SGS-CSTC Standards Technical Services Co., Ltd.

198 Kezhu Road, Scientech Park, Guangzhou Economic & Technological Development District, Guangzhou, China 510663
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Email: sgs_internet_operations@sgs.com

TEST REPORT

Application No.:	GLEMO080902818TX
Applicant:	Xiamen VS-TOP Electronics Co., Ltd.
Equipment Under Test (EUT):	
EUT Name:	Heat Alarm
Item No.:	VST-H598I, VST-H588, VST-WH588I, VST-AH598I, VST-AH588♣
Serial No.:	Not supplied by client
♣	Please refer to section 2 of this report which indicates which item was actually tested and which were electrically identical.
Standards:	EN 61000-6-3:2007
	EN 50130-4:1995+A1:1998+ A2:2003
Date of Receipt:	08 September 2008
Date of Test:	19 to 24 September 2008
Date of Issue:	25 September 2008

Test Result :	**PASS***

* The EUT complies with the standards specified above as the product is benign under the EMC directive. Please refer to section 2 of this report for further details

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.

Stephen Guo
2008 Sep.

CE

Stephen Guo
Manager

2 Test Summary

The customer requested EMC tests for a Heat Alarm.

Test	Test Requirement	Test Method	Class / Severity	Result
Radiated Emission, 30 MHz to 1 GHz	EN 61000-6-3:2007	CISPR 16-2-3:2003 +A2:2005	Table 1 Column 3 of EN61000-6-3	PASS
Conducted Emission (150 KHz to 30 MHz)	EN 61000-6-3:2007	CISPR 16-2-1:2005	Table 1 Column 3 of EN61000-6-3	PASS
Harmonic Emission on AC, 50 Hz	EN 61000-6-3:2007	N/A	Clause 7 of EN 61000-3-2	N/A
Flicker Emission on AC	EN 61000-6-3:2007	N/A	Clause 5 of EN 61000-3-3	N/A
ESD	EN 50130-4:1995 +A1:1998+A2:2003	EN 61000-4-2:1995 +A1:1999 +A2 :2001	Contact ±2,4,6 kV Air ±4,6,8 kV	PASS
Radiated Immunity, 80 MHz to 2 GHz	EN 50130-4:1995 +A1:1998+A2:2003	EN 61000-4-3:2006	10 V/m 80 %, 1 kHz, AM	PASS
			10 V/m 1 Hz (0.5s on, 0.5s off)	PASS
Electrical Fast Transients (EFT)	EN 50130-4:1995 +A1:1998+A2:2003	EN 61000-4-4:2004	AC ±1.0, 2.0 kV Signal ±1.0 kV	PASS
Surge Immunity on AC	EN 50130-4:1995 +A1:1998+A2:2003	EN 61000-4-5:2006	±1 kV D.M.†	PASS
Injected Currents, 150 kHz to 100 MHz	EN 50130-4:1995 +A1:1998+A2:2003	EN 61000-4-6:1996 +A1:2001	10 Vrms (emf), 80 %, 1 kHz Amp. Mod.	PASS
			10 V/m 1 Hz (0.5s on, 0.5s off)	
Voltage Dips and Interruptions	EN 50130-4:1995 +A1:1998+A2:2003	EN 61000-4-11:2004	0 % U_T* for 0.5,1.0, 5 periods 40 % U_T* for 0.5,1.0, 5, 10 periods 70 % U_T* for 0.5,1.0, 5, 10 periods	PASS
Voltage Variation	EN 50130-4:1995 +A1:1998+A2:2003	EN 50130-4:1995 +A1:1998+A2:2003	+10% & -15% of rated voltage	PASS

Remark:

* U_T is the nominal supply voltage

† D.M. – Differential Mode

N/A: not applicable. Please refer to Section 6.3 & Section 6.4 for further details.

♣ Remark: item No.: **VST-H598I**, VST-H588, VST-WH588I, VST-AH598I, VST-AH588

According to the declaration of the applicant, the electrical circuit design, layout, components used and internal wiring were identical for all models, with only difference being the rated voltage.

Therefore only one model **VST-H598I** was tested in this report.

3 Contents

4 General Information

4.1 Client Information

Applicant:	Xiamen VS-TOP Electronics Co., Ltd.
Address of Applicant:	2nd Floor, No.107 XiaGuang Road, XinYang Industrial District, HaiCnag, Xiamen, China

4.2 General Description of E.U.T.

EUT Name:	Heat Alarm
Item No.:	VST-H598I, VST-H588, VST-WH588I, VST-AH598I, VST-AH588
Serial No.:	Not supplied by client

4.3 Details of E.U.T.

Power Supply:	AC 220-240 V 50 Hz(for item VST-H598I)
	DC 9 V battery (for other items)
Power Cable:	0.2 m x 3 wires unscreened AC mains cable

4.4 Description of Support Units

The EUT has been tested with a power line with plug provided by SGS..

4.5 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory,
198 Kezhu Road, Scientech Park, Guangzhou Economic & Technology Development District,
Guangzhou, China 510663
Tel: +86 20 82155555 Fax: +86 20 82075059

No tests were sub-contracted.

4.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **NVLAP (Lab Code: 200611-0)**

  SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is recognized under the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

- **ACMA**

  SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our NVLAP accreditation.

- **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**

  Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

- **CNAS (Lab Code: L0167)**

  SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2006 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of Testing Laboratories.

- **FCC (Registration No.: 282399)**

  SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory 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 our files. Registration 282399, May 31, 2002. With the above and NVLAP's accreditation, SGS-CSTC is an authorized test laboratory for the DoC process.

- **Industry Canada (Registration No.: 4620B-1)**

  The 3m/10m Alternate Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620B-1.

  Date of Registration: Jan 15, 2007. Valid until Jan 15, 2009

- **VCCI (Registration No.: R-2460 and C-2584)**

  The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2460 and C-2584 respectively.

- **CBTL (Lab Code: TL129)**

  SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2005, the Basic Rules, IECEE 01:2006-10 and Rules of procedure IECEE 02:2006-10, and the relevant IECEE CB-Scheme Operational documents.

  This certificate was issued Dec.04.2006 and valid until Oct.12.2009.

4.7 Deviation from Standards

All Immunity tests to EN 61000-6-1 were performed in accordance with EN 61000-4-x and not IEC1000-4-x. (x=2,3,4,5,6,8,11).

4.8 Abnormalities from Standard Conditions

N/A

4.9 Monitoring of EUT for All Immunity Test

Visual: Monitored the LED lighting of EUT.

Audio: Monitored the sound of the EUT.

5 Equipment Used during Test

	Conducted Emission					
No:	**Test Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date (dd-mm-yy)**	**Cal.Due date (dd-mm-yy)**
EMC0306	Shielding Room	Zhong Yu	8 x 3 x 3.8 m^3	N/A	N/A	N/A
EMC0102	LISN	Schaffner Chase	MNZ050D/1	1421	14-12-2007	14-12-2008
EMC0118	Two-line v-netwok	Rohde & Schwarz	ENV216	3560.6550.02	28-07-2008	28-07-2009
EMC0506	EMI Test Receiver	Rohde & Schwarz	ESCS30	100085	14-12-2007	14-12-2008
EMC0107	Coaxial Cable	SGS	2m	N/A	24-11-2007	26-11-2008
EMC0106	Voltage Probe	SGS	N/A	N/A	N/A	N/A
EMC0120	8 Line LISN	Fischer Custom Communications Inc.	FCC-TLISN-T8-02	20550	21-02-2008	21-02-2009
EMC0121	4 Line LISN	Fischer Custom Communications Inc.	FCC-TLISN-T4-02	20549	21-02-2008	21-02-2009
EMC0122	2 Line LISN	Fischer Custom Communications Inc.	FCC-TLISN-T2-02	20548	21-02-2008	21-02-2009

	RE in Chamber					
No:	**Test Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date (dd-mm-yy)**	**Cal.Due date (dd-mm-yy)**
EMC0525	Compact Semi-Anechoic Chamber	ChangZhou ZhongYu	N/A	N/A	N/A	N/A
EMC0522	EMI Test Receiver	Rohde & Schwarz	ESIB26	100249	28-01-2008	28-01-2009
N/A	EMI Test Software	Audix	E3	N/A	N/A	N/A
EMC0514	Coaxial cable	SGS	N/A	N/A	04-12-2007	04-12-2008
EMC0524	Bi-log Type Antenna	Schaffner -Chase	CBL6112B	2966	12-08-2008	12-08-2009
EMC0519	Bilog Type Antenna	Schaffner -Chase	CBL6143	5070	12-08-2008	12-08-2009
EMC0517	Horn Antenna	Rohde & Schwarz	HF906	100095	12-08-2008	12-08-2009
EMC0040	Spectrum Analyzer	Rohde & Schwarz	FSP30	100324	05-12-2008	05-12-2009
EMC0520	0.1-1300 MHz Pre-Amplifier	HP	8447D OPT 010	2944A06252	11-03-2008	11-03-2009
EMC0521	1-26.5 GHz Pre-Amplifier	Agilent	8449B	3008A01649	11-03-2008	11-03-2009
EMC0075	310N Amplifier	Sonama	310N	272683	10-09-2008	10-09-2009
EMC0523	Active Loop Antenna	EMCO	6502	00042963	09-08-2008	09-08-2010
EMC0530	10m Semi- Anechoic Chamber	ETS	N/A	N/A	10-08-2008	10-08-2009

Electrostatic Discharge						
No:	**Test Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date (dd-mm-yy)**	**Cal.Due date (dd-mm-yy)**
EMC0809	ESD Simulator	EM Test AG	Dito	V0735102864	08-10-2007	08-10-2008
EMC0804	ESD Ground Plane	SGS	3m x 3m	N/A	N/A	N/A
EMC0055	Temperature, & Humidity	Shenzhen Tuojia	T218	N/A	16-08-2008	16-08-2009

EFT, Surge, Voltage dips and Interruption						
No:	**Test Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date (dd-mm-yy)**	**Cal.Due date (dd-mm-yy)**
EMC1010	EMC Immunity Test System	Thermo KeyTek	Pro-Plus	501276	14-12-2007	14-12-2008
EMC1003	Transient 1000	EMC Partner	TRA1HO1B	TRA1000-267	10-09-2008	10-09-2009
EMC1005	Digital Oscilloscope	Tektronix	TDS3012	B015508	16-07-2008	16-07-2009

Conducted Immunity						
No:	**Test Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date (dd-mm-yy)**	**Cal.Due date (dd-mm-yy)**
EMC1101	Signal Generator	Rohde & Schwarz	SMY01	825675/016	18-12-2007	18-12-2008
EMC1102	Amplifier 0.15-230MHz	Ophirrf	GRF5048	1003	11-03-2008	11-03-2009
EMC1103	Power Meter	Rohde & Schwarz	NRVS	825770/079	16-07-2008	16-07-2009
EMC0905	Power Sensor	Rohde & Schwarz	NRV-Z5	825802/013	16-07-2008	16-07-2009
EMC1105	Dual Directional coupler	Werlatone Inc.	C1795	6635	24-11-2007	24-11-2008
EMC0908	Oscilloscope Type 485	Tektronix	485	B144408	23-07-2008	23-07-2009
EMC1108	CDN M3	Schaffner Chase	CDN-M3-16	9866	14-12-2007	14-12-2008
EMC1107	CDN M2	Schaffner Chase	CDN-M2-16	9863	14-12-2007	14-12-2008
EMC1120	Immunity S/W Ver 4.31	Schaffner Chase	CIS9942	WHHPKB	N/A	N/A
EMC1116	Current Probe	Schaffner Chase	CIP9136	1155	25-11-2007	25-11-2008
EMC1117	Current Probe	Schaffner Chase	CSP8445	18	25-11-2007	25-11-2008

General used equipment						
No:	**Test Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date (dd-mm-yy)**	**Cal.Due date (dd-mm-yy)**
EMC0006	DMM	Fluke	73	70681569	27-09-2007	27-09-2008
EMC0007	DMM	Fluke	73	70671122	27-09-2007	27-09-2008

6 Emission Test Results

6.1 Radiated Emissions, 30 MHz to 1 GHz

Test Requirement:	EN 61000-6-3
Test Method:	CISPR 16-2-3
Test Date:	19 September 2008
Frequency Range:	30 MHz to 1 GHz
Class / Severity:	Table 1 Column 3 of EN61000-6-3
Measurement Distance:	3 m
Detector:	Peak for pre-scan
	Quasi-Peak if maximised peak within 6dB of limit

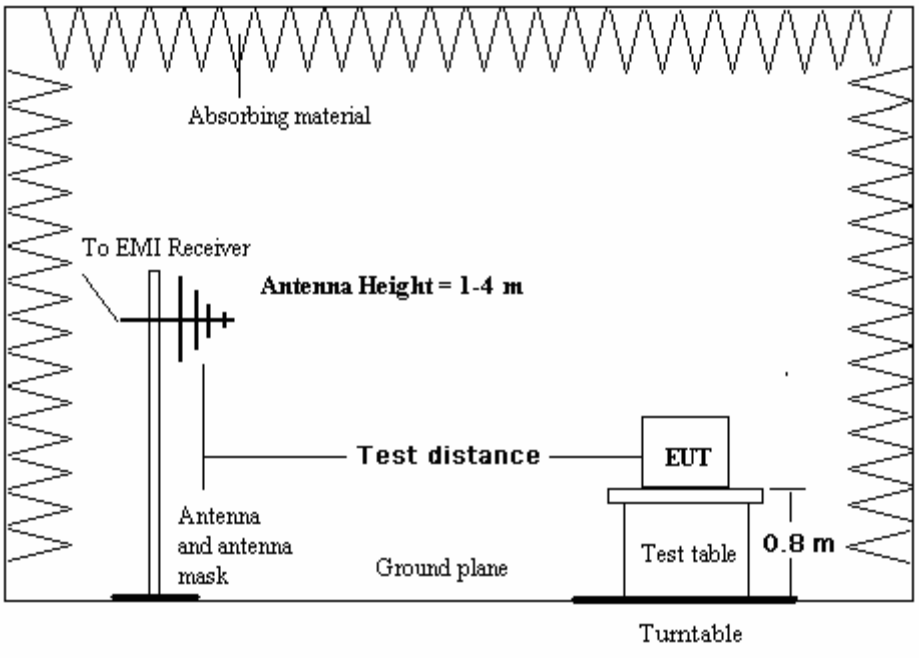
6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 26 °C Humidity: 50% RH Atmospheric Pressure: 1002 mbar

EUT Operation: Test the EUT in detecting mode.

6.1.2 Test Setup



6.1.3Measurement Data

An initial pre-scan was performed in the 3m chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by Bilog antenna with 2 orthogonal polarities.

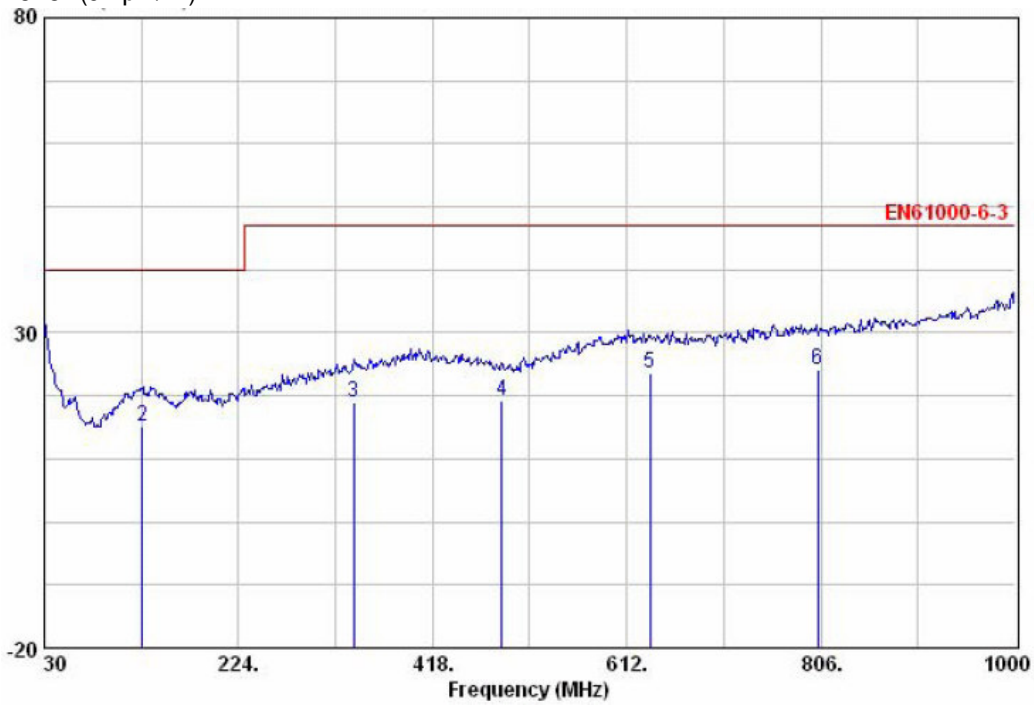
The following quasi-peak measurements were performed on the EUT on 19 September 2008:

AC mains:

Vertical:

Peak scan

Level (dBµV/m)



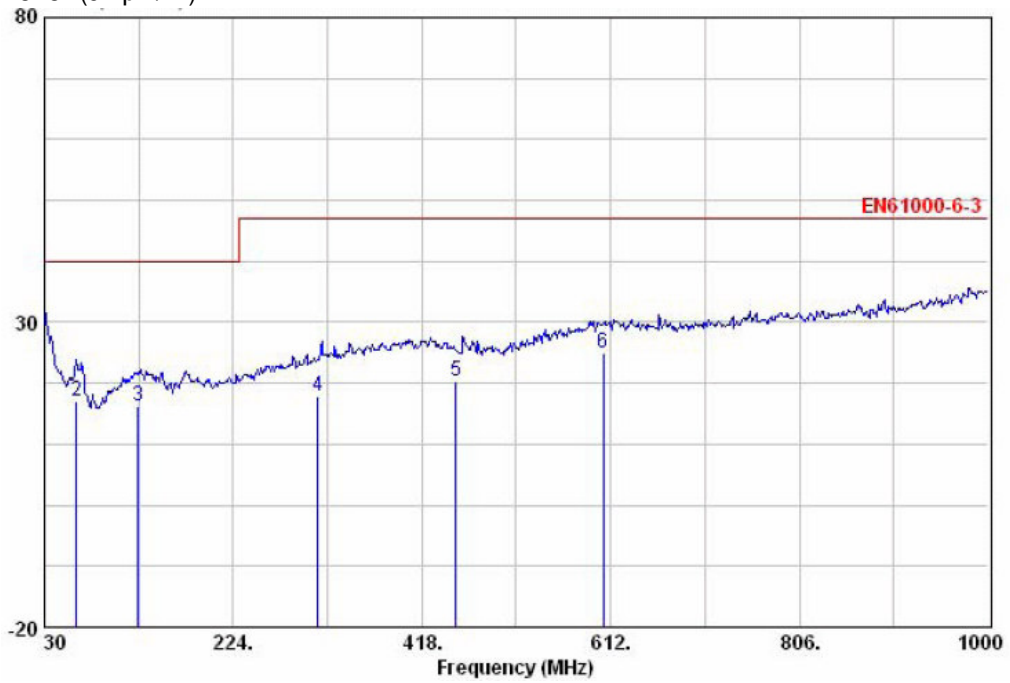
Quasi-peak measurement

Freq	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
30.000	24.03	24.40	0.60	25.50	23.53	40.00	-16.47	QP
127.970	25.51	13.56	1.30	25.10	15.27	40.00	-24.73	QP
339.430	25.73	15.52	2.29	24.66	18.88	47.00	-28.12	QP
486.870	26.44	15.75	2.77	25.80	19.16	47.00	-27.84	QP
635.280	26.49	19.62	3.15	25.76	23.49	47.00	-23.51	QP
803.090	25.38	20.62	3.60	25.58	24.02	47.00	-22.98	QP

Horizontal:

Peak scan

Level (dBμV/m)



Quasi-peak measurement

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
30.000	24.67	24.40	0.60	25.50	24.17	40.00	-15.83	QP
62.980	30.24	10.89	0.96	25.10	16.99	40.00	-23.01	QP
126.030	26.45	13.64	1.30	25.10	16.29	40.00	-23.71	QP
311.300	25.34	14.81	2.11	24.47	17.79	47.00	-29.21	QP
452.920	27.09	16.19	2.63	25.50	20.40	47.00	-26.60	QP
604.240	27.74	19.79	3.10	25.80	24.83	47.00	-22.17	QP

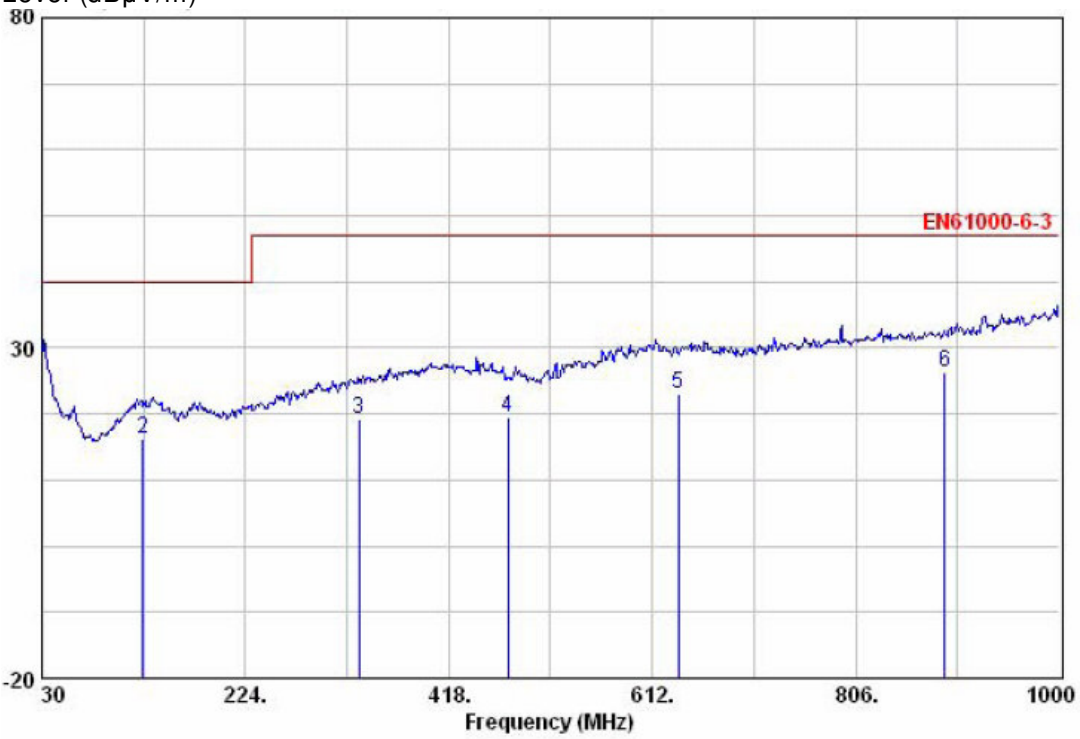
Level = Read Level + Antenna Factor + Cable Loss – Preamp Factor.

Battery operating:

Vertical:

Peak scan

Level (dBμV/m)



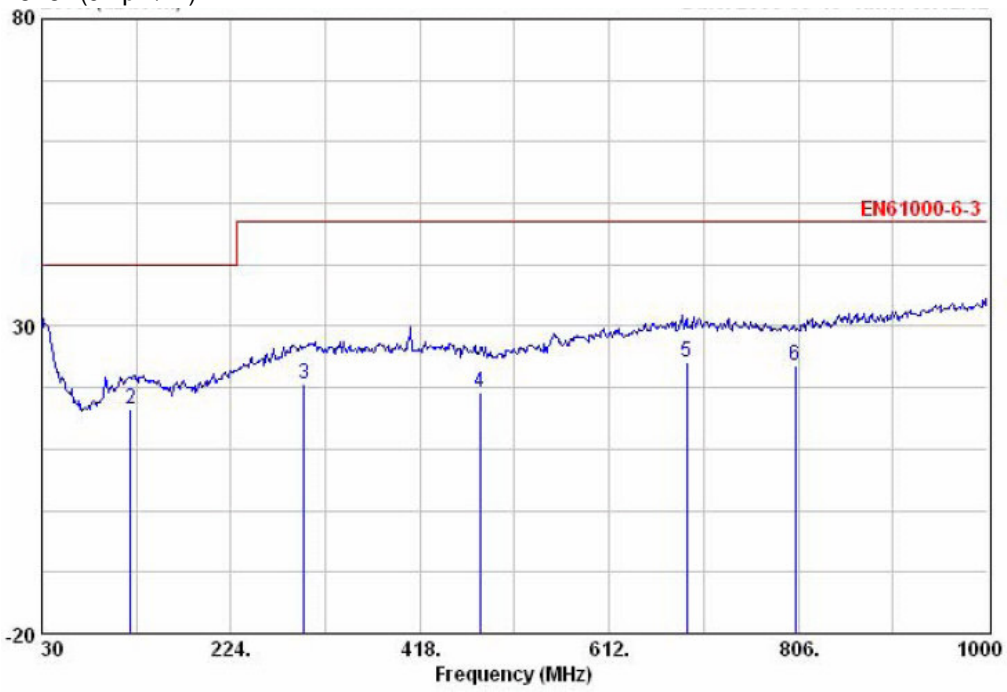
Quasi-peak measurement

Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
30.000	25.39	24.40	0.60	25.50	24.89	40.00	-15.11	QP
126.030	26.30	13.64	1.30	25.10	16.14	40.00	-23.86	QP
332.640	26.34	15.36	2.23	24.61	19.32	47.00	-27.68	QP
474.260	26.59	15.90	2.70	25.69	19.51	47.00	-27.49	QP
637.220	26.02	19.60	3.17	25.76	23.03	47.00	-23.97	Peak
891.360	26.37	21.07	3.90	25.05	26.29	47.00	-20.71	QP

Horizontal:

Peak scan

Level (dBμV/m)



Quasi-peak measurement

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
30.000	26.34	24.20	0.60	25.50	25.64	40.00	-14.36	QP
121.180	26.70	13.72	1.30	25.10	16.62	40.00	-23.38	QP
298.690	25.28	17.60	2.10	24.40	20.58	47.00	-26.42	QP
479.110	26.12	16.27	2.70	25.73	19.36	47.00	-27.64	QP
691.540	26.38	20.19	3.32	25.71	24.18	47.00	-22.82	QP
803.090	26.05	19.64	3.60	25.58	23.70	47.00	-23.30	QP

Level = Read Level + Antenna Factor + Cable Loss – Preamp Factor.

6.2 Conducted Emissions Mains Terminals, 150 kHz to 30 MHz

Test Requirement:	EN 61000-6-3
Test Method:	CISPR 16-2-1
Test Date:	19 September 2008
Frequency Range:	150 KHz to 30 MHz
Class / Severity:	Table 1 Column 3 of EN 61000-6-3
Detector:	Peak for pre-scan (9 kHz Resolution Bandwidth)
	Quasi-Peak if maximised peak within 6 dB of Quasi-Peak limit

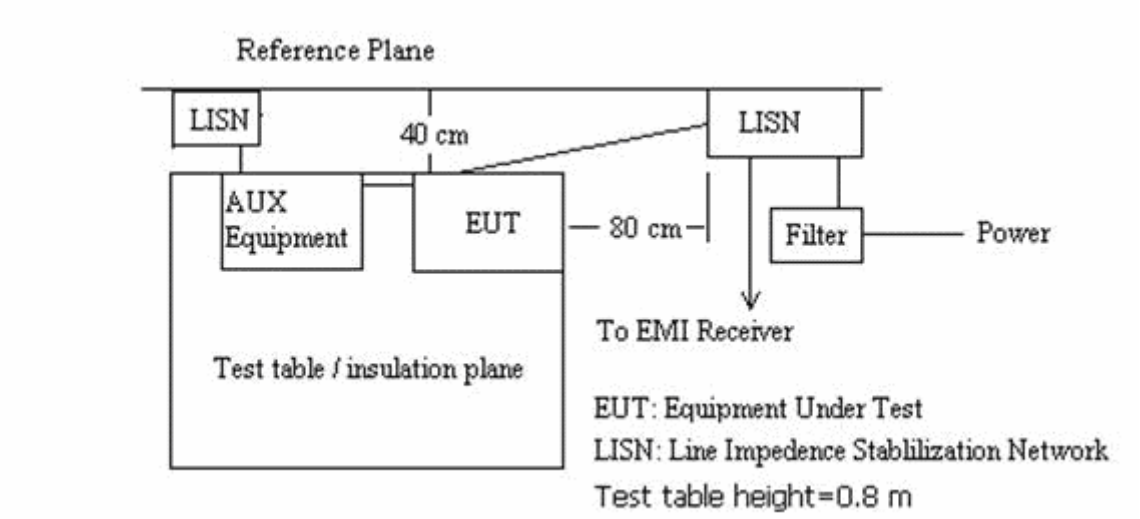
6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50% RH Atmospheric Pressure: 1005 mbar

EUT Operation: Test the EUT in detecting mode.

6.2.2 Plan View of Test Setup



6.2.3 Measurement Data

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

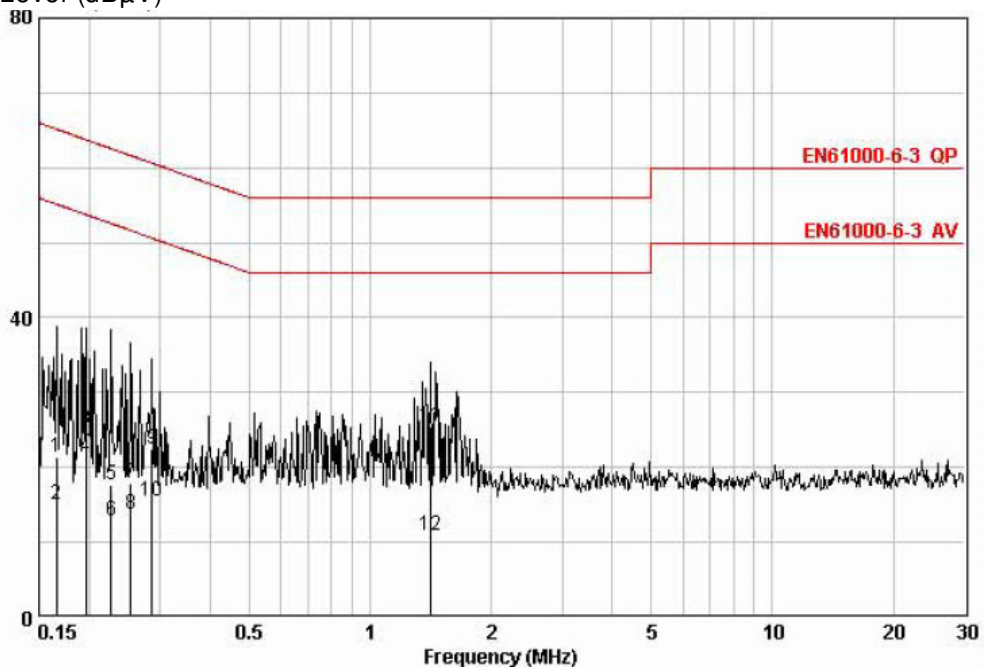
Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

The following Quasi-Peak and Average measurements were performed on the EUT on 19 September 2008:

Live Line:

Peak Scan:

Level (dBµV)



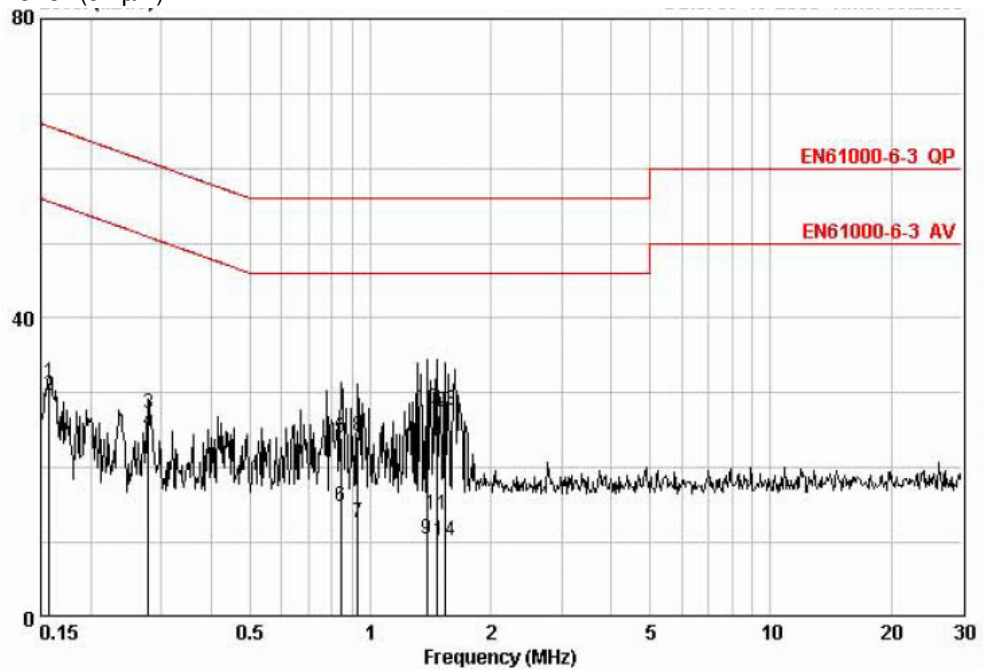
Quasi-peak and Average measurement:

Freq	Read Level	Cable Loss	LISN Factor	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
0.166	11.40	0.00	10.03	21.43	65.16	-43.73	QP
0.166	5.09	0.00	10.03	15.12	55.16	-40.04	AVERAGE
0.197	15.10	0.00	9.89	24.99	63.76	-38.76	QP
0.197	11.56	0.00	9.89	21.45	53.76	-32.30	AVERAGE
0.227	7.86	0.00	9.87	17.73	62.57	-44.83	QP
0.227	3.02	0.00	9.87	12.89	52.57	-39.67	AVERAGE
0.253	8.00	0.00	9.88	17.88	61.64	-43.76	QP
0.253	3.83	0.00	9.88	13.71	51.64	-37.93	AVERAGE
0.286	12.62	0.00	9.90	22.52	60.63	-38.12	QP
0.286	5.69	0.00	9.90	15.59	50.63	-35.05	AVERAGE
1.418	15.80	0.02	9.77	25.59	56.00	-30.41	QP
1.418	1.02	0.02	9.77	10.81	46.00	-35.19	AVERAGE

Neutral Line

Peak Scan:

Level (dBµV)



Quasi-peak and Average measurement:

Freq	Read Level	Cable Loss	LISN Factor	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
0.157	21.34	0.00	9.97	31.31	65.60	-34.30	QP
0.157	19.74	0.00	9.97	29.71	55.60	-25.90	AVERAGE
0.279	17.26	0.00	9.90	27.16	60.85	-33.69	QP
0.279	14.86	0.00	9.90	24.76	50.85	-26.09	AVERAGE
0.844	14.22	0.00	9.85	24.07	56.00	-31.93	QP
0.844	4.93	0.00	9.85	14.78	46.00	-31.22	AVERAGE
0.928	2.77	0.00	9.83	12.60	46.00	-33.40	AVERAGE
0.928	14.30	0.00	9.83	24.13	56.00	-31.87	QP
1.381	0.64	0.02	9.80	10.46	46.00	-35.54	AVERAGE
1.381	18.02	0.02	9.80	27.84	56.00	-28.16	QP
1.464	3.96	0.02	9.79	13.77	46.00	-32.23	AVERAGE
1.464	17.72	0.02	9.79	27.53	56.00	-28.47	QP
1.535	17.80	0.02	9.79	27.61	56.00	-28.39	QP
1.535	0.51	0.02	9.79	10.32	46.00	-35.68	AVERAGE

6.3 Harmonics Test Results

Test Requirement: EN 61000-6-3

Test Method : EN 61000-3-2

Frequency Range: 100Hz to 2kHz

There is no need for Harmonics test to be performed on this product (rated power is less than 75 W) in accordance with EN 61000-3-2:2006.

For further details, please refer to Clause 7, Note 1 of EN 61000-3-2 which states:

"For the following categories of equipment limits are not specified in this edition of the standard.

Note 1: Equipment with a rated power of 75 W or less, other than lighting equipment."

6.4 Flicker Test Results

Test Requirement: EN 61000-6-3

Test Method: N/A: See Remark Below

There is no need for Flicker test to be performed on this product in accordance with EN 61000-3-3:1995 +A1:2001+A2:2005.

For further details, please refer to Clause 6.1 of EN 61000-3-3 which states:

"For voltage changes caused by manual switching, equipment is deemed to comply without further testing if the maximum r.m.s. input current (including inrush current)evaluated over each 10 ms half-period between zero-crossings does not exceed 20 A, and the supply current after inrush is within a variation band of 1,5A.."

7 Immunity Test Results

7.1 Performance Criteria Description in EN 50130-4

ESD, RI, EFT, Surge, CI, Voltage Dips:

There shall be no damage, malfunction or change of status due to the conditioning. Flickering of an indicator during the application of the discharges is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change.

For further details, please refer to Clause 7.4, 8.4, 9.4, 10.4, 11.4, 12.4 and 13.4, of EN 50130-4.

7.2 ESD

Test Requirement:	EN 50130-4	
Test Method:	EN 61000-4-2	
Test Date:	23 September 2008	
Discharge Impedance:	330 Ω / 150 pF	
Discharge Voltage:	Air Discharge:	4, 6, 8 kV
	Contact Discharge:	2, 4, 6 kV
	VCP:	2, 4, 6 kV
Polarity:	Positive & Negative	
Number of Discharge:	Minimum 10 times at each test point	
Discharge Mode:	Single Discharge	
Discharge Period:	1 second minimum	

7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 21 °C Humidity: 52% RH Atmospheric Pressure: 1005 mbar

EUT Operation: Test the EUT in detecting mode and idle mode.

7.2.2 Direct Application Test Results

Direct Application Test Results

Observations: Test Point: 1. All Enclosure & Seams;
2. All the metallic parts.

Direct Application			Test Results	
Discharge Level (kV)	**Polarity (+/-)**	**Test Point**	**Contact Discharge**	**Air Discharge**
2, 4, 8	+/-	1	N/A	A
2, 4, 6	+/-	2	N/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**
2, 4, 6	+/-	1	N/A	A

Results:

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

N/A: Not applicable (Not requested by Standard or floor mounted EUT).

7.3 Radiated Immunity

Test Requirement: EN 50130-4
Test Method: EN 61000-4-3
Test Date: 19 September 2008
Frequency Range: 80 MHz to 2 GHz
Antenna Polarization: Horizontal & Vertical
Severity: 10 V/m 80 %, 1 kHz Amplitude Modulated
10 V/m 80 %, 1 Hz (0.5s on, 0.5s off) Plus Modulated

7.3.1 E.U.T. Operation

Operating Environment:
Temperature: 25 °C Humidity: 50% RH Atmospheric Pressure: 1002 mbar
EUT Operation: Test the EUT in detecting mode and idle mode.

7.3.2 Test Results

Frequency	Level	Modulation	EUT Face	Result / Observations
80 MHz-2 GHz	10 V/m	1 kHz, 80 % Amp. Mod, 1 % increment	0°V	A
			0°H	
			90°V	A
			90°H	
			180°V	A
			180°H	
			270°V	A
			270°H	
80 MHz-2 GHz	10 V/m	80 %, 1 Hz (0.5s on, 0.5 s off) Pulse Modulated	0°V	A
			0°H	
			90°V	A
			90°H	
			180°V	A
			180°H	
			270°V	A
			270°H	

Remarks:

A: No degradation in the performance of the E.U.T. was observed.

7.4 Electrical Fast Transients (EFT)

Test Requirement: EN 50130-4
Test Method: EN 61000-4-4
Test Date: 22 September 2008
Test Level: 1.0, 2.0kV on AC
Polarity: Positive & Negative
Repetition Frequency: 5 kHz
Burst Duration: 300 ms
Test Duration: 2 minute per level & polarity

7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 24 °C Humidity: 56% RH Atmospheric Pressure: 1006 mbar

EUT Operation: Test the EUT in detecting mode and idle mode.

7.4.2 Test Results:

Lead under Test	Level (±kV)	Coupling Direct/Clamp	EUT operating mode	Observations (Performance Criterion)
Live	± 1.0, 2.0	Direct	detecting mode and idle mode	(B)
Neutral	± 1.0, 2.0	Direct	detecting mode and idle mode	(B)
Live + Neutral	± 1.0, 2.0	Direct	detecting mode and idle mode	(B)

B: The LED light flash quickly during test. And it could recover automatically after test.

7.5 Surge

Test Requirement: EN 50130-4
Test Method: EN 61000-4-5
Test Date: 22 September 2008
Test Level: ±1 kV
Polarity: Positive & Negative
Interval: 60 s between each surge
No. of surges: 5 positive, 5 negative at 0°, 90°, 180°, 270°.

7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 24 °C Humidity: 55 % RH Atmospheric Pressure: 1006 mbar

EUT Operation: Test the EUT in detecting mode and idle mode.

7.5.2 Test Results:

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)

7.6 Conducted Immunity 0.15 MHz to 100 MHz

Test Requirement: EN 50130-4
Test Method: EN 61000-4-6
Test Date: 22 September 2008
Frequency Range: 0.15 MHz to 100 MHz
Test level: 10 V rms on AC Ports (unmodulated emf into 150 Ω)
Modulation: 80 %, 1 kHz Amplitude Modulation
80 %, 1 Hz (0.5s on, 0.5s off) Plus Modulated

7.6.1 E.U.T. Operation

Operating Environment:
Temperature: 25 °C Humidity: 55 % RH Atmospheric Pressure: 1006 mbar
EUT Operation: Test the EUT in detecting mode and idle mode.

7.6.2 Test Results:

Frequency	Line	Test Level	Modulation	Step Size	Dwell Time	Observation (Performance Criterion)
150 kHz to 100 MHz	2 Wire AC Supply Cable	10Vrms	80 %, 1 kHz Amp. Mod.	1%	2S	No Loss of Function (A)
			80 %, 1 Hz (0.5s on, 0.5s off) Pulse Mod.			

7.7 Voltage Dips and Interruptions

Test Requirement: EN 50130-4

Test Method: EN 61000-4-11

Test Date: 22 September 2008

Test Level: 0% of U_T (Supply Voltage) for 0.5, 1, 5 Periods
40% of U_T (Supply Voltage) for 0.5, 1, 5, 10 Periods
70 % of U_T (Supply Voltage) for 0.5, 1, 5, 10 Periods

No. of Dips / Interruptions: 3 per Level

7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 24 °C Humidity: 60% RH Atmospheric Pressure: 998 mbar

EUT Operation: Test the EUT in detecting mode and idle mode.

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)
detecting mode and idle mode	0	0°	0.5,1,5	3	10s	No loss of function (A)
detecting mode and idle mode	40	0°	0.5, 1, 5	3	10s	No loss of function (A)
detecting mode and idle mode	70	0°	0.5, 1, 5, 10	3	10s	No loss of function (A)
detecting mode and idle mode	85	0°	0.5, 1, 5, 10	3	10s	No loss of function (A)

7.8 Voltage Variations

Test Requirement: EN 50130-4
Test Method: EN 50130-4
Test Date: 24 September 2008
Test Level: + 110 % of U_T (Supply Voltage)
85 % of U_T (Supply Voltage) EN 50130-4

7.8.1 E.U.T. Operation

Operating Environment:

Temperature: 24 °C Humidity: 55% RH Atmospheric Pressure: 1006 mbar

EUT Operation: Test the EUT in detecting mode and idle mode.

7.8.2 Test Results:

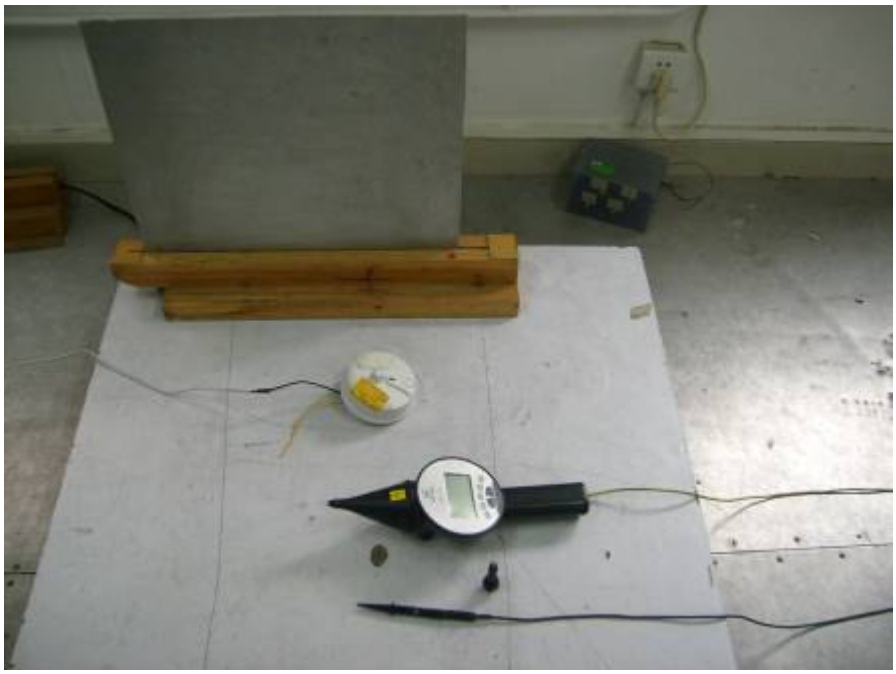
No performance degradation was observed during testing.

8 Photographs

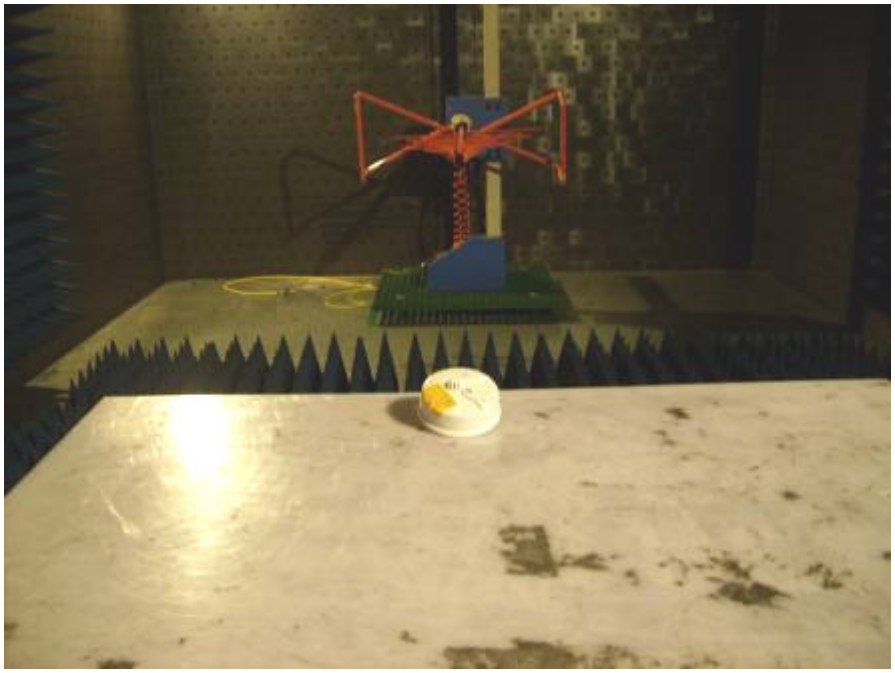
8.1 Radiated Emission Test Setup

8.2 Conducted Emission Test Setup

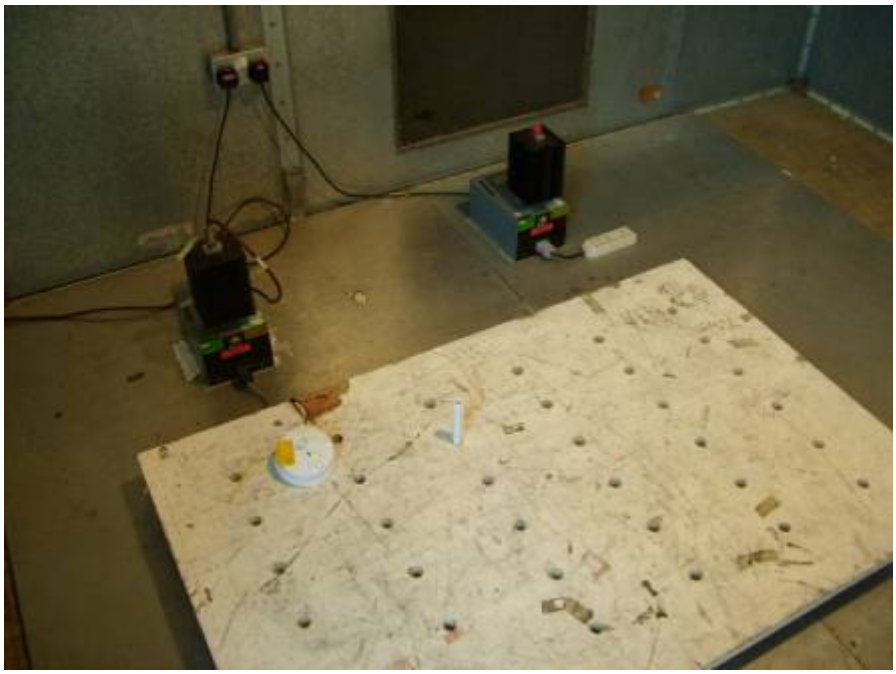
8.3 ESD Test Setup



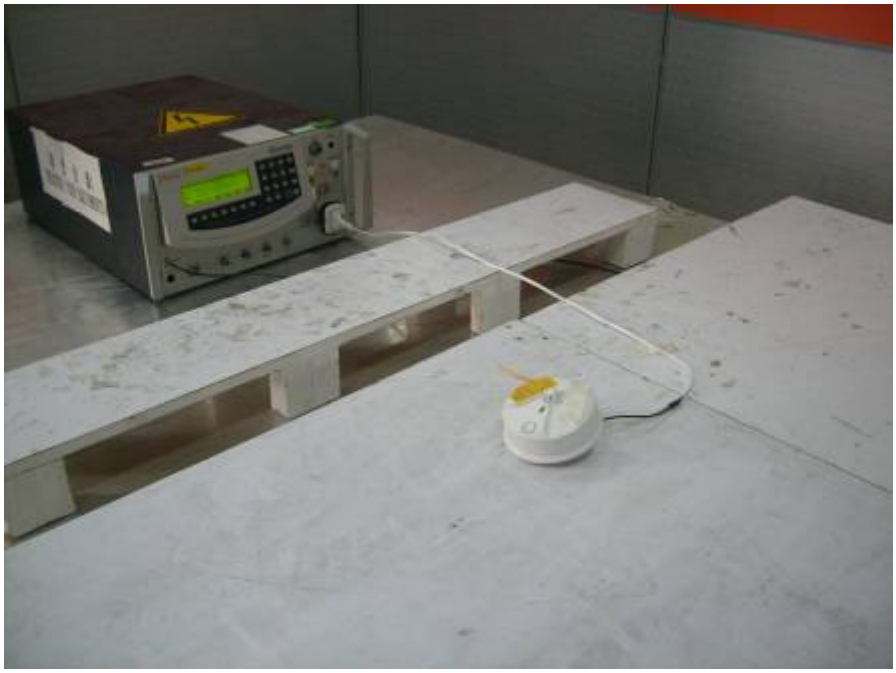
8.4 Radiated Immunity Test Setup



8.5 CI Test Setup



8.6 EFT, Surge and Voltage dips Test Setup



8.7 Voltage Variations Test Setup

8.8 EUT Constructional Details