SGS-CSTC Standards Technical Services Co., Ltd.

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TEST REPORT

Application No.:	SZEM1504002144HS(GZEM1504001816HS)
Applicant:	SHENZHEN SVAVO BATHROOM PRODUCTS CO.,LTD.
Address of Applicant:	No.4 Factory, Xinwu Industrial, Shabo, Pingshan New District, Shenzhen,China
Manufacturer:	SHENZHEN SVAVO BATHROOM PRODUCTS CO.,LTD.
Address of Manufacturer:	No.4 Factory, Xinwu Industrial, Shabo, Pingshan New District, Shenzhen,China
Equipment Under Test (EUT):	
EUT Name:	Automatic Foam/Soap dispenser
Model No.:	V-SEN3075, V-SEN3085 ♣
♣	Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical
Trade mark:	SVAVO
Standards:	EN 55014-1:2006+A1:2009+A2:2011
	EN 55014-2:1997+A1:2001+A2:2008
	EN 61000-3-2:2014
	EN 61000-3-3:2013
Date of Receipt:	2015-05-05
Date of Test:	2015-05-05 to 2015-05-26
Date of Issue:	2015-06-04
Test Result :	**Pass***

* In the configuration tested, the EUT complied with the standards specified above.

This report supersedes our previous report SZEM150400214401, issued on 2015-05-26, which is hereby deemed null and void.

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. The protection requirements with respect to electromagnetic compatibility contained in Directive 2004/108/EC are considered.

Jack Zhang
EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.
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

Item	Standard	Method	Class	Result
Conducted Disturbance at Mains Terminals (150kHz-30MHz)	EN 55014-1:2006 +A1:2009+A2:2011	CISPR 16-2-1	N/A	Pass
Radiated Disturbance (30MHz-1GHz)	EN 55014-1:2006 +A1:2009+A2:2011	CISPR 16-2-3	N/A	Pass
Electrostatic Discharge	EN 55014-2:1997 +A1:2001+A2:2008	EN 61000-4-2:2009	4kV Contact Discharge 8kV Air Discharge	Pass
Electrical Fast Transients/Burst at Power Port	EN 55014-2:1997 +A1:2001+A2:2008	EN 61000-4-4:2012	1kV 5/50ns Tr/Th 5kHz Repetition Frequency	Pass
Surge at Power Port	EN 55014-2:1997 +A1:2001+A2:2008	EN 61000-4-5:2014	1.2/50μs Tr/Th 1kV Line to Line 2kV Line to Ground	Pass
Voltage Dips and Interruptions	EN 55014-2:1997 +A1:2001+A2:2008	EN 61000-4-11:2004	0 % UT for 0.5per 40 % UT for 10per 70 % UT for 25per UT is Supply Voltage	Pass
Conducted Immunity at Power Port (150kHz-230MHz)	EN 55014-2:1997 +A1:2001+A2:2008	EN 61000-4-6:2014	3Vrms (emf),80%,1kHz Amp. Mod.	Pass
Harmonic Current Emission	EN 61000-3-2:2014	EN 61000-3-2:2014	Class A	Pass
Voltage Fluctuations and Flicker	EN 61000-3-3:2013	EN 61000-3-3:2013	Clause 5 of EN 61000-3-3	Pass

N/A: Not applicable

Remark:
Model No.: V-SEN3075, V-SEN3085

Only the model V-SEN3075 was tested, since the electrical circuit design, layout, components used and internal wiring were identical for all above models, only different on model name.

3 Contents

4 General Information

4.1 Details of E.U.T.

Power Supply: Input:DC6.0V 0.5A

DC6.0V(1.5V x 4"AA"Size batteries)

Cable: DC cable:10cm unshielded

Connect cable:30cm unshielded

4.2 Description of Support Units

Description	Manufacturer	Model No.
Adaptor	Supplied by client	XM04B0060V0500C

4.3 Standards Applicable for Testing

Table 1 : Tests Carried Out Under EN 55014-1:2006+A1:2009+A2:2011

Method	Item	Status
CISPR 16-2-1	Conducted Disturbance at Mains Terminals (150kHz-30MHz)	√
CISPR 16-2-1	Conducted Disturbance at Load Terminals and Additional Terminals	×
EN 55014-1:2006 +A1:2009+A2:2011	Discontinuous Disturbance (150kHz-30MHz)	×
CISPR 16-2-2	Disturbance Power	×
CISPR 16-2-3	Radiated Disturbance(30MHz-1GHz)	√
CISPR 16-2-3	Radiated Disturbance (Magnetic field Induced Current) (9kHz-30MHz)	×

Table 2 : Tests Carried Out Under EN 55014-2:1997+A1:2001+A2:2008

Method	Item	Status
EN 61000-4-2:2009	Electrostatic Discharge	√
EN 61000-4-3:2006 +A1:2008+A2:2010	Radiated Immunity (80MHz-1GHz)	×
EN 61000-4-4:2012	Electrical Fast Transients/Burst at Power Port	√
EN 61000-4-4:2012	Electrical Fast Transients/Burst at Signal Port	×
EN 61000-4-5:2014	Surge at Power Port	√
EN 61000-4-6:2014	Conducted Immunity at Power Port(150kHz-80MHz)	×
EN 61000-4-6:2014	Conducted Immunity at Signal Port(150kHz-80MHz)	×
EN 61000-4-11:2004	Voltage Dips and Interruptions	√
EN 61000-4-6:2014	Conducted Immunity at Power Port(150kHz-230MHz)	√
EN 61000-4-6:2014	Conducted Immunity at Signal Port(150kHz-230MHz)	×

Table 3 : Tests Carried Out Under EN 61000-3-2:2006+A1:2014

Method	Item	Status
EN 61000-3-2:2014	Harmonic Current Emission	√

Table 4 : Tests Carried Out Under EN 61000-3-3:2013

Method	Item	Status
EN 61000-3-3:2013	Voltage Fluctuations and Flicker	√

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

4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch E&E Lab,

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China. 518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

4.5 Test Facility

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

- **CNAS (No. CNAS L2929)**

  CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **VCCI**

  The 10m Semi-anechoic chamber and Shielded Room (7.5m x 4.0m x 3.0m) of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

- **FCC – Registration No.: 556682**

  SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen 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 No.: 556682.

- **Industry Canada (IC)**

  Two 3m Semi-anechoic chambers of SGS-CSTC Standards Technical Services Co., Ltd. have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1 & 4620C-2.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

4.8 Monitoring of EUT for All Immunity Test

Visual: Monitored the work status of the EUT

Audio: None

5 Equipment List

Conducted Disturbance at Mains Terminals(150kHz-30MHz)					
Item	**Equipment**	**Manufacturer**	**Model No**	**Inventory No**	**Cal Due Date**
1	Shielding Room	ChangZhou ZhongYu	GB-88	SEL0042	2016-05-13
2	LISN	Rohde & Schwarz	ENV216	SEL0152	2015-10-24
3	LISN	ETS-LINDGREN	3816/2	SEL0021	2016-05-13
4	EMI Test Receiver	Rohde & Schwarz	ESCI	SEL0022	2016-05-13
5	Coaxial Cable	SGS	N/A	SEL0025	2016-05-13

Radiated Disturbance(30MHz-1GHz)					
Item	**Equipment**	**Manufacturer**	**Model No**	**Inventory No**	**Cal Due Date**
1	3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEL0017	2016-05-13
2	EMI Test Receiver	Rohde & Schwarz	ESIB26	SEL0023	2016-05-13
3	EMI Test software	AUDIX	E3	SEL0050	N/A
4	Coaxial cable	SGS	N/A	SEL0028	2016-05-13
5	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEL0014	2015-10-24
6	Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEL0053	2016-05-13

Electrostatic Discharge					
Item	**Equipment**	**Manufacturer**	**Model No**	**Inventory No**	**Cal Due Date**
1	ESD Simulator	SCHAFFNER	NSG 438	SEL0035	2016-03-16
2	ESD Ground Plane	SGS(3m*3m)	N/A	SEL0004	N/A

Electrical Fast Transients/Burst at Power Port					
Item	**Equipment**	**Manufacturer**	**Model No**	**Inventory No**	**Cal Due Date**
1	EMC Immunity Test System	Thermo ELECTRON	EMCPro Plus	SEL0007	2015-10-24

Surge at Power Port					
Item	**Equipment**	**Manufacturer**	**Model No**	**Inventory No**	**Cal Due Date**
1	EMC Immunity Test System	Thermo ELECTRON	EMCPro Plus	SEL0007	2015-10-24

Voltage Dips and Interruptions					
Item	**Equipment**	**Manufacturer**	**Model No**	**Inventory No**	**Cal Due Date**
1	EMC Immunity Test System	Thermo ELECTRON	EMCPro Plus	SEL0007	2015-10-24

Conducted Immunity at Power Port(150kHz-230MHz)					
Item	**Equipment**	**Manufacturer**	**Model No**	**Inventory No**	**Cal Due Date**
1	RF-Generator	SCHAFFNER	NSG 2070	SEL0039	2015-10-24
2	Coupling/Decoupling Network	SCHAFFNER	CDN M016	SEL0040	2015-10-24

Voltage Fluctuations and Flicker					
Item	**Equipment**	**Manufacturer**	**Model No**	**Inventory No**	**Cal Due Date**
1	AC Power Source	California Instruments	5001ix	SEL0052	2016-05-13
2	Power Analyzer	California Instruments	PACS-1	SEL0051	2016-05-13
3	CTS 3.0 Software	California Instruments	N/A	SEL0087	N/A

General used equipment					
Item	**Equipment**	**Manufacturer**	**Model No**	**Inventory No**	**Cal Due Date**
1	Humidity/Temperature Indicator	Shang Hai Meteorological Industry Factory	ZJ1-2B	SEL0101	2015-10-24
2	Humidity/Temperature Indicator	Shang Hai Meteorological Industry Factory	ZJ1-2B	SEL0102	2015-10-24
3	Humidity/Temperature Indicator	Shang Hai Meteorological Industry Factory	ZJ1-2B	SEL0103	2015-10-24
4	Barometer	Chang Chun Meteorological Industry Factory	DYM3	SEL0088	2016-05-13

6 Emission Test Results

6.1 Conducted Disturbance at Mains Terminals(150kHz-30MHz)

Test Requirement: EN 55014-1:2006+A1:2009+A2:2011

Test Method: CISPR 16-2-1

Frequency Range: 150kHz to 30MHz

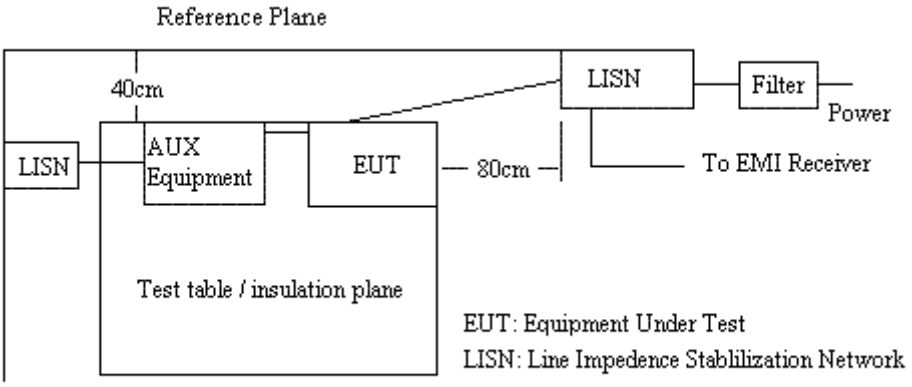
6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 20.0 °C Humidity: 54 % RH Atmospheric Pressure: 1010 mbar

Test mode: a: On mode: Keep the EUT working normally.

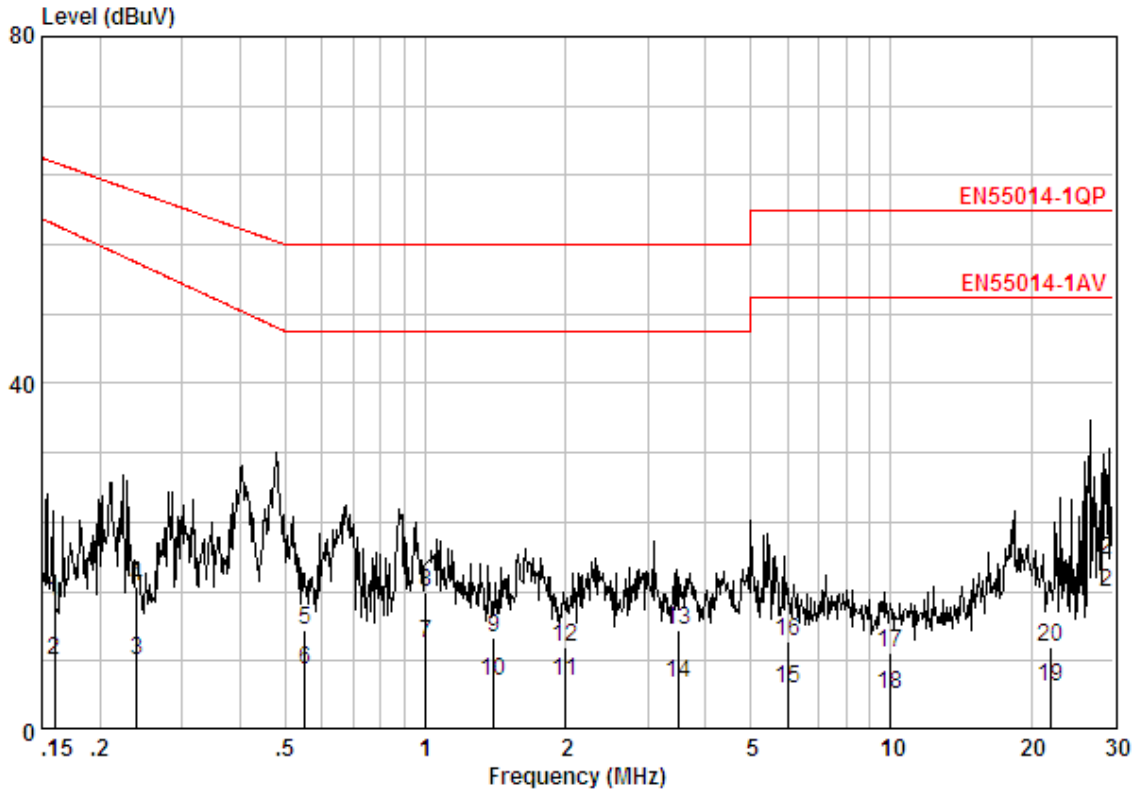
6.1.2 Test Setup



6.1.3 Measurement Data

An initial pre-scan was performed with peak detector.Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected.

Mode:a;Line:Live Line

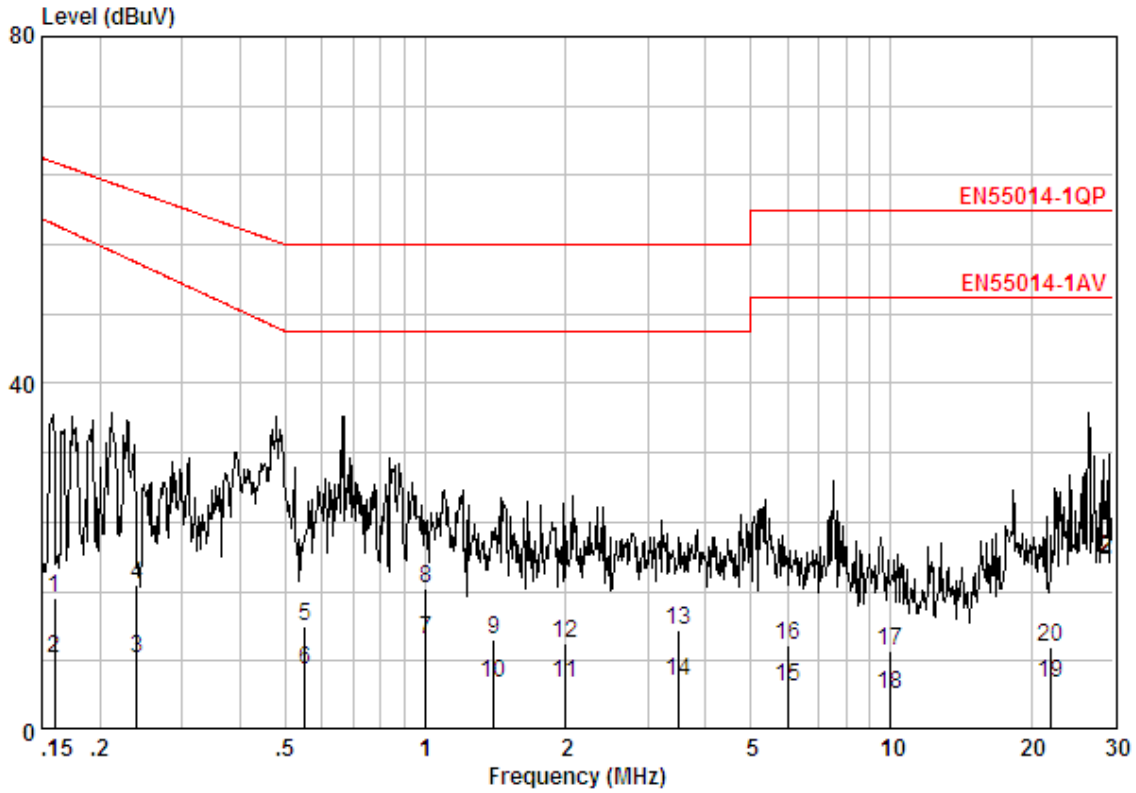


Site : Shielding Room
Condition : EN55014-1QP CE LINE
Job No.: : 2144HS
Test Mode: : a

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.16000	0.00	9.70	5.11	14.81	65.46	-50.65	QP
2	0.16000	0.00	9.70	-1.53	8.17	58.30	-50.14	AVERAGE
3	0.24000	0.00	9.70	-1.60	8.10	53.93	-45.82	AVERAGE
4	0.24000	0.00	9.70	6.95	16.65	62.10	-45.44	QP
5	0.55000	0.00	9.80	1.86	11.66	56.00	-44.34	QP
6	0.55000	0.00	9.80	-2.89	6.91	46.00	-39.09	AVERAGE
7	1.000	0.00	9.80	0.32	10.12	46.00	-35.88	AVERAGE
8	1.000	0.00	9.80	6.18	15.98	56.00	-40.02	QP
9	1.400	0.00	9.80	0.91	10.71	56.00	-45.29	QP
10	1.400	0.00	9.80	-4.04	5.76	46.00	-40.24	AVERAGE
11	2.000	0.00	9.80	-4.16	5.64	46.00	-40.36	AVERAGE
12	2.000	0.00	9.80	-0.16	9.64	56.00	-46.36	QP
13	3.500	0.00	9.86	1.62	11.48	56.00	-44.52	QP
14	3.500	0.00	9.86	-4.36	5.50	46.00	-40.50	AVERAGE

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
15	6.000	0.00	9.90	-5.07	4.83	50.00	-45.17	AVERAGE
16	6.000	0.00	9.90	0.45	10.35	60.00	-49.65	QP
17	10.000	0.00	9.90	-0.96	8.94	60.00	-51.06	QP
18	10.000	0.00	9.90	-5.74	4.16	50.00	-45.84	AVERAGE
19	22.000	0.00	10.10	-5.10	5.00	50.00	-45.00	AVERAGE
20	22.000	0.00	10.10	-0.56	9.54	60.00	-50.46	QP
21	30.000	0.00	10.10	9.62	19.72	60.00	-40.28	QP
22 @	30.000	0.00	10.10	5.76	15.86	50.00	-34.14	AVERAGE

Mode:a;Line:Neutral Line



Site : Shielding Room
Condition : EN55014-1QP CE NEUTRAL
Job No.: : 2144HS
Test Mode: : a

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.16000	0.00	9.70	5.46	15.16	65.46	-50.30	QP
2	0.16000	0.00	9.70	-1.50	8.20	58.30	-50.11	AVERAGE
3	0.24000	0.00	9.70	-1.49	8.21	53.93	-45.72	AVERAGE
4	0.24000	0.00	9.70	7.06	16.76	62.10	-45.34	QP
5	0.55000	0.00	9.80	2.11	11.91	56.00	-44.09	QP
6	0.55000	0.00	9.80	-2.77	7.03	46.00	-38.97	AVERAGE
7	1.000	0.00	9.80	0.60	10.40	46.00	-35.60	AVERAGE
8	1.000	0.00	9.80	6.45	16.25	56.00	-39.75	QP
9	1.400	0.00	9.80	0.72	10.52	56.00	-45.48	QP
10	1.400	0.00	9.80	-4.40	5.40	46.00	-40.60	AVERAGE
11	2.000	0.00	9.80	-4.43	5.37	46.00	-40.63	AVERAGE
12	2.000	0.00	9.80	0.19	9.99	56.00	-46.01	QP
13	3.500	0.00	9.86	1.67	11.53	56.00	-44.47	QP
14	3.500	0.00	9.86	-4.16	5.70	46.00	-40.30	AVERAGE

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
15	6.000	0.00	9.95	-4.90	5.06	50.00	-44.94	AVERAGE
16	6.000	0.00	9.95	-0.13	9.83	60.00	-50.17	QP
17	10.000	0.00	10.00	-0.76	9.24	60.00	-50.76	QP
18	10.000	0.00	10.00	-5.75	4.25	50.00	-45.75	AVERAGE
19	22.000	0.00	10.10	-4.63	5.47	50.00	-44.53	AVERAGE
20	22.000	0.00	10.10	-0.41	9.69	60.00	-50.31	QP
21	30.000	0.00	10.10	9.45	19.55	60.00	-40.45	QP
22	30.000	0.00	10.10	5.56	15.66	50.00	-34.34	AVERAGE

6.2 Radiated Disturbance(30MHz-1GHz)

Test Requirement:	EN 55014-1:2006+A1:2009+A2:2011
Test Method:	CISPR 16-2-3
Frequency Range:	30MHz to 1GHz
Measurement Distance:	3m
Limit:	
30MHz-230MHz	40 dB(μV/m) quasi-peak
230MHz-1GHz	47 dB(μV/m) quasi-peak
Detector:	Peak for pre-scan (120kHz resolution bandwidth) 30M to 1000MHz

6.2.1 E.U.T. Operation

Operating Environment:

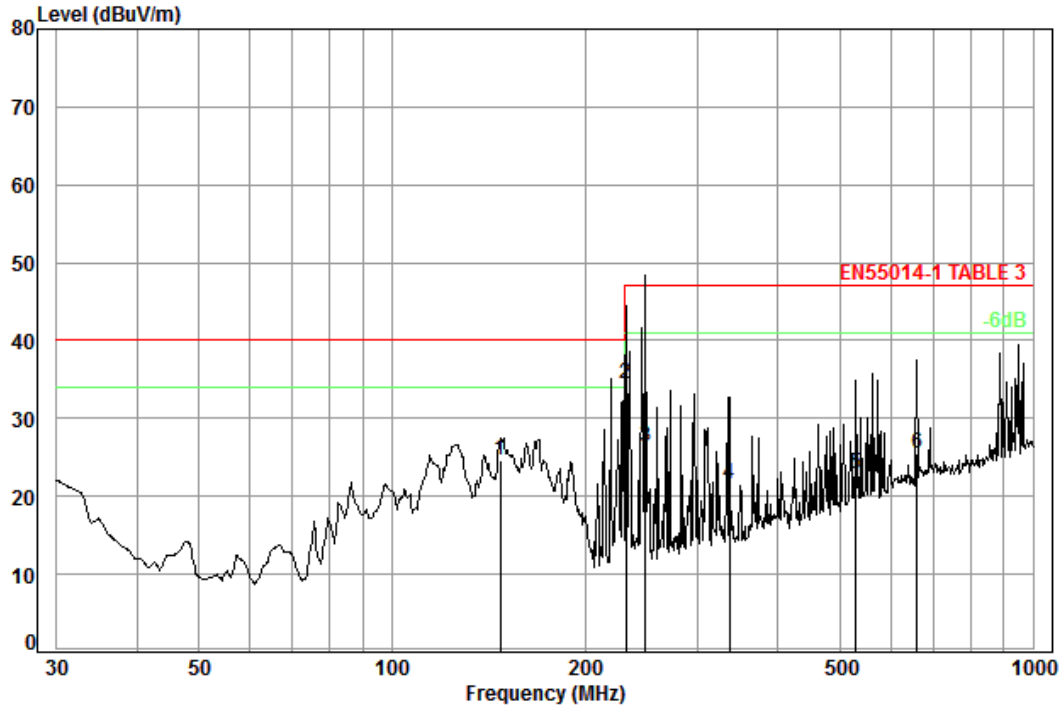
Temperature: 23.0 °C Humidity: 56 % RH Atmospheric Pressure: 1010 mbar

Test mode: a: On mode: Keep the EUT working normally.

6.2.2 Measurement Data

An initial pre-scan was performed in the 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 BiConiLog antenna with 2 orthogonal polarities.

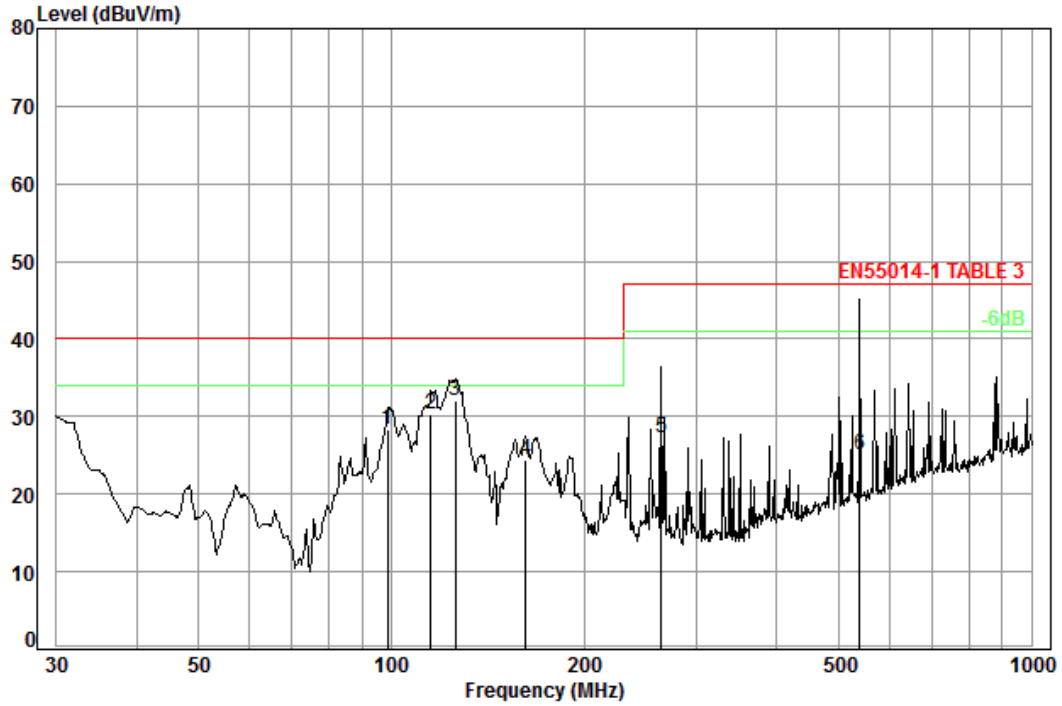
Mode:a;Polarization:Horizontal



Condition: EN55014-1 TABLE 3 3m Horizontal
Job No. : 2144HS
Test mode: a

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	147.40	1.31	8.77	26.92	41.40	24.56	40.00	-15.44
2	231.72	1.58	11.71	26.59	47.76	34.46	47.00	-12.54
3	248.55	1.67	12.25	26.54	38.94	26.32	47.00	-20.68
4	336.04	2.02	14.40	26.68	31.91	21.65	47.00	-25.35
5	530.10	2.63	18.58	27.65	29.31	22.87	47.00	-24.13
6	658.84	2.82	20.88	27.46	29.22	25.46	47.00	-21.54

Mode:a;Polarization:Vertical



Condition: EN55014-1 TABLE 3 3m Vertical
Job No. : 2144HS
Test mode: a

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	98.83	1.19	9.05	27.20	45.19	28.23	40.00	-11.77
2	115.32	1.24	8.23	27.10	48.02	30.39	40.00	-9.61
3	125.89	1.27	7.78	27.03	49.95	31.97	40.00	-8.03
4	162.04	1.34	9.58	26.85	40.33	24.40	40.00	-15.60
5	263.82	1.74	12.58	26.50	39.53	27.35	47.00	-19.65
6	539.48	2.64	18.73	27.63	31.32	25.06	47.00	-21.94

6.3 Harmonic Current Emission

Test Requirement: EN 61000-3-2:2014
Test Method: EN 61000-3-2:2014
Frequency Range: 100Hz to 2kHz

There is no need for Harmonics test to be performed on this product (rated power is less than 75W) in accordance with EN 61000-3-2:2014.

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

"For the following categories of equipment, limits are not specified in this standard.- equipment with a rated power of 75W or less, other than lighting equipment."

6.4 Voltage Fluctuations and Flicker

Test Requirement: EN 61000-3-3:2013

Test Method: EN 61000-3-3:2013

6.4.1 E.U.T. Operation

Operating Environment:

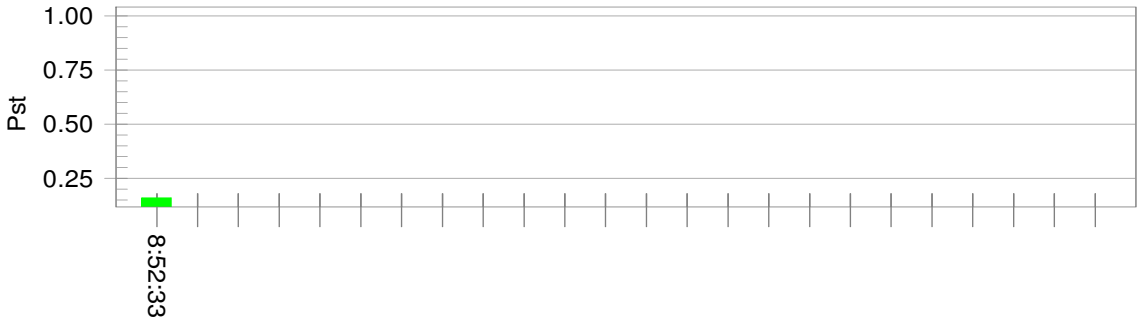
Temperature: 23.0 °C Humidity: 56 % RH Atmospheric Pressure: 1010 mbar

Test mode: a: On mode: Keep the EUT working normally.

6.4.2 Measurement Data

Mode:a
Test Result: Pass **Status: Test Completed**

Pst_i and limit line **European Limits**



Plt and limit line

Parameter values recorded during the test:

Vrms at the end of test (Volt):	**230.16**			
Highest dt (%):	**-0.14**	**Test limit (%):**	**3.30**	**Pass**
Time(mS) > dt:	**0.0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**-0.07**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.160**	**Test limit:**	**1.000**	**Pass**

7 Immunity Test Results

7.1 Performance Criteria Description in EN 55014-2:1997+A1:2001+A2:2008

Criterion A The apparatus shall continue to operate as intended during the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then 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.

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 (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. During the test, degradation of performance is allowed, however. 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, then 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.

Criterion C Temporary loss of function is allowed, provided the function is self recoverable or can be restored by the operation of the controls, or by any operation specified in the instructions for use.

7.2 Electrostatic Discharge

Test Requirement: EN 55014-2:1997+A1:2001+A2:2008
Test Method: EN 61000-4-2:2009
Performance Criterion: B
Discharge Impedance: 330Ω/150pF
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: 23.0 °C Humidity: 57 % RH Atmospheric Pressure: 1010 mbar

Test mode: a: On mode: Keep the EUT working normally.

7.2.2 Test Results:

Observations: Test Point:

1. All insulated enclosure and seams.
2. All accessible metal parts of the enclosure.
3. All side

Discharge type	Level (kV)	Polarity	Test Point	Result / Observations
Air Discharge	8	+	1	A
Air Discharge	8	-	1	A
Contact Discharge	4	+	2	A
Contact Discharge	4	-	2	A
Horizontal Coupling	4	+	3	A
Horizontal Coupling	4	-	3	A
Vertical Coupling	4	+	3	A
Vertical Coupling	4	-	3	A

Results:

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

7.3 Electrical Fast Transients/Burst at Power Port

Test Requirement: EN 55014-2:1997+A1:2001+A2:2008

Test Method: EN 61000-4-4:2012

Performance Criterion: B

Repetition Frequency: 5kHz

Burst Period: 300ms

Test Duration: 2 minute per level & polarity

7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 23.0 °C Humidity: 56 % RH Atmospheric Pressure: 1010 mbar

Test mode: a: On mode: Keep the EUT working normally.

7.3.2 Test Results:

Test Line	Level (kV)	Polarity	Direct/Coupling	Result / Observations
Live, Neutral	1	+	Direct	A
Live, Neutral	1	-	Direct	A

Results:

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

7.4 Surge at Power Port

Test Requirement: EN 55014-2:1997+A1:2001+A2:2008

Test Method: EN 61000-4-5:2014

Performance Criterion: B

Interval: 60s between each surge

No. of surges: 5 positive at 90°,, 5 negative at 270°.

7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 23.0 °C Humidity: 56 % RH Atmospheric Pressure: 1010 mbar

Test mode: a: On mode: Keep the EUT working normally.

7.4.2 Test Results:

Test Line	Level (kV)	Polarity	Phase (deg)	Result / Observations
L-N	1	+	90°	A
L-N	1	-	270°	A

Results:

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

7.5 Voltage Dips and Interruptions

Test Requirement: EN 55014-2:1997+A1:2001+A2:2008

Test Method: EN 61000-4-11:2004

Performance Criterion: 0% of UT (Supply Voltage) for 0.5 Periods: C; 40% of UT for 10 Periods: C;

70% of UT for 25 Periods: C

No. of Dips / Interruptions: 3 per Level

Time between dropout 10s

7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 23.0 °C Humidity: 56 % RH Atmospheric Pressure: 1010 mbar

Test mode: a: On mode: Keep the EUT working normally.

7.5.2 Test Results:

Level % UT	Phase (deg)	Duration	No. of Dips / Interruptions	Result / Observations
0	0°	0.5 Periods	3	A
0	180°	0.5 Periods	3	A
40	0°	10 Periods	3	A
40	180°	10 Periods	3	A
70	0°	25 Periods	3	A
70	180°	25 Periods	3	A

Results:

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

7.6 Conducted Immunity at Power Port(150kHz-230MHz)

Test Requirement: EN 55014-2:1997+A1:2001+A2:2008

Test Method: EN 61000-4-6:2014

Performance Criterion: A

Frequency Range: 0.15MHz to 230MHz

Modulation: 80%, 1kHz Amplitude Modulation

Step Size 1%

7.6.1 E.U.T. Operation

Operating Environment:

Temperature: 23.0 °C Humidity: 56 % RH Atmospheric Pressure: 1010 mbar

Test mode: a: On mode: Keep the EUT working normally.

7.6.2 Test Results:

Cable port	Level (Vrms)	Direct/Coupling	Dwell time	Result / Observations
AC power port	3	Direct	2s	A

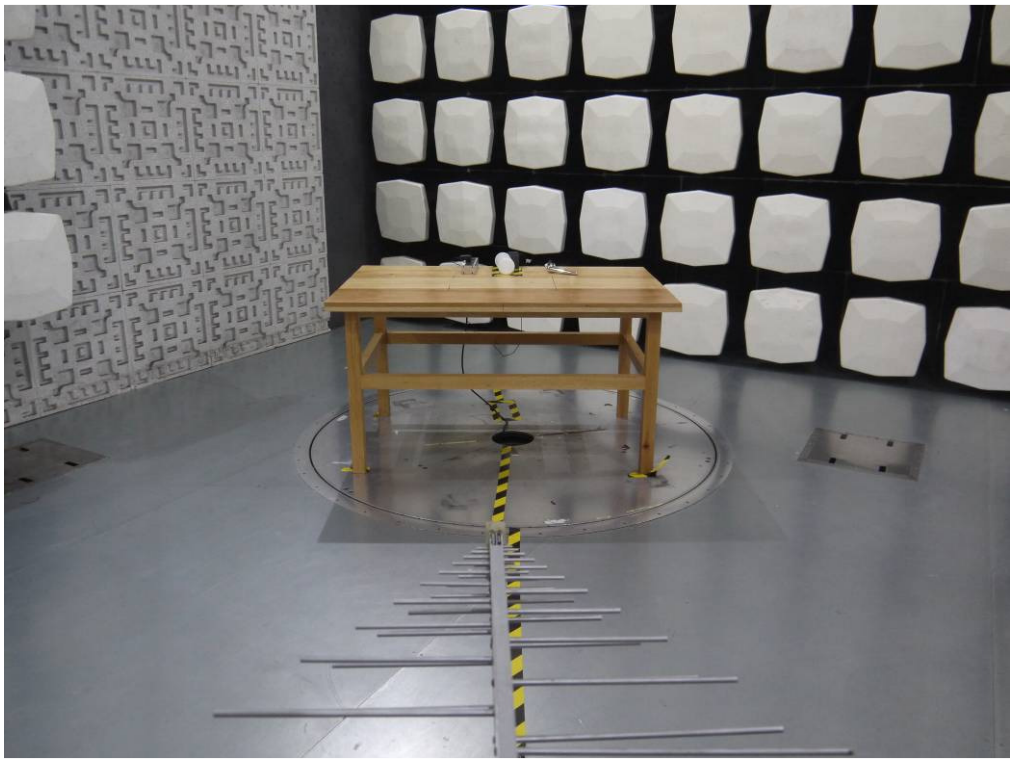
Results:

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

8 Photographs

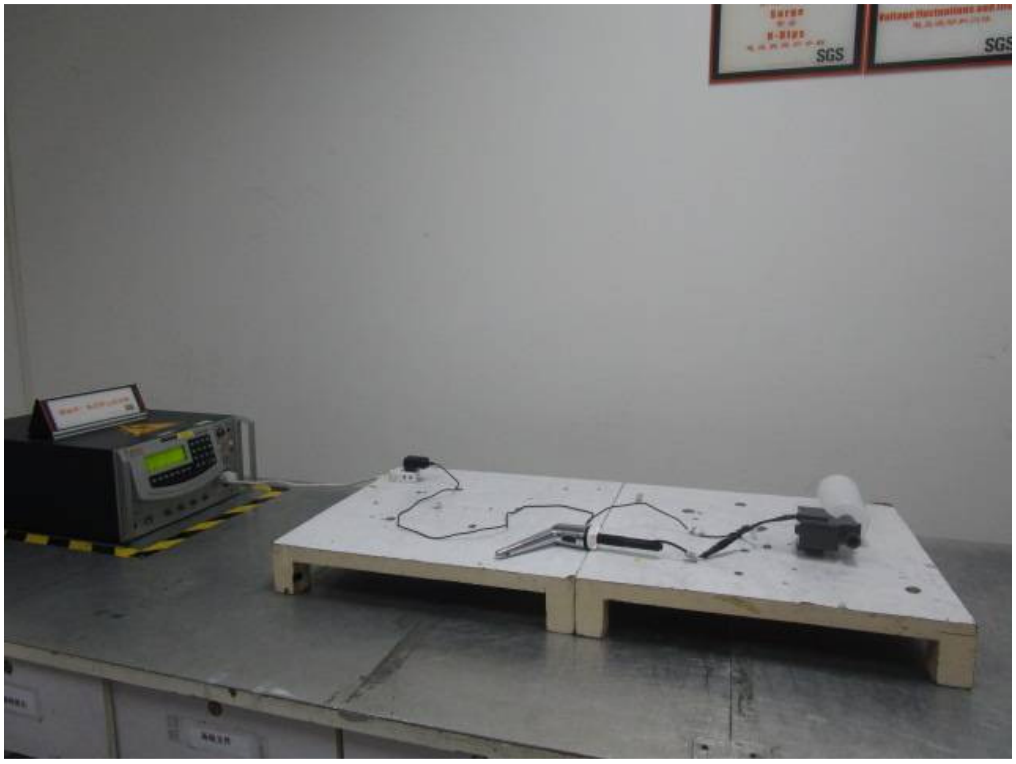
8.1 Conducted Disturbance at Mains Terminals(150kHz-30MHz) Test Setup

8.2 Radiated Disturbance(30MHz-1GHz) Test Setup

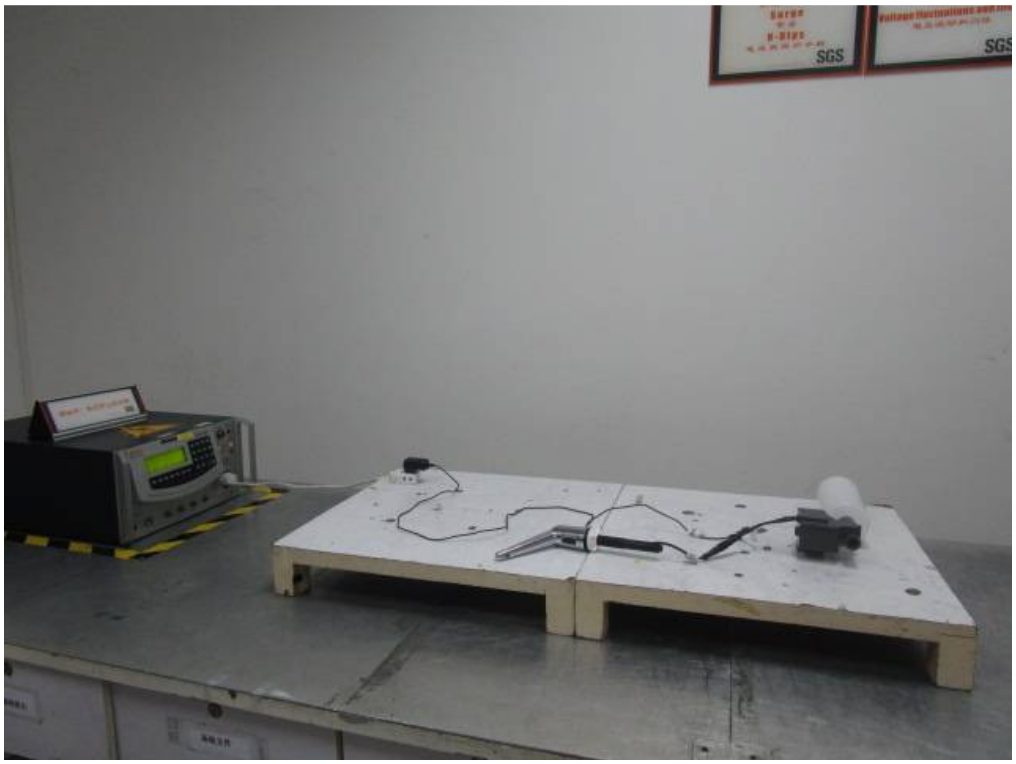


8.3 Electrostatic Discharge Test Setup

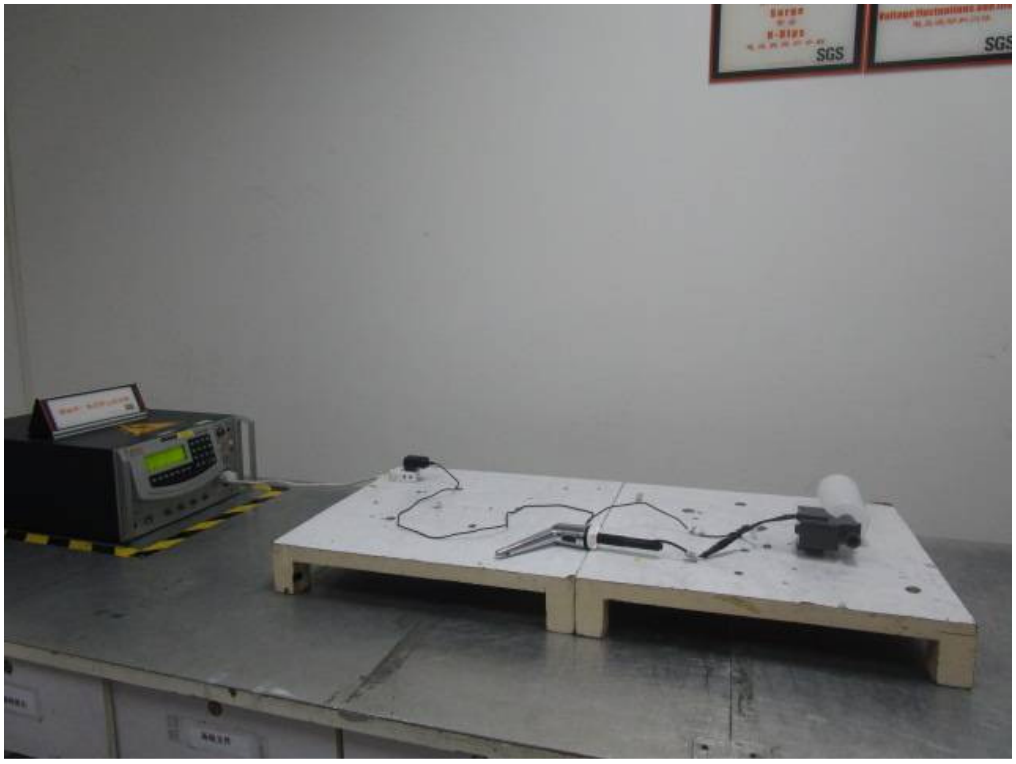
8.4 Electrical Fast Transients/Burst at Power Port Test Setup



8.5 Surge at Power Port Test Setup



8.6 Voltage Dips and Interruptions Test Setup



8.7 Conducted Immunity at Power Port(150kHz-230MHz) Test Setup

8.8 Voltage Fluctuations and Flicker Test Setup

8.9 EUT Constructional Details