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

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TEST REPORT

Application No.:	GZEM1604002509LM
Applicant:	Paragon Semiconductor Lighting Technology Co., Ltd.
Address of Applicant:	3F., No. 369, Sec. 2, Wenhua 2nd Rd., Linkou Dist., New Taipei Ctiy 244, Taiwan
Manufacturer:	Paragon Semiconductor Lighting Technology Co., Ltd.
Address of Manufacturer:	3F., No. 369, Sec. 2, Wenhua 2nd Rd., Linkou Dist., New Taipei Ctiy 244, Taiwan
Factory:	Paragon Semiconductor Lighting Technology Co., Ltd.
Address of Factory:	3F., No. 369, Sec. 2, Wenhua 2nd Rd., Linkou Dist., New Taipei Ctiy 244, Taiwan
Product Description:	AC Driven COB Module
Model No.:	CDAC-20-30135-230V-XX, CBHT-84-30135-230V-XX (XX=27, 30, 35, 40, 45, 50, 57, 65) ¤
¤	Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Trade Mark:	ParagonLED
Standards:	EN 55015:2013+A1:2015
	EN 61547:2009
	EN 61000-3-2:2014
	EN 61000-3-3:2013
Date of Receipt:	2016-04-27
Date of Test:	2016-05-05 to 2016-05-11
Date of Issue:	2016-05-13
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
EMC Laboratory Manager

2 Test Summary

Item	Standard	Method	Class	Result
Conducted Disturbance at Mains Terminals (9KHz-30MHz)	EN 55015:2013 +A1:2015	EN 55015:2013 +A1:2015	N/A	Pass
Radiated Disturbance (Magnetic field Induced Current) (9KHz-30MHz)	EN 55015:2013 +A1:2015	EN 55015:2013 +A1:2015	N/A	Pass
Conducted RF Emission Test for CDN method	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
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/Th 5kHz Repetition Frequency	Pass
Surge at Power Port	EN 61547:2009	EN 61000-4-5:2014	1.2/50μs Tr/Th 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 0.5per 70 % UT for 10per UT is Supply Voltage	Pass

N/A: Not applicable

¤ Declaration of EUT Family Grouping:

Model No.: CDAC-20-30135-230V-XX(XX=27, 30, 35, 40, 45, 50, 57, 65):7W
According to the declaration from the applicant, the electrical circuit design, layout, components used and internal wiring were identical for all models, except for t color temperature.

CBHT-84-30135-230V-XX(XX=27, 30, 35, 40, 45, 50, 57, 65):12W
According to the declaration from the applicant, the electrical circuit design, layout, components used and internal wiring were identical for all models, except for color temperature.

27:2700K, 30:3000K, 35:3500K, 40:4000K, 45:4500K, 50:5000K, 57:5700K, 65:6500K

Therefore only two models CDAC-20-30135-230V-30 and CBHT-84-30135-230V-30 were tested in this report.

3 Contents

4 General Information

4.1 Details of E.U.T.

Power Supply: AC 220-240V, 50-60Hz

Cable: 2 wires x about 1.0m unscreened AC mains cable supplied by SGS

Power: CDAC-20-30135-230V-30: 7W
CBHT-84-30135-230V-30: 12W

4.2 Description of Support Units

The EUT has been tested as an independent unit.

4.3 Standards Applicable for Testing

Table 1 : Tests Carried Out Under EN 55015:2013+A1:2015

Method	Item	Status
EN 55015:2013+A1:2015	Conducted Disturbance at Mains Terminals(9KHz-30MHz)	√
EN 55015:2013+A1:2015	Conducted Disturbance at Load Terminals(150KHz-30MHz)	×
CISPR 32:2015	Radiated Disturbance(30MHz-300MHz)	×
EN 55015:2013+A1:2015	Radiated Disturbance (Magnetic field Induced Current)(9KHz-30MHz)	√
EN 55015:2013+A1:2015	Insertion Loss	×
EN 55015:2013+A1:2015	Conducted Disturbance at Control Terminals(150KHz-30MHz)	×
EN 55015:2013+A1:2015	Conducted RF Emission Test for CDN method	√

Table 2 : Tests Carried Out Under EN 61547:2009

Method	Item	Status
EN 61000-4-2:2009	Electrostatic Discharge	√
EN 61000-4-3:2006+ A1:2008+A2:2010	Radiated Immunity(80MHz-1GHz)	√
EN 61000-4-4:2012	Electrical Fast Transients/Burst at Power Port	√
EN 61000-4-4:2012	Electrical Fast Transients/Burst at Signal Port	×
EN 61000-4-5:2014	Surge at Power Port	√
EN 61000-4-6:2014	Conducted Immunity at Power Port(150kHz-80MHz)	√
EN 61000-4-6:2014	Conducted Immunity at Signal Port(150kHz-80MHz)	×
EN 61000-4-11:2004	Voltage Dips and Interruptions	√

Table 3 : Tests Carried Out Under EN 61000-3-2:2014

Method	Item	Status
EN 61000-3-2:2014	Harmonic Current Emission	√

Table 4 : Tests Carried Out Under EN 61000-3-3:2013

Method	Item	Status
EN 61000-3-3:2013	Voltage Fluctuations and Flicker	√

× Indicates that the test is not applicable
√ Indicates that the test is applicable

4.4 Test Location

All tests were performed at:

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

198 Kezhu Road, 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 (Registration No.: 282399)**

  SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 282399, May 31, 2002.

- **Industry Canada (Registration No.: 4620B-1)**

  The 3m/10m Alternate Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Certification and Engineering of Industry Canada for radio equipment testing with Registration No. 4620B-1.

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

  The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co. Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2460, C-2584，G-449 and T-1179 respectively.

- **CBTL (Lab Code: TL129)**

  SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2005, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

4.8 Monitoring of EUT for All Immunity Test

Visual: LED lighting of the EUT
Audio: N/A

5 Equipment List

Conducted Disturbance at Mains Terminals(9KHz-30MHz)					
Item	**Equipment**	**Manufacturer**	**Model No**	**Inventory No**	**Cal Due Date**
1	Shielding Room	Zhong Yu	8 x 3 x 3.8 m3	EMC0306	N/A
2	Two-line v-netwok	R&S	ENV216	EMC0118	2017-01-24
3	LISN	SCHAFFNER CHASE	MN2050D/1	EMC0102	2016-09-23
4	EMI Test Receiver	Rohde & Schwarz	ESCS30	EMC0506	2016-12-18
5	Coaxial Cable	SGS	2m	EMC0107	2016-07-24
6	Voltage Probe	SGS	N/A	EMC0106	2018-04-04
7	Conical metal housing	SGS-EMC	N/A	EMC0167	2018-04-18

Radiated Disturbance (Magnetic field Induced Current)(9KHz-30MHz)					
Item	**Equipment**	**Manufacturer**	**Model No**	**Inventory No**	**Cal Due Date**
1	Loop Antenna	Laplace Instruments	RF300	EMC0701	2017-04-18
2	Software	Rohde & Schwarz	ESK1	EMC0409	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESCS30	EMC0506	2016-12-18

Conducted RF Emission Test for CDN method					
Item	**Equipment**	**Manufacturer**	**Model No**	**Inventory No**	**Cal Due Date**
1	CDN	Elektronik-Feinmechanik	L-801:AF2	EMC2047	2018-09-18
2	CDN	Elektronik-Feinmechanik	L-801:M2/M3	EMC2048	2018-09-24
3	6dB Attenuator	HP	8491A	EMC2062	2018-04-04

Harmonic Current Emission					
Item	**Equipment**	**Manufacturer**	**Model No**	**Inventory No**	**Cal Due Date**
1	AC Power Source	California	50001iX	EMC0608	2017-04-04
2	Power Analyzer	California	PACS	EMC0607	2017-04-04

Voltage Fluctuations and Flicker					
Item	**Equipment**	**Manufacturer**	**Model No**	**Inventory No**	**Cal Due Date**
1	AC Power Source	California	50001iX	EMC0608	2017-04-04
2	Power Analyzer	California	PACS	EMC0607	2017-04-04

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

Radiated Immunity(80MHz-1GHz)					
Item	**Equipment**	**Manufacturer**	**Model No**	**Inventory No**	**Cal Due Date**
1	Compact 3m Semi-Anechoic Chamber	ChangZhou ZhongYu	N/A	EMC0525	2016-12-04
2	Signal Generator	Rohde & Schwarz	SMR20	EMC0516	2017-01-24
3	Bilog Type Antenna	Schaffner -Chase	CBL6143	EMC0519	2017-05-03
4	Amplifier	EMPOWER	BBS2E4ALP	EMC0915	2016-12-18
5	Amplifier	EMPOWER	BBS3Q5KIN	EMC0914	2016-12-18
6	Power Meter	Rohde & Schwarz	NRVS	EMC0904	2016-12-18
7	URV5-Z2 Insert. Unit	R&S	URV5-Z2	EMC0071	2017-01-24
8	Dual Directional Coupler	EMCA	715-10-1.400	EMC0917	2016-07-17
9	Electric Field Probe	Wandel & Goltermann	EMC-20	EMC0907	2017-03-24
10	Oscilloscope	Tektronix	TDS3052C	EMC2055	2017-01-24
11	Monitor System	Mitsubish Corp.	M-0552AB	EMC0909	N/A
12	Laser probe Interface	Rf Microwave Instrumentation	FI7000	EMC2089	N/A
13	Open Swihch and control unit	R&S	OSP130	EMC2090	2017-02-15
14	Broadband Amplifier（80M~1GHZ/250W)	R&S	BBA150	EMC2091	2017-02-01
15	Broadband Amplifier（800M~3GHZ/110W)	R&S	BBA150	EMC2092	2017-02-09
16	Signal Generator	R&S	SMB100A	EMC2093	2017-02-14
17	Laser probe	Rf Microwave Instrumentation	FL7006	EMC2094	2017-01-27
18	NRP-Z91 Power Sensor 6GHZ	R&S	NPR-Z91	EMC2095	2017-02-14
19	NRP-Z91 Power Sensor 6GHZ	R&S	NPR-Z91	EMC2096	2017-02-14
20	High-Gain Log-preiodic Antema	R&S	HL046E	EMC2097	2019-02-14

Electrical Fast Transients/Burst at Power Port					
Item	**Equipment**	**Manufacturer**	**Model No**	**Inventory No**	**Cal Due Date**
1	EMC Immunity Test System	TESEQ AG	NSG 3060 CDN3061 INA	EMC2072	2017-01-24
2	Oscilloscope	Tektronix	TDS 744A	EMC2012	2016-12-18

Surge at Power Port					
Item	**Equipment**	**Manufacturer**	**Model No**	**Inventory No**	**Cal Due Date**
1	Modular Impulse Surge Generator	EMC PARTNER	MIG0603EN	EMC2059	2017-01-24
2	EMC Immunity Test System	TESEQ AG	NSG 3060 CDN3061 INA	EMC2072	2017-01-24
3	Oscilloscope	Tektronix	TDS 744A	EMC2012	2016-12-18

Conducted Immunity at Power Port(150kHz-80MHz)					
Item	**Equipment**	**Manufacturer**	**Model No**	**Inventory No**	**Cal Due Date**
1	Signal Generator	Rohde & Schwarz	SMY01	EMC1101	2016-07-17
2	Amplifier 0.15-230MHz	SCHAFFNER	GRF5048	EMC1102	2016-07-17
3	Power Meter	Rohde & Schwarz	NRVS	EMC1103	2016-12-18
4	URV5-Z2 Insert. Unit	R&S	URV5-Z2	EMC0071	2017-01-24
5	Dual Directional coupler	Werlatone Inc.	C1795	EMC1105	2016-07-17
6	Oscilloscope	Tektronix	TDS 744A	EMC2012	2016-12-18
7	CDN	Elektronik-Feinmechanik	L-801:M2/M3	EMC2048	2018-09-24
8	CDN M2	Schaffner Chase	CDN-M2-16	EMC1107	2017-11-23
9	Current Probe	Schaffner Chase	CIP9136	EMC1116	2017-11-17
10	Current Probe	Schaffner Chase	CSP8445	EMC1117	2017-11-14

Voltage Dips and Interruptions					
Item	**Equipment**	**Manufacturer**	**Model No**	**Inventory No**	**Cal Due Date**
1	EMC Immunity Test System	TESEQ AG	NSG 3060 CDN3061 INA	EMC2072	2017-01-24
2	Oscilloscope	Tektronix	TDS 744A	EMC2012	2016-12-18

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

6 Emission Test Results

6.1 Conducted Disturbance 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

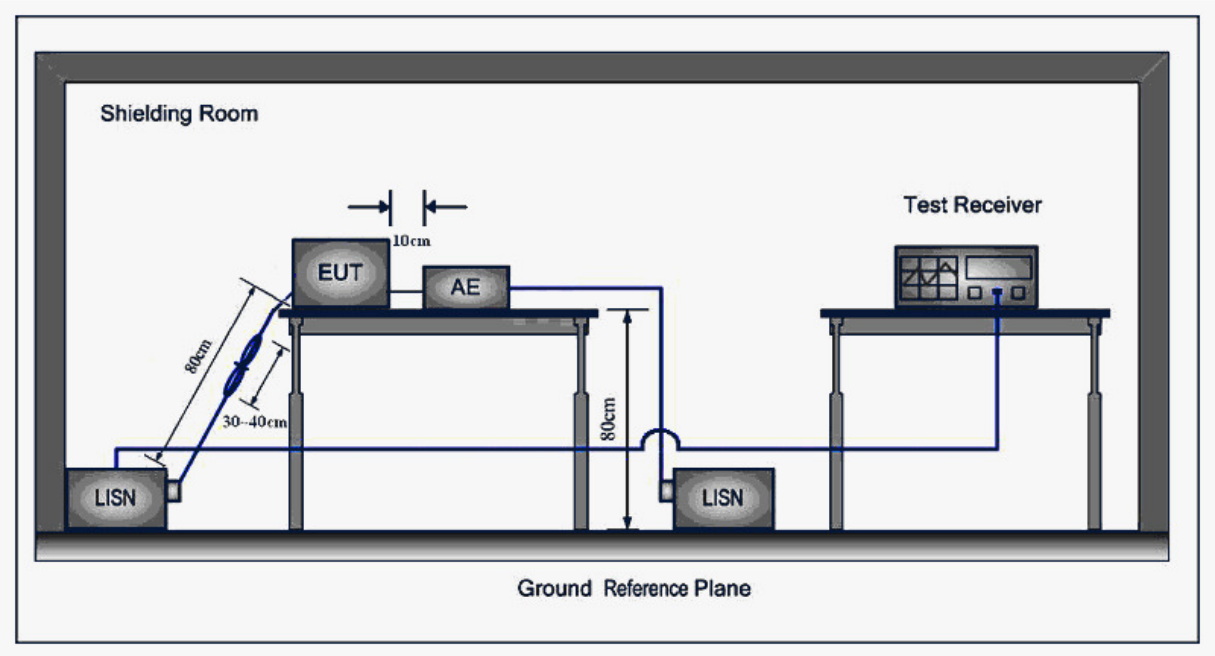
6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C Humidity: 55 % RH Atmospheric Pressure: 1004 mbar

Test Mode: a: Test in LED lighting mode (for CDAC-20-30135-230V-30).
b: Test in LED lighting mode (for CBHT-84-30135-230V-30).

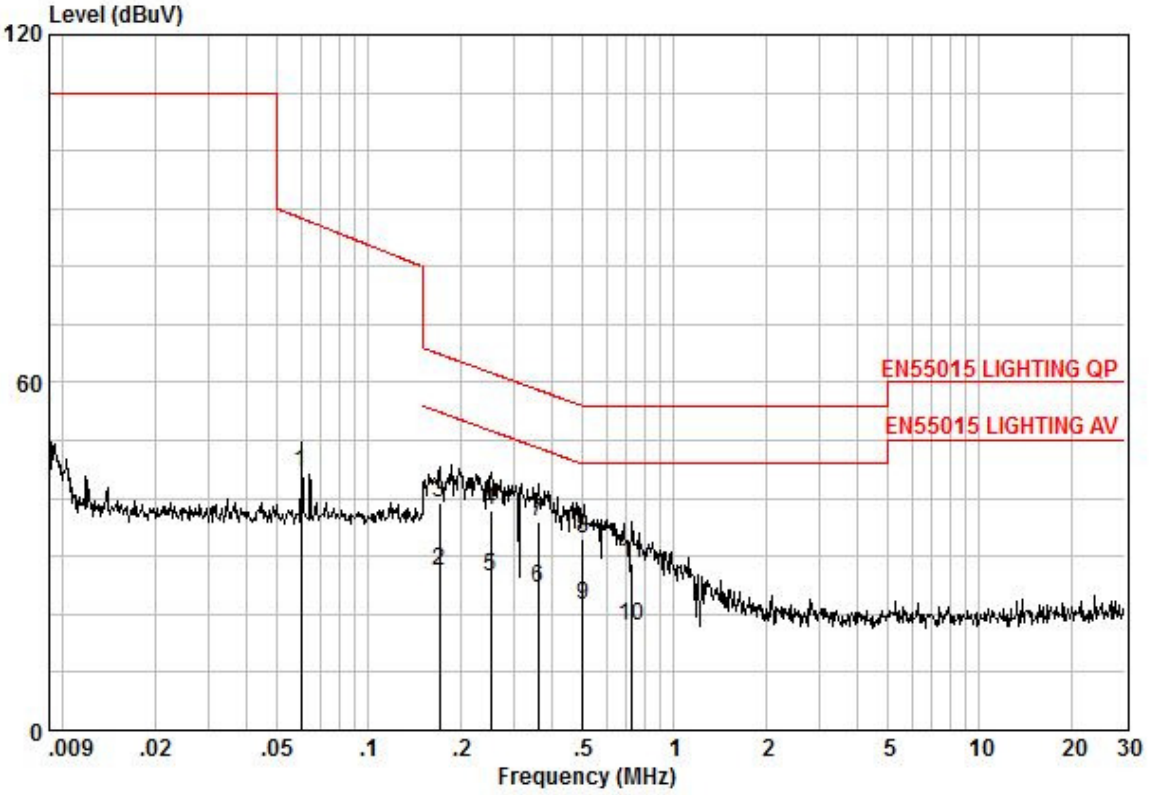
6.1.2 Test Setup



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.

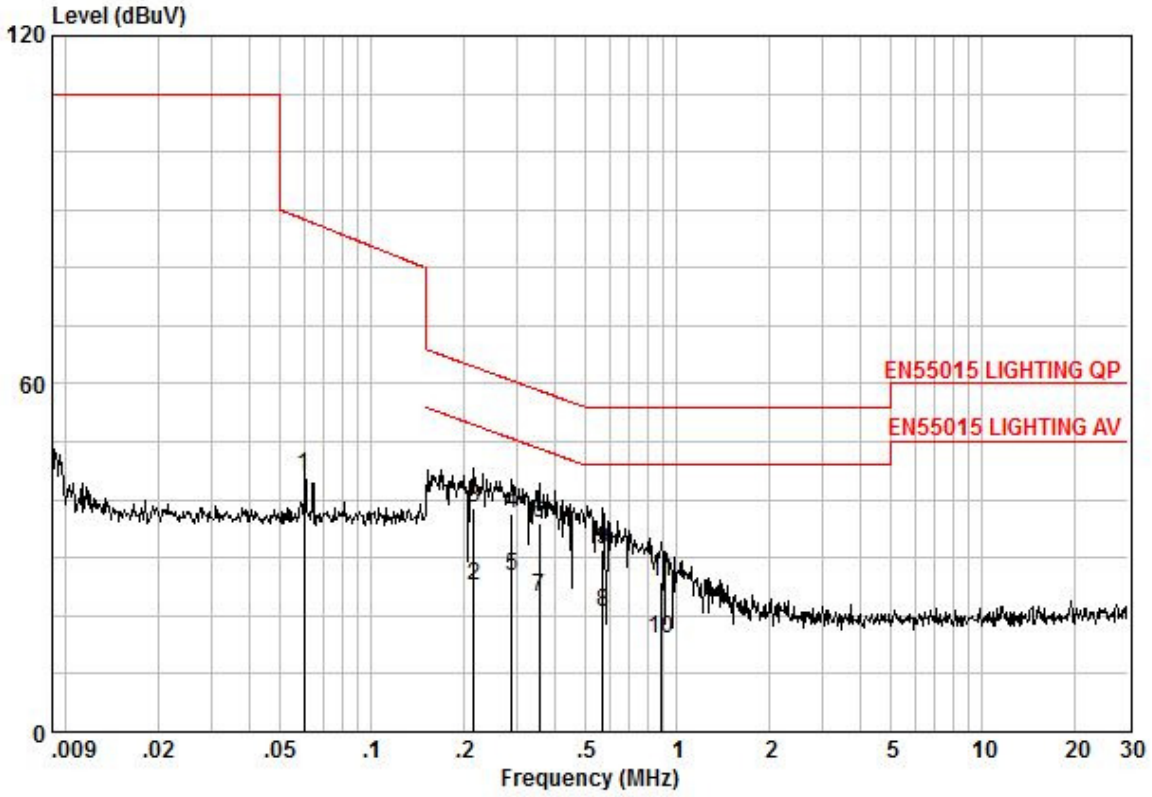
Mode:a; Line:Live Line



Phase : LINE
No :CDAC-20-30135
Model :

Frequency MHz	read level dBuV	Cable Loss dB	LISN Factor dB	Measured level dBuV	Limit Line dBuV	Over limit dB	Remark
0,06	34,78	0,00	9,70	44,48	88,30	-43,82	QP
0,17	17,72	0,09	9,60	27,41	54,90	-27,49	AVERAGE
0,17	29,44	0,09	9,60	39,13	64,90	-25,77	QP
0,25	28,32	0,07	9,60	38,00	61,69	-23,69	QP
0,25	16,82	0,07	9,60	26,50	51,69	-25,19	AVERAGE
0,36	14,63	0,05	9,68	24,36	48,74	-24,38	AVERAGE
0,36	26,21	0,05	9,68	35,94	58,74	-22,80	QP
0,50	23,20	0,04	9,70	32,94	56,00	-23,06	QP
0,50	11,92	0,04	9,70	21,66	46,00	-24,34	AVERAGE
0,73	8,41	0,02	9,70	18,13	46,00	-27,87	AVERAGE
0,73	19,01	0,02	9,70	28,73	56,00	-27,27	QP

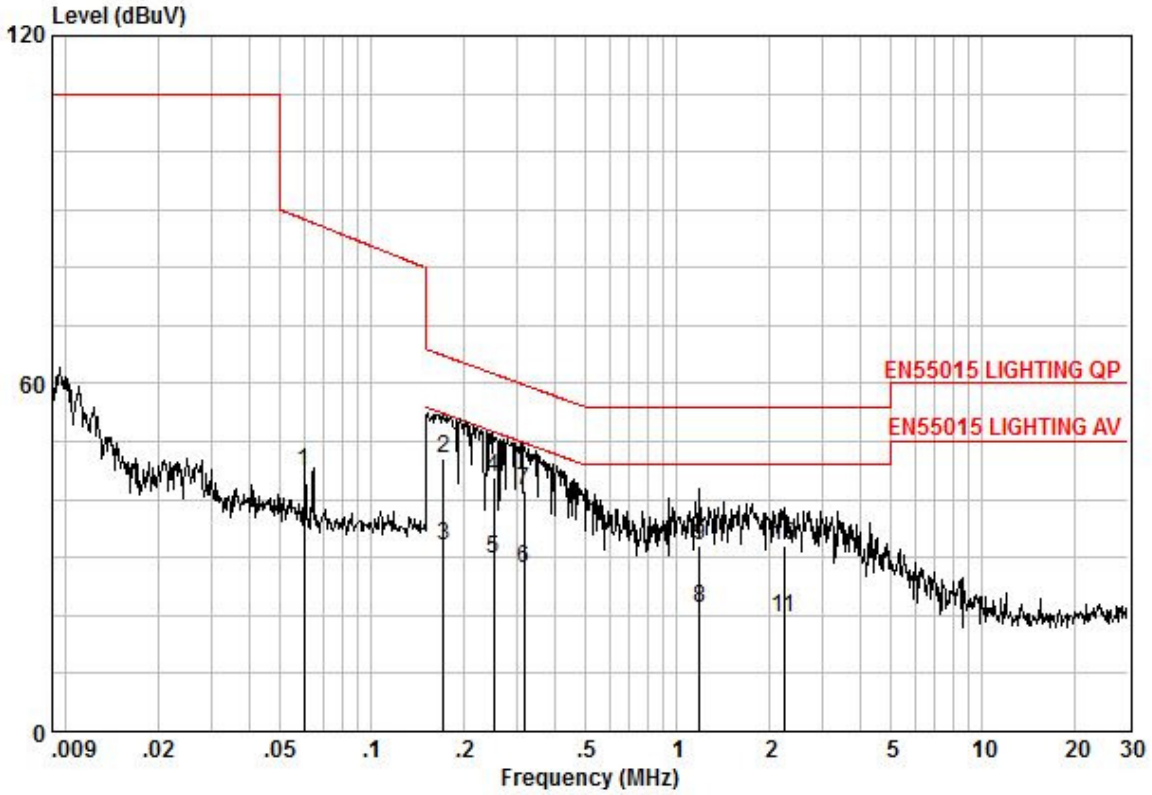
Mode:a; Line:Neutral Line



Phase : NEUTRAL
No :CDAC-20-30135
Model :

Frequency MHz	read level dBuV	Cable Loss dB	LISN Factor dB	Measured level dBuV	Limit Line dBuV	Over limit dB	Remark
0,06	34,45	0,00	9,69	44,14	88,30	-44,16	QP
0,22	15,58	0,08	9,66	25,32	52,96	-27,64	AVERAGE
0,22	28,83	0,08	9,66	38,57	62,96	-24,39	QP
0,29	27,75	0,07	9,66	37,48	60,59	-23,11	QP
0,29	17,00	0,07	9,66	26,73	50,59	-23,86	AVERAGE
0,35	26,29	0,05	9,66	36,00	58,87	-22,87	QP
0,35	13,43	0,05	9,66	23,14	48,87	-25,73	AVERAGE
0,57	11,06	0,03	9,67	20,76	46,00	-25,24	AVERAGE
0,57	21,83	0,03	9,67	31,53	56,00	-24,47	QP
0,89	6,38	0,01	9,67	16,06	46,00	-29,94	AVERAGE
0,89	16,19	0,01	9,67	25,87	56,00	-30,13	QP

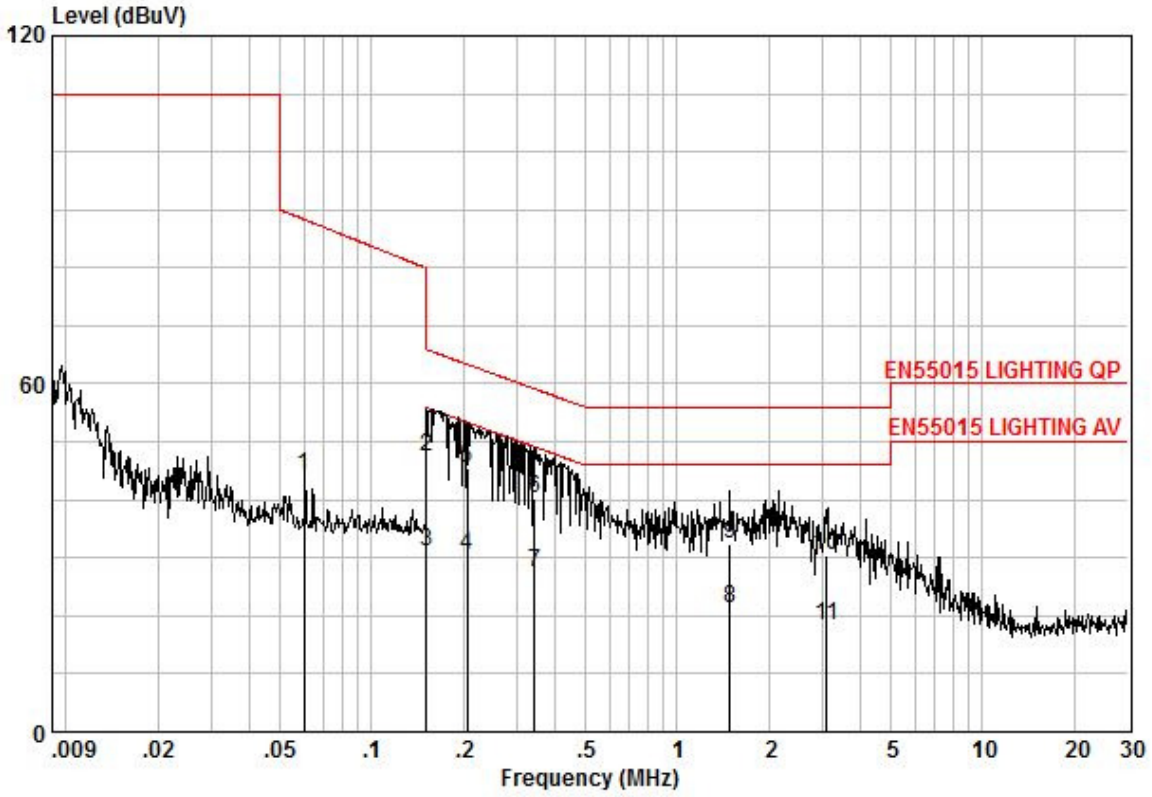
Mode:b; Line:Live Line



Phase : LINE
No :CBHT-84-30135
Model :

Frequency MHz	read level dBuV	Cable Loss dB	LISN Factor dB	Measured level dBuV	Limit Line dBuV	Over limit dB	Remark
0,06	35,24	0,00	9,70	44,94	88,30	-43,36	QP
0,17	37,45	0,09	9,60	47,14	64,86	-17,71	QP
0,17	22,30	0,09	9,60	31,99	54,86	-22,86	AVERAGE
0,25	34,06	0,07	9,60	43,73	61,73	-18,00	QP
0,25	20,00	0,07	9,60	29,67	51,73	-22,06	AVERAGE
0,31	18,25	0,06	9,70	28,01	49,84	-21,83	AVERAGE
0,31	31,76	0,06	9,70	41,52	59,84	-18,32	QP
1,19	11,60	0,02	9,70	21,32	46,00	-24,68	AVERAGE
1,19	22,42	0,02	9,70	32,14	56,00	-23,86	QP
2,24	22,14	0,11	9,70	31,95	56,00	-24,05	QP
2,24	9,89	0,11	9,70	19,70	46,00	-26,30	AVERAGE

Mode:b; Line:Neutral Line



Phase : NEUTRAL
No :CBHT-84-30135
Model :

Frequency MHz	read level dBuV	Cable Loss dB	LISN Factor dB	Measured level dBuV	Limit Line dBuV	Over limit dB	Remark
0,06	34,29	0,00	9,69	43,98	88,30	-44,32	QP
0,15	37,52	0,10	9,66	47,28	65,91	-18,63	QP
0,15	21,35	0,10	9,66	31,11	55,91	-24,80	AVERAGE
0,21	20,77	0,08	9,66	30,51	53,36	-22,85	AVERAGE
0,21	35,57	0,08	9,66	45,31	63,36	-18,05	QP
0,34	30,54	0,06	9,66	40,26	59,18	-18,92	QP
0,34	17,69	0,06	9,66	27,41	49,18	-21,77	AVERAGE
1,50	11,67	0,05	9,68	21,40	46,00	-24,60	AVERAGE
1,50	22,59	0,05	9,68	32,32	56,00	-23,68	QP
3,11	20,57	0,15	9,70	30,42	56,00	-25,58	QP
3,11	8,32	0,15	9,70	18,17	46,00	-27,83	AVERAGE

6.2 Radiated Disturbance (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

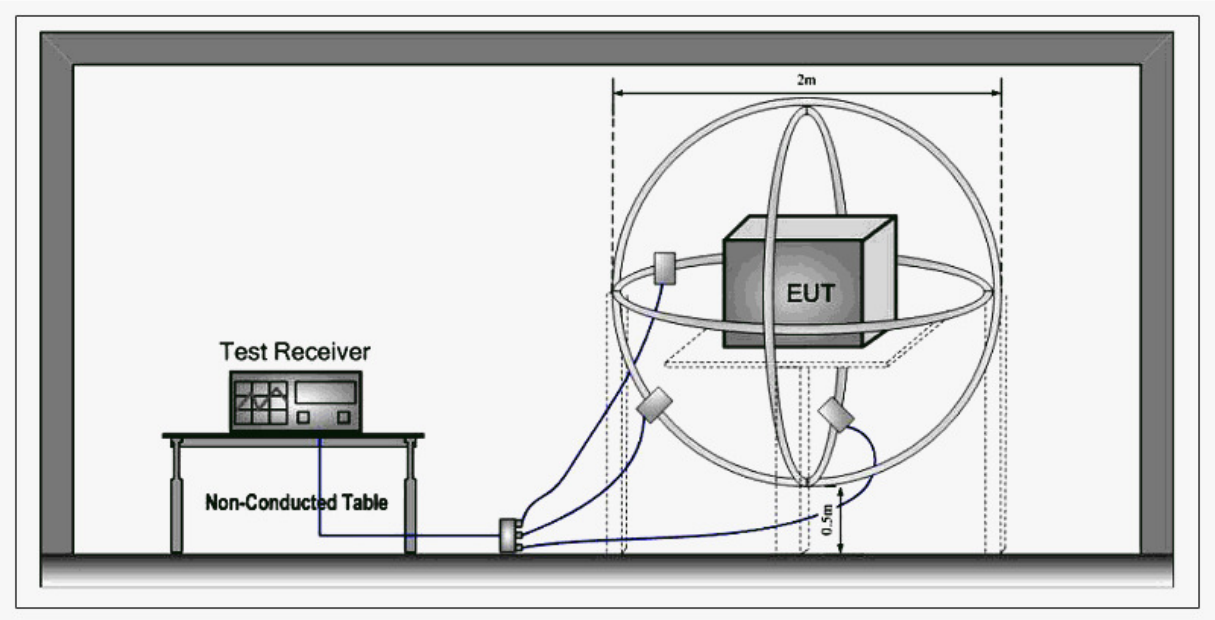
6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C Humidity: 55 % RH Atmospheric Pressure: 1004 mbar

Test Mode: a: Test in LED lighting mode (for CDAC-20-30135-230V-30).
b: Test in LED lighting mode (for CBHT-84-30135-230V-30).

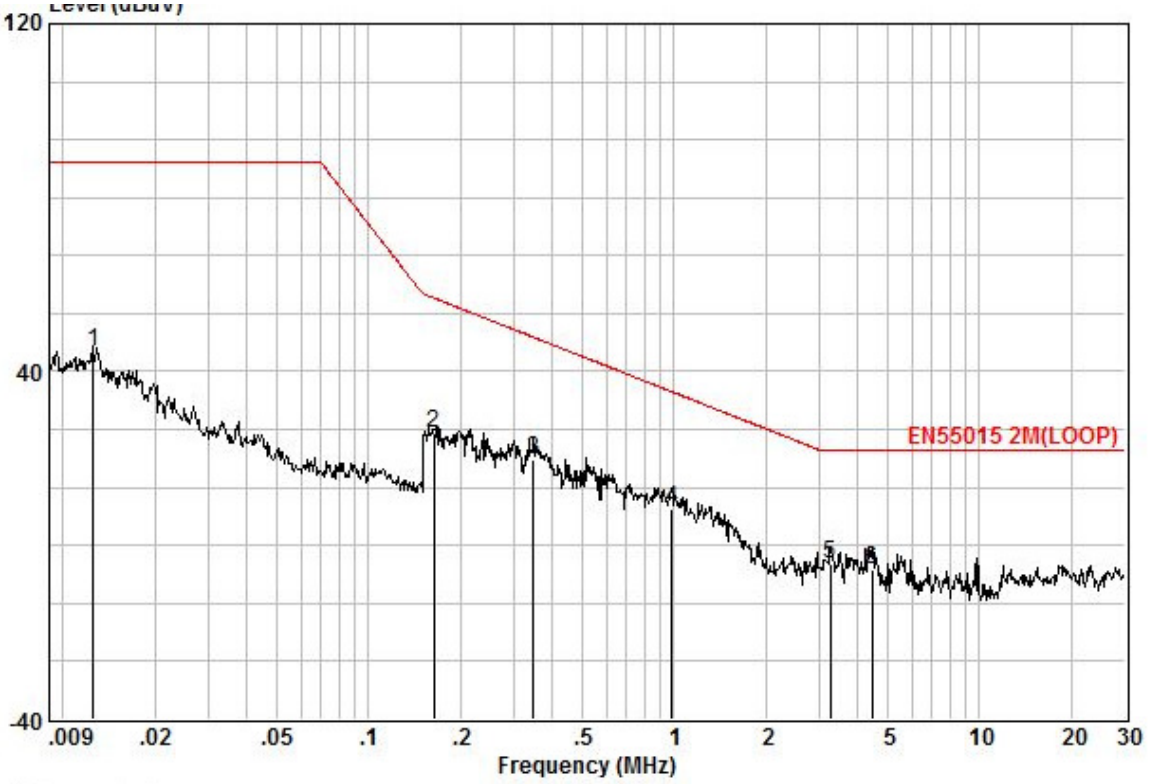
6.2.2 Test Setup



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.

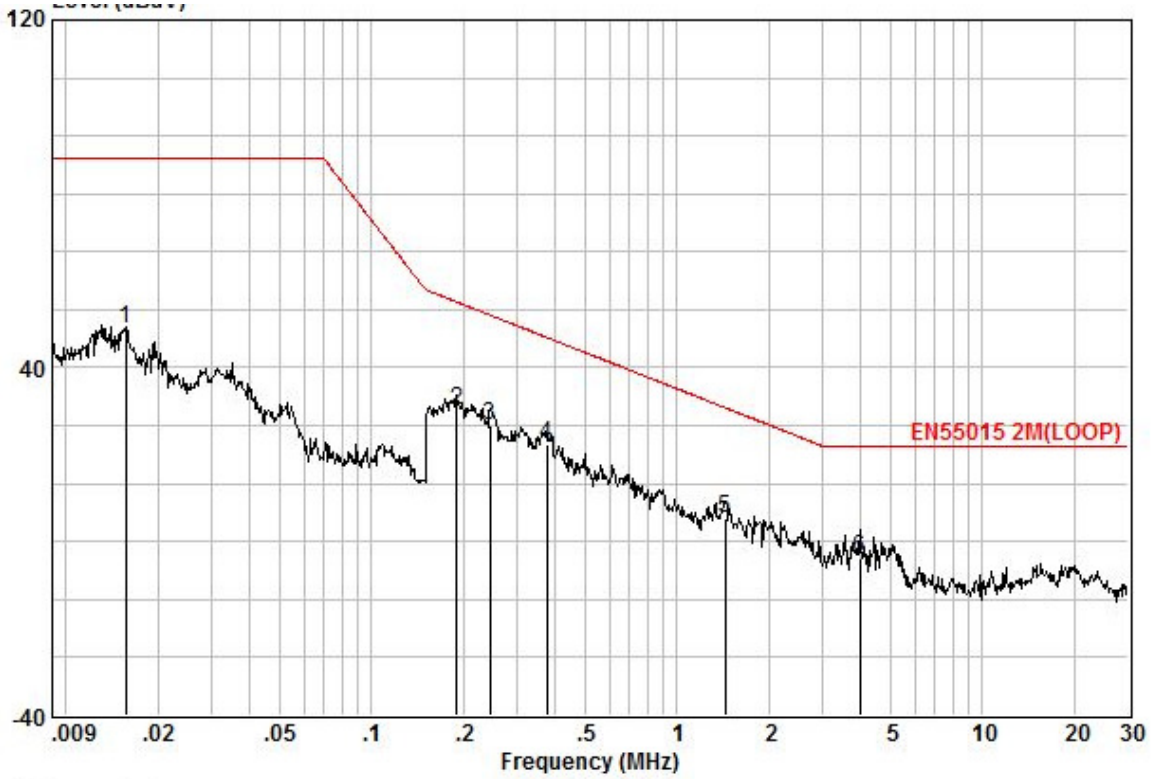
Mode:a;Axial:X



Loop : X
No : CDAC-20-30135
Mode :

Frequency MHz	Read Level dBuA	Trans ducer dB	Measured Level dBuA	Limit Line dBuA	Over Limit dB	Remark
0,013	40,05	0,29	44,57	88,00	-43,43	QP
0,164	41,28	0,30	25,78	56,91	-31,13	QP
0,346	40,93	0,32	19,88	47,94	-28,06	QP
0,986	34,32	0,28	8,25	35,37	-27,11	QP
3,250	22,28	0,49	-4,05	22,00	-26,05	QP
4,459	21,02	0,54	-5,54	22,00	-27,54	QP

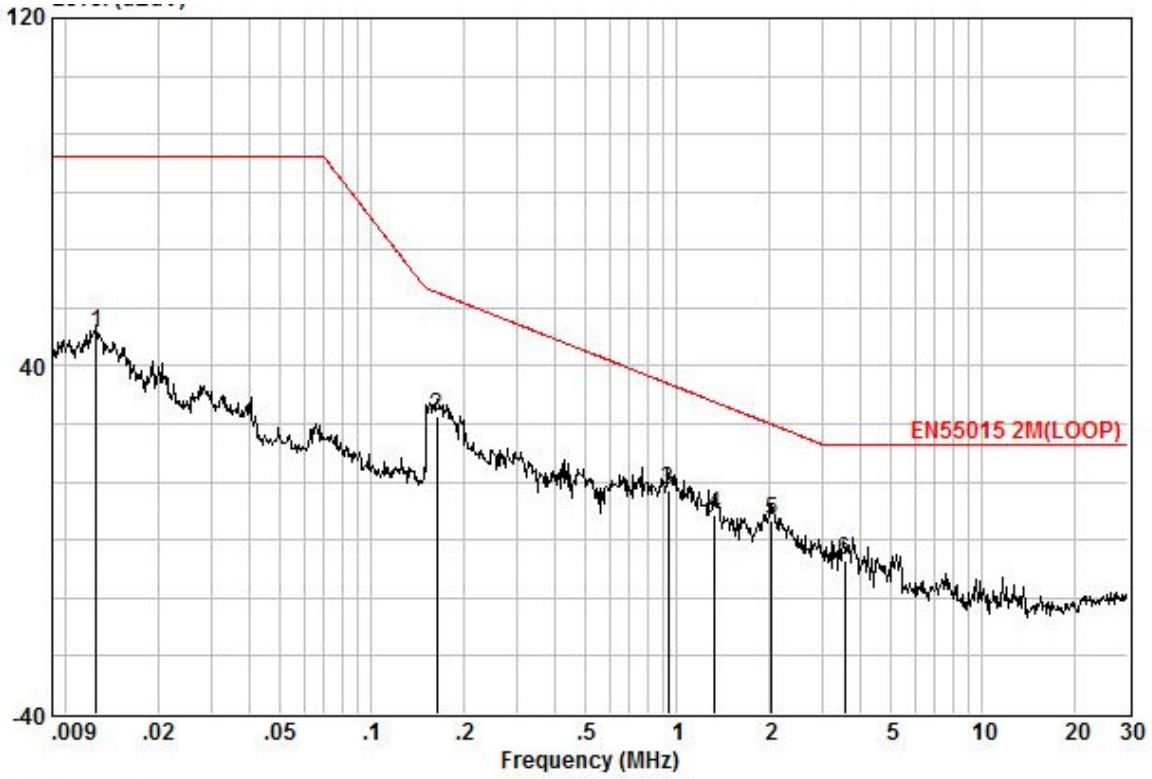
Mode:a;Axial:Y



Loop : Y
No : CDAC-20-30135
Mode :

Frequency MHz	Read Level dBuA	Trans ducer dB	Measured Level dBuA	Limit Line dBuA	Over Limit dB	Remark
0,016	45,97	0,29	48,86	88,00	-39,14	QP
0,190	46,99	0,25	30,35	55,16	-24,81	QP
0,244	45,24	0,28	26,76	52,13	-25,38	QP
0,376	44,03	0,32	22,37	46,97	-24,60	QP
1,444	31,58	0,35	5,45	30,79	-25,34	QP
3,980	22,45	0,53	-4,02	22,00	-26,02	QP

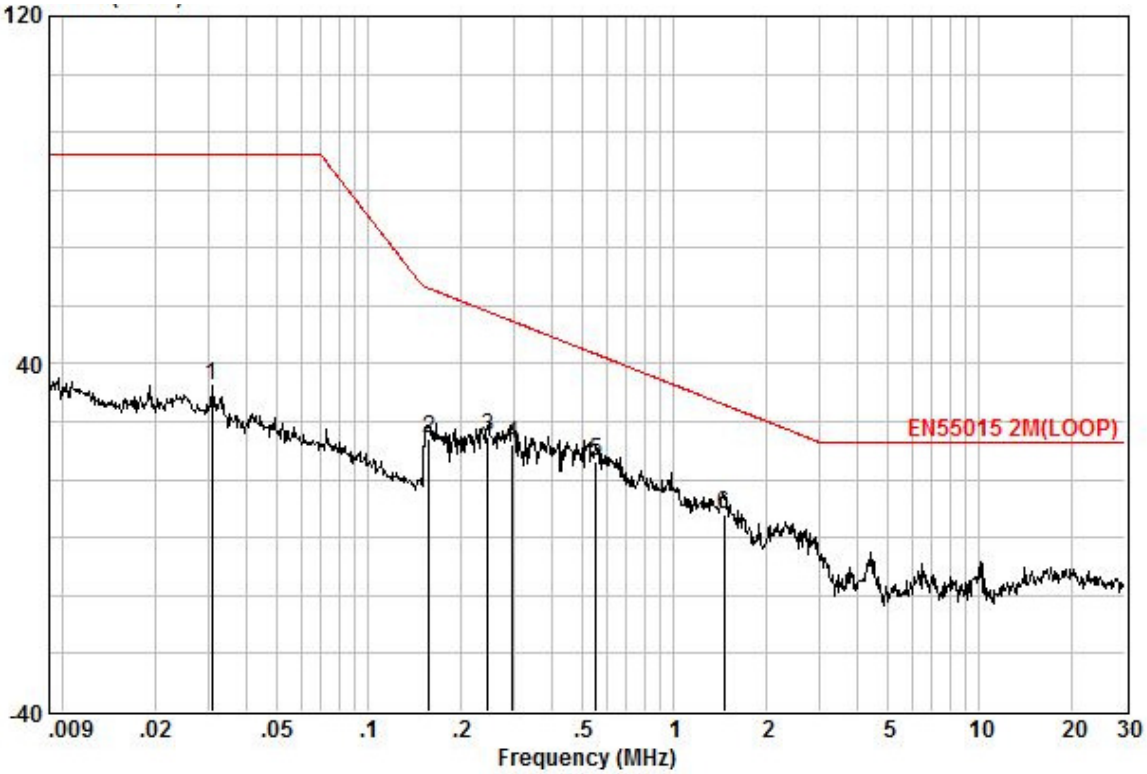
Mode:a;Axial:Z



Loop : Z
No : CDAC-20-30135
Mode :

Frequency MHz	Read Level dBuA	Trans ducer dB	Measured Level dBuA	Limit Line dBuA	Over Limit dB	Remark
0,013	43,33	0,29	47,85	88,00	-40,15	QP
0,164	44,10	0,30	28,60	56,91	-28,31	QP
0,939	37,36	0,28	11,45	35,95	-24,50	QP
1,331	31,80	0,33	5,67	31,76	-26,09	QP
2,047	30,62	0,41	4,48	26,60	-22,12	QP
3,553	21,72	0,51	-4,67	22,00	-26,67	QP

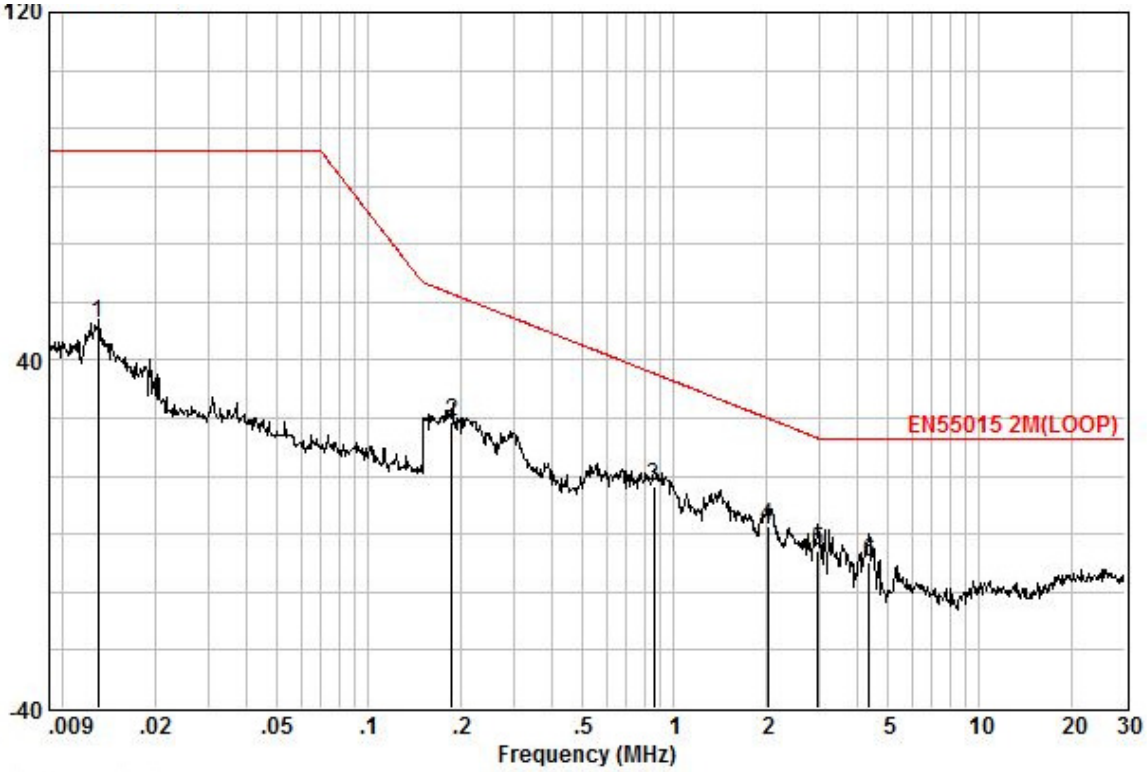
Mode:b;Axial:X



Loop : X
No : CBHT-84-30135
Mode :

Frequency MHz	Read Level dBuA	Trans ducer dB	Measured Level dBuA	Limit Line dBuA	Over Limit dB	Remark
0,031	37,09	0,34	35,02	88,00	-52,98	QP
0,158	38,13	0,31	22,95	57,40	-34,45	QP
0,246	41,55	0,29	23,01	52,04	-29,03	QP
0,297	41,46	0,33	21,57	49,80	-28,23	QP
0,554	41,51	0,30	17,36	42,29	-24,93	QP
1,456	31,45	0,35	5,32	30,69	-25,37	QP

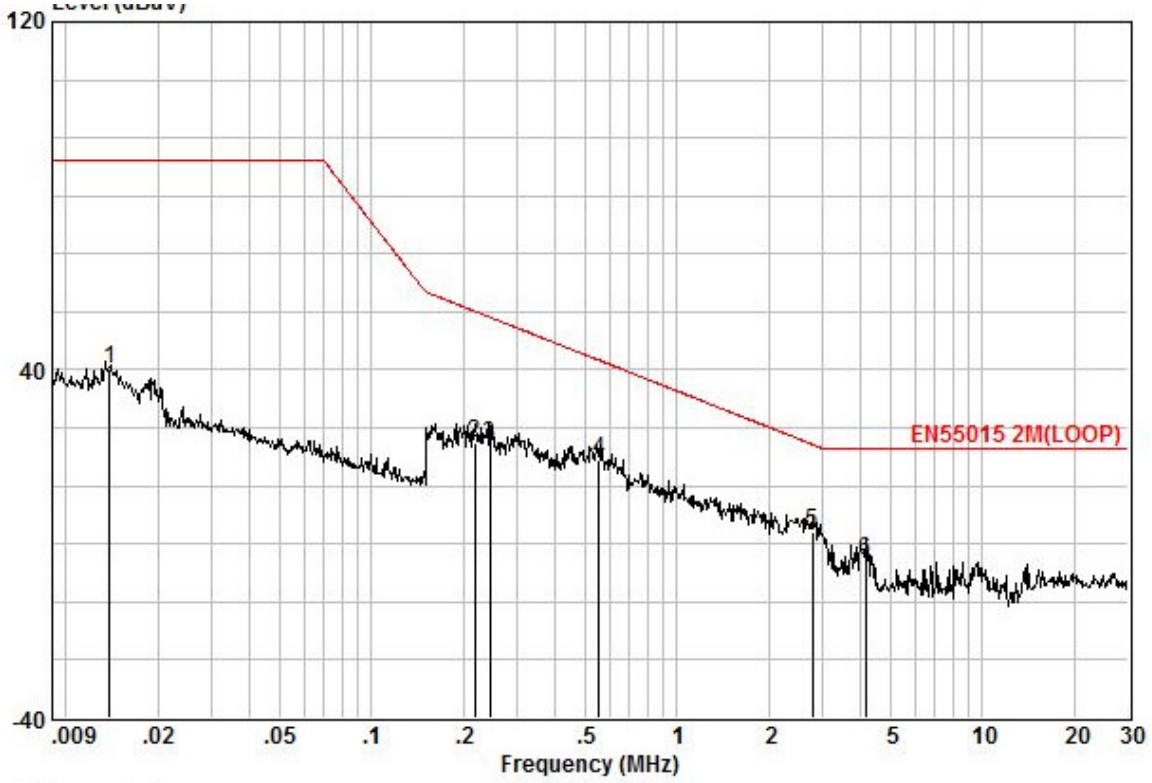
Mode:b;Axial:Y



Loop : Y
No : CBHT-84-30135
Mode :

Frequency MHz	Read Level dBuA	Trans ducer dB	Measured Level dBuA	Limit Line dBuA	Over Limit dB	Remark
0,013	44,29	0,29	48,57	88,00	-39,43	QP
0,187	42,21	0,26	25,70	55,35	-29,65	QP
0,859	36,49	0,29	10,89	37,03	-26,14	QP
2,030	28,10	0,41	1,96	26,69	-24,73	QP
2,972	22,66	0,48	-3,61	22,11	-25,72	QP
4,352	19,94	0,54	-6,60	22,00	-28,60	QP

Mode:b;Axial:Z



Loop : Z
No : CBHT-84-30135
Mode :

Frequency MHz	Read Level dBuA	Trans ducer dB	Measured Level dBuA	Limit Line dBuA	Over Limit dB	Remark
0,014	36,46	0,29	40,25	88,00	-47,75	QP
0,218	40,98	0,25	23,31	53,50	-30,18	QP
0,244	41,08	0,28	22,60	52,13	-29,54	QP
0,554	43,57	0,30	19,42	42,29	-22,87	QP
2,786	28,75	0,47	2,53	22,89	-20,36	QP
4,145	22,69	0,53	-3,81	22,00	-25,81	QP

6.3 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

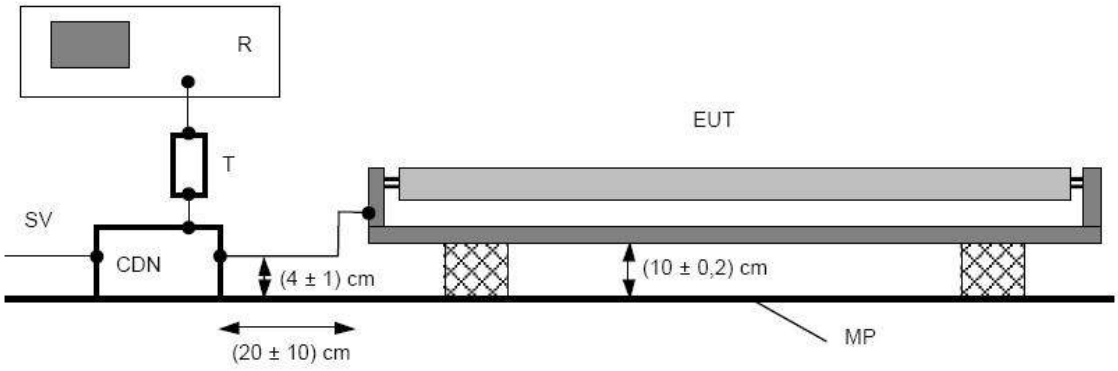
6.3.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C Humidity: 55 % RH Atmospheric Pressure: 1004 mbar

Test Mode: a: Test in LED lighting mode (for CDAC-20-30135-230V-30).
b: Test in LED lighting mode (for CBHT-84-30135-230V-30).

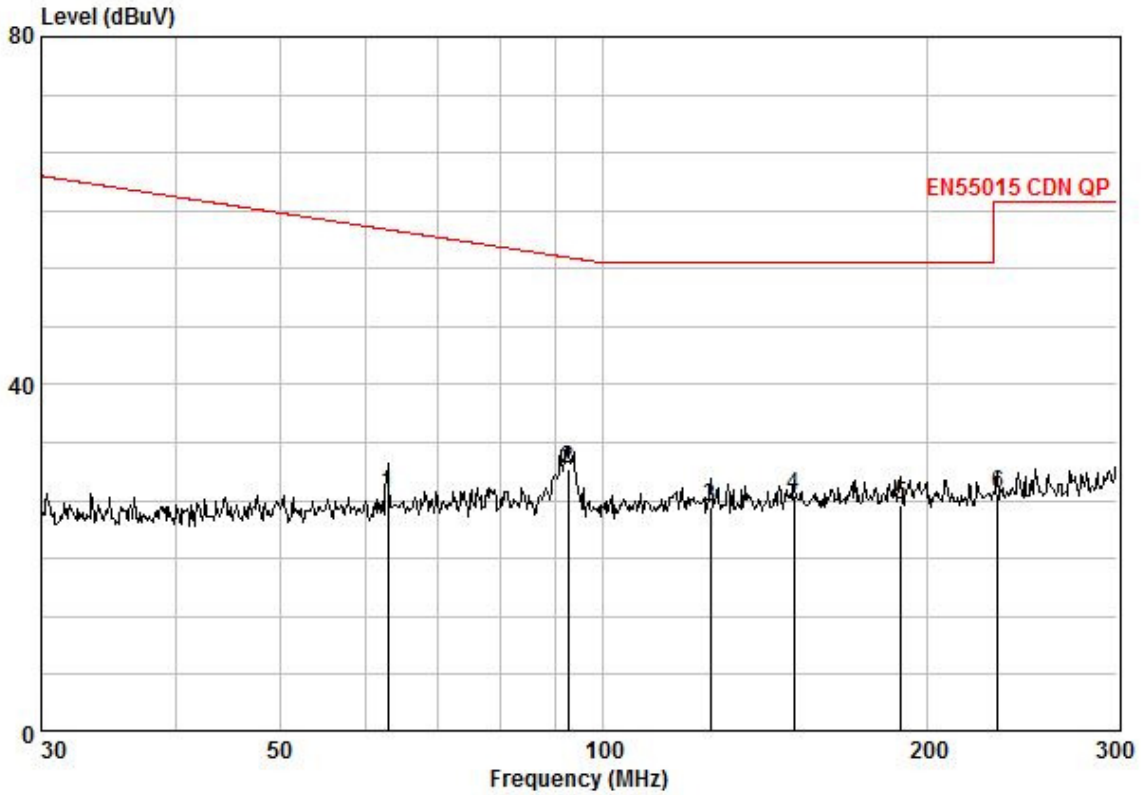
6.3.1 Test Setup



6.3.2 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 testIn order to check the level of disturbance varies considerably with the supply voltage, compliance test at AC 240V as no worse case was found.

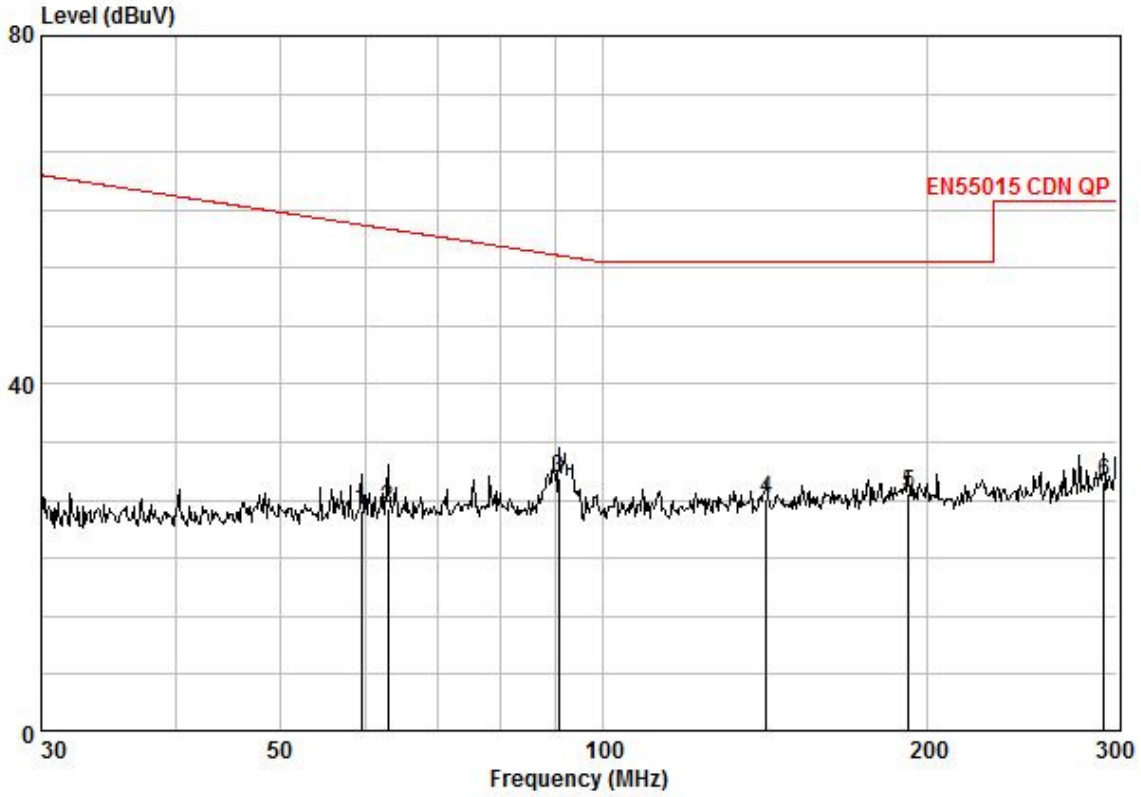
Mode:a



Phase :
No :CDAC-20-30135
Model :

Frequency MHz	read level dBuV	Cable Loss dB	LISN Factor dB	Measured level dBuV	Limit Line dBuV	Over limit dB	Remark
62,97	10,29	6,42	10,81	27,52	57,84	-30,32	QP
92,71	12,80	6,54	10,97	30,31	54,63	-24,32	QP
125,64	7,83	6,74	11,40	25,97	54,00	-28,03	QP
150,36	8,81	6,86	11,68	27,36	54,00	-26,64	QP
188,85	7,09	7,01	12,15	26,25	54,00	-27,75	QP
232,34	7,77	7,15	12,53	27,45	61,00	-33,55	QP

Mode:b



Phase :
No :CBHT-84-30135
Model :

Frequency MHz	read level dBuV	Cable Loss dB	LISN Factor dB	Measured level dBuV	Limit Line dBuV	Over limit dB	Remark
59,58	8,40	6,34	10,80	25,55	58,30	-32,75	QP
62,97	8,59	6,42	10,81	25,82	57,84	-32,02	QP
90,81	11,67	6,53	10,95	29,15	54,80	-25,65	QP
141,62	8,35	6,82	11,59	26,76	54,00	-27,24	QP
191,92	8,32	7,02	12,19	27,53	54,00	-26,47	QP
291,82	8,68	7,30	12,89	28,87	61,00	-32,13	QP

6.4 Harmonic Current Emission

Test Requirement: EN 61000-3-2
Test Method: See Remark Below
Frequency range: 100Hz to 2kHz

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 all LED lighting equipments with active input power ≤25 W except Discharge lighting equipment (refer to 7.3 b）)

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

6.5 Voltage Fluctuations and Flicker

Test Requirement: EN 61000-3-3:2013

Test Method: EN 61000-3-3:2013

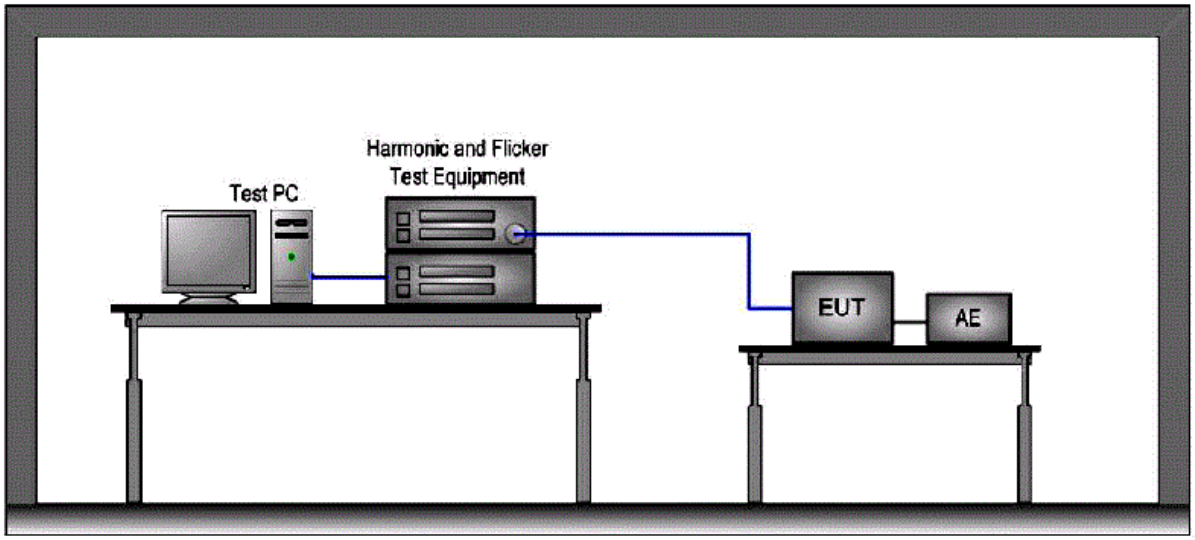
6.5.1 E.U.T. Operation

Operating Environment:

Temperature: 24 °C Humidity: 55 % RH Atmospheric Pressure: 1004 mbar

Test Mode: a: Test in LED lighting mode (for CDAC-20-30135-230V-30).
b: Test in LED lighting mode (for CBHT-84-30135-230V-30).

6.5.2 Test Setup



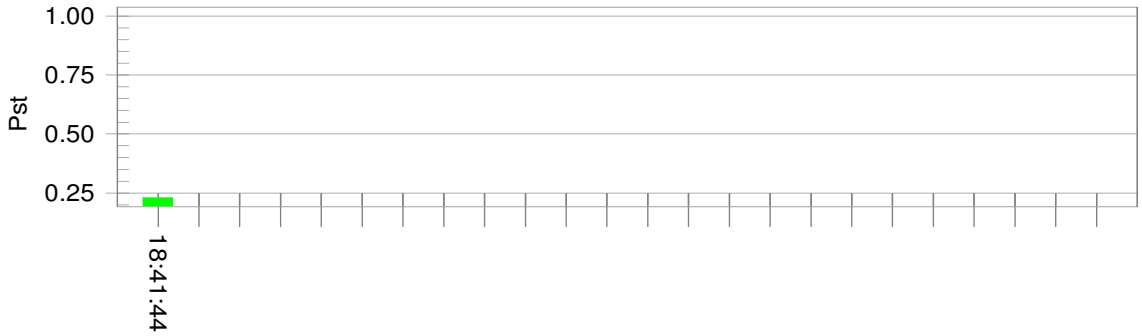
6.5.3 Measurement Data

Mode:a

Flicker Test Summary per EN 61000-3-3 (Run time)

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

Pst_i and limit line **European Limits**



Parameter values recorded during the test:

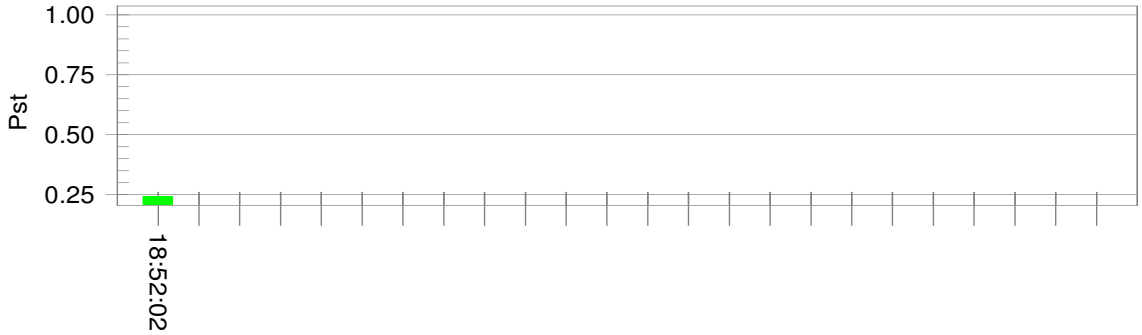
Vrms at the end of test (Volt):	**229.99**			
Highest dt (%):	**0.00**	**Test limit (%):**	**N/A**	**N/A**
T-max (mS):	**0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**0.05**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.233**	**Test limit:**	**1.000**	**Pass**

Mode:b

Flicker Test Summary per EN 61000-3-3 (Run time)

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):	**229.98**			
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 (%):	**0.05**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.240**	**Test limit:**	**1.000**	**Pass**

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.

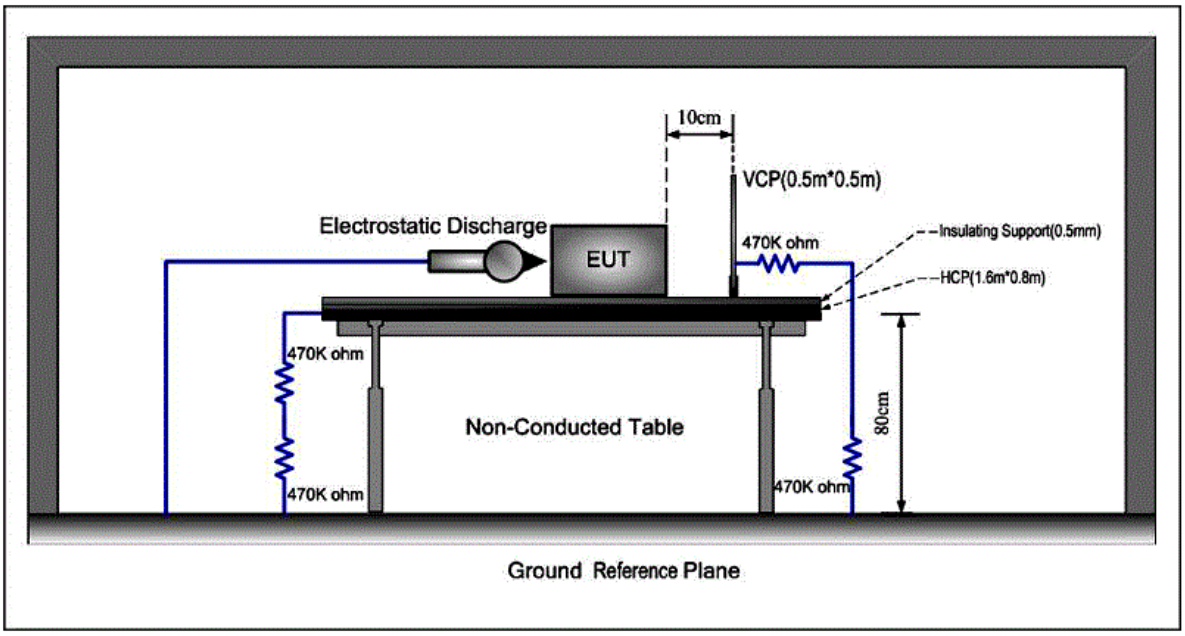
Regulating controls need not function during the test, but after the test the mode of the control shall be the same as before the test provided that during the test no mode changing commands were given.

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 Test Setup:



7.2.2 E.U.T. Operation

Operating Environment:

Temperature: 24 °C Humidity: 55 % RH Atmospheric Pressure: 1004 mbar

Test Mode: a: Test in LED lighting mode (for CDAC-20-30135-230V-30).
b: Test in LED lighting mode (for CBHT-84-30135-230V-30).

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	2,4	+	3	A
Horizontal Coupling	2,4	-	3	A
Vertical Coupling	2,4	+	3	A
Vertical Coupling	2,4	-	3	A

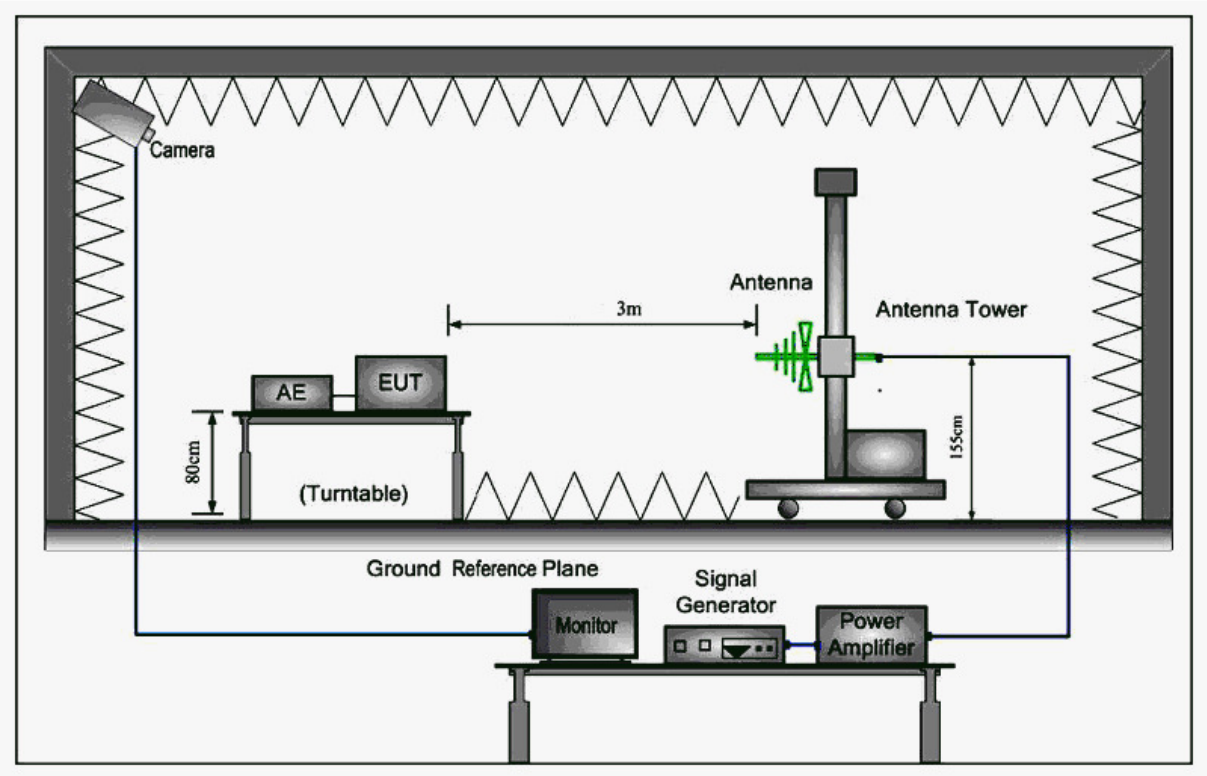
Results:

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 Test Setup:



7.3.2 E.U.T. Operation

Operating Environment:

Temperature: 21 °C Humidity: 53 % RH Atmospheric Pressure: 1004 mbar

Test Mode: a: Test in LED lighting mode (for CDAC-20-30135-230V-30).
b: Test in LED lighting mode (for CBHT-84-30135-230V-30).

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

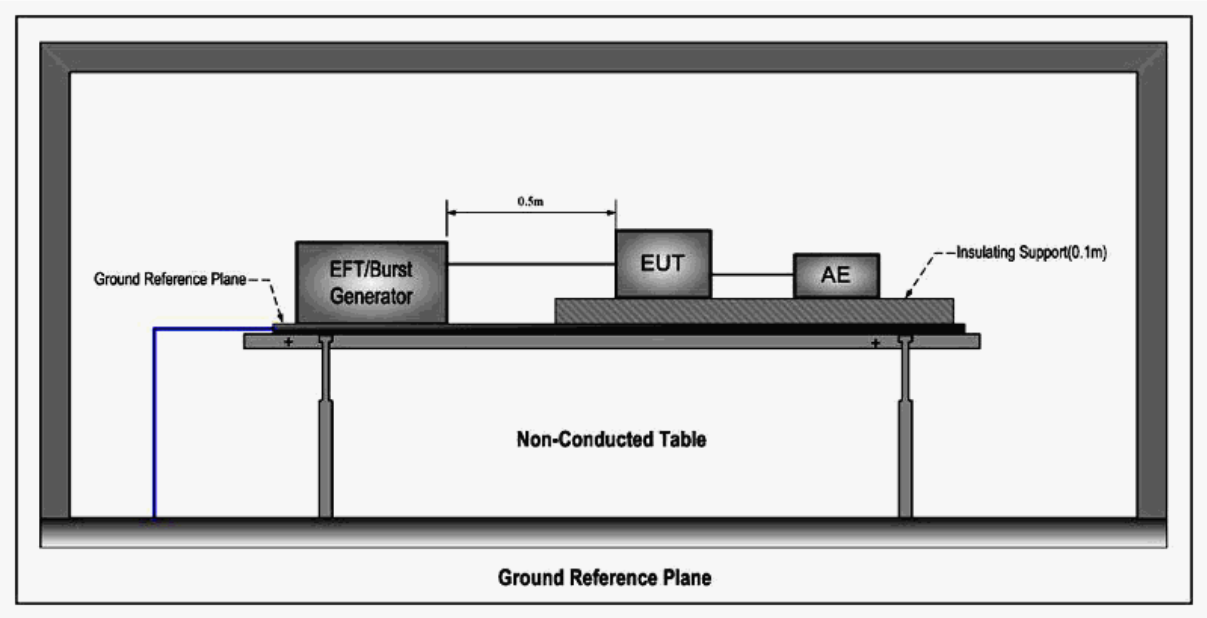
Results:

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 Test Setup:



7.4.2 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 55 % RH Atmospheric Pressure: 1004 mbar

Test Mode: a: Test in LED lighting mode (for CDAC-20-30135-230V-30).
b: Test in LED lighting mode (for CBHT-84-30135-230V-30).

7.4.3 Test Results:

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

Results:

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

7.5 Surge at Power Port

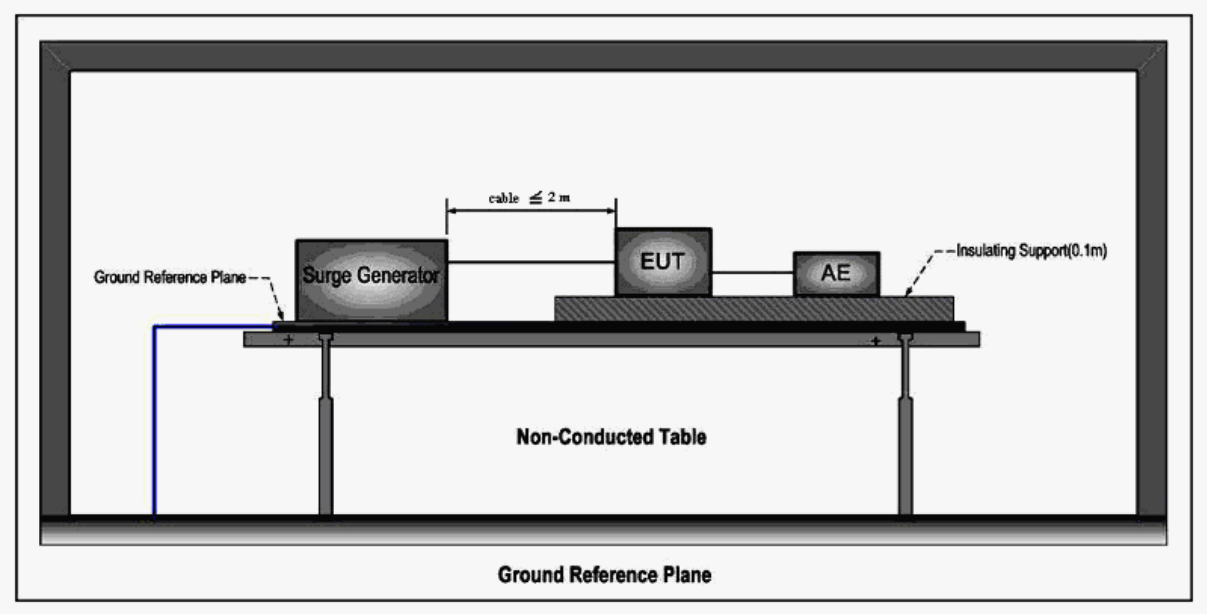
Test Requirement: EN 61547:2009

Test Method: EN 61000-4-5:2014

Performance Criterion: C

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

7.5.1 Test Setup:



7.5.2 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 55 % RH Atmospheric Pressure: 1004 mbar

Test Mode: a: Test in LED lighting mode (for CDAC-20-30135-230V-30).
b: Test in LED lighting mode (for CBHT-84-30135-230V-30).

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

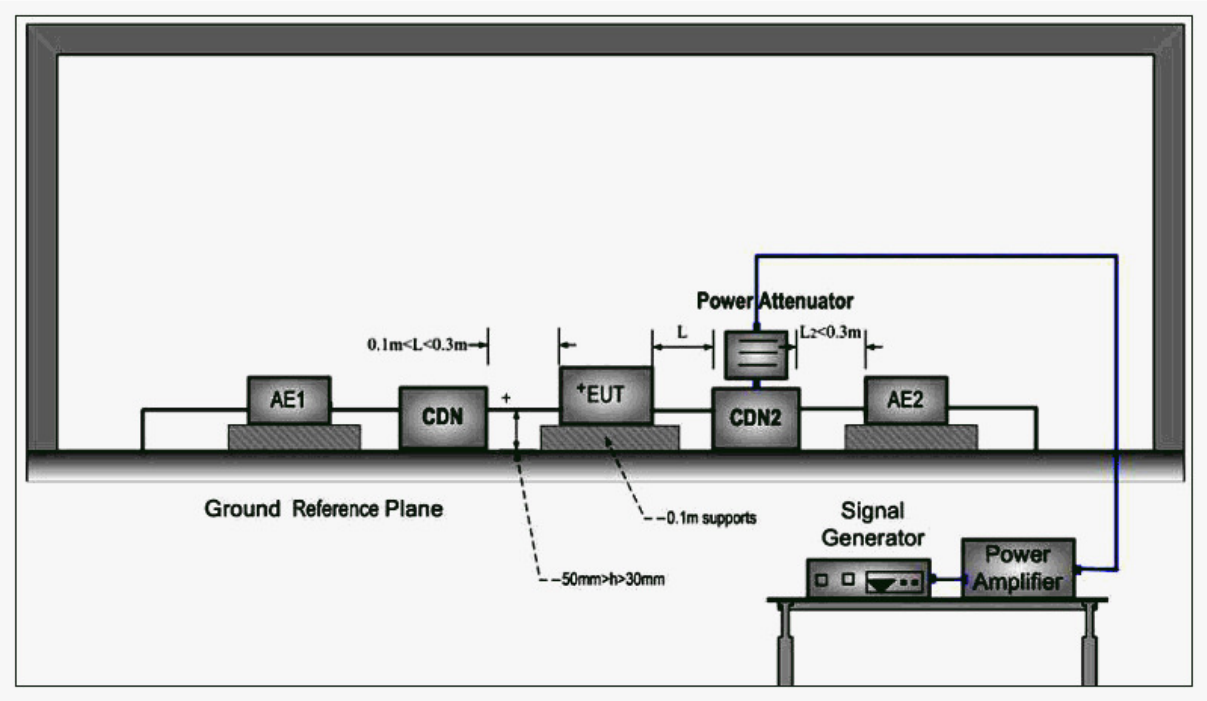
Results:

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 Test Setup:



7.6.2 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 55 % RH Atmospheric Pressure: 1004 mbar

Test Mode: a: Test in LED lighting mode (for CDAC-20-30135-230V-30).
b: Test in LED lighting mode (for CBHT-84-30135-230V-30).

7.6.3 Test Results:

Cable port	Level (Vrms)	Direct/Coupling	Dwell time	Result / Observations
AC power port	3	Direct	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

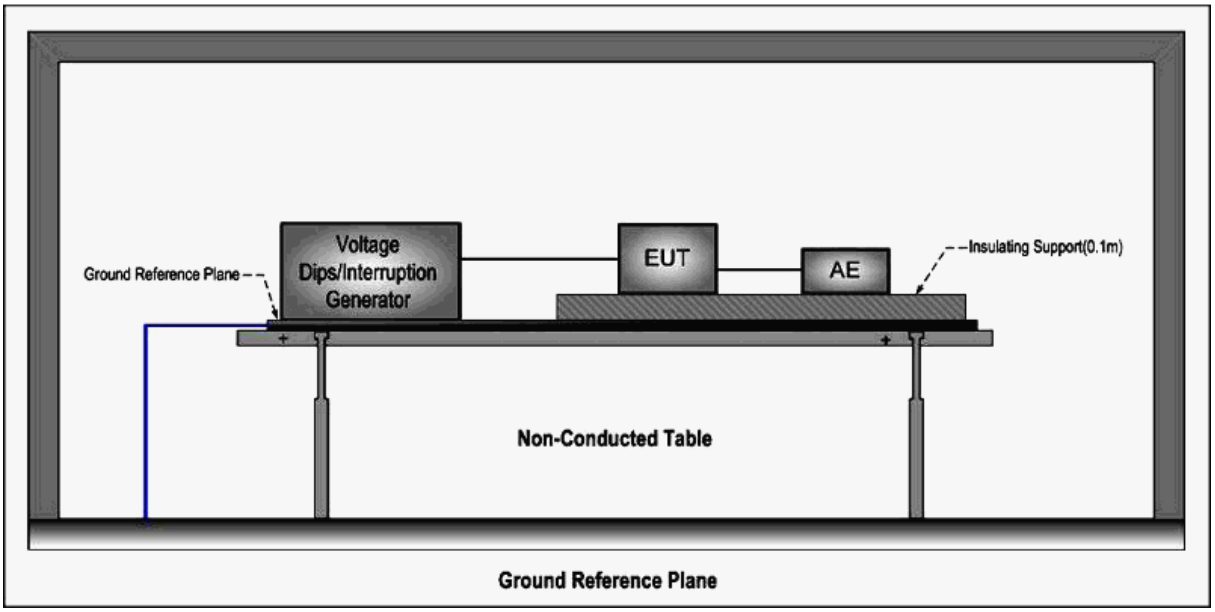
Test Method: EN 61000-4-11:2004

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

No. of Dips / Interruptions: 3 per Level

Time between dropout 10s

7.7.1 Test Setup:



7.7.2 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 55 % RH Atmospheric Pressure: 1004 mbar

Test Mode: a: Test in LED lighting mode (for CDAC-20-30135-230V-30).
b: Test in LED lighting mode (for CBHT-84-30135-230V-30).

7.7.3 Test Results:

Level % UT	Phase (deg)	Duration	No. of Dips / Interruptions	Result / Observations
0	0°	0.5 Periods	3	B
0	180°	0.5 Periods	3	B
70	0°	10 Periods	3	B
70	180°	10 Periods	3	B

Results:

B: During test, the EUT LED lighting occured flicker; After test, it could recover normal automatically.

8 Photographs

8.1 Conducted Disturbance at Mains Terminals(9KHz-30MHz) Test Setup

CBHT-84-30135-230V-30

CDAC-20-30135-230V-30

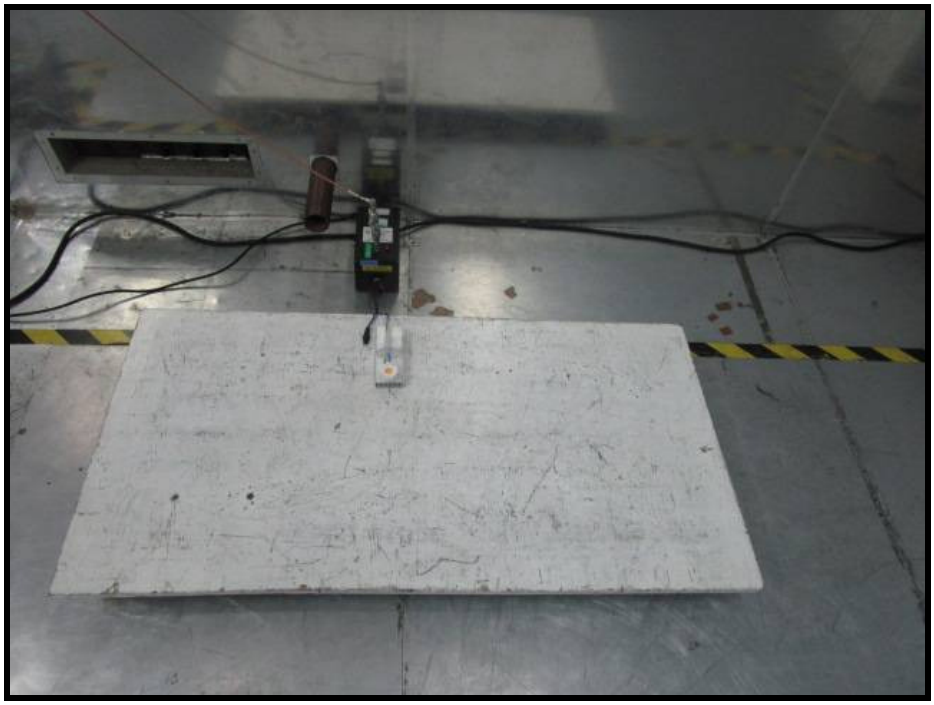
8.2 Radiated Disturbance (Magnetic field Induced Current)(9KHz-30MHz) Test Setup

CBHT-84-30135-230V-30

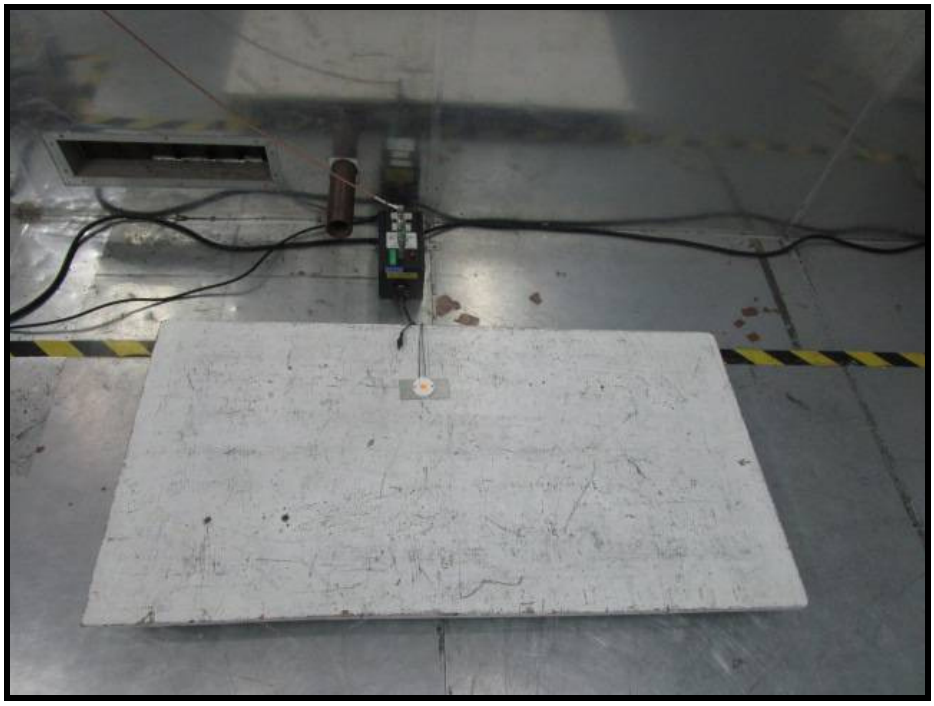
CDAC-20-30135-230V-30

8.3 Conducted RF Emission Test for CDN method Test Setup

CBHT-84-30135-230V-30

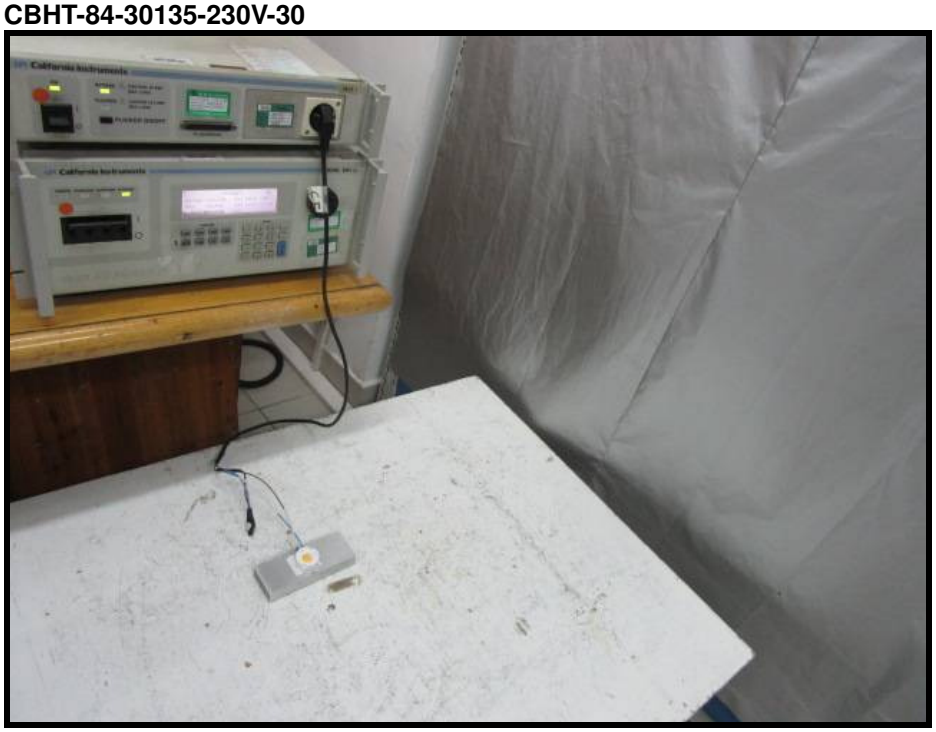


CDAC-20-30135-230V-30



8.4 Voltage Fluctuations and Flicker Test Setup

CBHT-84-30135-230V-30



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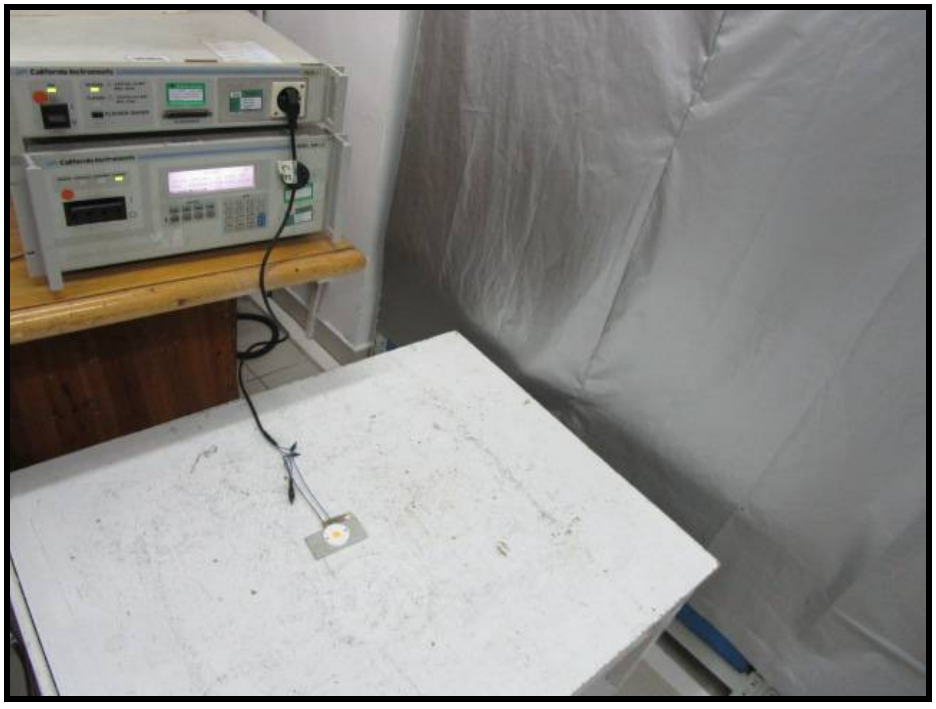


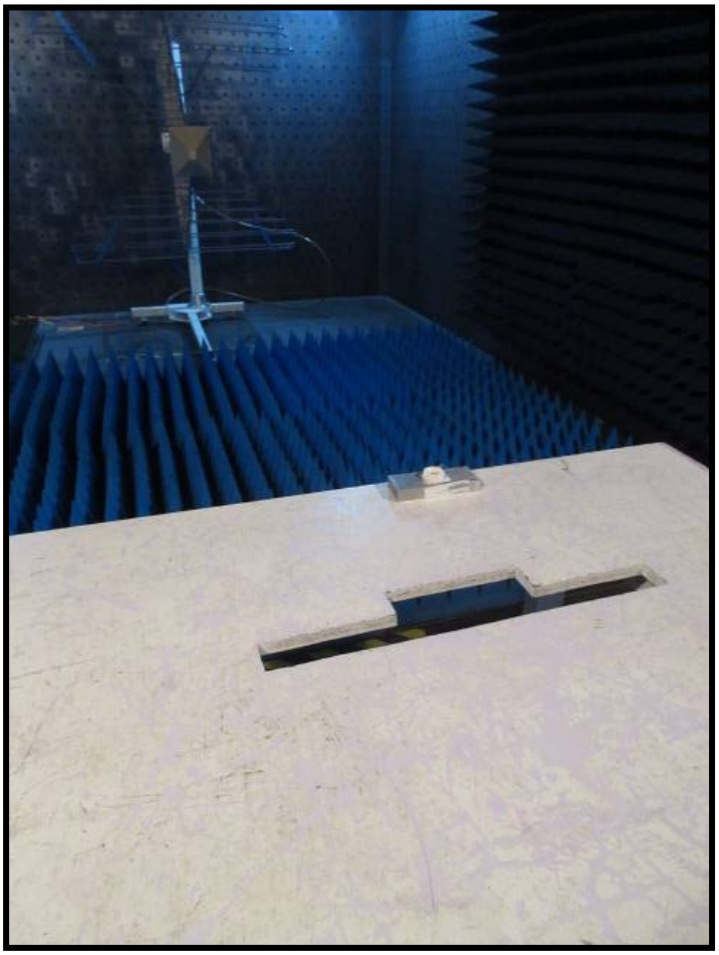
8.5 Electrostatic Discharge Test Setup

CBHT-84-30135-230V-30

CDAC-20-30135-230V-30

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

CBHT-84-30135-230V-30



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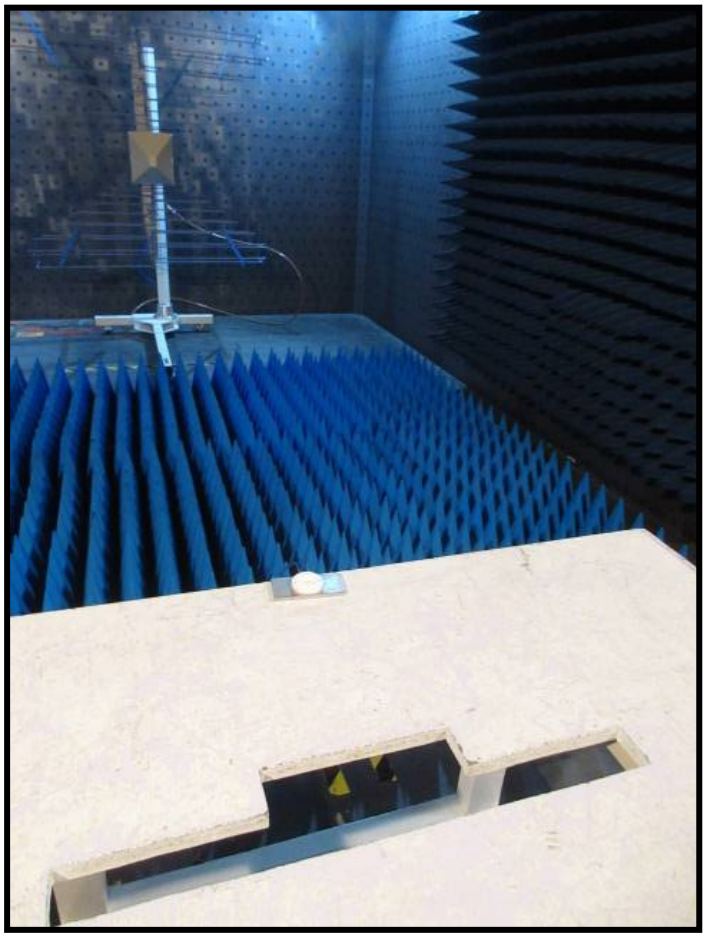
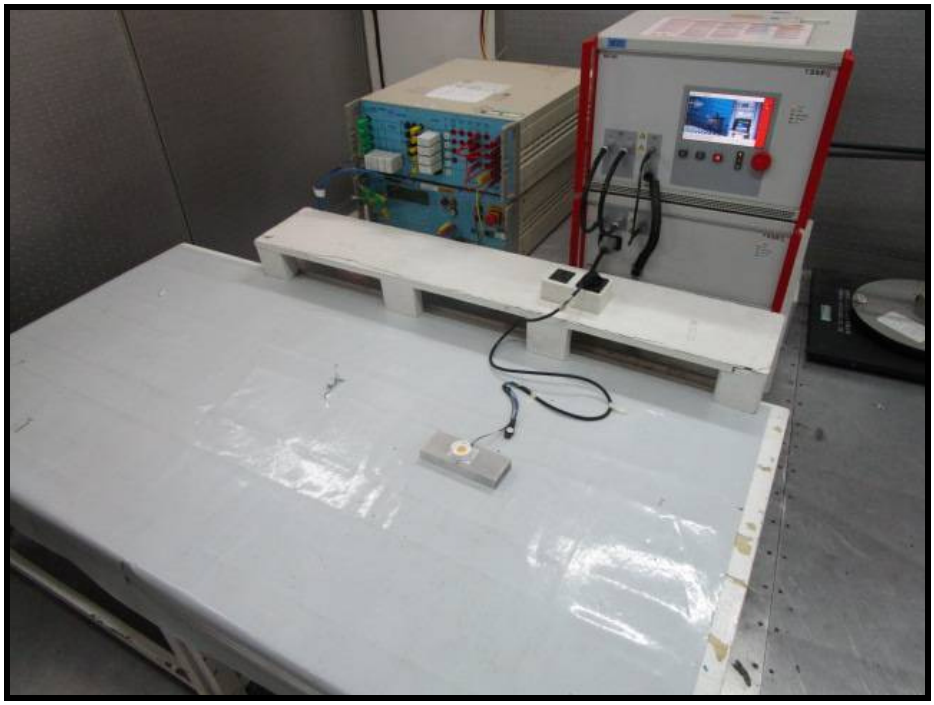


8.7 Electrical Fast Transients/Burst at Power Port Test Setup

CBHT-84-30135-230V-30



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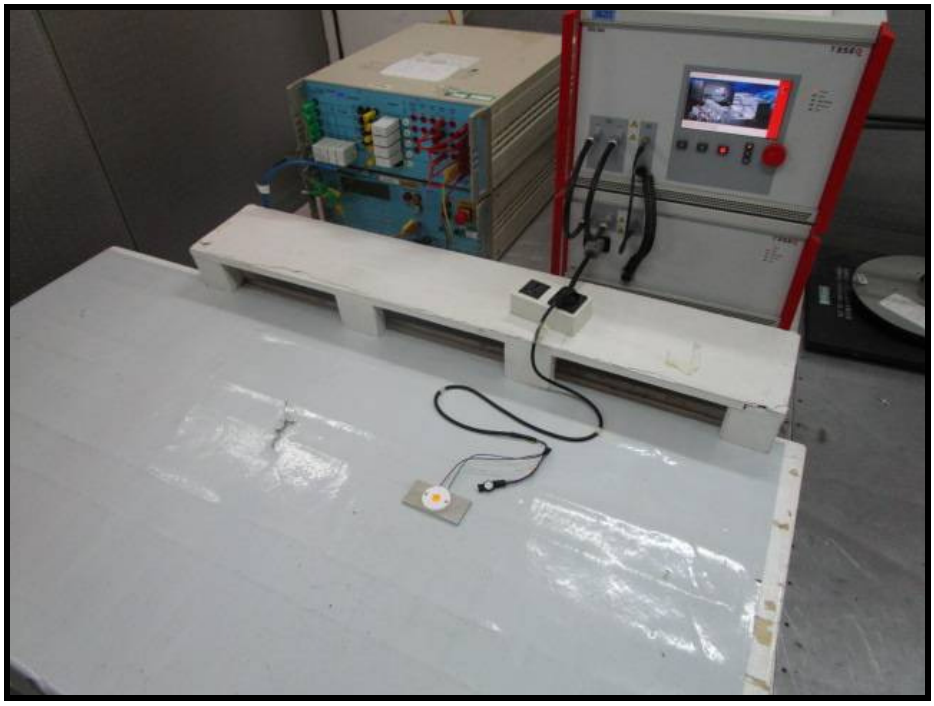
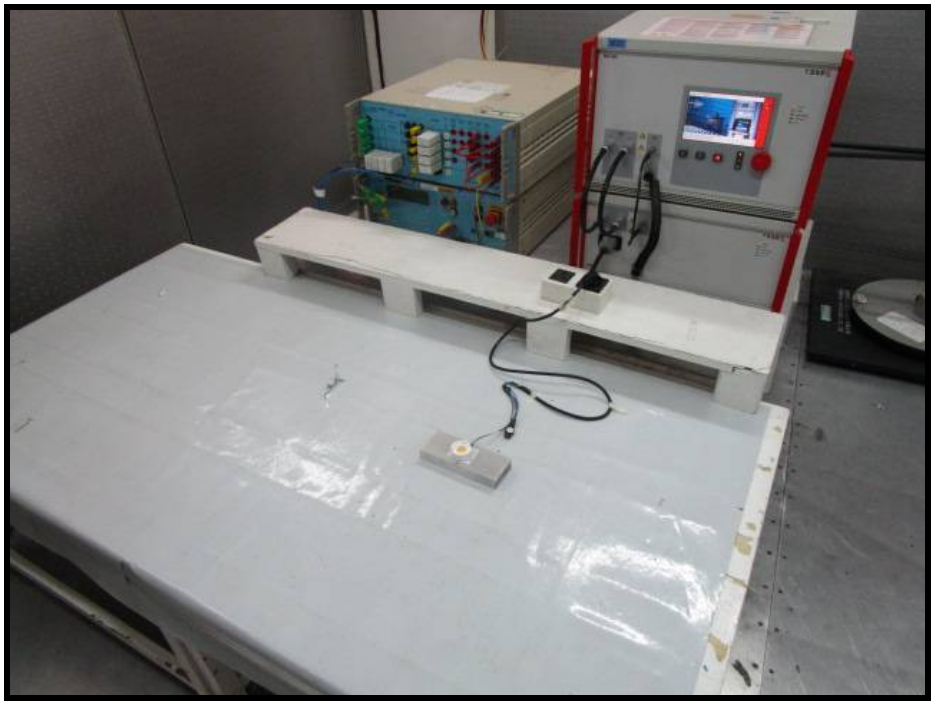


8.8 Surge at Power Port Test Setup

CBHT-84-30135-230V-30



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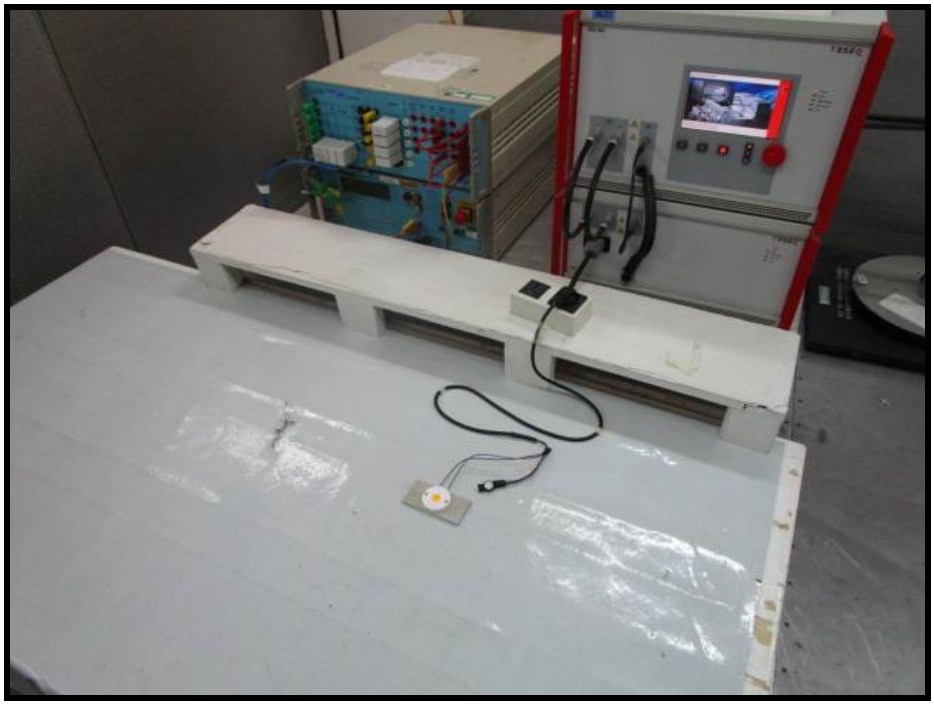

8.9 Conducted Immunity at Power Port(150kHz-80MHz) Test Setup

CBHT-84-30135-230V-30

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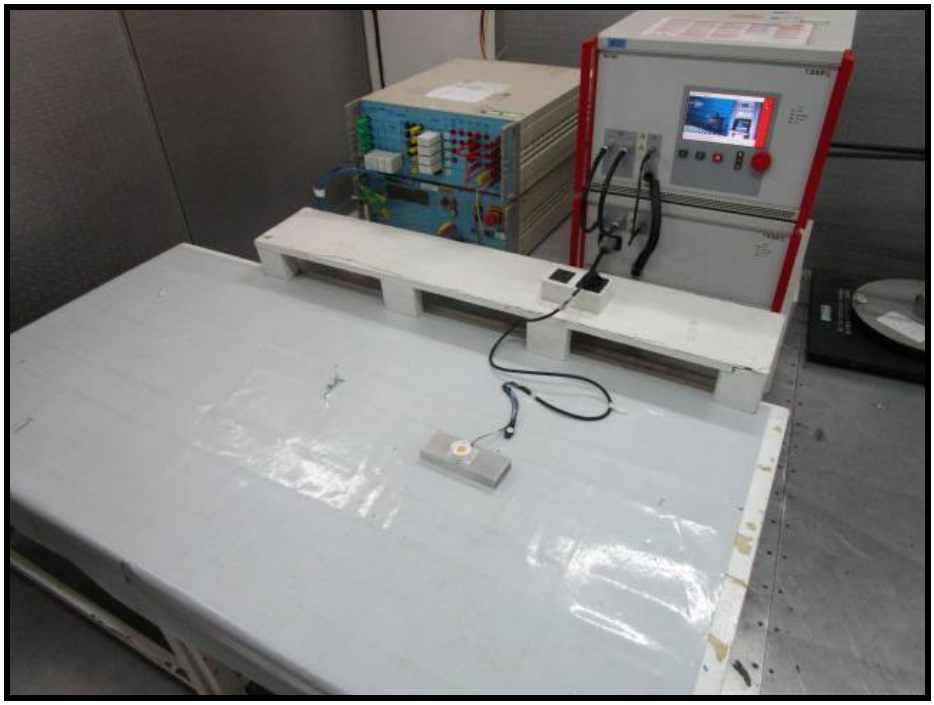
8.10 Voltage Dips and Interruptions Test Setup

CBHT-84-30135-230V-30



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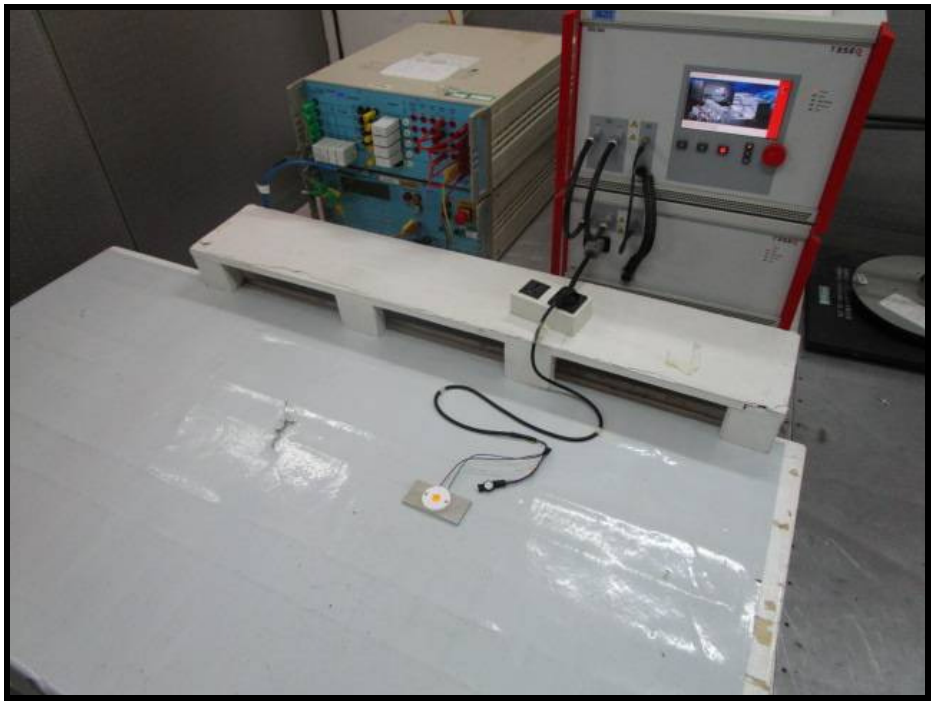
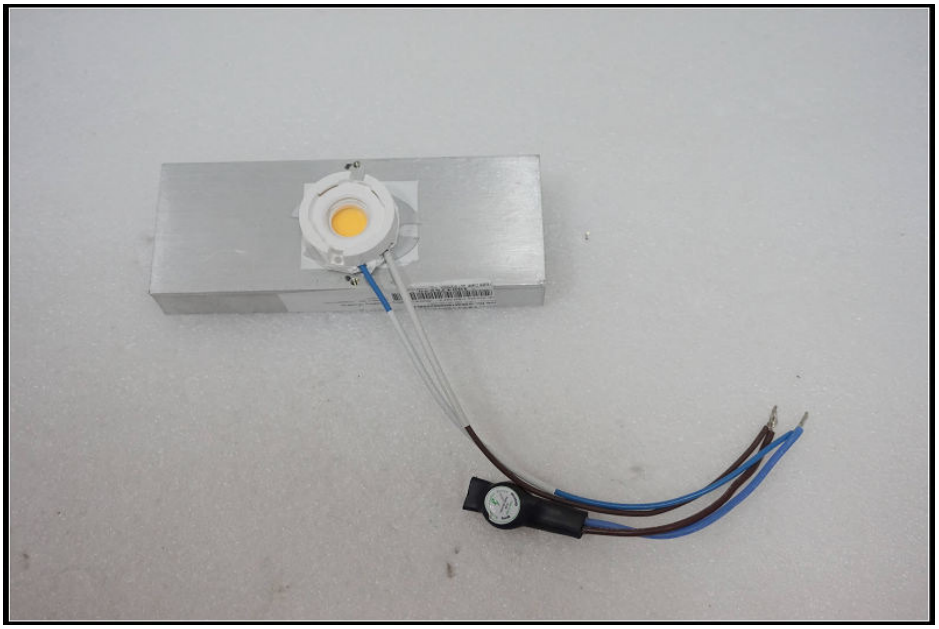
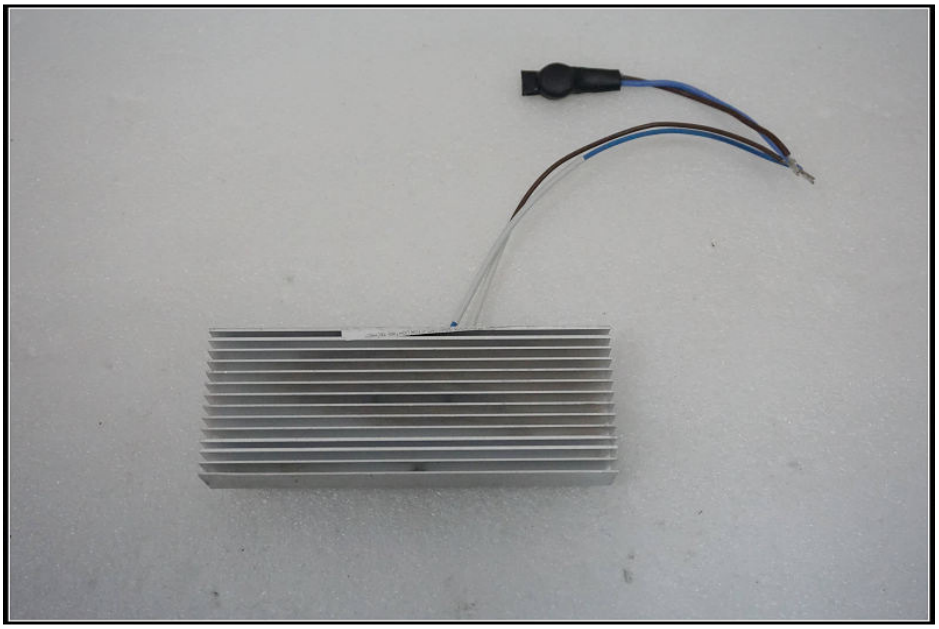
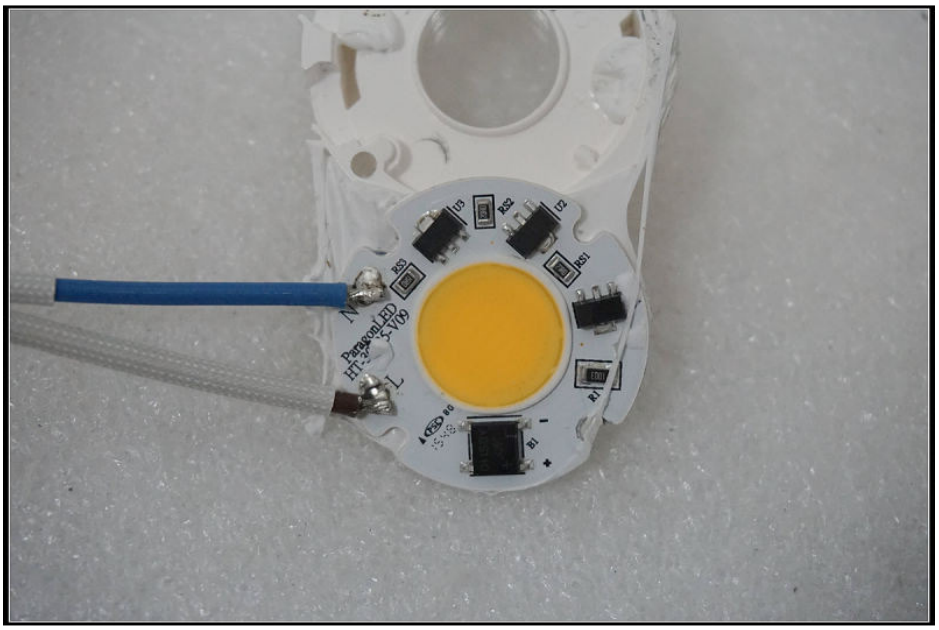


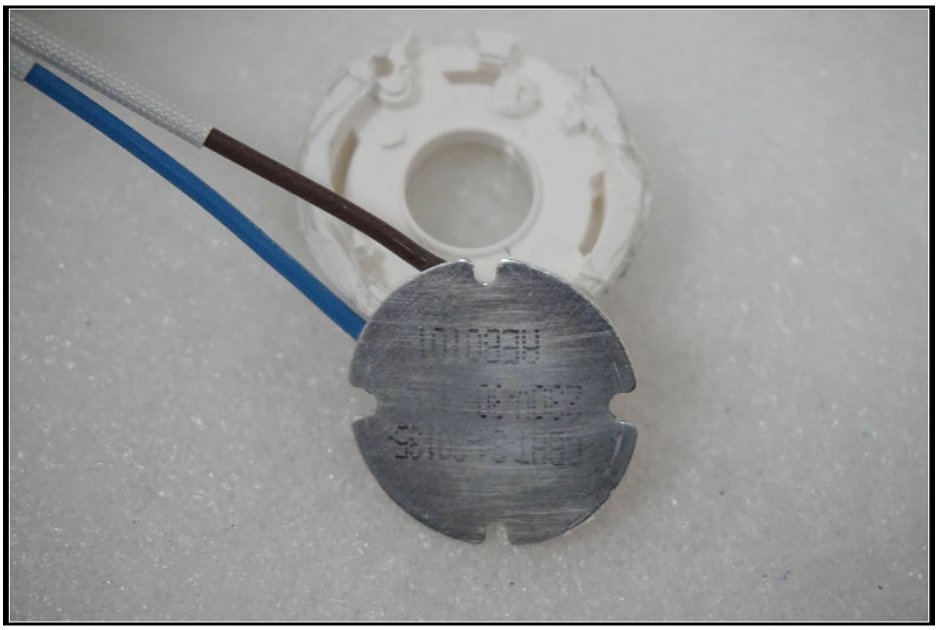
8.11 EUT Constructional Details

CBHT-84-30135-230V-30









CDAC-20-30135-230V-30