

TEST REPORT

Application No.: SHEM2108009975TX
Applicant: Ningbo Airtac Automatic Industrial Co., Ltd.
Address of Applicant: No.88, Siming E.RD., High Tech Area of Fenghua City, Zhejiang, China
Manufacturer: AirTAC International Group Taiwan Branch
Address of Manufacturer: No.28, Kanxi Rd., Xinshi Dist., Tainan City 744092, Taiwan (R.O.C.)
Factory: AirTAC International Group Taiwan Branch
Address of Factory: No.28, Kanxi Rd., Xinshi Dist., Tainan City 744092, Taiwan (R.O.C.)
Equipment Under Test (EUT):
EUT Name: CMS Reed Sensor
Model No.: Refer to page 2
 ☐ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Standard(s) : EN 61000-6-3:2007 +A1:2011
 EN IEC 61000-6-1:2019
Date of Receipt: 2021-08-30
Date of Test: 2021-10-18 to 2021-10-21
Date of Issue: 2021-10-25

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
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.



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Model No.:

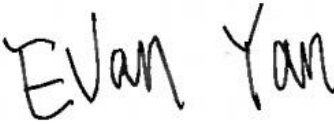

CMSG-M12, CMSG-020-□, CMSH-020-□, CMSE-020-□, CMSJ-020-□, CMSG-030-□, CMSH-030-□, CMSE-030-□, CMSJ-030-□, CMSG-050-□, CMSH-050-□, CMSE-050-□, CMSJ-050-□, CMSG-100-□, CMSH-100-□, CMSE-100-□, CMSJ-100-□, CMSG-M08-□, CMSH-M08-□, CMSE-M08-□, CMSJ-M08-□, CMSG-M08010-□, CMSH-M08010-□, CMSE-M08010-□, CMSJ-M08010-□, CMSG-M08020-□, CMSH-M08020-□, CMSE-M08020-□, CMSJ-M08020-□, CMSG-M08030-□, CMSH-M08030-□, CMSE-M08030-□, CMSJ-M08030-□, CMSG-M12-□, CMSH-M12-□, CMSE-M12-□, CMSJ-M12-□, CMSG-M12010-□, CMSH-M12010-□, CMSE-M12010-□, CMSJ-M12010-□, CMSG-M12020-□, CMSH-M12020-□, CMSE-M12020-□, CMSJ-M12020-□, CMSG-M12030-□, CMSH-M12030-□, CMSE-M12030-□, CMSJ-M12030-□, CMSG-020-H, CMSH-020-H, CMSE-020-H, CMSJ-020-H, CMSG-030-H, CMSH-030-H, CMSE-030-H, CMSJ-030-H, CMSG-050-H, CMSH-050-H, CMSE-050-H, CMSJ-050-H, CMSG-100-H, CMSH-100-H, CMSE-100-H, CMSJ-100-H, A05-CMSG-020, A05-CMSH-020, A05-CMSE-020, A05-CMSJ-020, A05-CMSG-030, A05-CMSH-030, A05-CMSE-030, A05-CMSJ-030, A05-CMSG-050, A05-CMSH-050, A05-CMSE-050, A05-CMSJ-050, A05-CMSG-100, A05-CMSH-100, A05-CMSE-100, A05-CMSJ-100



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Revision Record			
Version	Description	Date	Remark
00	Original	2021-10-25	/

Authorized for issue by:			
			
		<hr/>	
		Evan Yan / Project Engineer	
			
		<hr/>	
		Bruce Tang / Reviewer	



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2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at Mains Terminals (150kHz-30MHz)	EN 61000-6-3:2007 +A1:2011	CISPR 16-2-1	N/A	Pass
Radiated Emissions (30MHz-1GHz)	EN 61000-6-3:2007 +A1:2011	CISPR 16-2-3	N/A	Pass
Harmonic Current Emission	EN 61000-6-3:2007 +A1:2011	EN IEC 61000-3-2:2019	Class A	N/A*
Voltage Fluctuations and Flicker	EN 61000-6-3:2007 +A1:2011	EN 61000-3-3:2013+A1:2019	Clause 5 of EN 61000-3-3	Pass

N/A: Not applicable

N/A*: Not applicable, please refer to section 6.3 of this report for more details.

Immunity Part				
Item	Standard	Method	Requirement	Result
Electrostatic Discharge	EN IEC 61000-6-1:2019	EN 61000-4-2:2009	4kV Contact Discharge 8kV Air Discharge	Pass
Electrical Fast Transients/Burst at Power Port	EN IEC 61000-6-1:2019	EN 61000-4-4:2012	1kV 5/50ns Tr/Td 5 or 100kHz Repetition Frequency	Pass
Electrical Fast Transients/Burst at Signal Port	EN IEC 61000-6-1:2019	EN 61000-4-4:2012	0.5kV 5/50ns Tr/Td 5kHz Repetition Frequency	Pass
Surge at Power Port	EN IEC 61000-6-1:2019	EN 61000-4-5:2014 +A1:2017	1.2/50µs Tr/Td 1kV Line to Line 2kV Line to Ground	Pass
Surge at Signal Port	EN IEC 61000-6-1:2019	EN 61000-4-5:2014 +A1:2017	1.2/50µs Tr/Td 1kV Line to Ground	Pass
Conducted Immunity at Power Port (150kHz-80MHz)	EN IEC 61000-6-1:2019	EN 61000-4-6:2014	3Vrms (emf),80%,1kHz Amp. Mod.	Pass
Conducted Immunity at Signal Port (150kHz-80MHz)	EN IEC 61000-6-1:2019	EN 61000-4-6:2014	3Vrms (emf),80%,1kHz Amp. Mod.	Pass



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Immunity Part				
Item	Standard	Method	Requirement	Result
Voltage Dips and Interruptions	EN IEC 61000-6-1:2019	EN 61000-4-11:2004 +A1:2017	0 % UT for 0.5per 0 % UT for 1per 70 % UT for 25per 0 % UT for 250per UT is Supply Voltage	Pass
Radiated Immunity (80MHz-6GHz)	EN IEC 61000-6-1:2019	EN 61000-4-3:2006 +A1:2008+A2:2010	3V/m, 80%, 1kHz Amp. Mod. 3V/m, 80%, 1kHz Amp. Mod.	Pass

N/A: Not applicable

Note: Declaration of EUT Family Grouping:

There are series models mentioned in this report and they are the similar in electrical and electronic characters. Only the model CMSG-M12 was tested since their differences were model number and appearance.



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3 Contents

	Page
1 COVER PAGE.....	1
2 TEST SUMMARY	4
3 CONTENTS.....	6
4 GENERAL INFORMATION.....	8
4.1 DETAILS OF E.U.T.	8
4.2 DESCRIPTION OF SUPPORT UNITS	8
4.3 MEASUREMENT UNCERTAINTY.....	8
4.4 TEST LOCATION.....	9
4.5 TEST FACILITY.....	9
4.6 DEVIATION FROM STANDARDS	9
4.7 ABNORMALITIES FROM STANDARD CONDITIONS.....	9
4.8 MONITORING OF EUT FOR ALL IMMUNITY TEST	9
5 EQUIPMENT LIST.....	10
6 EMISSION TEST RESULTS	13
6.1 CONDUCTED EMISSIONS AT MAINS TERMINALS (150kHz-30MHz)	13
6.2 RADIATED EMISSIONS (30MHz-1GHz)	16
6.3 HARMONIC CURRENT EMISSION	19
6.4 VOLTAGE FLUCTUATIONS AND FLICKER	20
7 IMMUNITY TEST RESULTS.....	21
7.1 PERFORMANCE CRITERIA DESCRIPTION IN EN IEC 61000-6-1:2019	21
7.2 ELECTROSTATIC DISCHARGE	22
7.3 ELECTRICAL FAST TRANSIENTS/BURST AT POWER PORT	23
7.4 ELECTRICAL FAST TRANSIENTS/BURST AT SIGNAL PORT	24
7.5 SURGE AT POWER PORT	25
7.6 SURGE AT SIGNAL PORT.....	26
7.7 CONDUCTED IMMUNITY AT POWER PORT (150kHz-80MHz).....	27
7.8 CONDUCTED IMMUNITY AT SIGNAL PORT (150kHz-80MHz).....	28
7.9 VOLTAGE DIPS AND INTERRUPTIONS	29
7.10 RADIATED IMMUNITY (80MHz-6GHz)	30
8 PHOTOGRAPHS.....	31
8.1 CONDUCTED EMISSIONS AT MAINS TERMINALS (150kHz-30MHz) TEST SETUP	31
8.2 RADIATED EMISSIONS (30MHz-1GHz) TEST SETUP.....	31
8.3 VOLTAGE FLUCTUATIONS AND FLICKER TEST SETUP	32
8.4 ELECTROSTATIC DISCHARGE TEST SETUP.....	32
8.5 ELECTRICAL FAST TRANSIENTS/BURST AT POWER PORT TEST SETUP	33
8.6 ELECTRICAL FAST TRANSIENTS/BURST AT SIGNAL PORT TEST SETUP.....	33
8.7 SURGE AT POWER PORT TEST SETUP.....	34
8.8 SURGE AT SIGNAL PORT TEST SETUP	34
8.9 CONDUCTED IMMUNITY AT POWER PORT (150kHz-80MHz) TEST SETUP	35
8.10 CONDUCTED IMMUNITY AT SIGNAL PORT (150kHz-80MHz) TEST SETUP	35
8.11 VOLTAGE DIPS AND INTERRUPTIONS TEST SETUP	36
8.12 RADIATED IMMUNITY (80MHz-6GHz) TEST SETUP.....	37



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8.13 EUT CONSTRUCTIONAL DETAILS (EUT PHOTOS).....38



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4 General Information

4.1 Details of E.U.T.

Power supply: AC/DC5V-240V

Test voltage: AC230V 50Hz

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Digital Multimeter	FLUKE	15B+	/
Load Resistor	/	/	/

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Conducted Emission at mains port using AMN	2.6dB (9kHz to 150kHz)
		2.4dB (150kHz to 30MHz)
2	Conducted Emission at mains port using VP	1.8 dB (9kHz to 30MHz)
3	Conducted Emission at telecommunication port using AAN	4.2 dB (150kHz to 30MHz)
4	Radiated Power	3.2dB
5	Radiated Emission	4.5dB (30MHz-1GHz)
		5.1dB (1GHz-6GHz)
		5.4dB (6GHz-18GHz)
6	Radiated Disturbance (disturbance current in a LLAS)	2.4dB (9kHz to 30MHz)

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



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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 17025:2017 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.

- **A2LA (Certificate No. 6332.01)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. is accredited by the American Association for Laboratory Accreditation(A2LA).

- **FCC (Designation Number: CN1301)**

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

- **ISED (CAB Identifier: CN0020)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. EMC Laboratory has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory. Company Number: 8617A

- **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



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5 Equipment List

Conducted Emissions at Mains Terminals (150kHz-30MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI test receiver	Rohde & Schwarz	ESR7	SHEM162-1	2020-12-20	2021-12-19
Line impedance stabilization network	SCHWARZBECK	NSLK8127	SHEM061-1	2020-12-20	2021-12-19
Line impedance stabilization network	EMCO	3816/2	SHEM019-1	2020-12-20	2021-12-19
Pulse limiter	Rohde & Schwarz	ESH3-Z2	SHEM029-1	2020-12-20	2021-12-19
Shielding Room	ZHONGYU	8*4*3M	SHEM079-2	2020-12-20	2023-12-19
CE test Cable	/	/	CE01	2020-12-20	2021-12-19

Radiated Emissions (30MHz-1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI test receiver	Rohde & Schwarz	ESU40	SHEM051-1	2020-12-20	2021-12-19
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	2021-09-11	2023-09-10
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2020-05-25	2023-05-24
Pre-Amplifier	HP	8447D	SHEM236-1	2021-05-27	2022-05-26

Voltage Fluctuations and Flicker					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Harmonic&Flicker analyzer	AMETEK	PACS-1	SHEM024-2	2021-05-27	2022-05-26
AC Power Source 5KVA	AMETEK	5001iX	SHEM025-2	2021-05-27	2022-05-26
Test software	AMETEK	CTS4	Version: 4.24.0	N/A	N/A

Electrostatic Discharge					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Electrostatic Discharge Simulator	TESEQ	NSG 437	SHEM041-2	2021-08-13	2022-08-12

Electrical Fast Transients/Burst at Power Port					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Immunity Test System	EMC PARTNER	TRA3000 F-S-D-V	SHEM163-1	2020-12-20	2021-12-19
Test software	EMC PARTNER	GENECS	Version: 3.29	N/A	N/A
Immunity Test System	TESEQ	NSG 3060	SHEM224-1	2021-04-15	2022-04-14
Coupling / Decoupling Network (CDN)	TESEQ	CDN 3061	SHEM224-3	2021-04-15	2022-04-14



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Electrical Fast Transients/Burst at Signal Port					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Immunity Test System	EMC PARTNER	TRA3000 F-S-D-V	SHEM163-1	2020-12-20	2021-12-19
Test software	EMC PARTNER	GENECS	Version: 3.29	N/A	N/A
Immunity Test System	TESEQ	NSG 3060	SHEM224-1	2021-04-15	2022-04-14
Capacitive coupling clamp	EM test	HFK	SHEM026-2	2020-12-20	2021-12-19
Data coupling network 4 line	EM test	CNV 504	SHEM026-3	2020-12-20	2021-12-19

Surge at Power Port					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Immunity Test System	EMC PARTNER	TRA3000 F-S-D-V	SHEM163-1	2020-12-20	2021-12-19
Test software	EMC PARTNER	GENECS	Version: 3.29	N/A	N/A
Immunity Test System	TESEQ	NSG 3060	SHEM224-1	2021-04-15	2022-04-14
Coupling / Decoupling Network (CDN)	TESEQ	CDN 3061	SHEM224-3	2021-04-15	2022-04-14

Surge at Signal Port					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Immunity Test System	EMC PARTNER	TRA3000 F-S-D-V	SHEM163-1	2020-12-20	2021-12-19
Test software	EMC PARTNER	GENECS	Version: 3.29	N/A	N/A
Immunity Test System	TESEQ	NSG 3060	SHEM224-1	2021-04-15	2022-04-14
Data coupling network 4 line	EM test	CNV 504	SHEM026-3	2020-12-20	2021-12-19
Telecom surge (10 / 700us) extension unit	TESEQ	NSG 3060-TS-EXT	SHEM224-2	2021-04-15	2022-04-14
Coupling / Decoupling Network (CDN)	SCHAFFNER	CDN 117	SHEM224-5	2021-04-15	2022-04-14

Conducted Immunity at Power Port (150kHz-80MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Signal generator	Rohde & Schwarz	SMJ100A	SHEM141-1	2021-08-13	2022-08-12
Power Amplifier	HAEFFLY	PAMP250	SHEM023-1	2020-12-20	2021-12-19
6dB Attenuator	HUAXIANG	DTS50-6dB-1G-A	SHEM123-2	2020-12-20	2021-12-19
Coupling clamp	LUTHI	EM 101	SHEM027-1	2020-12-20	2021-12-19
Coupling and Decoupling Network (CDN)	LUTHI	L-801 M1	SHEM023-5	2020-12-20	2021-12-19
Coupling and Decoupling Network (CDN)	LUTHI	L-801 M2/M3	SHEM023-6	2020-12-20	2021-12-19
RF Generator	SCHAFFNER	NSG 2070	SHEM221-1	2021-05-27	2022-05-26
Shielding Room	ZHONGYU	5*5*3M	SHEM079-6	2019-12-20	2022-12-19
Coupling and Decoupling Network	Teseq	CDN M016	SHEM168-1	2021-08-13	2022-08-12



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Conducted Immunity at Signal Port (150kHz-80MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Signal generator	Rohde & Schwarz	SMJ100A	SHEM141-1	2021-08-13	2022-08-12
Power Amplifier	HAEFLY	PAMP250	SHEM023-1	2020-12-20	2021-12-19
6dB Attenuator	HUAXIANG	DTS50-6dB-1G-A	SHEM123-2	2020-12-20	2021-12-19
Coupling clamp	LUTHI	EM 101	SHEM027-1	2020-12-20	2021-12-19
Shielding Room	ZHONGYU	5*5*3M	SHEM079-6	2019-12-20	2022-12-19

Voltage Dips and Interruptions					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Immunity Test System	EMC PARTNER	TRA3000 F-S-D-V	SHEM163-1	2020-12-20	2021-12-19
Test software	EMC PARTNER	GENECS	Version: 3.29	N/A	N/A
Immunity Test System	TESEQ	NSG 3060	SHEM224-1	2021-04-15	2022-04-14
Coupling / Decoupling Network (CDN)	TESEQ	CDN 3061	SHEM224-3	2021-04-15	2022-04-14
Manual step transformer	TESEQ	INA 6501	SHEM224-4	2021-04-15	2022-04-14

Radiated Immunity (80MHz-6GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Signal generator	Rohde & Schwarz	SMJ100A	SHEM141-1	2021-08-13	2022-08-12
Power Meter	Rohde & Schwarz	NRP	SHEM057-1	2021-04-15	2022-04-14
Power meter sensor	Rohde & Schwarz	NRP-Z91	SHEM057-2	2021-04-15	2022-04-14
Antenna	SCHWARZBECK	STLP9128D	SHEM130-1	N/A	N/A
Amplifier	MILMEGA	AS0840-55-55	SHEM133-1	2020-12-20	2021-12-19
Power meter sensor	Rohde & Schwarz	NRP-Z22	SHEM136-1	2021-04-15	2022-04-14
ElectroMagnetic Field Probe	ETS-Lindgren	HI-6105	SHEM134-1	2021-08-06	2022-08-05

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Digital pressure meter	YONGZHI	DYM3-01	SHEM082-1	2021-01-22	2024-01-21
Temperature&humidity recorder	ShangHai weather meter work	ZJ 1-2B	SHEM042-1~6	2021-09-07	2022-09-06
Digital Multimeter	FLUKE	17B	SHEM043-3	2021-09-04	2022-09-03
Autoformer regulator	Guangzhou bao de	TDGC2-5KVA	SHEM150-1	N/A	N/A
Multi-purpose tong tester	FLUKE	316	SHEM001-1	2020-12-20	2021-12-19



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6 Emission Test Results

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

Test Requirement:	EN 61000-6-3:2007 +A1:2011
Test Method:	CISPR 16-2-1
Frequency Range:	150kHz to 30MHz
Limit:	
0.15M-0.5MHz	66dB(μV)-56dB(μV) quasi-peak, 56dB(μV)-46dB(μV) average
0.5M-5MHz	56dB(μV) quasi-peak, 46dB(μV) average
5M-30MHz	60dB(μV) quasi-peak, 50dB(μV) average
Detector:	Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

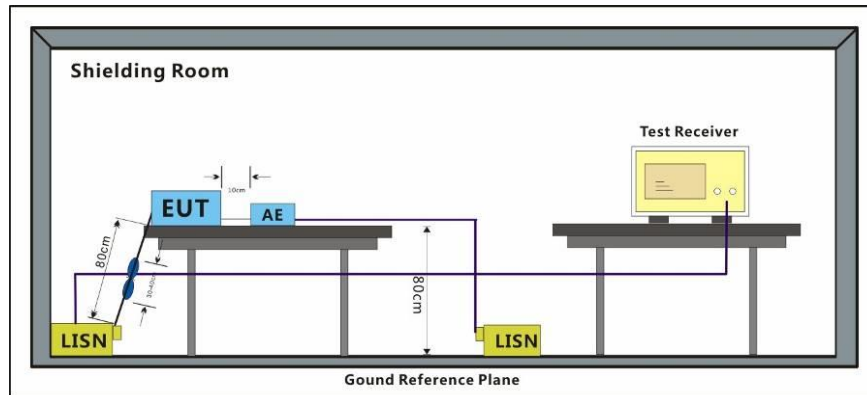
6.1.1 E.U.T. Operation

Operating Environment:

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

Test mode a: Normal Working_Keep EUT running continually.

6.1.2 Test Setup Diagram



6.1.3 Measurement Data

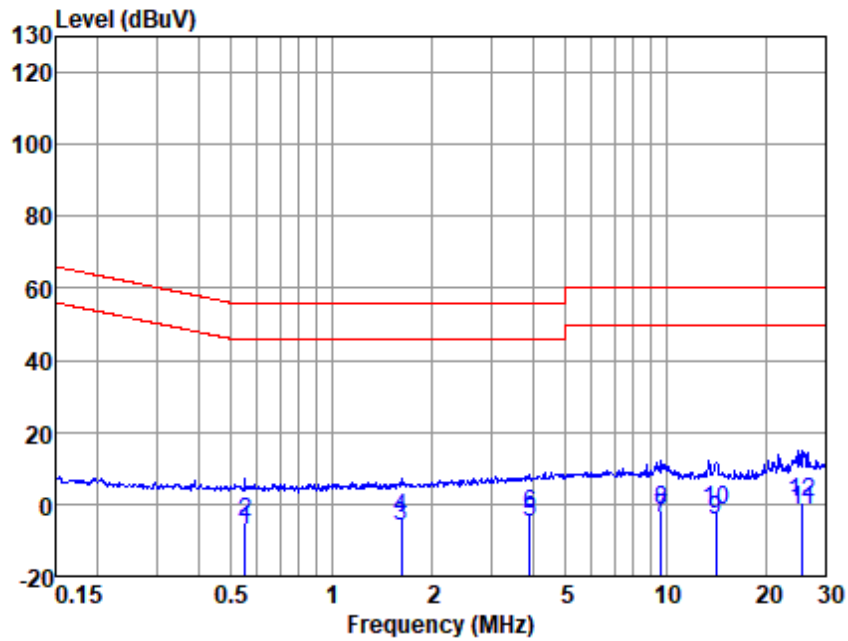
An initial pre-scan was performed with peak detector. Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected.



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Mode:a; Line:Live Line



LISN : LINE
 EUT/Project No : 09975TX
 Test Mode : a

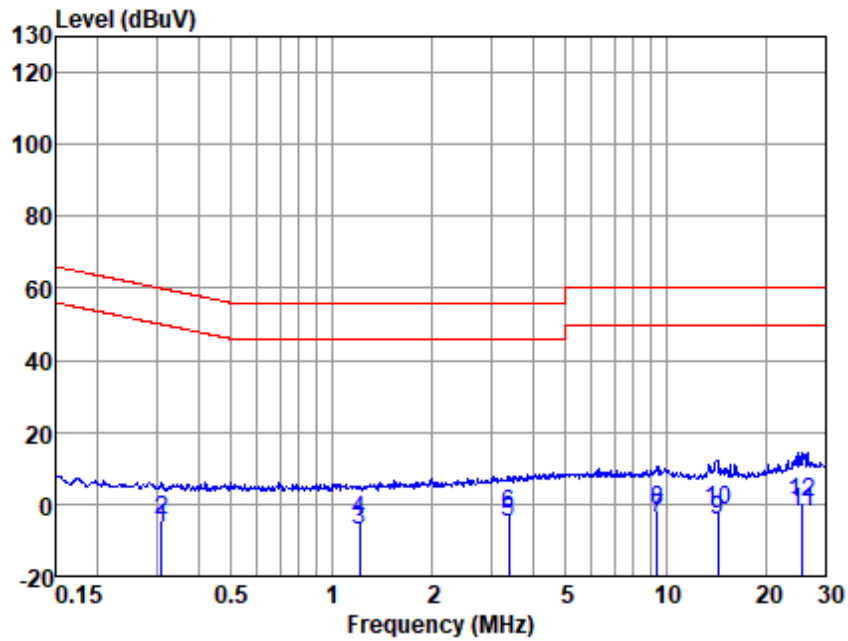
Freq (MHz)	Read level (dBuV)	LISN Factor (dB)	Cable Loss (dB)	Emission Level (dBuV)	Limit (dBuV)	Over Limit (dB)	Remark	
1	0.55	-17.24	0.20	9.92	-7.12	46.00	-53.12	Average
2	0.55	-14.93	0.20	9.92	-4.81	56.00	-60.81	QP
3	1.62	-16.46	0.20	9.93	-6.33	46.00	-52.33	Average
4	1.62	-13.83	0.20	9.93	-3.70	56.00	-59.70	QP
5	3.92	-15.34	0.20	9.99	-5.15	46.00	-51.15	Average
6	3.92	-13.04	0.20	9.99	-2.85	56.00	-58.85	QP
7	9.71	-14.42	0.29	10.05	-4.08	50.00	-54.08	Average
8	9.71	-12.05	0.29	10.05	-1.71	60.00	-61.71	QP
9	14.14	-15.35	0.47	10.13	-4.75	50.00	-54.75	Average
10	14.14	-12.31	0.47	10.13	-1.71	60.00	-61.71	QP
11	25.73	-12.95	0.94	10.19	-1.82	50.00	-51.82	Average
12	25.73	-10.45	0.94	10.19	0.68	60.00	-59.32	QP

Notes: Emission Level = Read Level + LISN Factor + Cable loss



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Mode:a; Line:Neutral Line



LISN : NEUTRAL
 EUT/Project No : 09975TX
 Test Mode : a

Freq (MHz)	Read level (dBuV)	LISN Factor (dB)	Cable Loss (dB)	Emission Level (dBuV)	Limit (dBuV)	Over Limit (dB)	Remark	
1	0.31	-17.09	0.20	9.94	-6.95	49.97	-56.92	Average
2	0.31	-14.92	0.20	9.94	-4.78	59.97	-64.75	QP
3	1.22	-17.30	0.20	9.91	-7.19	46.00	-53.19	Average
4	1.22	-14.81	0.20	9.91	-4.70	56.00	-60.70	QP
5	3.40	-15.42	0.20	9.99	-5.23	46.00	-51.23	Average
6	3.40	-13.30	0.20	9.99	-3.11	56.00	-59.11	QP
7	9.40	-14.45	0.28	10.05	-4.12	50.00	-54.12	Average
8	9.40	-11.95	0.28	10.05	-1.62	60.00	-61.62	QP
9	14.29	-15.22	0.48	10.13	-4.61	50.00	-54.61	Average
10	14.29	-12.41	0.48	10.13	-1.80	60.00	-61.80	QP
11	25.73	-13.38	0.94	10.19	-2.25	50.00	-52.25	Average
12	25.73	-10.44	0.94	10.19	0.69	60.00	-59.31	QP

Notes: Emission Level = Read Level + LISN Factor + Cable loss



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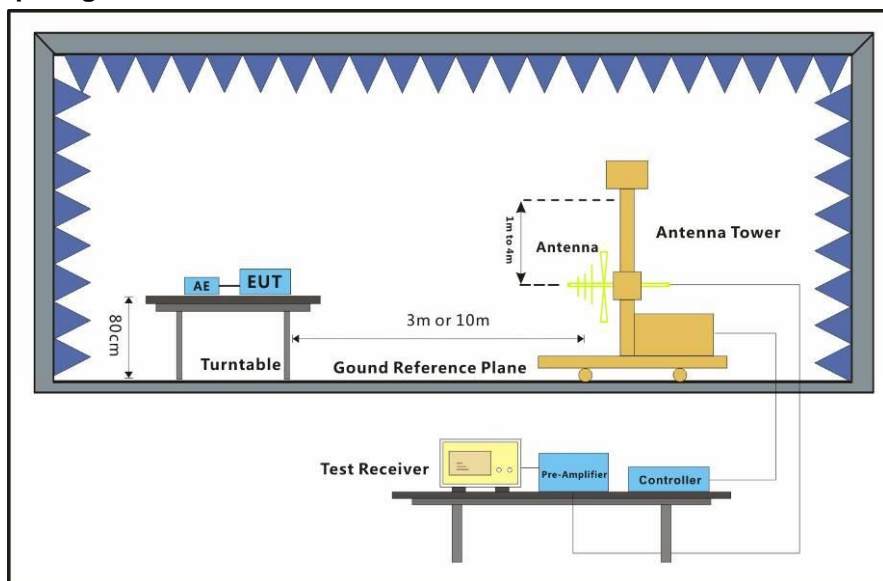
6.2 Radiated Emissions (30MHz-1GHz)

Test Requirement: EN 61000-6-3:2007 +A1:2011
 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

6.2.1 E.U.T. Operation

Operating Environment:
 Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1020 mbar
 Test mode a:Normal Working_Keep EUT running continually.

6.2.2 Test Setup Diagram



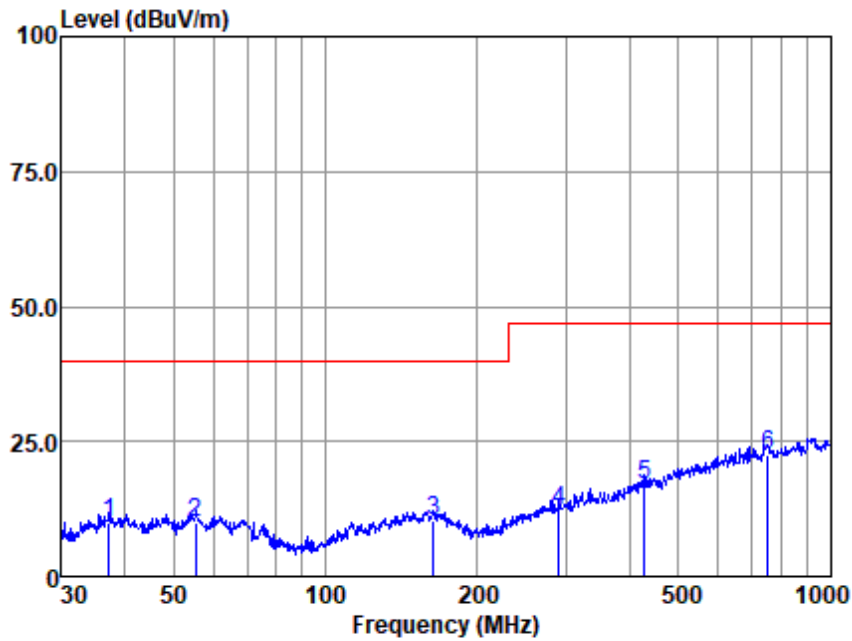
6.2.3 Measurement Data

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.



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Mode:a; Polarization:Horizontal



Antenna Polarity :HORIZONTAL
 EUT/Project :09975TX
 Test mode :a

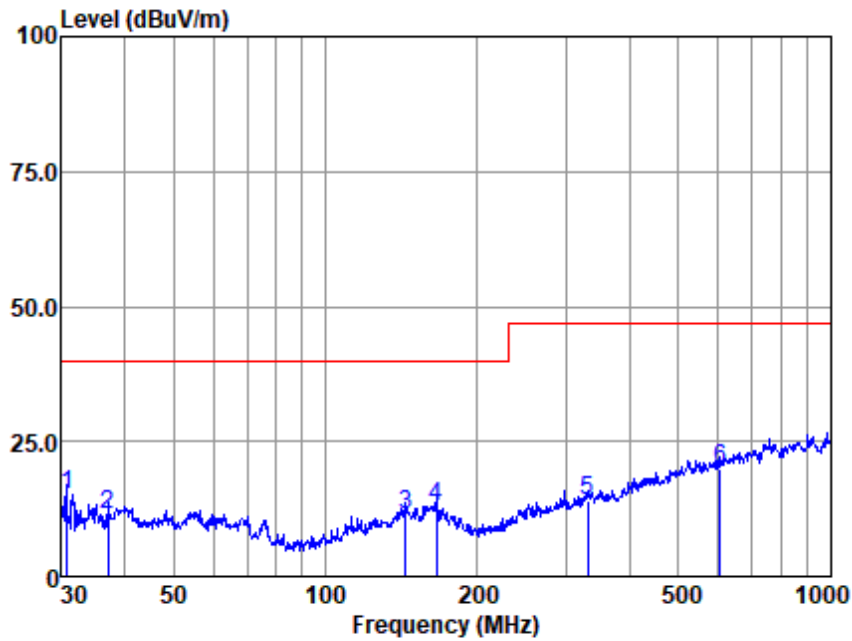
	Read	Antenna	Cable	Preamp	Emission	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	37.285	27.91	13.07	0.84	31.93	9.89	40.00	-30.11 QP
2	55.415	27.19	13.64	1.06	31.83	10.06	40.00	-29.94 QP
3	163.755	26.31	13.20	1.94	31.24	10.21	40.00	-29.79 QP
4	290.017	27.42	13.34	2.78	31.28	12.26	47.00	-34.74 QP
5	428.019	27.37	16.59	3.22	30.35	16.83	47.00	-30.17 QP
6	752.743	26.51	22.31	4.37	30.79	22.40	47.00	-24.60 QP

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



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Mode:a; Polarization:Vertical



Antenna Polarity :VERTICAL
 EUT/Project :09975TX
 Test mode :a

	Read	Antenna	Cable	Preamp	Emission	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	30.745	33.73	12.21	0.80	31.71	15.03	40.00	-24.97 QP
2	37.025	29.59	13.04	0.84	31.92	11.55	40.00	-28.45 QP
3	143.830	28.43	12.97	1.82	31.62	11.60	40.00	-28.40 QP
4	166.068	28.90	13.15	1.96	31.26	12.75	40.00	-27.25 QP
5	330.195	27.61	14.31	2.92	30.85	13.99	47.00	-33.01 QP
6	605.659	26.95	20.24	3.92	31.04	20.07	47.00	-26.93 QP

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



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6.3 Harmonic Current Emission

Test Requirement: EN 61000-6-3:2007 +A1:2011

Test Method: EN IEC 61000-3-2:2019

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 IEC 61000-3-2:2019.

For further details, please refer to Clause 7 of EN IEC 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."



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6.4 Voltage Fluctuations and Flicker

Test Requirement: EN 61000-6-3:2007 +A1:2011

Test Method: EN 61000-3-3:2013+A1:2019

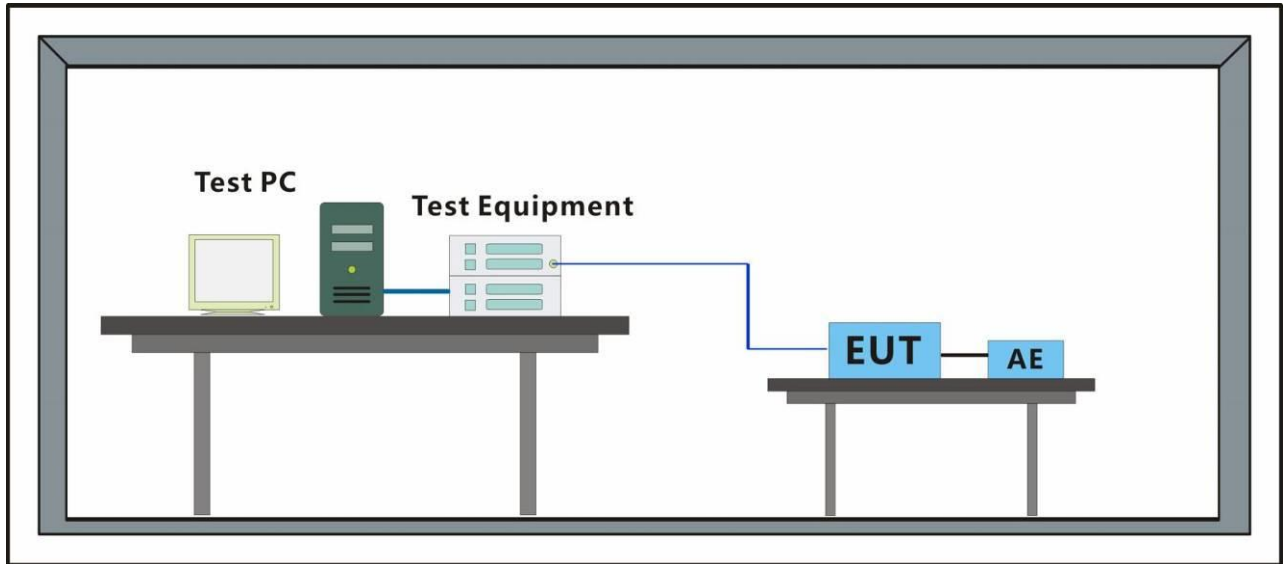
6.4.1 E.U.T. Operation

Operating Environment:

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

Test mode a:Normal Working_Keep EUT running continually.

6.4.2 Test Setup Diagram



6.4.3 Measurement Data

Mode:a

Vrms at the end of test (Volt):	230.02			
T-max (mS):	0	Test limit (mS):	500.0	Pass
Highest dc (%):	0.00	Test limit (%):	3.30	Pass
Highest dmax (%):	0.00	Test limit (%):	4.00	Pass
Highest Pst (10 min. period):	0.064	Test limit:	1.000	Pass
Highest Plt (2 hr. period):	0.064	Test limit:	0.650	Pass



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7 Immunity Test Results

7.1 Performance Criteria Description in EN IEC 61000-6-1:2019

- Criterion A** The EUT 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 EUT is used as intended. If the performance level is not specified by the manufacturer, this may be derived from the product description and documentation and what the user may reasonably expect from the equipment if used as intended.
- Criterion B** The EUT 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 EUT is used as intended. The performance level may be replaced by a permissible loss of performance. However, during the test degradation of performance is allowed but 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 what the user may reasonably expect from the equipment if used as intended.
- Criterion C** Temporary loss of function is allowed during the test, provided the function is self-recoverable or can be restored by the operation of the controls.



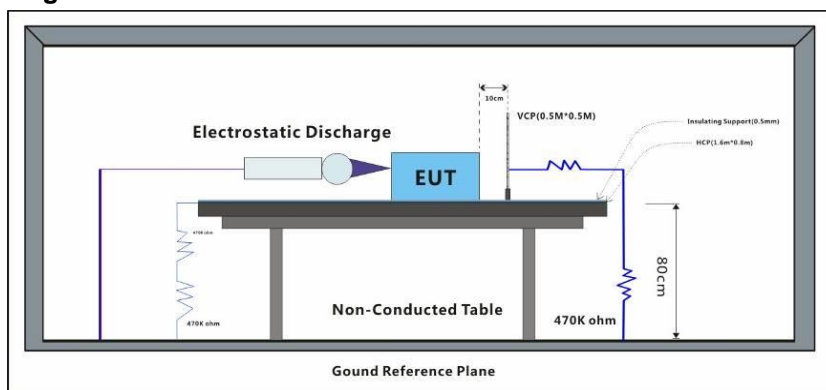
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7.2 Electrostatic Discharge

Test Requirement: EN IEC 61000-6-1:2019
 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:Normal Working_Keep EUT running continually.

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	2,4,8	+	1	A
Air Discharge	2,4,8	-	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.

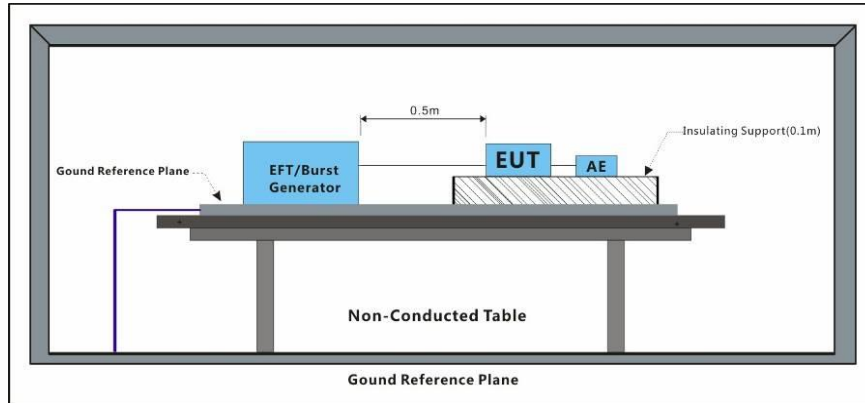


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7.3 Electrical Fast Transients/Burst at Power Port

Test Requirement: EN IEC 61000-6-1:2019
 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 Test Setup Diagram



7.3.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1002 mbar
 Test mode: a:Normal Working_Keep EUT running continually.

7.3.3 Test Results:

Test Line	Level (kV)	Polarity	CDN/Clamp	Result / Observations
AC power port	1	+	CDN	A
AC power port	1	-	CDN	A

Results:

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

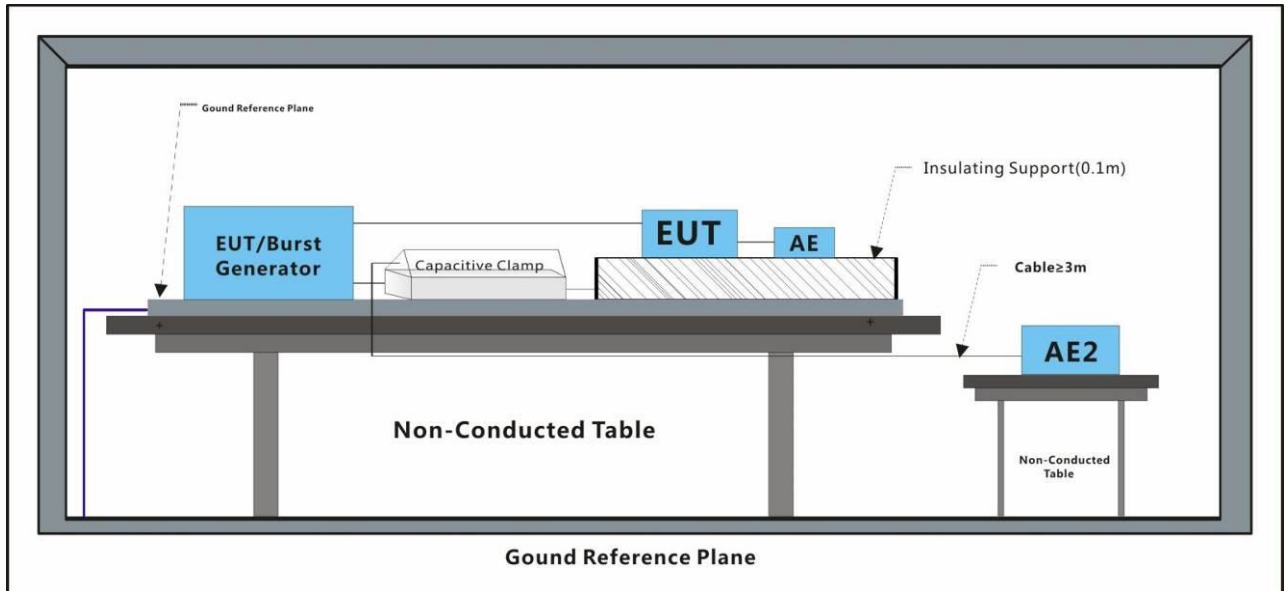


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7.4 Electrical Fast Transients/Burst at Signal Port

Test Requirement: EN IEC 61000-6-1:2019
 Test Method: EN 61000-4-4:2012
 Performance Criterion: B
 Repetition Frequency: 5kHz
 Burst Period: 300ms
 Test Duration: 2 minute per level & polarity

7.4.1 Test Setup Diagram



7.4.2 E.U.T. Operation

Operating Environment:
 Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1002 mbar
 Test mode: a:Normal Working_Keep EUT running continually.

7.4.3 Test Results:

Port	Level (kV)	Polarity	CDN/Clamp	Result / Observations
Signal port	0.5	+	Clamp	A
Signal port	0.5	-	Clamp	A

Results:

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

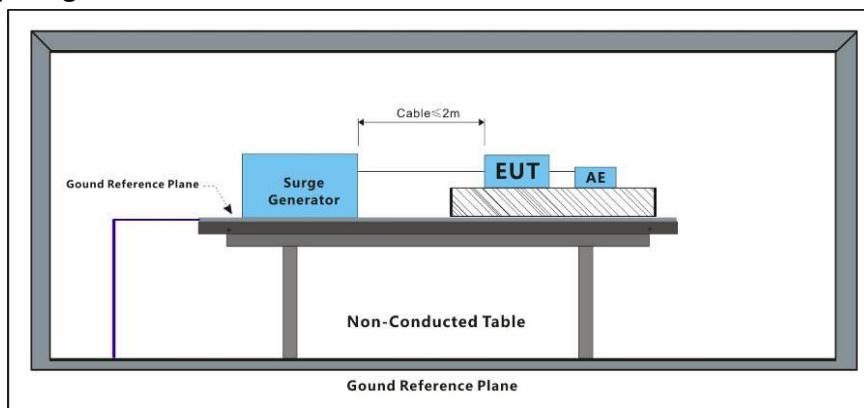


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7.5 Surge at Power Port

Test Requirement: EN IEC 61000-6-1:2019
 Test Method: EN 61000-4-5:2014 +A1:2017
 Performance Criterion: B
 Interval: 60s between each surge
 No. of surges: 5 positive, 5 negative at 0°, 90°, 180°, 270°.

7.5.1 Test Setup Diagram



7.5.2 E.U.T. Operation

Operating Environment:
 Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1002 mbar
 Test mode: a:Normal Working_Keep EUT running continually.

7.5.3 Test Results:

Test Line	Level (kV)	Polarity	Phase (deg)	Result / Observations
L-N	1	+	0°	A
L-N	1	-	0°	A
L-N	1	+	90°	A
L-N	1	-	90°	A
L-N	1	+	180°	A
L-N	1	-	180°	A
L-N	1	+	270°	A
L-N	1	-	270°	A

Results:

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

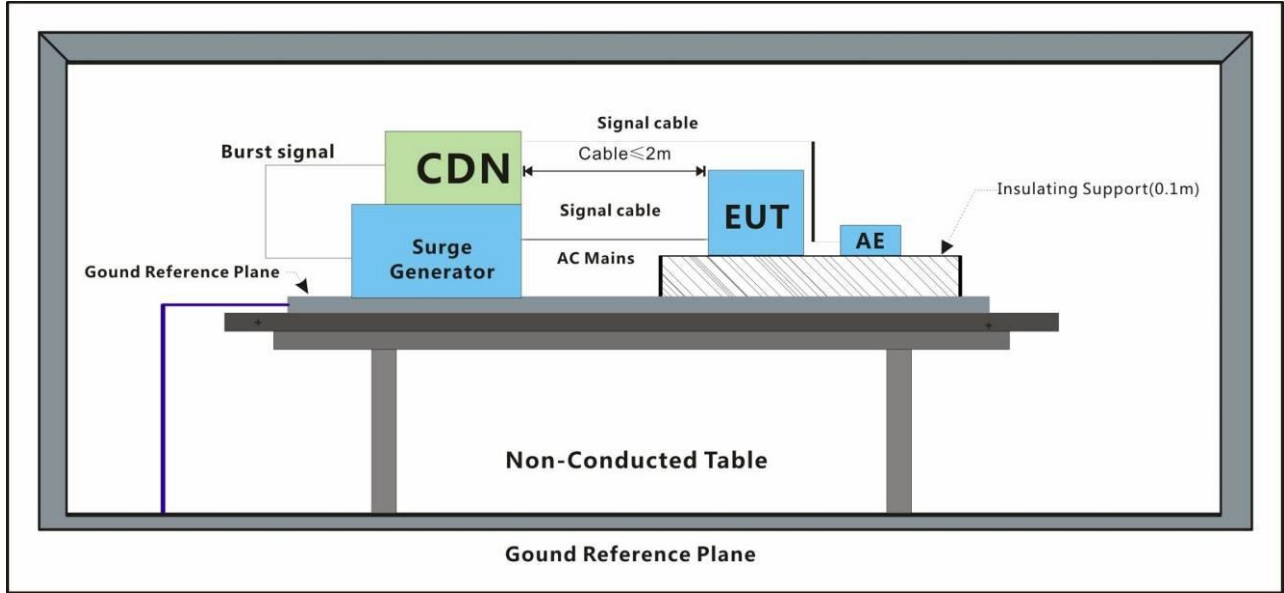


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7.6 Surge at Signal Port

Test Requirement: EN IEC 61000-6-1:2019
 Test Method: EN 61000-4-5:2014 +A1:2017
 Interval: 60s between each surge

7.6.1 Test Setup Diagram



7.6.2 E.U.T. Operation

Operating Environment:
 Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1002 mbar
 Test mode: a:Normal Working_Keep EUT running continually.

7.6.3 Test Results:

Port	Line	Level (kV)	Polarity	Result / Observations
Signal port	Line-Ground	1	+	A
Signal port	Line-Ground	1	-	A

Results:

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

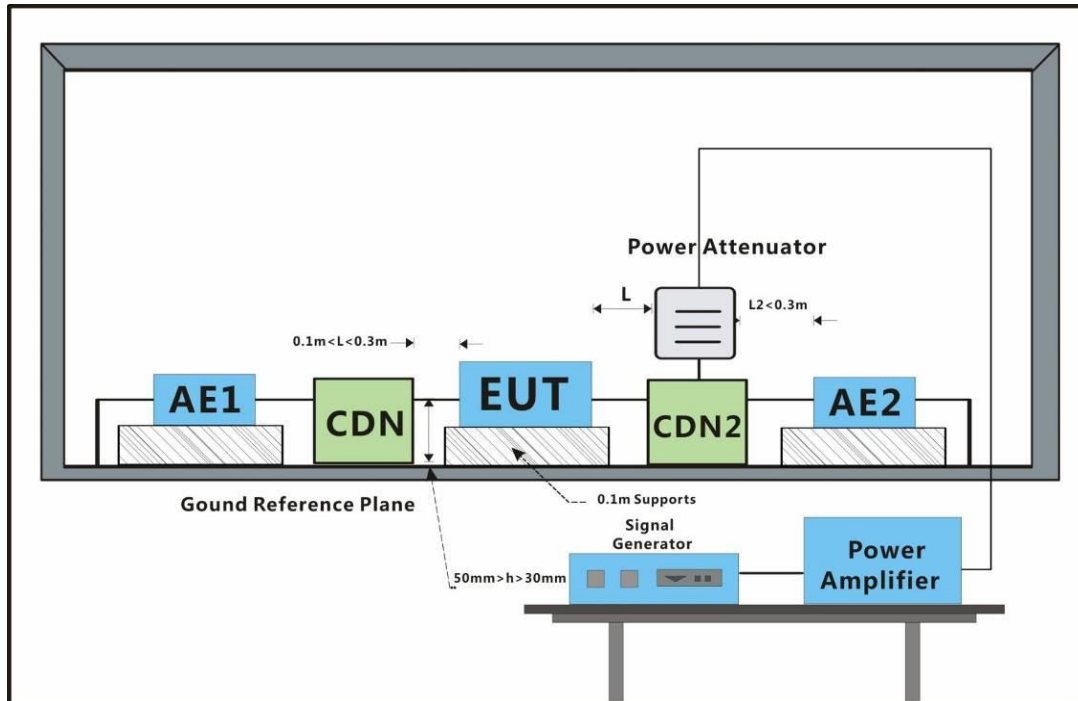


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7.7 Conducted Immunity at Power Port (150kHz-80MHz)

Test Requirement: EN IEC 61000-6-1:2019
 Test Method: EN 61000-4-6:2014
 Performance Criterion: A
 Frequency Range: 0.15MHz to 80MHz
 Modulation: 80%, 1kHz Amplitude Modulation
 Step Size: 1%

7.7.1 Test Setup Diagram



7.7.2 E.U.T. Operation

Operating Environment:
 Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1020 mbar
 Test mode: a:Normal Working_Keep EUT running continually.

7.7.3 Test Results:

Cable port	Level (Vrms)	CDN/Clamp	Dwell time	Result / Observations
AC power port	3	CDN	3s	A

Results:

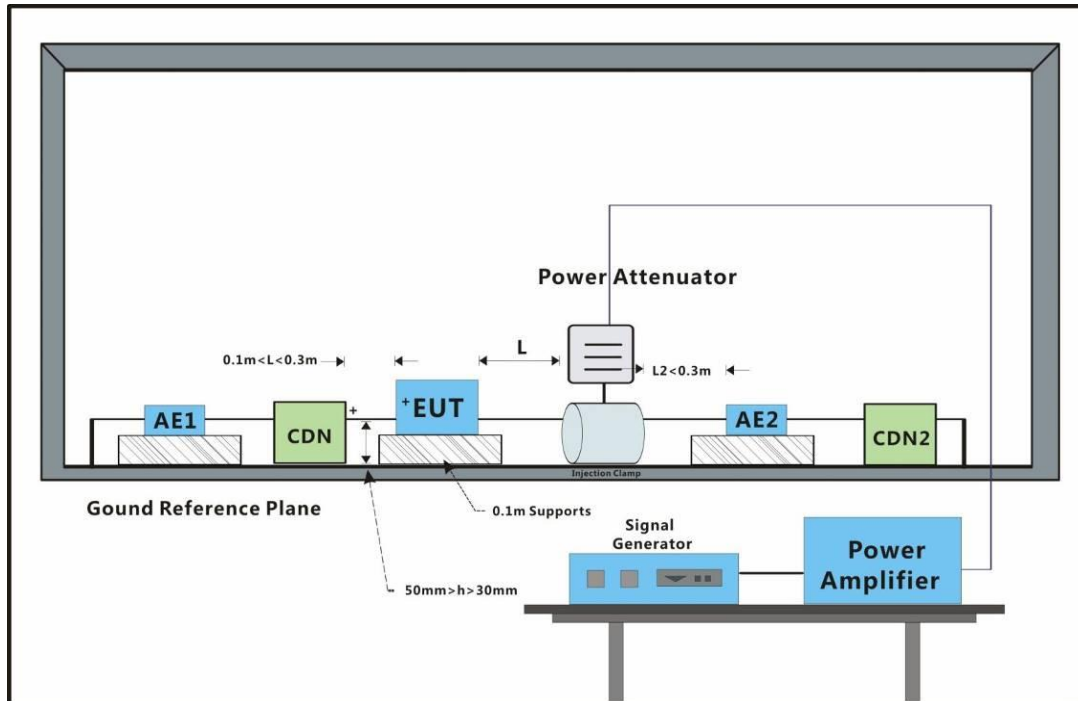
A: No degradation in the performance of the EUT was observed.



7.8 Conducted Immunity at Signal Port (150kHz-80MHz)

Test Requirement: EN IEC 61000-6-1:2019
 Test Method: EN 61000-4-6:2014
 Performance Criterion: A
 Frequency Range: 0.15MHz to 80MHz
 Modulation: 80%, 1kHz Amplitude Modulation
 Step Size: 1%

7.8.1 Test Setup Diagram



7.8.2 E.U.T. Operation

Operating Environment:
 Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1020 mbar
 Test mode: a:Normal Working_Keep EUT running continually.

7.8.3 Test Results:

Port	Level (Vrms)	CDN/Clamp	Dwell time	Result / Observations
Signal port	3	Clamp	3s	A

Results:

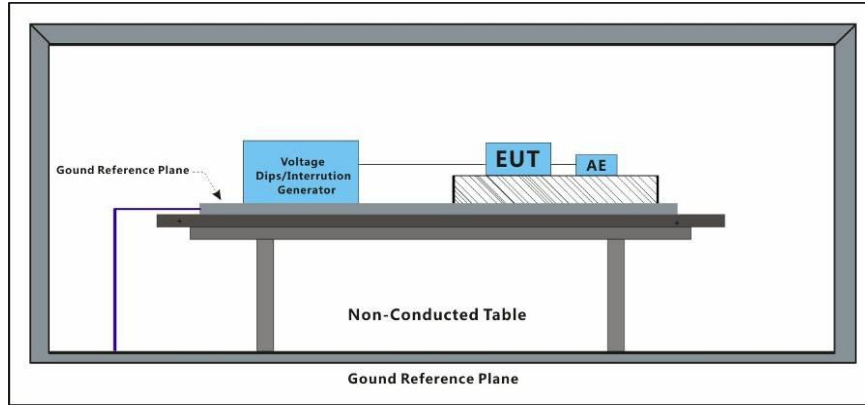
A: No degradation in the performance of the EUT was observed.



7.9 Voltage Dips and Interruptions

Test Requirement: EN IEC 61000-6-1:2019
 Test Method: EN 61000-4-11:2004 +A1:2017
 Performance Criterion: 0% of UT (Supply Voltage) for 0.5 Periods:B; 0% of UT for 1 Periods:B; 0% of UT for 250 Periods:C; 70% of UT for 25 Periods:C;
 No. of Dips / Interruptions: 3 per Level
 Time between dropout 10s

7.9.1 Test Setup Diagram



7.9.2 E.U.T. Operation

Operating Environment:
 Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1002 mbar
 Test mode: a:Normal Working_Keep EUT running continually.

7.9.3 Test Results:

Level % UT	Phase (deg)	Duration	No. of Dips / Interruptions	Result / Observations
0	0°	0.5 Cycles	3	A
0	180°	0.5 Cycles	3	A
0	0°	1 Cycles	3	A
0	180°	1 Cycles	3	A
70	0°	25 Cycles	3	A
70	180°	25 Cycles	3	A
0	0°	250 Cycles	3	B
0	180°	250 Cycles	3	B

Results:

A: No degradation in the performance of the EUT was observed.
 B: During test,EUT stop work.After test,the EUT restarted automatically.

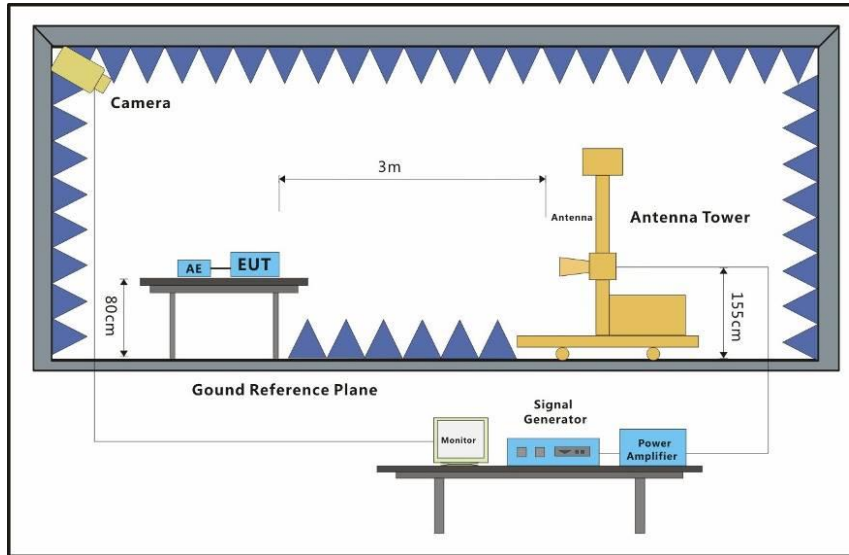


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7.10 Radiated Immunity (80MHz-6GHz)

Test Requirement: EN IEC 61000-6-1:2019
 Test Method: EN 61000-4-3:2006 +A1:2008+A2:2010
 Performance Criterion: A
 Frequency Range: 80MHz to 1GHz, 1.4GHz to 6GHz
 Antenna Polarisation: Vertical and Horizontal
 Modulation: 1kHz,80% Amp. Mod,1% increment

7.10.1 Test Setup Diagram



7.10.2 E.U.T. Operation

Operating Environment:
 Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1020 mbar
 Test mode: a:Normal Working_Keep EUT running continually.

7.10.3 Test Results:

Frequency	Level (V/m)	EUT Face	Dwell time	Result / Observations
80MHz-1GHz	3	Front	3s	A
80MHz-1GHz	3	Back	3s	A
80MHz-1GHz	3	Left	3s	A
80MHz-1GHz	3	Right	3s	A
80MHz-1GHz	3	Top	3s	A
80MHz-1GHz	3	Underside	3s	A
1.4GHz-6GHz	3	Front	3s	A
1.4GHz-6GHz	3	Back	3s	A
1.4GHz-6GHz	3	Left	3s	A
1.4GHz-6GHz	3	Right	3s	A
1.4GHz-6GHz	3	Top	3s	A
1.4GHz-6GHz	3	Underside	3s	A

Results:

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



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8 Photographs

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



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



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8.3 Voltage Fluctuations and Flicker Test Setup



8.4 Electrostatic Discharge Test Setup



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8.5 Electrical Fast Transients/Burst at Power Port Test Setup



8.6 Electrical Fast Transients/Burst at Signal Port Test Setup



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8.7 Surge at Power Port Test Setup



8.8 Surge at Signal Port Test Setup



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8.9 Conducted Immunity at Power Port (150kHz-80MHz) Test Setup



8.10 Conducted Immunity at Signal Port (150kHz-80MHz) Test Setup



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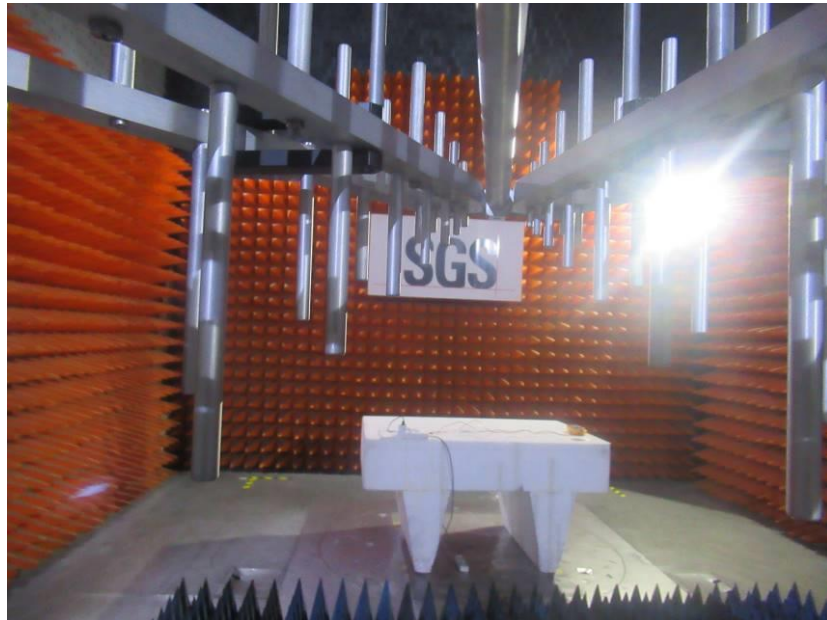
8.11 Voltage Dips and Interruptions Test Setup



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8.12 Radiated Immunity (80MHz-6GHz) Test Setup



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8.13 EUT Constructional Details (EUT Photos)



- End of the Report -



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