Intertek Legal Entity: Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
Address: Block E, No.7-2 Guang Dong Software Science Park, Caipin Road,
Guangzhou Science City, GETDD Guangzhou, China
Tel / Fax: 86-20-8213 9688/86-20-3205 7538

Test Verification of Conformity

On the basis of the referenced test report(s), the sample(s) of the below product has been found to comply with the relevant harmonized standard(s) to the directive(s) listed on this verification at the time the tests were carried out.
The manufacturer may indicate compliance to only the said directives by signing a DoC himself and may affix the CE marking to products identical to the tested sample(s) if the product complies with all CE marking directives that has the product in their scope. In addition, the manufacturer shall file and keep the documentation according to the rules of the applicable directive(s) and shall consider changes of the standards as they may occur. Additional requirements, additional directives and local laws may be applicable.

Applicant Name & Address	:	Eaglerise Electronics (Foshan) Co., Ltd. No. 4, East Huanzhen Road, Beijiao, Shunde, Foshan, Guangdong, 528000, China
Product(s) Tested	:	Electronic controlgear for LED (Electronic LED driver)
Ratings and principal characteristics	:	See Annex to Test Verification of Conformity
Model(s)	:	See Annex to Test Verification of Conformity
Brand name	:	EAGLERISE for model EIP030V0120US and EIP030V0240US; K-LIGHT for model LD30V12F and LD30V24F
Relevant Standard(s) / Specification(s) / Directive(s)	:	EN 55015: 2006+A1: 2007+A2: 2009/ Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment EN 61000-3-2: 2006+ A1: 2009+ A2: 2009/ Electromagnetic compatibility (EMC) – Part 3-2: Limits – Limits for harmonic current emissions (equipment input current ≤ 16 A per phase) EN 61000-3-3: 2008/ Electromagnetic compatibility (EMC) – Part 3-3: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection EN 61547: 2009/ Equipment for general lighting purposes — EMC immunity requirements EMC Directive 2004/108/EC
Verification Issuing Office Name & Address	:	Same as Legal Entity
Verification/Report Number(s)	:	GZ12051285-1/ GZ12051285-1

Note 1 : This verification is part of the full test report(s) and should be read in conjunction with it.

CE

Signature

Name: Carrie Chen
Position: Technical Supervisor
Date: 09 Aug., 2012

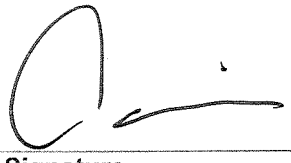
Intertek Legal Entity: Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
Address: Block E, No,7-2 Guang Dong Software Science Park, Caipin Road,
Guangzhou Science City, GETDD Guangzhou
Tel / Fax: 86-20-8213 9688/86-20-3205 7538

Annex to Test Verification of Conformity

This is an Annex to Test Verification of Conformity with Verification/Report Number(s): GZ12051285-1/ GZ12051285-1. The issuing office is Intertek Testing Services Shenzhen Ltd. Guangzhou Branch (Address: Block E, No, 7-2 Guang Dong Software Science Park, Caipin Road Guangzhou Science City, GETDD Guangzhou).

Ratings and principal characteristics	:	**Input: 220-240 VAC; 50/60 Hz; 0,18 A; Class II; IP 20; SELV; ta 50 °C; tc 85 °C; Independent type; 110 °C thermal protection;** **Inherently short-circuit proof; MM mark; Suitable for direct mounting on normally flammable surfaces; Constant voltage type for output;** **Output for EIP030V0120US: Constant voltage type; 12 VDC; Max. 30 W;** **Output for EIP030V0240US: Constant voltage type; 24 VDC; Max. 30 W**
Model(s)	:	**EIP030V0120US(LD30V12F); EIP030V0240US(LD30V24F)** **Remark: model EIP030V0120US and LD30V12F are identical except model description. The same situation is for model EIP030V0240US and LD30V24F.**

Note 1: This annex is part of the Test Verification of Conformity and should be read in conjunction with it.



Signature

Name: Carrie Chen
Position: Technical Supervisor
Date: 09 Aug., 2012

Report No.: GZ12051285-1

TEST REPORT

Applicant Name & Address	:	Eaglerise Electronics (Foshan) Co., Ltd. No. 4, East Huanzhen Road, Beijiao, Shunde, Foshan, Guangdong, 528000, China
Manufacturing Site	:	Same as applicant

Sample Description

Product	:	Electronic controlgear for LED (Electronic LED driver)
Model No.	:	EIP030V0120US(LD30V12F); EIP030V0240US(LD30V24F) Remark: model EIP030V0120US and LD30V12F are identical except model description. The same situation is for model EIP030V0240US and LD30V24F.
Electrical Rating	:	Input: 220-240 VAC; 50/60 Hz; 0,18 A; Class II; IP 20; SELV; ta 50 °C; tc 85 °C; Independent type; 110 °C thermal protection; Inherently short-circuit proof; MM mark; Suitable for direct mounting on normally flammable surfaces; Constant voltage type for output; Output for EIP030V0120US: Constant voltage type; 12 VDC; Max. 30 W; Output for EIP030V0240US: Constant voltage type; 24 VDC; Max. 30 W

Date Received	:	21 May 2012
Date Test Conducted	:	04 June 2012 – 07 June 2012
Test standards	:	**EN 55015: 2006+A1: 2007+A2: 2009** **EN 61000-3-2: 2006+ A1:2009+ A2:2009** **EN 61000-3-3: 2008** **EN 61547: 2009**
Test Result	:	Pass
Conclusion	:	The submitted samples complied with the above EMC standards.
Remark	:	None.

**********End of Page**********

Prepared and Checked By:

Helen Ma

Helen Ma
Project Engineer
Intertek Guangzhou

Approved By:

Signature

Carrie Chen
Technical Supervisor
Intertek Guangzhou
09 Aug., 2012 ***Date***

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
Block E, No.7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City, GETDD Guangzhou, China
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CONTENT

1 TEST RESULTS SUMMARY

Test Item	Standard	Result
Continuous conducted disturbance voltage	EN 55015: 2006+A1: 2007+A2: 2009	Pass
Radiated electromagnetic disturbance (9 kHz -30 MHz)	EN 55015: 2006+A1: 2007+A2: 2009	Pass
Radiated Electromagnetic Disturbance (30 MHz -300 MHz)	EN 55015: 2006+A1: 2007+A2: 2009	Pass
Insertion loss	EN 55015: 2006+A1: 2007+A2: 2009	N/A
Harmonic of current	EN 61000-3-2: 2006+ A1:2009+ A2:2009	Pass
Flicker	EN 61000-3-3: 2008	Pass
ESD immunity	EN 61547:2009 Reference: EN 61000-4-2: 2009	Pass
Radiated EM filed immunity	EN 61547:2009 Reference: EN 61000-4-3:2006+A1 :2008	Pass
EFT immunity	EN 61547:2009 Reference: EN 61000-4-4:2004	Pass
Surge immunity	EN 61547:2009 Reference: EN 61000-4-5:2006	Pass
Inject current immunity	EN 61547:2009 Reference: EN 61000-4-6:2009	Pass
Power frequency magnetic field immunity	EN 61547:2009 Reference: EN 61000-4-8:1993+A1:2001	N/A
Voltage dips and interruption immunity	EN 61547:2009 Reference: EN 61000-4-11:2004	Pass

Remark: 1. The symbol "N/A" in above table means Not Applicable.
2. When determining the test results, measurement uncertainty of tests has been considered.

2 EMC Results Conclusion
(with Justification)

RE: EMC Testing Pursuant to EMC Directive 2004/108/EC Performed on the Electronic controlgear for LED (Electronic LED driver), Models: EIP030V0120US(LD30V12F); EIP030V0240US(LD30V24F).

We tested the Electronic controlgear for LED (Electronic LED driver), Model: EIP030V0120US, EIP030V0240US, to determine if they were in compliance with the relevant EN standards as marked on the Test Results Summary. We found that the unit met the requirement of EN 55015, EN 61000-3-2, EN 61000-3-3, EN 61547 (EN 61000-4-2), EN 61547 (EN 61000-4-4), EN 61547 (EN 61000-4-6), EN 61547 (EN 61000-4-5), EN 61547 (EN 61000-4-11), & EN 61547 (EN 61000-4-3) standards when tested as received. The worst case's test data was presented in this test report. Test items Radiated Electromagnetic Disturbance (30 MHz -300 MHz) and Radiated EM filed immunity were subcontracted.

The production units are required to conform to the initial sample as received when the units are placed on the market.

3 LABORATORY MEASUREMENTS

Configuration Information

Equipment Under Test (EUT):	Electronic controlgear for LED (Electronic LED driver)
Model:	EIP030V0120US; EIP030V0240US
Serial No.	Not Labeled
Support Equipment:	N/A
Rated Voltage:	220-240V, 50/60Hz
Condition of Environment:	Temperature : 15~25°C Relative Humidity: 35~60% Atmosphere Pressure 86~106kPa

Notes:
1. The EMI measurements had been made in the operating mode produced the largest emission in the frequency band being investigated consistent with normal applications.
An attempt had been made to maximize the emission by varying the configuration of the EUT.

2. The EMS measurements had been made in the frequency bands being investigated, with the EUT in the most susceptible operating mode consistent with normal applications. The configuration of the test sample had been varied to achieve maximum susceptibility.

4 EMI TEST

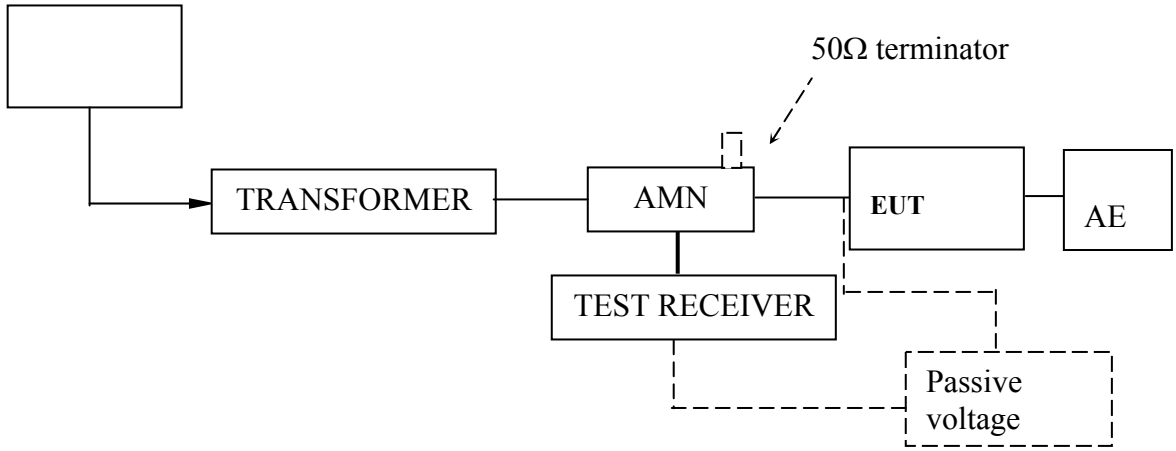
4.1 EN 55015 Continuous Conducted Disturbance Voltage Test

Test Result: Pass

4.1.1 Used Test Equipment

Equipment No.	Equipment	Model	Manufacturer
EM080-05	EMI receiver	ESCI	R&S
EM006-05	LISN	ENV216	R&S
EM004-04	EMC shield Room	8m×3m×3m	Zhongyu

4.1.2 Block Diagram of Test Setup



4.1.3 Test Setup and Procedure

The EUT was set to achieve the maximum emission level. The mains terminal disturbance voltage was measured with the EUT in a shielded room. The EUT was connected to AC power source through an Artificial Mains Network which provide a 50Ω linear impedance Artificial hand is used if appropriate (for handheld apparatus). The load/control terminal disturbance voltage was measured with passive voltage probe if appropriate.

The EUT was placed on a 0.4m high non-metallic table above a metallic plane, and 0.4m from wall of shielded room which is considered as Ground Reference Plane (GRP) (For floor standing EUT, was placed on a 0.1m high non-metallic supported on GRP) The EUT keeps a distance of at least 0.8m from any other of the metallic surface. The Artificial Mains Network is situated at a distance of 0.8m from the EUT.

During the test, mains lead of EUT excess 0.8m was folded back and forth parallel to the lead so as to form a horizontal bundle with a length between 0.3m and 0.4m.

The bandwidth of test receiver was set at 200Hz in the frequency range from 9kHz to 150KHz, and 9kHz in the frequency range from 150kHz to 30MHz.

4.1.4 Test Data

At main terminal: Pass

Model: EIP030V0120US

Tested Wire: Live **Operation Mode: on mode**

EDIT PEAK LIST (Final Measurement Results)					
Trace1:	CE1511QP				
Trace2:	CE1511AV				
Trace3:	---				
TRACE		FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
1	Quasi Peak	60.44 kHz	66.07	L1	-22.19
2	Average	150 kHz	40.89	L1	-15.10
1	Quasi Peak	154 kHz	58.58	L1	-7.19
1	Quasi Peak	190 kHz	48.11	L1	-15.92
2	Average	310 kHz	36.87	L1	-13.09
1	Quasi Peak	490 kHz	40.86	L1	-15.29
2	Average	490 kHz	33.78	L1	-12.37
1	Quasi Peak	526 kHz	40.21	L1	-15.78
2	Average	566 kHz	32.92	L1	-13.07
2	Average	1.258 MHz	32.63	L1	-13.36
1	Quasi Peak	1.418 MHz	44.35	L1	-11.64
2	Average	1.95 MHz	38.02	L1	-7.97
1	Quasi Peak	2.142 MHz	46.09	L1	-9.90
2	Average	2.382 MHz	33.97	L1	-12.02
1	Quasi Peak	2.49 MHz	44.61	L1	-11.39
2	Average	4.982 MHz	25.61	L1	-20.38
1	Quasi Peak	4.986 MHz	35.44	L1	-20.55

Tested Wire: Neutral **Operation Mode: on mode**

EDIT PEAK LIST (Final Measurement Results)					
Trace1:	CE1511QP				
Trace2:	CE1511AV				
Trace3:	---				
TRACE		FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
1	Quasi Peak	60.44 kHz	66.73	L1	-21.54
1	Quasi Peak	154 kHz	55.92	L1	-9.85
1	Quasi Peak	310 kHz	42.91	L1	-17.05
2	Average	310 kHz	37.42	L1	-12.54
1	Quasi Peak	434 kHz	44.46	L1	-12.71
2	Average	490 kHz	34.18	L1	-11.98
1	Quasi Peak	558 kHz	41.87	L1	-14.12
2	Average	562 kHz	35.01	L1	-10.98
2	Average	1.254 MHz	34.87	L1	-11.12
1	Quasi Peak	1.402 MHz	46.10	L1	-9.89
2	Average	1.942 MHz	39.77	L1	-6.22
1	Quasi Peak	2.134 MHz	47.95	L1	-8.04
2	Average	2.494 MHz	35.73	L1	-10.26
1	Quasi Peak	2.606 MHz	46.73	L1	-9.26
1	Quasi Peak	4.694 MHz	37.25	L1	-18.74
2	Average	4.798 MHz	26.59	L1	-19.40

Model: EIP030V0240US

Tested Wire: Live **Operation Mode: on mode**

EDIT PEAK LIST (Final Measurement Results)					
Trace1:	CE1511QP				
Trace2:	CE1511AV				
Trace3:	---				
TRACE		FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
1	Quasi Peak	154 kHz	54.58	L1	-11.19
2	Average	154 kHz	42.31	L1	-13.47
1	Quasi Peak	306 kHz	38.16	L1	-21.91
2	Average	310 kHz	32.09	L1	-17.87
2	Average	386 kHz	37.72	L1	-10.42
1	Quasi Peak	486 kHz	41.89	L1	-14.33
1	Quasi Peak	534 kHz	41.15	L1	-14.84
2	Average	702 kHz	34.11	L1	-11.88
1	Quasi Peak	1.326 MHz	43.88	L1	-12.11
2	Average	1.326 MHz	33.21	L1	-12.78
2	Average	1.874 MHz	34.46	L1	-11.53
1	Quasi Peak	2.054 MHz	43.02	L1	-12.97
1	Quasi Peak	2.39 MHz	41.58	L1	-14.41
2	Average	2.97 MHz	30.22	L1	-15.77
2	Average	3.962 MHz	27.66	L1	-18.33
1	Quasi Peak	3.974 MHz	37.62	L1	-18.37
1	Quasi Peak	7.142 MHz	33.70	L1	-26.30

Tested Wire: Neutral **Operation Mode: on mode**

EDIT PEAK LIST (Final Measurement Results)					
Trace1:	CE1511QP				
Trace2:	CE1511AV				
Trace3:	---				
TRACE		FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
1	Quasi Peak	154 kHz	56.52	L1	-9.25
2	Average	154 kHz	43.49	L1	-12.28
1	Quasi Peak	310 kHz	39.74	L1	-20.23
2	Average	310 kHz	33.75	L1	-16.21
2	Average	386 kHz	39.19	L1	-8.95
1	Quasi Peak	478 kHz	42.78	L1	-13.58
1	Quasi Peak	522 kHz	42.23	L1	-13.76
2	Average	702 kHz	35.39	L1	-10.61
1	Quasi Peak	1.326 MHz	45.17	L1	-10.82
2	Average	1.326 MHz	34.63	L1	-11.36
2	Average	1.874 MHz	35.39	L1	-10.60
1	Quasi Peak	2.074 MHz	47.17	L1	-8.83
1	Quasi Peak	2.778 MHz	42.58	L1	-13.41
2	Average	2.89 MHz	30.94	L1	-15.05
1	Quasi Peak	3.978 MHz	38.72	L1	-17.27
2	Average	3.982 MHz	28.83	L1	-17.17
1	Quasi Peak	6.95 MHz	34.56	L1	-25.44

At load/control terminal: Not Applicable

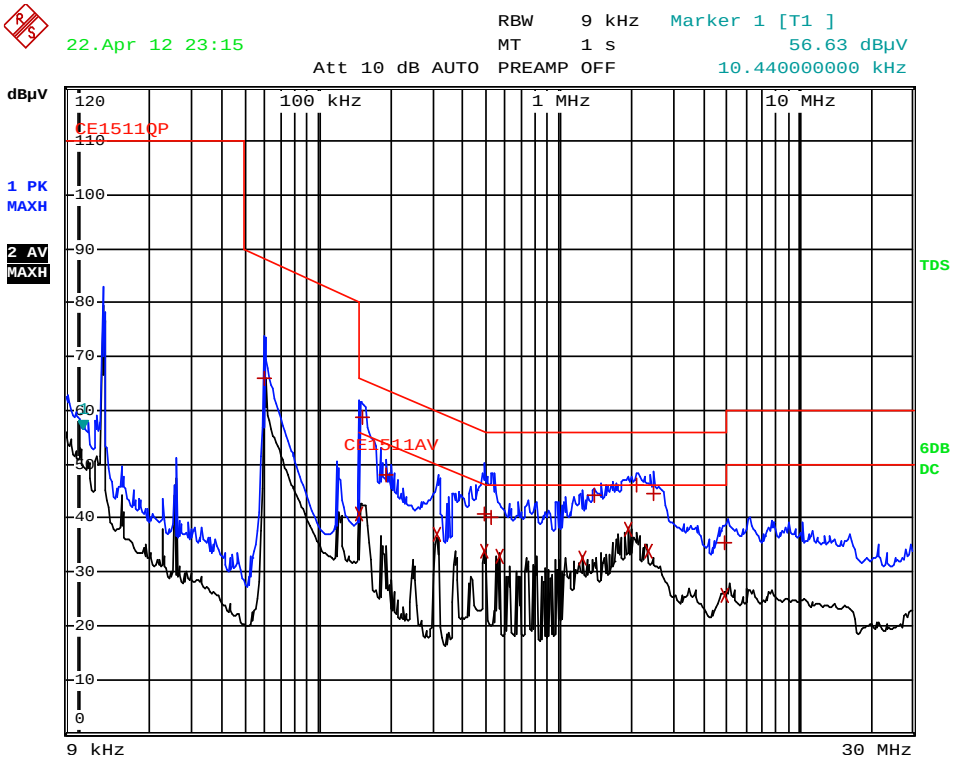
Frequency	Quasi-Peak		Average	
[MHz]	Disturbance level [dB(μV)]	Permitted limit [dB(μV)]	Disturbance level [dB(μV)]	Permitted limit [dB(μV)]
--	--	--	--	--
--	--	--	--	--
--	--	--	--	--
--	--	--	--	--
--	--	--	--	--

4.1.5 Emission Curve

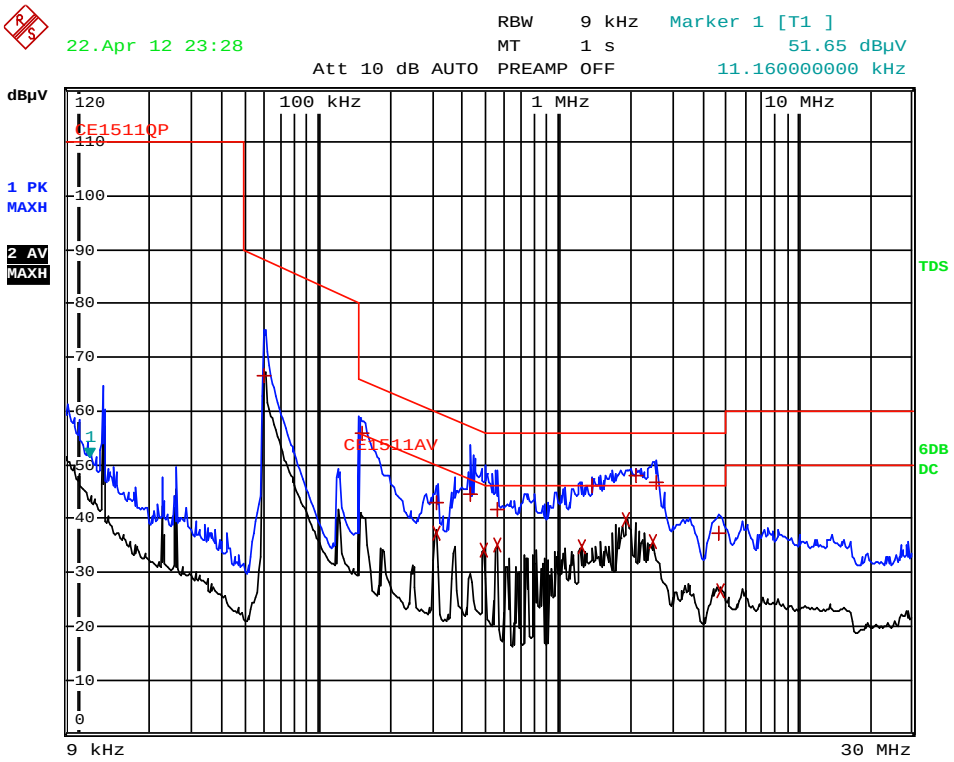
At mains terminal:

Model: EIP030V0120US

Tested Wire: Live

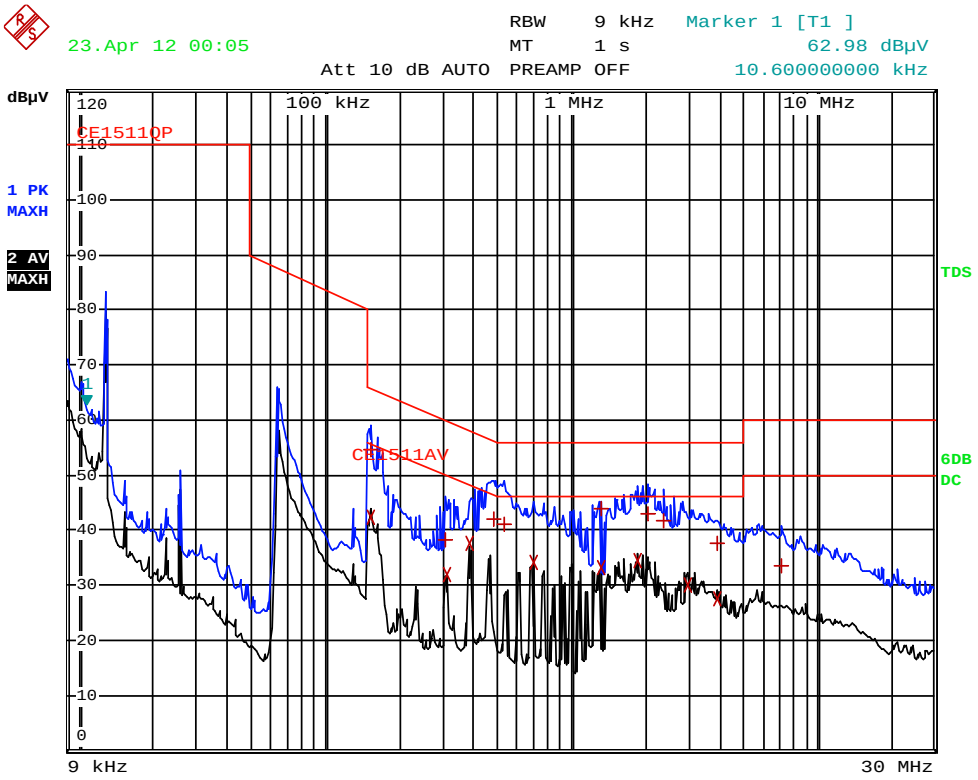


Tested Wire: Neutral

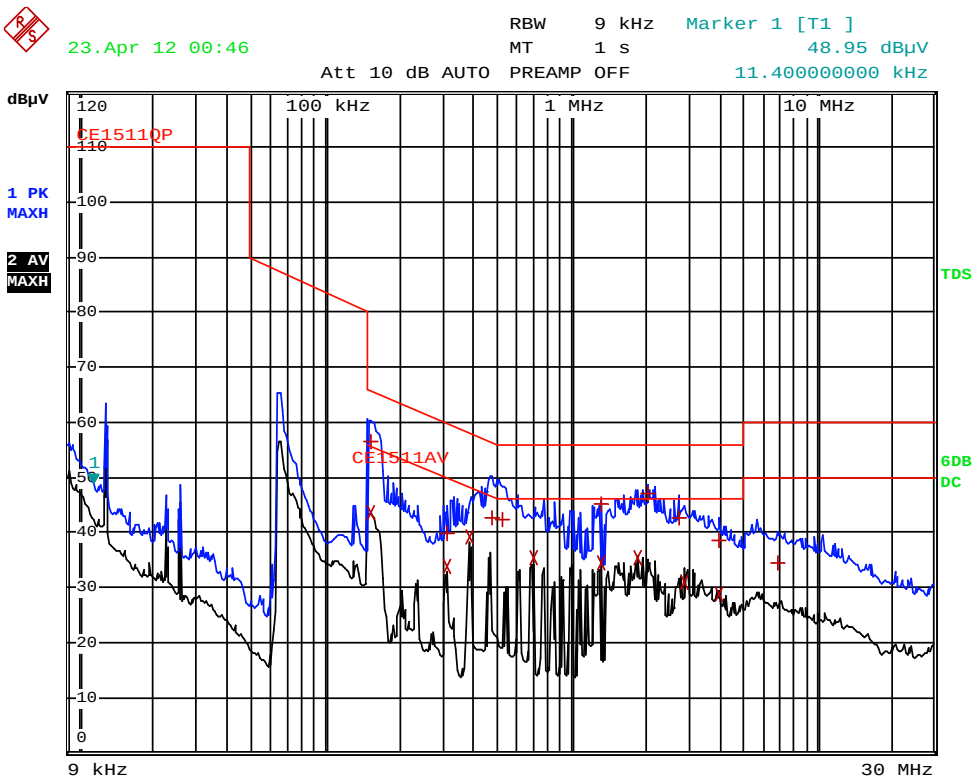


Model: EIP030V0240US

Tested Wire: Live



Tested Wire: Neutral



At load/control terminal:

Not Applicable.

4.1.6 Measurement Uncertainty

The measurement uncertainty describes the overall uncertainty of the given measured value during the operation of the EUT.
Measurement uncertainty is calculated in accordance with CISPR 16-4-2: 2003.
Measurement uncertainty of mains terminal disturbance voltage in CISPR band A: 1.6 dB.
Measurement uncertainty of mains terminal disturbance voltage in CISPR band B: 2.3 dB.
The measurement uncertainty is given with a confidence of 95%, k=2.

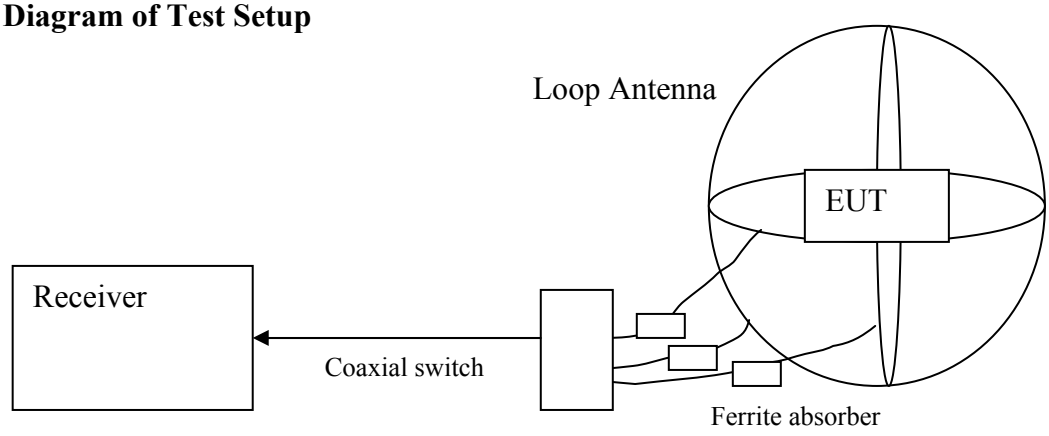
4.2 EN 55015 Radiated Electromagnetic Disturbance (9 kHz-30 MHz)

Test Result: Pass

4.2.1 Used Test Equipment

Equipment No.	Equipment	Model	Manufacturer
EM080-05	EMI receiver	ESCI	R&S
EM061-04	Triple Loop Antenna	HXYZ9170	SCHWARZBECK
EM004-03	EMC shield Room	8m×4m×3m	Zhongyu

4.2.2 Block Diagram of Test Setup



4.2.3 Test Setup and Procedure

The EUT is placed in the centre of the loop antenna system(LAS). The current induced by the magnetic field from the EUT into each of the three large loop antennas of the LAS is measured by connecting the current probe of the large loop antenna to a measuring receiver. During the measurements the EUT remains in a fixed position.
The currents in the three large loop antenna, origination from the three mutually orthogonal magnetic field components, are measured in sequence. Each current level measured shall comply with the emission limit, expressed in dBμA, as specified in table of EN 55015.
The distance between the outer perimeter of the LAS and nearby objects, such as floor and walls, shall be at least 0.5m.

To avoid unwanted capacitive coupling between the EUT and the LAS, the maximum dimensions of the EUT shall allow a distance of at least 0.2m between the EUT and the standardized 2m large loop antenna of the LAS.
The position of the mains lead shall be optimized for maximum current induction. In general, this position will not be critical when the EUT complies with the conducted emission limit.

4.2.4 Test Data

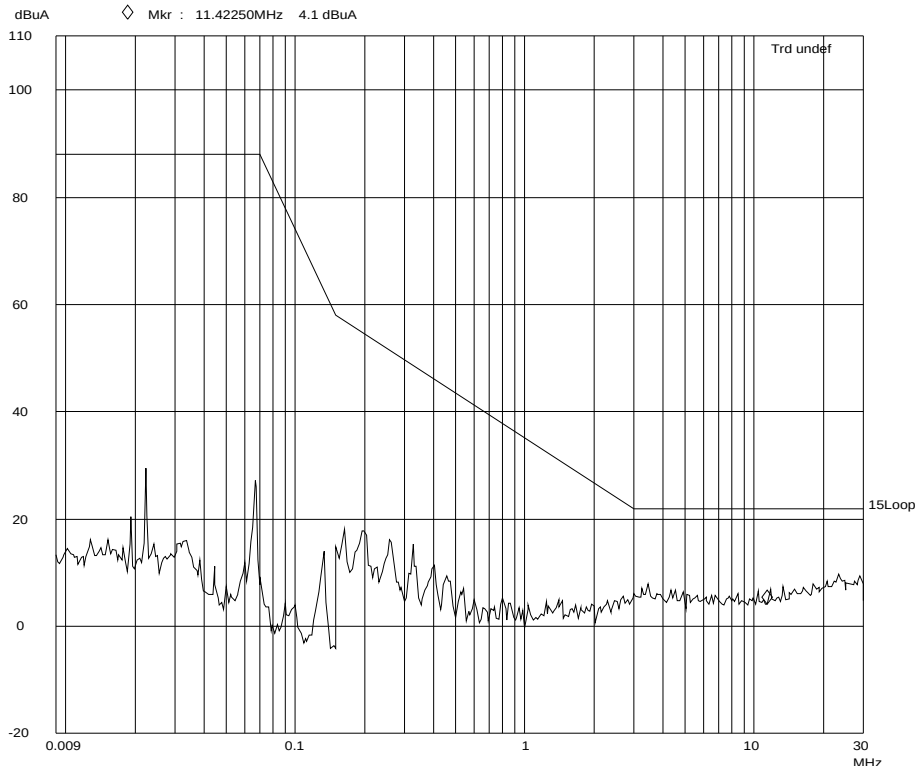
Model: EIP030V0120US, EIP030V0240US

Frequency [MHz]	X axis [dB(µA)]	Y axis [dB(µA)]	Z axis [dB(µA)]	Limit [dB(µA)]
0.009	<78	<78	<78	88.0
0.050	<78	<78	<78	88.0
0.100	<64	<64	<64	74.0
0.160	<47	<47	<47	57.2
0.240	<40	<40	<40	52.4
0.550	<30	<30	<30	42.5
1.000	<25	<25	<25	35.4
1.400	<20	<20	<20	31.4
2.000	<17	<17	<17	27.1
3.500	<12	<12	<12	22.0
6.000	<12	<12	<12	22.0
10.000	<12	<12	<12	22.0
22.000	<12	<12	<12	22.0
30.000	<12	<12	<12	22.0

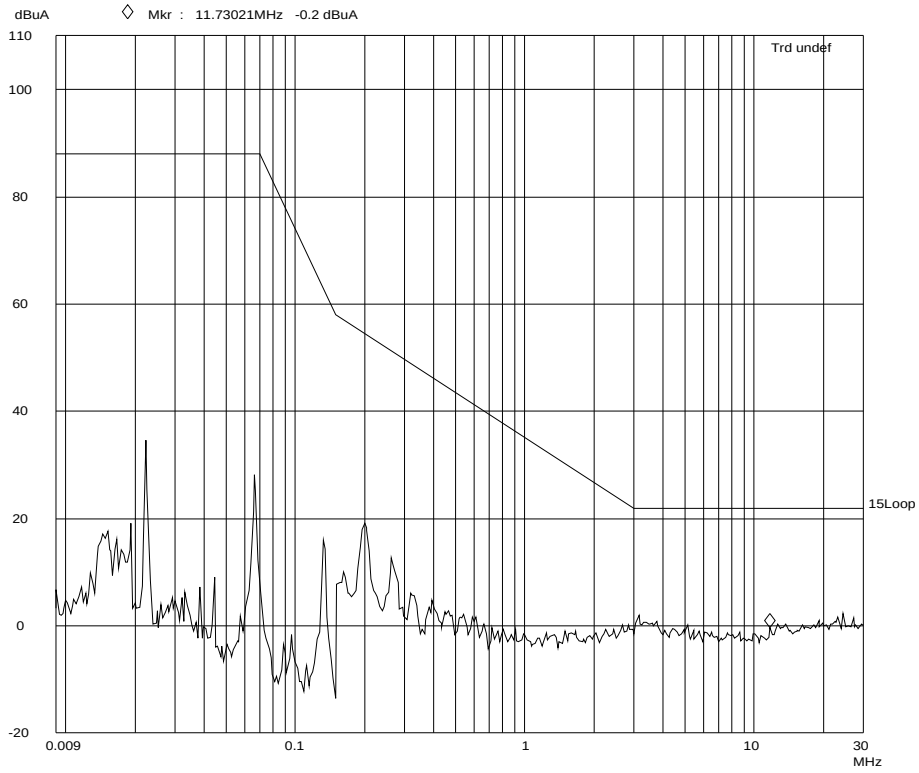
4.2.5 Test Curve

Model: EIP030V0120US

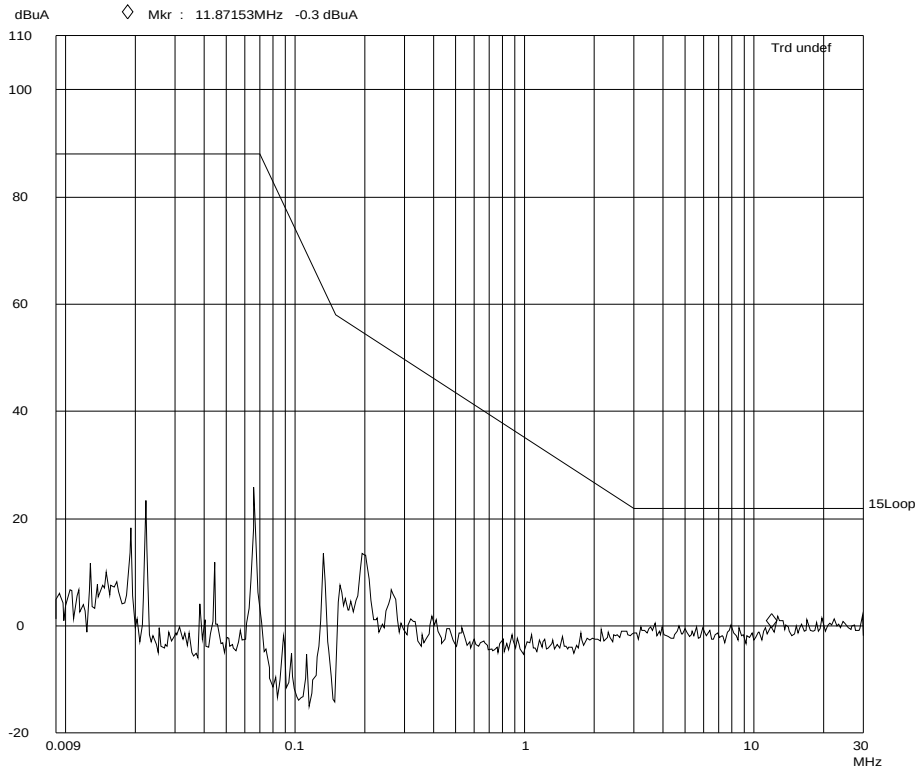
X axis



Y axis

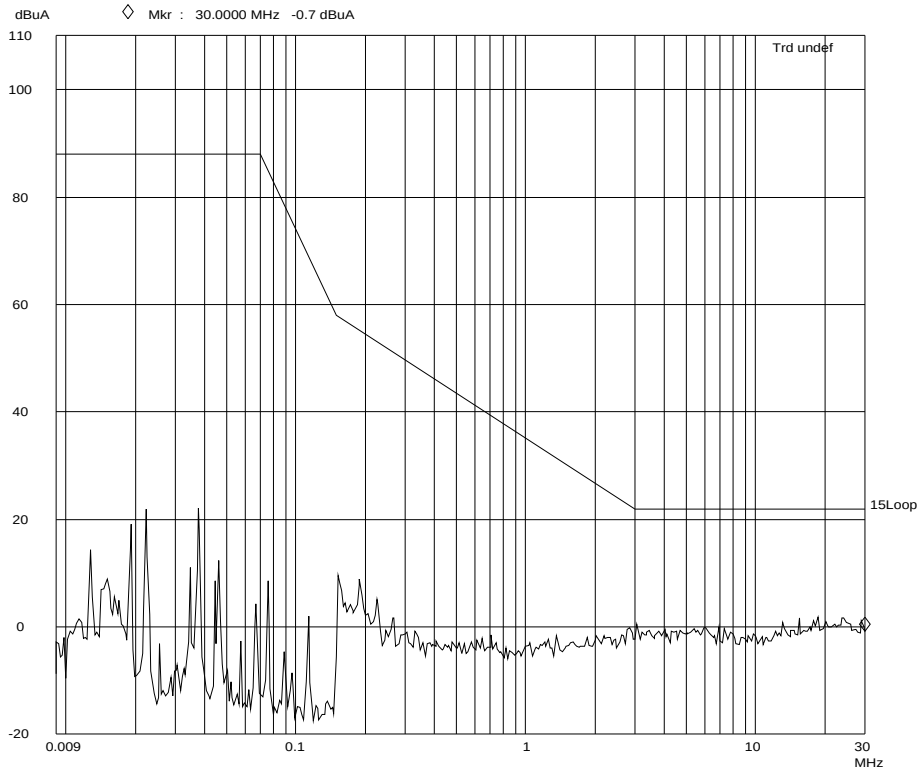


Z axis

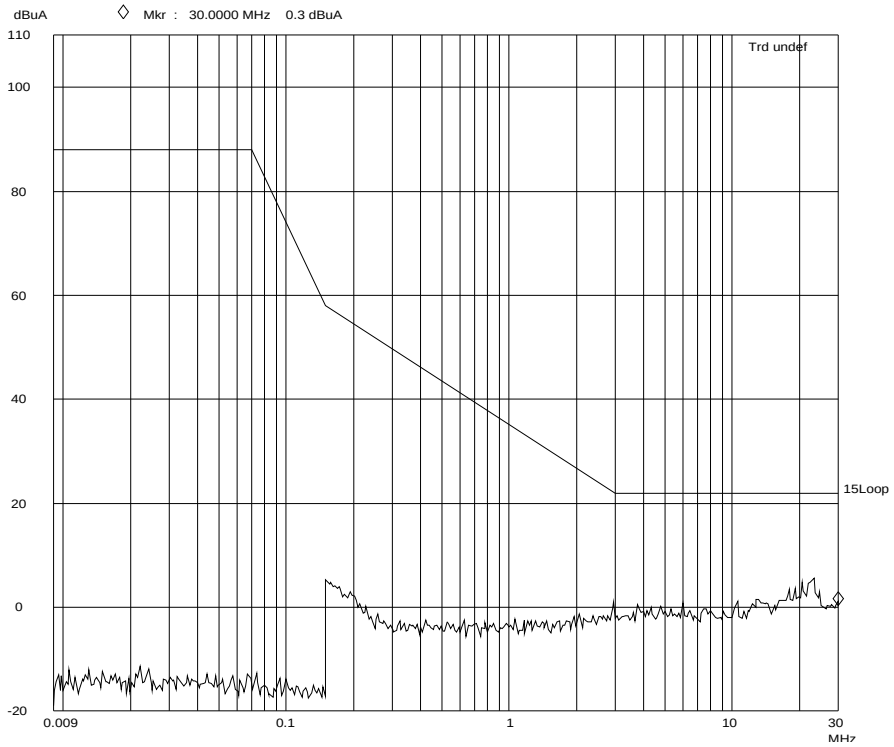


Model: EIP030V0240US

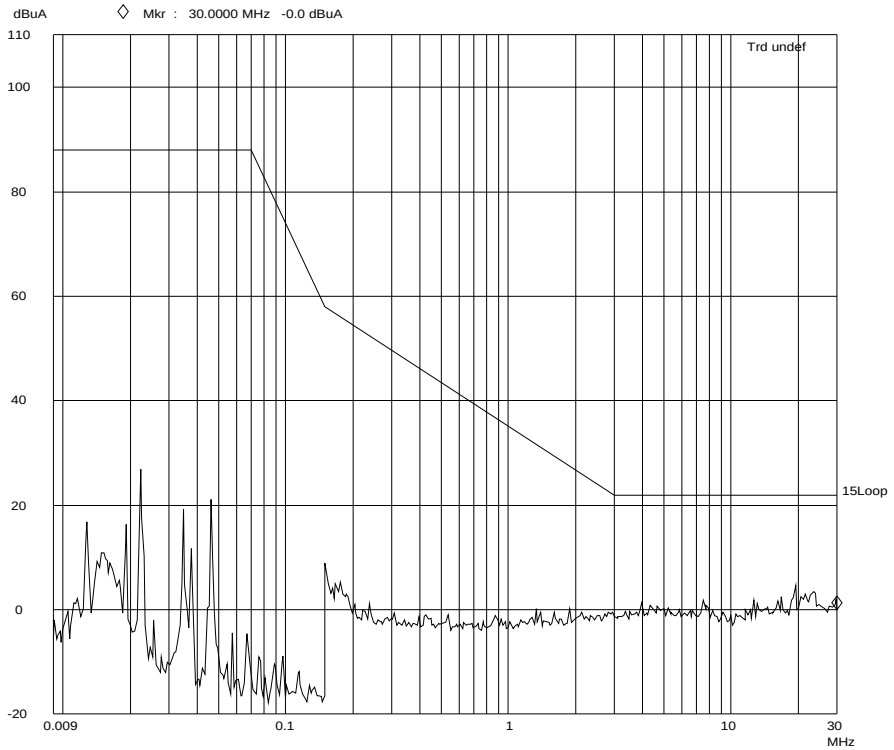
X axis



Y axis



Z axis



4.2.6 Measurement Uncertainty

The measurement uncertainty for induction current is under consideration according to CISPR 16-4-2:2003.

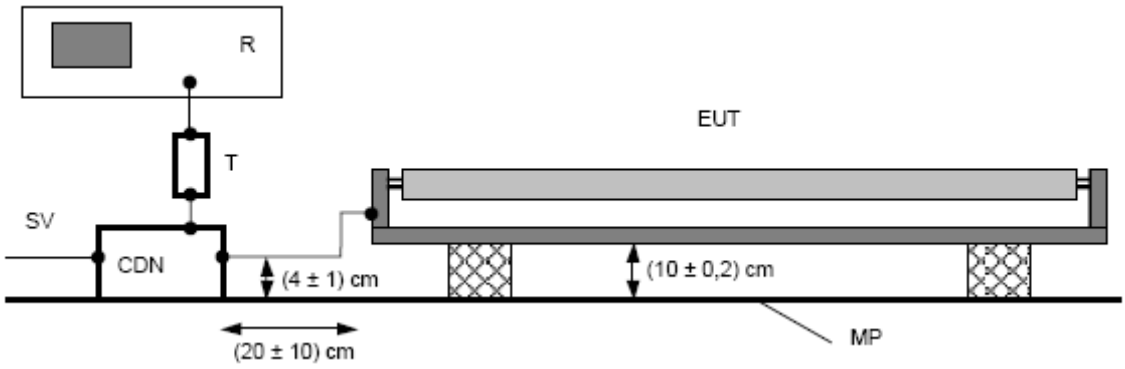
4.3 EN 55015 Radiated Electromagnetic Disturbance (30 MHz -300 MHz, CDN method)

Test Result: Pass

4.3.1 Used Test Equipment

Equip. No.	Equipment	Model	Manufacturer
EM004-04	EMC shield Room	8m×3m×3m	Zhongyu
EM080-05	EMI receiver	ESCI	R&S
EM003-02	Coupling & Decoupling Network	CDN M2 16	TESEQ
EM003-01-05	Attenuator	6dB	drhubert

4.3.2 Block Diagram of Test Setup



4.3.3 Test Setup and Procedure

The EUT shall be placed on a non-conducting table with a height of (10 ± 0.2) cm.
The EUT is connected to CDN with a length of (20 ± 10) cm and the distance of the cable to the metal plate should be (4 ± 1) cm.
The RF output of the CDN is connected to EMI receiver via a 6 dB, 50Ω attenuator.
The distance from any conductive parts shall be more than 40 cm.

Prior to a measurement, the lamps shall be operated until stabilization has been reached.
5min for incandescent lamps, 15min for fluorescent lamp, 30min for other discharge lamp.

The EUT should be powered on before the coaxial cable is connected to receiver every time.
And the coaxial cable should be removed from receiver before stopping EUT.

4.3.4 Test Data

EIP030V0120US

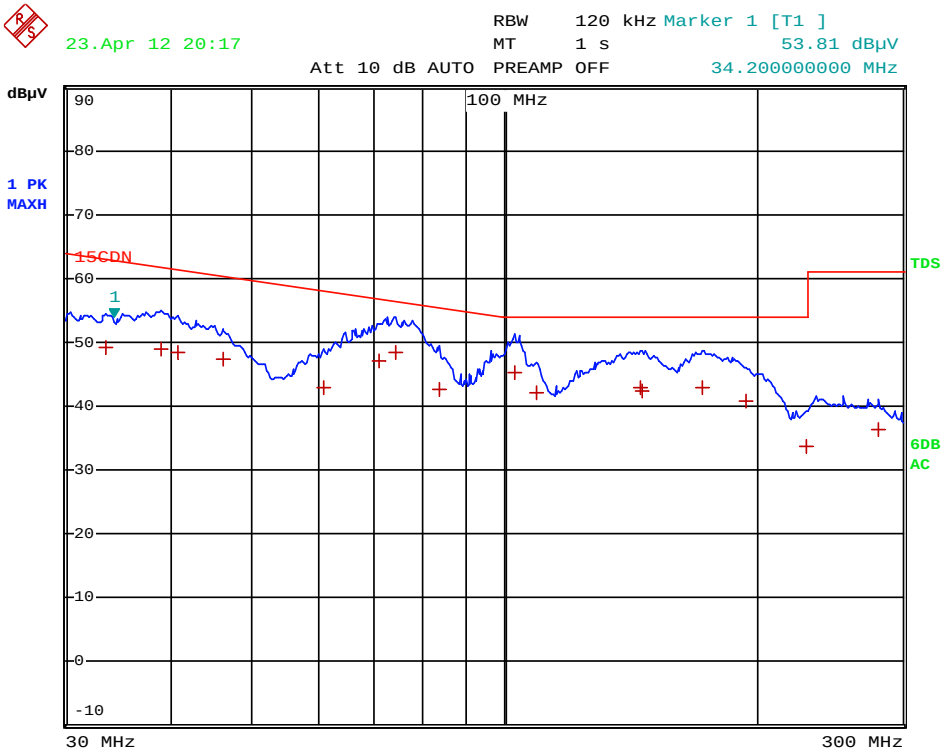
EDIT PEAK LIST (Final Measurement Results)			
Trace1:	15CDN		
Trace2:	---		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1 Quasi Peak	74.12 MHz	48.27 L1	-8.21
1 Quasi Peak	102.92 MHz	45.28 L1	-8.71
1 Quasi Peak	70.8 MHz	47.00 L1	-9.86
1 Quasi Peak	172.6 MHz	42.95 L1	-11.04
1 Quasi Peak	145.36 MHz	42.81 L1	-11.18
1 Quasi Peak	146.24 MHz	42.48 L1	-11.51
1 Quasi Peak	109.6 MHz	42.07 L1	-11.92
1 Quasi Peak	83.64 MHz	42.75 L1	-12.72
1 Quasi Peak	39.04 MHz	49.03 L1	-12.77
1 Quasi Peak	46.28 MHz	47.34 L1	-13.05
1 Quasi Peak	40.72 MHz	48.39 L1	-13.07
1 Quasi Peak	194.92 MHz	40.69 L1	-13.30
1 Quasi Peak	33.52 MHz	49.23 L1	-13.84
1 Quasi Peak	61.04 MHz	42.77 L1	-15.32
1 Quasi Peak	229.96 MHz	33.79 L1	-20.20
1 Quasi Peak	279.32 MHz	36.24 L1	-24.75

EIP030V0240US

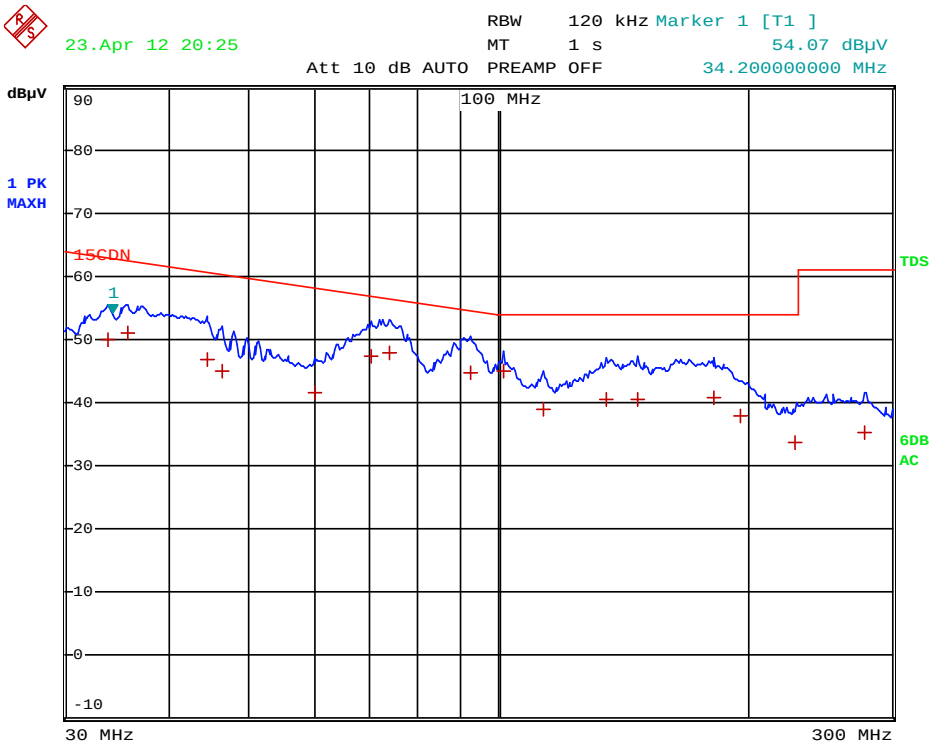
EDIT PEAK LIST (Final Measurement Results)			
Trace1:	15CDN		
Trace2:	---		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1 Quasi Peak	73.92 MHz	47.80 L1	-8.70
1 Quasi Peak	101.72 MHz	44.95 L1	-9.04
1 Quasi Peak	70.4 MHz	47.30 L1	-9.61
1 Quasi Peak	92.6 MHz	44.70 L1	-9.93
1 Quasi Peak	35.64 MHz	51.00 L1	-11.56
1 Quasi Peak	33.72 MHz	49.99 L1	-13.03
1 Quasi Peak	182 MHz	40.87 L1	-13.12
1 Quasi Peak	147.84 MHz	40.64 L1	-13.35
1 Quasi Peak	134.96 MHz	40.44 L1	-13.55
1 Quasi Peak	44.56 MHz	46.91 L1	-13.80
1 Quasi Peak	113.24 MHz	38.94 L1	-15.05
1 Quasi Peak	46.4 MHz	44.95 L1	-15.42
1 Quasi Peak	196 MHz	37.77 L1	-16.22
1 Quasi Peak	60.08 MHz	41.48 L1	-16.74
1 Quasi Peak	229.4 MHz	33.68 L1	-20.31
1 Quasi Peak	277.32 MHz	35.17 L1	-25.82

4.3.5 Test Curve

EIP030V0120US



EIP030V0240US



4.3.6 Measurement uncertainty

The measurement uncertainty for Radiated Electromagnetic Disturbance t (30 MHz -300 MHz, CDN method) is under consideration according to CISPR 16-4-2:2003.

4.4 Insertion Loss

Test Result: Not Applicable.

Remark: Not required by standard.

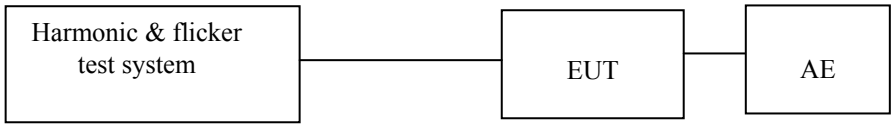
5 Harmonics of current

Test Result: Pass

5.1 Used Test Equipment

Equipment No.	Equipment	Model	Manufacturer
EM001-02	Harmonic & Flicker Test System	5001IX-CTS-400-413	California Instrument

5.2 Block Diagram of Test Setup



5.3 Test Setup and Procedure

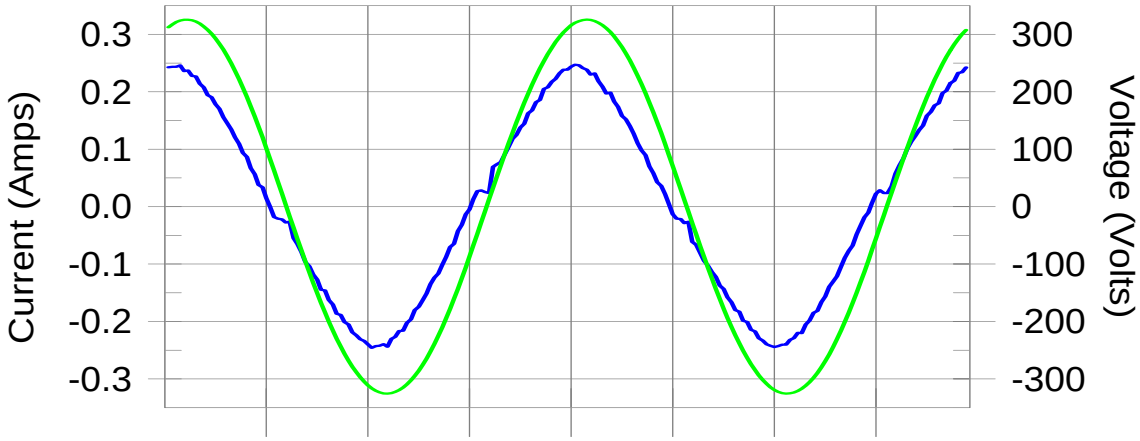
Harmonics of the fundamental current were measured up to 40 order harmonics using a digital power meter with an analogue output and frequency analyzer which was integrated in the harmonic & flicker test system. The measurements were carried out under steady conditions.

5.4 Test Data

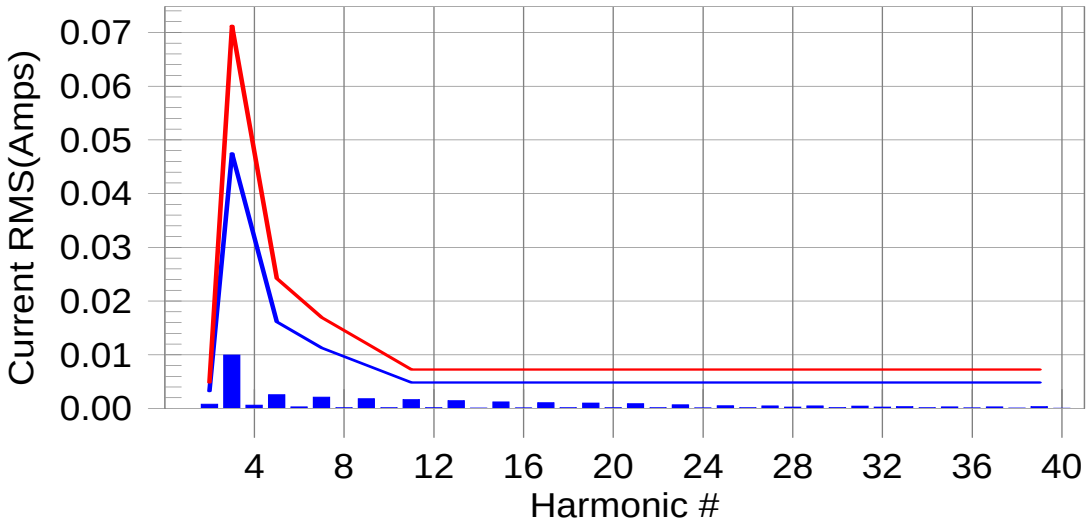
Harmonics – Class-C per Ed. 3.0 (incl. inter-harmonics)

Model: EIP030V0120US

Current & voltage waveforms



Harmonics and Class C limit line **European Limits**



Test result: Pass Worst harmonics H3-21.00% of 100% limit, H3-15.63% of 150% limit.

Current Test Result Summary (Run time)

Test Result: Pass **Source qualification: Normal**

Model: EIP030V0120US

Highest parameter values during test:

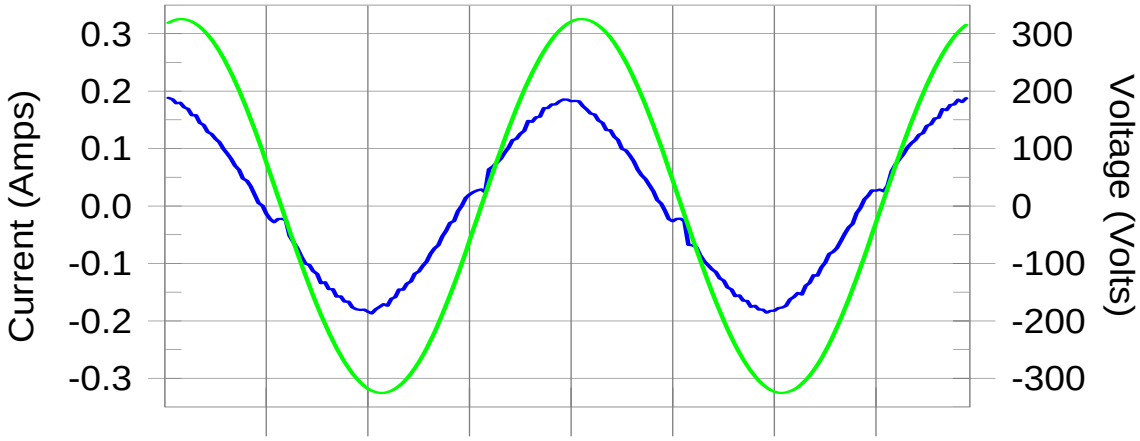
V_RMS (Volts):	230.22	Frequency(Hz):	50.00
I_Peak (Amps):	0.254	I_RMS (Amps):	0.162
I_Fund (Amps):	0.161	Crest Factor:	1.572
Power (Watts):	36.4	Power Factor:	0.982

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.001	0.003	0.0	0.001	0.005	0.00	Pass
3	0.010	0.048	21.0	0.011	0.071	15.63	Pass
4	0.001						
5	0.003	0.016	0.0	0.004	0.024	0.00	Pass
6	0.000						
7	0.002	0.011	0.0	0.003	0.017	0.00	Pass
8	0.000						
9	0.002	0.008	0.0	0.002	0.012	0.00	Pass
10	0.000						
11	0.002	0.005	0.0	0.002	0.007	0.00	Pass
12	0.000						
13	0.001	0.005	0.0	0.002	0.007	0.00	Pass
14	0.000						
15	0.001	0.005	0.0	0.001	0.007	0.00	Pass
16	0.000						
17	0.001	0.005	0.0	0.001	0.007	0.00	Pass
18	0.000						
19	0.001	0.005	0.0	0.001	0.007	0.00	Pass
20	0.000						
21	0.001	0.005	0.0	0.001	0.007	0.00	Pass
22	0.000						
23	0.001	0.005	0.0	0.001	0.007	0.00	Pass
24	0.000						
25	0.001	0.005	0.0	0.001	0.007	0.00	Pass
26	0.000						
27	0.000	0.005	0.0	0.001	0.007	0.00	Pass
28	0.000						
29	0.000	0.005	0.0	0.001	0.007	0.00	Pass
30	0.000						
31	0.000	0.005	0.0	0.001	0.007	0.00	Pass
32	0.000						
33	0.000	0.005	0.0	0.000	0.007	0.00	Pass
34	0.000						
35	0.000	0.005	0.0	0.000	0.007	0.00	Pass
36	0.000						
37	0.000	0.005	0.0	0.000	0.007	0.00	Pass
38	0.000						
39	0.000	0.005	0.0	0.000	0.007	0.00	Pass
40	0.000						

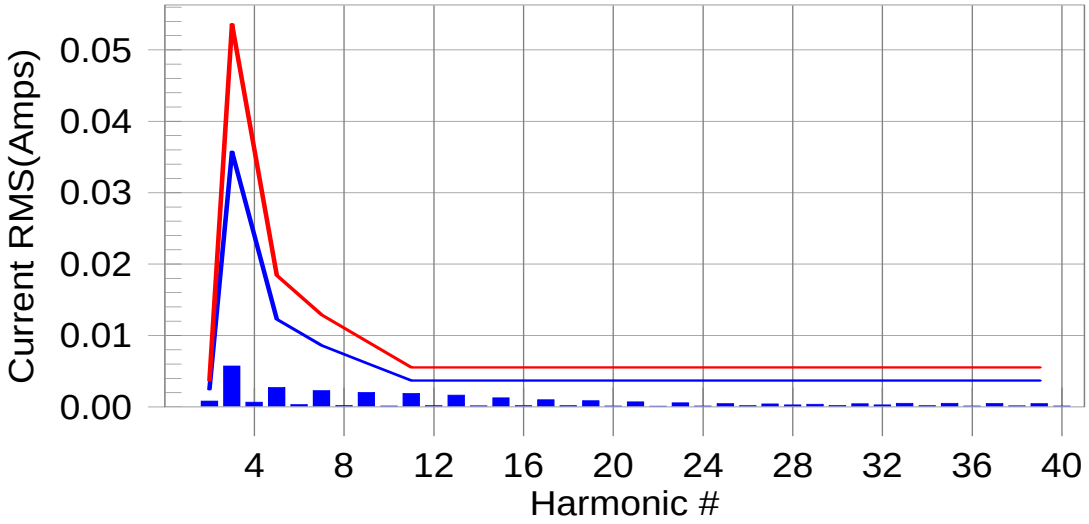
Harmonics – Class-C per Ed. 3.0 (incl. inter-harmonics)

Model: EIP030V0240US

Current & voltage waveforms



Harmonics and Class C limit line **European Limits**



Test result: Pass Worst harmonics H3-16.03% of 100% limit, H3-12.72% of 150% limit.

Current Test Result Summary (Run time)

Test Result: Pass **Source qualification: Normal**

Model: EIP030V0240US

Highest parameter values during test:

V_RMS (Volts):	230.21	Frequency(Hz):	50.00
I_Peak (Amps):	0.194	I_RMS (Amps):	0.123
I_Fund (Amps):	0.123	Crest Factor:	1.574
Power (Watts):	27.4	Power Factor:	0.971

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.001	0.002	0.0	0.001	0.004	0.00	Pass
3	0.006	0.036	16.0	0.007	0.054	12.72	Pass
4	0.001						
5	0.003	0.012	0.0	0.004	0.018	0.00	Pass
6	0.000						
7	0.002	0.009	0.0	0.003	0.012	0.00	Pass
8	0.000						
9	0.002	0.006	0.0	0.002	0.009	0.00	Pass
10	0.000						
11	0.002	0.004	0.0	0.002	0.005	0.00	Pass
12	0.000						
13	0.002	0.004	0.0	0.002	0.005	0.00	Pass
14	0.000						
15	0.001	0.004	0.0	0.001	0.005	0.00	Pass
16	0.000						
17	0.001	0.004	0.0	0.001	0.005	0.00	Pass
18	0.000						
19	0.001	0.004	0.0	0.001	0.005	0.00	Pass
20	0.000						
21	0.001	0.004	0.0	0.001	0.005	0.00	Pass
22	0.000						
23	0.001	0.004	0.0	0.001	0.005	0.00	Pass
24	0.000						
25	0.000	0.004	0.0	0.000	0.006	0.00	Pass
26	0.000						
27	0.000	0.004	0.0	0.000	0.005	0.00	Pass
28	0.000						
29	0.000	0.004	0.0	0.000	0.006	0.00	Pass
30	0.000						
31	0.000	0.004	0.0	0.000	0.005	0.00	Pass
32	0.000						
33	0.001	0.004	0.0	0.001	0.006	0.00	Pass
34	0.000						
35	0.001	0.004	0.0	0.001	0.005	0.00	Pass
36	0.000						
37	0.000	0.004	0.0	0.001	0.006	0.00	Pass
38	0.000						
39	0.000	0.004	0.0	0.000	0.005	0.00	Pass
40	0.000						

5.5 Measurement Uncertainty

The measurement uncertainty for harmonic test is under consideration according to CISPR 16-4-2:2003.

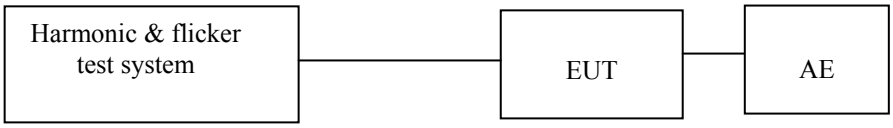
6 Flicker

Test Result: Pass

6.1 Used Test Equipment

Equipment No.	Equipment	Model	Manufacturer
EM001-02	Harmonic & Flicker Test System	5001IX-CTS-400-413	California Instrument

6.2 Block Diagram of Test Setup



6.3 Test Setup and Procedure

6.3.1 Definition

Flicker: impression of unsteadiness of visual sensation induced by a lighting stimulus whose luminance or spectral distribution fluctuates with time.

Pst: Short-term flicker indicator The flicker severity evaluated over a short period (in minutes); Pst=1 is the conventional threshold of irritability

Plt: long-term flicker indicator; the flicker severity evaluated over a long period (a few hous). Using successive Pst valuse.

dc: the relative steady-state voltage change

dmax: the maximum relative voltage change

d(t): the value during a voltage change

6.3.2 Test condition

The EUT was set to produce the most unfavourable sequence of voltage changes.

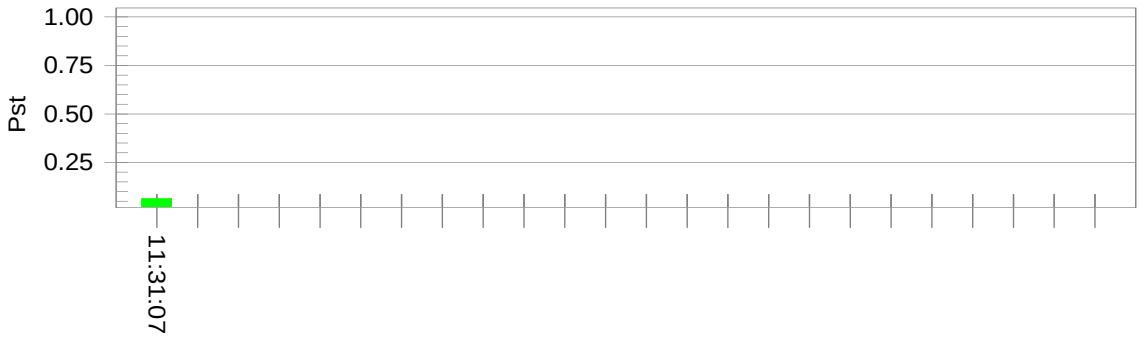
6.4 Test Data

Flicker Test Summary (Run time)

Model: EIP030V0120US

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

Pst_i and limit line **European Limits**



Time is too short for Plt plot

Parameter values recorded during the test:

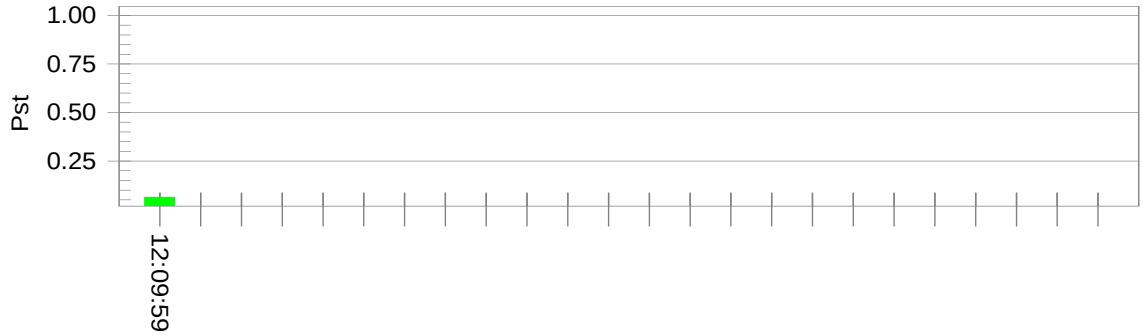
Vrms at the end of test (Volt):	**229.92**			
Highest dt (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dc (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**0.09**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.064**	**Test limit:**	**1.000**	**Pass**

Flicker Test Summary (Run time)

Model: EIP030V0240US

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

Pst_i and limit line **European Limits**



Time is too short for Plt plot

Parameter values recorded during the test:

Vrms at the end of test (Volt):	**230.02**			
Highest dt (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dc (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**0.09**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.064**	**Test limit:**	**1.000**	**Pass**

6.5 Measurement Uncertainty

Measurement uncertainty for voltage fluctuation and flicker is under consideration according to CISPR 16-4-2:2003.

7 EMS TEST

Performance Criteria:

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.

Additional requirement for lighting equipment incorporation a starting device:

After the test the lighting equipment is switched off. After half an hour it is witched on again. The lighting equipment shall start and operate as intended.

Measurement Uncertainty

According to CISPR 16-4-2:2003, measurement uncertainty to immunity test is under consideration.

Note: "N/A" means Not Applicable in below text.

7.1 EN 61000-4-2(Pursuant to EN 61547) Electrostatic Discharge Immunity

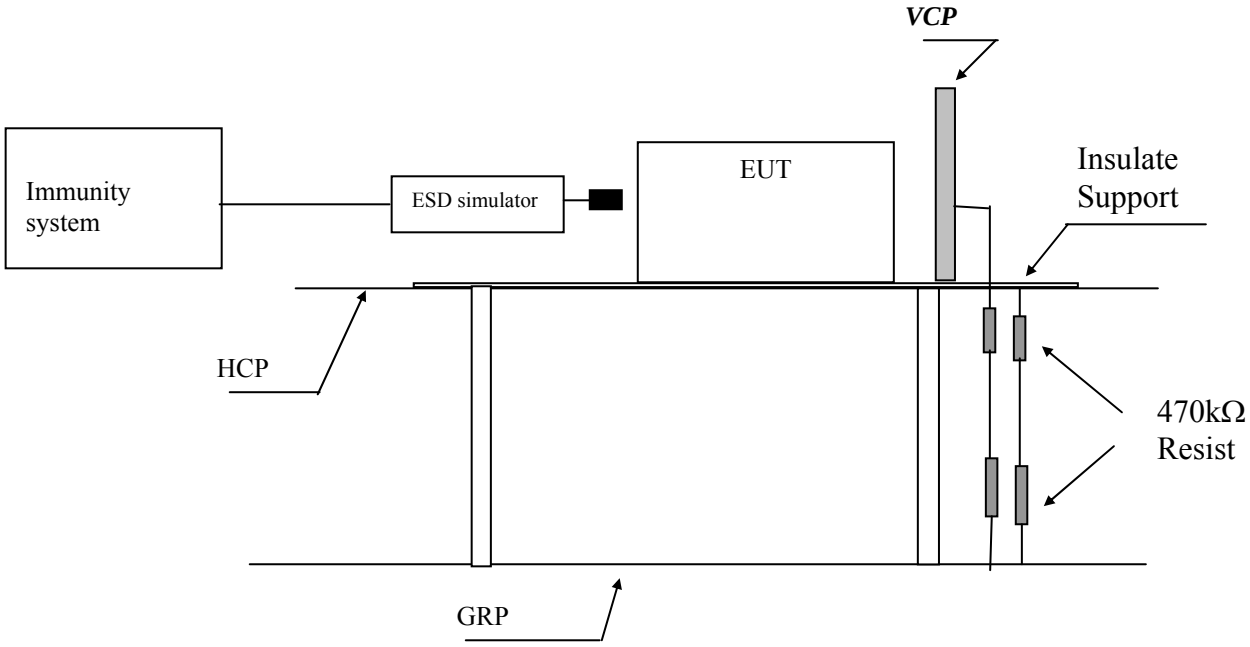
Performance criterion: B

Test Result: Pass

7.1.1 Used Test Equipment

Equip. No.	Equipment	Model	Manufacturer
EM077-02	ESD Simulator	NSG435	SCHAFFNER

7.1.2 Block Diagram of Test Setup



Note: HCP means Horizontal Coupling Plane,
VCP means Vertical Coupling Plane
GRP means Ground Reference Plane

7.1.3 Test Setup and Procedure

The EUT was put on a (0,8 ±0,08) m high wooden tabel/0.1m high for floor standing equipment standing on the ground reference plane(GRP) 3m by 2m in size, made by iron 1.0 mm thick. A horizontal coupling plane(HCP) (1,6 ±0,02) m by (0,8 ±0,02) m in size was placed on the table, and the EUT with its cables were isolated from the HCP by an insulating support with (0.5±0.05)mm thick. The VCP 0.5m by 0.5m in size & HCP were constructed from the same material type & thinkmess as that of the GRP, and connected to the GRP via a 470kΩ resistor at each end.

For floor standing equipment, The EUT shall be isolated from the ground reference plane by an insulating support of 0,05 mto 0,15 m thick. The EUT cables shall be isolated from the ground reference plane by an insulating support of (0,5 ± 0,05) mm. This cable isolation shall extend beyond the edge of the EUT isolation.

The distance between EUT and any of the other metallic surface excepted the GRP, HCP & VCP was greater than 0.8m.

The EUT was arranged and connected according to its functional requirements.

Direct static electricity discharges was applied only to those points and surface which are accessible to personnel during normal usage, terminals are excluded.

On each preselected points 10 times of each polarity single discharge were applied .

The ESD generator was held perpendicular to the surface to which the discharge is applied.

The discharge return cable of the generator was kept at a distance of 0.2m whilst the discharge is being applied. During the contact discharges, the tip of the discharge electrode was touch the EUT before the discharge switch is operated. During the air discharges, the round discharge tip of the discharge electrode was approached as fast as possible to touch the EUT.

Indirect discharge was conducted to objects placed near the EUT, simulated by applying the dischares of the ESD generator to a coupling plane, in the contact discharge mode.

After each discharge, the ESD generator was removed from the EUT, the generator is then retriggered for a new single discharge. For ungrounded product, a grounded carbon fibre brush with bleeder resistors (2×470 kΩ) in the grounding cable was used after each discharge to remove remnant electrostatic voltage.

10 times of each polarity single discharge were applied to HCP and VCP. The detail selected points are listed in the following table.

7.1.4 Test Result

Direct Application of ESD

Direct Contact Discharge

Applied Voltage (kV)	No. of Discharge for each point	Result (Pursuant to EN 61547)	Discharged Points
4	20	Pass	Accessible metal parts of the EUT.

Direct Air Discharge

Applied Voltage (kV)	No. of Discharge for each point	Result (Pursuant to EN 61547)	Discharged Points
2, 4, 8	20	Pass	All accessible points where contact discharge cannot be applied such as Air gap.

Indirect Application of ESD

Horizontal Coupling Plane under the EUT

Applied Voltage (kV)	No. of Discharge for each point	Result (pursuant to EN 61547)	Discharged Point
4	20	Pass	At the front edge of each HCP opposite the centre point of each unit of the EUT

Vertical Coupling Plane beside the EUT

Applied Voltage (kV)	No. of Discharge for each point	Result (pursuant to EN 61547 criterion B)	Discharged Point
4	20	Pass	The centre of the vertical edge of the coupling plane

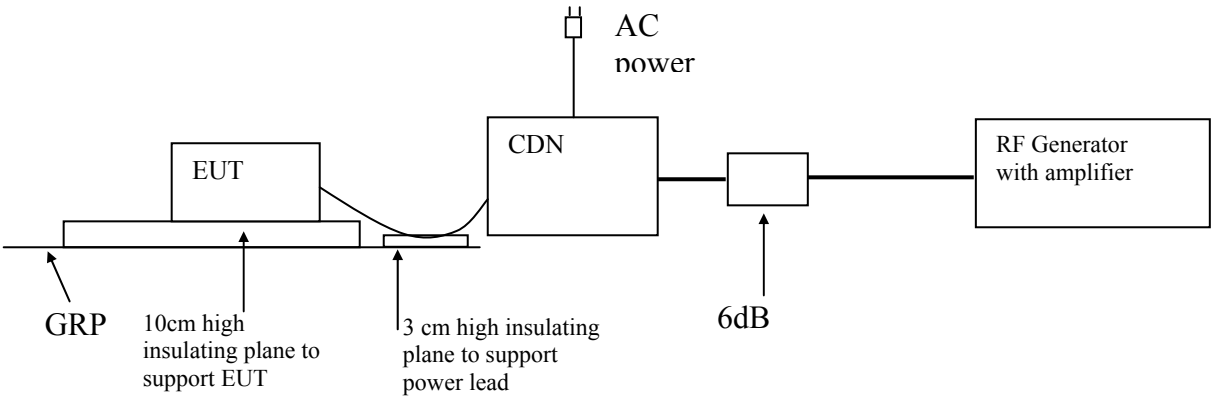
7.2 EN 61000-4-6(Pursuant to EN 61547) Injected Current (0.15 MHz to 80 MHz)

Performance criterion: A
Test Result: Pass

7.2.1 Used Test Equipment

Equip. No.	Equipment	Model	Manufacturer
EM019-01	Conducted Immunity Testing System	NSG4070-75	Teseq GmbH
EM019-01-02	Coupling & Decoupling Network	CDNM016	Teseq GmbH
EM019-01-03	6dB Attenuator	ATN6075	Teseq GmbH

7.2.2 Block Diagram of Test Setup



7.2.3 Test Setup and Procedure

The EUT was placed on an insulating support of 0.1m height above a ground reference Plane, arranged and connected to satisfy its functional requirement.
All relevant cables were provided with the appropriate coupling and decoupling devices at a distance between 0.1m and 0.3m from the projected geometry of the EUT on an insulating support of 0.03m height above the ground reference plane.
Test voltage was verified before each testing though power meter combined in the RF generator with AMP.
Dwell time was set to 3s and step was set as 1% to keep sufficient response time for EUT.
The frequency from 0.15MHz to 80MHz was checked.

7.2.4 Test Result

Port:	Frequency (MHz)	Level (Pursuant to EN 61547)	Result
A.C. Power Lines	0.15 to 80	3V (r.m.s.)	Pass
D.C. Power Lines	0.15 to 80	3V (r.m.s.)	N/A
Signal Lines	0.15 to 80	3V (r.m.s.)	N/A
Control Lines	0.15 to 80	3V (r.m.s.)	N/A

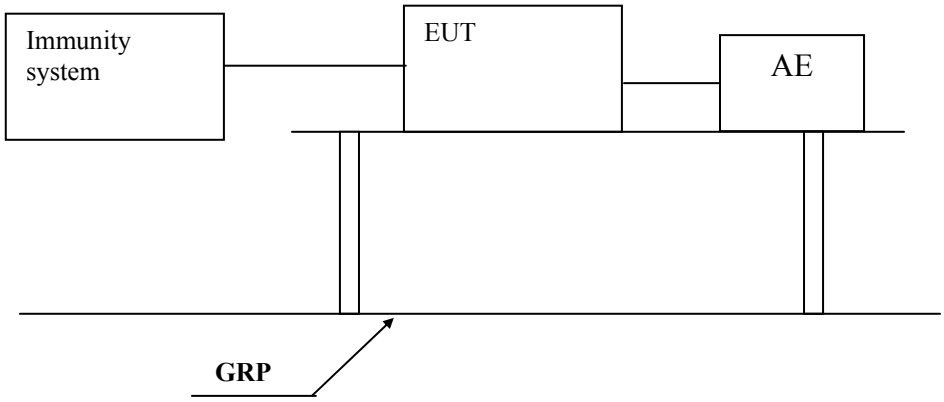
7.3 EN 61000-4-4(Pursuant to EN 61547) Electrical Fast Transient/Burst

Performance criterion: B
Test Result: Pass

7.3.1 Used Test Equipment

Equipment No.	Equipment	Model	Manufacturer
EM005-07	EMS test system	Ecompact 4	HAEFELY

7.3.2 Block Diagram of Test Setup



7.3.3 Test Setup and Procedure

The EUT was placed on a 0.1m high wooden table, standing on the ground reference plane 3m by 2m in size, made by steel 1mm thick.

The distance between the EUT and any other of the metallic surface except the GRP is greater than 0.5m.

The mains lead excess than 0.5m is folded to avoid a flat coil and situated at a distance of 0.1m above the ground reference plane to insure the distance between the coupling device and the EUT were 0.5m.

The EUT was arranged and connected to satisfy its functional requirement and supplied by the coupling-decoupling network.

7.3.4 Test Result

Level (Pursuant to EN 61547)	Polarity	Input and Output A.C. Power Ports	D.C. Power Ports, Signal and Control Lines
0.5kV	+	N/A	N/A
0.5kV	-	N/A	N/A
1kV	+	Pass	N/A
1kV	-	Pass	N/A

7.4 EN 61000-4-5(Pursuant to EN 61547) Surge Immunity

Performance criterion: ☒ **C**

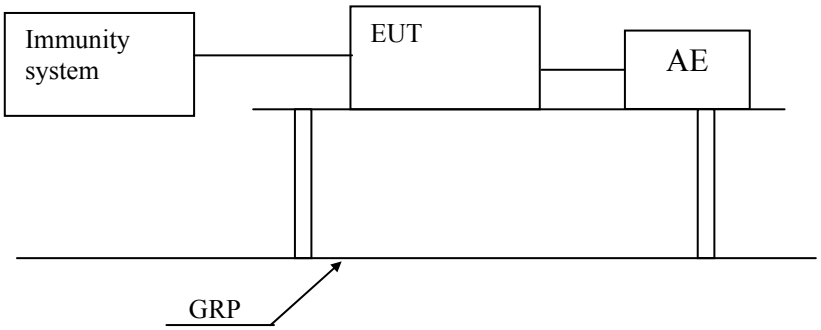
☐ **B** (lumimaire for emergency lighting)

Test Result: Pass

7.4.1 Used Test Equipment

Equipment No.	Equipment	Model	Manufacturer
EM005-09	Surge/DIP Generator	NSG3040	TESEQ

7.4.2 Block Diagram of Test Setup



7.4.3 Test Setup and Procedure

The surge is to be applied to the EUT power supply terminals via the capacitive coupling network.

Decoupling networks are required in order to avoid possible adverse effects on equipment not under test that may be powered by the same lines and to provide sufficient decoupling impedance to the surge wave so that the specified wave may be developed on the lines under test.

The EUT was arranged and connected according to its functional requirements.

The EUT was placed on a 0.1m high wooden support above the GRP), supplied by the coupling-decoupling network, and arranged and connected to satisfy its functional requirement. The power cord between the EUT and the coupling/decoupling network was less than 2 meters.

Five positive and five negative pulses shall be applied at the peak value and zero crossing points of the a.c. voltage wave.

7.4.4 Test Result

☐ I. For Self-ballasted lamps and semi-luminaires and independent auxiliaries with input power less or equal to 25 W:

Level (Pursuant to EN 61547)		Result
Between Phase And Phase:	0.5 kV	N/A
Between Phase And Neutral:	0.5 kV	N/A
Between Phase And Earth:	0.5 kV, 1.0 kV	N/A
Between Neutral And Earth:	0.5 kV, 1.0 kV	N/A

☒ II. For luminaires and independent auxiliaries with input power greater than 25 W:

Level (Pursuant to EN 61547)		Result
Between Phase And Phase:	0.5 kV, 1.0 kV	N/A
Between Phase And Neutral:	0.5 kV, 1.0 kV	Pass
Between Phase And Earth:	0.5 kV, 1.0 kV, 2.0 kV	N/A
Between Neutral And Earth:	0.5 kV, 1.0 kV, 2.0 kV	N/A

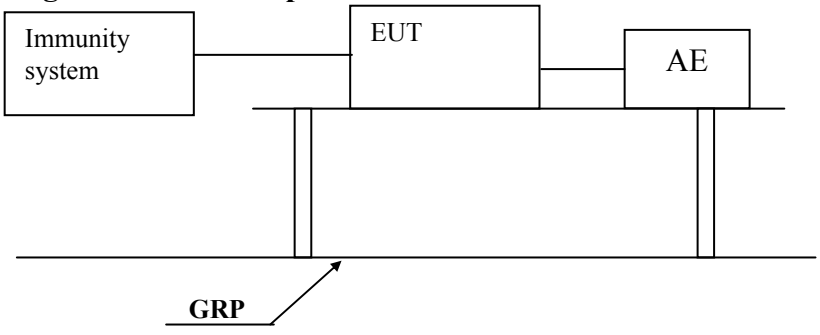
7.5 EN 61000-4-11(Pursuant to EN 61547) Voltage Dips and Interruptions

Performance criterion:
for table 11 of EN 61547 ------ **C**
for table 12 of EN 61547------- **B**
Test Result: Pass

7.5.1 Used Test Equipment

Equipment No.	Equipment	Model	Manufacturer
EM005-07	EMS test system	Ecompact 4	HAEFELY

7.5.2 Block Diagram of Test Setup



7.5.3 Test Setup and Procedure

The EUT was placed on an insulating support of 0.8m height, standing on a ground reference plane, and arranged and connected to satisfy its functional requirement

The test was performed with the EUT connected to the test generator with the shortest power supply cable as specified by the EUT manufacturer.

The EUT was tested for each selected combination of test level and duration with a sequence of three dips/interruptions with intervals of 10 s minimum. Each representative mode of operation was tested.

EUT is tested for voltage reduction of 0%Ut, 0.5 period, 70%Ut, 10 periods, both the positive and negative polarity test was conducted.

Changes to the voltage level shall occur at a zero crossing point in the a.c. voltage waveform.

7.5.4 Test Result

I. According to table 11 of EN 61547

Test condition (Pursuant to EN 61547)		Result
Test Level in $\%U_T$	Duration (in period of the rated frequency)	
70	10	Pass

II. According to table 12 of EN 61547

Test condition (Pursuant to EN 61547)		Result
Test Level in $\%U_T$	Duration (in period of the rated frequency)	
0	0.5	Pass

Remark: U_T is the rated voltage for the equipment.

7.6 EN 61000-4-3(Pursuant to EN 61547) Radiated Electromagnetic Field Immunity

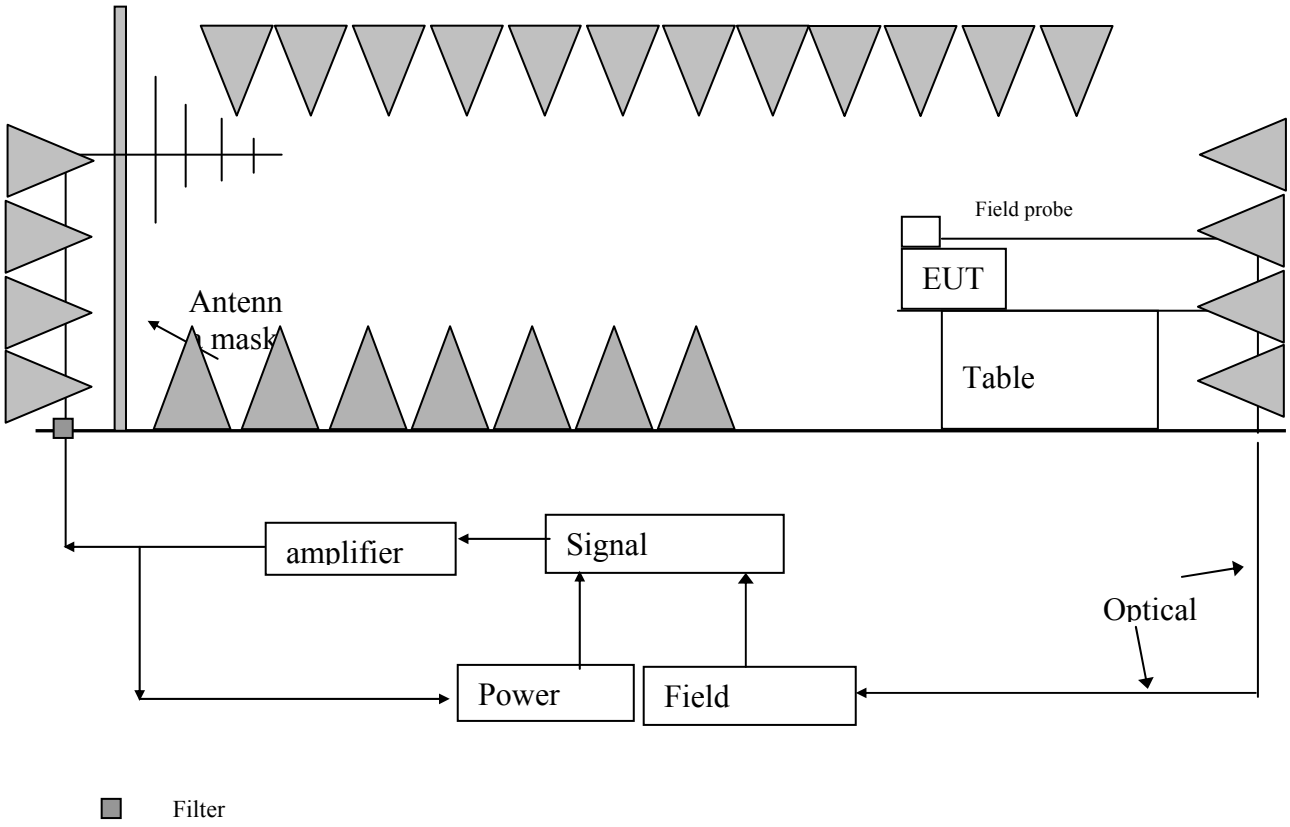
Performance criterion: A

Test Result: Pass

7.6.1 Used Test Equipment

Equipment No.	Equipment	Model	Manufacturer
103002	Signal generator	SML03	Rohde & Schwarz
10543	Power Meter	4232A	BOOTON
0611-768	Power Amplifier	AP32DT214	PRAnA
0611-767	Power Amplifier	AP32SV150A	PRAnA
75971	Double Log.-Per. Antenna	STLP9128E	SCHWARZBECK
BBHA9120E318/ 0899	Horn Antenna	BBHA 9120 E	SCHWARZBECK

7.6.2 Block Diagram of Test Setup



7.6.3 Test Setup and Procedure

The test was conducted in an fully anechoic chamber to maintain a uniform field of sufficient dimensions with respect to the EUT, and also in order to comply with various national and international laws prohibiting interference to radio communications.

The equipment is placed in the test facility on a non-conducting table 0.8m high (for floor standing EUT, is placed on a non-conducting support 0.1m height).

The EUT was placed on the uniform calibrated plane which is 3V/m EM field.

For all ports connected to EUT, manufacturer specified cable type and length was used, for those cables no specification, unshielded cable applied.

Wire is left exposed to the electromagnetic field for a distance of 1m from the EUT.

The EUT was arranged and connected according to its functional requirements

Before testing, the intensity of the established field strength have been checked by placing the field sensor at a calibration grid point, and with the field generating antenna and cables in the same positions as used for the calibration, the forward power needed to give the calibrated field strength was measured.

Spot checks was made at a number of calibration grid points over the frequency range 80MHz to 1000MHz, both polarizations was checked.

After calibration, the EUT is initially placed with one face coincident with the calibration plane.

The frequency range is swept from 80MHz to 1000MHz, with the signal 80% amplitude modulated with a 1 kHz sinewave, pausing to adjust the r.f. signal level.

The dwell time at each frequency was 3s so as that the EUT to be exercised and be able to respond.

The step size was 1% of the fundamental with linear interpolation between calibrated points. Test was performed with the generating antenna facing each of the four sides of the EUT.

7.6.4 Test Result

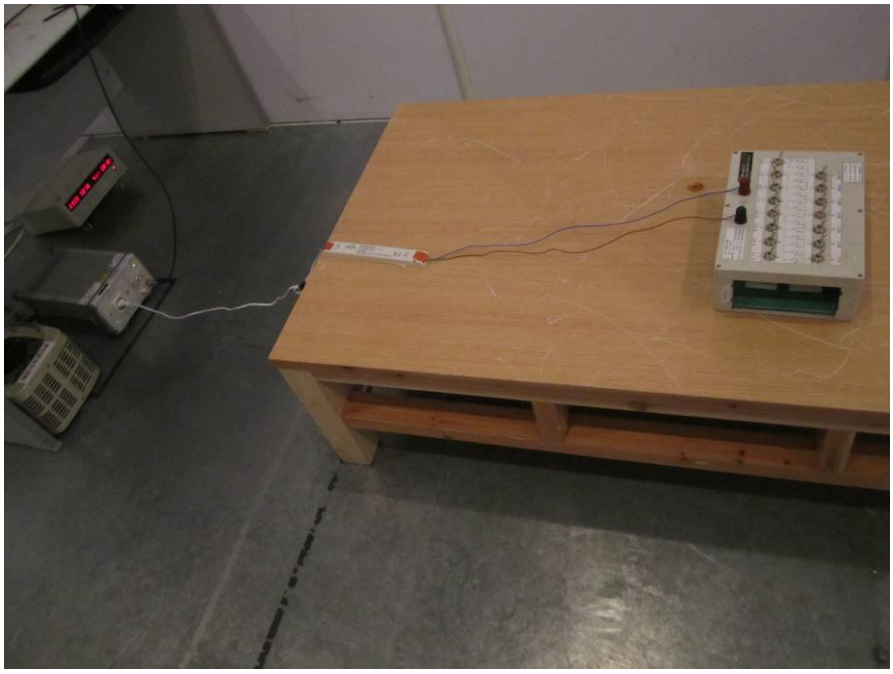
Frequency (MHz)	Exposed Side	Field Strength (V/m)	Result
80 to 1000	Front	3V/m (r.m.s.)	Pass
80 to 1000	Left	3V/m (r.m.s.)	Pass
80 to 1000	Rear	3V/m (r.m.s.)	Pass
80 to 1000	Right	3V/m (r.m.s.)	Pass

7.7 EN 61000-4-8(Pursuant to EN 61547) Power Frequency Magnetic Field Immunity

Performance criterion: A
Test Result: Not Applicable
Remark:
Equipment containing no Hall elements or magnetic field sensors is not susceptible to magnetic field.Hence, this equipment is deemed to fulfil the magnetic field test.

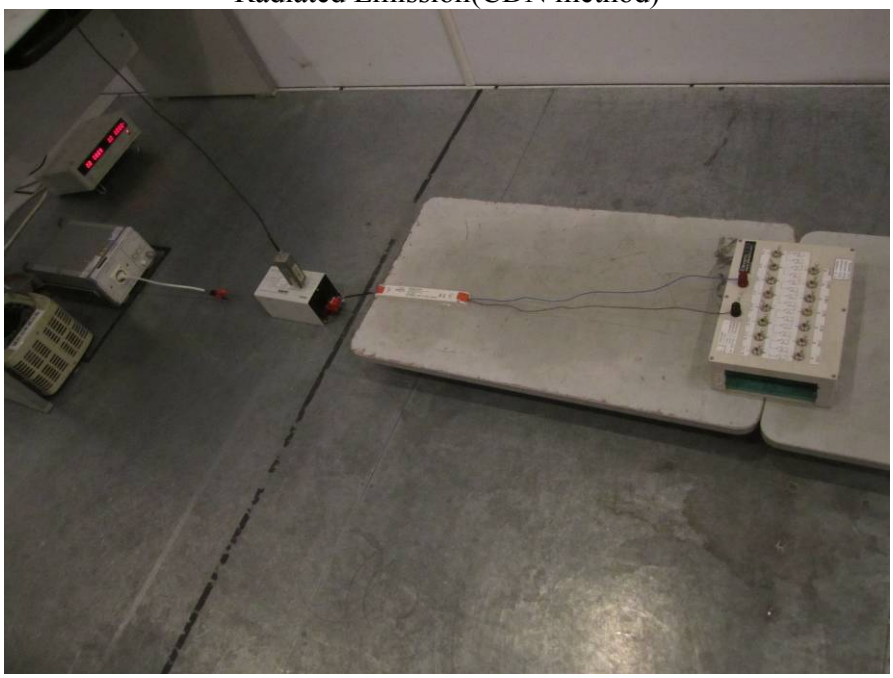
8 Appendix I - Photos of test setup

Conducted Emission

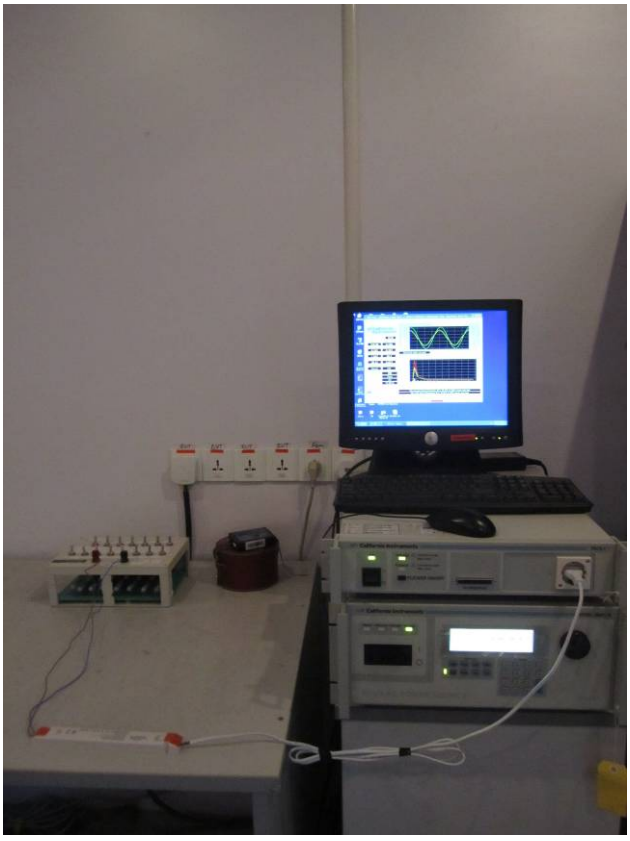


Radiated Electromagnetic Filed Disturbance

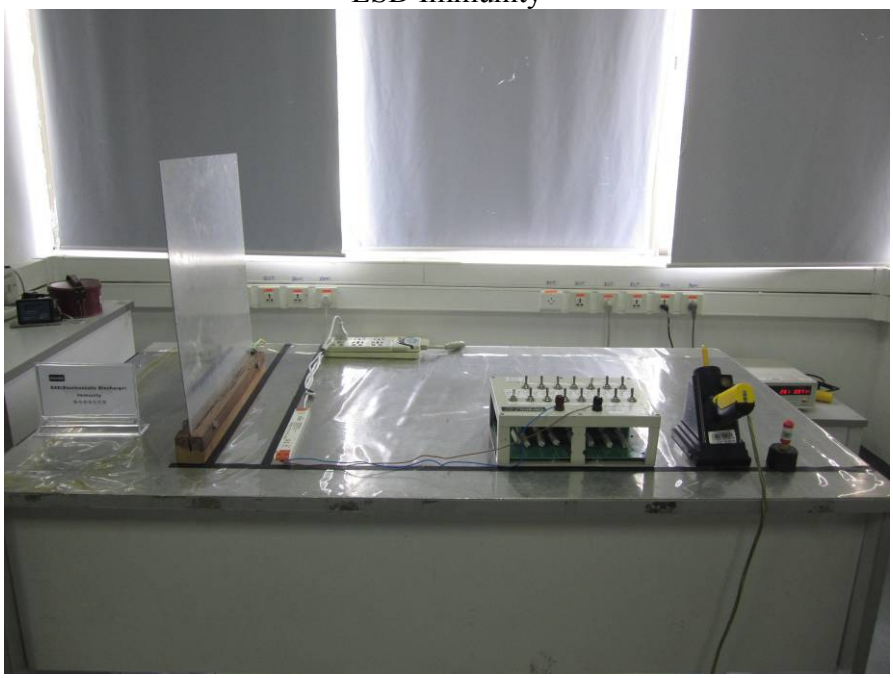
Radiated Emission(CDN method)



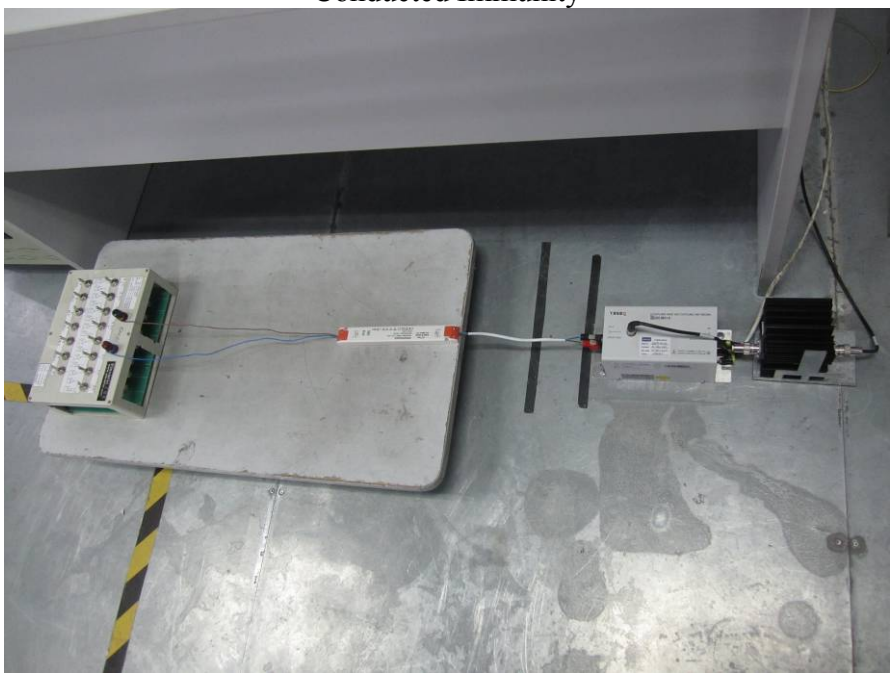
Harmonics and Flicker



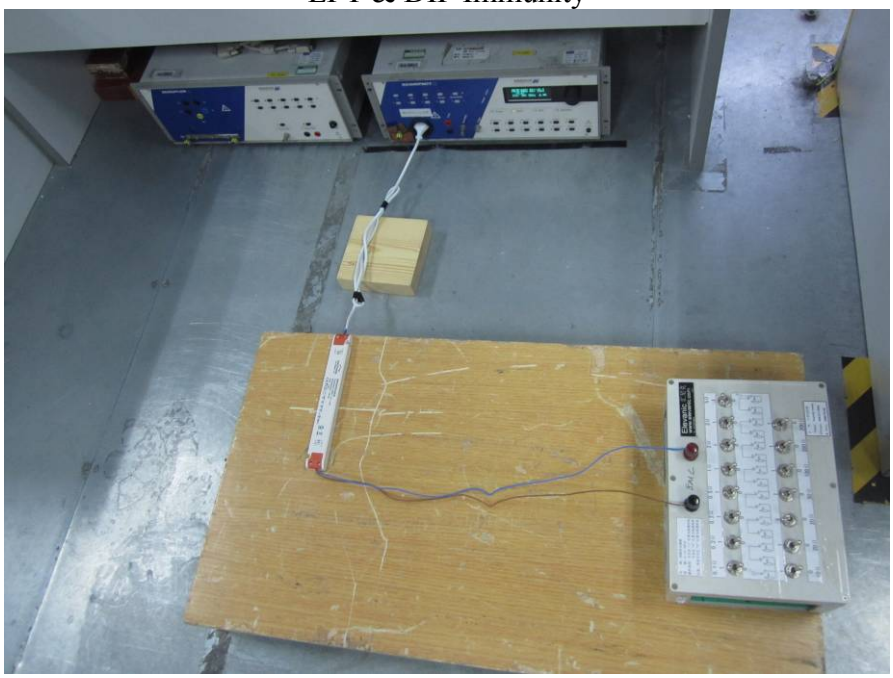
ESD Immunity



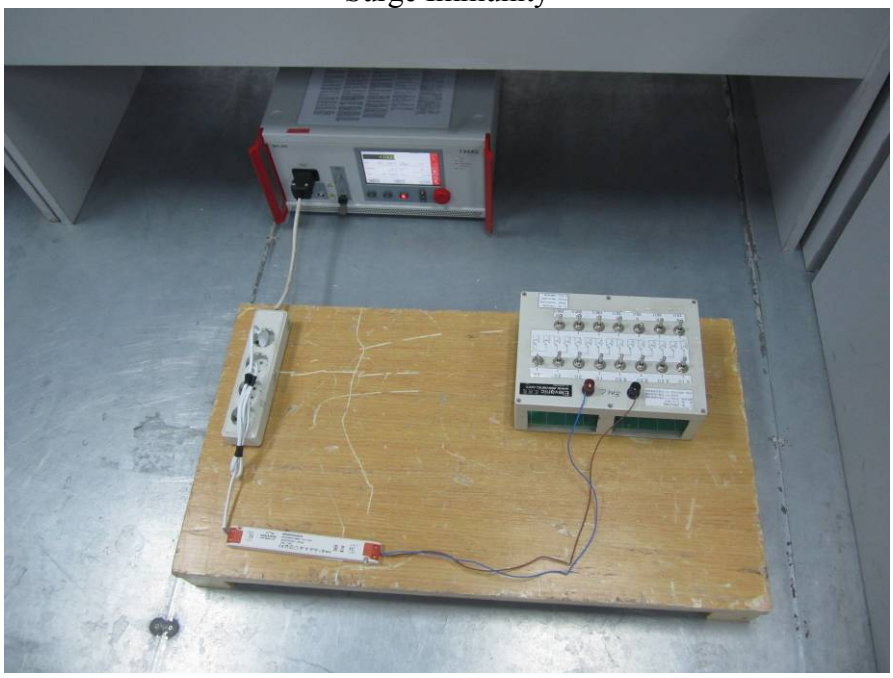
Conducted Immunity



EFT & DIP Immunity



Surge Immunity



Radiated field Immunity