

TEST REPORT

Applicant Name &

: Eaglerise Electronics (Foshan) Co., Ltd.

Address

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.

EIP008C****LS

Remark:

The 1st to 4th "*" indicate the output current of LED driver; can be replaced by "0200" to "1000" and increasing in multiplies of 50. "0200" means 200 mA;

"1000" means 1000 mA.

Electrical Rating

: Input: 220-240 VAC; 50/60 Hz; 0,07 A; Class II; IP 20; SELV; ta 50 °C; tc 75 °C; Independent type; 110 °C thermal protection;

Inherently short-circuit proof; MM mark; Output: Constant current type for

output;

Suitable for direct mounting on normally flammable surfaces;

Other parameters refer to appendix for model list.

Date Received

28 May 2012

Date Test Conducted

15 June 2012 – 19 June 2012

Test standards

EN 62493: 2010

Test Result

Pass

Conclusion

The submitted samples complied with the above light EMF standard.

Remark

: When determine the test result, measurement uncertainty has been considered.

Prepared and Checked By:

Approved By:

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Project Engineer Intertek Guangzhou

30 Aug., 2012

Date

Signature

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Report No.: GZ12051857-2

TEST RESULTS SUMMARY

Test Item	Standard	Result
Disturbance Voltage on Mains Terminals (20kHz-30MHz)	EN 62493: 2010 Reference: EN 55015: 2006+A1:2007+A2:2009	Pass
Radiated Electromagnetic Disturbance (100kHz-30MHz)	EN 62493: 2010 Reference: EN 55015: 2006+A1:2007+A2:2009	Pass
Radiated Electromagnetic Disturbance (30-300MHz)	EN 62493: 2010 Reference: EN 55015: 2006+A1:2007+A2:2009	Pass
Induced Current Density (20kHz-10MHz)	EN 62493: 2010	Pass

Remark: 1. The symbol "N/A" in above table means \underline{N} ot \underline{A} pplicable.

^{2.} When determining the test results, measurement uncertainty of tests has been considered.



2

Report No.: GZ12051857-2

EMF Results Conclusion

(with Justification)

We tested the Electronic controlgear for LED (Electronic LED driver), Model: EIP008C0200LS, EIP008C0600LS, EIP008C1000LS, to determine if they were in compliance with the relevant EN standards as marked on the Test Results Summary. We found that the units met the requirement of EN 62493 standard when tested as received. The worst case's test data was presented in this test report.

Model List:

Model	Rated input voltage	Frequency	Output voltage range	Max. output voltage
EIP008C0200LS	220-240 VAC	50/60Hz	20V-40VDC	46VDC
EIP008C0250LS	220-240 VAC	50/60Hz	16V-32VDC	37VDC
EIP008C0300LS	220-240 VAC	50/60Hz	13V-26VDC	30VDC
EIP008C0350LS	220-240 VAC	50/60Hz	11.5V-23VDC	28VDC
EIP008C0400LS	220-240 VAC	50/60Hz	10V-20VDC	25VDC
EIP008C0450LS	220-240 VAC	50/60Hz	9V-17.8VDC	24VDC
EIP008C0500LS	220-240 VAC	50/60Hz	8V-16VDC	20VDC
EIP008C0550LS	220-240 VAC	50/60Hz	7.3V-14.6VDC	18VDC
EIP008C0600LS	220-240 VAC	50/60Hz	7V-13.5VDC	16VDC
EIP008C0650LS	220-240 VAC	50/60Hz	6.2V-12.3VDC	15VDC
EIP008C0700LS	220-240 VAC	50/60Hz	6V-11.4VDC	15VDC
EIP008C0750LS	220-240 VAC	50/60Hz	5.3V-10.7VDC	15VDC
EIP008C0800LS	220-240 VAC	50/60Hz	5V-10VDC	15VDC
EIP008C0850LS	220-240 VAC	50/60Hz	4.7V-9.4VDC	14VDC
EIP008C0900LS	220-240 VAC	50/60Hz	4.4V-8.9VDC	14VDC
EIP008C0950LS	220-240 VAC	50/60Hz	4.2V-8.4VDC	13VDC
EIP008C1000LS	220-240 VAC	50/60Hz	4V-8VDC	11VDC



All models had the same mechanical structure, output load, PCB layout; the only deference is the parameters for the components used in secondary circuit. Model EIP008C0200LS, EIP008C0600LS, EIP008C1000LS were selected to do the full tests based on above statement.

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



3

Report No.: GZ12051857-2

LABORATORY MEASUREMENTS

Configuration Information

Equipment Under Test (EUT): Electronic controlgear for LED (Electronic LED

driver)

Model: EIP008C0200LS, EIP008C0600LS,

EIP008C1000LS

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:

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.



4 EMITEST

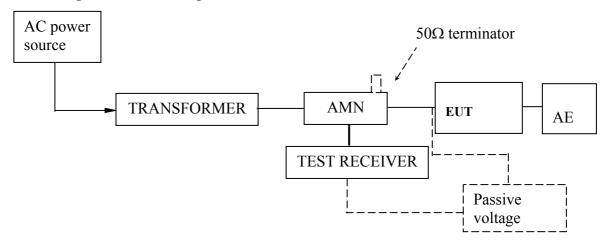
4.1 Disturbance Voltage on Mains Terminals (20 kHz-30 MHz)

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 20kHz to 150KHz, and 9kHz in the frequency range from 150kHz to 30MHz.



4.1.4 Test Data

At main terminal: Pass

EIP008C0200LS

Tested Wire: Live

Operation Mode: on mode, full load

	EDT	P DEAK ITCT (Final	Measurement Resul	t a l
			Measurement Resul	.ts)
	cel:	CE1511QP		
Tra	ce2:	CE1511AV		
Tra	ce3:			
	TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1	Quasi Peak	57.24 kHz	65.40 L1	-23.36
1	Quasi Peak	170 kHz	55.66 L1	-9.29
1	Quasi Peak	190 kHz	46.93 L1	-17.10
2	Average	230 kHz	35.69 L1	-16.75
1	Quasi Peak	398 kHz	44.28 L1	-13.60
2	Average	398 kHz	35.73 L1	-12.15
2	Average	622 kHz	34.27 L1	-11.72
1	Quasi Peak	626 kHz	40.70 L1	-15.29
2	Average	906 kHz	33.23 L1	-12.76
1	Quasi Peak	1.302 MHz	44.93 L1	-11.06
1	Quasi Peak	1.642 MHz	43.79 L1	-12.20
2	Average	1.646 MHz	29.07 L1	-16.92
1	Quasi Peak	2.434 MHz	38.73 L1	-17.26

Tested Wire: Neutral

Operation Mode: on mode, full load

EDIT	F PEAK LIST (Final	Measurement Resul	.ts)
Trace1:	CE1511QP		
Trace2:	CE1511AV		
Trace3:			
TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1 Quasi Peak	166 kHz	55.02 L1	-10.13
2 Average	166 kHz	46.11 L1	-9.04
2 Average	282 kHz	39.84 L1	-10.91
1 Quasi Peak	390 kHz	46.49 L1	-11.56
2 Average	390 kHz	38.99 L1	-9.06
1 Quasi Peak	618 kHz	46.35 L1	-9.64
2 Average	618 kHz	35.86 L1	-10.13
2 Average	1.01 MHz	36.31 L1	-9.68
1 Quasi Peak	1.286 MHz	47.45 L1	-8.54
1 Quasi Peak	1.622 MHz	46.00 L1	-10.00





At main terminal: Pass

EIP008C0600LS

Tested Wire: Live Operation Mode: on mode, full load

EDIT PEAK LIST (Final Measurement Results)				
Tracel:	CE1511QP			
Trace2:	CE1511AV			
Trace3:				
TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB	
2 Average	178 kHz	33.73 L1	-20.84	
1 Quasi Peak	618 kHz	36.42 L1	-19.57	
1 Quasi Peak	1.298 MHz	37.63 L1	-18.36	
2 Average	1.534 MHz	29.76 L1	-16.24	
1 Quasi Peak	1.59 MHz	37.92 L1	-18.07	

Tested Wire: Neutral Operation Mode: on mode, full load

EDIT PEAK LIST (Final Measurement Results)				
Trace1:	CE1511QP			
Trace2:	CE1511AV			
Trace3:				
TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB	
2 Average	182 kHz	34.79 L1	-19.60	
1 Quasi Peak	374 kHz	41.84 L1	-16.57	
1 Quasi Peak	610 kHz	40.31 L1	-15.68	
2 Average	1.042 MHz	32.42 L1	-13.58	
1 Quasi Peak	1.274 MHz	41.92 L1	-14.07	
2 Average	1.506 MHz	32.21 L1	-13.78	
1 Quasi Peak	1.582 MHz	39.77 L1	-16.22	



At main terminal: Pass

EIP008C1000LS

Tested Wire: Live Operation Mode: on mode, full load

EDIT	r PEAK LIST (Final	Measurement Resul	ts)		
Trace1:	CE1511QP				
Trace2:	CE1511AV	CE1511AV			
Trace3:					
TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB		
2 Average	178 kHz	33.52 L1	-21.05		
1 Quasi Peak	606 kHz	41.67 L1	-14.32		
1 Quasi Peak	1.262 MHz	42.64 L1	-13.35		
1 Quasi Peak	2.042 MHz	41.11 L1	-14.88		

Tested Wire: Neutral Operation Mode: on mode, full load

	EDIT PEAK LIST (Final Measurement Results)				
Tra	ce1:	CE1511QP			
Tra	ce2:	CE1511AV			
Tra	ce3:				
	TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB	
2	Average	182 kHz	34.15 L1	-20.24	
1	Quasi Peak	250 kHz	40.60 L1	-21.15	
1	Quasi Peak	518 kHz	39.72 L1	-16.27	
1	Quasi Peak	618 kHz	38.48 L1	-17.51	
1	Quasi Peak	1.286 MHz	42.19 L1	-13.80	
1	Quasi Peak	2.014 MHz	39.21 L1	-16.79	

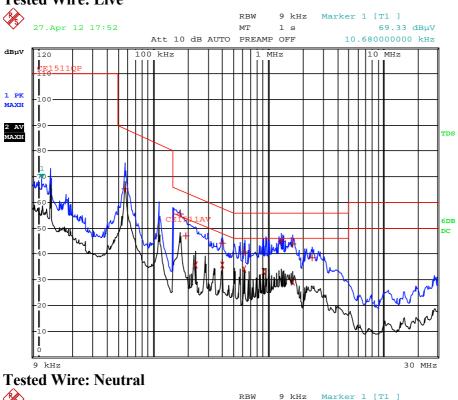
At load/control terminal: Not Applicable

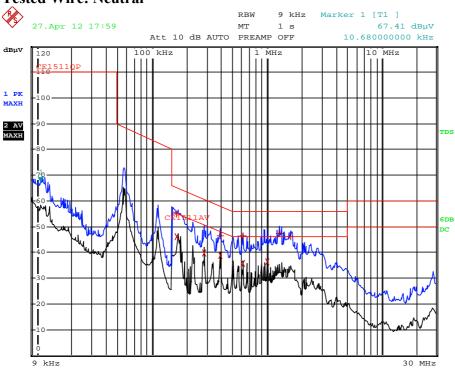
Frequency	Quasi-Peak		Average	
[MHz]	Disturbance	Permitted	Disturbance	Permitted
	level	limit	level	limit
	$[dB(\mu V)]$	$[dB(\mu V)]$	$[dB(\mu V)]$	$[dB(\mu V)]$
			-	
		-	-	
			1	-
			1	-



4.1.5 Emission Curve

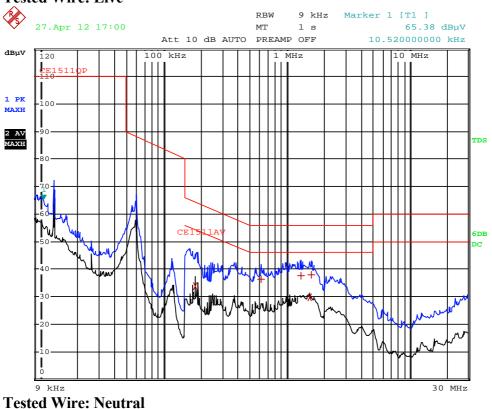
At mains terminal: **EIP008C0200LS Tested Wire: Live**

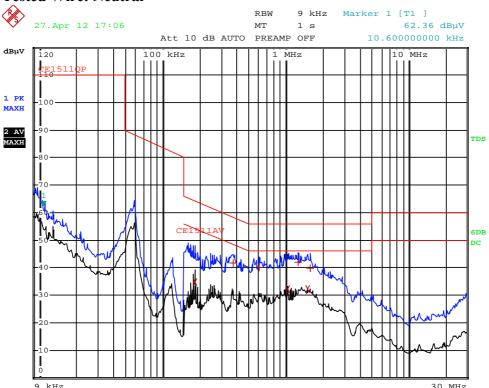






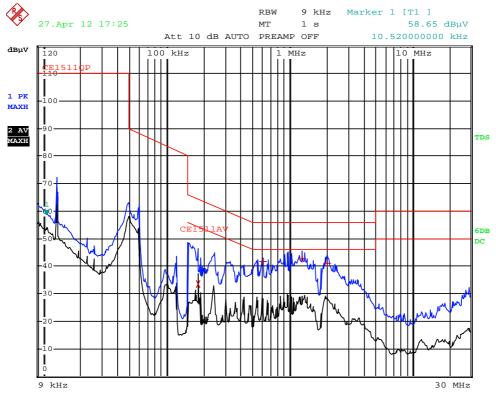
At mains terminal: EIP008C0600LS **Tested Wire: Live**



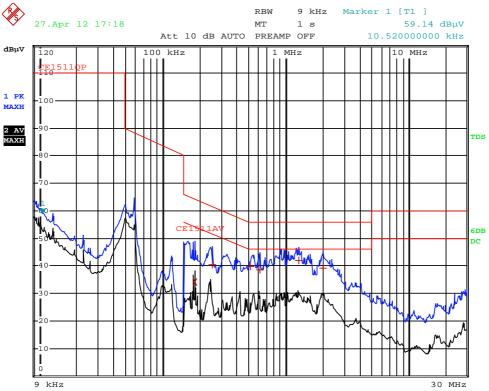




At mains terminal: EIP008C1000LS Tested Wire: Live









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.

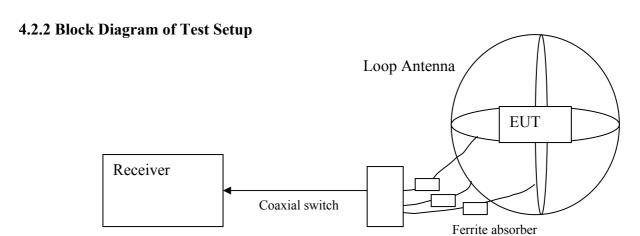


4.2 Radiated Electromagnetic Disturbance (100 kHz -30 MHz)

Test Result: Pass

4.2.1 Used Test Equipment

Equipment No.	Equipment	Model	Manufacturer
EM080-04	EMI receiver	ESCS30	R&S
EM061-04	Triple Loop Antenna	HXYZ9170	SCHWARZBECK
EM004-03	EMC shield Room	8m×4m×3m	Zhongyu



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 dB μ A, 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

For models: EIP008C0200LS, EIP008C0600LS, EIP008C1000LS

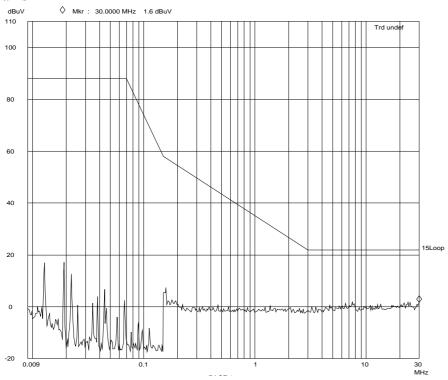
Frequency [MHz]	X axis [dB(μA)]	Υ axis [dB(μA)]	Z axis [dB(µA)]	Limit [dB(μA)]
0.100	<64	<64	<64	74.0
0.160	<47	<47	<47	57.2
0.240	<40	<40	<40	52.4
0.550	<30	<30	<30	42.5
1.000	<25	<25	<25	35.4
1.400	<20	<20	<20	31.4
2.000	<17	<17	<17	27.1
3.500	<12	<12	<12	22.0
6.000	<12	<12	<12	22.0
10.000	<12	<12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



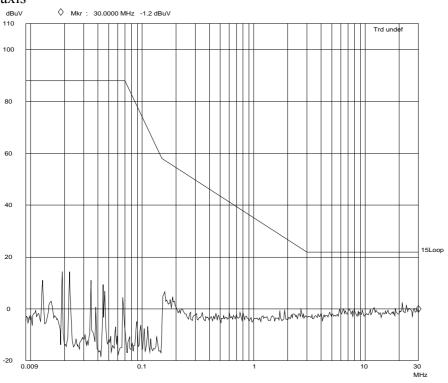
4.2.5 Test Curve

EIP008C0200LS

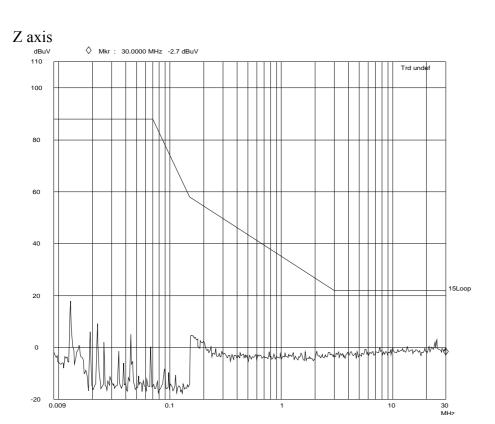
X axis



Y axis

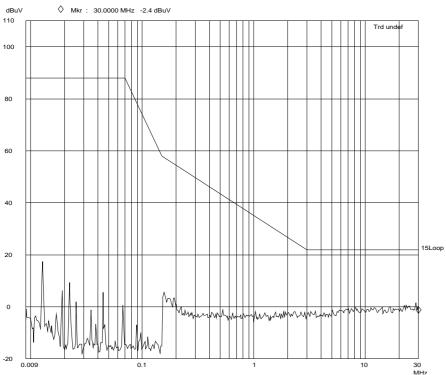






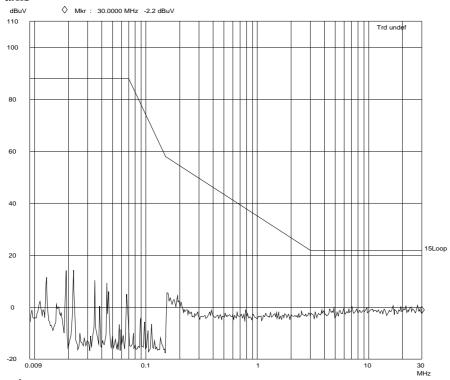
EIP008C0600LS

X axis

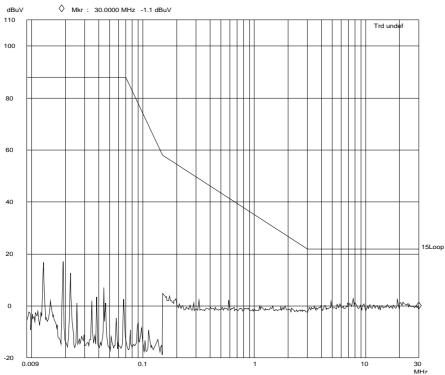




Y axis



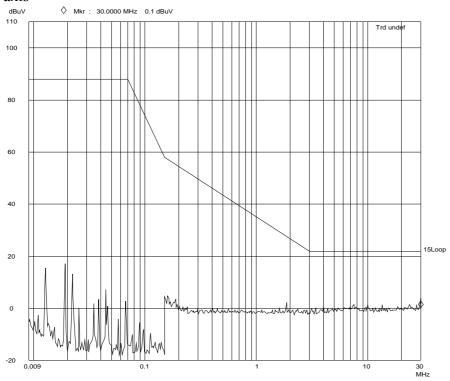
Z axis



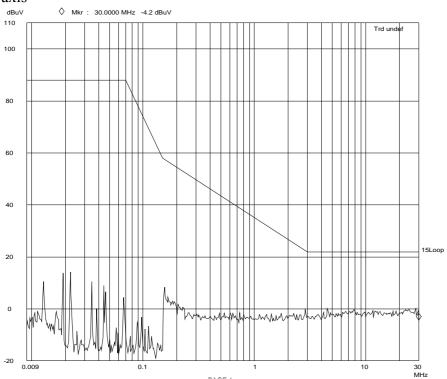


EIP008C1000LS

X axis

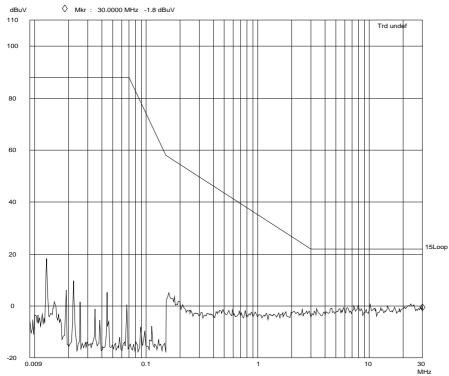


Y axis









4.2.6 Measurement Uncertainty

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

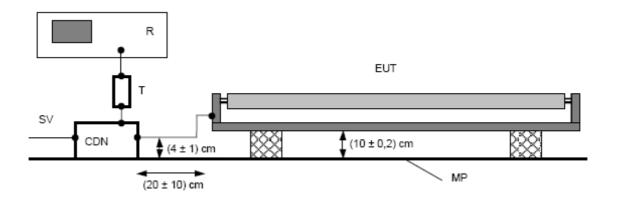


4.3 Radiated Electromagnetic Disturbance (30-300MHz, CDN method) Test Result: Pass

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 &	CDN M2 16	TESEQ
	Decoupling Network		
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 \pm 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

EIP008C0200LS

EDIT	F PEAK LIST (Final	Measurement Resul	ts)
Tracel:	15CDN		
Trace2:			
Trace3:			
TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1 Quasi Peak	73.52 MHz	45.77 L1	-10.78
1 Quasi Peak	69.84 MHz	46.06 L1	-10.92
1 Quasi Peak	60.64 MHz	44.57 L1	-13.58
1 Quasi Peak	47.92 MHz	43.99 L1	-16.11

EIP008C0600LS

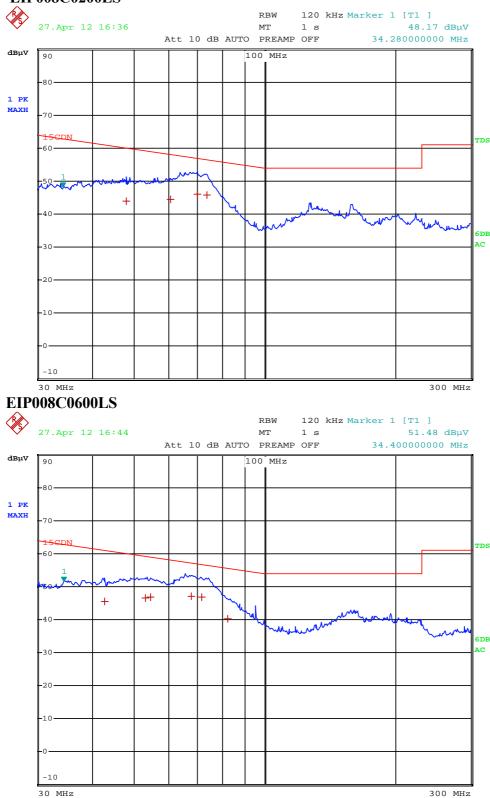
-	EH 000C000ES					
		EDIT	PEAK LIST (Final	Measurement Resul	.ts)	
	Tra	ce1:	15CDN			
Trace2:		ce2:				
Trace3:		ce3:				
		TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB	
	1	Quasi Peak	71.44 MHz	46.83 L1	-9.95	
	1	Quasi Peak	67.64 MHz	47.19 L1	-10.04	
	1	Quasi Peak	54.6 MHz	46.70 L1	-12.32	
	1	Quasi Peak	53.08 MHz	46.58 L1	-12.68	
	1	Quasi Peak	82.28 MHz	40.26 L1	-15.35	
	1	Quasi Peak	42.64 MHz	45.55 L1	-15.52	

EIP008C1000LS

Trace1: 15CDN Trace2:				
man and 2:				
iracez				
Trace3:				
TRACE FREQUENCY LEVEL dBµV DELTA LIMI	T dB			
1 Quasi Peak 68.2 MHz 45.72 L1 -11.45				
1 Quasi Peak 71.44 MHz 44.85 L1 -11.94				
1 Quasi Peak 58.52 MHz 45.52 L1 -12.93				
1 Quasi Peak 53.24 MHz 45.78 L1 -13.45				
1 Quasi Peak 83.44 MHz 39.56 L1 -15.93				
1 Quasi Peak 39.88 MHz 45.04 L1 -16.58				
1 Quasi Peak 43.84 MHz 44.14 L1 -16.70				



4.3.5 Test Curve EIP008C0200LS









4.3.6 Measurement uncertainty

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



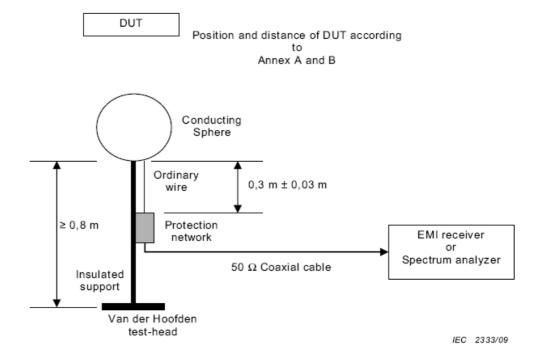
4.4 Induced Current Density (20 kHz-10 MHz)

Test Result: Pass

4.4.1 Used Test Equipment

Equip. No.	Equipment	Model	Manufacturer
EM080-05	EMI receiver	ESCI	R&S
EM007-02	Van der Hoofden test-head	VDHH 9502	SCHWARZBECK
EM004-04	EMC shield Room	8m×3m×3m	Zhongyu

4.4.2 Block Diagram of Test Setup



DUT = device under test.

4.4.3 Test Setup and Procedure

The height of the insulated support is minimum 0,8 m. The conducting sphere is connected to the protection network via an ordinary wire of length 30 cm \pm 3 cm. The protection network is then connected to the EMI receiver, or spectrum analyser, by a 50 Ω coaxial cable having a maximum cable loss of 0,2 dB and a d.c. resistance of \leq 10 Ω .

Lighting equipment is evaluated in accordance with the measurement distance given in Table A.1 of Annex A unless otherwise specified by the manufacturer. The external surface of the test-head is taken as the reference point when determining the measurement distance.

Tolerances of the measurement distances are \pm 5 %.



If the lighting equipment is provided with an earthing terminal, the lighting equipment shall be connected by means of an earth conductor contained in the power cable to the lighting equipment.

During the tests no conductive plane or object or human being should be closer to the lighting equipment than 0,8 m.

Prior to measurement, the lamp(s) shall be operated until stabilisation has been reached. Unless otherwise stated by the manufacturer, the following stabilisation times shall be observed:15 min. for fluorescent lamps; 30 min. for other discharge lamps. All measurements have to be done with 100 h aged lamps.

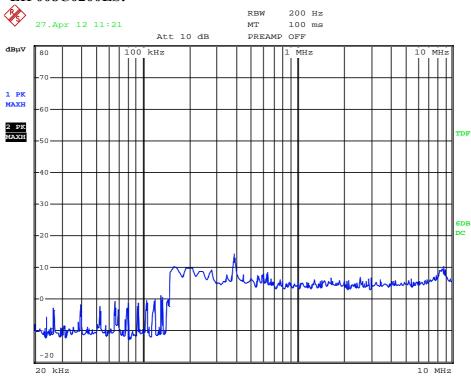
4.4.4 Test Data

EIP008C0200LS: 0.038 EIP008C0600LS: 0.027 EIP008C1000LS: 0.032

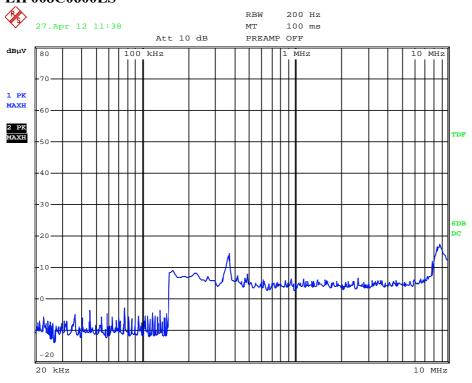


4.4.5 Test Curve

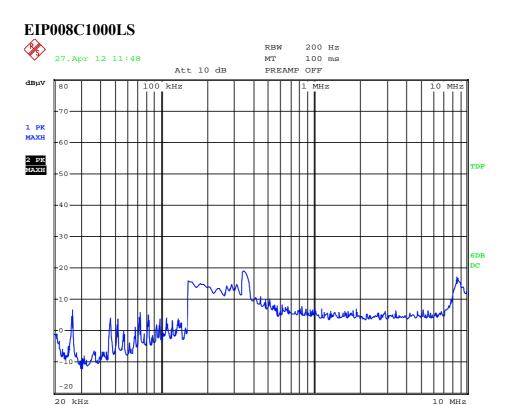
EIP008C0200LS:



EIP008C0600LS







4.4.6 Measurement uncertainty

The measurement uncertainty for Induced Current Density test is according to CISPR 16-4-2:2003.



Appendix I - Photos of test setup 5

