



SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch

198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technological
Development District, Guangzhou, China 510663

Telephone: +86 (0) 20 82155555
Fax: +86 (0) 20 82075059
Email: ee.guangzhou@sgs.com

Report No.: GZEM160300090101
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TEST REPORT

Application No.: GZEM1603000901HS
Applicant: SHENZHEN CITY SVAVO BATHROOM PRODUCTS CO., LTD.
Address of Applicant: NO.4 FACTORY, XINWU INDUSTRIAL, PINGSHAN NEW DISTRICT,
SHENZHEN, CHINA.
Manufacturer: SHENZHEN CITY SVAVO BATHROOM PRODUCTS CO., LTD.
Address of Manufacturer: NO.4 FACTORY, XINWU INDUSTRIAL, PINGSHAN NEW DISTRICT,
SHENZHEN, CHINA.
Factory: SHENZHEN CITY SVAVO BATHROOM PRODUCTS CO., LTD.
Address of Factory: NO.4 FACTORY, XINWU INDUSTRIAL, PINGSHAN NEW DISTRICT,
SHENZHEN, CHINA.
Product Description: Automatic Soap Dispenser
Model No.: V-472
Trade Mark: SVAVO
Standards: EN 55014-1:2006+A1:2009+A2:2011
EN 55014-2:2015
Date of Receipt: 2016-03-03
Date of Test: 2016-03-21 to 2016-03-24
Date of Issue: 2016-04-05

Test Result :	Pass*
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* In the configuration tested, the EUT detailed in this report complied with the standards specified above.

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.



Kobe Jian
EMC Laboratory Manager



The manufacturer should ensure that all products in series production are in conformity with the products 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.

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.

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2 Test Summary

Item	Standard	Method	Class	Result
Radiated Disturbance(30MHz-1GHz)	EN 55014-1:2006+A1:2009+A2:2011	CISPR 16-2-3	N/A	Pass
Electrostatic Discharge	EN 55014-2:2015	EN 61000-4-2:2009	4kV Contact Discharge 8kV Air Discharge	Pass
Radiated Immunity(80MHz-1GHz)	EN 55014-2:2015	EN 61000-4-3:2006+A1:2008+A2:2010	3V/m, 80%, 1kHz Amp. Mod.	Pass

N/A: Not applicable



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4 General Information

4.1 Details of E.U.T.

Power supply: DC 6V=DC1.5V x 4 size AAA batteries

Cable: N/A

4.2 Description of Support Units

The EUT has been tested as an independent unit.

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 55014-2:2015

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)	×

×

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., Guangzhou Branch EMC Laboratory,
198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technology Development District,
Guangzhou, China 510663

Tel: +86 20 82155555 Fax: +86 20 82075059

No tests were sub-contracted.

4.5 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 accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

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.

- **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.

- **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 of Industry Canada for radio equipment testing with Registration No. 4620B-1.

- **VCCI (Registration No.: R-2460, C-2584, G-449 and T-1179)**

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, C-2584, G-449 and T-1179 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 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.



4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

4.8 Monitoring of EUT for All Immunity Test

Visual: motor running and LED indicator lighting

Audio: N/A



5 Equipment List

Radiated Disturbance(30MHz-1GHz)					
Item	Equipment	Manufacturer	Model No	Inventory No	Cal Due Date
1	EMI Test Receiver	Rohde & Schwarz	ESIB26	EMC0522	2017-01-31
2	EMI Test Receiver	Rohde & Schwarz	ESCI	EMC0056	2017-01-31
3	RI High frequency Cable	SGS	20 m	EMC0528	2016-04-18
4	Trilog Broadband Antenna 30-1000MHz	SCHWARZBECK MESS- ELEKTRONIK	VULB 9160	EMC2025	2017-07-13
5	Bi-log Type Antenna	Schaffner -Chase	CBL6112B	EMC0524	2016-08-30
6	Bilog Type Antenna	Schaffner -Chase	CBL6143	EMC0519	2017-05-03
7	Horn Antenna 1-18GHz	SCHWARZBECK MESS- ELEKTRONIK	BBHA 9120D	EMC2026	2016-08-31
8	1-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2017-1-24
9	Amplifier	HP	8447F	EMC2065	2016-07-17
10	PRE AMPLIFIER MH648A	ANRITSU CORP	MH648A	EMC2086	2016-12-18
11	Active Loop Antenna	EMCO	6502	EMC0523	2018-02-26
12	Broad-Band Horn Antenna (14)15-26.5(40)GHz	SCHWARZBECK MESS- ELEKTRONIK	BBHA 9170	EMC2041	2017-05-25
13	High Pass Filter(915MHz)	FSY MICROWAVE	HM1465-9SS	EMC2079	2017-01-24
14	2.4GHz filter	Micro-Tronics	BRM 50702	EMC2069	2017-01-24
15	10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2016-05-02

Electrostatic Discharge					
Item	Equipment	Manufacturer	Model No	Inventory No	Cal Due Date
1	ESD Simulator	TESEQ AG	NSG 435	EMC2071	2017-01-27
2	ESD Ground Plane	SGS	3m x 3m	EMC0804	N/A
3	Temperature, & Humidity	Shanghai Meteorological Instrument factory Co., Ltd.	ZJ1-2B	EMC0078	2016-09-17



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Radiated Immunity(80MHz-1GHz)					
Item	Equipment	Manufacturer	Model No	Inventory No	Cal Due Date
1	Compact 3m Semi-Anechoic Chamber	ChangZhou ZhongYu	N/A	EMC0525	2016-12-04
2	Signal Generator	Rohde & Schwarz	SMR20	EMC0516	2017-01-24
3	Bilog Type Antenna	Schaffner -Chase	CBL6143	EMC0519	2017-05-03
4	Amplifier	EMPOWER	BBS2E4ALP	EMC0915	2016-12-18
5	Amplifier	EMPOWER	BBS3Q5KIN	EMC0914	2016-12-18
6	Power Meter	Rohde & Schwarz	NRVS	EMC0904	2016-12-18
7	URV5-Z2 Insert. Unit	R&S	URV5-Z2	EMC0071	2017-01-24
8	Dual Directional Coupler	EMCA	715-10-1.400	EMC0917	2016-07-17
9	Electric Field Probe	Wandel & Goltermann	EMC-20	EMC0907	2016-04-09
10	Oscilloscope	Tektronix	TDS3052C	EMC2055	2017-01-24
11	Monitor System	Mitsubish Corp.	M-0552AB	EMC0909	N/A

General used equipment					
Item	Equipment	Manufacturer	Model No	Inventory No	Cal Due Date
1	DMM	Fluke	73	EMC0006	2016-09-16
2	DMM	Fluke	73	EMC0007	2016-09-16

6 Emission Test Results

6.1 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
Limit:	
30MHz-230MHz	40 dB(μ V/m) quasi-peak
230MHz-1GHz	47 dB(μ V/m) quasi-peak
Detector:	Peak for pre-scan (120kHz resolution bandwidth) 30M to 1000MHz

6.1.1 E.U.T. Operation

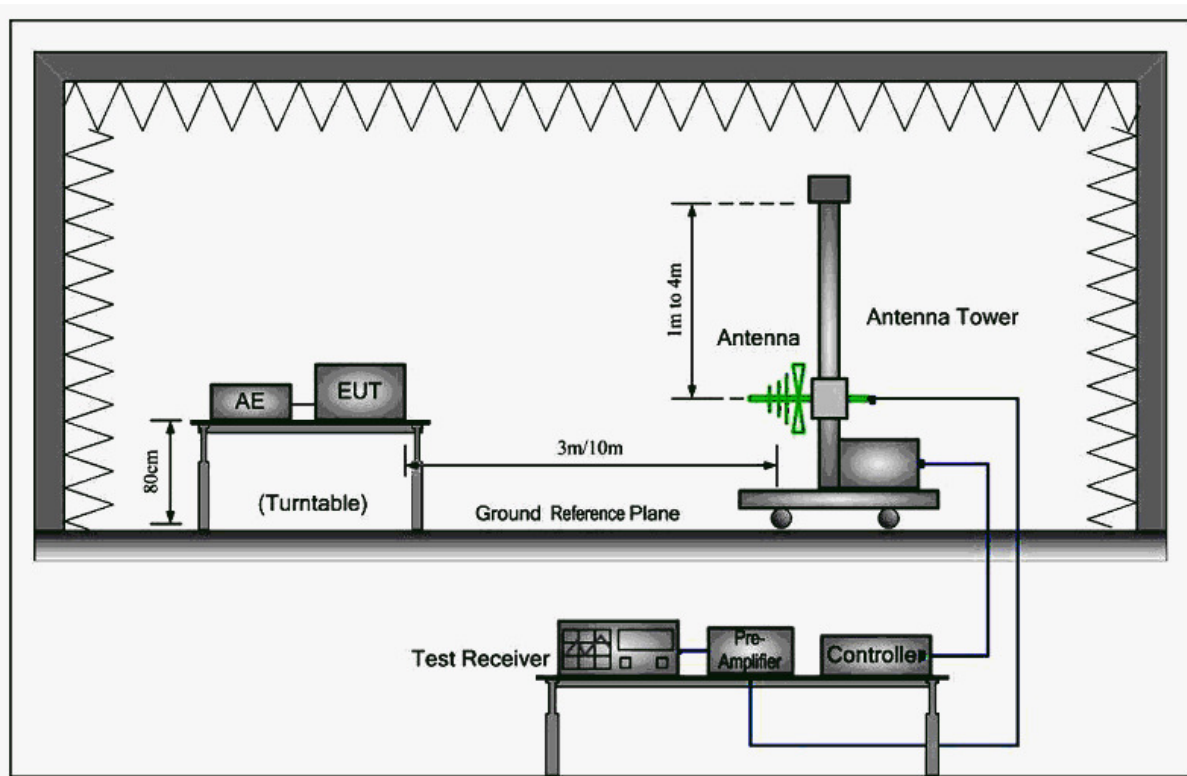
Operating Environment:

Temperature: 23 °C Humidity: 60 % RH Atmospheric Pressure: 1010 mbar

Pretest these mode to find the worst case:
a: motor running at position I.
b: motor running at position II.

Final Test a: motor running at position I.

6.1.2 Test Setup

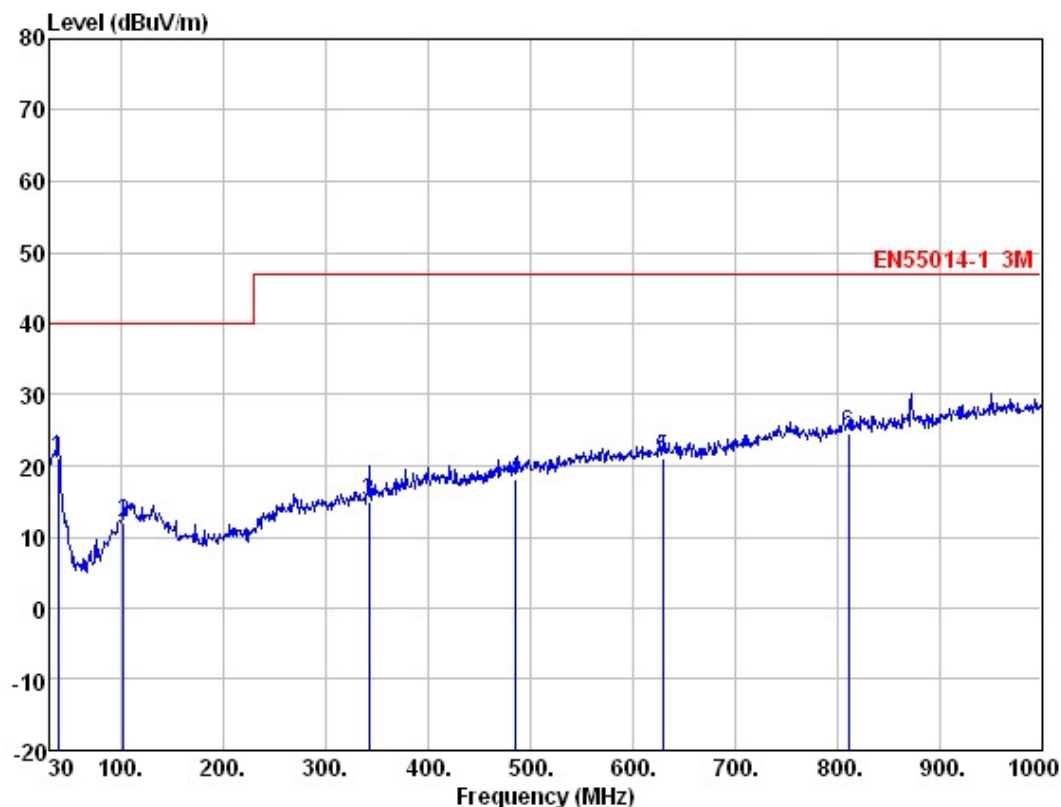


6.1.3 Measurement Data

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.

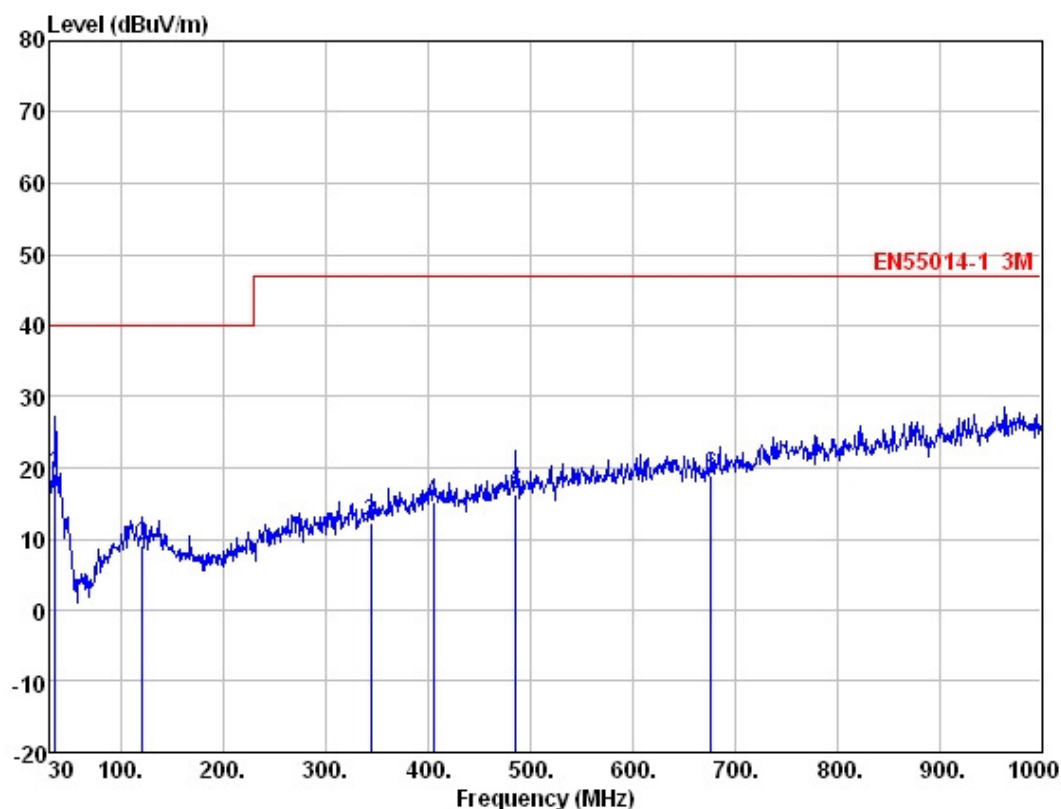


Mode:a;Polarization:Horizontal



	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	37.8	34.4	15.7	0.6	29.7	21.0	40.0	-19.0	HORIZONTAL	QP
2	101.8	29.4	11.1	1.0	29.6	11.9	40.0	-28.1	HORIZONTAL	QP
3	342.3	29.1	14.0	1.8	29.9	15.0	47.0	-32.0	HORIZONTAL	QP
4	485.9	28.5	17.3	2.3	30.0	18.1	47.0	-28.9	HORIZONTAL	QP
5	629.5	29.3	18.8	2.7	29.8	21.0	47.0	-26.0	HORIZONTAL	QP
6	810.9	30.6	20.2	2.9	29.2	24.5	47.0	-22.5	HORIZONTAL	QP

Mode:a;Polarization:Vertical



	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	MHz	Level	Factor	Loss	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	34.9	30.9	17.4	0.6	29.7	19.2	40.0	-20.8	VERTICAL QP
2	120.2	25.6	11.8	1.2	29.6	9.0	40.0	-31.0	VERTICAL QP
3	344.3	26.1	14.1	1.9	29.9	12.2	47.0	-34.8	VERTICAL QP
4	405.4	26.8	16.2	2.2	30.0	15.2	47.0	-31.8	VERTICAL QP
5	485.9	26.7	17.3	2.3	30.0	16.3	47.0	-30.7	VERTICAL QP
6	677.0	27.4	18.5	2.5	29.6	18.8	47.0	-28.2	VERTICAL QP



7 Immunity Test Results

7.1 Performance Criteria Description in EN 55014-2:2015

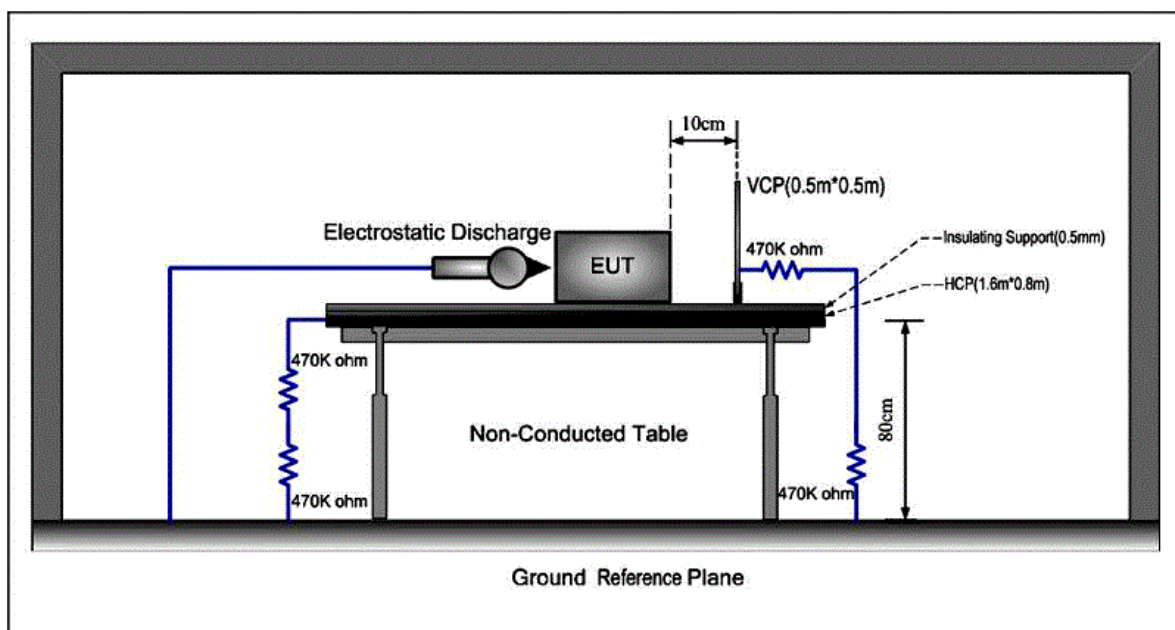
- Criterion A** The apparatus shall continue to operate as intended during the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. If the minimum performance 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 55014-2:2015
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 Test Setup:



7.2.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 55 % RH Atmospheric Pressure: 1010 mbar

Test Mode:

- a: motor running at position I.
- b: motor running at position II.
- c: idle mode.

7.2.3 Test Results:

Observations: Test Point:

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



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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

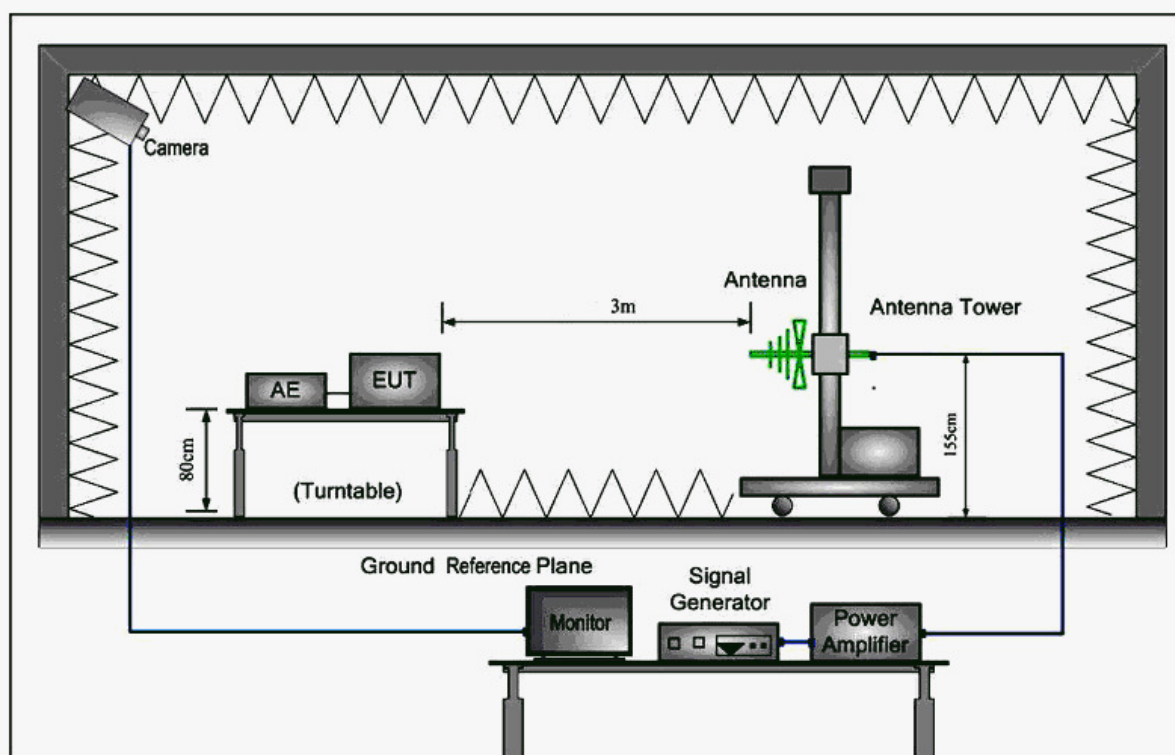
Results:

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

7.3 Radiated Immunity(80MHz-1GHz)

Test Requirement: EN 55014-2:2015
 Test Method: EN 61000-4-3:2006+A1:2008+A2:2010
 Performance Criterion: A
 Frequency Range: 80MHz to 1GHz
 Antenna Polarisation: Vertical and Horizontal
 Modulation: 1kHz,80% Amp. Mod,1% increment

7.3.1 Test Setup:



7.3.2 E.U.T. Operation

Operating Environment:

Temperature: 21 °C Humidity: 53 % RH Atmospheric Pressure: 1010 mbar

Test Mode:
 a: motor running at position I.
 b: motor running at position II.
 c: idle mode.



7.3.3 Test Results:

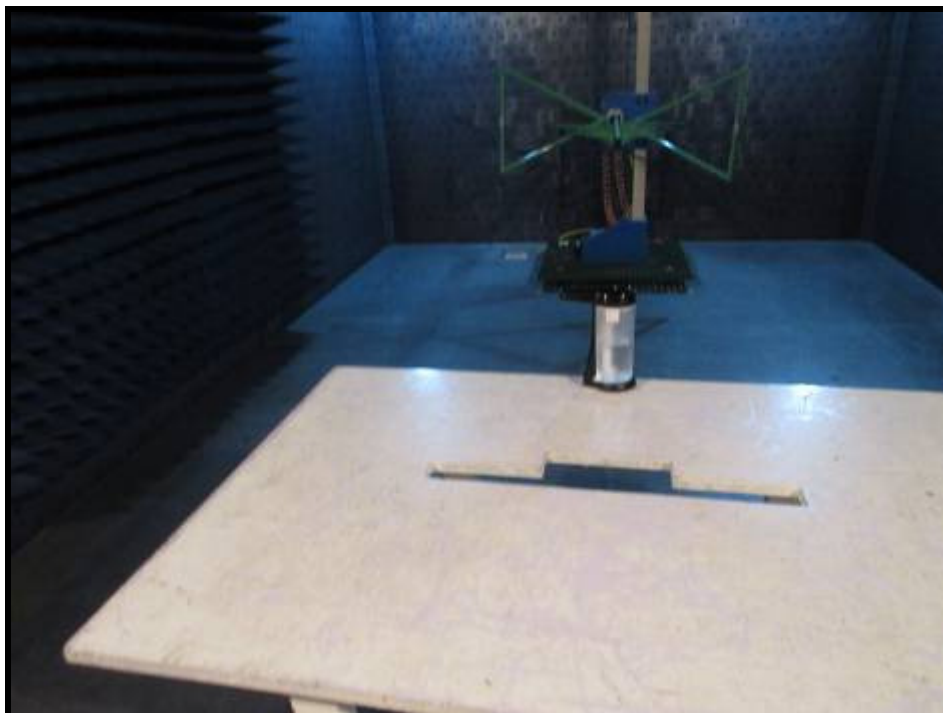
Frequency	Level (V/m)	EUT Face	Dwell time	Result / Observations
80MHz-1GHz	3	Front	2s	A
80MHz-1GHz	3	Back	2s	A
80MHz-1GHz	3	Left	2s	A
80MHz-1GHz	3	Right	2s	A
80MHz-1GHz	3	Top	2s	A
80MHz-1GHz	3	Underside	2s	A

Results:

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

8 Photographs

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



8.2 Electrostatic Discharge Test Setup



8.3 Radiated Immunity(80MHz-1GHz) Test Setup



8.4 EUT Constructional Details



