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## ***EMC TEST REPORT***

**Application No.:** SHEMO081200629AV01  
**Applicant:** LINCON AUTOMATION CO., LTD

**Equipment Under Test (EUT):**

**NOTE:** The following sample(s) submitted was/were identified on behalf of the client as

**EUT Name:** LinCon HMI  
**Model No.:** LC104S, LC057S, LC080S, LC121S, LC150S  
**Serial No.:** Not supplied by client  
**Standards:** EN 55011: 2007/A2:2007

EN 61000-6-2: 2005  
EN 61000-3-2: 2006  
EN 61000-3-3: 1995/A1: 2001/A2:2005

**Date of Receipt:** Dec. 31, 2008  
**Date of Test:** Jan. 08, 2009 to Jan. 12, 2009  
**Date of Issue:** Jan. 13, 2009

**Test Result :**

**PASS**

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EC Declaration of Conformity and compliance with all relevant EC Directives.



Tino Pan  
E&E Section Manager  
SGS-CSTC Co., Ltd.

Liky Zhu  
E&E Project Engineer  
SGS-CSTC Co., Ltd.

This report refers to the General Conditions for Inspection and Testing Services, printed overleaf.

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the SGS PRODUCT CERTIFICATION MARK. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

All test results in this report can be traceable to National or International Standards.

## 2 Test Summary

Test	Test Requirement	Test Method	Class / Severity	Result
Conducted Emission (150K to 30MHz)	EN 55011: 2007/A2:2007	EN 55011: 2007/A2:2007	Class A	PASS
Radiated Emission (30MHz to 1000MHz)	EN 55011: 2007/A2:2007	EN 55011: 2007/A2:2007	Class A	PASS
Harmonic Current Emission on AC, up to 2kHz	EN 61000-3-2: 2006	EN 61000-3-2: 2006	Clause 7 of EN61000-3-2	PASS
Voltage Fluctuation and Flicker on AC	EN 61000-3-3: 1995/A1:2001/A2:2005	EN 61000-3-3: 1995/A1:2001/A2:2005	Clause 5 of EN61000-3-3	PASS
ESD	EN 61000-6-2: 2005	IEC 61000-4-2 :2001	Contact ±4 kV Air ±8 kV	PASS
Radio-Rrequency Rlectromagnetic Field.,80MHz to 1 GHz,1.4GHz to 2 GHz,2GHz to 2.7 GHz	EN 61000-6-2: 2005	IEC 61000-4-3: 2006	10V/m 3V/m 1V/m 80%, 1kHz, AM	PASS
Electrical Fast Transients (EFT) on AC	EN 61000-6-2: 2005	IEC 61000-4-4:2004	±2.0kV	PASS
Surges on AC	EN 61000-6-2: 2005	IEC 61000-4-5 :2005	±1.0kV D.M.† ±2.0kV C.M.†	PASS
Injected Currents on AC, 150kHz to 80MHz	EN 61000-6-2: 2005	IEC 61000-4-6 :2006	10Vrms (emf), 80%, 1kHz Amp. Mod.	PASS
Power-frequency magnetic field	EN 61000-6-2: 2005	IEC 61000-4-8 :2001	50,60 Hz 30A/m	N/A Ψ
Voltage Dips and Interruptions on AC	EN 61000-6-2: 2005	IEC 61000-4-11 :2004	0 % UT* for1per 40 % UT* for10per 70 % UT* for 25per 0 % UT* for 250per	PASS

**Remark:**

\*  $U_T$  is the nominal supply voltage.

† D.M. – Differential Mode.

† C.M. – Common Mode.

Ψ N/A –Not Applicable

**Note:** There are five models mentioned in this report, and they are the same in electrical and electronic characters. So we just have the model LC104S tested.

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## 4 General Information

### 4.1 Client Information

Applicant: LINCON AUTOMATION CO., LTD  
Address of Applicant: BUILDING E, OVERSEAS SCHOLAR BUSINESS  
PARK, EAST LAKE HIGH-TECH DEVELOPMENT ZONE,  
WUHAN, P.R.C

### 4.2 General Description of E.U.T.

EUT Name: LinCon HMI  
Model No.: LC104S, LC057S, LC080S, LC121S, LC150S  
Brand Name: Not supplied by client  
Serial No.: Not supplied by client

### 4.3 Details of E.U.T.

Power Supply: Not supplied by client  
Power Cord: Not supplied by client

### 4.4 Description of Support Units

Name / Function	Model No.	Remark
N/A	N/A	N/A

### 4.5 Standards Applicable for Testing

The customer requested EMC tests for LinCon HMI.

The standards used were EN 55011: 2007/A2:2007, EN 61000-6-2: 2005, EN 61000-3-2: 2006 and EN 61000-3-3: 1995/A1:2001/A2:2005.

**Table 1 : Tests Carried Out Under EN 55011: 2007/A2:2007**

Standard	Status
EN 55011: 2007/A2:2007 Conducted Emission	√
EN 55011: 2007/A2:2007 Radiated Emissions	√

× Indicates that the test is not applicable  
√ Indicates that the test is applicable

**Table 2: Tests Carried Out Under EN 61000-3-2: 2006 & EN 61000-3-3:  
1995/A1:2001/A2:2005**

Standard	Status
EN 61000-3-2: 2006 Harmonic Current Emission on AC	√
EN 61000-3-3: 1995/A1:2001/A2:2005 Voltage Fluctuation and Flicker on AC	√

× Indicates that the test is not applicable  
√ Indicates that the test is applicable

**Table 3: Tests carried out under EN 61000-6-2: 2005**

<b>Standard</b>		<b>Status</b>
IEC 61000-4-2 :2001	Electrostatic discharge test	√
IEC 61000-4-3: 2006	Radio frequency electromagnetic fields test	√
IEC 61000-4-4:2004	Electrical fast transients/burst test	√
IEC 61000-4-5 :2005	Surges test	√
IEC 61000-4-6 :2006	Injected Currents test	√
IEC 61000-4-8 :2001	Power-frequency magnetic field immunity test	×
IEC 61000-4-11 :2004	Voltage dips and interruptions test	√

× Indicates that the test is not applicable

√ Indicates that the test is applicable

Note The EUT does not contain any component which is susceptible from the magnetic field.

#### **4.6 Deviation from Standards**

None.

#### **4.7 Abnormalities from Standard Conditions**

None.

#### **4.8 Monitoring of EUT for All Immunity Test**

Visual:

#### **4.9 Test Location**

All tests were performed at:

SGS-CSTC EMC Laboratory, No. 588 West Jindu Road, Songjiang District, Shanghai, China

Tel:+86 21 61915666 Fax: +86 21 61915655

## 5 Equipments Used during Test

### Conducted Emission

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due date
1	EMI test receiver	Rohde & Schwarz	ESCS30	100086	2008-06-26	2009-06-25
2	Line impedance stabilization network	ETS	3816/2	00034161	2008-07-30	2009-07-29

### Radiated Emission

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due date
1	EMI test receiver	Rohde & Schwarz	ESU40	100109	2008-6-19	2009-6-18
2	ANTENNA	SCHWARZBECK	VULB9168	9168-313	2008-06-04	2009-06-03
3	ANTENNA	SCHWARZBECK	BBHA9120D	9120D-679	2008-06-04	2009-06-03

### Harmonic & Flicker

Item	Test Equipment	Manufacturer	Model No.	Series No.	Cal. Date	Cal. Due date
1	Single phase harmonics&flicker analyzer	EM test	DPA500	V050710012 5	2008-06-12	2009-06-11
2	AC SOURCE 6KVA	EM test	ACS500	V050710012 6	2008-06-12	2009-06-11

### Electrostatic Discharge Test

Item	Test Equipment	Manufacturer	Model No.	Series No.	Cal. Date	Cal. Due date
1	Electrostatic Discharge Simulator	KIKUSUI	KES4021	LL004261	2008-04-25	2009-4-24

### Radio Frequency Electromagnetic Fields Test

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due date
1	Ultra broadband antenna	Rohde & Schwarz	HL562	100227	2008-10-9	2009-10-8
2	amplifier	AR	30W1000B	0327284	--	--
3	amplifier	AR	30S1G3	0324978	--	--
4	power meter	Rohde & Schwarz	NRP	101641	2008-6-17	2009-6-16
	Single generator	Rohde & Schwarz	SMR40	100555	2008-6-24	2009-6-23

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**EFT Test**

Item	Test Equipment	Manufacturer	Model No.	Series No.	Cal. Date	Cal. Due date
1	Ultra-compact simulator	EM test	UCS500M4	V0507100122	2008-06-11	2009-06-10

**Surge Test**

Item	Test Equipment	Manufacturer	Model No.	Series No.	Cal. Date	Cal. Due date
1	Ultra-compact simulator	EM test	UCS500M4	V0507100122	2008-06-11	2009-06-10

**Injected Currents Test**

Item	Test Equipment	Manufacturer	Model No.	Series No.	Cal. Date	Cal. Due date
1	AM/FM signal generator	AEROFLEX	2023A	202306/528	2008-04-22	2009-04-21
2	PAMP Conducted RF test system	HAEFFLY	PAMP250	151708	2008-04-23	2009-04-22
3	CDN impedance and K-factor	LUTHI	L-801 M2/M3	2117	/	/

**Voltage dips and Interruption Test**

Item	Test Equipment	Manufacturer	Model No.	Series No.	Cal. Date	Cal. Due date
1	Ultra-compact simulator	EM test	UCS500M4	V0507100122	2008-06-11	2009-06-10
2	Motorised Variac	EM test	MV2616	V0507100123	2008-06-07	2009-06-06

**General Equipment**

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due date
1	Atmosphere pressure meter	Shanghai ZhongXuan Electronic Co;Ltd	BY—2003P	/	2008-10-21	2009-10-20
2	CLAMP METER	FLUKE	316	86080010	2008-04-21	2009-04-20
3	Thermo-Hygrometer	ZHICHEN	ZC1-2	01050033	2008-10-21	2009-10-20
4	Digital illuminance meter	TES electrical electronic Corp.	TES-1330A	050602219	2008-10-21	2009-10-20

## **6 Emission Test Results**

### **6.1 Conducted Emissions Mains Terminals, 150kHz to 30MHz**

Test Requirement: EN 55011: 2007/A2:2007  
Test Method: EN 55011: 2007/A2:2007  
Test Date: Jan. 08, 2009  
Frequency Range: 150KHz to 30MHz  
Class / Severity: Class A  
Detector: Peak for pre-scan (9kHz Resolution Bandwidth for 0.15-30MHz)  
Quasi-Peak if maximised peak within 6dB of Quasi-Peak limit

Operating Environment:

#### **6.1.1 E.U.T. Operation**

Temperature: 21.0 °C Humidity: 48 % RH Atmospheric Pressure: 1006 mbar

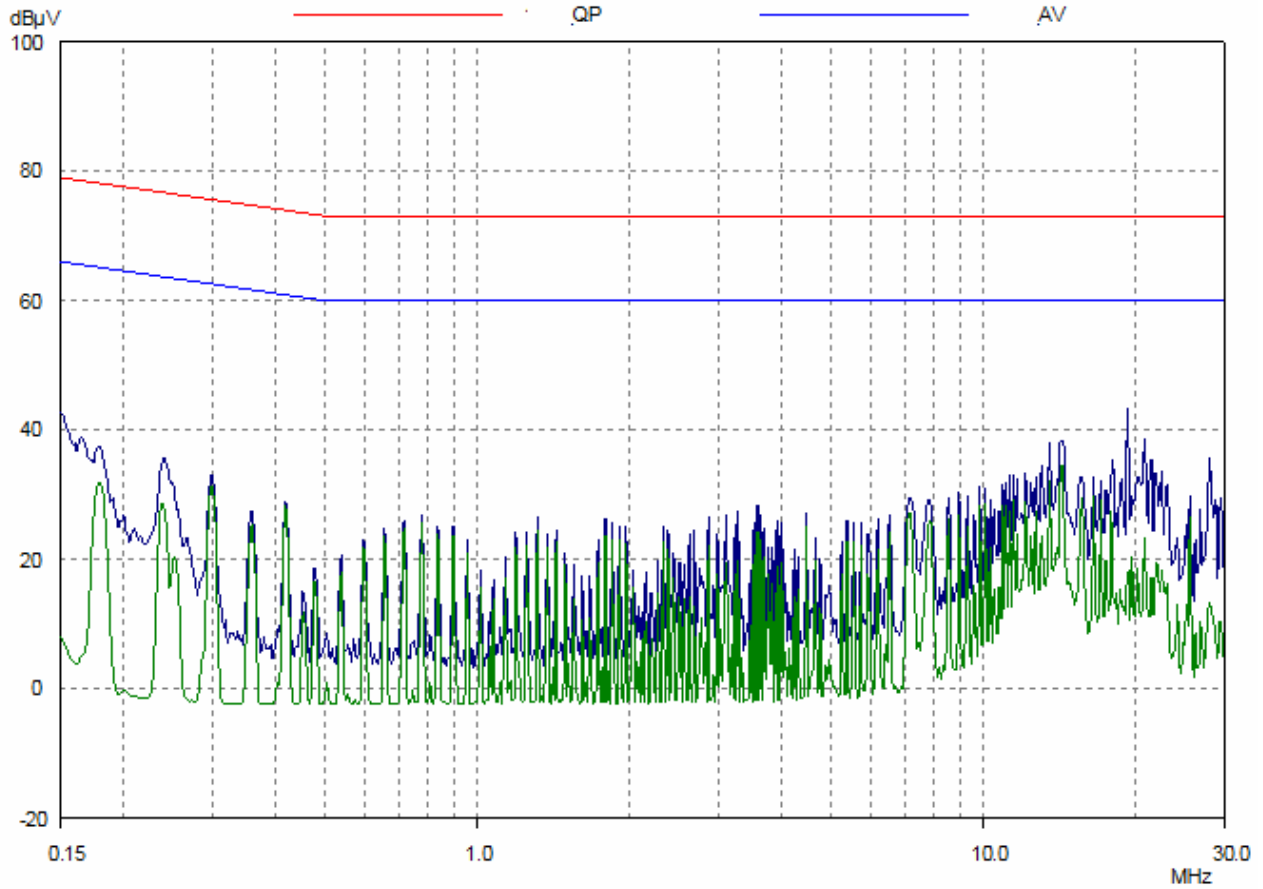
EUT Operation: Test the EUT with full function according to standard.

#### **6.1.2 Measurement Data**

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

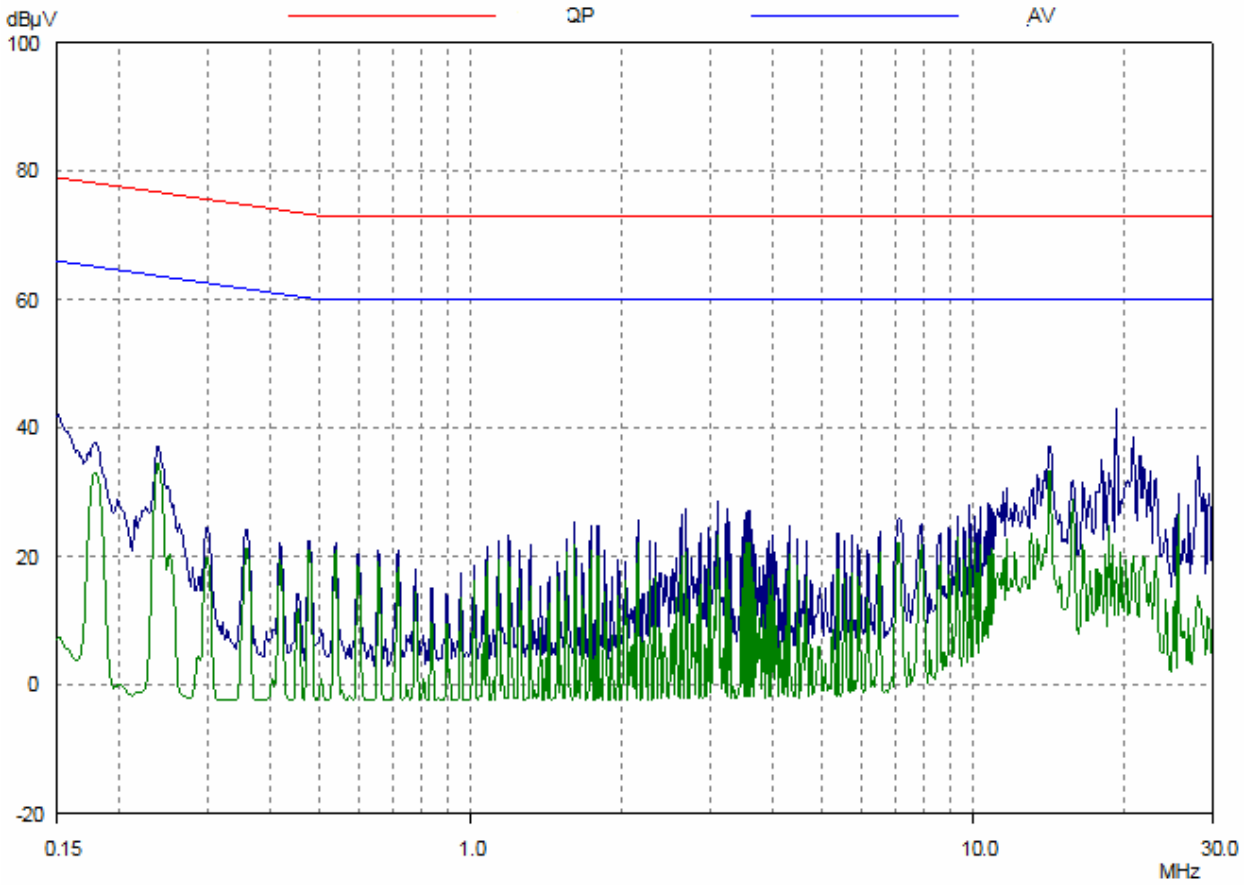
L line



Frequency (MHz)	Receiver QP Level (dBuV)	Limit (dBuV)	Margin (dB)	Receiver AV Level (dBuV)	Limit (dBuV)	Margin (dB)
0.15	*	79.00	*	*	66.00	*
0.50	*	73.00	*	*	60.00	*
1.00	*	73.00	*	*	60.00	*
1.40	*	73.00	*	*	60.00	*
2.00	*	73.00	*	*	60.00	*
3.50	*	73.00	*	*	60.00	*
6.00	*	73.00	*	*	60.00	*
10.00	*	73.00	*	*	60.00	*
22.00	*	73.00	*	*	60.00	*
30.00	*	73.00	*	*	60.00	*

“\*” means the emission level is 6dB lower than the relevant limit.

N line



Frequency (MHz)	Receiver QP Level (dBuV)	Limit (dBuV)	Margin (dB)	Receiver AV Level (dBuV)	Limit (dBuV)	Margin (dB)
0.15	*	79.00	*	*	66.00	*
0.50	*	73.00	*	*	60.00	*
1.00	*	73.00	*	*	60.00	*
1.40	*	73.00	*	*	60.00	*
2.00	*	73.00	*	*	60.00	*
3.50	*	73.00	*	*	60.00	*
6.00	*	73.00	*	*	60.00	*
10.00	*	73.00	*	*	60.00	*
22.00	*	73.00	*	*	60.00	*
30.00	*	73.00	*	*	60.00	*

“\*” means the emission level is 6dB lower than the relevant limit.

## **6.2 Radiated Emissions (30MHz to 1GHz)**

Test Requirement:	EN 55011: 2007/A2:2007
Test Method:	EN 55011: 2007/A2:2007
Test Date:	Jan. 08, 2009
Frequency Range:	30MHz to 1GHz
Measurement Distance:	3m
Class / Severity:	Class A
Limit:	50.0 dB $\mu$ V/m between 30MHz & 230MHz 57.0 dB $\mu$ V/m between 230MHz & 1GHz
Detector:	Peak for pre-scan (120kHz resolution bandwidth) Quasi-Peak if maximised peak within 6dB of limit

### **6.2.1 E.U.T. Operation**

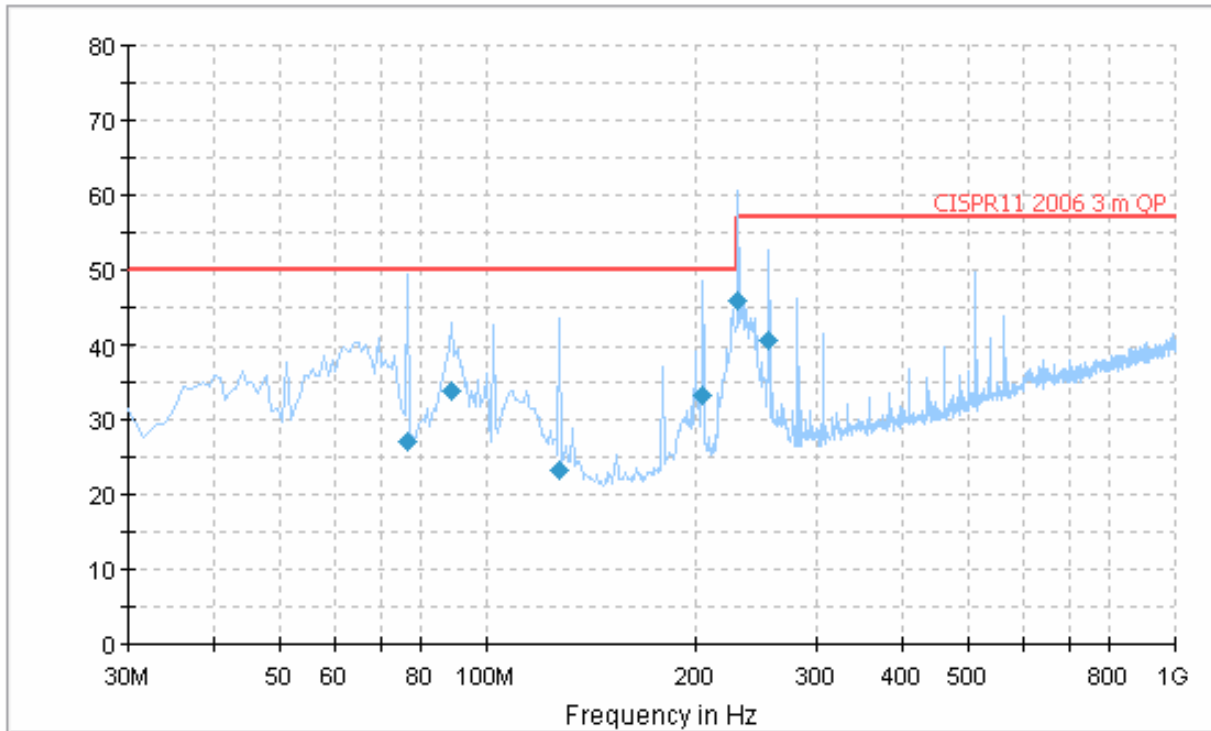
Operating Environment:  
Temperature: 26 °C Humidity: 50 % RH Atmospheric Pressure: 1004 mbar  
EUT Operation: The EUT is in representative work mode.

### **6.2.2 Measurement Data**

An initial pre-scan was performed in peak detection mode. Quasi-Peak was performed at the frequencies with maximized peak emission were detected.

Horizontal:

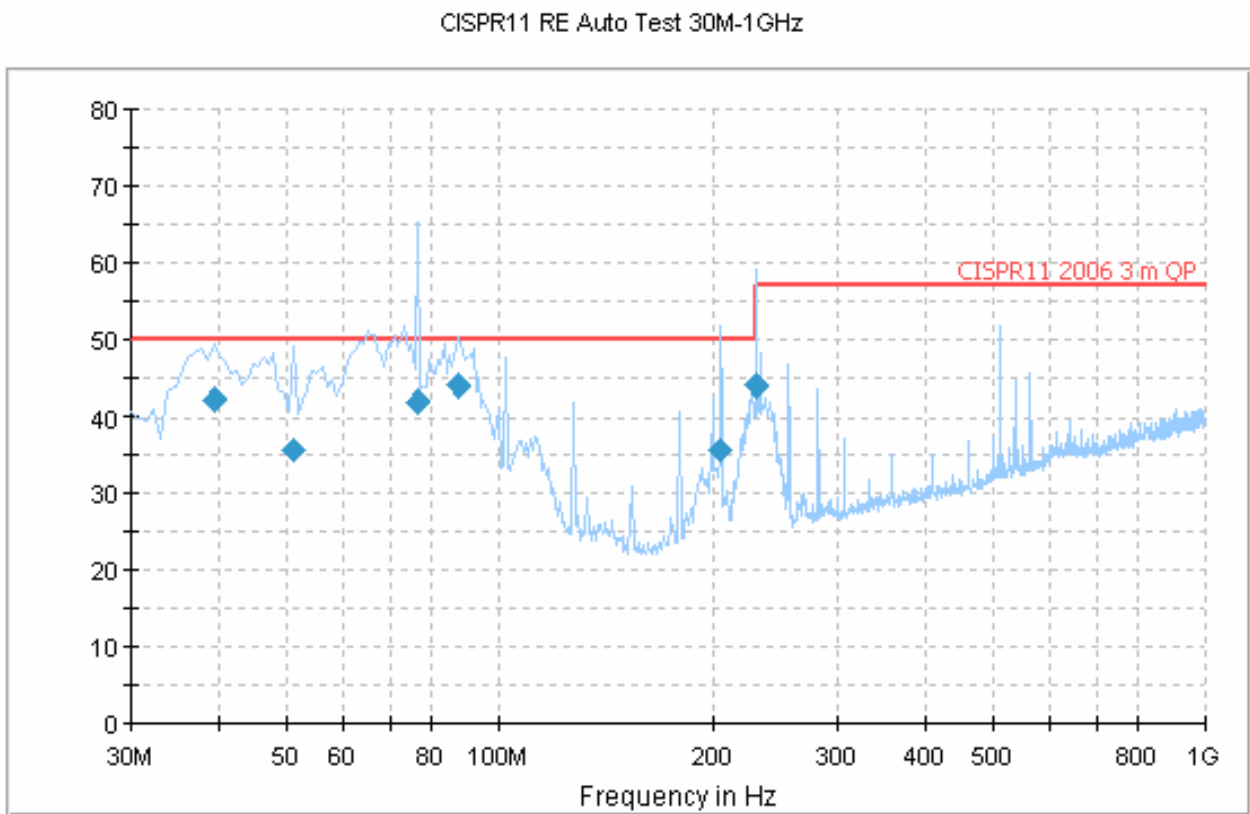
CISPR11 RE Auto Test 30M-1GHz



**Final Result 1**

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBuV /m)
76.560000	27.1	1000.000	120.000	400.0	H	304.0	9.8	22.90	50.00
88.976000	34.1	1000.000	120.000	400.0	H	264.0	12.6	15.90	50.00
127.776000	23.5	1000.000	120.000	300.0	H	126.0	10.5	26.50	50.00
204.600000	33.2	1000.000	120.000	200.0	H	316.0	12.4	16.80	50.00
230.208000	45.8	1000.000	120.000	200.0	H	0.0	13.4	11.20	57.00
255.816000	40.7	1000.000	120.000	100.0	H	265.0	13.9	16.30	57.00

Vertical :



**Final Result 1**

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBuV/m)
39.312000	42.3	1000.000	120.000	100.0	V	299.0	14.7	7.70	50.00
50.952000	35.8	1000.000	120.000	100.0	V	154.0	14.0	14.20	50.00
76.560000	41.8	1000.000	120.000	100.0	V	240.0	9.8	8.20	50.00
87.424000	43.9	1000.000	120.000	200.0	V	167.0	12.1	6.10	50.00
204.600000	35.8	1000.000	120.000	100.0	V	216.0	12.4	14.20	50.00
230.208000	44.0	1000.000	120.000	100.0	V	154.0	13.4	13.00	57.00

### 6.3 Harmonics Test Results

Test Requirement: EN 61000-3-2:2006  
 Test Method: EN 61000-3-2:2006  
 Frequency Range: Up to 2kHz  
 Test Class: Class A  
 Test Date: Jan. 11, 2009

#### 6.3.1 Measurement Diagram and Data

<b>Average harmonic current results</b>				
Hn	I <sub>eff</sub> [A]	I <sub>eff</sub> [%]	Limit [A]	Result
1	69.402E-3	100.000		
2	2.838E-3	4.090	1.08	PASS
3	54.863E-3	79.051	2.30	PASS
4	3.376E-3	4.864	430.00E-3	PASS
5	55.361E-3	79.769	1.14	PASS
6	2.649E-3	3.817	300.00E-3	PASS
7	53.085E-3	76.489	770.00E-3	PASS
8	2.536E-3	3.654	230.00E-3	PASS
9	49.657E-3	71.550	400.00E-3	PASS
10	2.024E-3	2.917	184.00E-3	PASS
11	46.315E-3	66.734	330.00E-3	PASS
12	2.239E-3	3.226	153.33E-3	PASS
13	43.788E-3	63.094	210.00E-3	PASS
14	2.080E-3	2.997	131.43E-3	PASS
15	39.835E-3	57.397	150.00E-3	PASS
16	1.824E-3	2.628	115.00E-3	PASS
17	35.253E-3	50.796	132.35E-3	PASS
18	1.747E-3	2.518	102.22E-3	PASS
19	30.369E-3	43.759	118.42E-3	PASS
20	1.297E-3	1.869	92.00E-3	PASS
21	26.067E-3	37.559	160.71E-3	PASS
22	1.369E-3	1.973	83.64E-3	PASS
23	22.240E-3	32.046	146.74E-3	PASS
24	1.015E-3	1.462	76.66E-3	PASS
25	17.766E-3	25.600	135.00E-3	PASS
26	1.023E-3	1.474	70.77E-3	PASS
27	14.006E-3	20.181	124.99E-3	PASS
28	992.411E-6	1.430	65.71E-3	PASS
29	10.522E-3	15.161	116.39E-3	PASS
30	1.050E-3	1.513	61.33E-3	PASS
31	7.606E-3	10.959	108.87E-3	PASS
32	1.063E-3	1.531	57.50E-3	PASS
33	4.949E-3	7.131	102.27E-3	PASS
34	990.778E-6	1.428	54.12E-3	PASS
35	3.073E-3	4.428	96.44E-3	PASS
36	1.100E-3	1.585	51.11E-3	PASS
37	1.914E-3	2.758	91.21E-3	PASS
38	910.435E-6	1.312	48.42E-3	PASS
39	2.308E-3	3.326	86.53E-3	PASS
40	1.033E-3	1.489	46.00E-3	PASS

**Maximum harmonic current results**

Hn	I <sub>eff</sub> [A]	I <sub>eff</sub> [%]	Limit [A]	Result
1	69.838E-3	100.000		
2	3.723E-3	5.330	1.62	PASS
3	55.298E-3	79.180	3.45	PASS
4	4.076E-3	5.837	645.00E-3	PASS
5	55.703E-3	79.760	1.71	PASS
6	3.486E-3	4.992	450.00E-3	PASS
7	53.298E-3	76.317	1.15	PASS
8	3.300E-3	4.725	345.00E-3	PASS
9	49.943E-3	71.513	600.00E-3	PASS
10	2.791E-3	3.997	276.00E-3	PASS
11	46.560E-3	66.669	495.00E-3	PASS
12	2.983E-3	4.271	229.99E-3	PASS
13	43.961E-3	62.947	315.00E-3	PASS
14	2.840E-3	4.066	197.15E-3	PASS
15	40.042E-3	57.336	225.00E-3	PASS
16	2.582E-3	3.697	172.50E-3	PASS
17	35.442E-3	50.748	198.52E-3	PASS
18	2.467E-3	3.533	153.33E-3	PASS
19	30.576E-3	43.782	177.63E-3	PASS
20	2.081E-3	2.979	138.00E-3	PASS
21	26.227E-3	37.553	160.71E-3	PASS
22	2.124E-3	3.041	125.46E-3	PASS
23	22.435E-3	32.124	146.74E-3	PASS
24	1.727E-3	2.473	114.99E-3	PASS
25	18.003E-3	25.778	135.00E-3	PASS
26	1.783E-3	2.553	106.16E-3	PASS
27	14.277E-3	20.443	124.99E-3	PASS
28	1.713E-3	2.452	98.57E-3	PASS
29	10.722E-3	15.352	116.39E-3	PASS
30	1.719E-3	2.461	92.00E-3	PASS
31	7.821E-3	11.199	108.87E-3	PASS
32	1.725E-3	2.470	86.25E-3	PASS
33	5.205E-3	7.453	102.27E-3	PASS
34	1.625E-3	2.327	81.18E-3	PASS
35	3.243E-3	4.643	96.44E-3	PASS
36	1.628E-3	2.331	76.66E-3	PASS
37	2.136E-3	3.059	91.21E-3	PASS
38	1.423E-3	2.037	72.63E-3	PASS
39	2.464E-3	3.529	86.53E-3	PASS
40	1.528E-3	2.187	69.00E-3	PASS

#### **6.4 Flicker Test Result**

Test Requirement: EN 61000-3-3:1995/A1:2001/A2:2005  
Test Method: EN 61000-3-3:1995/A1:2001/A2:2005  
Test Date: Jan. 11, 2009  
Class/Severity: Clause 5 of EN 61000-3-3  
Measurement Time: 2h  
Detector: As per EN 61000-3-3

6.4.1 Test Results: Pass

### Maximum Flicker results

	<b>EUT values</b>	<b>Limit</b>	<b>Result</b>
Pst	0.031	1.00	PASS
Plt	0.028	0.65	PASS
dc [%]	0.004	3.30	PASS
dmax [%]	0.110	4.00	PASS
dt [s]	0.000	0.50	PASS

## **7 Immunity Test Results**

### **7.1 Performance Criteria Description in Clause 4 of EN 61000-6-2:2005**

Performance Criterion A: The apparatus shall continue to operate as intended during and 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. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation, and from what the user may reasonably expect from the apparatus if used as intended.

Performance Criterion B: The apparatus shall continue 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. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed. No change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation, and from what the user may reasonably expect from the apparatus if used as intended.

Performance Criterion C: Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

### **7.2 ESD**

Test Requirement: EN 61000-6-2: 2005

Test Method: IEC 61000-4-2 :2001

Test Date: Jan. 12, 2009

Discharge Impedance: 330  $\Omega$  / 150 pF

Discharge Voltage: Air Discharge:  $\pm 8$  kV

Contact Discharge:  $\pm 4$  kV

HCP:  $\pm 4$  kV

VCP:  $\pm 4$  kV

Polarity: Positive & Negative

Number of Discharge: Minimum 10 times at each test point for Contact and VCP Discharge;

Minimum 10 times at each test point for Air Discharge

Discharge Mode: Single Discharge

Discharge Period: 1 second minimum

#### **7.2.1 E.U.T. Operation**

Operating Environment:

Temperature: 23.0°C      Humidity: 49% RH      Atmospheric Pressure: 1008 mbar

EUT Operation: The EUT is in representative work mode.

**7.2.2 Direct Application Test Results**

Observations: Test Point:

1. All insulated enclosure & seams around EUT.
2. All touchable metal material of EUT

Direct Application			Test Results	
Discharge Level (kV)	Polarity (+/-)	Test Points	Contact Discharge	Air Discharge
8	+/-	1	N/A	A
4	+/-	2	A	N/A

**Indirect Application Test Results**

Observations: Test Point: 1. All sides.

Indirect Application			Test Results	
Discharge Level (kV)	Polarity (+/-)	Test Point	Horizontal Coupling	Vertical Coupling
4	+/-	1	A	A

**Results:**

A: No degradation in the performance of the EUT was observed.

N/A: Not applicable (not required in the standard or floor mounted the EUT)

**7.3 Radio Frequency Electromagnetic Fields Test (80MHz to 1GHz, 1.4GHz to 2GHz, 2GHz to 2.7GHz )**

Test Requirement: EN 61000-6-2: 2005  
Test Method: IEC 61000-4-3: 2006  
Test Date: Jan. 12, 2009  
Frequency Range: 80MHz to 1GHz, 1.4GHz to 2GHz, 2GHz to 2.7GHz  
Test level: 80MHz to 1GHz, 10V/m on enclosure  
1.4GHz to 2GHz, 3V/m on enclosure  
2GHz to 2.7GHz, 1V/m on enclosure  
Modulation: 80%, 1kHz Amplitude Modulation  
Criteria: Performance criteria A

**7.3.1 E.U.T. Operation**

Operating Environment:

Temperature: 23 °C Humidity: 51% RH Atmospheric Pressure: 1007 mbar

EUT Operation: The EUT is in representative work mode.

**7.3.2 Test Results**

**Pass**

**7.4 Electrical Fast Transients (EFT)**

Test Requirement: EN 61000-6-2: 2005  
Test Method: IEC 61000-4-4: 2004  
Test Date: Jan. 12, 2009  
Test Level:  $\pm 2.0$ kV on AC  
Polarity: Positive & Negative  
Repetition Frequency: 5kHz  
Burst Duration: 300ms  
Test Duration: 2 minute per level & polarity

**7.4.1 E.U.T. Operation**

Operating Environment:

Temperature: 21 °C Humidity: 40% RH Atmospheric Pressure: 1002 mbar

EUT Operation: The EUT is in representative work mode.

**7.4.2 Test Results On AC Supply:**

<b>Lead under Test</b>	<b>Level (<math>\pm</math>kV)</b>	<b>Coupling Direct/Clamp</b>	<b>EUT operating mode</b>	<b>Observations (Performance Criterion)</b>
L,N,PE	$\pm 2.0$	Direct	On working mode	(A)

A: No loss of function was observed.

## **7.5 Surges**

Test Requirement:	EN 61000-6-2: 2005
Test Method:	IEC 61000-4-5 :2005
Test Date:	Jan. 12, 2009
Test Level:	±1kV Line to Neutral, ±2kV Line to PE
Polarity:	Positive & Negative
Generator source impedance:	2Ω Line to Neutral, 12Ω Line to PE
Trigger Mode:	Internal
No. of surges:	5 positive, 5 negative at 0°, 90°, 180°, 270°.

### **7.5.1 E.U.T. Operation**

Operating Environment:

Temperature: 22.0°C    Humidity: 50 % RH    Atmospheric Pressure: 1017 mbar

EUT Operation: The EUT is in representative work mode.

### **7.5.2 Test Results: Pass**

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Pulse No	Line-Line	Level (kV)	Surge Interval	Phase (deg)	Observation (Performance Criterion)
1-5	L-N	+1	60s	0°	No loss of performance (A)
6-10	L-N	-1	60s	0°	(A)
11-15	L-N	+1	60s	90°	(A)
16-20	L-N	-1	60s	90°	(A)
21-25	L-N	+1	60s	180°	(A)
26-30	L-N	-1	60s	180°	(A)
31-35	L-N	+1	60s	270°	(A)
36-40	L-N	-1	60s	270°	(A)
1-5	L-PE	+2	60s	0°	(A)
6-10	L-PE	-2	60s	0°	(A)
11-15	L-PE	+2	60s	90°	(A)
16-20	L-PE	-2	60s	90°	(A)
21-25	L-PE	+2	60s	180°	(A)
26-30	L-PE	-2	60s	180°	(A)
31-35	L-PE	+2	60s	270°	(A)
36-40	L-PE	-2	60s	270°	(A)
1-5	N-PE	+2	60s	0°	(A)
6-10	N-PE	-2	60s	0°	(A)
11-15	N-PE	+2	60s	90°	(A)
16-20	N-PE	-2	60s	90°	(A)
21-25	N-PE	+2	60s	180°	(A)
26-30	N-PE	-2	60s	180°	(A)
31-35	N-PE	+2	60s	270°	(A)
36-40	N-PE	-2	60s	270°	(A)

**7.6 Injected Currents 0.15MHz to 80MHz**

Test Requirement: EN 61000-6-2: 2005  
Test Method: IEC 61000-4-6 :2006  
Test Date: Jan. 12, 2009  
Frequency Range: 0.15MHz to 80MHz  
Test level: 10V rms on AC Ports (unmodulated emf into 150 Ω)  
Modulation: 80%, 1kHz Amplitude Modulation

**7.6.1 E.U.T. Operation**

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1017 mbar

EUT Operation: The EUT is in representative work mode.

**7.6.2 Test Results:**

Frequency	Line	Test Level	Modulation	Step Size	Dwell Time	Observation (Performance Criterion)
150kHz to 80MHz	3 Wire AC Supply Cable	10Vrms	80%, 1kHz Amp. Mod.	1%	3S	No Loss of Function (A)

**7.7 Voltage Dips and Interruptions**

Test Requirement: EN 61000-6-2: 2005  
 Test Method: IEC 61000-4-11 :2004  
 Test Date: December 26, 2008  
 Test Level: 0% of  $U_T$  (Supply Voltage) for 1 Periods  
 40% of  $U_T$  (Supply Voltage) for 10 Periods  
 70 % of  $U_T$  (Supply Voltage) for 25 Periods  
 0 % of  $U_T$  (Supply Voltage) for 250 Periods  
 No. of Dips / Interruptions: 6 per Level

**7.7.1 E.U.T. Operation**

Operating Environment:  
 Temperature: 22 °C Humidity: 50% RH Atmospheric Pressure: 1017 mbar  
 EUT Operation: Test the EUT with full function according to standard.

**7.7.2 Test Results:**

EUT operating mode	Dropout % $U_T$	Phase	Duration of dropout in Periods	No of dropout	Time between dropout	Observations (Performance Criterion)
On mode	100	0°	1	3	10s	(B)
On mode	100	180°	1	3	10s	(B)
On mode	60	0°	10	3	10s	(A)
On mode	60	180°	10	3	10s	(A)
On mode	30	0°	25	3	10s	(A)
On mode	30	180°	25	3	10s	(A)
On mode	100	0°	250	3	10s	(B)
On mode	100	180°	250	3	10s	(B)

Performance C is within the acceptable criterion for Voltage Dips and Interruption test.

## 8 Photographs

### 8.1 Conducted Emission Test Setup



### 8.2 Radiated emission Test Setup



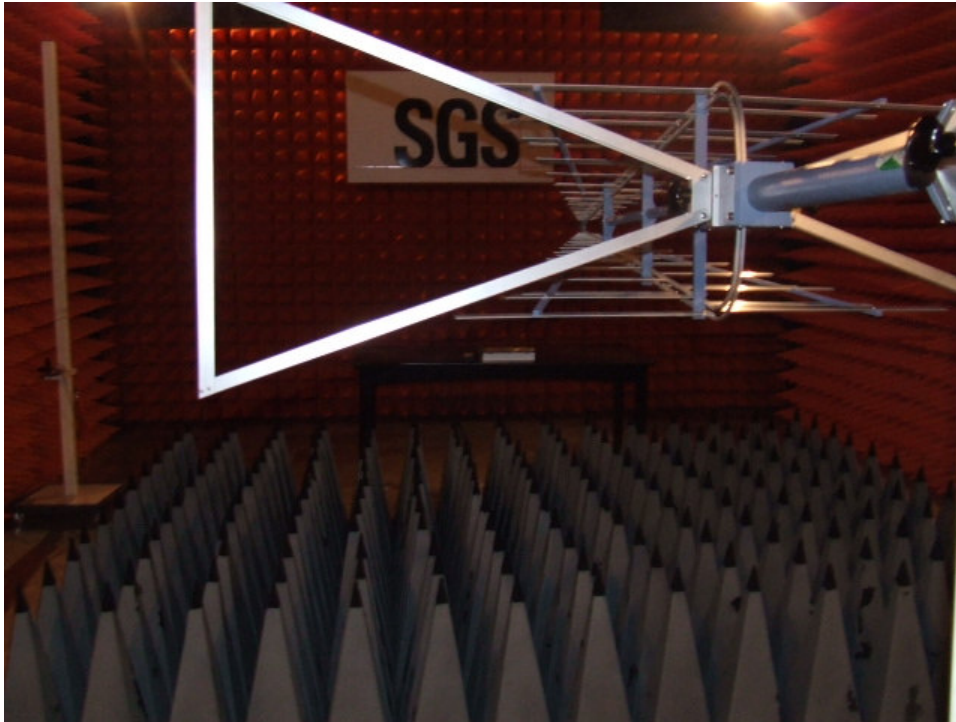
### 8.3 Harmonic&Flicker Test Setup



### 8.4 ESD Test Setup



**8.5 Radio Frequency Electromagnetic Fields Test Setup**



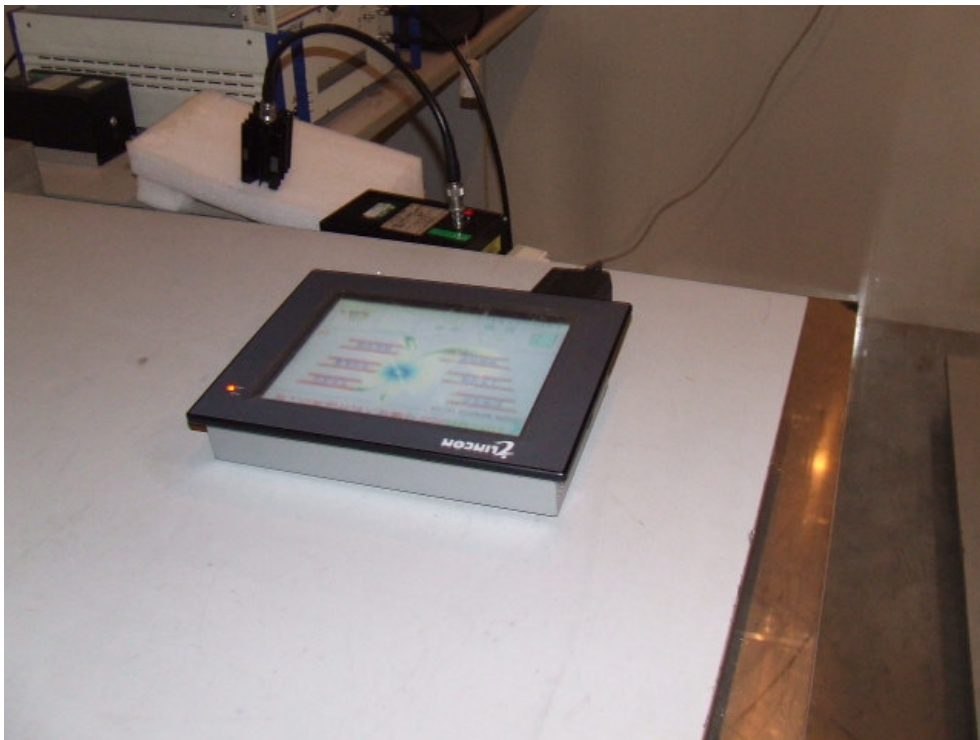
**8.6 Surge/ Voltage Dips And Interruptions Test Setup**



**8.7 EFT Test Setup**

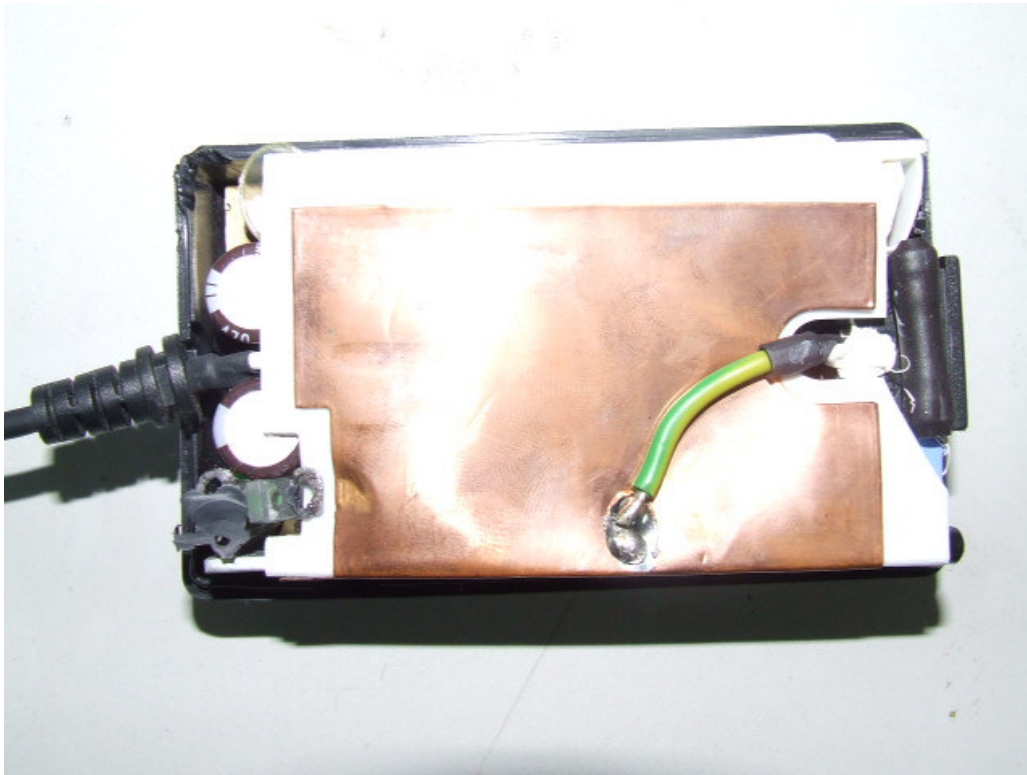


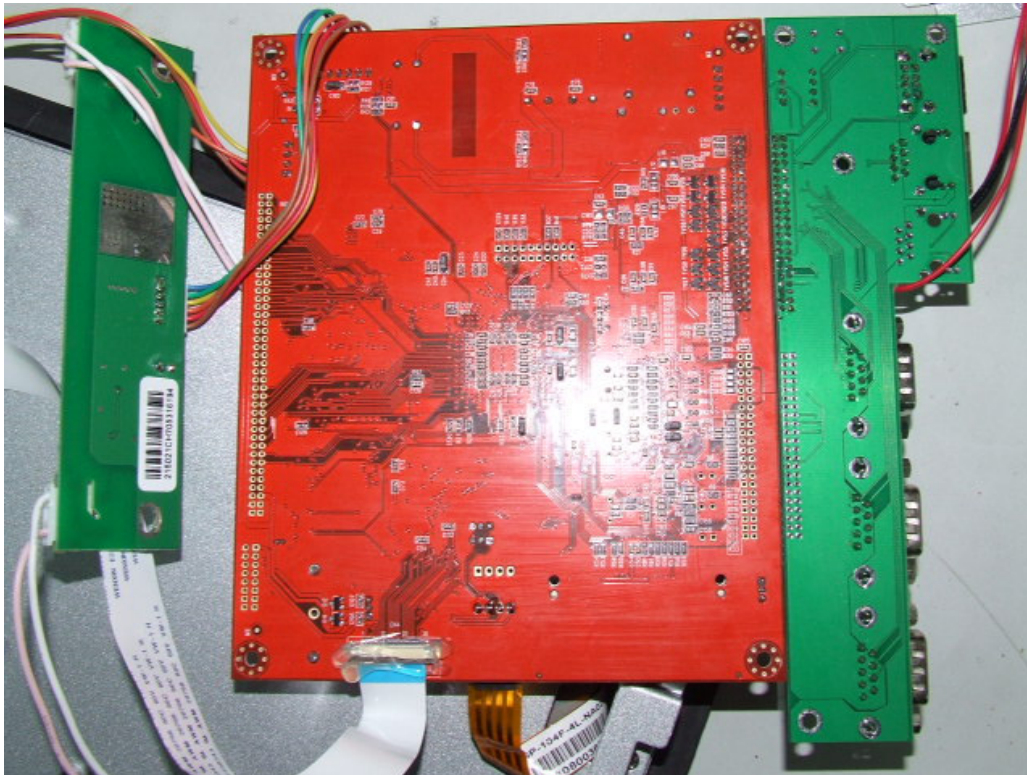
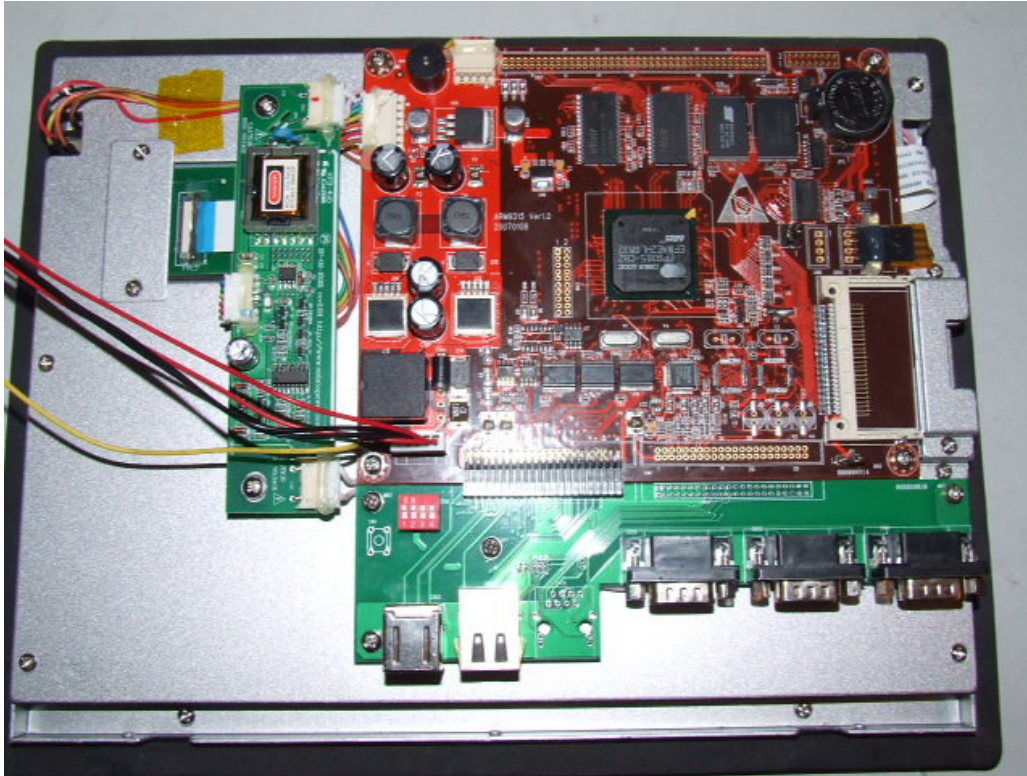
**8.8 Injected Currents Test Setup**



8.9 EUT Constructional Details









***THE END OF REPORT***