TEST REPORT

Applicant:	Dongguan Amsamotion automation technology Co, Ltd.
Address of Applicant:	1st Floor, Block B, Zosun Intelligence Creation Zone, Yizhan Road, Yuanwubian Nancheng District, Dongguan City, Gunagdong Province
Manufacturer:	Dongguan Amsamotion automation technology Co, Ltd.
Address of Manufacturer:	1st Floor, Block B, Zosun Intelligence Creation Zone, Yizhan Road, Yuanwubian Nancheng District, Dongguan City, Gunagdong Province
Factory:	Dongguan Amsamotion automation technology Co, Ltd.
Address of Factory:	1st Floor, Block B, Zosun Intelligence Creation Zone, Yizhan Road, Yuanwubian Nancheng District, Dongguan City, Gunagdong Province
Test item description:	PLC&HIM
Model No.:	HSE7A-32MR
Additional models:	See the attached files.
Trade Mark:	AMSAMOTION
Standard(s) :	EN 55032:2015/A11:2020 EN 61000-3-3:2013 EN IEC 61000-3-2:2019/A1:2021 EN 55035:2017/A1:2020
Date of Receipt:	2024-06-13
Date of Test:	2024-06-13 to 2024-06-20
Date of Issue:	2024-06-20

Test Result:	**Pass***

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

sto9V2 9rrixM

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.

CE

Add:201, Building A1, Lilang International Jewelry Industrial Park, No.31, BulanRoad, Xialilang Community, Nanwan Street, Longgang District, Shenzhen.Guangdong, China Certificate Search: Tel: 400-6800-890,http//www.ctic-lab.com, E-mail:christina@ctic-lab.com

Additional models:
HM4-16MR、HM4-16MT、HM4-16MRT、HM4A-16MR、HM4A-16MT、HM4A-16MRT、HM4R-16MR、HM4R-16MT、HM4R-16MRT、HM4T-16MR、HM4T-16MT、HM4T-16MRT、HM7-46MR、HM7-46MT、HM7-46MRT、HM7A-32MR、HM7A-32MT、HM7A-32MRT、HM7R-32MR、HM7R-32MT、HM7R-32MRT、HM7N-32MR、HM7N-32MT、HM7N-32MRT、HM7A-24MR、HM7A-24MT、HM7A-24MRT、HM7A-16MR、HM7A-16MT、HM7A-16MRT、HM7-16MR、HM7-16MT、HM7-16MRT、HM10A-48MR、HM10A-48MT、HM10A-48MRT、HM10X-40MR、HM10X-40MT、HM10X-40MRT、HM10X-32MR、HM10X-32MT、HM10X-32MRT、HS4-16MR、HS4-16MT、HS4-16MRT、HS4A-16MR、HS4A-16MT、HS4A-16MRT、HS4R-16MR、HS4R-16MT、HS4R-16MRT、HS4T-16MR、HS4T-16MT、HS4T-16MRT、HS7-46MR、HS7-46MT、HS7-46MRT、HS7A-32MR、HS7A-32MT、HS7A-32MRT、HS7A-24MR、HS7A-24MT、HS7A-24MRT、HS7A-16MR、HS7A-16MT、HS7A-16MRT、HS7-16MR、HS7-16MT、HS7-16MRT、HS7R-32MR、HS7R-32MT、HS7R-32MRT、HS7N-32MR、HS7N-32MRT、HS7N-32MT、HS10A-48MR、HS10A-48MT、HS10A-48MRT、HS10X-40MR、HS10X-40MT、HS10X-40MRT、HS10X-32MR、HS10X-32MT、HS10X-32MRT、HSE4-16MR、HSE4-16MT、HSE4-16MRT、HSE4A-16MR、HSE4A-16MT、HSE4A-16MRT、HSE4R-16MR、HSE4R-16MT、HSE4R-16MRT、HSE4T-16MR、HSE4T-16MT、HSE4T-16MRT、HSE7-46MR、HSE7-46MT、HSE7-46MRT、HSE7A-32MR、HSE7A-32MT、HSE7A-32MRT、HSE7A-24MR、HSE7A-24MT、HSE7A-24MRT、HSE7A-16MR、HSE7A-16MT、HSE7A-16MRT、HSE7-16MR、HSE7-16MR、HSE7-16MRT、HSE7R-32MR、HSE7R-32MT、HSE7R-32MRT、HSE7N-32MR、HSE7N-32MT、HSE7N-32MRT、HSE10A-48MR、HSE10A-48MT、HSE10A-48MRT、HSE10X-40MR、HSE10X-40MT、HSE10X-40MRT、HSE10X-32MR、HSE10X-32MT、HSE10X-32MRT

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		*2023-02-15*		*Original*

Authorized for issue by:				
Tested By		Project Engineer		2024-06-13 to 2024-06-20 **Date**
Reviewed By		Reviewer		2024-06-20 **Date**

CTIC Testing Group (Guangdong) Co., Ltd. APPROVED

1 Test Summary

Emission Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
Conducted Emissions at AC Mains Power Port (150kHz-30MHz)	EN 55032:2015/A11:2020	EN 55032:2015/A11:2020	--	Pass
Radiated Emissions	EN 55032:2015/A11:2020	EN 55032:2015/A11:2020	Class B	Pass
Discontinuous Interference	EN 55032:2015/A11:2020	EN 55032:2015/A11:2020	CISPR 32	Pass
Harmonic Current Emission	EN IEC 61000-3-2:2019/A1:2021	EN IEC 61000-3-2:2019/A1:2021	Class A	Pass
Voltage Fluctuations and Flicker	EN 55035:2017/A1:2020	EN 55035:2017/A1:2020	Clause 5 of EN 61000-3-3	Pass

Immunity Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
Electrostatic Discharge	EN 61000-3-3:2013	EN 61000-4-2:2009	2,4kV Contact Discharge, 2,4,8kV Air Discharge	Pass
Continuos RF Eletromagnetic field Disturbance	EN 61000-3-3:2013	EN 61000-4-3:2006 +A1:2007+A2:2010	80%,1kHz, AM Mod 3V/m,0.08~1GHz 3V/m,1.4~2.0GHz 1V/m,2.0~2.7GHz	Pass
Electrical Fast Transients Burst at AC Mains Power Port	EN 61000-3-3:2013	EN 61000-4-4:2012	1kV, 5/50ns Tr/Td, 5kHz Repetition Frequency	Pass
Surge at AC Mains Power Port	EN 61000-3-3:2013	EN 61000-4-5:2014 +A1:2017	1.2/50μs Tr/Td, 1kV Line to Line, 2kV Line to Ground	Pass
Conducted Immunity at AC Mains Power Port (150kHz-80MHz)	EN 61000-3-3:2013	EN 61000-4-6:2014	3Vrms (emf),80%,1kHz Amp. Mod.	Pass
Voltage Dips and Interruptions	EN 61000-3-3:2013	EN 61000-4-11:2004 +A1:2017	For 50Hz: 0 % UT for 0.5cycle, 0 % UT for 1.0cycles, 70 % UT for 25cycles 0 % UT for 250cycles,	Pass

Note: (1)= Continuous working product. (2)=Refer to section 5..4.

2 Contents

Page

1 Cover Page 1
1 Test Summary 4
2 Contents 5
3 General Information 7
3.1 Details of E.U.T. 7
3.2 Description of Support Units 7
3.3 Measurement Uncertainty 7
3.4 Test Location 7
3.5 Test Facility 7
3.6 Deviation from Standards 7
3.7 Abnormalities from Standard Conditions 7
3.8 EMS Monitor 7
4 Equipment List 8
5 Emission Test Results 9
5.1 Conducted Emissions at AC Mains Power Port (150kHz-30MHz) 9
5.1.1 E.U.T. Operation 9
5.1.2 Test Mode Description 9
5.1.3 Test Setup Diagram 9
5.1.4 Measurement Procedure and Data 9
5.2 Disturbance POWER test 10
5.2.1 E.U.T. Operation 10
5.2.2 Test Mode Description 10
5.2.3 Test Setup Diagram 10
5.2.4 Measurement Procedure and Data 10
5.3 Radiated Emissions 11
5.3.1 E.U.T. Operation 11
5.3.2 Test Mode Description 11
5.3.3 Test Setup Diagram 11
5.3.4 Measurement Procedure and Data 11
5.4 Voltage Fluctuations and Flicker 14
5.4.1 E.U.T. Operation 14
5.4.2 Test Mode Description 14
5.4.3 Test Setup Diagram 14
5.4.4 Measurement Procedure and Data 15
5.5 Harmonic Current Emission 16
5.5.1 E.U.T. Operation 16
5.5.2 Test Setup Diagram 16
5.5.3 Measurement Data 17
6 Immunity Test Results 18
6.1 Electrostatic Discharge 19
6.1.1 Test Setup Diagram 19
6.1.2 E.U.T. Operation 19
6.1.3 Test Mode Description 19
6.1.4 Test Condition and Results: 19
6.2 Continuos RF Eletromagnetic field Disturbance 21
2.1.1 Test Setup Diagram 21

6.2.1 E.U.T. Operation 21
6.2.2 Test Mode Description 21
6.2.3 Test Condition and Results: 21
6.3 Electrical Fast Transients Burst at AC Mains Power Port 22
6.3.1 Test Setup Diagram 22
6.3.2 E.U.T. Operation 22
6.3.3 Test Mode Description 22
6.3.4 Test Condition and Results: 22
6.4 Surge at AC Mains Power Port 22
6.4.1 Test Setup Diagram 23
6.4.2 E.U.T. Operation 23
6.4.3 Test Mode Description 23
6.4.4 Test Condition and Results: 23
6.5 Conducted Immunity at AC Mains Power Port (150kHz-80MHz) 23
2.1.2 Test Setup Diagram 24
6.5.1 E.U.T. Operation 24
6.5.2 Test Mode Description 24
6.5.3 Test Condition and Results: 24
6.6 Voltage Dips and Interruptions 25
6.6.1 Test Setup Diagram 25
6.6.2 E.U.T. Operation 25
6.6.3 Test Mode Description 25
6.6.4 Test Condition and Results: 25
7 EUT Constructional Details (EUT Photos) 26

General Information

3.1 Details of E.U.T.

Power supply: AC
Test Voltage: 220V
Cable(s): DC:2 wires 1.0m unshielded out put for the adapter.

3.2 Description of Support Units

3.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Emissions at AC Mains Power Port (150kHz-30MHz)	3.12dB
Radiated Emissions(30MHz-1000MHz)	3.66dB
Remark: The U_{lab} (lab Uncertainty) is less than U_{cispr} (CISPR Uncertainty), so the test results – compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit; – non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.	

3.4 Test Location

CTIC Testing Group (Guangdong) Co., Ltd.

201, Building A1 Lilang International Jewelry industrial Park, No.31, BulanRoad,Xialilang Community,Nanwan Street, Longgang District,Shenzhen,Guangdong,China

3.5 Test Facility

The test facility is recognized, certified, or accredited.

3.6 Deviation from Standards

This report is based on the requirements of customers to carry the equipment in the manufacturer for on-site testing.

3.7 Abnormalities from Standard Conditions

The test equipment in the calibration period, but the test site has not been calibrated.

3.8 EMS Monitor

Visual: LCD Display
Audio: Buzzing
Other: N/A

4 Equipment List

Test Equipment	Model	Manufacturer	Serial No.	Cal Date
EMC Laboratory				
Conduction& Radiated Test equipment				
EMI Test Receiver	ESPI	R&S	102086	2024.10.14
LISN	ENV216	R&S	101242	2024.10.14
LISN	3810/2NM	EMCO	000-23625	2024.10.14
Bi-log Antenna	CBL6111D	TESEQ	34678	2024.10.11
Pre-Amplifier (0.1M-3GHz)	EM330	EM	060665	2024.10.11
RE Cable (9K-1G)	N/A	R01	N/A	2024.10.11
EMS Test equipment				
ESD				
ESD TEST GENERATOR	KES4021	KZKUSUI	LB003568	2024.06.27
EFT				
EFT/B Generator	HEFT 51	HTEC	143801	2024.10.14
Surge				
Surge Generator	HCWG71	HTEC	143804	2024.10.14
Conducted RF immunity				
CS	CDG-6000-25	SCHLODER	126A1280/2014	2024.10.14
Attenuator	ATT-6DB-100	Nemtest	A100W224	2024.10.17
CDN	CDN-M2+3	Frankonia	A2210275/2014	2024.10.14
Coupling clamp	----	KEMZ801	-----	2024.10.14
Voltage dips, short interruptions and voltage variations immunity				
VOLTAGE DIPS & INTERRUPTIONS Generator	HPFS 161P	HTEC	143803	2024.10.17
Harmonics &Flicker				
Harmonic Voltage & Flicker	PACS-1	California Instruments	72812	2024.10.14
AC Power Source	5000ix	California Instruments	59862	2024.10.18

Radiated Immunity				
No.	Test Item	Equipment	Model No.	Cal due date
1	Power Meter	Agilent	E4419B	2024.10.09
2	Power Sensor	Hp	E9300A	2024.10.11
3	Power Sensor	Hp	E9300A	2024.10.11
4	Signal Generator	Agilent	N5181A	2024.10.11
5	Power Amplifier	MICOTOP	MPA-80-1000 -250	2024.10.11
6	Power Amplifier	MICOTOP	MPA-1000-6000-100	2024.10.09
7	RS Test Antenna (0.08-1GHz)	SCHWARZBECK	VULP 9118E	N/A
8	RS Test Antenna (1-10GHz)	SCHWARZBECK	STLP 9149	N/A
9	Temperature & Humidity	Mieo	HH660	2024.10.12

5 Emission Test Results

5.1 Conducted Emissions at AC Mains Power Port (150kHz-30MHz)

Test Requirement: EN 55032:2015/A11:2020

Test Method: EN 55032:2015/A11:2020

Limit:

0.15M-0.5MHz	66dB(μV)-56dB(μV) quasi-peak, 59dB(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

5.1.1 E.U.T. Operation

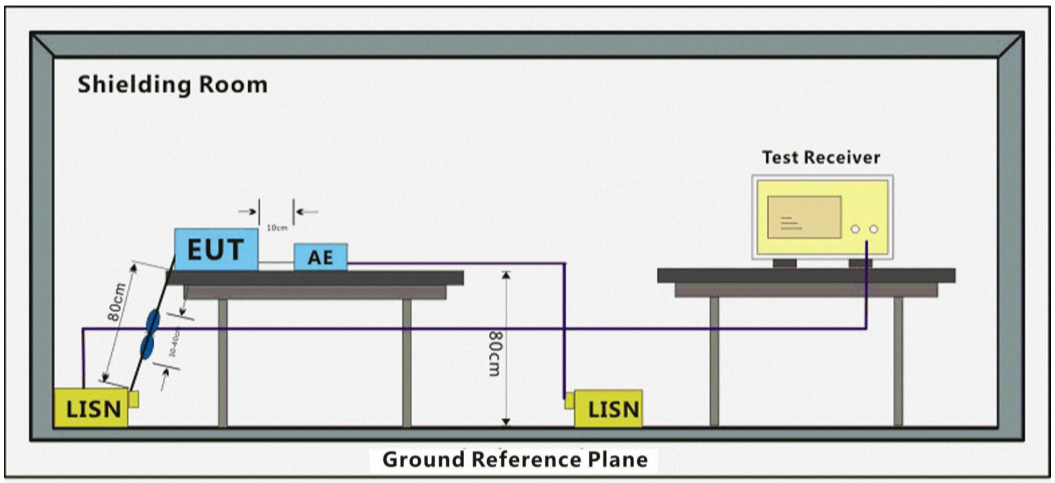
Operating Environment:

Temperature: 22.1 °C Humidity: 52 % RH Atmospheric Pressure: 1010 mbar

5.1.2 Test Mode Description

Test Mode: Normal working mode(Max Loading).

5.1.3 Test Setup Diagram



5.1.4 Measurement Procedure and Data

Frequency Range: 150kHz to 30MHz

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.

Measured Level = Read level + Cable Loss + LISN Factor

5.2 Disturbance POWER test

Test Requirement: EN 55032:2015/A11:2020

Test Method: EN 55032:2015/A11:2020

Limit:

30 ~ 300	45 Increasing Linearly with Frequency to 55 (Q.P.) 35 Increasing Linearly with Frequency to 45 (A.V.)

5.2.1 E.U.T. Operation

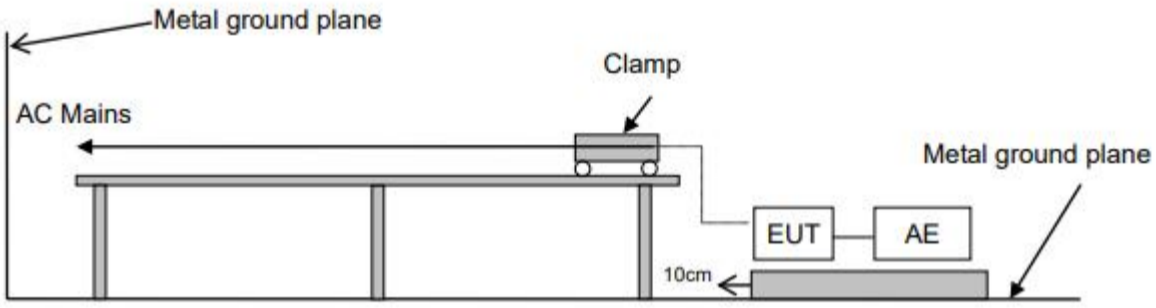
Operating Environment:

Temperature: 24 °C Humidity: 54 % RH Atmospheric Pressure: 1010 mbar

5.2.2 Test Mode Description

Test Mode: Normal working mode(Max Loading).

5.2.3 Test Setup Diagram



5.2.4 Measurement Procedure and Data

The EUT is placed on the ground and away from other metallic surface at least 0.4m. It is connected to the power mains through an extension cord of 6m min. The absorber clamp clamps the cord and moves from the far end to the EUT to measure the disturbing energy emitted from the cord.

The bandwidth of the test receiver is set at 120kHz.

All the test results are listed in Section 6.6.

The frequency spectrum from 30 MHz to 300 MHz is investigated.

As the peak value is too low against the limit, so the quasi-peak value and average value have omitted. All the scanning waveforms are attached in **Appendix II**

5.3 Radiated Emissions

Test Requirement: EN 55032:2015/A11:2020

Test Method: EN 55032:2015/A11:2020

Limit:

30MHz- 230MHz: 40dBuV/m quasi-peak

230MHz- 1000MHz: 47dBuV/m quasi-peak

Detector: Peak for pre-scan (120kHz resolution bandwidth) 30MHz to 1000MHz

5.3.1 E.U.T. Operation

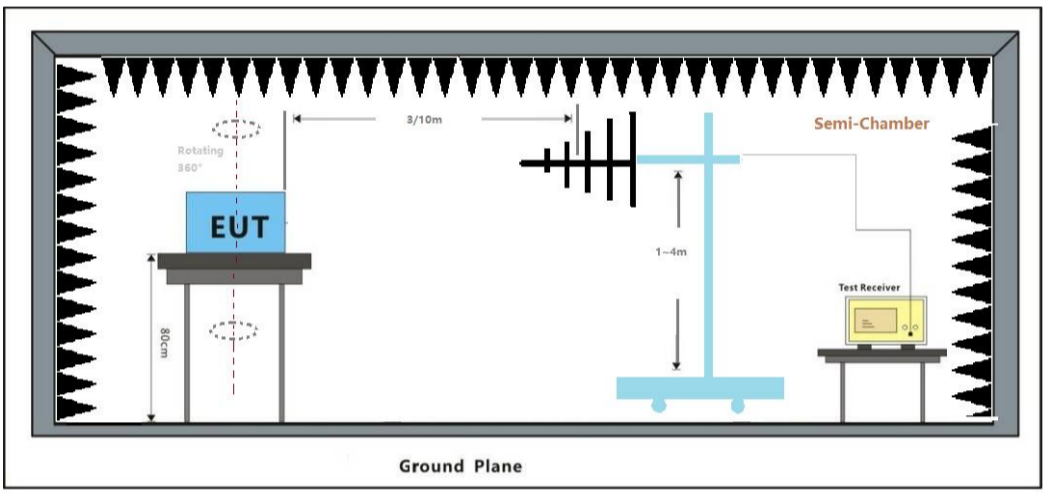
Operating Environment:

Temperature: 22.0 °C Humidity: 52 % RH Atmospheric Pressure: 1010 mbar

5.3.2 Test Mode Description

Test Mode: Normal working mode(Max Loading).

5.3.3 Test Setup Diagram



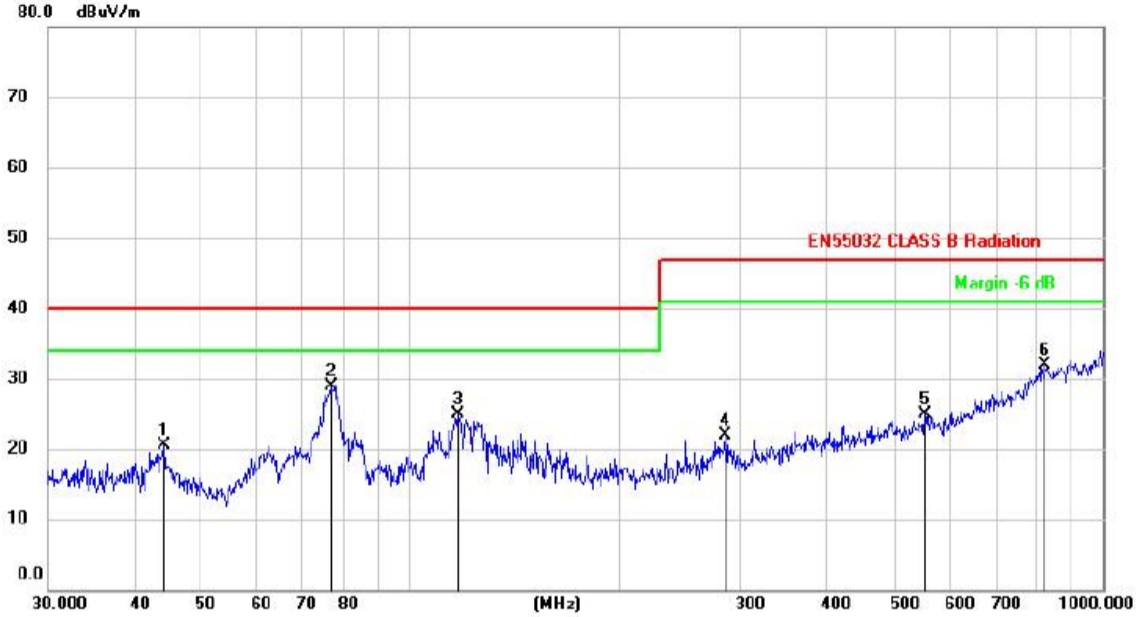
5.3.4 Measurement Procedure and Data

Frequency Range: 30MHz to 1000MHz

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

Measured Level = Read level + Cable Loss + Ant Factor- Pre-amp

Polarization: Horizontal



Site Chamber #1
Limit: EN55032 CLASS B Radiation
EUT:
M/N:
Mode:
Note:

Polarization: *Horizontal*
Power:
Distance:

Temperature: 26
Humidity: 55 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		44.1202	17.13	3.29	20.42	40.00	-19.58	QP			
2	*	76.7808	27.84	1.05	28.89	40.00	-11.11	QP			
3		116.9495	21.12	3.81	24.93	40.00	-15.07	QP			
4		284.9767	15.29	6.60	21.89	47.00	-25.11	QP			
5		552.8832	13.15	11.76	24.91	47.00	-22.09	QP			
6		824.5968	13.96	18.01	31.97	47.00	-15.03	QP			

Note: Measurement Level = Reading Level + Correct Factor

Polarization: Vertical



Site Chamber #1
Limit: EN55032 CLASS B Radiation
EUT:
M/N:
Mode:
Note:

Polarization: *Vertical*
Power:
Distance:

Temperature: 26
Humidity: 55 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		44.1202	28.87	3.33	32.20	40.00	-7.80	QP			
2	*	75.7114	34.62	1.15	35.77	40.00	-4.23	QP			
3		126.7723	30.08	3.75	33.83	40.00	-6.17	QP			
4		173.8135	25.75	2.49	28.24	40.00	-11.76	QP			
5		373.3112	13.33	9.57	22.90	47.00	-24.10	QP			
6		706.6999	14.15	13.72	27.87	47.00	-19.13	QP			

Note: Measurement Level = Reading Level + Correct Factor

5.4 Voltage Fluctuations and Flicker

Test Requirement: EN 55035:2017/A1:2020

Test Method: EN 55035:2017/A1:2020

5.4.1 E.U.T. Operation

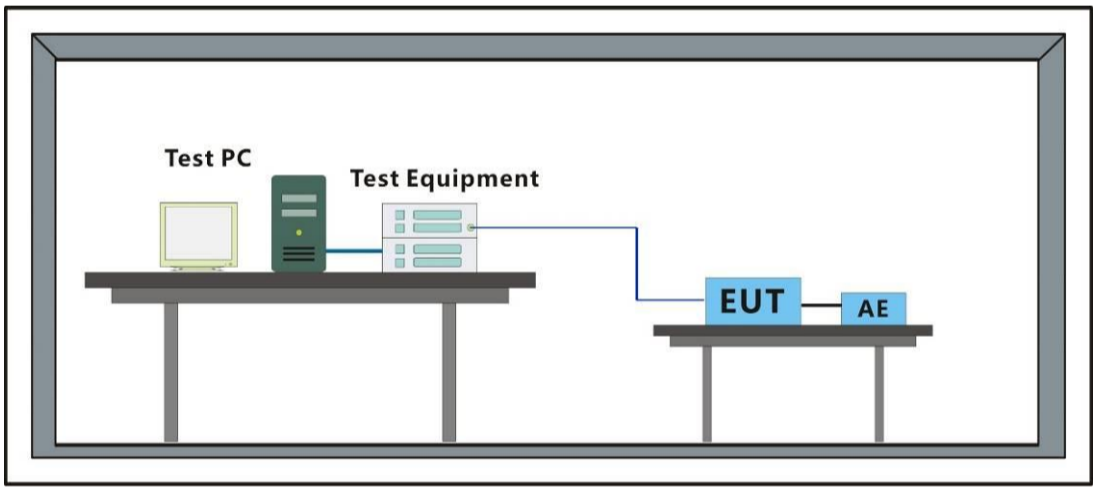
Operating Environment:

Temperature: 25.6 °C Humidity: 65.6 % RH Atmospheric Pressure: 1010 mbar

5.4.2 Test Mode Description

Test Mode: Normal working mode(Max Loading).

5.4.3 Test Setup Diagram



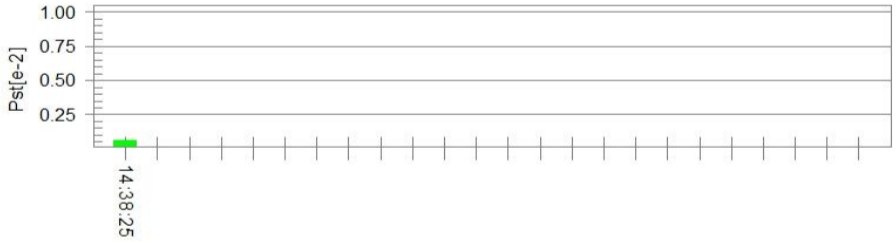
5.4.4 Measurement Procedure and Data

Flicker Test Summary per EN/IEC61000-3-3 (Run time)

Test category: dt,dmax,dc and Pst (European limits) **Test Margin: 100**
Test duration (min): 10

Test Result: Pass **Status: Test Completed**

Pst, and limit line **European Limits**



Parameter values recorded during the test:

Vrms at the end of test (Volt):	**230.06**			
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**

5.5 Harmonic Current Emission

Test Requirement: EN IEC 61000-3-2:2019/A1:2021

Test Method: EN IEC 61000-3-2:2019/A1:2021

Frequency Range: 100Hz to 2kHz

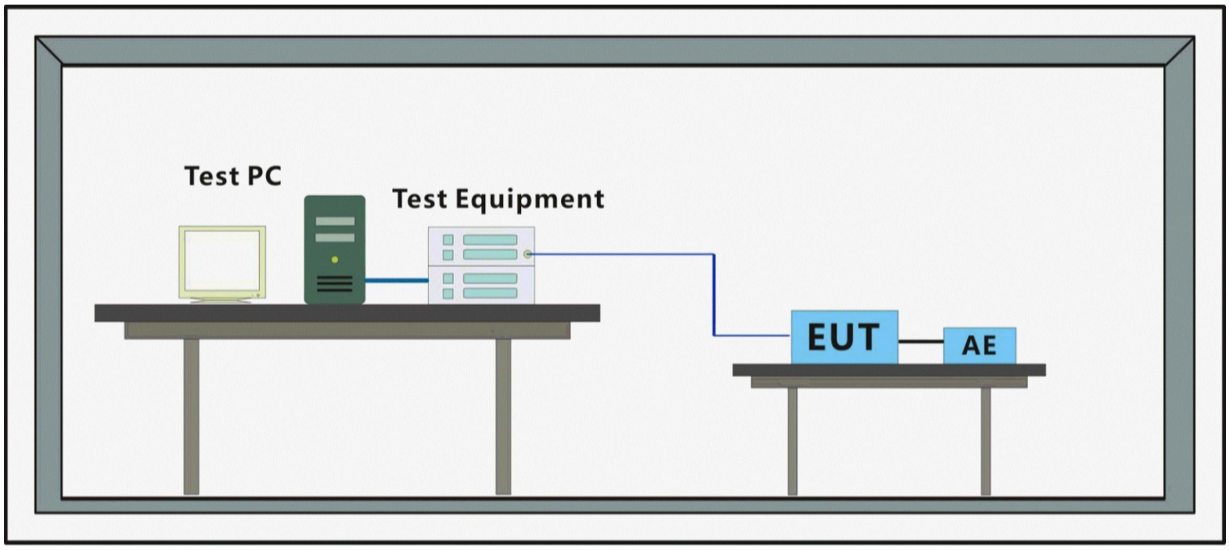
5.5.1 E.U.T. Operation

Operating Environment:

Temperature: / °C Humidity: / % RH Atmospheric Pressure: / mbar

Test Mode: Normal working mode(Max Loading).

5.5.2 Test Setup Diagram



5.5.3 Measurement Data

Ha	Entire measurement (0.320 s = 1 time window(s))						Worst 2.5 min		Average		PASS	FAIL
	Maximum	Window	EN61000-3-2 Class D 50W	Margin in MaxWin	100 to 150%	Ex-ceeded	100 to 150%	Ex-ceeded	Value	Ex-ceeded		
DC	0.0012 A	1	--	--	0	0	n.e.	n.e.	-0.0012 A	0	X	
1	0.2989 A	1	--	--	0	0	n.e.	n.e.	0.2989 A	0	X	
2	0.0002 A	1	--	--	0	0	n.e.	n.e.	0.0002 A	0	X	
3	0.0418 A	1	0.2239 A	81.3 %	0	0	n.e.	n.e.	0.0418 A	0	X	
4	0.0001 A	1	--	--	0	0	n.e.	n.e.	0.0001 A	0	X	
5	0.0263 A	1	0.1251 A	78.9 %	0	0	n.e.	n.e.	0.0263 A	0	X	
6	0.0000 A	1	--	--	0	0	n.e.	n.e.	0.0000 A	0	X	
7	0.0141 A	1	0.0658 A	78.6 %	0	0	n.e.	n.e.	0.0141 A	0	X	
8	0.0000 A	1	--	--	0	0	n.e.	n.e.	0.0000 A	0	X	
9	0.0051 A	1	0.0329 A	84.4 %	0	0	n.e.	n.e.	0.0051 A	0	X	
10	0.0000 A	1	--	--	0	0	n.e.	n.e.	0.0000 A	0	X	
11	0.0007 A	1	0.0230 A	97.1 %	0	0	n.e.	n.e.	0.0007 A	0	X	
12	0.0001 A	1	--	--	0	0	n.e.	n.e.	0.0001 A	0	X	
13	0.0029 A	1	0.0195 A	85.1 %	0	0	n.e.	n.e.	0.0029 A	0	X	
14	0.0000 A	1	--	--	0	0	n.e.	n.e.	0.0000 A	0	X	
15	0.0033 A	1	0.0169 A	80.3 %	0	0	n.e.	n.e.	0.0033 A	0	X	
16	0.0000 A	1	--	--	0	0	n.e.	n.e.	0.0000 A	0	X	
17	0.0039 A	1	0.0149 A	73.9 %	0	0	n.e.	n.e.	0.0039 A	0	X	
18	0.0000 A	1	--	--	0	0	n.e.	n.e.	0.0000 A	0	X	
19	0.0018 A	1	0.0133 A	86.9 %	0	0	n.e.	n.e.	0.0018 A	0	X	
20	0.0000 A	1	--	--	0	0	n.e.	n.e.	0.0000 A	0	X	
21	0.0016 A	1	0.0121 A	86.7 %	0	0	n.e.	n.e.	0.0016 A	0	X	
22	0.0000 A	1	--	--	0	0	n.e.	n.e.	0.0000 A	0	X	
23	0.0015 A	1	0.0110 A	86.4 %	0	0	n.e.	n.e.	0.0015 A	0	X	
24	0.0000 A	1	--	--	0	0	n.e.	n.e.	0.0000 A	0	X	
25	0.0023 A	1	0.0101 A	77.5 %	0	0	n.e.	n.e.	0.0023 A	0	X	
26	0.0000 A	1	--	--	0	0	n.e.	n.e.	0.0000 A	0	X	
27	0.0019 A	1	0.0094 A	80.0 %	0	0	n.e.	n.e.	0.0019 A	0	X	
28	0.0000 A	1	--	--	0	0	n.e.	n.e.	0.0000 A	0	X	
29	0.0017 A	1	0.0087 A	80.2 %	0	0	n.e.	n.e.	0.0017 A	0	X	
30	0.0001 A	1	--	--	0	0	n.e.	n.e.	0.0001 A	0	X	
31	0.0009 A	1	0.0082 A	88.5 %	0	0	n.e.	n.e.	0.0009 A	0	X	
32	0.0000 A	1	--	--	0	0	n.e.	n.e.	0.0000 A	0	X	
33	0.0015 A	1	0.0077 A	80.3 %	0	0	n.e.	n.e.	0.0015 A	0	X	
34	0.0000 A	1	--	--	0	0	n.e.	n.e.	0.0000 A	0	X	
35	0.0014 A	1	0.0072 A	80.3 %	0	0	n.e.	n.e.	0.0014 A	0	X	
36	0.0001 A	1	--	--	0	0	n.e.	n.e.	0.0001 A	0	X	
37	0.0013 A	1	0.0069 A	80.6 %	0	0	n.e.	n.e.	0.0013 A	0	X	
38	0.0001 A	1	--	--	0	0	n.e.	n.e.	0.0001 A	0	X	
39	0.0010 A	1	0.0065 A	84.3 %	0	0	n.e.	n.e.	0.0010 A	0	X	
40	0.0000 A	1	--	--	0	0	n.e.	n.e.	0.0000 A	0	X	

Note: The actual power is less than 75W.

6 Immunity Test Results

Performance Criteria Description

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.

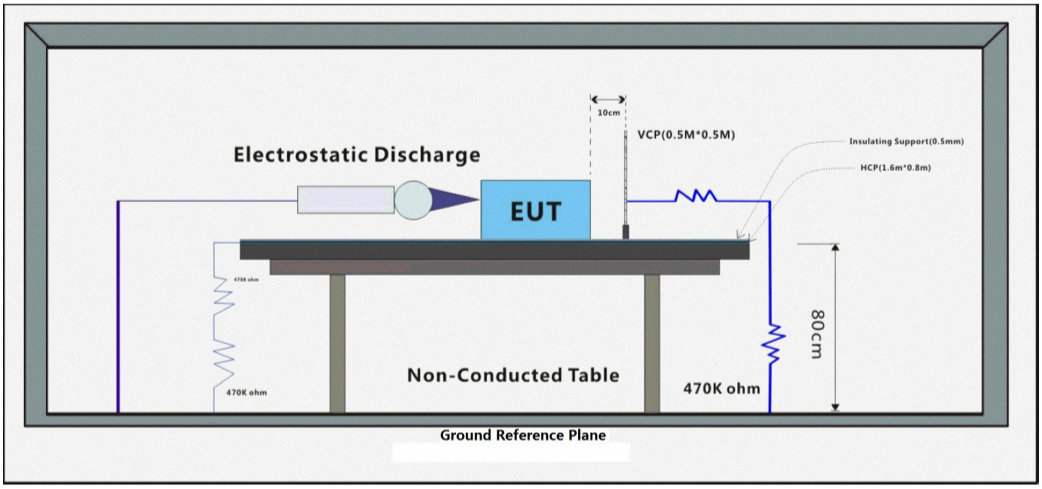
Criterion C: Temporary loss of function is allowed, provided the function is self recoverable or can be restored by the operation of the controls, or by any operation specified in the instructions for use.

6.1 Electrostatic Discharge

Test Requirement: EN 61000-4-2:2009

Test Method: EN 61000-4-2:2009

6.1.1 Test Setup Diagram



6.1.2 E.U.T. Operation

Operating Environment:

Temperature: 25.6 °C Humidity: 55.9 % RH Atmospheric Pressure: 1010 mbar

6.1.3 Test Mode Description

Test Mode: Normal working mode(Max Loading).

6.1.4 Test Condition and Results:

Performance Criterion: B

Discharge Impedance: 330 Ω / 150 pF

Discharge Voltage: Air Discharge: 8 kV; Contact Discharge:4 kV; VCP/HCP: 4 kV.

Polarity: Positive & Negative

Number of Discharge: Minimum 10 times at each test point

Discharge Mode: Single Discharge

Discharge Period: 1 second minimum

Test Point 1: All insulated enclosure & seams.

Test Point 2: All accessible metal parts of the enclosure.

Test Point 3: All sides.

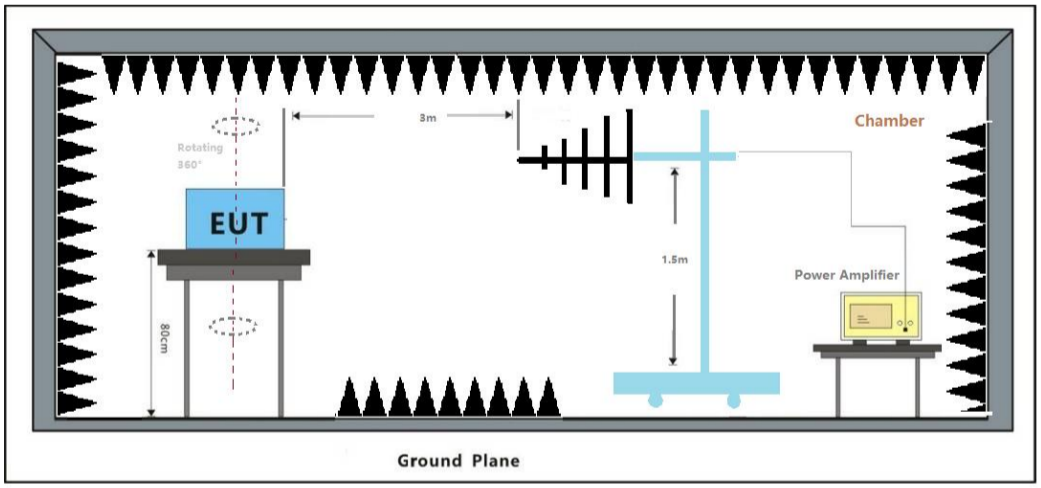
Discharge type	Level (kV)	Polarity	Test Point	Result / Observations
Air Discharge	8	+	1	A
Air Discharge	8	-	1	A
Contact Discharge	4	+	2	A
Contact Discharge	4	-	2	A
Horizontal Coupling	4	+	3	A
Horizontal Coupling	4	-	3	A
Vertical Coupling	4	+	3	A
Vertical Coupling	4	-	3	A
A: No degradation in the performance of the EUT was observed N/A:Not applicable				

6.2 Continuos RF Eletromagnetic field Disturbance

Test Requirement: EN 61000-4-2:2009

Test Method: EN IEC 61000-4-3:2020

2.1.1 Test Setup Diagram



6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 23.7 °C Humidity: 68.3 % RH Atmospheric Pressure: 1010 mbar

6.2.2 Test Mode Description

Test Mode: Normal working mode(Max Loading).

6.2.3 Test Condition and Results:

Performance Criterion: A

Step Size: 1%

Frequency Range: 80MHz to 2700MHz

Modulation: 80%, 1kHz Amplitude Modulation

80~2000MHz

Surface	Level (V/m)	Polarization	Dwell time	Result / Observations
AC power port	3	H&V	1s	A
AC power port	3	H&V	1s	A
AC power port	3	H&V	1s	A
AC power port	3	H&V	1s	A
A: No degradation in the performance of the EUT was observed				

2.0~2.7GHz

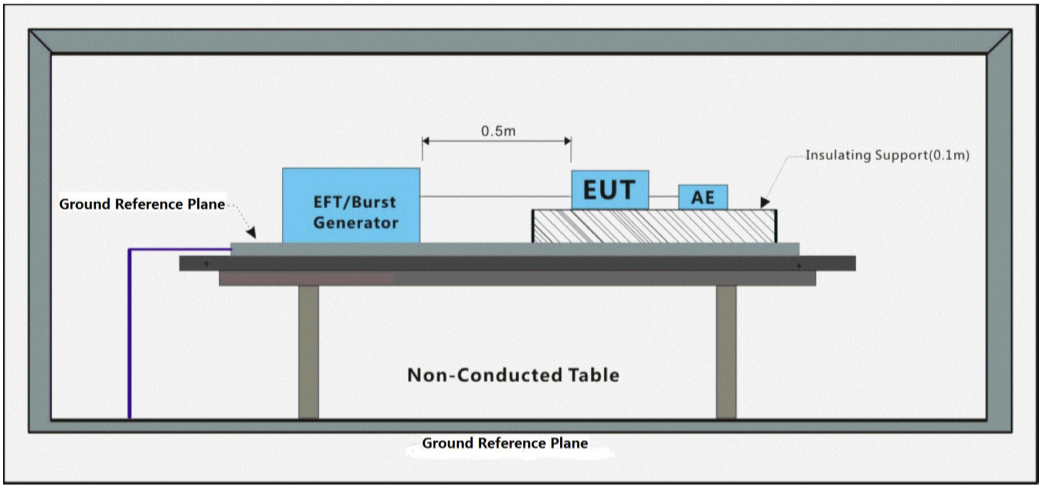
Surface	Level (V/m)	Polarization	Dwell time	Result / Observations
AC power port	1	H&V	1s	A
AC power port	1	H&V	1s	A
AC power port	1	H&V	1s	A
AC power port	1	H&V	1s	A
A: No degradation in the performance of the EUT was observed				

6.3 Electrical Fast Transients Burst at AC Mains Power Port

Test Requirement: EN 61000-4-4:2012

Test Method: EN 61000-4-4:2012

6.3.1 Test Setup Diagram



6.3.2 E.U.T. Operation

Operating Environment:

Temperature: 23.8 °C Humidity: 67.5 % RH Atmospheric Pressure: 1010 mbar

6.3.3 Test Mode Description

Test Mode: Normal working mode(Max Loading).

6.3.4 Test Condition and Results:

Performance Criterion: B

Repetition Frequency: 5kHz

Burst Period: 300ms

Test Duration: 2 minute per level & polarity

Test Level: 1.0kV

Polarity: Positive & Negative

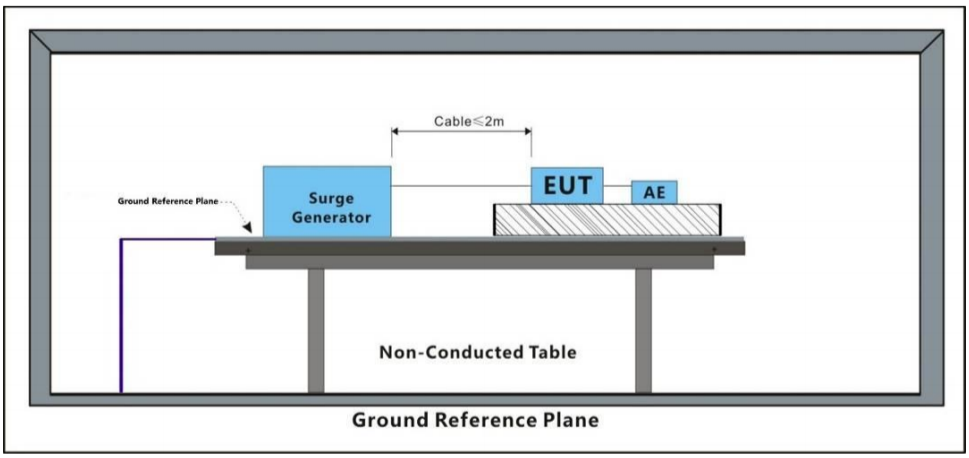
Test Line	Level (kV)	Polarity	CDN/Clamp	Result / Observations
AC power port	1	+	CDN	A
AC power port	1	-	CDN	A
A: No degradation in the performance of the EUT was observed				

6.4 Surge at AC Mains Power Port

Test Requirement: EN 61000-4-5:2014+A1:2017

Test Method: EN 61000-4-5:2014+A1:2017

6.4.1 Test Setup Diagram



6.4.2 E.U.T. Operation

Operating Environment:

Temperature: 23.7 °C Humidity: 68.4 % RH Atmospheric Pressure: 1010 mbar

6.4.3 Test Mode Description

Test Mode: Normal working mode(Max Loading).

6.4.4 Test Condition and Results:

Performance Criterion: B
Interval: 60s between each surge
Test Level: ±1kV Live to Neutral; ±2kV Live, Neutral to Earth
Polarity: Positive & Negative
Generator source impedance: 2Ω
Trigger Mode: Internal
No. of surges: 5 positive at 90°, 5 negative at 270°.

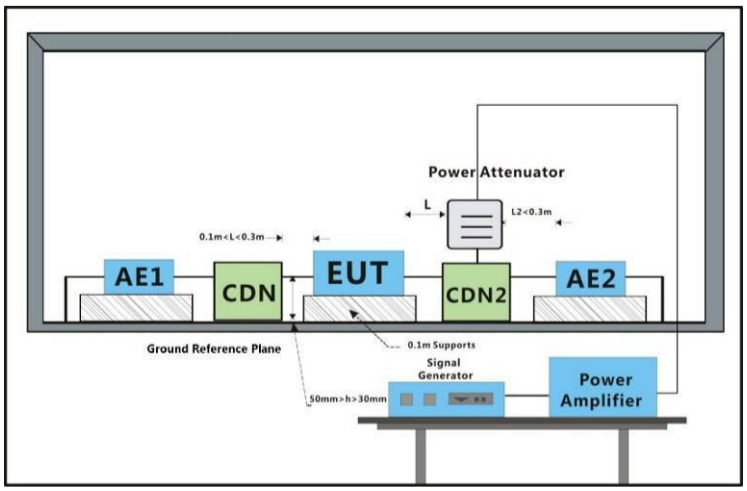
Test Line	Level (kV)	Polarity	Phase (deg)	Result / Observations
L-N	1	+	0°,90°,180°,270°	A
L-N	1	-	0°,90°,180°,270°	A
L-E	2	+	0°,90°,180°,270°	A
L-E	2	-	0°,90°,180°,270°	A
N-E	2	+	0°,90°,180°,270°	A
N-E	2	-	0°,90°,180°,270°	A
A: No degradation in the performance of the EUT was observed				

6.5 Conducted Immunity at AC Mains Power Port (150kHz-80MHz)

Test Requirement: EN 61000-4-6:2014

Test Method: EN 61000-4-6:2014

2.1.2 Test Setup Diagram



6.5.1 E.U.T. Operation

Operating Environment:

Temperature: 23.7 °C Humidity: 68.3 % RH Atmospheric Pressure: 1010 mbar

6.5.2 Test Mode Description

Test Mode: Normal working mode(Max Loading).

6.5.3 Test Condition and Results:

Performance Criterion: A

Step Size: 1%

Frequency Range: 0.15MHz to 230MHz

Modulation: 80%, 1kHz Amplitude Modulation

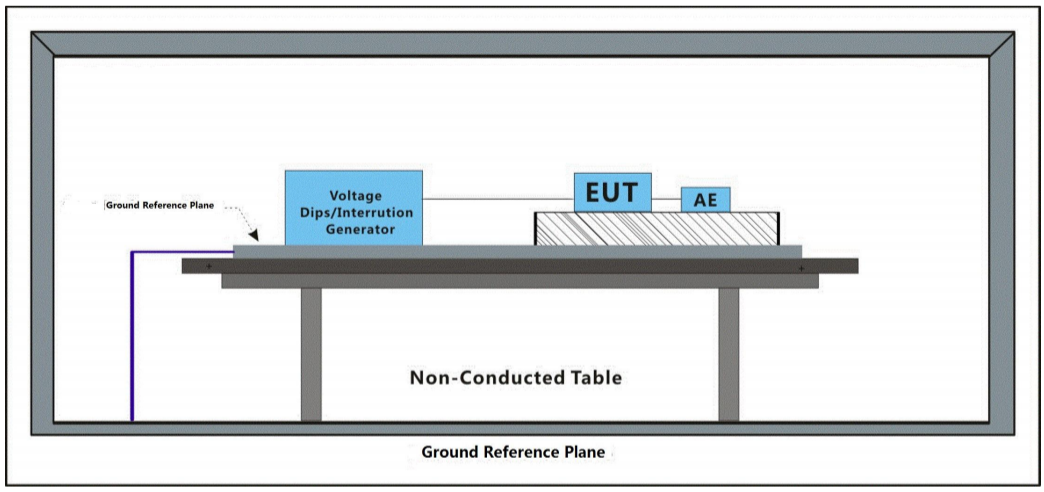
Cable Port	Level (Vrms)	CDN/Clamp	Dwell time	Result / Observations
AC power port	3	CDN	2s	A
A: No degradation in the performance of the EUT was observed				

6.6 Voltage Dips and Interruptions

Test Requirement: EN IEC 61000-4-11:2020

Test Method: EN IEC 61000-4-11:2020

6.6.1 Test Setup Diagram



6.6.2 E.U.T. Operation

Operating Environment:

Temperature: 23.8 °C Humidity: 68.3 % RH Atmospheric Pressure: 1010 mbar

6.6.3 Test Mode Description

Test Mode: Normal working mode(Max Loading).

6.6.4 Test Condition and Results:

Performance Criterion:

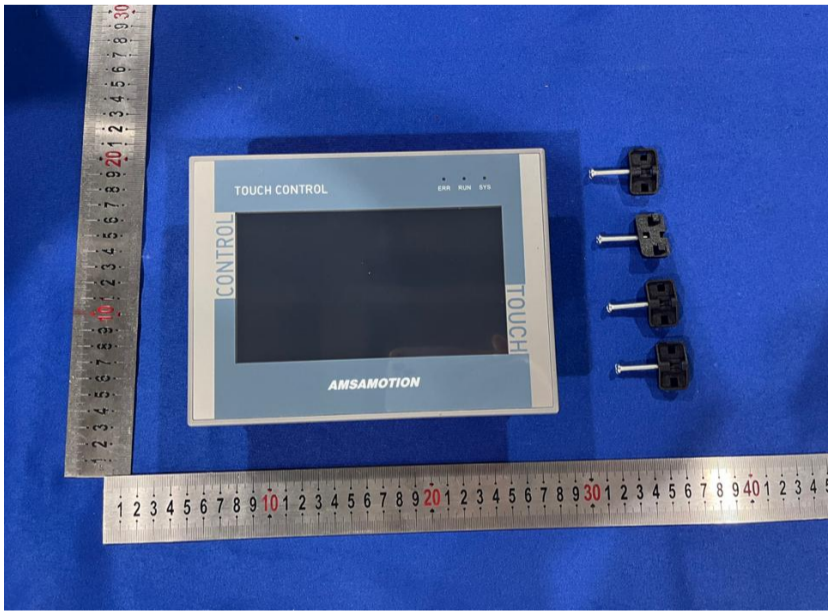
For 50Hz: 0% of UT (Rated Voltage) for 0.5 Cycle: C; 40% of UT for 10 Cycles: C; 70% of UT for 25 Cycles: C.

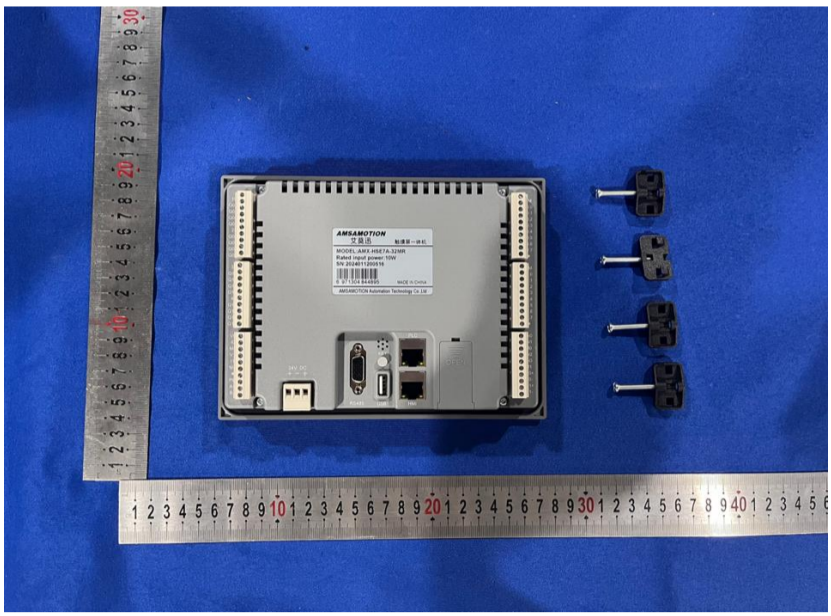
No. of Dips / Interruptions: 3 per Level

Time between dropout: 10s

Level % UT	Phase (deg)	Duration	No. of Dips / Interruptions	Result / Observations
0	0°	0.5 Cycle for 50Hz	3	A
0	180°	0.5 Cycle for 50Hz	3	A
40	0°	10 Cycles for 50Hz	3	A
40	180°	10 Cycles for 50Hz	3	A
70	0°	25 Cycles for 50Hz	3	A
70	180°	25 Cycles for 50Hz	3	A
A: No degradation in the performance of the EUT was observed				

7 EUT Constructional Details (EUT Photos)





--End of the report--