

TEST REPORT

Application No.: SHEM1912019685HS
Applicant: SUZHOU ARMOCON TECHNOLOGY CO., LTD
Address of Applicant: 3/F No 77 SuHong Middle Road SIP Jiangsu China
Manufacturer: SUZHOU ARMOCON TECHNOLOGY CO., LTD
Address of Manufacturer: 3/F No 77 SuHong Middle Road SIP Jiangsu China
Factory: SUZHOU ARMOCON TECHNOLOGY CO., LTD
Address of Factory: 3/F No 77 SuHong Middle Road SIP Jiangsu China
Equipment Under Test (EUT):
EUT Name: Handheld massager
Model No.: Soraya Wave
Trade mark: LELO
Standard(s) : EN 55014-1:2017
 EN 55014-2:2015
Date of Receipt: 2019-12-13
Date of Test: 2019-12-16 to 2019-12-18
Date of Issue: 2019-12-23

Test Result:	Pass*
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* In the configuration tested, the EUT 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 EU Declaration of Conformity and compliance with all relevant EU Directives.

Parlan Zhan

Parlan Zhan
E&E Section 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.



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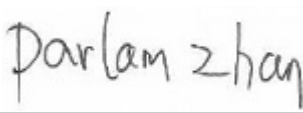
SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.
Testing Center EMC Laboratory

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Revision Record			
Version	Description	Date	Remark
00	Original	2019-12-23	/

Authorized for issue by:				
				
		Leo Xu / Project Engineer		
				
		Parlam Zhan / Reviewer		

2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Radiated Emissions (30MHz-1GHz)	EN 55014-1:2017	CISPR 16-2-3	N/A	Pass

N/A: Not applicable

Immunity Part				
Item	Standard	Method	Requirement	Result
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: DC5V Battery:3.7V

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
High-Speed Rechargeable Li-Lon portable Power Bank	Zimi Corporation	QB810	

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Conducted Emission at mains port using AMN	$\pm 2.6\text{dB}$ (9kHz to 150kHz)
		$\pm 2.3\text{dB}$ (150kHz to 30MHz)
2	Conducted Emission at mains port using VP	$\pm 1.9\text{ dB}$ (9kHz to 30MHz)
3	Conducted Emission at telecommunication port using AAN	$\pm 4.1\text{ dB}$ (150kHz to 30MHz)
4	Radiated Power	$\pm 3.0\text{dB}$
5	Radiated emission	$\pm 4.4\text{dB}$ (30MHz-1GHz)
		$\pm 4.8\text{dB}$ (1GHz-6GHz)
		$\pm 5.2\text{dB}$ (6GHz-18GHz)

Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. E&E Lab

588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China

Tel: +86 21 6191 5666

Fax: +86 21 6191 5678

No tests were sub-contracted.

4.5 Test Facility

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

- **CNAS (No. CNAS L0599)**

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. 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.

- **NVLAP (Certificate No. 201034-0)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP). Certificate No. 201034-0.

- **FCC –Designation Number: CN5033**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been recognized as an accredited testing laboratory.

Designation Number: CN5033. Test Firm Registration Number: 479755.

- **Innovation, Science and Economic Development Canada**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

IC Registration No.: 8617A-1. CAB identifier: CN0020.

- **VCCI (Member No.: 3061)**

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-13868, C-14336, T-12221, G-10830 respectively.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

4.8 Monitoring of EUT for All Immunity Test

Visual: working status

5 Equipment List

Radiated Emissions (30MHz-1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI test receiver	Rohde & Schwarz	ESU40	SHEM051-1	2018-12-20	2019-12-19
CONTROLLER	INNCO	CO200	SHEM047-1	N/A	N/A
ANTENNA MAST	INNCO	MA400-EP	SHEM047-2	N/A	N/A
TURN DEVICE	INNCO	DE 3600-RH	SHEM047-3	N/A	N/A
Broadband UHF-VHF ANTENNA	SCHWARZBECK	VULB9168	SHEM048-1	2017-02-28	2020-02-27
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2017-07-22	2020-07-21
Low Amplifier	CLAVIO	BDLNA-0001-412010	SHEM164-1	2019-08-13	2020-08-12

Electrostatic Discharge					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Electrostatic Discharge Simulator	TESEQ	NSG 437	SHEM041-2	2019-08-13	2020-08-12

Radiated Immunity (80MHz-1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Signal generator	Rohde & Schwarz	SMJ100A	SHEM141-1	2019-08-13	2020-08-12
Power Meter	Rohde & Schwarz	NRP	SHEM057-1	2018-12-20	2019-12-19
Power meter sensor	Rohde & Schwarz	NRP-Z91	SHEM057-2	2018-12-20	2019-12-19
Antenna	SCHWARZBECK	STLP9128D	SHEM130-1	N/A	N/A
Amplifier	MILMEGA	AS0840-55-55	SHEM133-1	2018-12-20	2019-12-19
Power meter sensor	Rohde & Schwarz	NRP-Z22	SHEM136-1	2018-12-20	2019-12-19
ElectroMagnetic Field Probe	ETS-Lindgren	HI-6105	SHEM134-1	2018-12-11	2019-12-10
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2017-07-22	2020-07-21

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Digital pressure meter	YONGZHI	DYM3-01	SHEM082-1	2018-01-25	2021-01-24
Temperature&humidity recorder	ShangHai weather meter work	ZJ 1-2B	SHEM042-1~6	2019-09-16	2020-09-15
Digital Multimeter	FLUKE	17B	SHEM043-3	2019-09-02	2020-09-01
Autoformer regulator	Guangzhou bao de	TDGC2-5KVA	SHEM150-1	N/A	N/A
Multi-purpose tong tester	FLUKE	316	SHEM001-1	2018-12-20	2019-12-19

6 Emission Test Results

6.1 Radiated Emissions (30MHz-1GHz)

Test Requirement: EN 55014-1:2017

Test Method: CISPR 16-2-3

Frequency Range: 30MHz to 1GHz

Measurement Distance: 3m

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

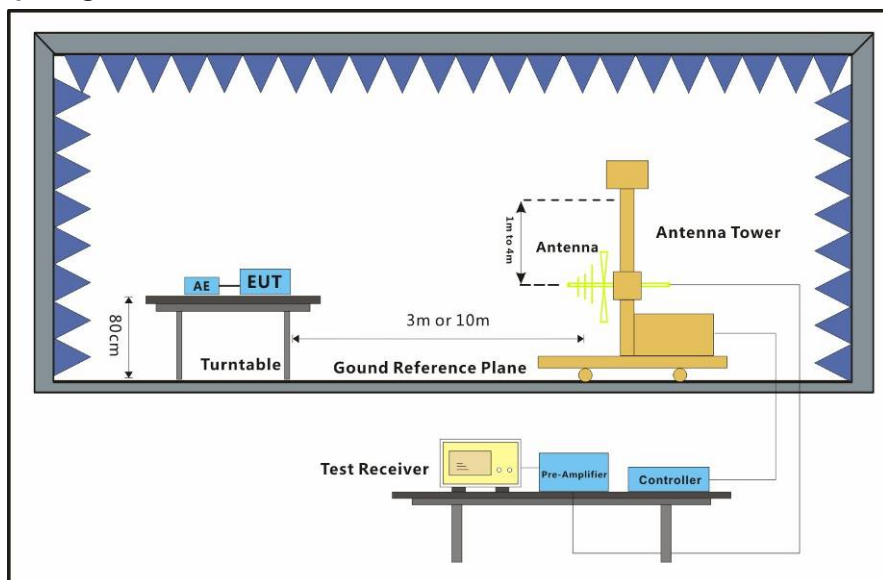
Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1020 mbar

Test mode: a: Charging mode: keep EUT charging,

b: Running mode: keep EUT running.

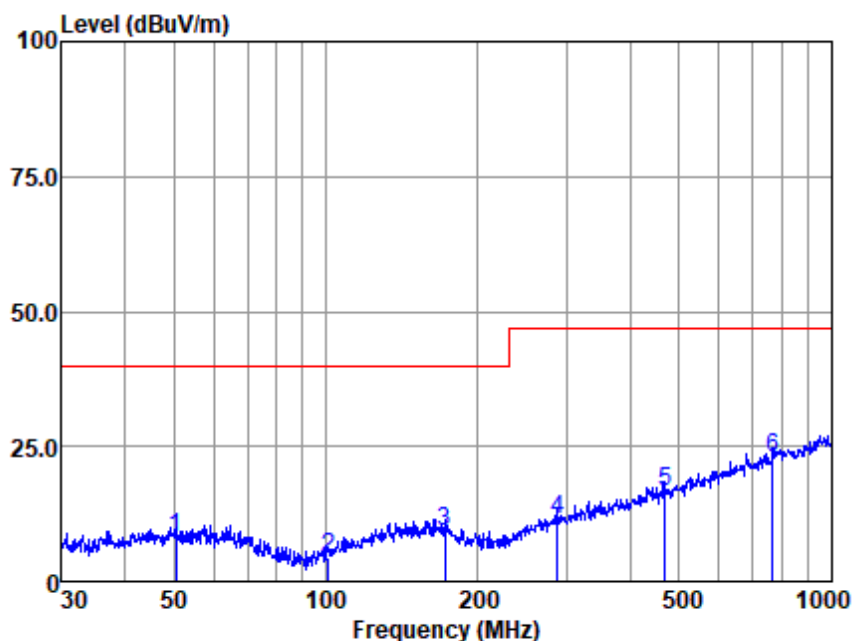
6.1.2 Test Setup Diagram



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



Antenna Polarity :HORIZONTAL

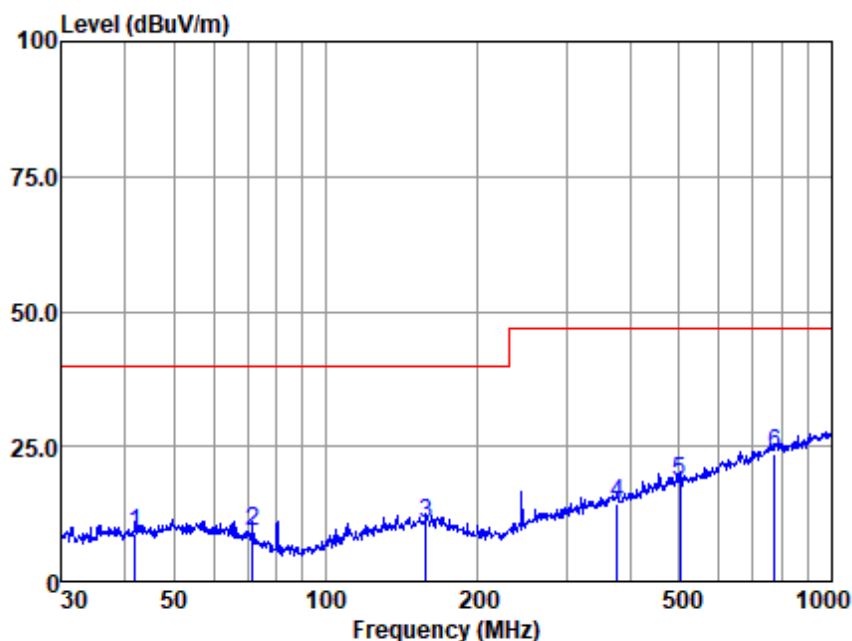
EUT/Project :19685HS

Test mode :a

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	50.586	36.28	13.67	0.48	42.33	8.10	40.00	-31.90	QP
2	100.934	36.60	8.85	1.13	42.32	4.26	40.00	-35.74	QP
3	171.995	37.45	12.61	1.55	42.21	9.40	40.00	-30.60	QP
4	286.982	38.37	12.99	2.27	42.12	11.51	47.00	-35.49	QP
5	468.876	37.83	17.12	3.38	41.73	16.60	47.00	-30.40	QP
6	766.057	38.27	22.17	4.27	41.99	22.72	47.00	-24.28	QP

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Mode:a; Polarization:Vertical



Antenna Polarity :VERTICAL

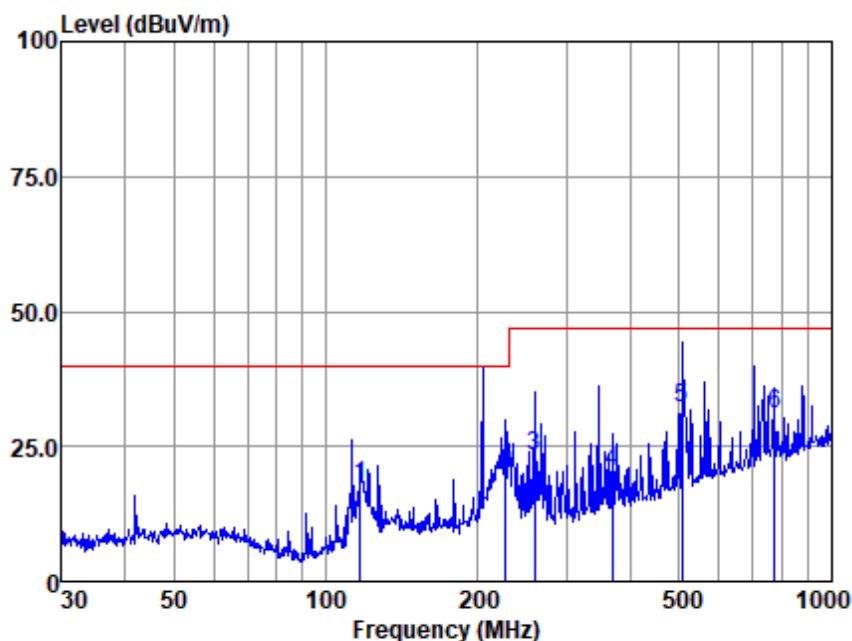
EUT/Project :19685HS

Test mode :a

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	42.007	37.64	13.32	0.35	42.33	8.98	40.00	-31.02	QP
2	71.581	39.39	11.31	0.65	42.26	9.09	40.00	-30.91	QP
3	157.559	38.20	13.13	1.42	42.22	10.53	40.00	-29.47	QP
4	377.259	38.04	15.05	3.08	41.93	14.24	47.00	-32.76	QP
5	501.179	38.93	17.72	3.50	41.69	18.46	47.00	-28.54	QP
6	774.158	39.03	22.20	4.30	41.99	23.54	47.00	-23.46	QP

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Mode:b; Polarization:Horizontal



Antenna Polarity :HORIZONTAL

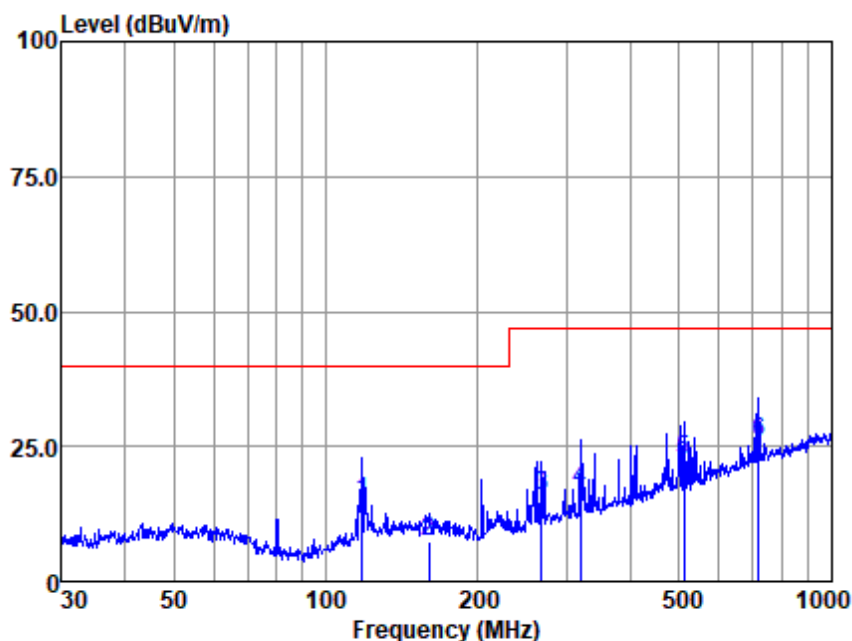
EUT/Project :19685HS

Test mode :b

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	116.950	48.13	10.74	1.28	42.29	17.86	40.00	-22.14	QP
2	226.894	50.14	9.74	2.04	42.14	19.78	40.00	-20.22	QP
3	258.326	51.06	12.03	2.21	42.10	23.20	47.00	-23.80	QP
4	368.112	44.25	14.82	3.09	41.93	20.23	47.00	-26.77	QP
5	506.479	52.59	17.79	3.57	41.69	32.26	47.00	-14.74	QP
6	771.449	46.38	22.19	4.30	41.99	30.88	47.00	-16.12	QP

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamplifier Factor

Mode:b; Polarization:Vertical



Antenna Polarity :VERTICAL

EUT/Project :19685HS

Test mode :b

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	118.186	44.99	10.85	1.31	42.28	14.87	40.00	-25.13	QP
2	159.784	35.04	13.20	1.44	42.22	7.46	40.00	-32.54	QP
3	267.546	43.51	12.40	2.21	42.11	16.01	47.00	-30.99	QP
4	318.817	42.56	13.84	2.72	42.04	17.08	47.00	-29.92	QP
5	511.835	42.95	17.85	3.58	41.69	22.69	47.00	-24.31	QP
6	719.200	42.23	21.32	4.31	41.89	25.97	47.00	-21.03	QP

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

7 Immunity Test Results

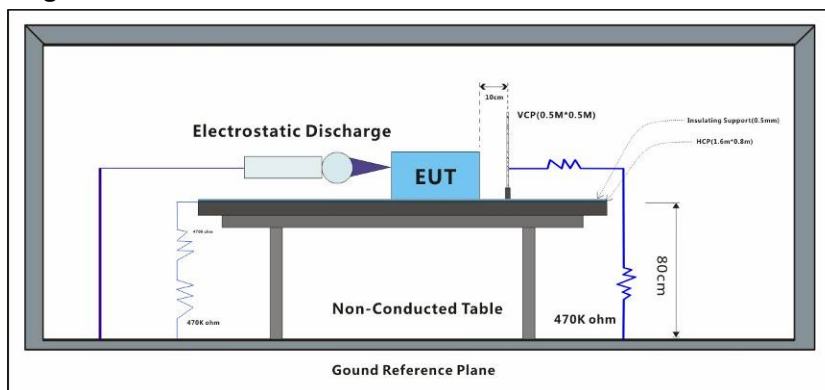
7.1 Performance Criteria Description in EN 55014-2:2015

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 Diagram



7.2.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1002 mbar

Test mode: a: Charging mode: keep EUT charging,
 b: Running mode: keep EUT running.

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

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

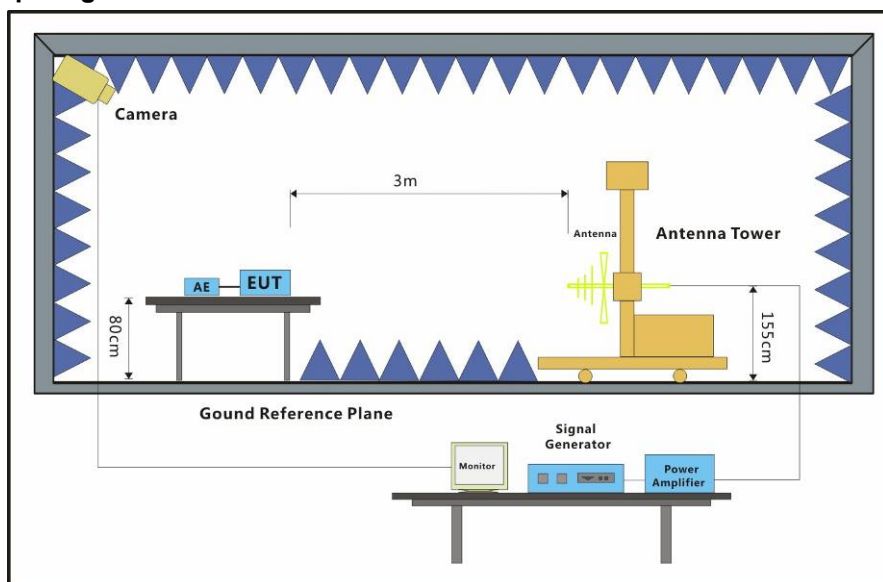
Results:

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 Diagram



7.3.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1020 mbar

Test mode:
 a: Charging mode: keep EUT charging,
 b: Running mode: keep EUT running.

7.3.3 Test Results:

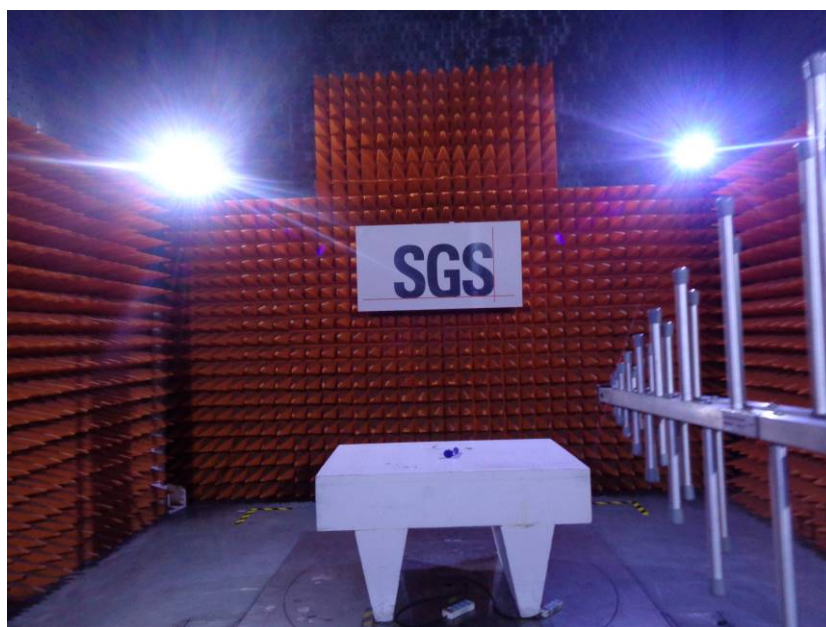
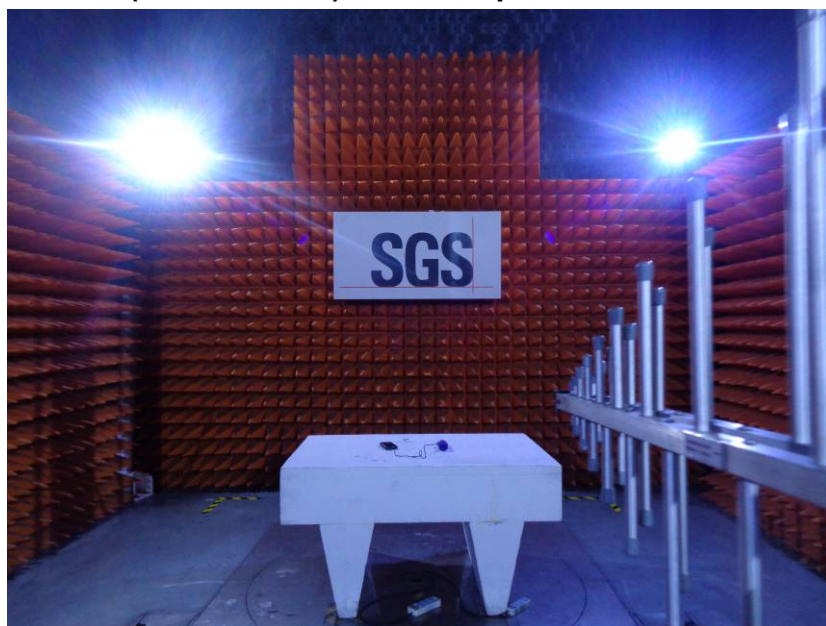
Frequency	Level (V/m)	EUT Face	Dwell time	Result / Observations
80MHz-1GHz	3	Front	2s	A
80MHz-1GHz	3	Back	2s	A
80MHz-1GHz	3	Left	2s	A
80MHz-1GHz	3	Right	2s	A
80MHz-1GHz	3	Top	2s	A
80MHz-1GHz	3	Underside	2s	A

Results:

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

8 Photographs

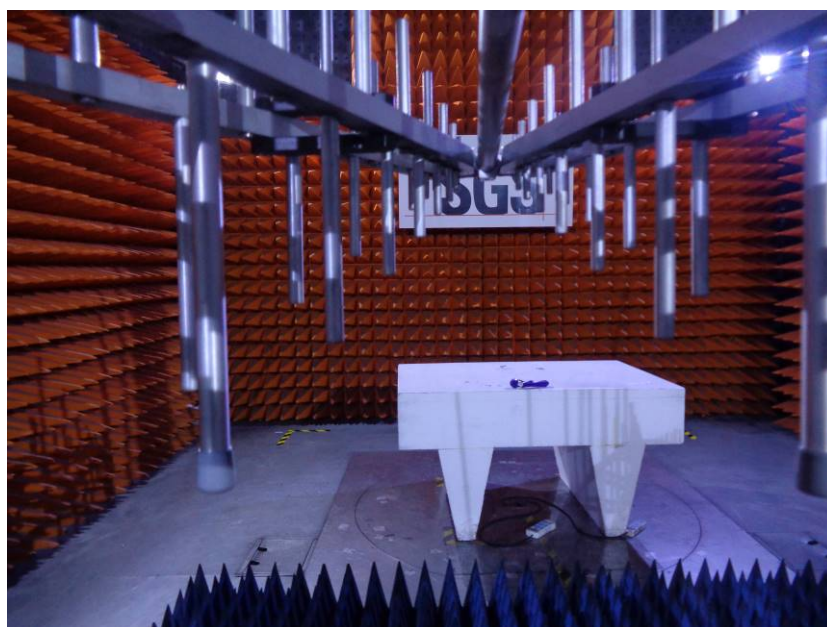
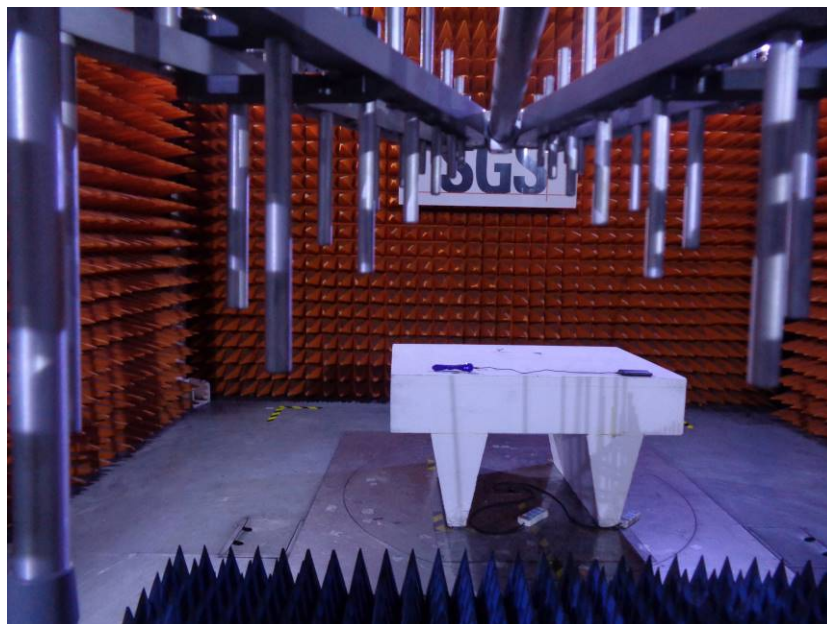
8.1 Radiated Emissions (30MHz-1GHz) Test Setup



8.2 Electrostatic Discharge Test Setup

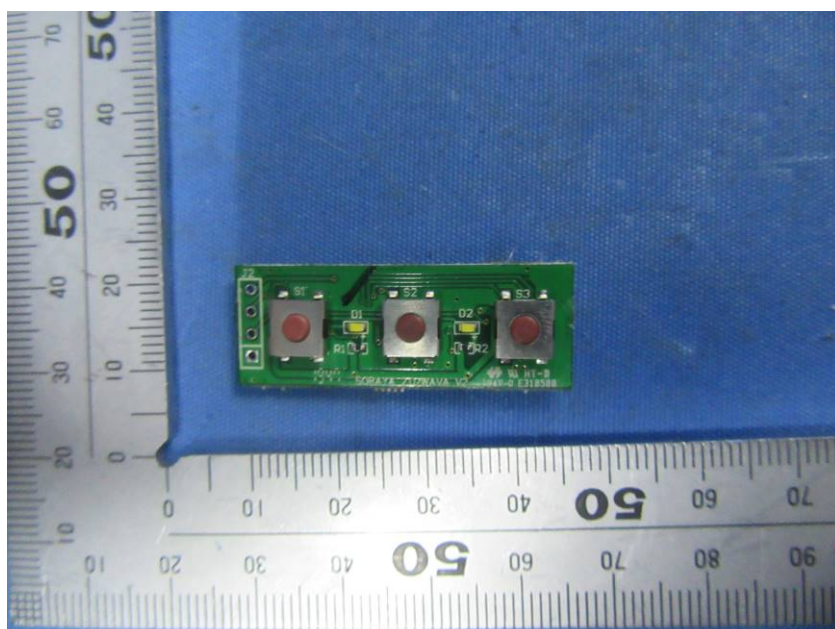
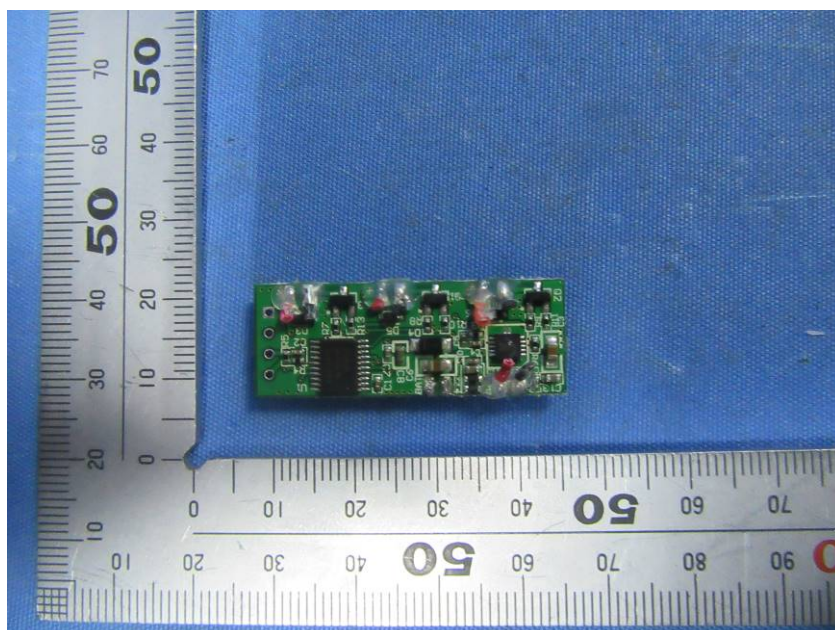


8.3 Radiated Immunity (80MHz-1GHz) Test Setup



8.4 EUT Constructional Details (EUT Photos)





- End of the Report -