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Report No.: SHEM110800108401
Page 1 of 23

EMC TEST REPORT

Application No.: SHEM110800108401
Applicant: SHANGHAI WINSUN ELECTRONICS CO.,LTD.
Equipment Under Test (EUT):

NOTE: The following sample(s) submitted was/were identified on behalf of the client as

EUT Name: Spot light
Model No.: D5005-C,D5005-E,D5004-F
Serial No.: Not supplied by the client
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

Date of Receipt: August 15, 2011
Date of Test: August 16, 2011 to September 16, 2011
Date of Issue: September 19, 2011

Test Result :	PASS
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The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EC Declaration of Conformity and compliance with all relevant EC Directives.



Jim Xu
E&E Section Head
SGS-CSTC(Shanghai) Co., Ltd.



Zoe Cang
E&E Project Engineer
SGS-CSTC(Shanghai) Co., Ltd.

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2 Test Summary

Test	Test Requirement	Test Method	Class / Severity	Result
Conducted Emission on Main Terminals (150K to 30MHz)	EN 55015: 2006+A1:2007+A2:2009	EN 55015: 2006+A1:2007+A2:2009	Clause 4.3.1 of EN55015	N/A
Radiated Electromagnetic Disturbance 9KHz to 30MHz	EN 55015: 2006+A1:2007+A2:2009	EN 55015: 2006+A1:2007+A2:2009	Clause 4.4.1 of EN55015 (2 M Loop)	PASS
Radiated Emission (30MHz to 300MHz)	EN 55015: 2006+A1:2007+A2:2009	EN 55015: 2006+A1:2007+A2:2009	Clause 4.4.2 of EN55015	PASS
Harmonic Current Emission on AC, up to 2kHz	EN 61000-3-2: 2006+A1:2009+A2:2009	EN 61000-3-2: 2006+A1:2009+A2:2009	Clause 7 of EN61000-3-2	N/A
Voltage Fluctuation and Flicker on AC	EN 61000-3-3 : 2008	EN 61000-3-3 :2008	Clause 5 of EN61000-3-3	N/A
ESD	EN 61547: 2009	EN 61000-4-2 :2009	Contact ±4 kV Air ±8 kV	PASS
Radio frequency electromagnetic fields, 80MHz to 1 GHz	EN 61547: 2009	EN 61000-4-3: 2006+A1:2008+A2:2010	3V/m 80%, 1kHz, AM	PASS
Electrical Fast Transients (EFT) on DC	EN 61547: 2009	EN 61000-4-4:2004+A1:2010	DC ± 0.5kV	N/A
Surges on AC	EN 61547: 2009	EN 61000-4-5:2006	±0.5kV D.M.† ±1.0kV C.M.†	N/A
Injected Currents on DC, 150kHz to 80MHz	EN 61547: 2009	EN 61000-4-6 :2009	3Vrms (emf), 80%, 1kHz Amp. Mod.	N/A
Power-frequency magnetic field	EN 61547: 2009	EN 61000-4-8: 2010	50/60Hz,3A/m	N/A**
Voltage Dips and Interruptions on AC	EN 61547: 2009	EN 61000-4-11 :2004	30% of U _T * for 10ps 100%of U _T * for 0.5per	N/A

Remark:

- * U_T is the nominal supply voltage.
- † D.M. – Differential Mode.
- † C.M. – Common Mode.
- ψ N/A –Not Applicable

Note:

- 1.**The Power-frequency magnetic field test will not apply to the equipment containing no components susceptible to magnetic fields, such as Hall elements or magnetic field sensors, according to EN 61547.
2. There are 3 models mentioned in this report, and they are the same in electrical and electronic characters. So we just have the model D5005-C tested.

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4 General Information

4.1 Client Information

Applicant: SHANGHAI WINSUN ELECTRONICS CO.,LTD.
 Address of Applicant: Room 501,Building 1,No.3266,JinDu Road,Min Hang District,
 Shanghai,China
 Manufacturer: SHANGHAI WINSUN ELECTRONICS CO.,LTD.
 Address of Manufacturer: Room 501,Building 1,No.3266,JinDu Road,Min Hang District,
 Shanghai,China

4.2 General Description of E.U.T.

EUT Name: Spot light
 Model No.: D5005-C,D5005-E,D5004-F
 Serial No.: Not supplied by the client

4.3 Details of E.U.T.

Power Supply: Input Voltage:12V AC/DC
 Power:5W
 Power Cord: N/A

4.4 Description of Support Units

Name / Function	Model No.	Remark
DC Power	PMC35—3	0-35V 3A

4.5 Standards Applicable for Testing

The customer requested EMC tests for Spot light.

The standards used were EN 55015: 2006+A1:2007+A2:2009, EN 61000-3-2:2006+A1:2009+A2:2009, EN 61000-3-3:2008 and EN 61547: 2009.

Table 1 : Tests Carried Out Under EN 55015: 2006+A1:2007+A2:2009

Standard	Status
EN 55015: 2006+A1:2007+A2:2009 Conducted Emissions on Main Terminals	×
EN 55015: 2006+A1:2007+A2:2009 Radiated Electromagnetic Disturbance	√
EN 55015: 2006+A1:2007+A2:2009 Radiated Emission	√

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

Table 2: Tests Carried Out Under EN 61000-3-2: 2006+A1:2009+A2:2009 & EN 61000-3-3: 2008

Standard	Status
EN 61000-3-2: 2006+A1:2009+A2:2009 Harmonic Current Emission on AC	×
EN 61000-3-3:2008 Voltage Fluctuation and Flicker on AC	×

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

Table 3: Tests carried out under EN 61547: 2009

Standard	Status
EN 61000-4-2 :2009 Electrostatic discharge test	√
EN 61000-4-3:2006+A1:2008+A2:2010 Radio frequency electromagnetic fields test	√
EN 61000-4-4: 2004+A1:2010 Electrical fast transients/burst test	×
EN 61000-4-5: 2006 Surges test	×
EN 61000-4-6: 2009 Injected Currents test	×
EN 61000-4-8: 2010 Power-frequency magnetic field test	×
EN 61000-4-11: 2004 Voltage dips and interruptions test	×

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

4.6 Deviation from Standards

All Immunity tests to the product standard were performed in accordance with EN 61000-4-x and not IEC 61000-4-x. (x=2,3,4,5,6,8,11).

4.7 Abnormalities from Standard Conditions

None.

4.8 Monitoring of EUT for All Immunity Test

Visual:

4.9 Test Location

All tests were performed at:

SGS-CSTC EMC Laboratory, No.588 West Jindu Road,Songjiang District,Shanghai,China
Tel:+86 21 6191 5666 Fax:+86 21 6191 5655

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4.10 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L0599)**

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing. Date of expiry: 2014-07-26.

- **FCC – Registration No.: 402683**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered and fully described in a report filed with the Federal Communications Commission (FCC). The acceptance letter from the FCC is maintained in our files. Registration No.: 402683, Expiry Date: 2012-03-17.

- **Industry Canada (IC) – IC Assigned Code: 8617A**

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 8617A. Expiry Date: 2014-09-20.

- **VCCI (Member No.: 3061)**

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-3172 and C-3514 respectively. Date of Registration: 2009-11-30. Date of Expiry: 2012-03-17.

4.11 Measurement Uncertainty

According to CISPR 16-4-2.

Test Item	Frequency Range	Measurement Uncertainty
Conducted Emission	9KHz – 150KHz	3.9dB
	150KHz – 30MHz	3.5dB
Radiated Emission	30MHz – 1000MHz	4.0dB

Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

5 Equipments Used during Test

Radiated Electromagnetic Disturbance

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due date
1	3-dimensional large loop	R&S	HXYZ9170	HXYZ9170-136	2011-04-20	2012-04-19
2	EMI test receiver	Rohde & Schwarz	ESCS30	100086	2011-06-03	2012-06-02

Radiated Emission

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due date
1	EMI test receiver	Rohde & Schwarz	ESU40	100109	2011-06-03	2012-06-02
2	Antenna	SCHWARZBECK	VULB9168	9168-313	2011-06-03	2012-06-02
3	CONTROLLER	INCO	CO200	474	/	/
4	Antenna	SCHWARZBECK	BBHA9120D	9120D-679	2011-06-03	2012-06-02

Electrostatic Discharge Test

Item	Test Equipment	Manufacturer	Model No.	Series No.	Cal. Date	Cal. Due date
1	ESD Simulator	TESEQ	NSG 437	468	2011-08-05	2012-08-04

Radio Frequency Electromagnetic Fields Test

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due date
1	Ultra broadband antenna	Rohde & Schwarz	HL562	100227	2010-10-9	2011-10-8
2	amplifier	AR	30W1000B	0327284	--	--
3	amplifier	AR	30S1G3	0324978	--	--
4	power meter	Rohde & Schwarz	NRP	101641	2011-05-04	2012-05-03
5	Single generator	Rohde & Schwarz	SMR40	100555	2011-06-03	2012-06-02

General Equipment

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due date
1	Digital pressure meter	YONGZHI	DYM3-01	101012	2010-11-19	2011-11-18
2	Digital Multimeter	FLUKE	17B	10560713	2011-09-07	2012-09-06
3	Temperature&humidity recorder	ShangHai weather meter work	ZJ 1-2B	0805126	2011-07-29	2012-07-28
4	Digital illuminance meter	TES electrical electronic Corp.	TES-1330A	050602219	2010-10-20	2011-10-19

6 Emission Test Results

6.1 Radiated Electromagnetic Disturbance (9KHz to 30MHz)

Test Requirement: EN 55015: 2006+A1: 2007+A2: 2009
Test Method: EN 55015: 2006+A1: 2007+A2: 2009
Test Date: September 08, 2011
Frequency Range: 9KHz to 30MHz
Class: N/A
Detector: Peak for pre-scan (200Hz resolution bandwidth for frequency range 9KHz-150KHz; 9kHz resolution bandwidth for frequency range 150KHz-30MHz)
Quasi-Peak if maximised peak within 10dB of limit
Result: **PASS**

6.1.1 E.U.T. Operation

Operating Environment:

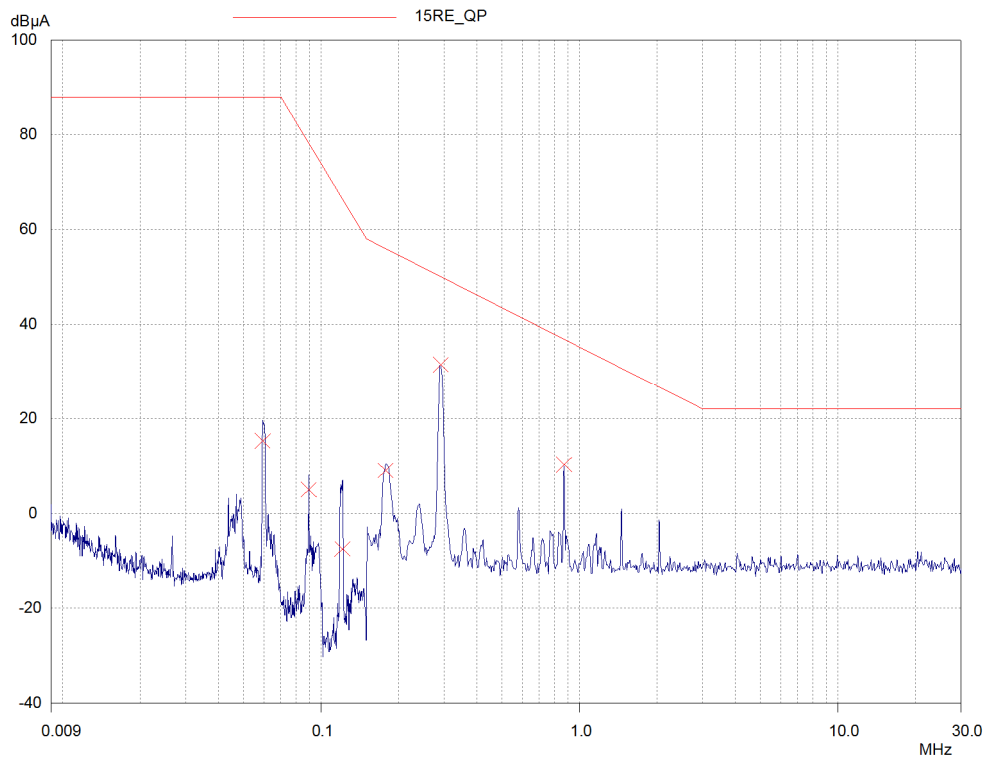
Temperature: 24.0 °C Humidity: 42 %RH Atmospheric Pressure: 1004 mbar

EUT Operation: Test the EUT in On Mode (Keep the EUT Lighting).

6.1.2 Measurement Data

An initial pre-scan was performed in peak detection mode. Quasi-Peak was performed at the frequencies with maximized peak emission were detected.

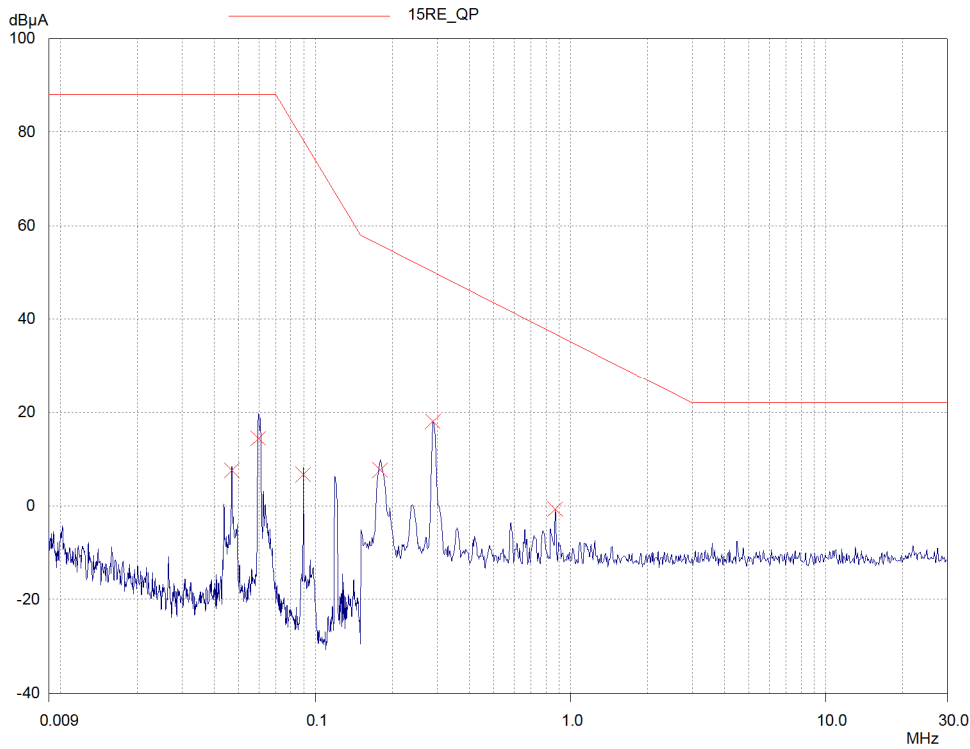
X direction



Final Measurement Results

Frequency MHz	QP Level dBµA	QP Limit dBµA	QP Delta dB
0.05946	15.20	88.00	72.80
0.08935	4.94	78.39	73.45
0.12102	-7.53	66.45	73.98
0.17732	9.03	55.99	46.96
0.29061	31.46	50.05	18.59
0.8727	10.21	36.84	26.63

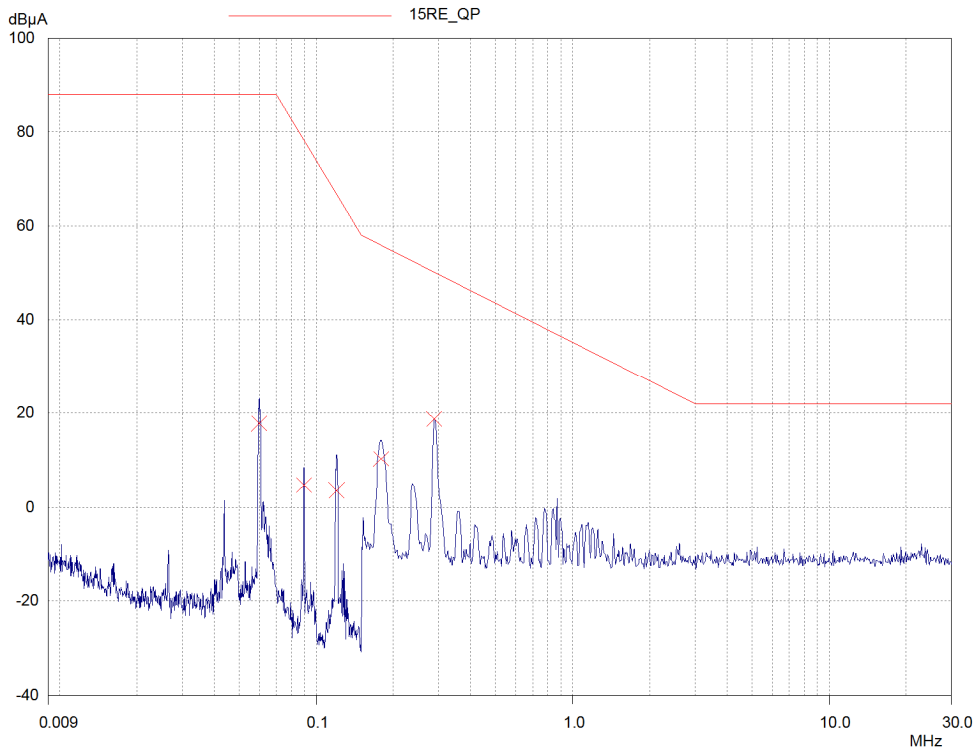
Y direction



Final Measurement Results

Frequency MHz	QP Level dBµA	QP Limit dBµA	QP Delta dB
0.04698	7.60	88.00	80.40
0.0597	14.38	88.00	73.62
0.08935	6.70	78.39	71.69
0.17874	7.62	55.89	48.27
0.2883	18.02	50.15	32.13
0.86578	-0.69	36.93	37.62

Z direction



Final Measurement Results

Frequency MHz	QP Level dBµA	QP Limit dBµA	QP Delta dB
0.05994	17.74	88.00	70.26
0.08935	4.64	78.39	73.75
0.11958	3.57	66.92	63.35
0.17874	10.22	55.89	45.67
0.2883	18.74	50.15	31.41

6.2 Radiated Emissions (30MHz to 300MHz)

Test Requirement: EN 55015: 2006+A1: 2007+ A2: 2009
Test Method: EN 55015: 2006+A1: 2007+A2: 2009
Test Date: September 12, 2011
Frequency Range: 30MHz to 300MHz
Measurement Distance: 3m
Limit: 40.0 dB μ V/m between 30MHz & 230MHz
47.0 dB μ V/m between 230MHz & 300MHz
Detector: Peak for pre-scan (120kHz resolution bandwidth)
Quasi-Peak if maximised peak within 6dB of limit

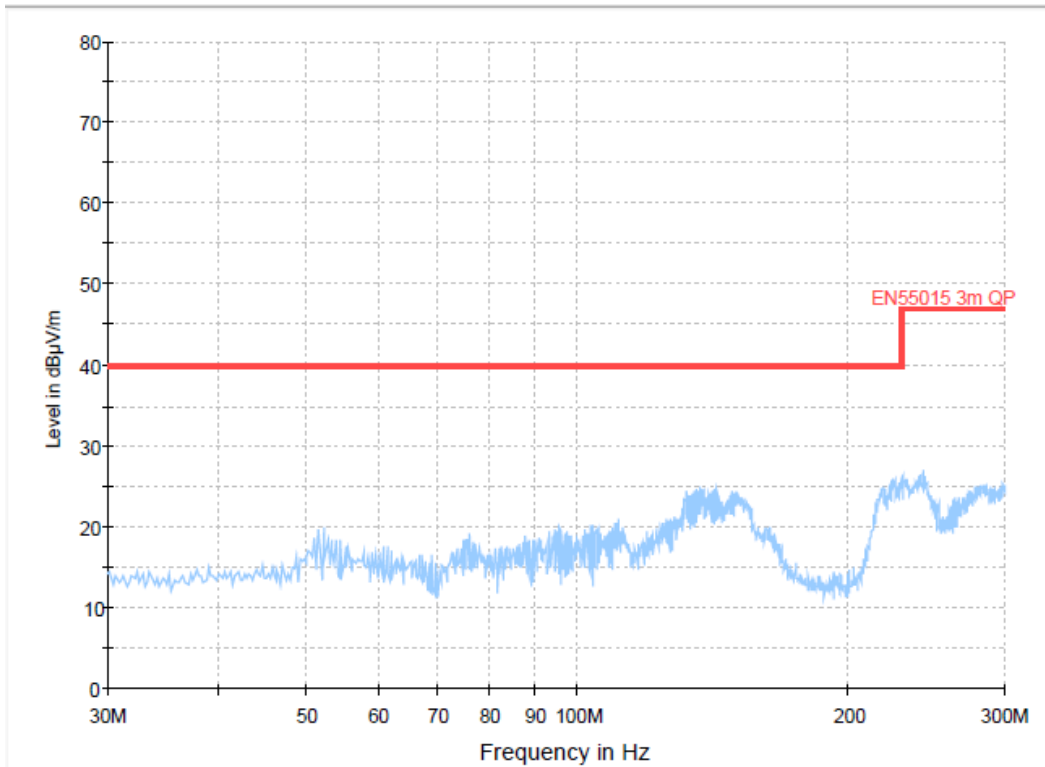
6.2.1 E.U.T. Operation

Operating Environment:
Temperature: 22 °C Humidity: 45 % RH Atmospheric Pressure: 1006 mbar
EUT Operation: Test the EUT in On Mode (Keep the EUT Lighting).

6.2.2 Measurement Data

An initial pre-scan was performed in peak detection mode. Quasi-Peak was performed at the frequencies with maximized peak emission were detected.

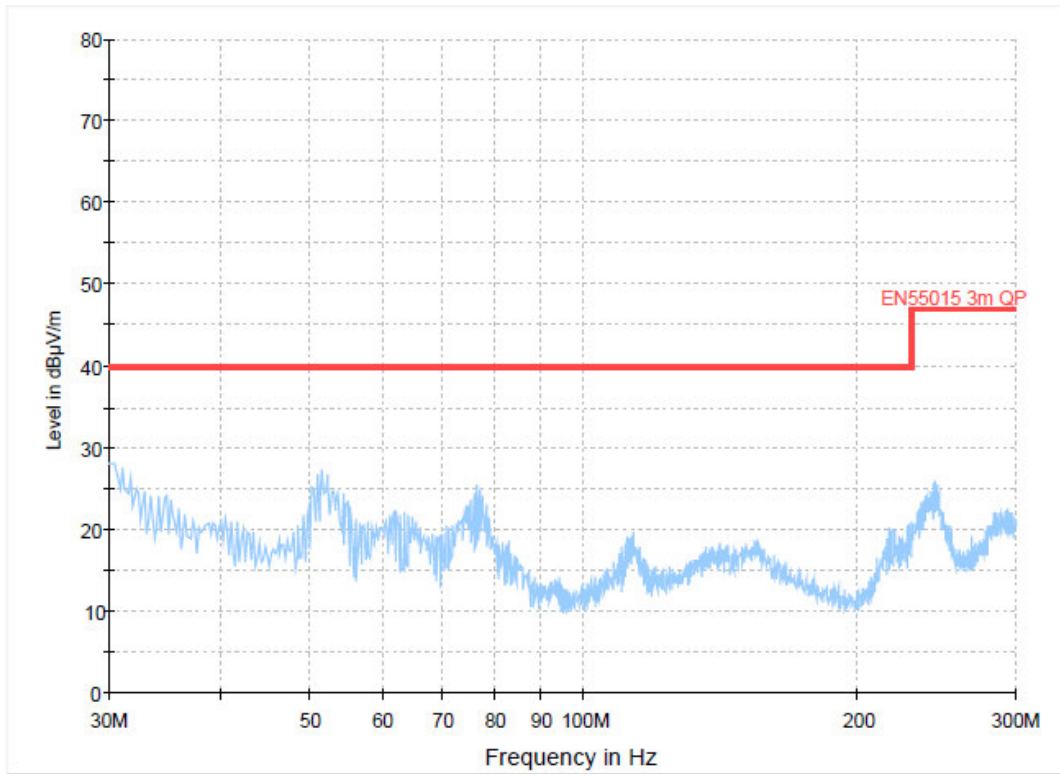
Horizontal:



Frequency (MHz)	Receiver QP Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
30.00	*	40.00	*
40.00	*	40.00	*
50.00	*	40.00	*
100.00	*	40.00	*
150.00	*	40.00	*
200.00	*	40.00	*
250.00	*	47.00	*
300.00	*	47.00	*

“*” means the emission level is 6dB lower than the relevant limit.

Vertical:



Frequency	Receiver QP Level	Limit	Margin
(MHz)	(dBuV/m)	(dBuV/m)	(dB)
30.00	*	40.00	*
40.00	*	40.00	*
50.00	*	40.00	*
100.00	*	40.00	*
150.00	*	40.00	*
200.00	*	40.00	*
250.00	*	47.00	*
300.00	*	47.00	*

“*” means the emission level is 6dB lower than the relevant limit.

7 Immunity Test Results

7.1 Performance Criteria Description in Clause 4 of 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. Additional requirement for lighting equipment incorporating a starting device: After the test the lighting equipment is switched off. After half an hour it is switched on again. The lighting equipment shall start and operate as intended.

7.2 ESD

Test Requirement:	EN 61547: 2009	
Test Method:	ENC 61000-4-2: 2009	
Test Date:	September 16, 2011	
Discharge Impedance:	330 Ω / 150 pF	
Discharge Voltage:	Air Discharge:	± 8 kV
	Contact Discharge:	± 4 kV
	HCP:	± 4 kV
	VCP:	± 4 kV
Polarity:	Positive & Negative	
Number of Discharge:	Minimum 10 times at each test point for Contact and VCP&HCP Discharge;	
	Minimum 10 times at each test point for Air Discharge	
Discharge Mode:	Single Discharge	
Discharge Period:	1 second minimum	
Result:	PASS	

7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 22.0°C Humidity: 46% RH Atmospheric Pressure: 1018 mbar

EUT Operation: Test the EUT in On Mode (Keep the EUT Lighting).

7.2.2 Direct Application Test Results

- Observations: Test Point:
1. All insulated enclosure & seams around EUT.
 2. All touchable metal material of EUT

Direct Application			Test Results	
Discharge Level (kV)	Polarity (+/-)	Test Points	Contact Discharge	Air Discharge
8	+/-	1	N/A	A
4	+/-	2	A	N/A

Indirect Application Test Results

- Observations: Test points: Test Point: 1. All sides.

Indirect Application			Test Results	
Discharge Level (kV)	Polarity (+/-)	Test Point	Horizontal Coupling	Vertical Coupling
4	+/-	1	A	A

Results:

N/A: Not applicable (not required in the standard or floor mounted the EUT)

7.3 Radio Frequency Electromagnetic Fields (80MHz-1GHz)

Test Requirement: EN 61547: 2009
Test Method: EN 61000-4-3: 2006+A1:2008+A2:2010
Test Date: September 15, 2011
Frequency Range: 80MHz-1GHz
Test level: 3V/m on enclosure
Modulation: 80%, 1kHz Amplitude Modulation
Criteria: Performance criteria A
Result: **PASS**

7.3.1 E.U.T. Operation

Operating Environment:
Temperature: 22 °C Humidity: 47% RH Atmospheric Pressure: 1006 mbar
EUT Operation: Test the EUT in On Mode (Keep the EUT Lighting).

7.3.2 Test Results

Pass

8 Photographs

8.1 Radiated Electromagnetic Disturbance Test Setup



8.2 Radiated Emissions Test Setup



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8.3 ESD Test Setup

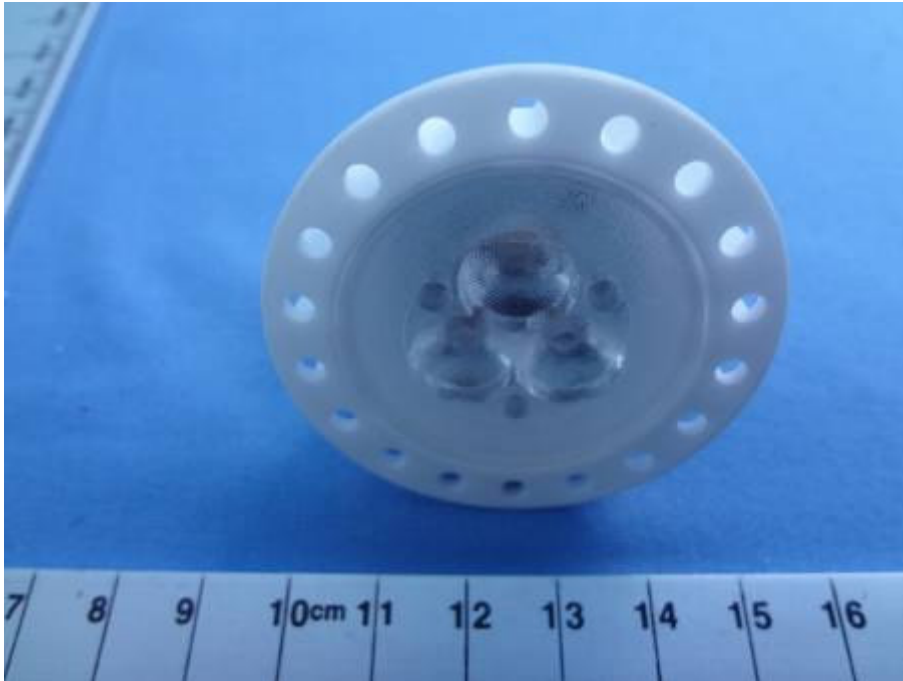


8.4 Radio Frequency Electromagnetic Fields Test Setup

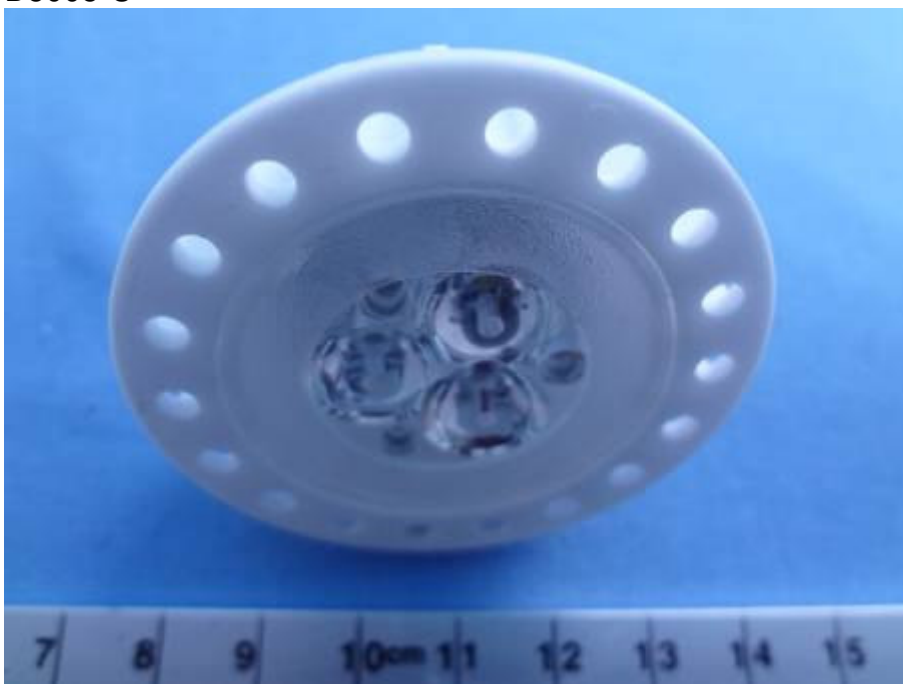


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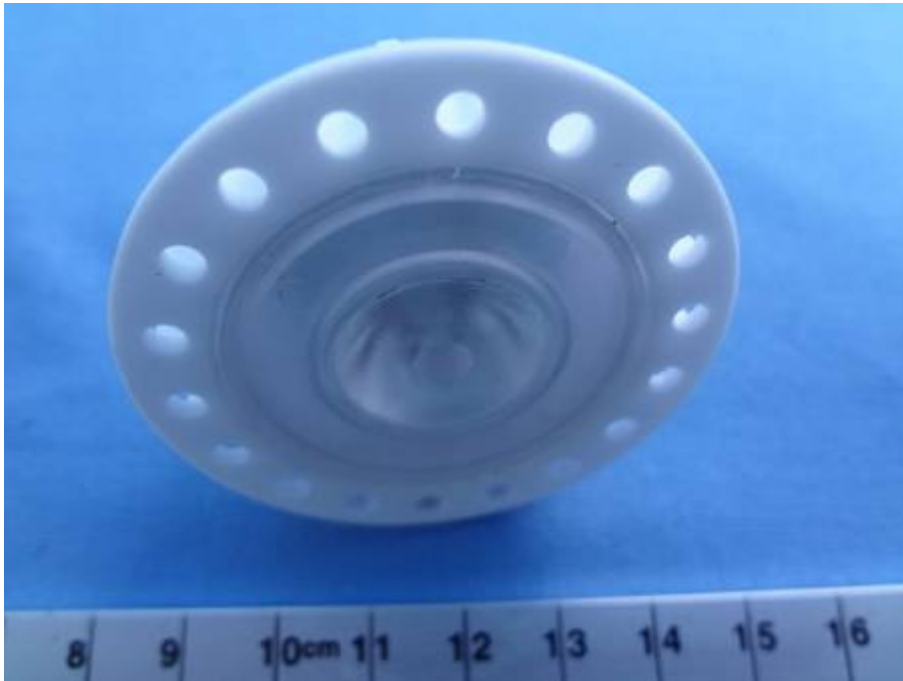
8.5 EUT Constructional Details



D5005-C



D5005-E



D5004-F

The end of report