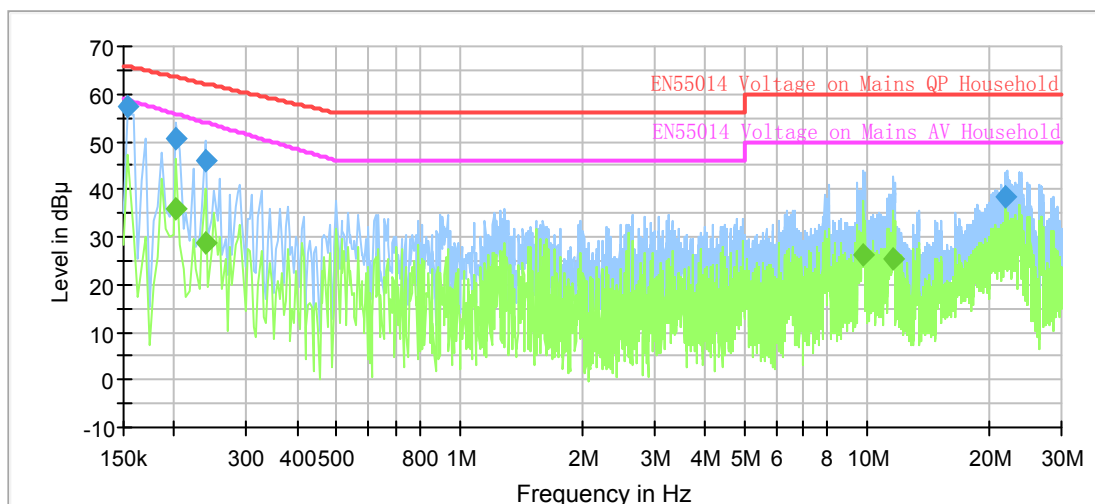
Where QP reading is less than relevant AV limit, the AV reading will not be measured.





**Live Line:**

Voltage\_Household\_L1



- EN55014 Voltage on Mains QP\_Household.LimitLine
- EN55014 Voltage on Mains AV\_Household.LimitLine
- Preview Result 1-PK+
- Preview Result 2-AVG
- ◆ Final Result 1-QPK
- ◆ Final Result 2-CAV

**Final Result 1**

Frequency (MHz)	QuasiPeak (dB $\mu$ V)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)	Comment
0.154000	57.2	1000.0	9.000	GN	L1	0.1	8.5	65.8	
0.202000	50.7	1000.0	9.000	GN	L1	0.1	12.8	63.5	
0.238000	46.1	1000.0	9.000	GN	L1	0.1	16.0	62.2	
21.866000	38.2	1000.0	9.000	GN	L1	0.7	21.8	60.0	

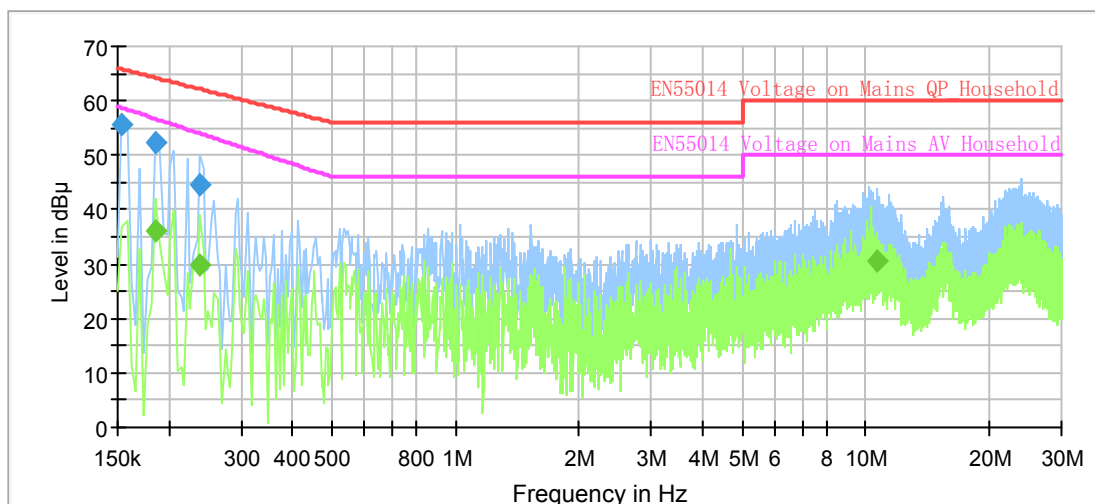
**Final Result 2**

Frequency (MHz)	CAverage (dB $\mu$ V)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)	Comment
0.202000	35.9	1000.0	9.000	GN	L1	0.1	19.9	55.8	
0.238000	28.9	1000.0	9.000	GN	L1	0.1	25.1	54.0	
9.802000	26.4	1000.0	9.000	GN	L1	0.4	23.6	50.0	
11.574000	25.5	1000.0	9.000	GN	L1	0.4	24.5	50.0	



### Neutral Line:

Voltage\_Household\_N



- EN55014 Voltage on Mains QP\_Household.LimitLine
- EN55014 Voltage on Mains AV\_Household.LimitLine
- Preview Result 1-PK+
- Preview Result 2-AVG
- ◆ Final Result 1-QPK
- ◆ Final Result 2-CAV

### Final Result 1

Frequency (MHz)	QuasiPeak (dB $\mu$ V)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)	Comment
0.154000	55.5	1000.0	9.000	GN	N	0.1	10.3	65.8	
0.186000	52.2	1000.0	9.000	GN	N	0.1	12.0	64.2	
0.238000	44.7	1000.0	9.000	GN	N	0.1	17.4	62.2	

### Final Result 2

Frequency (MHz)	CAverage (dB $\mu$ V)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)	Comment
0.186000	36.2	1000.0	9.000	GN	N	0.1	20.4	56.7	
0.238000	29.9	1000.0	9.000	GN	N	0.1	24.1	54.0	
10.706000	30.7	1000.0	9.000	GN	N	0.4	19.3	50.0	

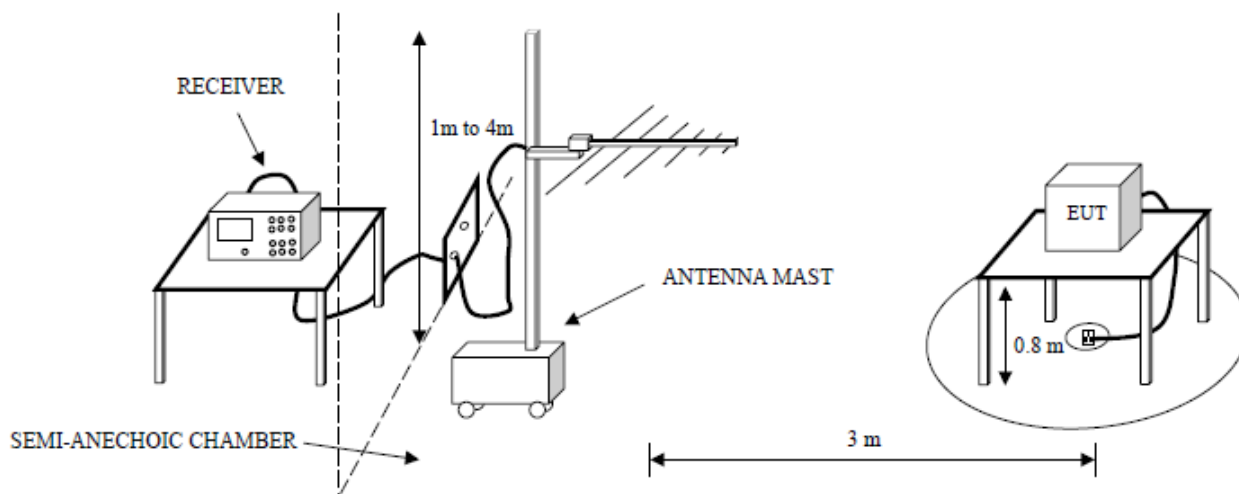


## 4 Radiated Disturbance Test

### 4.1 Test Standard

EN 61000-6-3:2007+A1:2011  
EN 55022:2010/AC: 2011

### 4.2 Diagram Test Setup



### 4.3 Test Equipments Used

Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
EMI Test Receiver		E7450A	2013-12	1 Year
Bilog Antenna	Chase	CBL6112B	2013-12	1 Year
Computer	Lenovo	A6900R	N/A	N/A
Software	Rohde & Schwarz	ESK1	N/A	N/A

### 4.4 Test Description

#### 4.4.1 Equipment Test Setup

Detector: Quasi-Peak

Band Width: 120 KHz

Frequency Range: 30MHz to 1000MHz

Turntable Rotated: 0 to 360 degrees

Antenna Position:

— Height: 1m to 4m

— Polarity: Horizontal and Vertical



#### 4.4.2 EUT Operation

The operation mode of EUT is same as Section 3.4.2.

#### 4.5 Test Procedure

EUT is tested in Semi-Anechoic Chamber. EUT is placed on a nonmetal table which is 0.8 meter above a grounded turntable. The turntable can rotate 360 degrees to determine the azimuth of the maximum emission level. EUT is set 3 meters away from the center of receiving antenna, The antenna can move up and down from 1 to 4 meter to find out the maximum emission level. Both horizontal and vertical polarization of the antenna is set on the test.

#### 4.6 Radiated Disturbance Limit

Frequency Range MHz	Quasi-peak Limit dB( $\mu$ V/m)
30 to 230	40
230 to 1000	47
NOTE 1 The lower limit shall apply at the transition frequencies. NOTE 2 The test distance was 3 meter.	

#### 4.7 Test Result and Test Data

**Test Result: PASS**

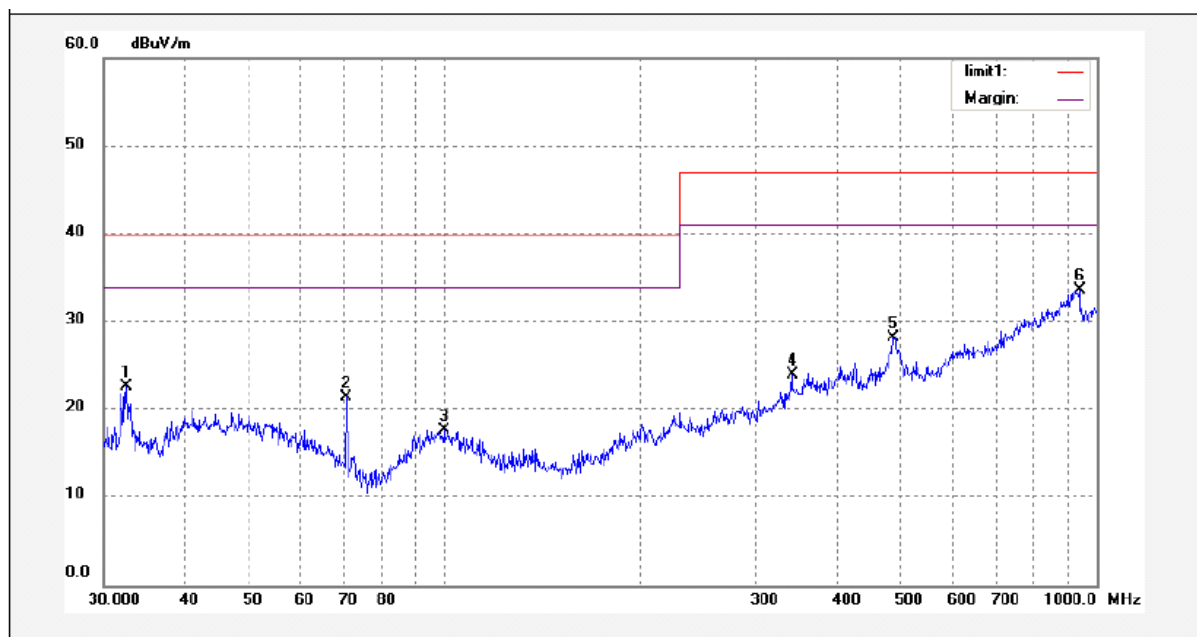
**Test Data:**

Test data refer to see following pages.

Remark: When PK reading is less than relevant limit 20dB, the QP reading will not be recorded.



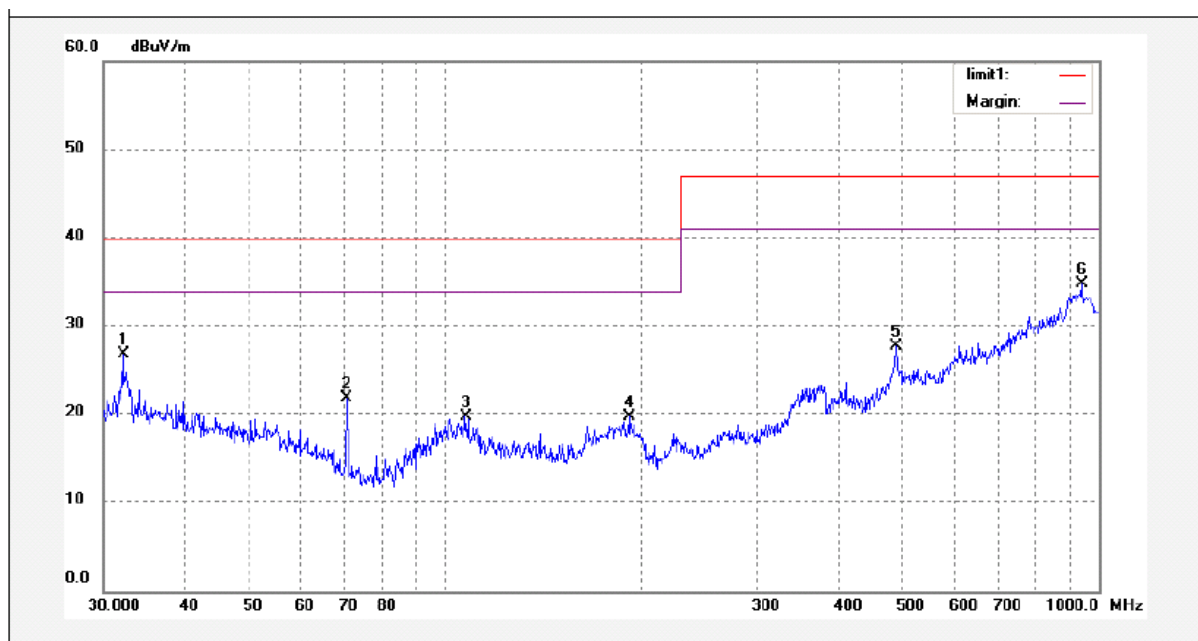
**Vertical:**



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	32.5250	6.04	16.62	22.66	40.00	-17.34	peak	
2	70.7047	7.80	13.72	21.52	40.00	-18.48	peak	
3	99.7676	0.36	17.44	17.80	40.00	-22.20	peak	
4	341.2442	2.52	21.53	24.05	47.00	-22.95	peak	
5	488.3263	1.90	26.39	28.29	47.00	-18.71	peak	
6	942.0180	2.88	30.86	33.74	47.00	-13.26	peak	



### Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	32.1840	6.59	20.35	26.94	40.00	-13.06	peak	
2	70.7047	8.18	13.86	22.04	40.00	-17.96	peak	
3	107.4074	1.89	18.05	19.94	40.00	-20.06	peak	
4	191.1114	2.27	17.60	19.87	40.00	-20.13	peak	
5	490.0451	2.62	25.24	27.86	47.00	-19.14	peak	
6	942.0180	3.98	30.86	34.84	47.00	-12.16	peak	

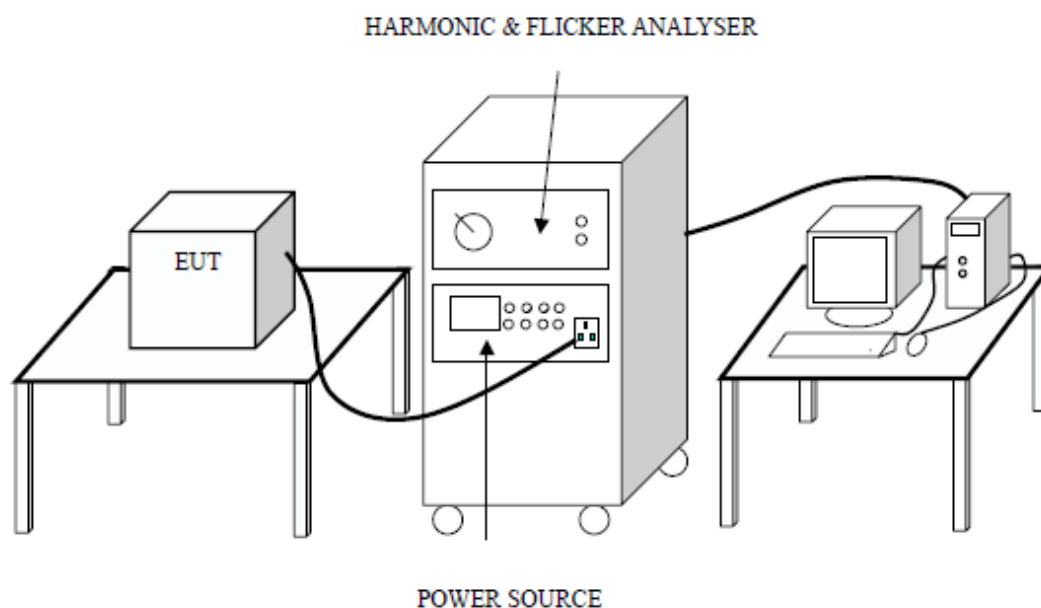


## 5 Flicker and Voltage Fluctuations

### 5.1 Test Standard

EN 61000-3-3:2008

### 5.2 Diagram Test Setup



### 5.3 Test Equipments Used

Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
Harmonic flicker test system	EMTEST	DPA500	2013-12	1 Year
Purified Power Source	EMTEST	UCS7000	2013-12	1 Year

### 5.4 Test Description

#### 5.4.1 EUT Operation

The operation mode of EUT is same as Section 3.4.2.

#### 5.4.2 Test Procedure

Test Procedure see clause 6 of standard EN61000-3-3.



## 5.5 Test Result and Test Data

**Test Result: PASS**

**Test Data:**

**Maximum Flicker Results:**

	<b>EUT values</b>	<b>Limit</b>	<b>Result</b>
Pst	0.028	1.00	PASS
Plt	0.028	0.65	PASS
dc [%]	0.004	3.30	PASS
dmax [%]	0.207	4.00	PASS
dt [s]	0.000	0.50	PASS





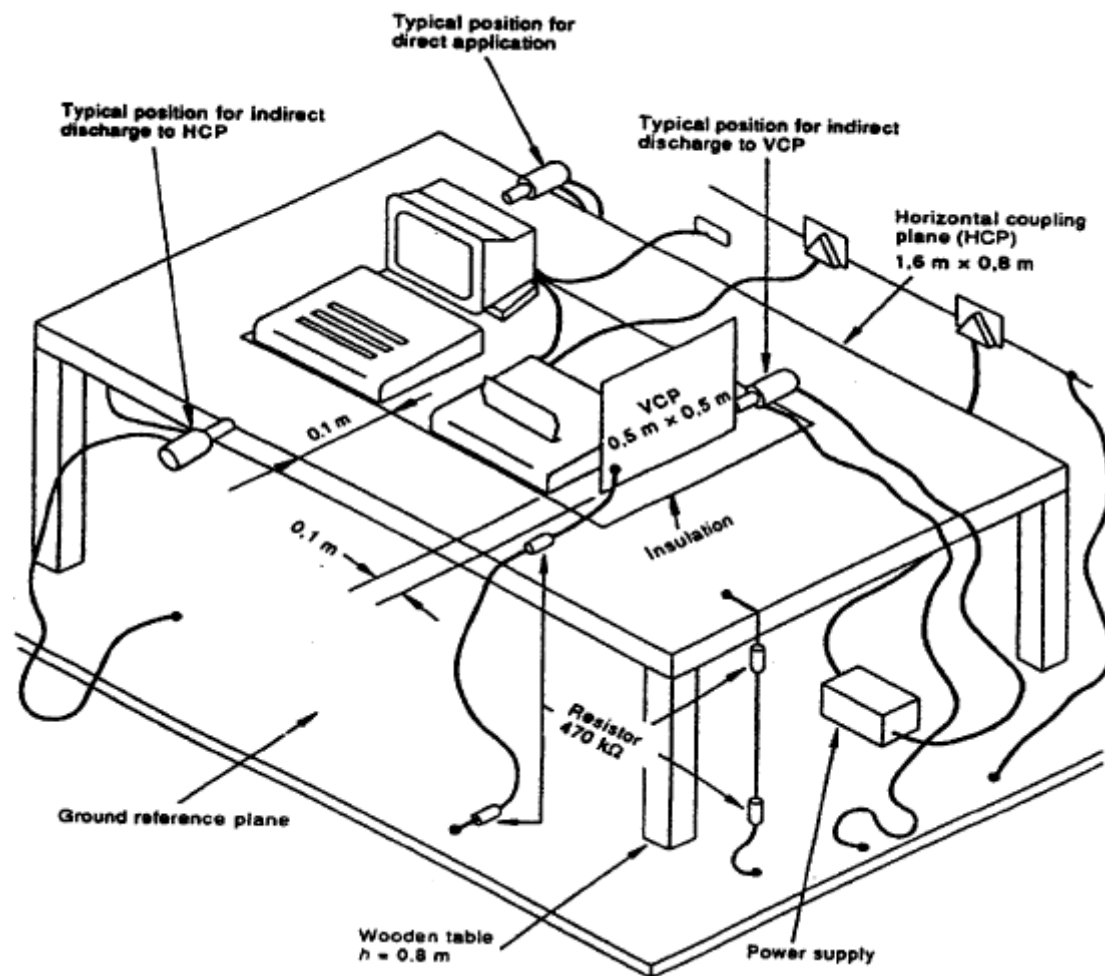
## 6 Electrostatic Discharges

### 6.1 Test Standards

EN 61000-6-1:2007

EN 61000-4-2:2009

### 6.2 Diagram of Test Setup



### 6.3 Test Equipment Used

Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
ESD tester	EMTEST	Dito	2013-12	1 Year



## 6.4 Test Required and Performance Criterion

Test method	Test Level	Performance Criterion
Air Discharges	$\pm 8KV$	B
Contact Discharges or Coupling	$\pm 4KV$	B

## 6.5 Test Description

### 6.5.1 EUT Operation

The operation mode of EUT is same as Section 3.4.2.

### 6.5.2 Test Procedure

Air Discharge:

— This test is done on a non-conductive surfaces. The round discharge tip of the Electrostatic Discharge simulator shall be approached as fast as possible then to touch the EUT. After each discharge, the simulator shall be removed from the EUT. The simulator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

Contact Discharge:

— All the procedure shall be same as air discharge, except using the acute discharge tip. The top end of the Electrostatic Discharge simulator is touch the EUT all the time when the simulator is re-triggered for a new single discharge and repeated 10 times for each pre-selected test point.

Indirect Discharge:

— The vertical coupling plane(VCP) is placed 0.1m away from EUT. The top end of Electrostatic Discharge simulator should aim at the center of one border of the VCP for at least 10 times discharge.

— The top end of Electrostatic Discharge simulator should place at the point 0.1m away from EUT on the horizontal coupling plane(HCP). At least 10 times discharge should be done for every pre-selected point around EUT.

Recording any performance degradation of the EUT during the test and judge the test result according to performance criterion.



## 6.6 Test Results

<b>Immunity</b>	<b>ESD Electrostatic Discharge</b>			<input checked="" type="checkbox"/> <b>EN 61000-4-2</b>
Criterion:	<b>A</b>			Total: <b>PASS</b>
EUT	<b>Crane scale</b>			
Ambient:	25 °C	53% RH	1011mbar	
Test Site:				
Air Discharge:	±8 kV	10 Discharges per test		
Contact/Indirect	±4 kV	10 Discharges per test		
Operation Mode:	<i>Working.</i>			
	<b>Location</b>	<b>Kind</b> Air Cont.	<b>Result</b>	
	All Exposed Surface & Seams	Air	PASS	
	All metallic part	Cont.	N/A	
	HCP	Cont.	PASS	
	VCP	Cont.	PASS	
Note: Minimum 10 times at each test point				



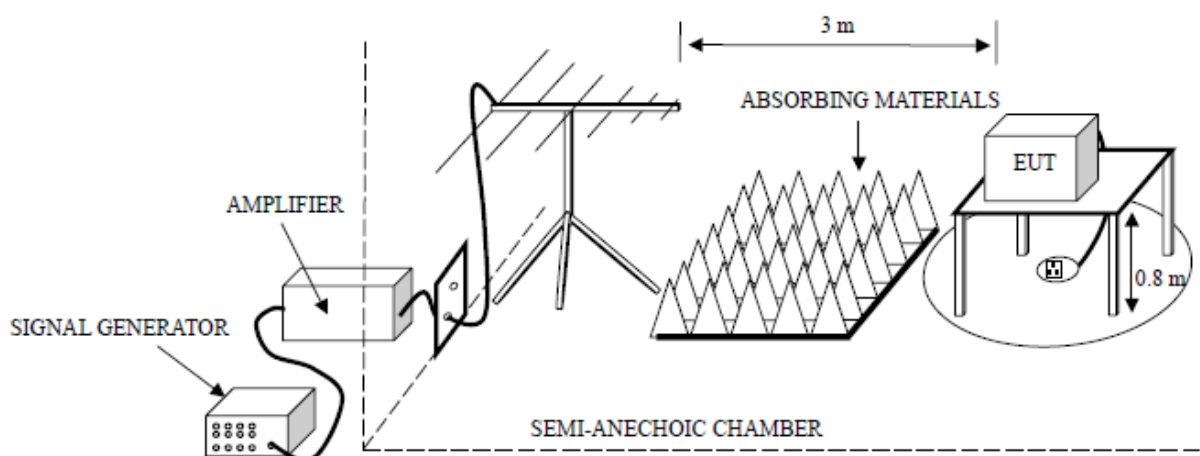
## 7 Radio-Frequency Electromagnetic Field

### 7.1 Test Standards

EN 61000-6-1:2007

EN 61000-4-3:2006

### 7.2 Diagram of Test Setup



### 7.3 Test Equipments Used

Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
Signal Generator	Rohde & Schwarz	SMT03	2013-12	1 Year
Power Meter	Rohde & Schwarz	NRVD	2013-12	1Year
Voltage Probe	Rohde & Schwarz	URV5-Z2	2013-12	1Year
Voltage Probe	Rohde & Schwarz	URV5-Z2	2013-12	1Year
Power Amplifier	AR	150W1000	2013-12	1Year
Bilog Antenna	Chase	CBL6111C	2013-12	1Year



## 7.4 Test Required and Performance Criterion

Level	Field Strength (V/m)	Performance criterion
1	1	A
2	3	A
3	10	A
X	Special	A

## 7.5 Test Description

### 7.5.1 EUT Operation

The operation mode of EUT is same as Section 3.4.2.

### 7.5.2 Test Procedure

Equipments setup:

Fielded Strength: 3V/m

Scanning Frequency: 80MHz - 1000 MHz

Radiated Signal: 80% amplitude modulated with a 1KHz sine wave.

Step Size: 1% of the start and thereafter 1% of the preceding frequency value.

EUT and its auxiliary instrument are placed on a turntable which is 0.8 meter above ground. The center of the transmitting antenna mounted on an antenna mast is set 3 meter away from the EUT. During the test, each of the four sides of EUT will face the transmitting antenna with the turntable cycled. Both horizontal and vertical polarization of the antenna are set on test and measured individually.

In order to judge the performance of the EUT, a set of monitor system is used.

Recording any performance degradation of the EUT during the test and judge the test result according to performance criterion.



7.6 Test Results

<b>Immunity Enclosure</b>		<b>RS Radiated Susceptibility</b>			<input checked="" type="checkbox"/> <b>EN 61000-4-3</b>	
Criterion:		<b>A</b>			Total: <b>PASS</b>	
EUT		<b>Crane scale</b>				
Ambient:		26 °C	52% RH	1009mbar		
Operation Mode:		<i>Working.</i>				
<b>Electromagnetic Field</b>		<b>Key Carrier</b>		<b>Magnetic Field</b>		
Freq. Range:		80-1000MHz		Frequency:		50/60Hz
Field Strength:		3 V/m		Field Strength:		A/m
Modulation		Modulation:				
none	AM	Pulse	%	kHz	Pulse: 50%	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	80	1	Repletion time: 200Hz	
Steps	1%	#	/	%	#	/
<b>Front</b>	Vertical	PASS		<b>Front</b>	Horizontal	PASS
<b>Left</b>	Vertical	PASS		<b>Left</b>	Horizontal	PASS
<b>Back</b>	Vertical	PASS		<b>Back</b>	Horizontal	PASS
<b>Right</b>	Vertical	PASS		<b>Right</b>	Horizontal	PASS
<b>Comments:</b>						



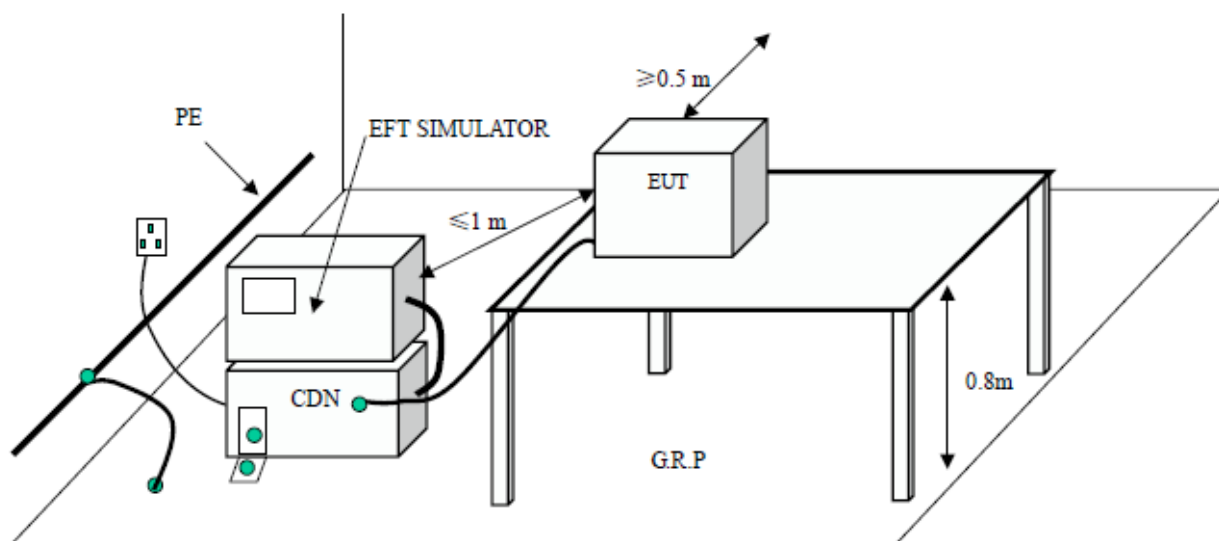
## 8 Electrical Fast Transients

### 8.1 Test Standards

EN 61000-6-1:2007

EN 61000-4-4:2004

### 8.2 Diagram of Test Setup



### 8.3 Test Equipment Used

Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
Simulator	EMTEST	UCS500	2013-12	1 Year

### 8.4 Test Required and Performance Criterion

Open Circuit Output Test Voltage And Repetition Rate Of The Impulses					Performance criterion
Level	On Power Supply Port and PE		On I/O (input/output) signal, data and control ports		
	Voltage Peak (kV)	Repetition Rate kHz	Voltage Peak (kV)	Repetition Rate kHz	
1	0.5kV	50 or 100	0.25	50 or 100	B
2	1	50 or 100	0.5	50 or 100	B
3	2	50 or 100	1	50 or 100	B
4	4	50 or 100	2	50 or 100	B
X	Special	Special	Special	Special	B



## **8.5 Test Description**

### **8.5.1 EUT Operation**

The operation mode of EUT is same as Section 3.4.2.

### **8.5.2 Test Procedure**

For AC power input ports:

EUT is connected to coupling/decoupling network which couples the EFT signal to power input lines. During the test, both polarities of the test voltage should be applied and the duration of the test can't be less than 1mins.

For signal / control lines and DC power lines:

The cables of EUT not longer than 3 m, shall not be tested.

EUT and its simulators shall be placed 0.8m high above the ground reference plane which is a minimum 1m\*1m with minimum 0.65mm thickness. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

Recording any performance degradation of the EUT during the test and judge the test result according to performance criterion.





## 8.6 Test Results

Immunity	EFT(Fast Transient / Burst)			<input checked="" type="checkbox"/> EN 61000-4-4		
Criterion:	<b>B</b>			Total: PASS		
EUT:	Crane scale					
Ambient:	24°C	52% RH	1012mbar			
Operation Mode:	Working.					
Line:	<input checked="" type="checkbox"/> AC Mains		<input type="checkbox"/> DC Supply		<input type="checkbox"/> Signal:	
Coupling:	<input checked="" type="checkbox"/> Direct		<input type="checkbox"/> Capacitive Clamp			
Conductor	Voltage	+	-	Voltage	+	-
L	1kV	PASS	PASS			
N	1kV	PASS	PASS			
PE	1kV	N/A	N/A			
L,PE	1kV	N/A	N/A			
N,PE	1kV	N/A	N/A			
L,N,PE	1kV	N/A	N/A			



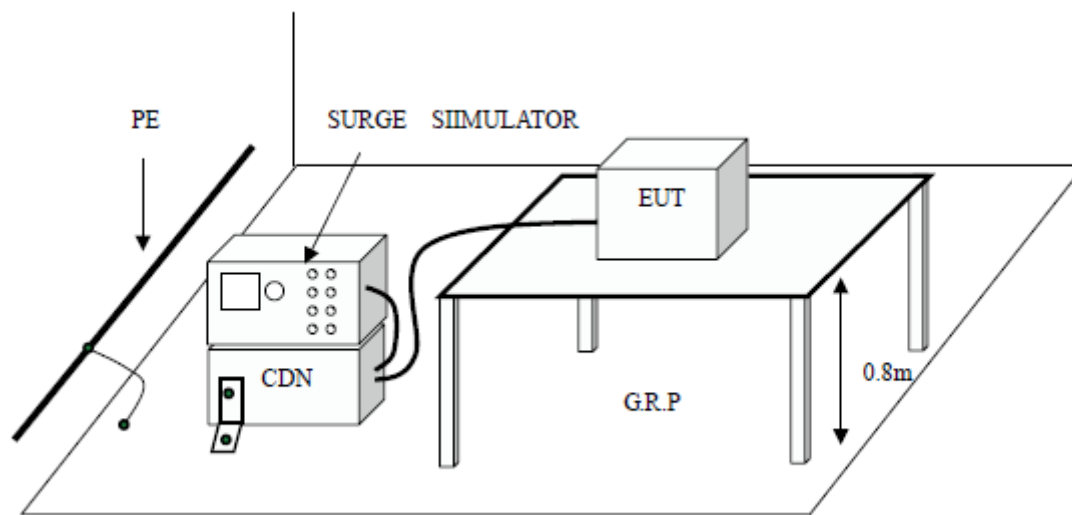
## 9 Surges

### 9.1 Test Standards

EN 61000-6-1:2007

EN 61000-4-5:2006

### 9.2 Diagram of Test Setup



### 9.3 Test Equipment Used

Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
Simulator	EMTEST	UCS500	2013-12	1 Year

### 9.4 Test Required and Performance Criterion

Level	Test Voltage kV
1	0.5
2	1.0
3	2.0
4	4.0
X	Special

**Performance Criterion: B**



Note:

1: At signal ports and telecommunication ports, Applicable only to ports which according to the manufacturer's specification may connect directly to outdoor cables. And where normal functioning cannot be achieved because of the impact of the CDN on the EUT, no test shall be required.

2: At input d.c. power ports, Applicable only to ports which according to the manufacturer's specification may connect directly to outdoor cables. And excluding equipment marketed with an a.c/d.c, power converter

## **9.5 Test Description**

### **9.5.1 EUT Operation**

The operation mode of EUT is same as Section 3.4.2.

### **9.5.2 Test Procedure**

In this test, the 1.2/50us& 8/20us surge generator must be used for AC power ports. The voltage for line to earth coupling mode is twice of that for line to line. At least 5 positive and 5 negative (polarity) surge signal with a maximum 1/min repetition rate are injected to AC power lines from 4 different phase angle( 0°,90°,180°,270) during the test.

Recording any performance degradation of the EUT during the test and judge the test result according to performance criterion.



9.6 Test Results

Immunity		Surges								<input checked="" type="checkbox"/> EN 61000-4-5	
Criterion:		<b>B</b>								Total: PASS	
EUT:		Crane scale									
Repetition:		5 times per test				Interval:		60 sec.			
Ambient:		24°C		52% RH		1012mbar					
Operation Mode:		Working.									
Line:		<input checked="" type="checkbox"/> AC Mains		<input type="checkbox"/> DC Supply		<input type="checkbox"/> Signal:					
Conductor	Volt:	500V		1kV		2kV		3kV		4kV	
	Phase	+	-	+	-	+	-	+	-	+	-
L – PE	0°										
	90°										
	180°										
	270°										
N – PE	0°										
	90°										
	180°										
	270°										
L – N	0°			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						
	90°			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						
	180°			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						
	270°			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						



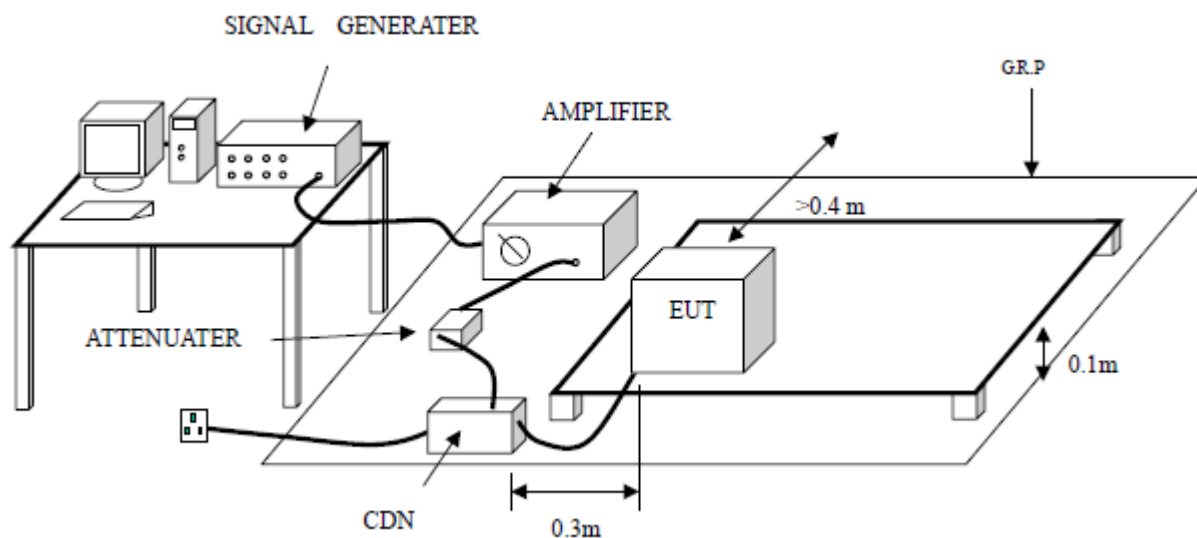
## 10 Conducted Immunity

### 10.1 Test Standards

EN 61000-6-1:2007

EN 61000-4-6:2009

### 10.2 Diagram of Test Setup



### 10.3 Test Equipments Used

Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
CW sine Generator	EMTEST	CWS500	2013-12	1 Year
CDN	EMTEST	CDN-M2	2013-12	1 Year

### 10.4 Test Required and Performance Criterion

Level	Voltage Level
1	0.5
2	1.0
3	2.0
4	4.0
X	Special

**Performance Criterion: A**



## 10.5 Test Description

### 10.5.1 EUT Operation

The operation mode of EUT is same as Section 3.4.2.

### 10.5.2 Test Procedure

Scanning Frequency: 150 KHz -- 80 MHz

Radiated Signal: 80% amplitude modulated with a 1 KHz sine wave.

Step Size: 1% of the start and thereafter 1% of the preceding frequency value.

EUT is placed on an insulating support of 0.1m high above a ground reference plane. It must be 0.3m away the CDN (coupling and decoupling network) of which the bottom is made of metallic material and placed directly on the ground plane. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible). The disturbance signal amplified by amplifier is injected to EUT through CDN.

Recording any performance degradation of the EUT during the test and judge the test result according to performance criterion.



**10.6 Test Results**

Immunity	Conducted Immunity			<input checked="" type="checkbox"/> EN 61000-4-6
<b>Voltage level</b>	3 V	Criterion:	A	Total: PASS
EUT:	<b>Crane scale</b>			
Frequency Range:	150kHz to 80 MHz			
Modulation:	<input type="checkbox"/> none	<input checked="" type="checkbox"/> AM	<input type="checkbox"/> Pulse	1 kHz, 80%
Ambient:	24°C,	52% RH,	1012mbar	
Operation Mode:	Working.			
Line:	<input checked="" type="checkbox"/> AC Mains <input type="checkbox"/> DC Supply <input type="checkbox"/> Signal:			
Step Size:	1%			
Coupling:	<input type="checkbox"/> Cable Shielding, Grounding: <input type="checkbox"/> 2 Sides <input type="checkbox"/> 1 Side (+ 10nF)			
	<input checked="" type="checkbox"/> CDN			
Frequency	Note			

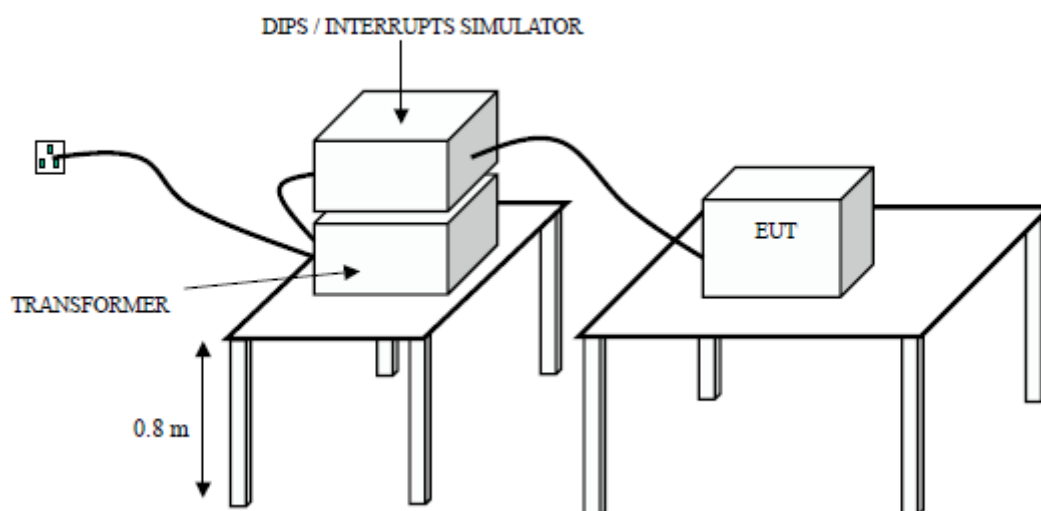


## 11 Voltage Dips and Interruptions

### 11.1 Test Standards

EN 61000-6-1:2007  
EN 61000-4-11:2004

### 11.2 Diagram of Test Setup



### 11.3 Test Equipment Used

Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
Simulator	EMTEST	UCS500	2013-12	1 Year
EMCPRO	EMTEST	----	2013-12	1 Year

### 11.4 Test Required and Performance Criterion

Level(Dropout % $U_T$ )	Duration (In Period)	Performance Criterion
95	0.5	B
95	250	C
30	25	C





## 11.5 Test Description

### 11.5.1 EUT Operation

The operation mode of EUT is same as Section 3.4.2.

### 11.5.2 Test Procedure

EUT is connected to the simulator. When conducting the test level of 0.5 period duration, make sure that it shall start at the phase angle of 0° and 180°

## 11.6 Test Results

<b>Immunity</b>	<b>Voltage dips, short interruptions and voltage variations</b>			<input checked="" type="checkbox"/> EN61000-4-11			
Criterion:	<b>B&amp;C</b>			Total: PASS			
EUT:	<b>Crane scale</b>						
Ambient:	24°C	52% RH	1012mbar				
Operation Mode:	Working.						
Voltage dips and short interruptions							
	Test level	Voltage dip and short interruptions % UT	Duration ( in period/time)	Result		Observations (Performance Criterion)	
				Pass	Fail		
<input checked="" type="checkbox"/>	0	>95%	0.5	<input checked="" type="checkbox"/>	<input type="checkbox"/>		B
<input checked="" type="checkbox"/>	0	>95%	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>		B
<input checked="" type="checkbox"/>	70	30	25	<input checked="" type="checkbox"/>	<input type="checkbox"/>		C
<input checked="" type="checkbox"/>	0	100	250	<input checked="" type="checkbox"/>	<input type="checkbox"/>	C	
Note:							



## 12 Photographs of EUT

### 12.1 Appearance View of EUT

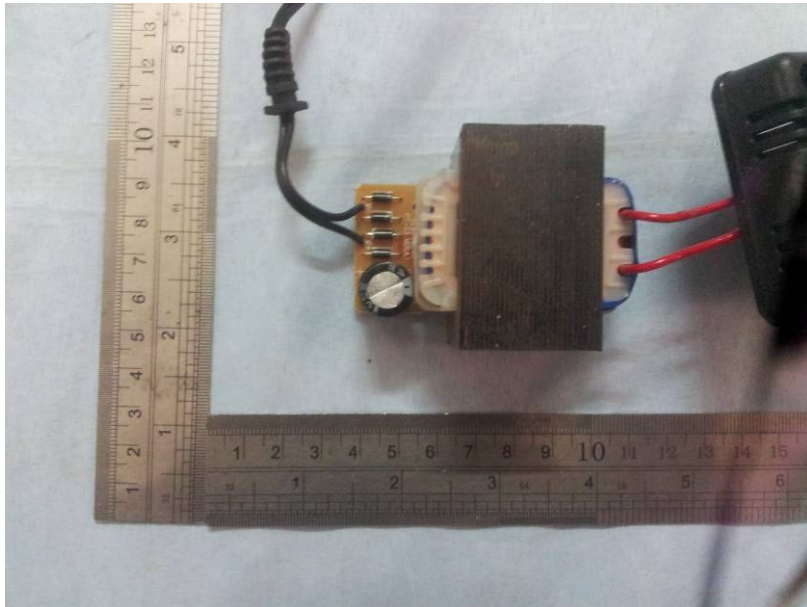


### 12.2 Appearance View of EUT

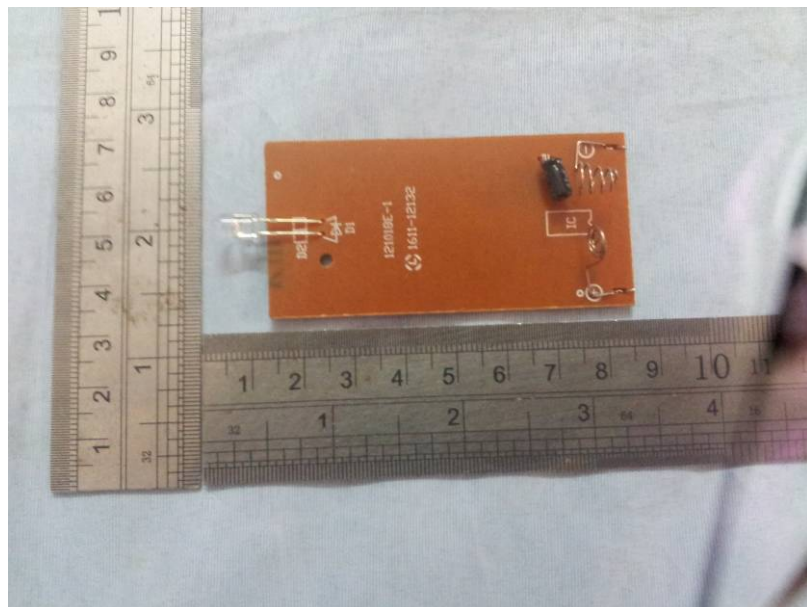




### 12.3 Open View of Adapter

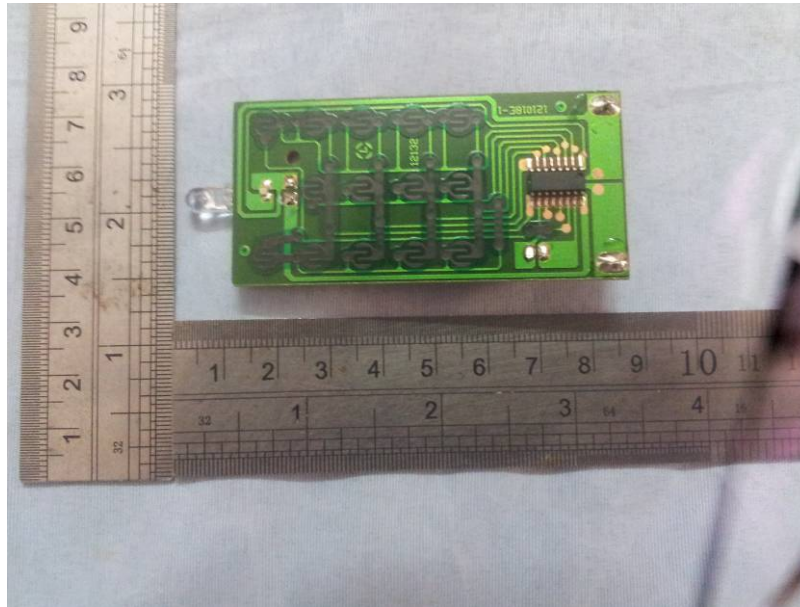


### 12.4 Front View of PCB 1

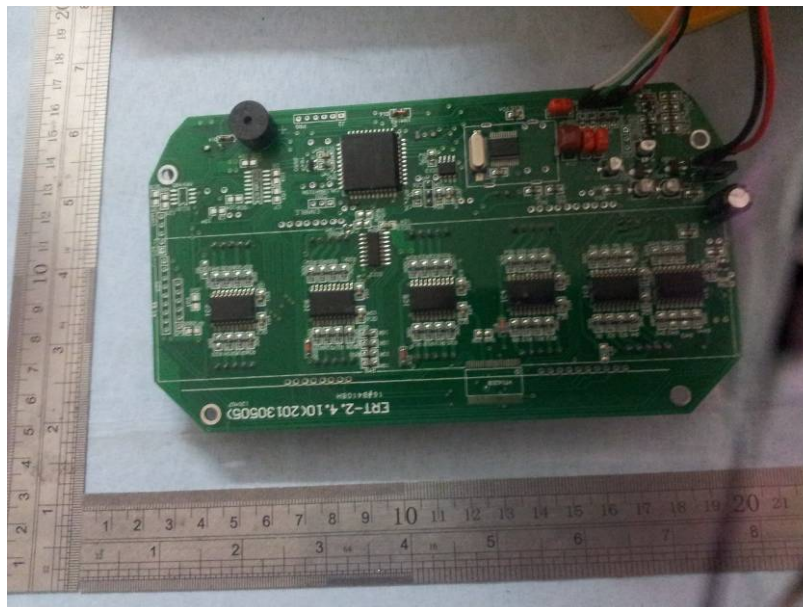




### 12.5 Back View of PCB 1



### 12.6 Front View of PCB 2





## 12.7 Back View of PCB 2

