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

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

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

TEST REPORT

Application No.:	GZEM1809005185LM
Applicant:	Blueview Elec-optic Tech Co., Ltd
Address of Applicant:	No.1000, Section 2, 2nd Konggang Road, Southwest Aviation Industrial Development
Manufacturer:	The same as applicant
Address of Manufacturer:	The same as applicant
Factory:	The same as applicant
Address of Factory:	The same as applicant
Equipment Under Test (EUT):	
EUT Name:	AC Rigid Bar
Model No.:	A1-1226, A1-1022, A1-0619, A3 3.0-1226, A3 3.0-1022, A3 3.0-0619 ¤
¤	Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Trade Mark:	Blueview
Standard(s) :	EN 55015:2013 +A1:2015
	EN 61000-3-2:2014
	EN 61000-3-3:2013
	EN 61547:2009
Date of Receipt:	2018-09-06
Date of Test:	2018-09-10 to 2018-09-14
Date of Issue:	2018-09-20
Test Result:	**Pass***

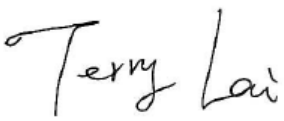
* In the configuration tested, the EUT complied with the standards specified above.

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.

Kobe Jian
Lab 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.

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		2018-09-20		Original

Authorized for issue by:				
Tested By		 **Damon_Guan /Project Engineer**		2018-09-10 to 2018-09-14 **Date**
Checked By		 **Terry_Lai /Reviewer**		2018-09-20 **Date**

2 Test Summary

Emission Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
Conducted Emissions at Mains Terminals (9kHz-30MHz)	EN 55015:2013 +A1:2015	EN 55015:2013 +A1:2015	N/A	Pass
Radiated Emissions (Magnetic field Induced Current) (9kHz-30MHz)	EN 55015:2013 +A1:2015	EN 55015:2013 +A1:2015	N/A	Pass
Harmonic Current Emission	EN 61000-3-2:2014	EN 61000-3-2:2014	Class C	Pass
Voltage Fluctuations and Flicker	EN 61000-3-3:2013	EN 61000-3-3:2013	Clause 5 of EN 61000-3-3	Pass
Conducted RF Emission Test for CDN method	EN 55015:2013 +A1:2015	EN 55015:2013 +A1:2015	N/A	Pass

N/A: Not applicable

Immunity Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
Electrostatic Discharge	EN 61547:2009	EN 61000-4-2:2009	4kV Contact Discharge 8kV Air Discharge	Pass
Radiated Immunity (80MHz-1GHz)	EN 61547:2009	EN 61000-4-3:2006 +A1:2008+A2:2010	3V/m, 80%, 1kHz Amp. Mod.	Pass
Electrical Fast Transients/Burst at Power Port	EN 61547:2009	EN 61000-4-4:2012	1kV 5/50ns Tr/Td 5kHz Repetition Frequency	Pass
Surge at Power Port	EN 61547:2009	EN 61000-4-5:2014	1.2/50μs Tr/Td 0.5kV Line to Line	Pass
Conducted Immunity at Power Port (150kHz-80MHz)	EN 61547:2009	EN 61000-4-6:2014	3Vrms (emf),80%,1kHz Amp. Mod.	Pass
Voltage Dips and Interruptions	EN 61547:2009	EN 61000-4-11:2004	0 % UT for 0.5 cycles 70 % UT for 10 cycles UT is Supply Voltage	Pass

N/A: Not applicable

¤ Declaration of EUT Family Grouping:

Model No.: A1-1226, A1-1022, A1-0619, A3 3.0-1226, A3 3.0-1022, A3 3.0-0619

According to the declaration from the applicant, the electrical circuit design, layout, components used and internal wiring were identical for all models, with only difference on the rated power, model name and colour.

Therefore only one model A1-1226 with maximum rated power(12W) was tested in this report.

3 Contents

4 General Information

4.1 Details of E.U.T.

Power Supply: AC 220-240V 50/60Hz 12W
Test Voltage: AC 230V
Cable: About 0.3m x 2 wires unscreened AC mains cable.
About 0.8m x 2 wires unscreened AC mains cable supplied by SGS.

4.2 Description of Support Units

The EUT has been tested as an independent unit.

4.3 Measurement Uncertainty

EMC

No.	Item	Measurement Uncertainty
1	Conducted Disturbance Voltage at Mains Terminals	±3.63dB (9kHz to 150kHz)
		±3.22dB (150kHz to 30MHz)
2	Disturbance Power	±3.78dB
3	Radiated Emissions	±5.0dB (30MHz-1GHz)
		±5.0dB (1GHz-6GHz)
4	Radiated Immunity	±2.18dB(80MHz-3GHz)
5	Conducted Immunity	±3.5dB(150kHz-230MHz)
6	Electrostatic Discharge	±6 %
7	EFT (Electrical Fast Transients)	±4 %
8	Surge Immunity	±6%
9	Voltage Dips and Interruptions	±4 %
10	CISPR 20 Immunity	±1.5dB
11	Temperature	±0.4℃
12	Humidity	±1.3%
13	DC power	±0.5 %

4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,
198 Kezhu Road, Scientech 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 Recognized 2.948 Listed Test Firm(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.

- **FCC Recognized Accredited Test Firm(Registration No.: 486818)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: CN5016, Test Firm Registration Number: 486818, Jul 13, 2017.

- **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: LED lighting of the EUT.

5 Equipment List

Conducted Emissions at Mains Terminals (9kHz-30MHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Shielding Room	Zhong Yu	8m x 3m x 3.8m	EMC0306	N/A	N/A
Two-Line V-Netwok	R&S	ENV216	EMC0118	2018-01-19	2019-01-18
LISN	SCHAFFNER CHASE	MN2050D/1	EMC0102	2017-09-20	2018-09-19
EMI Test Receiver	Rohde & Schwarz	ESCS30	EMC0506	2017-11-27	2018-11-26
Coaxial Cable	HangTianXing	2m	EMC0107	2017-07-23	2019-07-22
Voltage Probe	SGS	N/A	EMC0106	2018-04-04	2020-04-03
Conical Metal Housing	SGS-EMC	N/A	EMC0167	2018-04-19	2020-04-18
Test Software E3c	Audix	Ver. 5.4.1221b	GZE100-62	N/A	N/A

Radiated Emissions (Magnetic field Induced Current) (9kHz-30MHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Loop Antenna	Laplace Instruments	RF300	EMC0701	2017-03-20	2019-03-19
EMI Test Receiver	Rohde & Schwarz	ESCS30	EMC0506	2017-11-27	2018-11-26
Test Software E3c	Audix	Ver. 5.4.1221b	GZE100-62	N/A	N/A

Voltage Fluctuations and Flicker					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
AC Power Source	California	50001iX	EMC0608	2018-04-08	2019-04-08
Power Analyzer	California	PACS	EMC0607	2018-04-08	2019-04-08
Test Software CTS4	California	Ver 4.14.0	GZE100-66	N/A	N/A

Electrostatic Discharge					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
ESD Simulator	TESEQ AG	NSG 435	EMC2071	2018-03-07	2019-03-06
ESD Ground Plane	SGS	3m x 3m	EMC0804	N/A	N/A
Temperature & Humidity	Shanghai Meteorological Instrument Factory Co., Ltd.	ZJ1-2B	EMC0078	2018-07-05	2019-07-04

Radiated Immunity (80MHz-1GHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Compact 3m Semi-Anechoic Chamber	ChangZhou ZhongYu	N/A	EMC0525	2016-12-04	2019-12-03
Laser Probe Interface	RF Microwave Instrumentation	FI7000	EMC2089	N/A	N/A
Open Switch And Control Unit	R&S	OSP130	EMC2090	N/A	N/A
Broadband Amplifier(80MHz~1GHz/ 250W)	R&S	BBA150	EMC2091	2018-01-08	2019-01-07
Broadband Amplifier(800MHz~3GHz /110W)	R&S	BBA150	EMC2092	2018-01-08	2019-01-07
Signal Generator	R&S	SMB100A	EMC2093	2018-01-08	2019-01-07
Laser Probe	RF Microwave Instrumentation	FL7006	EMC2094	2018-02-24	2019-02-23
NRP-Z91 PowerSensor 6GHz	R&S	NPR-Z91	EMC2095	2018-01-08	2019-01-07
NRP-Z91 PowerSensor 6GHz	R&S	NPR-Z91	EMC2096	2018-01-08	2019-01-07
High-Gain Log-preiodicAntenna	R&S	HL046E	EMC2097	2016-02-15	2019-02-14
RI Cable	R&S	7m	EMC2098	2018-05-23	2019-05-22
Oscilloscope	Tektronix	TDS3052C	EMC2055	2018-01-08	2019-01-07
Monitor System	Mitsubish Corp.	M-0552AB	EMC0909	N/A	N/A
Test Software EMC32	Rohde & Schwarz	Ver. 9.26.00	GZE100-63	N/A	N/A

Electrical Fast Transients/Burst at Power Port					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
EMC Immunity Test System	TESEQ AG	NSG 3060CDN3061I NA 6	EMC2072	2018-01-08	2019-01-07
Oscilloscope	Tektronix	TDS3052C	EMC2055	2018-01-08	2019-01-07
Test Software WIN 3000	TESEQ AG	Ver 1.3.2	GZE100-68	N/A	N/A

Surge at Power Port					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Modular Impulse Surge Generator	EMC PARTNER	MIG0603EN	EMC2059	2018-01-08	2019-01-07
EMC Immunity Test System	TESEQ AG	NSG 3060CDN3061I NA 6	EMC2072	2018-01-08	2019-01-07
Oscilloscope	Tektronix	TDS3052C	EMC2055	2018-01-08	2019-01-07
Test Software WIN 3000	TESEQ AG	Ver 1.3.2	GZE100-68	N/A	N/A

Conducted Immunity at Power Port (150kHz-80MHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Test System Of CI	TESEQ AG	NSG 4070B-80	EMC2115	2018-07-04	2019-07-04
Test Software NSG4070_Ctrl1	TESEQ AG	Ver.1.3.0.1	GZE100-72	N/A	N/A
CDN S502A	TESEQ AG	CDN S502A	EMC2113	2017-06-19	2020-06-18
CDN ST08A	TESEQ AG	CDN ST08A	EMC2112	2017-07-03	2020-07-02
CDN USB3.0	TESEQ AG	CDN USB3.0	EMC2114	2017-06-19	2020-06-18
Dual Directional coupler	Werlatone Inc.	C1795	EMC1105	2018-06-01	2019-06-01
Oscilloscope	Tektronix	TDS3052C	EMC2055	2018-01-08	2019-01-07
CDN	Elektronik-Feinmechanik	L-801:M2/M3	EMC2048	2015-09-25	2018-09-24
CDN M2	Schaffner Chase	CDN-M2-16	EMC1107	2017-10-26	2020-10-25
Current Probe	Schaffner Chase	CIP9136	EMC1116	2017-10-26	2020-10-25
Current Probe	Schaffner Chase	CSP8445	EMC1117	2017-10-26	2020-10-25

Voltage Dips and Interruptions					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
EMC Immunity Test System	TESEQ AG	NSG 3060CDN3061I NA 6	EMC2072	2018-01-08	2019-01-07
Oscilloscope	Tektronix	TDS3052C	EMC2055	2018-01-08	2019-01-07
Test Software WIN 3000	TESEQ AG	Ver 1.3.2	GZE100-68	N/A	N/A

Conducted RF Emission Test for CDN method					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
CDN	Elektronik-Feinmechanik	L-801:AF2	EMC2047	2015-09-19	2018-09-18
CDN	Elektronik-Feinmechanik	L-801:M2/M3	EMC2048	2015-09-25	2018-09-24
6dB Attenuator	HP	8491A	EMC2062	2018-04-04	2020-04-03
Matching Pad	Rohde & Schwarz	RAM	EMC1704	2015-10-23	2018-10-22
Power Splitters	Shanghai Huaxiang	SHX-GF2-2-18N	EMC2118	2018-07-12	2019-07-11
Matching Pad	Shanghai Huaxiang	TZ2-3G	EMC2119	2018-07-20	2019-07-19
Matching Pad	Shanghai Huaxiang	TZ2-3G	EMC2120	2018-07-20	2019-07-19

General used equipment					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
DMM	Fluke	73	EMC0006	2018-07-20	2019-07-19
DMM	Fluke	73	EMC0007	2018-07-19	2019-07-18

6 Emission Test Results

6.1 Conducted Emissions at Mains Terminals (9kHz-30MHz)

Test Requirement:	EN 55015:2013 +A1:2015
Test Method:	EN 55015:2013 +A1:2015
Frequency Range:	9kHz to 30MHz
Limit:	
0.009MHz – 0.05MHz	110dB(μV) quasi-peak
0.05MHz – 0.15MHz	90dB(μV)-80dB(μV) quasi-peak
0.15MHz – 0.5MHz	66dB(μV)-56dB(μV) quasi-peak, 56dB(μV)-46dB(μV) average
0.5MHz – 5MHz	56dB(μV) quasi-peak, 46dB(μV) average
5MHz – 30MHz	60dB(μV) quasi-peak, 50dB(μV) average
Detector:	Peak for pre-scan (200Hz resolution bandwidth) 0.009M to 0.15MHz
	Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

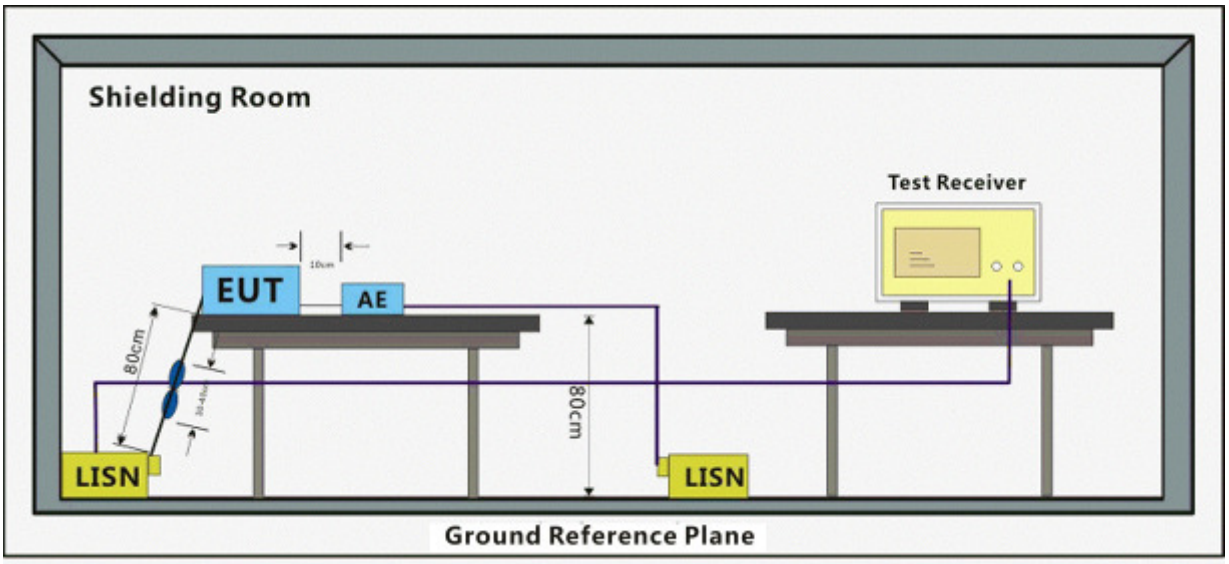
6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 22.9 °C Humidity: 52 % RH Atmospheric Pressure: 1020 mbar

Test mode a: Test the EUT in lighting mode.

6.1.2 Test Setup Diagram

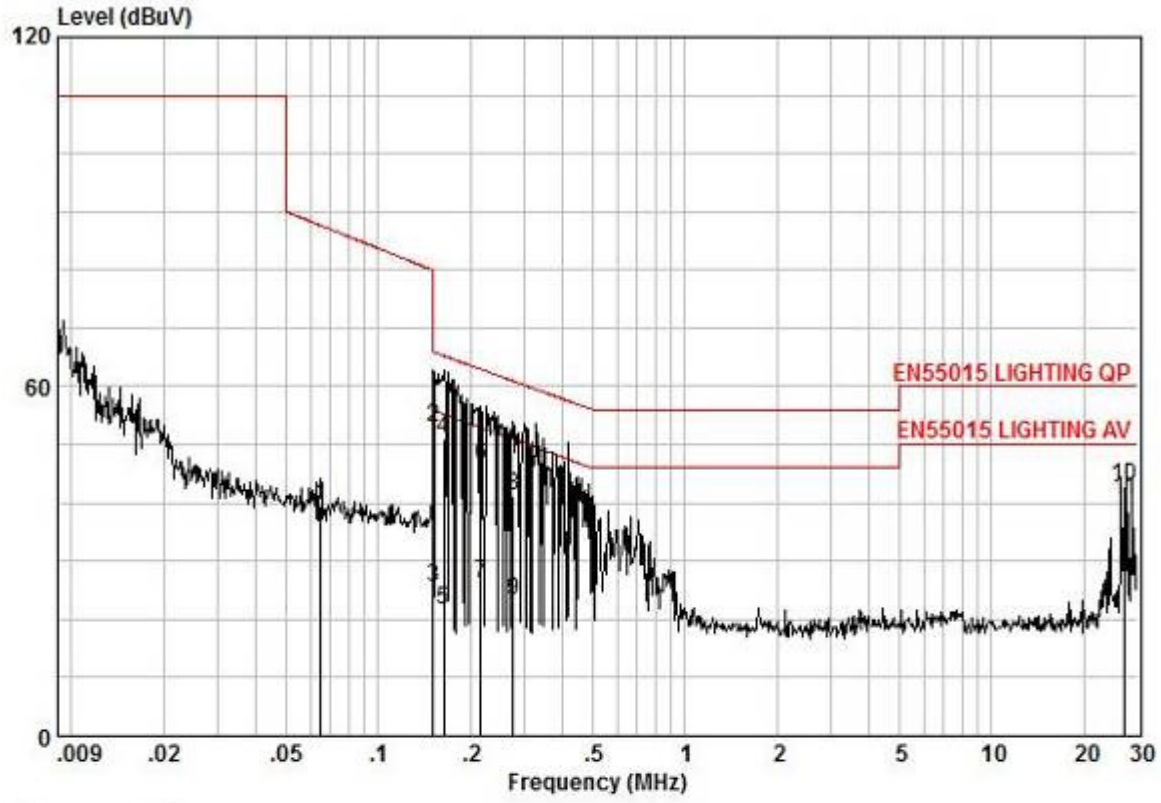


6.1.3 Measurement Data

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.

Measured Level = Read level + Cable Loss + LISN Factor

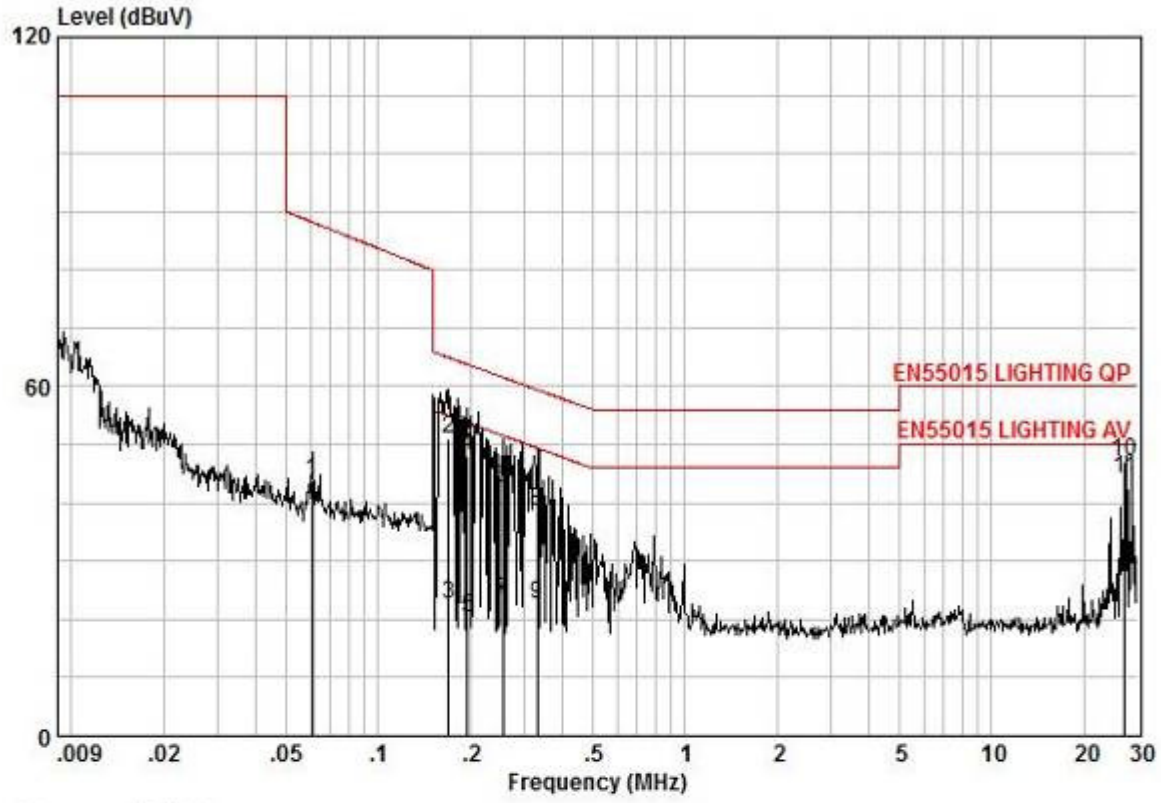
Mode:a; Line:Live Line



Pol :LIVE
No :
Model :

Frequency MHz	read level dBuV	Cable Loss dB	LISN Factor dB	Measured level dBuV	Limit Line dBuV	Over limit dB	Remark
0.06	29.80	0.10	9.60	39.50	87.63	-48.13	QP
0.15	43.27	0.10	9.46	52.83	65.91	-13.08	QP
0.15	15.78	0.10	9.46	25.34	55.91	-30.57	AVERAGE
0.16	41.48	0.10	9.51	51.09	65.25	-14.16	QP
0.16	12.13	0.10	9.51	21.74	55.25	-33.51	AVERAGE
0.22	36.86	0.11	9.62	46.59	62.96	-16.37	QP
0.22	16.27	0.11	9.62	26.00	52.96	-26.96	AVERAGE
0.28	31.44	0.14	9.63	41.21	60.94	-19.73	QP
0.28	13.44	0.14	9.63	23.21	50.94	-27.73	AVERAGE
27.16	32.64	0.62	9.63	42.88	60.00	-17.12	QP
27.16	30.34	0.62	9.63	40.58	50.00	-9.42	AVERAGE

Mode:a; Line:Neutral Line



Pol :NEUTRAL
No :
Model :

Frequency MHz	read level dBuV	Cable Loss dB	LISN Factor dB	Measured level dBuV	Limit Line dBuV	Over limit dB	Remark
0.06	34.08	0.10	9.53	43.71	88.22	-44.51	QP
0.17	41.44	0.10	9.47	51.01	64.99	-13.98	QP
0.17	13.11	0.10	9.47	22.68	54.99	-32.31	AVERAGE
0.20	38.50	0.10	9.57	48.17	63.80	-15.63	QP
0.20	10.73	0.10	9.57	20.40	53.80	-33.40	AVERAGE
0.25	32.94	0.13	9.58	42.65	61.60	-18.95	QP
0.25	13.64	0.13	9.58	23.35	51.60	-28.25	AVERAGE
0.33	28.78	0.15	9.57	38.50	59.44	-20.94	QP
0.33	12.76	0.15	9.57	22.48	49.44	-26.96	AVERAGE
27.16	36.94	0.62	9.69	47.25	60.00	-12.75	QP
27.16	33.86	0.62	9.69	44.17	50.00	-5.83	AVERAGE

6.2 Radiated Emissions (Magnetic field Induced Current) (9kHz-30MHz)

Test Requirement:	EN 55015:2013 +A1:2015
Test Method:	EN 55015:2013 +A1:2015
Frequency Range:	9kHz to 30MHz
Limit:	
0.009MHz-0.07MHz	88dB(μA) quasi-peak
0.07MHz-0.15MHz	88dB(μA)-58dB(μA) quasi-peak
0.15MHz-3MHz	58dB(μA)-22dB(μA) quasi-peak
3MHz-30MHz	22dB(μA) quasi-peak
Detector:	Peak for pre-scan (200Hz resolution bandwidth) 0.009M to 0.15MHz
	Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

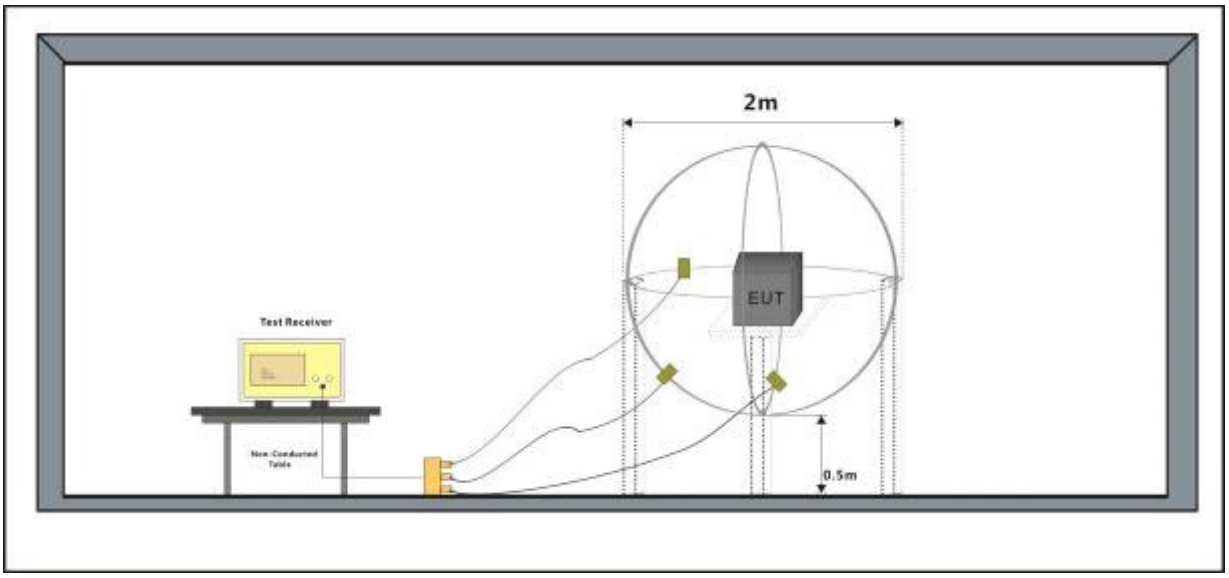
6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 22.9 °C Humidity: 52 % RH Atmospheric Pressure: 1020 mbar

Test mode a: Test the EUT in lighting mode.

6.2.2 Test Setup Diagram



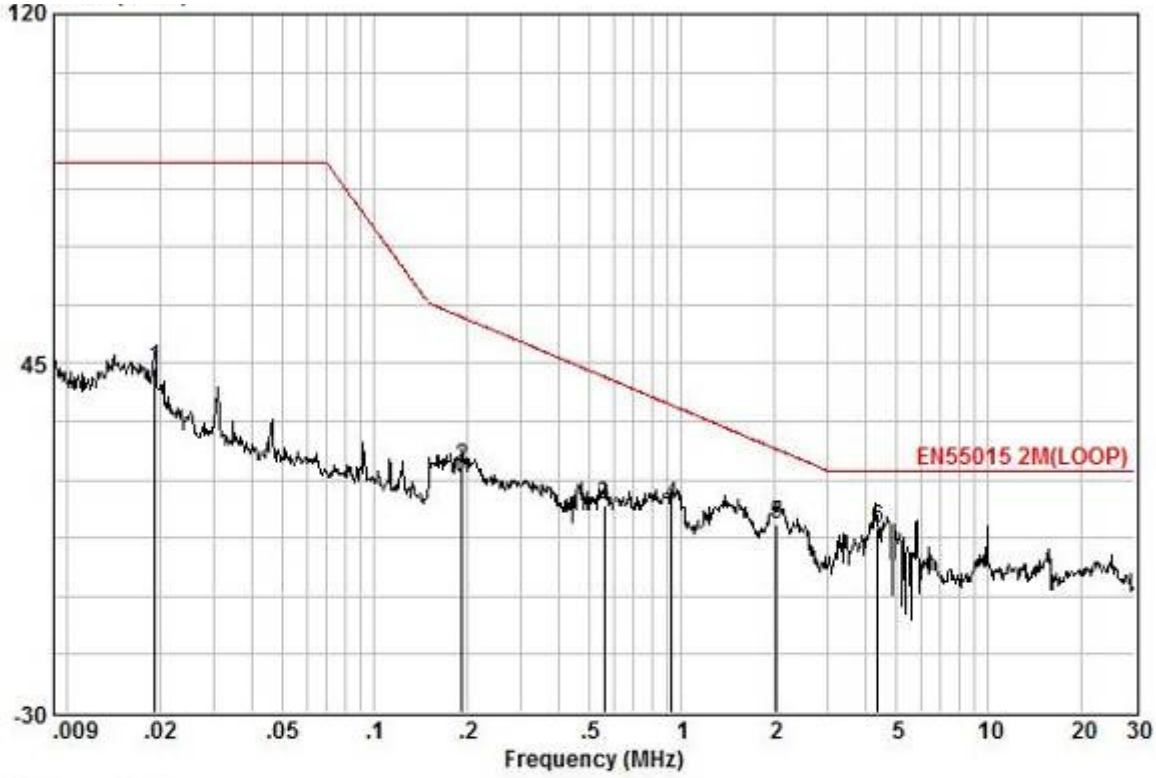
6.2.3 Measurement Data

An initial pre-scan was performed in the 2m loop antenna using the spectrum analyser in peak detection mode. The EUT was measured for X(A), Y(B), Z(C) polarities.

Measured Level = Read Level + Antenna Factor + Cable Loss

Mode:a; Axial:X

Level (dBµA)

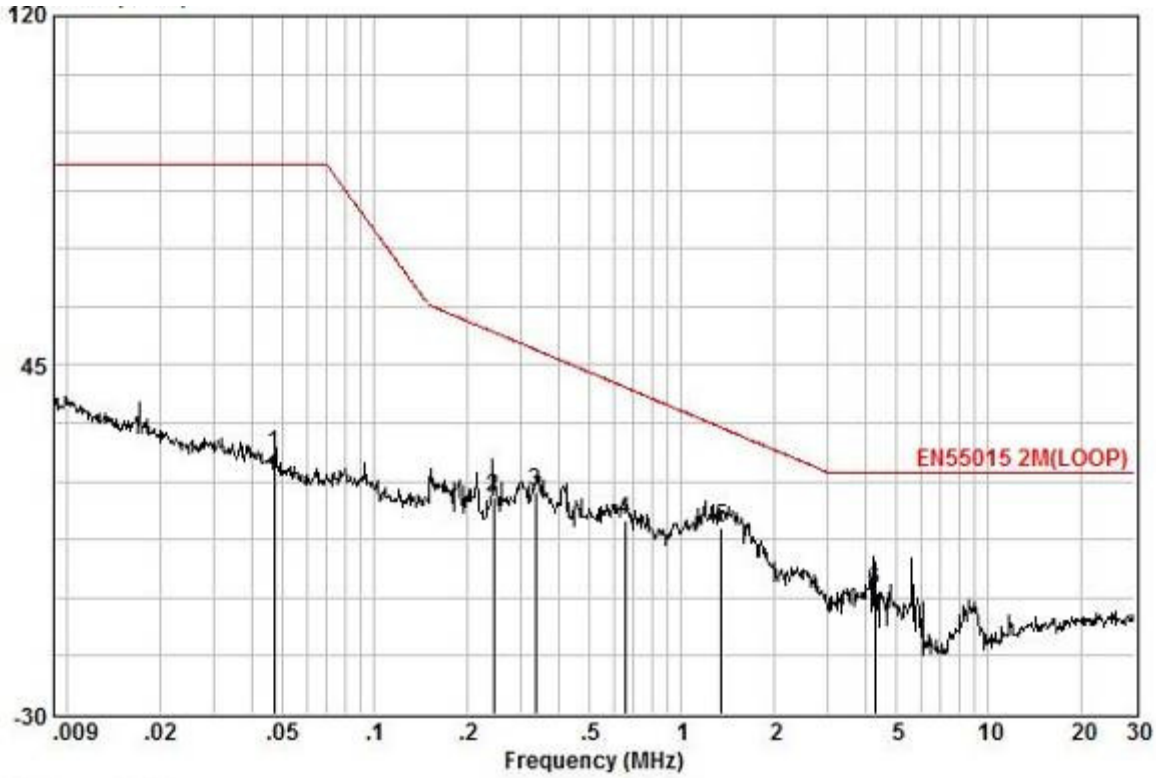


Loop : X
NO :
Model :

Frequency MHz	Read level dBuA	Cable Loss dB	Antenna Factor dB	Measured level dBuA	Limit Line dBuA	Over limit dB	Remark
0.019	42.39	0.31	1.28	43.97	88.00	-44.03	QP
0.193	39.59	0.24	-17.01	22.82	54.96	-32.14	QP
0.559	38.66	0.30	-24.46	14.50	42.19	-27.69	QP
0.932	40.45	0.28	-26.07	14.66	36.05	-21.39	QP
2.047	36.68	0.41	-26.69	10.40	26.60	-16.19	QP
4.352	36.71	0.54	-27.60	9.65	22.00	-12.35	QP

Mode:a; Axial:Y

Level (dBµA)

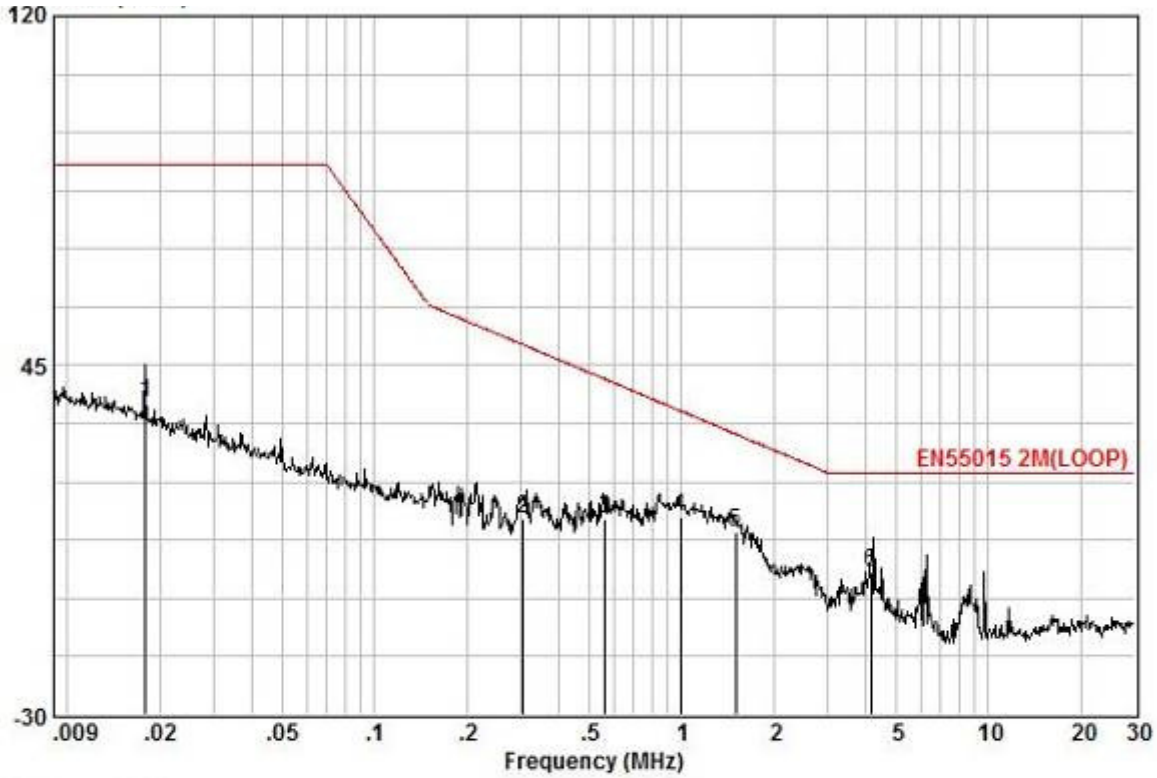


Loop : Y
NO :
Model :

Frequency MHz	Read level dBuA	Cable Loss dB	Antenna Factor dB	Measured level dBuA	Limit Line dBuA	Over limit dB	Remark
0.047	31.29	0.32	-5.76	25.85	88.00	-62.15	QP
0.244	35.22	0.28	-18.77	16.74	52.13	-35.40	QP
0.335	38.48	0.33	-21.13	17.68	48.33	-30.66	QP
0.657	36.20	0.33	-25.01	11.53	40.24	-28.72	QP
1.353	36.20	0.34	-26.47	10.07	31.57	-21.50	QP
4.282	23.28	0.54	-27.07	-3.25	22.00	-25.25	QP

Mode:a; Axial:Z

Level (dBµA)



Loop : Z
NO :
Model :

Frequency MHz	Read level dBuA	Cable Loss dB	Antenna Factor dB	Measured level dBuA	Limit Line dBuA	Over limit dB	Remark
0.018	34.67	0.30	2.03	37.01	88.00	-50.99	QP
0.304	32.02	0.33	-20.27	12.08	49.50	-37.43	QP
0.564	36.10	0.30	-24.38	12.02	42.09	-30.07	QP
0.994	38.42	0.28	-26.17	12.53	35.27	-22.75	QP
1.504	35.00	0.36	-26.29	9.07	30.30	-21.23	QP
4.145	27.12	0.53	-26.91	0.74	22.00	-21.26	QP

6.3 Harmonic Current Emission

Test Requirement: EN 61000-3-2:2014

Test Method: EN 61000-3-2:2014

Frequency Range: 100Hz to 2kHz

There is no need for harmonics tests to be performed on this product in accordance with EN 61000-3-2.

For further details, please refer to Annex C.5.3 of EN 61000-3-2 which states:

“Incandescent lamp luminaires which do not incorporate an electronic transformer or a dimming device are deemed to fulfil the harmonic current requirements and need not be tested.”

Remark :

Since the EUT was belong to exception of clause 7 and Annex C, according to EN 61000-3-2 figure 1, it was deemed to conform to the requirements of this standard without further testing.

“7 Harmonic current limits

The procedure for applying the limits and assessing the results is shown in Figure 1.

For the following categories of equipment, limits are not specified in this standard:

NOTE 1 Limits may be defined in a future amendment or revision of the standard.

– equipment with a rated power of 75 W or less, other than lighting equipment.

NOTE 2 This value may be reduced from 75 W to 50 W in the future, subject to approval by National Committees at that time.

– professional equipment with a total rated power greater than 1 kW;

– symmetrically controlled heating elements with a rated power less than or equal to 200 W.

– independent dimmers for incandescent lamps with a rated power less than or equal to 1 kW.

NOTE 3 See also C.5.3.”

and

No limit applies for LED lighting equipments with active input power ≤25 W except Discharge lighting equipment (refer to 7.3 b).

Kitchen machines as listed in the scope of IEC 60335-2-14 are deemed to conform to the harmonic current limits of this standard without further testing.

Please read clause 7 & Annex C of this standard for reference.

6.4 Voltage Fluctuations and Flicker

Test Requirement: EN 61000-3-3:2013

Test Method: EN 61000-3-3:2013

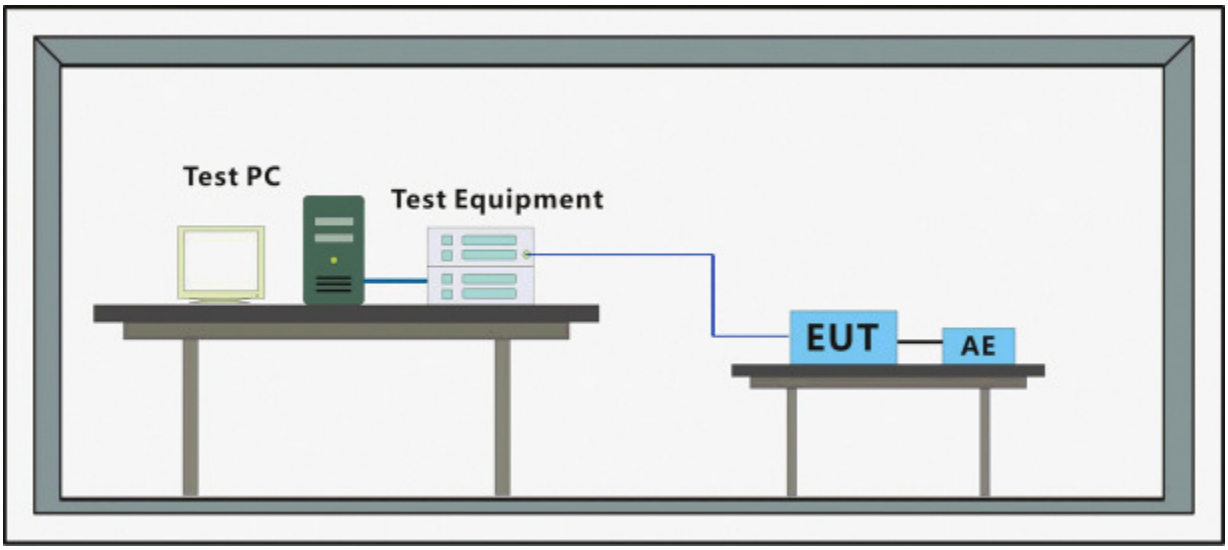
6.4.1 E.U.T. Operation

Operating Environment:

Temperature: 25.5 °C Humidity: 54.3 % RH Atmospheric Pressure: 1020 mbar

Test mode a: Test the EUT in lighting mode.

6.4.2 Test Setup Diagram



6.4.3 Measurement Data

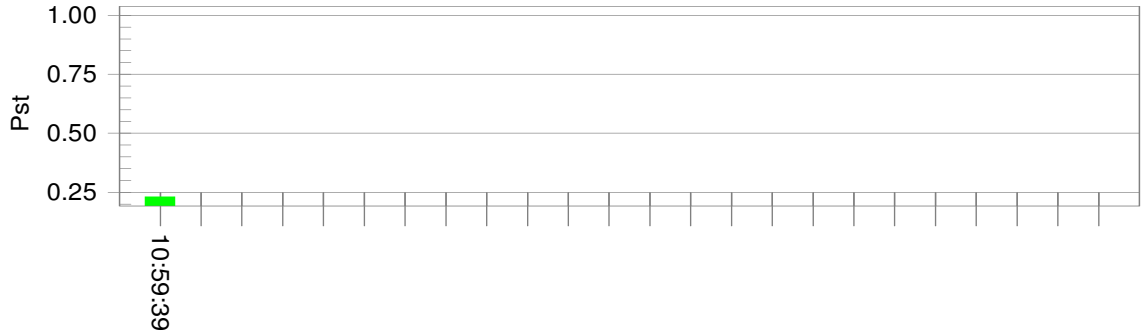
Mode:a

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_i and limit line **European Limits**



Parameter values recorded during the test:

Vrms at the end of test (Volt):	**229.97**			
Highest dt (%):	**0.00**	**Test limit (%):**	**N/A**	**N/A**
T-max (mS):	**0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**0.06**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.230**	**Test limit:**	**1.000**	**Pass**

6.5 Conducted RF Emission Test for CDN method

Test Requirement:	EN 55015:2013 +A1:2015
Test Method:	EN 55015:2013 +A1:2015
Frequency Range:	30MHz to 300MHz
Limit:	
30MHz-100MHz	64dB(μV)-54dB(μV) quasi-peak
100MHz-230MHz	54dB(μV) quasi-peak
230MHz-300MHz	61dB(μV) quasi-peak
Detector:	Peak for pre-scan Quasi-Peak for final test (120 kHz resolution bandwidth) 30MHz-300MHz

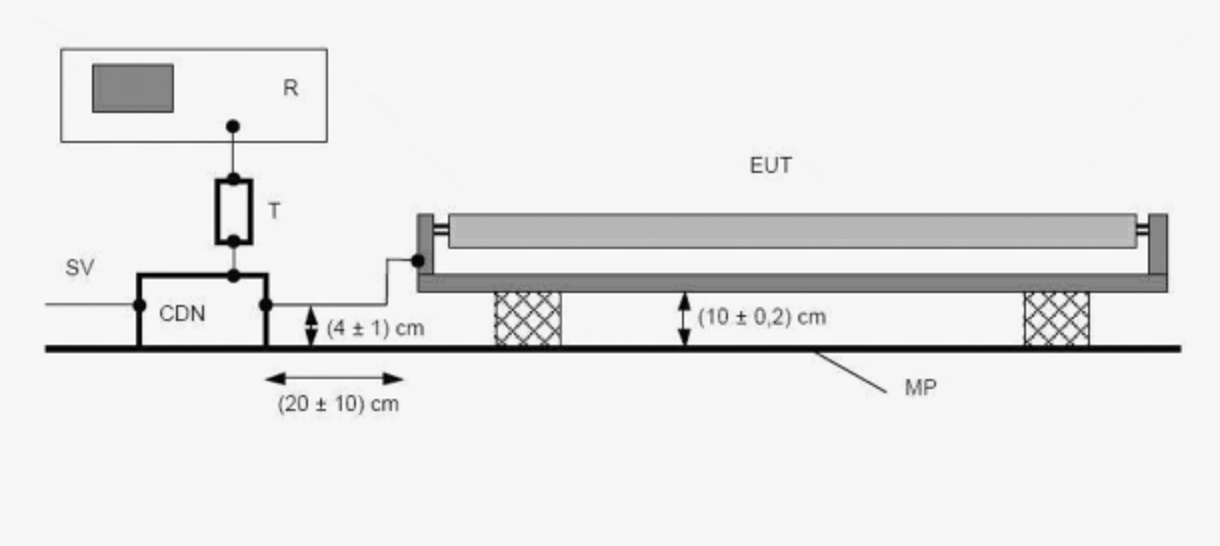
6.5.1 E.U.T. Operation

Operating Environment:

Temperature: 22.9 °C Humidity: 52 % RH Atmospheric Pressure: 1020 mbar

Test mode a: Test the EUT in lighting mode.

6.5.2 Test Setup Diagram

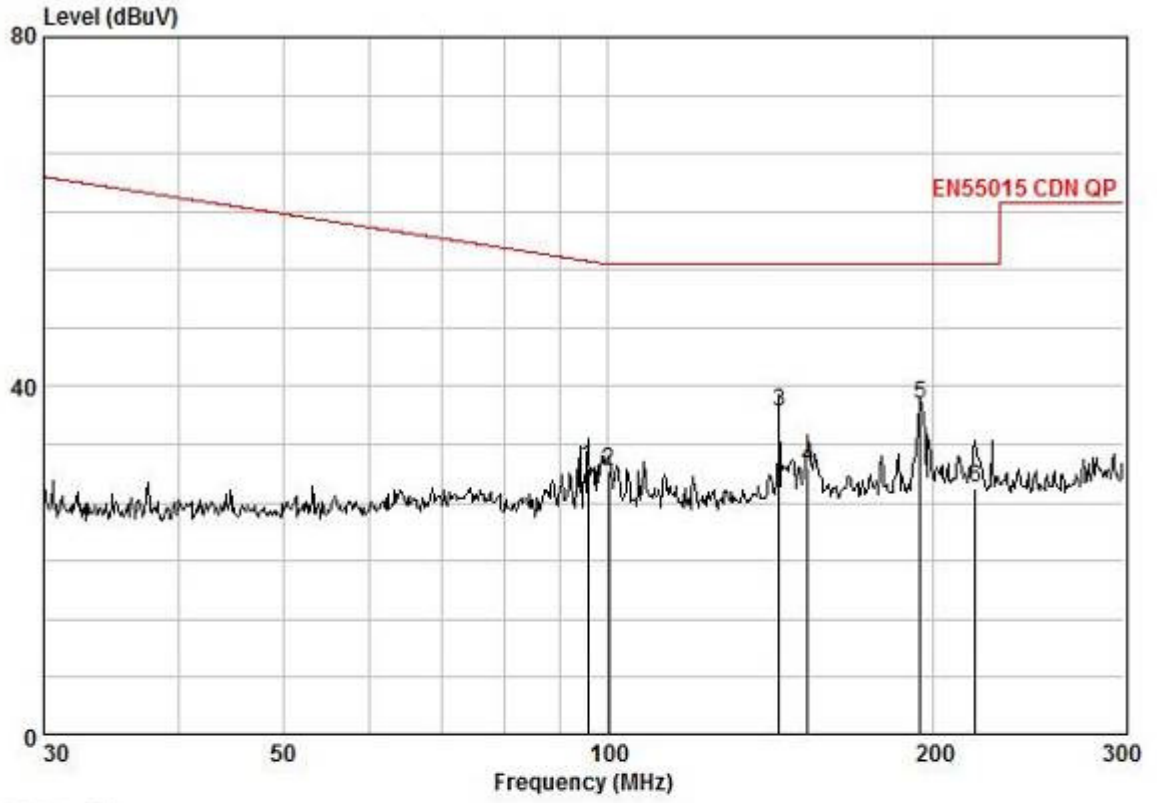


6.5.3 Measurement Data

Pre-test the EUT supply voltage shall be within ±2 % of the rated voltage. In the case of a voltage range, measurement shall be carried out within ±2 % of each of the nominal supply voltages of that range.

In order to check the level of disturbance varies considerably with the supply voltage, compliance test at AC 230V as no worse case was found.

Mode:a



Test Site: SGS
Condition: EN55015 CDN QP
Polarity :
EUT :
Applicant:
Job No :
Model No :
Test Mode:
Remark :

Frequency MHz	read level dBuV	Cable Loss dB	CDN Factor dB	Measured level dBuV	Limit Line dBuV	Over limit dB	Remark
95.77	13.07	6.56	11.00	30.63	54.36	-23.73	QP
100.04	12.68	6.59	11.04	30.31	54.00	-23.69	QP
144.02	18.62	6.83	11.61	37.07	54.00	-16.93	QP
152.89	12.24	6.87	11.72	30.83	54.00	-23.17	QP
194.57	18.58	7.03	12.21	37.83	54.00	-16.17	QP
218.84	8.88	7.11	12.44	28.43	54.00	-25.57	QP

7 Immunity Test Results

7.1 Performance Criteria Description in EN 61547:2009

Criterion A During the test no change of the luminous intensity shall be observed and the regulating control, if any, shall operate during the test as intended.

Criterion B During the test the luminous intensity may change to any value. After the test the luminous intensity shall be restored to its initial value within 1 min.

Regulating controls need not function during the test, but after the test the mode of the control shall be the same as before the test provided that during the test no mode changing commands were given.

Criterion C During and after the test any change of the luminous intensity is allowed and the lamp(s) may be extinguished. After the test, within 30 min, all functions shall return to normal if necessary by temporary interruption of the mains supply and/or operating the regulating control.

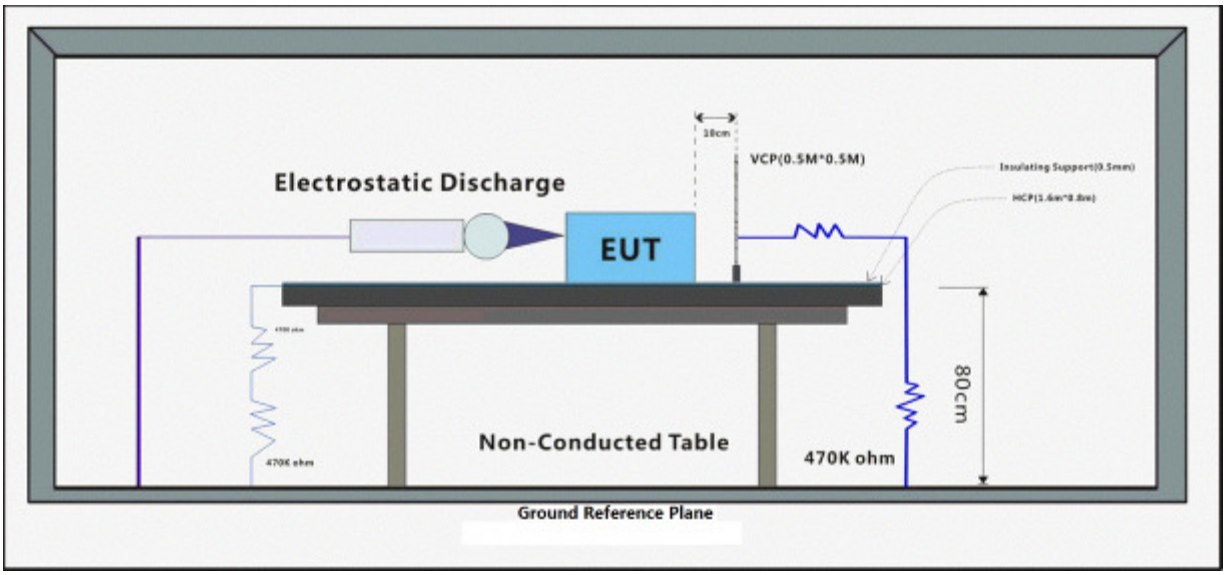
7.2 Electrostatic Discharge

Test Requirement: EN 61547:2009
Test Method: EN 61000-4-2:2009
Performance Criterion: B
Discharge Impedance: 330Ω/150pF
Number of Discharge: Minimum 10 times at each test point
Discharge Mode: Single Discharge
Discharge Period: 1 second minimum

7.2.1 E.U.T. Operation

Operating Environment:
Temperature: 25.5 °C Humidity: 53.9 % RH Atmospheric Pressure: 1020 mbar
Test Mode: a: Test the EUT in lighting mode.

7.2.2 Test Setup Diagram



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	N/A
Contact Discharge	4	-	2	N/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 61547:2009

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

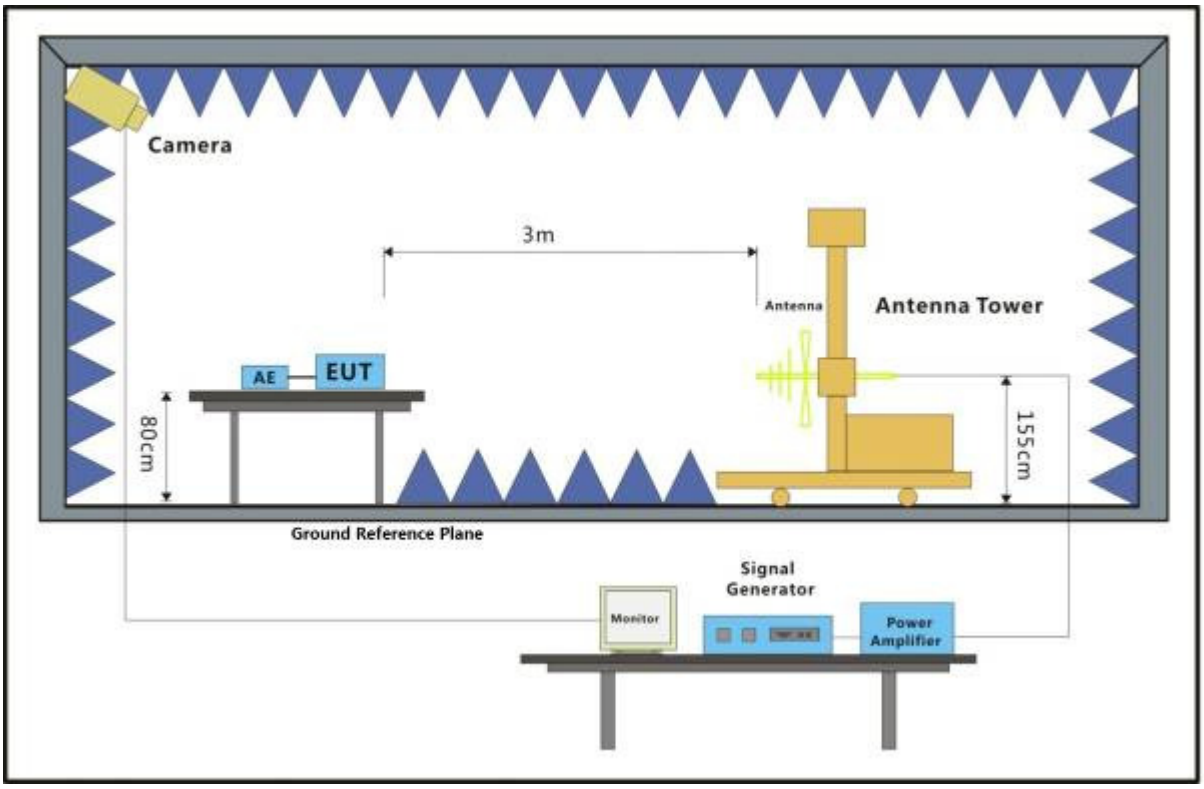
7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 25.3 °C Humidity: 52 % RH Atmospheric Pressure: 1020 mbar

Test Mode: a: Test the EUT in lighting mode.

7.3.2 Test Setup Diagram



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.

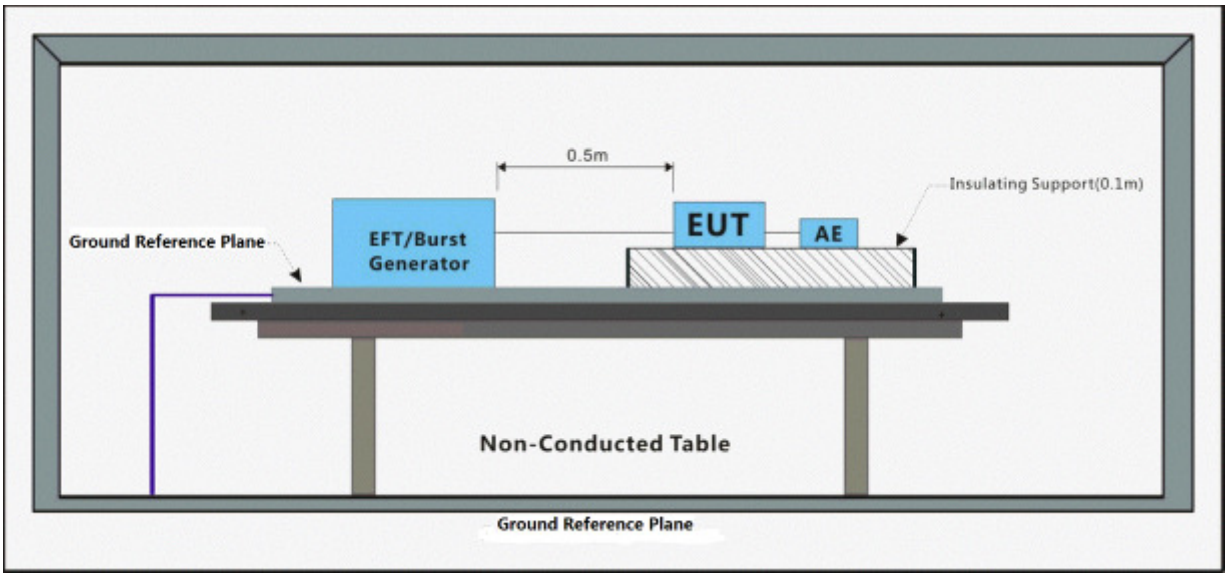
7.4 Electrical Fast Transients/Burst at Power Port

Test Requirement: EN 61547:2009
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 E.U.T. Operation

Operating Environment:
Temperature: 24.4 °C Humidity: 55.3 % RH Atmospheric Pressure: 1020 mbar
Test Mode: a: Test the EUT in lighting mode.

7.4.2 Test Setup Diagram



7.4.3 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.

7.5 Surge at Power Port

Test Requirement: EN 61547:2009

Test Method: EN 61000-4-5:2014

Performance Criterion: C

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

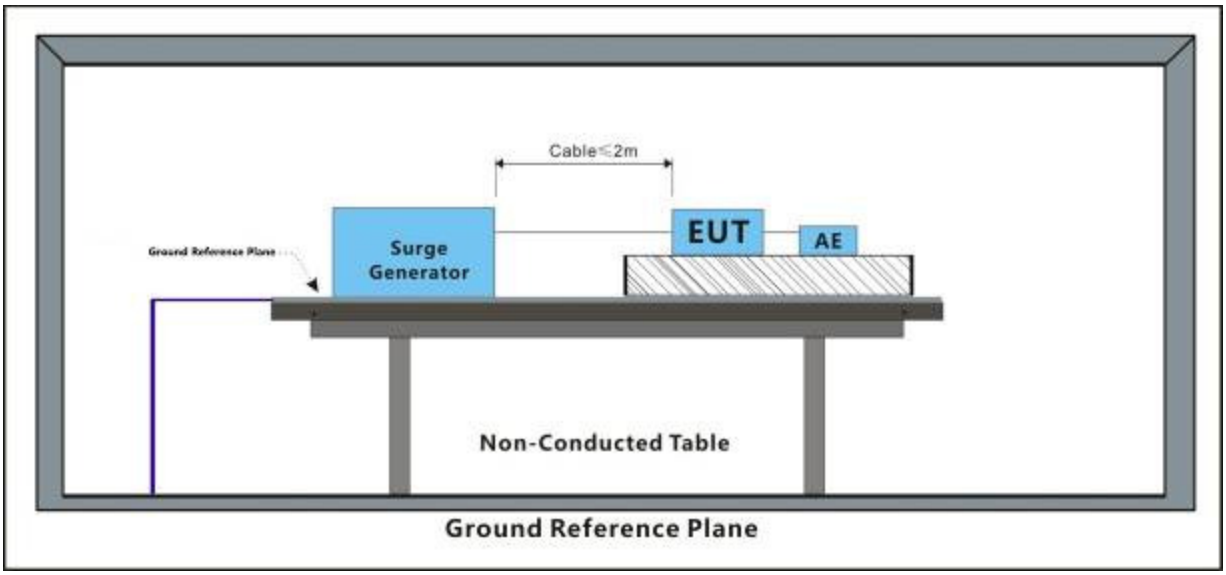
7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 24.4 °C Humidity: 55.4 % RH Atmospheric Pressure: 1020 mbar

Test Mode: a: Test the EUT in lighting mode.

7.5.2 Test Setup Diagram



7.5.3 Test Results

Test Line	Level (kV)	Polarity	Phase (deg)	Result / Observations
L-N	0.5	+	90°	A
L-N	0.5	-	270°	A

Results:

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

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

Test Requirement: EN 61547:2009

Test Method: EN 61000-4-6:2014

Performance Criterion: A

Frequency Range: 0.15MHz to 80MHz

Modulation: 80%, 1kHz Amplitude Modulation

Step Size 1%

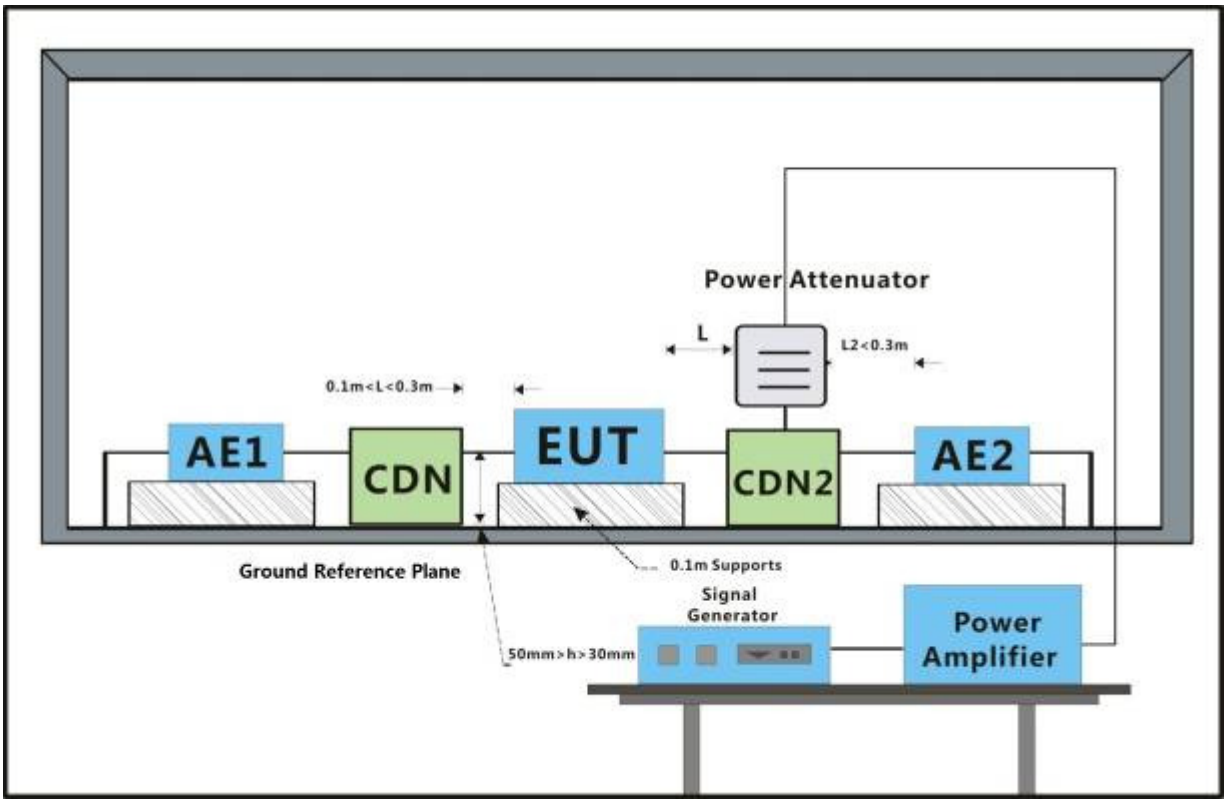
7.6.1 E.U.T. Operation

Operating Environment:

Temperature: 24.4 °C Humidity: 55.5 % RH Atmospheric Pressure: 1020 mbar

Test Mode: a: Test the EUT in lighting mode.

7.6.2 Test Setup Diagram



7.6.3 Test Results

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

Results:

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

7.7 Voltage Dips and Interruptions

Test Requirement: EN 61547:2009

Test Method: EN 61000-4-11:2004

Performance Criterion: 0% of UT (Supply Voltage) for 0.5 cycles:B;
70 % of UT for 10 cycles:C

No. of Dips / Interruptions: 3 per Level

Time between dropout 10s

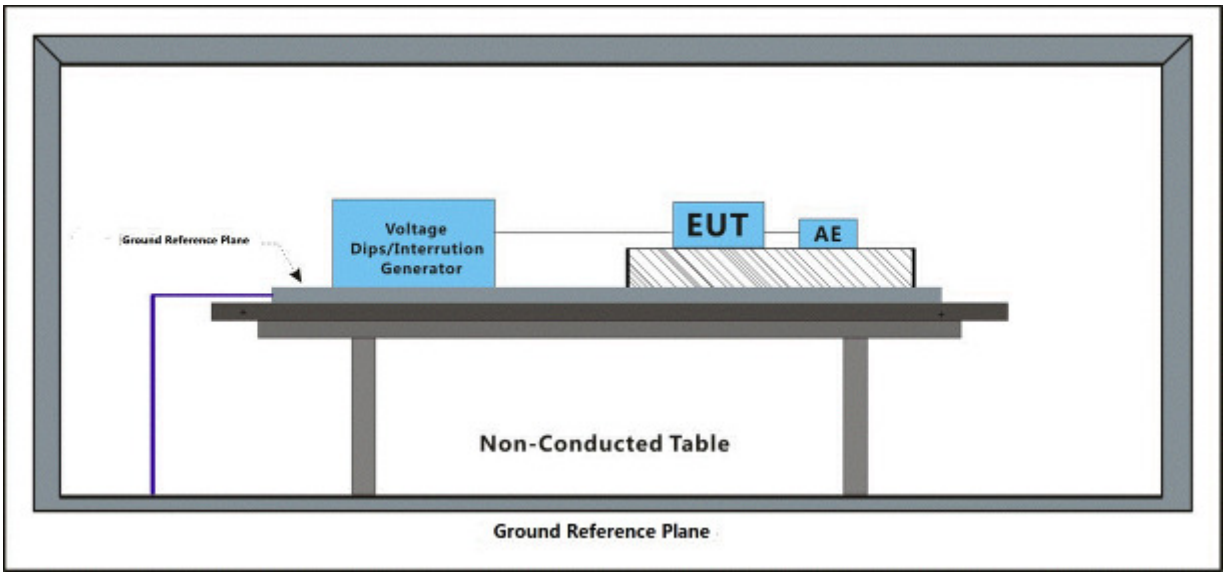
7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 24.4 °C Humidity: 55.4 % RH Atmospheric Pressure: 1020 mbar

Test Mode: a: Test the EUT in lighting mode.

7.7.2 Test Setup Diagram



7.7.3 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
70	0°	10 Cycles	3	A
70	180°	10 Cycles	3	A

Results:

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

8 Photographs

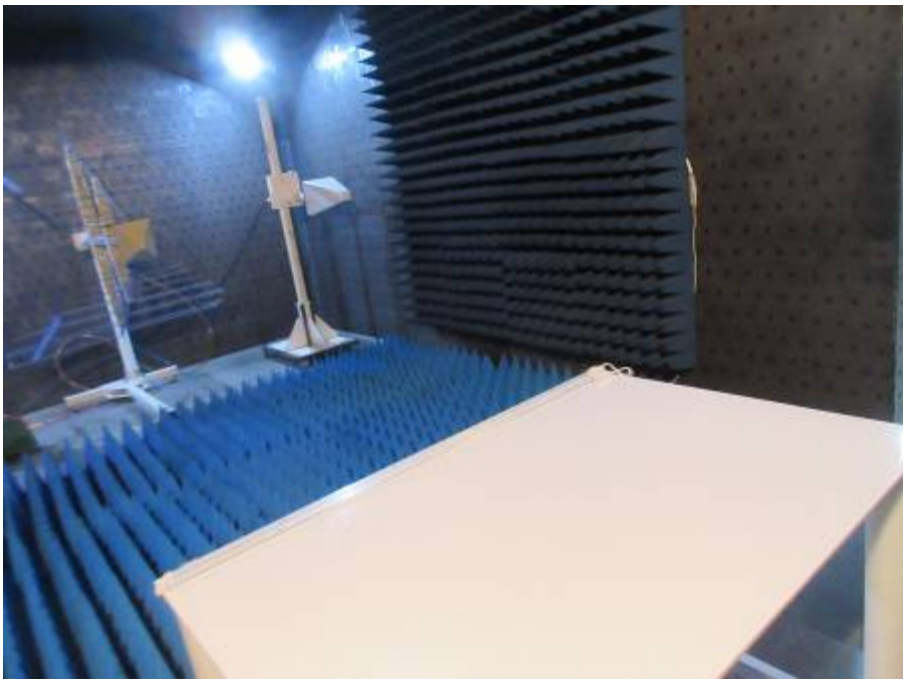
8.1 Conducted Emissions at Mains Terminals (9kHz-30MHz) Test Setup

8.2 Radiated Emissions (Magnetic field Induced Current) (9kHz-30MHz) Test Setup

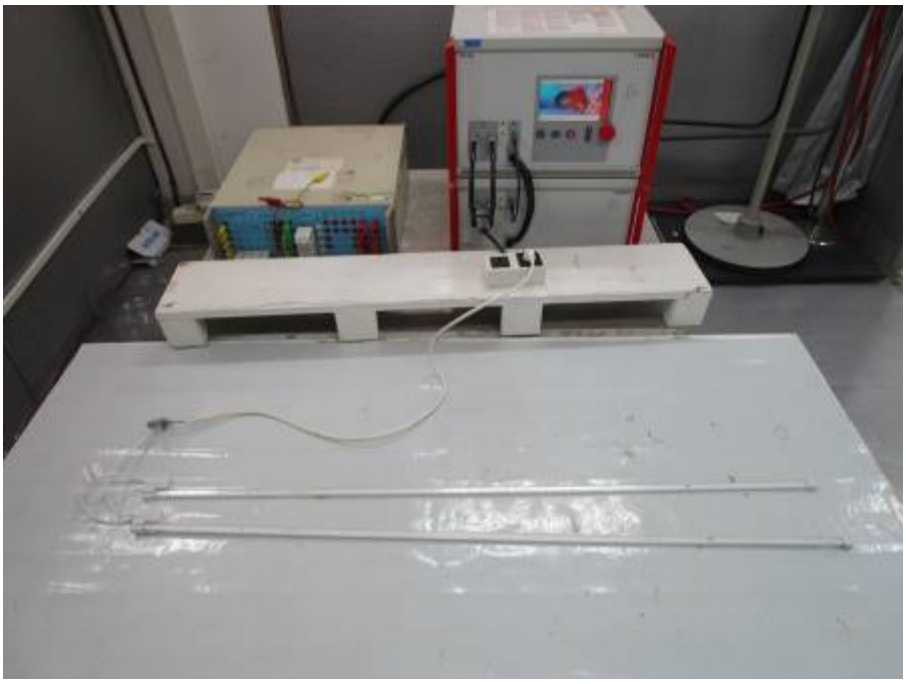
8.3 Voltage Fluctuations and Flicker Test Setup

8.4 Electrostatic Discharge Test Setup

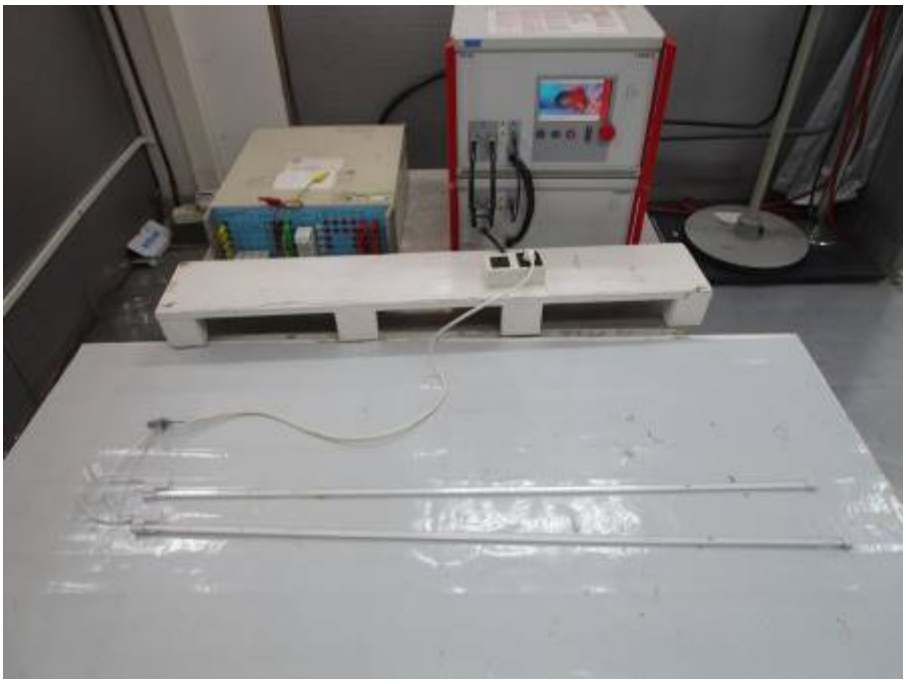
8.5 Radiated Immunity (80MHz-1GHz) Test Setup



8.6 Electrical Fast Transients/Burst at Power Port Test Setup

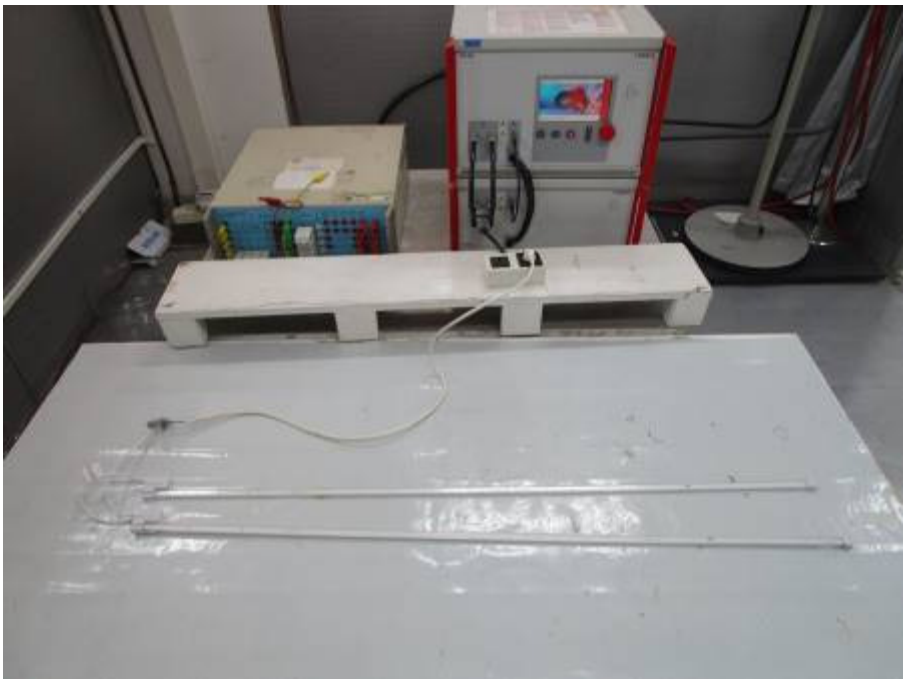


8.7 Surge at Power Port Test Setup

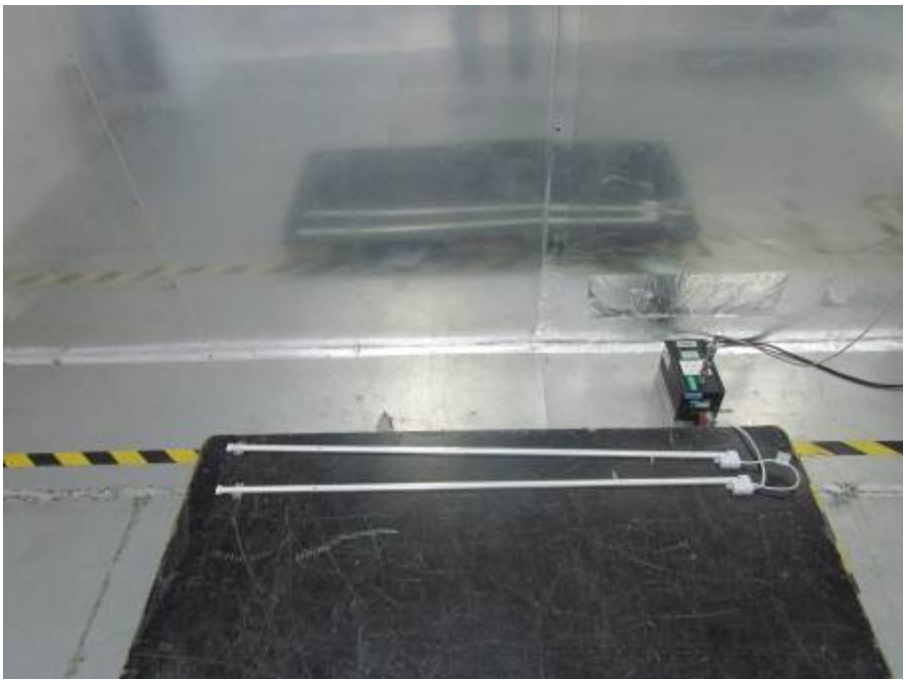


8.8 Conducted Immunity at Power Port (150kHz-80MHz) Test Setup

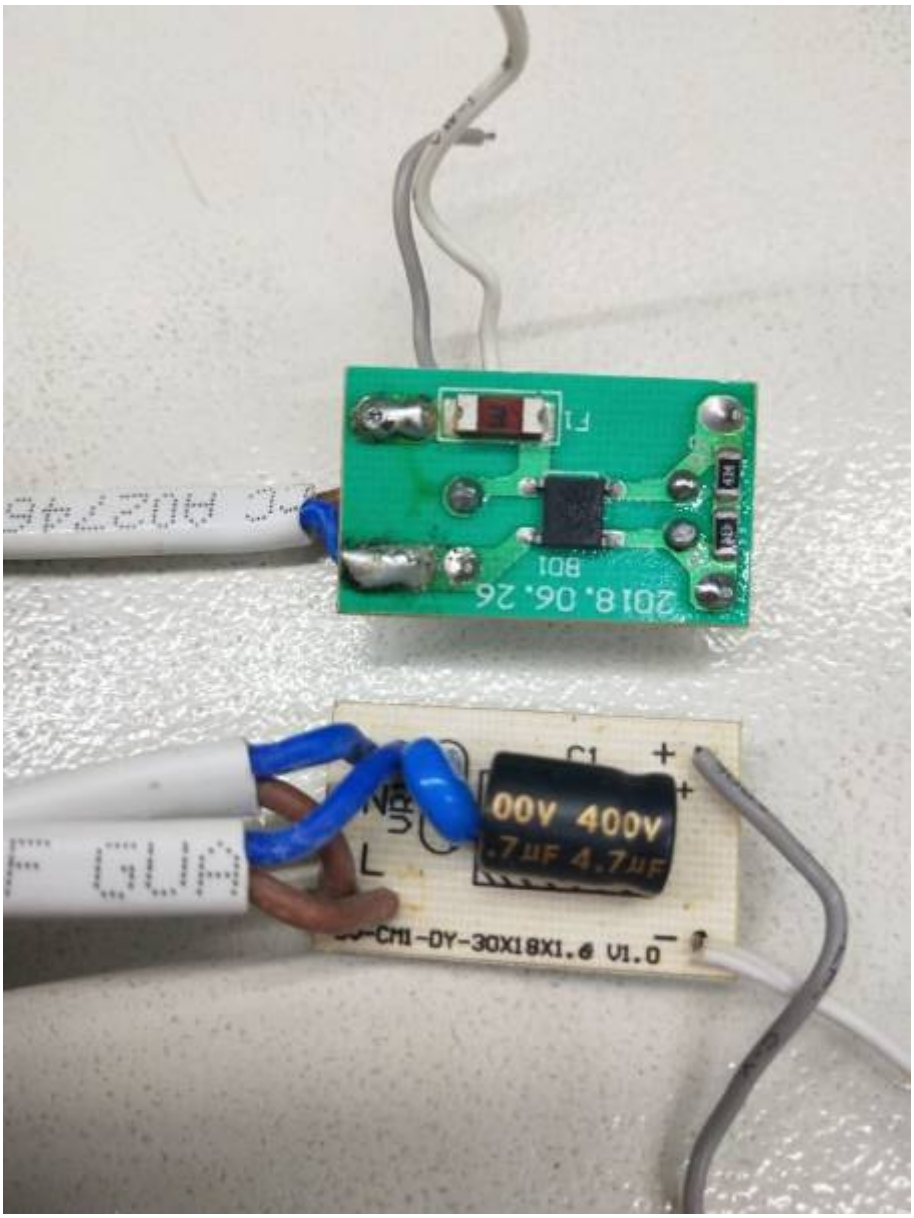
8.9 Voltage Dips and Interruptions Test Setup



8.10 Conducted RF Emission Test for CDN method Test Setup



8.11 EUT Constructional Details



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