



China

EMC EMISSION - TEST REPORT

Report Number : 708881669201-00-Part 1 Date of Issue: Aug 16, 2016

Model : Detail model name see Appendix B

Product Type : LED Lamps

Applicant : Haiyan Yaohua Lighting Co.,Ltd.

Manufacturer : Haiyan Yaohua Lighting Co.,Ltd.

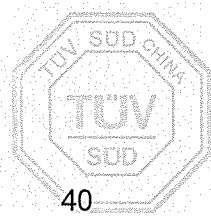
License holder : Haiyan Yaohua Lighting Co.,Ltd.

Address : South of Jiuqugang, Tongbei Village, Tongyuan Town 314306

: Haiyan, Zhejiang

: People's Republic of China

Test Result : Positive Negative



Total pages including Appendices

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EMISSIONS TEST REGULATIONS :

The emissions tests were performed according to the following regulations:

■ - EMC - Directive 2014/30/EU

- EN 61000-6-3:2007+A1:2011

- EN 61000-6-4:2007+A1:2011

- EN 61326-1:2013

- Class A

- Class B

- EN 55011:2009+A1:2010

- Group 1

- Group 2

- EN 55012:2007+A1:2009

- Class A

- Class B

- EN 55013:2013

- EN 55014-1:2006+A1:2009+A2:2011

- Household appliances and similar

- Electric tools

- Others _____.

■- EN 55015:2013+A1:2015

- EN 55022: 2010

- Class A

- Class B

■- EN 61000-3-2:2014

■ - EN 61000-3-3:2013

- EN 61000-3-11:2000



China

Environmental Conditions In The Laboratory:

	<u>Actual</u>
Temperature:	: 20~25°C
Relative Humidity:	: 40~60%
Atmospheric Pressure:	: 1000~1040mBar

Power Supply Utilized:

Power supply system : 220-240V~, 50 or 60 Hz / 1φ

Statement of Measurement Uncertainty:

For a 95% confidence level, the measurement uncertainties for defined systems are:-

Test Discipline	Frequency / Parameter	MU
Conducted Emission	9kHz to 150kHz	3.56 dB
Conducted Emission	150kHz to 30MHz	2.73 dB
Radiated Emission (Electric field)	30MHz to 1GHz	5.03 dB (Horizontal)
		5.11 dB (Vertical)
Radiated Emission (Magnetic field)	9KHz to 30MHz	3.21dB
Disturbance power	30MHz to 300MHz	3.47 dB
Harmonic	50Hz to 2KHz	2.56%
Flicker	dc	6.20%
	dmax	6.22%
	dt	6.21%
	Pst/Plt	6.21%

Symbol Definitions:

- - Applicable
- - Not Applicable



China

Emissions Test Conditions: CONDUCTED EMISSIONS (Interference Voltage)

The **CONDUCTED EMISSIONS (INTERFERENCE VOLTAGE)** measurements were performed at the following test location:

- Test not applicable

■ - Test Area – O

Test Equipment Used :

	Model Number	Manufacturer	Description	TUV PS Number
■	ESR3	R&S	EMI test receiver	S1503001-YQ-EMC
■	ENV216	R&S	2-Line V-network	S1503103-YQ-EMC
<input type="checkbox"/>	ENV4200	R&S	4-Line V-network	S1503106-YQ-EMC
■	Conical cover	Schwarzbeck	Test fixture for energy saving lamps	S1503116-SB-EMC
<input type="checkbox"/>	TK 9420	R&S	High voltage probe	S1503104-YQ-EMC
<input type="checkbox"/>	EZ-17	R&S	RF-current probe	S1503033-YQ-EMC
<input type="checkbox"/>	--	TÜV PS	Artificial Hand	--
<input type="checkbox"/>	T800	Teseq	Impedance stabilization network	S1505241-YQ-EMC

Remarks: Test equipment used is calibrated on a regular basis.



China

Emissions Test Conditions: RADIATED EMISSIONS (Magnetic Field)

The *RADIATED EMISSIONS (MAGNETIC FIELD)* measurements were performed at the following test location:

- Test not applicable

- Test Area-O

Testing was performed at a test loop diameter of:

- 2 meters

- _ meters

Test Equipment Used :

	Model Number	Manufacturer	Description	TUV PS Number
■	ESR3	R&S	EMI test receiver	S1503101-YQ-EMC
■	HM020	R&S	Triple loop antenna	S1503115-YQ-EMC

-

Remarks: Test equipment used is calibrated on a regular basis.



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Emissions Test Conditions: RADIATED EMISSIONS (Electric Field)

The *RADIATED EMISSIONS (ELECTRIC FIELD)* measurements, in the frequency range of 30 MHz-300/1000/6000 MHz, were tested in a horizontal and vertical polarization at the following test location :

- Test not applicable

■ - Test Area - O

Testing was performed at a test distance of :

■ - 3 meters

Test Equipment Used :

	Model Number	Manufacturer	Description	TUV PS Number
■	ESR3	R&S	EMI test receiver	S1503109-YQ-EMC
<input type="checkbox"/>	- FSV40	R&S	Signal and spectrum analyzer	S1503003-YQ-EMC
■	- VULB 9163	SCHWARZBECK	Trilog super broadband test antenna	S1503008-YQ-EMC
<input type="checkbox"/>	- HF907	R&S	Double-ridged waveguide horn antenna	S1503009-YQ-EMC
<input type="checkbox"/>	- SCU-18D	R&S	Signal conditioning unit	S1503012-YQ-EMC
<input type="checkbox"/>	- HFH2-Z2	R&S	Loop antenna	S1503013-YQ-EMC
■	- 3m	TDK	3 meter semi-anechoic chamber	S1503231-YQ-EMC

Remarks: Test equipment used is calibrated on a regular basis.



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Emissions Test Conditions: INTERFERENCE POWER

The *INTERFERENCE POWER* measurements were performed by using the absorbing clamp on the mains and interface cables in the frequency range 30 MHz - 300 MHz at the following test location :

- Test not applicable

- Test Area – O

Test Equipment Used :

	Model Number	Manufacturer	Description	TUV PS Number
<input type="checkbox"/>	MDS21	R&S	Absorbing clamp	S1503113-YQ-EMC
<input type="checkbox"/>	EZ-24	R&S	Ferrite clamp	S1503114-SB-EMC
<input type="checkbox"/>	ESR3	R&S	EMI test receiver	S1503101-YQ-EMC

Remarks: Test equipment used is calibrated on a regular basis.



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Emissions Test Conditions: CONDUCTED EMISSIONS (Harmonics and Flicker)

The *Harmonic Current Emissions and Voltage Fluctuations and Flicker* measurements were performed at the following test location :

- Test not applicable

- Test Area – O

Test Equipment Used :

	Model Number	Manufacturer	Description	TUV PS Number
<input type="checkbox"/> -	15003IX-CTS-400-413-LF-411	California Instruments	Harmonic-flicker test system	S1503193-YQ-EMC

Remarks: Test equipment used is calibrated on a regular basis.



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Equipment Under Test (EUT) Test Operation Mode - Emissions Tests:

The equipment under test was operated under the following conditions during emissions testing:

- Standby
- Test Program (H - Pattern)
- Test Program (Color Bar)
- Test Program (Customer Specified)
- Normal Operating Mode

- Power on

Pre-tests are performed under 220-240V~, 50/60Hz, the worst test results are recorded.

Configuration of the equipment under test:

- See Constructional Data Form in Appendix B
- See Product Information Form(s) in Appendix B

The following peripheral devices and interface cables were connected during the testing:

- | | |
|----------------------------------|--------------|
| <input type="checkbox"/> - _____ | Type : _____ |
| <input type="checkbox"/> - _____ | Type : _____ |
| <input type="checkbox"/> - _____ | Type : _____ |
| <input type="checkbox"/> - _____ | Type : _____ |
| <input type="checkbox"/> - _____ | Type : _____ |
| <input type="checkbox"/> - _____ | Type : _____ |
| <input type="checkbox"/> - _____ | Type : _____ |
| <input type="checkbox"/> - _____ | Type : _____ |

- unshielded power cable

- unshielded cables

- shielded cables

TUVPS.No.:

- customer specific cables

- _____

- _____



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Emissions Test Results:

Conducted Emissions, 9/150 kHz - 30 MHz

- PASS - FAIL - NOT APPLICABLE

Minimum limit margin >6 dB At 0.009-30 MHz

Maximum limit exceeding _____ dB At _____ MHz

Remarks: _____

Radiated Emissions (Magnetic Field), 9 kHz - 30 MHz

- PASS - FAIL - NOT APPLICABLE

Minimum limit margin >6 dB At 0.009-30 MHz

Maximum limit exceeding _____ dB At _____ MHz

Remarks: _____

Interference Power at the Mains and Interface Cables, 30 MHz - 300 MHz

- PASS - FAIL - NOT APPLICABLE

Minimum limit margin _____ dB At _____ MHz

Maximum limit exceeding -- dB At -- MHz

Comply with the limits reduces by Table 2b of EN 55014-1? - YES - NO - N/A

Remarks: _____

Radiated Emissions (Electric Field), - 30 MHz – 300 MHz, - 30MHz – 1000MHz

- PASS - FAIL - NOT APPLICABLE

Minimum limit margin >6 dB At 30-300 MHz

Maximum limit exceeding _____ dB At _____ MHz

Remarks: _____

Harmonic Current Emissions and Voltage Fluctuations and Flicker

- PASS - FAIL - NOT APPLICABLE

Harmonic measurement exceeding limit _____ Above At _____ Harmonic

Flicker measurement exceeding limit _____ Above The _____ Requirement

P-DSH: 617, decisions: A LED cannot be considered as an incandescent lamp, neither as discharge lamp. The clause 7.3 b of the standard (EN 61000-3-2:2014) give requirements for discharge lighting

Remarks: equipment with active power less than 25W and these requirements are not applicable to LED.

Tests need not be made on equipment which is unlikely to produce significant voltage fluctuations or flicker. (EN 61000-3-3:2013, clause 6.1)



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GENERAL REMARKS:

According to the client's declaration, all models have the similar electronic construction except their rated power, LED quantities and appearance.

So model A60-8W-E27 with the highest power were chosen to perform all the tests; model C35-2W-E14 with lower power was chosen to perform Conducted Emission and Radiated Emission test.

SUMMARY:

All tests according to the regulations cited on page 3 were

- Performed
- **Not** Performed

The Equipment Under Test

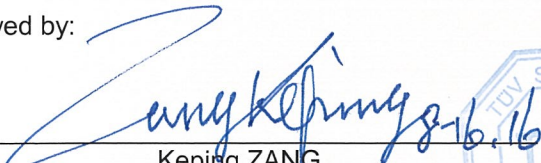
- **Fulfills** the general approval requirements cited on page 3.
- **Does not** fulfill the general approval requirements cited on page 3.

Testing Start Date: July 13, 2016

Testing End Date: July 20, 2016


- TÜV SÜD CERTIFICATION AND TESTING (CHINA) CO., LTD. SHANGHAI BRANCH-

Reviewed by:


 Keping ZANG
 Review Engineer

Prepared by:




 Zhining ZHANG
 Project Engineer

Photograph of Test Setup:
Conducted Emissions : 9/150 kHz - 30 MHz

- Test not applicable





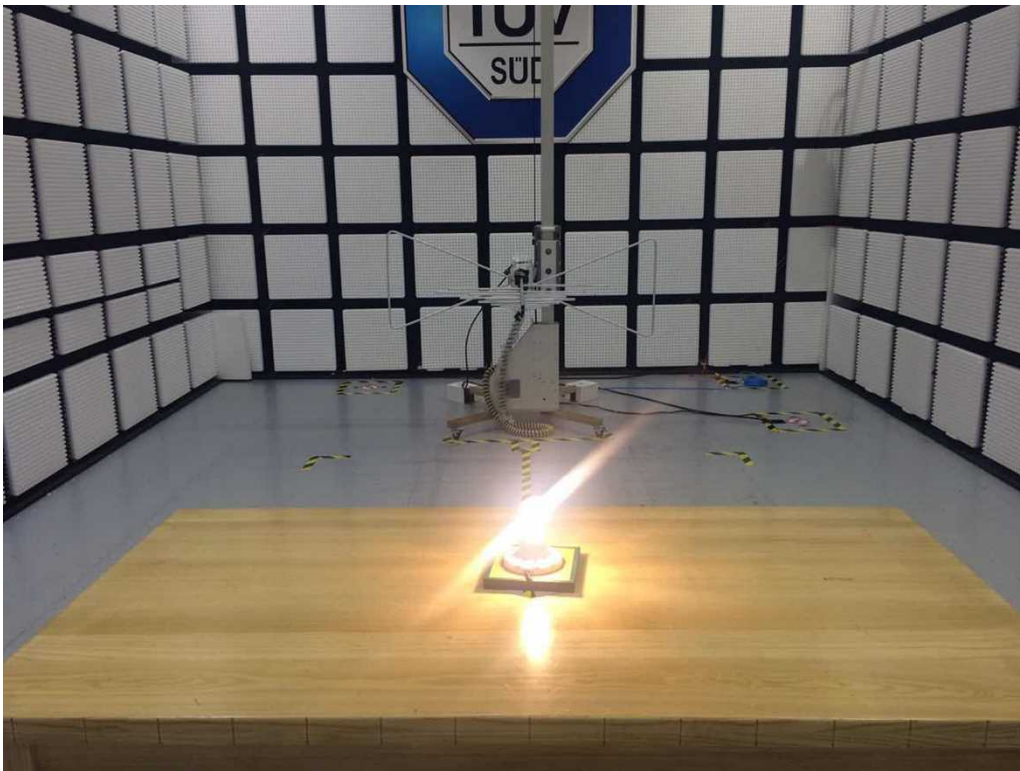
China

Photograph of Test Setup:
Inteference Power 30 MHz - 300 MHz

■ - Test not applicable

Photograph of Test Setup:
Radiated Emissions 9kHz-30MHz, 30 MHz – 300/1000 MHz

- Test not applicable





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Photograph of Test Setup:
Harmonic Current/Voltage Fluctuations and Flicker

■ - Test not applicable



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Appendix A

Test Data Sheets



China

9K-30MHz Conducted Emission Test

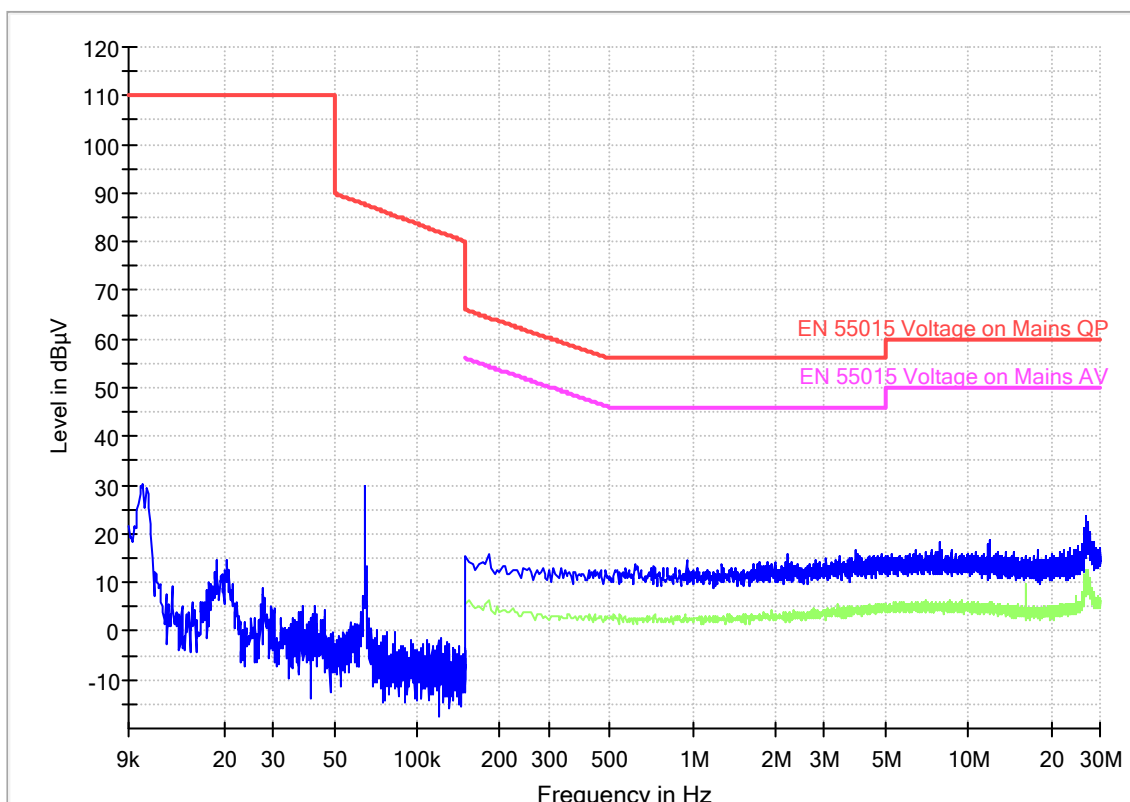
EUT Information

EUT Name: LED lamps
Model: C35-2W-E14
Manufacturer: HAIYAN YAOHUA LIGHTING CO.,LTD
Op Cond: Power on
Operator: Zhining ZHANG
Test Spec: EN 55015
Comment: Phase L
Sample No.: SHA-233189-1

Scan Setup: Voltage with 2-Line-LISN pre [EMI conducted]

Hardware Setup: Voltage with 2-Line-LISN
Receiver: [ESR 3]
Level Unit: dB μ V

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
9 kHz - 150 kHz	100 Hz	PK+	200 Hz	0.01 s	0 dB
150 kHz - 30 MHz	4.5 kHz	PK+; AVG	9 kHz	0.01 s	0 dB





China

9K-30MHz Conducted Emission Test

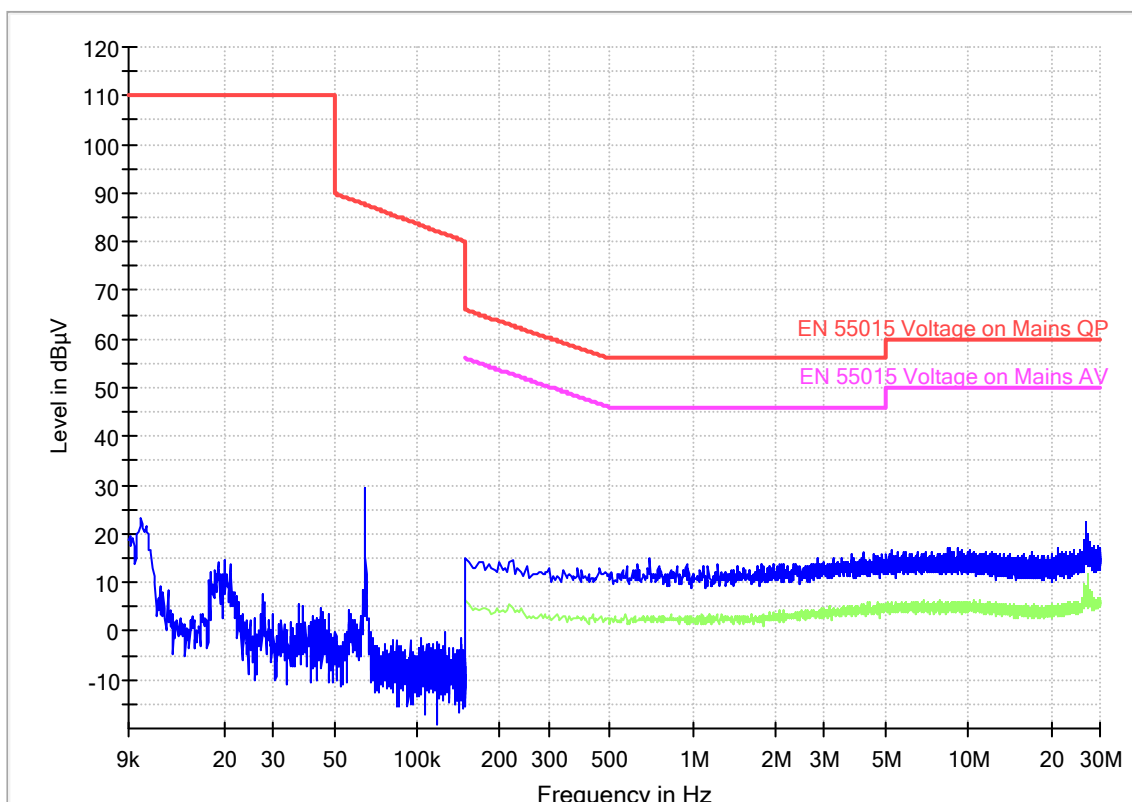
EUT Information

EUT Name: LED lamps
Model: C35-2W-E14
Manufacturer: HAIYAN YAOHUA LIGHTING CO.,LTD
Op Cond: Power on
Operator: Zhining ZHANG
Test Spec: EN 55015
Comment: Phase N
Sample No.: SHA-233189-1

Scan Setup: Voltage with 2-Line-LISN pre [EMI conducted]

Hardware Setup: Voltage with 2-Line-LISN
Receiver: [ESR 3]
Level Unit: dB μ V

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
9 kHz - 150 kHz	100 Hz	PK+	200 Hz	0.01 s	0 dB
150 kHz - 30 MHz	4.5 kHz	PK+; AVG	9 kHz	0.01 s	0 dB





China

30-300MHz Radiated Emission

EUT Information

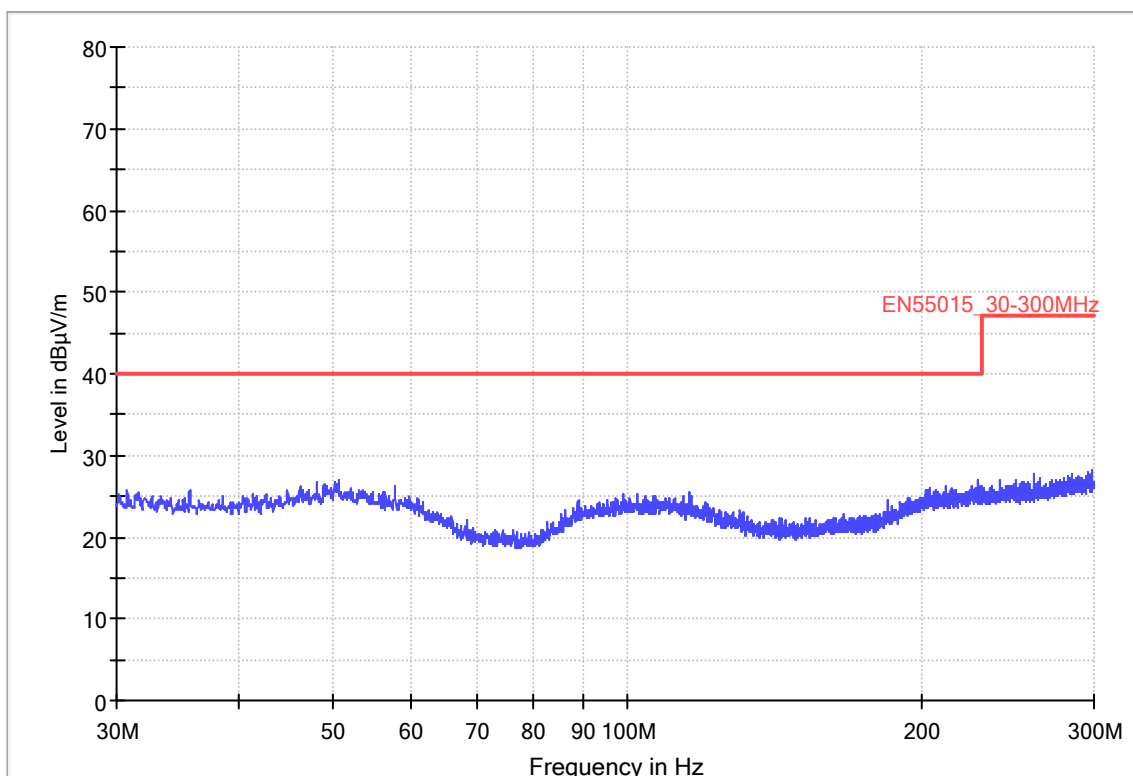
EUT Name: LED lamps
Model: C35-2W-E14
Manufacturer: HAIYAN YAOHUA LIGHTING CO.,LTD
Op Cond: Power on
Operator: Zhining ZHANG
Test Spec: EN 55015
Comment: Horizontal
Sample No: SHA-233189-1

Sweep Setup: RE_VULB9163_pre_Cont_30_300 [EMI radiated]

Hardware Setup: RE_VULB9163
Receiver: [ESR 3]
Level Unit: dB μ V/m

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
30 MHz - 300 MHz	50 kHz	PK+	120 kHz	0.005 s	20 dB

RE_VULB9163_pre_Cont_30_300





China

30-300MHz Radiated Emission

EUT Information

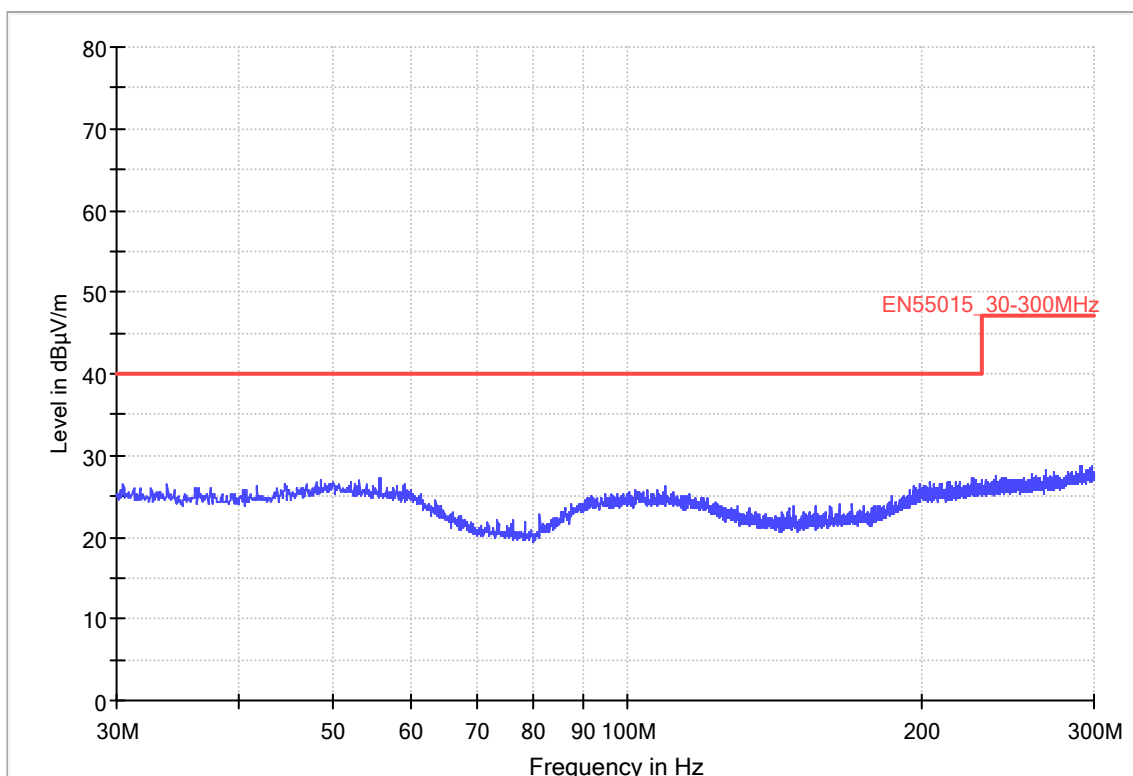
EUT Name: LED lamps
Model: C35-2W-E14
Manufacturer: HAIYAN YAOHUA LIGHTING CO.,LTD
Op Cond: Power on
Operator: Zhining ZHANG
Test Spec: EN 55015
Comment: Vertical
Sample No: SHA-233181-1

Sweep Setup: RE_VULB9163_pre_Cont_30_300 [EMI radiated]

Hardware Setup: RE_VULB9163
Receiver: [ESR 3]
Level Unit: dB μ V/m

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
30 MHz - 300 MHz	50 kHz	PK+	120 kHz	0.005 s	20 dB

RE_VULB9163_pre_Cont_30_300





China

9K-30MHz Conducted Emission Test

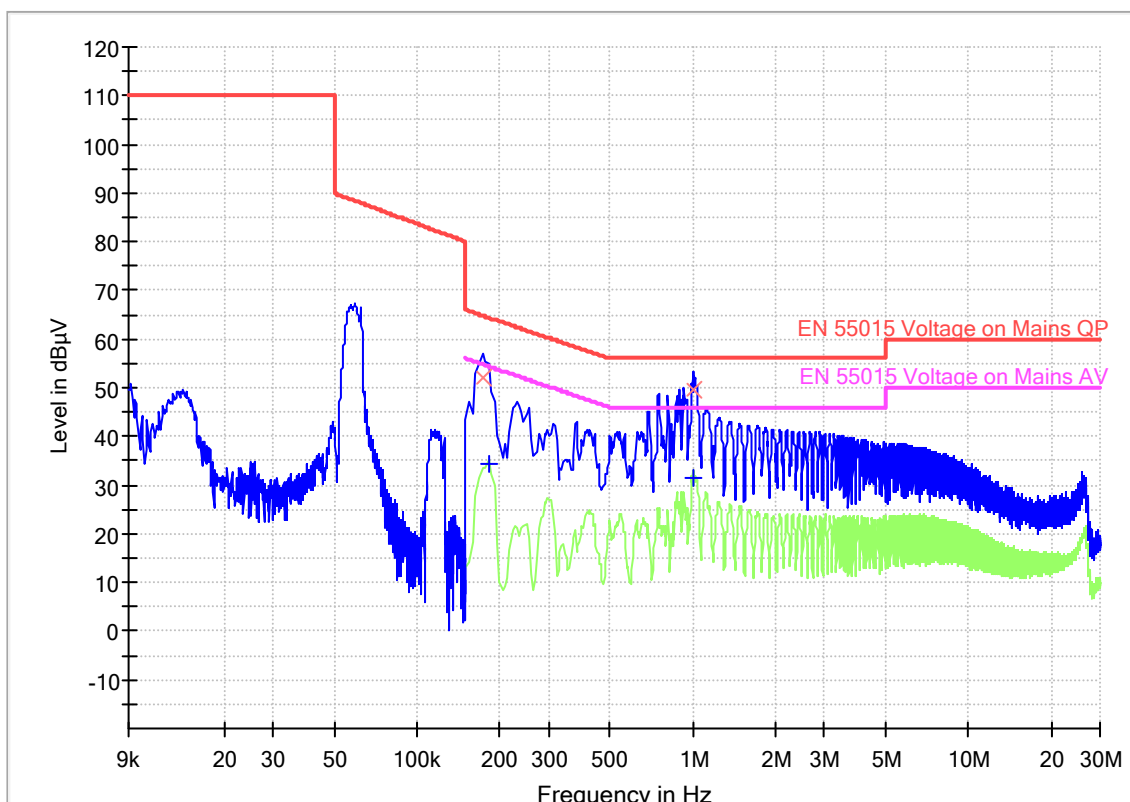
EUT Information

EUT Name: LED lamps
Model: A60-8W-E27
Manufacturer: HAIYAN YAOHUA LIGHTING CO.,LTD
Op Cond: Power on
Operator: Zhining ZHANG
Test Spec: EN 55015
Comment: Phase L
Sample No.: SHA-233189-2

Scan Setup: Voltage with 2-Line-LISN pre [EMI conducted]

Hardware Setup: Voltage with 2-Line-LISN
Receiver: [ESR 3]
Level Unit: dB μ V

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
9 kHz - 150 kHz	100 Hz	PK+	200 Hz	0.01 s	0 dB
150 kHz - 30 MHz	4.5 kHz	PK+; AVG	9 kHz	0.01 s	0 dB





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Final Result

Frequency (MHz)	QuasiPeak (dB μ V)	CAverage (dB μ V)	Limit (dB μ V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter
0.172500	52.03	---	64.84	12.81	1000.0	9.000	L1	OFF
0.181500	---	34.25	54.42	20.17	1000.0	9.000	L1	OFF
1.000500	---	31.50	46.00	14.50	1000.0	9.000	L1	OFF
1.009500	49.60	---	56.00	6.40	1000.0	9.000	L1	OFF



China

9K-30MHz Conducted Emission Test

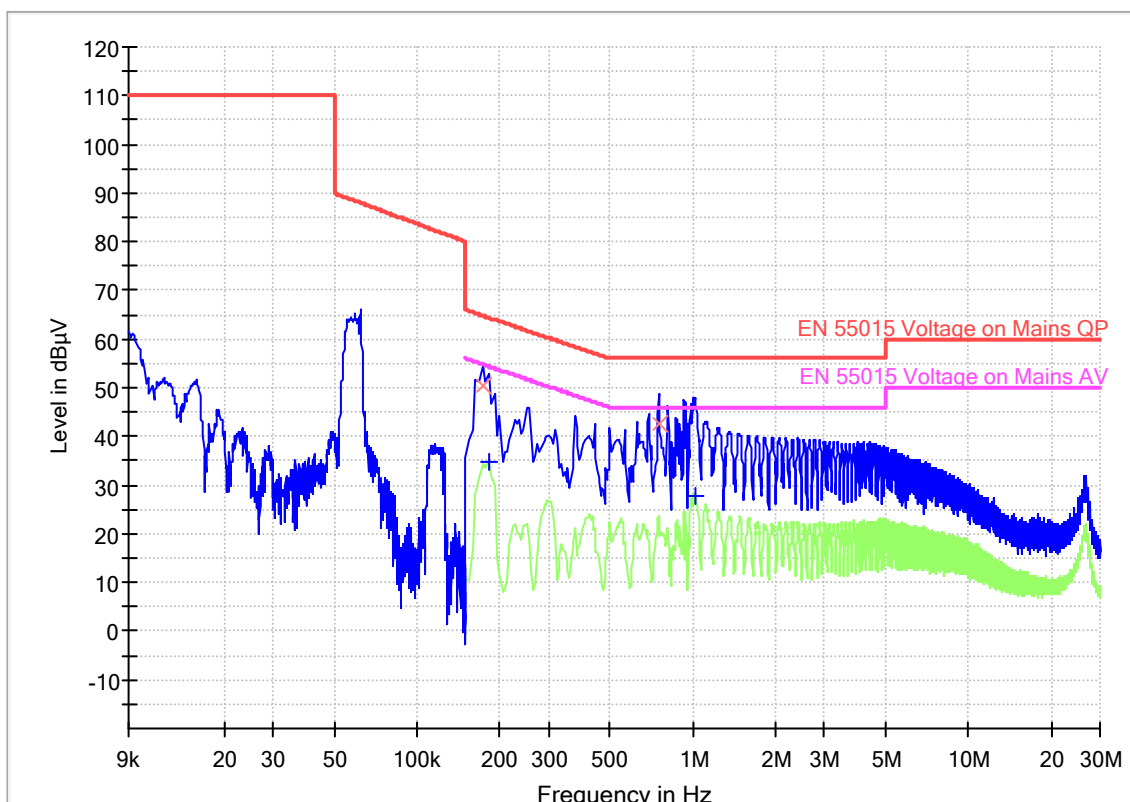
EUT Information

EUT Name: LED lamps
Model: A60-8W-E27
Manufacturer: HAIYAN YAOHUA LIGHTING CO.,LTD
Op Cond: Power on
Operator: Zhining ZHANG
Test Spec: EN 55015
Comment: Phase N
Sample No.: SHA-233189-2

Scan Setup: Voltage with 2-Line-LISN pre [EMI conducted]

Hardware Setup: Voltage with 2-Line-LISN
Receiver: [ESR 3]
Level Unit: dB μ V

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
9 kHz - 150 kHz	100 Hz	PK+	200 Hz	0.01 s	0 dB
150 kHz - 30 MHz	4.5 kHz	PK+; AVG	9 kHz	0.01 s	0 dB





China

Final Result

Frequency (MHz)	QuasiPeak (dB μ V)	CAverage (dB μ V)	Limit (dB μ V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter
0.172500	50.27	---	64.84	14.57	1000.0	9.000	N	OFF
0.181500	---	34.59	54.42	19.83	1000.0	9.000	N	OFF
0.753000	42.62	---	56.00	13.38	1000.0	9.000	N	OFF
1.018500	---	27.89	46.00	18.11	1000.0	9.000	N	OFF

9K-30MHz Radiated Disturbance Test

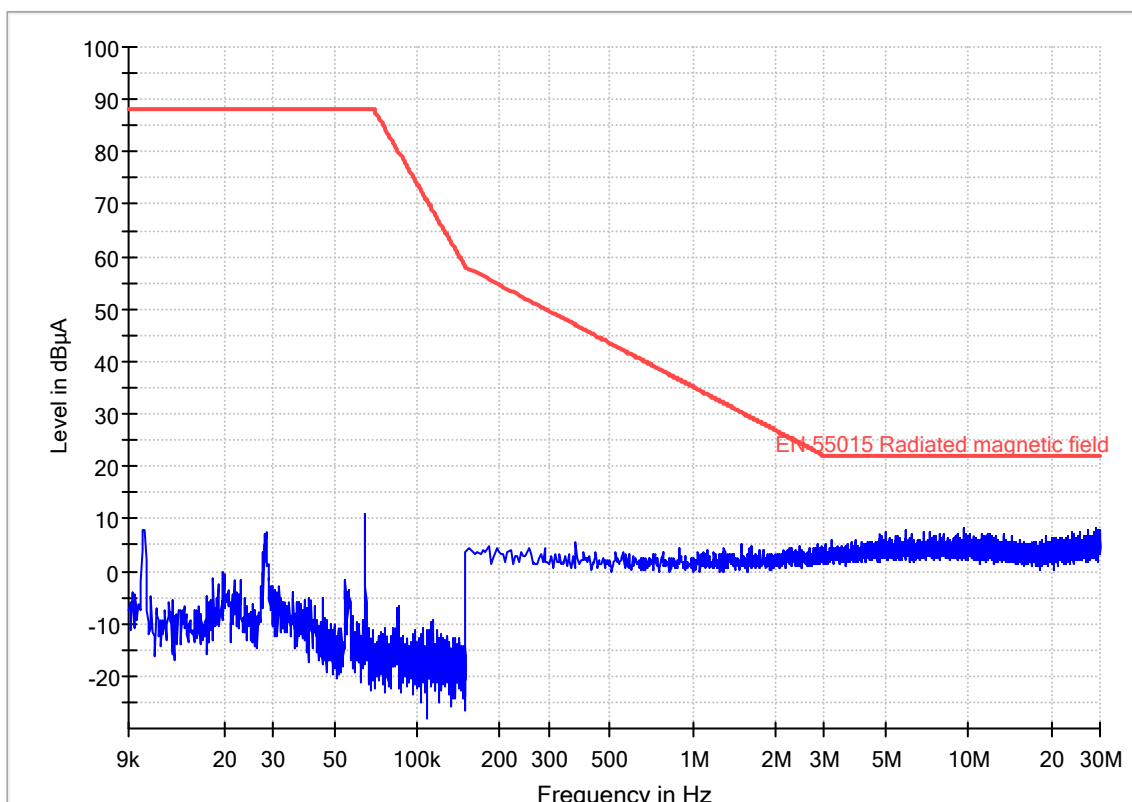
EUT Information

EUT Name: LED lamps
 Model: A60-8W-E27
 Manufacturer: HAIYAN YAOHUA LIGHTING CO.,LTD
 Op cond: Power on
 Operator: Zhining ZHANG
 Test Spec: EN 55015
 Comment: X
 Sample No.: SHA-233189-2

Scan Setup: TripleLoop max [EMI radiated]

Hardware Setup: TripleLoop
 Receiver: [ESR 3]
 Level Unit: dB μ A

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
9 kHz - 150 kHz	100 Hz	PK+	200 Hz	0.01 s	0 dB
150 kHz - 30 MHz	4 kHz	PK+	9 kHz	0.01 s	0 dB



9K-30MHz Radiated Disturbance Test

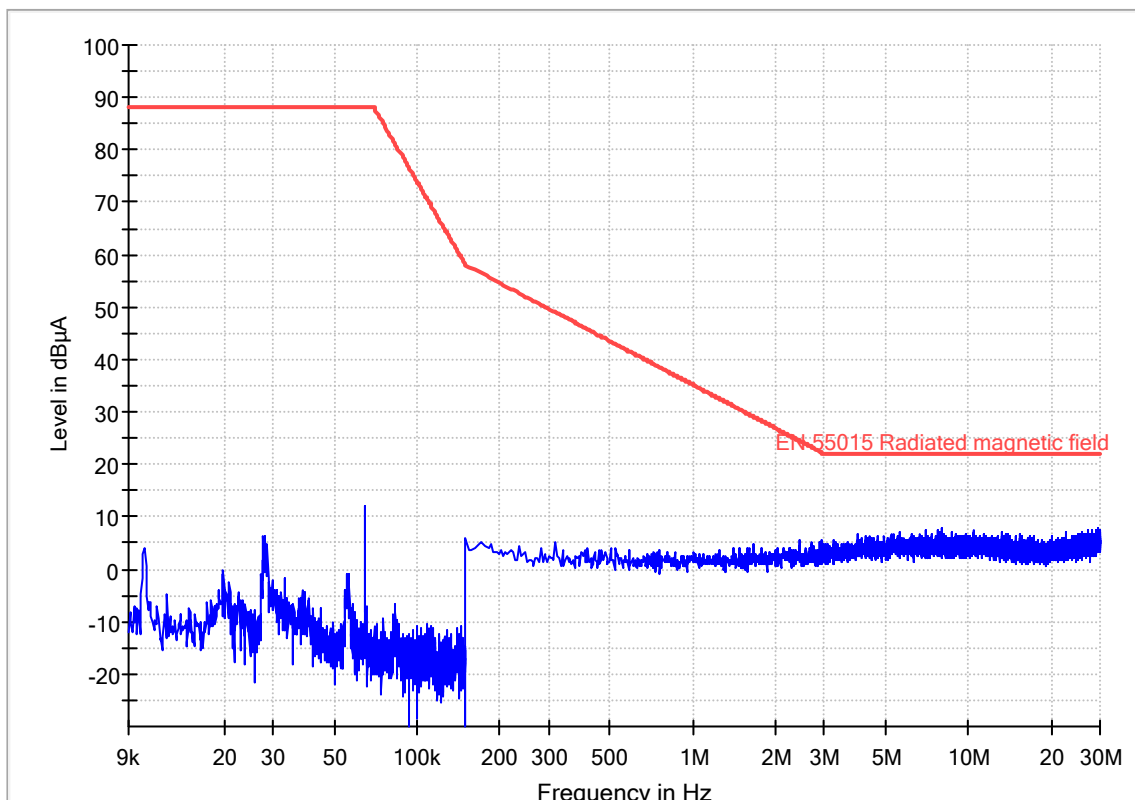
EUT Information

EUT Name: LED lamps
 Model: A60-8W-E27
 Manufacturer: HAIYAN YAOHUA LIGHTING CO.,LTD
 Op cond: Power on
 Operator: Zhining ZHANG
 Test Spec: EN 55015
 Comment: Y
 Sample No.: SHA-233189-2

Scan Setup: TripleLoop max [EMI radiated]

Hardware Setup: TripleLoop
 Receiver: [ESR 3]
 Level Unit: dB μ A

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
9 kHz - 150 kHz	100 Hz	PK+	200 Hz	0.01 s	0 dB
150 kHz - 30 MHz	4 kHz	PK+	9 kHz	0.01 s	0 dB





China

9K-30MHz Radiated Disturbance Test

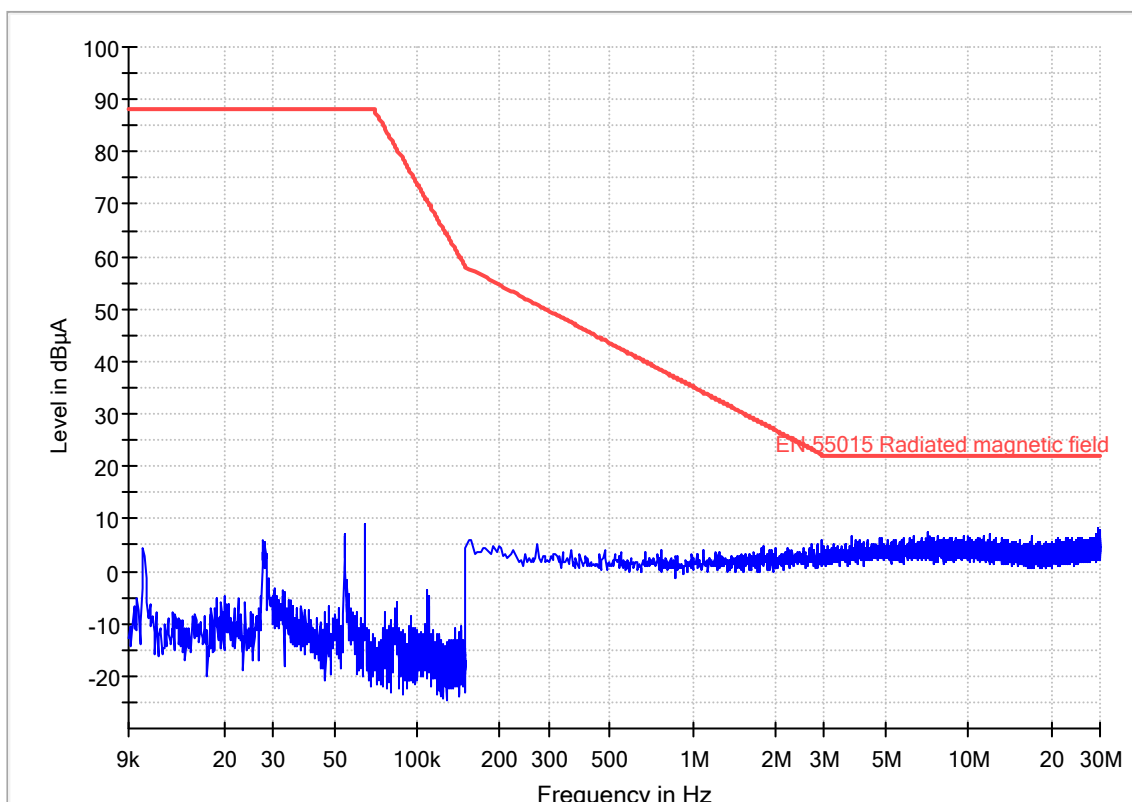
EUT Information

EUT Name: LED lamps
Model: A60-8W-E27
Manufacturer: HAIYAN YAOHUA LIGHTING CO.,LTD
Op cond: Power on
Operator: Zhining ZHANG
Test Spec: EN 55015
Comment: Z
Sample No.: SHA-233189-2

Scan Setup: TripleLoop max [EMI radiated]

Hardware Setup: TripleLoop
Receiver: [ESR 3]
Level Unit: dB μ A

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
9 kHz - 150 kHz	100 Hz	PK+	200 Hz	0.01 s	0 dB
150 kHz - 30 MHz	4 kHz	PK+	9 kHz	0.01 s	0 dB





China

30-300MHz Radiated Emission

EUT Information

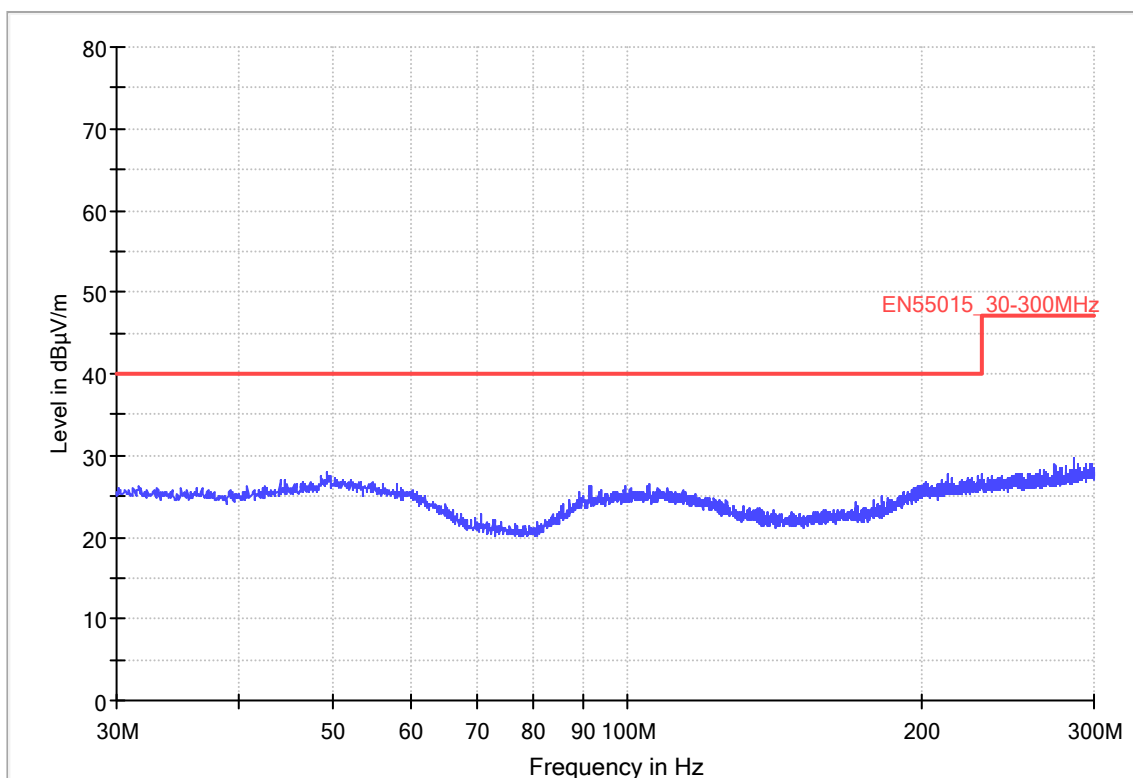
EUT Name: LED lamps
Model: A60-8W-E27
Manufacturer: HAIYAN YAOHUA LIGHTING CO.,LTD
Op Cond: Power on
Operator: Zhining ZHANG
Test Spec: EN 55015
Comment: Horizontal
Sample No: SHA-233189-2

Sweep Setup: RE_VULB9163_pre_Cont_30_300 [EMI radiated]

Hardware Setup: RE_VULB9163
Receiver: [ESR 3]
Level Unit: dB μ V/m

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
30 MHz - 300 MHz	50 kHz	PK+	120 kHz	0.005 s	20 dB

RE_VULB9163_pre_Cont_30_300





China

30-300MHz Radiated Emission

EUT Information

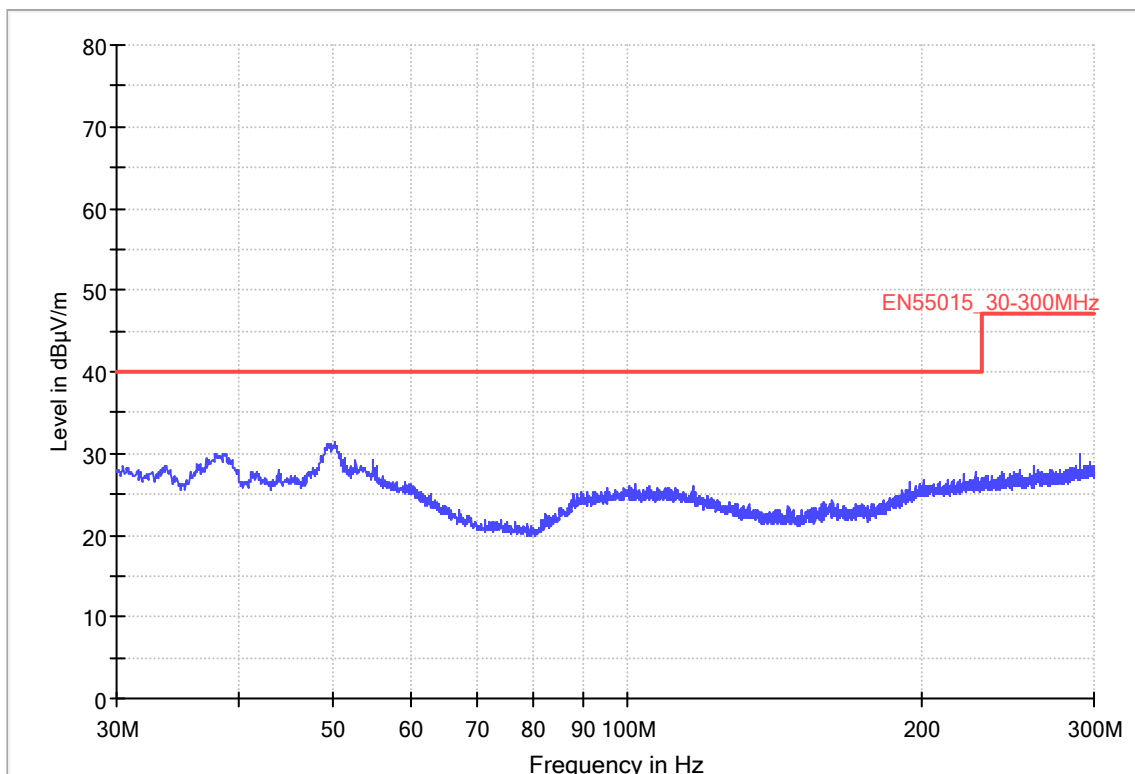
EUT Name: LED lamps
Model: A60-8W-E27
Manufacturer: HAIYAN YAOHUA LIGHTING CO.,LTD
Op Cond: Power on
Operator: Zhining ZHANG
Test Spec: EN 55015
Comment: Vertical
Sample No: SHA-233189-2

Sweep Setup: RE_VULB9163_pre_Cont_30_300 [EMI radiated]

Hardware Setup: RE_VULB9163
Receiver: [ESR 3]
Level Unit: dB μ V/m

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
30 MHz - 300 MHz	50 kHz	PK+	120 kHz	0.005 s	20 dB

RE_VULB9163_pre_Cont_30_300





China

Appendix B

Product Information Form(s)

Auftraggeber / Applicant:	Haiyan Yaohua Lighting Co., Ltd. South of Jiuqugang, Tongbei Village, Tongyuan Town, Haiyan Country, Zhejiang Province, P.R. China			
Fertigungsstätte / Production facility:	Haiyan Yaohua Lighting Co., Ltd. South of Jiuqugang, Tongbei Village, Tongyuan Town, Haiyan Country, Zhejiang Province, P.R. China			
Geräteart / Type of equipment:	LED lamps			
Typenbezeichnung / Type/model:	See Attachment			
Nennspannung / Frequenz / Rated voltage / frequency:	220-240V~, 50/60Hz			
Vennaufnahme: / Rated input power:	See Attachment			
Ausführung / Construction:	Ortsfest Ortsveränderlich Handgerät Einbaugerät	Stationary LED lamp Hand-held Open-frame	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Schutzklasse / Protection class:	Schutzklasse I: Schutzklasse II: Schutzklasse III:	Schutzleiteranschluß Schutzisoliert Schutzkleinspannung/ interne Stromversorgung	PE-connection Double insulation SELV/internally powered	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
Schutzart / Degree of protection against liquids:	IP20		<input checked="" type="checkbox"/>	
Anschlußart / Supply connection:	Feste Anschlußleitung Fester Anschluß Gerätesteckvorrichtung	Non detachable cord Permanent connection Appliance inlet insert into lampholder	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	
Netzbetriebsart / Rated operation:	Dauerbetrieb Aussetzbetrieb Kurzzeitbetrieb	Continuous operation Intermittent operation Short time operation	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Material:	a) Gehäuse / Enclosure N/A b) Leiterplatten / p.c.b. N/A			



China

Model list

	Model	Wattage	Voltage	Current	Cap
1	A55-4W-E27	4W	AC 220-240V	34mA	E27
2	A55-5W-E27	5W	AC 220-240V	40mA	E27
3	A55-6W-E27	6W	AC 220-240V	48mA	E27
4	A55-7W-E27	7W	AC 220-240V	56mA	E27
5	A55-8W-E27	8W	AC 220-240V	64mA	E27
6	A55-4W-B22	4W	AC 220-240V	34mA	B22
7	A55-5W-B22	5W	AC 220-240V	40mA	B22
8	A55-6W-B22	6W	AC 220-240V	48mA	B22
9	A55-7W-B22	7W	AC 220-240V	56mA	B22
10	A55-8W-B22	8W	AC 220-240V	64mA	B22
11	A60-4W-E27	4W	AC 220-240V	34mA	E27
12	A60-5W-E27	5W	AC 220-240V	40mA	E27
13	A60-6W-E27	6W	AC 220-240V	48mA	E27
14	A60-7W-E27	7W	AC 220-240V	56mA	E27
15	A60-8W-E27	8W	AC 220-240V	64mA	E27
16	A60-4W-B22	4W	AC 220-240V	34mA	B22
17	A60-5W-B22	5W	AC 220-240V	40mA	B22
18	A60-6W-B22	6W	AC 220-240V	48mA	B22
19	A60-7W-B22	7W	AC 220-240V	56mA	B22
20	A60-8W-B22	8W	AC 220-240V	64mA	B22
21	G45-2W-E14	2W	AC 220-240V	18mA	E14
22	G45-4W-E14	4W	AC 220-240V	34mA	E14
23	G45-2W- B15D	2W	AC 220-240V	18mA	B15D
24	G45-4W- B15D	4W	AC 220-240V	34mA	B15D
25	G45-2W-E27	2W	AC 220-240V	18mA	E27
26	G45-4W-E27	4W	AC 220-240V	34mA	E27



China

27	G45-2W- B22	2W	AC 220-240V	18mA	B22
28	G45-4W- B22	4W	AC 220-240V	34mA	B22
29	C35-2W-E14	2W	AC 220-240V	18mA	E14
30	C35-4W-E14	4W	AC 220-240V	34mA	E14
31	C35-2W- B15D	2W	AC 220-240V	18mA	B15D
32	C35-4W- B15D	4W	AC 220-240V	34mA	B15D
33	C35-2W-E27	2W	AC 220-240V	18mA	E27
34	C35-4W-E27	4W	AC 220-240V	34mA	E27
35	C35-2W- B22	2W	AC 220-240V	18mA	B22
36	C35-4W- B22	4W	AC 220-240V	34mA	B22
37	C35T-2W-E14	2W	AC 220-240V	18mA	E14
38	C35T-4W-E14	4W	AC 220-240V	34mA	E14
39	C35T-2W- B15D	2W	AC 220-240V	18mA	B15D
40	C35T-4W- B15D	4W	AC 220-240V	34mA	B15D
41	C35T-2W-E27	2W	AC 220-240V	18mA	E27
42	C35T-4W-E27	4W	AC 220-240V	34mA	E27
43	C35T-2W- B22	2W	AC 220-240V	18mA	B22
44	C35T-4W- B22	4W	AC 220-240V	34mA	B22
45	C35F-2W-E14	2W	AC 220-240V	18mA	E14
46	C35F-4W-E14	4W	AC 220-240V	34mA	E14
47	C35F-2W- B15D	2W	AC 220-240V	18mA	B15D
48	C35F-4W- B15D	4W	AC 220-240V	34mA	B15D
49	C35F-2W-E27	2W	AC 220-240V	18mA	E27
50	C35F-4W-E27	4W	AC 220-240V	34mA	E27
51	C35F-2W- B22	2W	AC 220-240V	18mA	B22
52	C35F-4W- B22	4W	AC 220-240V	34mA	B22
53	G80-4W-E27	4W	AC 220-240V	34mA	E27
54	G80-5W-E27	5W	AC 220-240V	40mA	E27



China

55	G80-6W-E27	6W	AC 220-240V	48mA	E27
56	G80-7W-E27	7W	AC 220-240V	56mA	E27
57	G80-8W-E27	8W	AC 220-240V	64mA	E27
58	G80-4W-B22	4W	AC 220-240V	34mA	B22
59	G80-5W-B22	5W	AC 220-240V	40mA	B22
60	G80-6W-B22	6W	AC 220-240V	48mA	B22
61	G80-7W-B22	7W	AC 220-240V	56mA	B22
62	G80-8W-B22	8W	AC 220-240V	64mA	B22
63	G95-4W-E27	4W	AC 220-240V	34mA	E27
64	G95-5W-E27	5W	AC 220-240V	40mA	E27
65	G95-6W-E27	6W	AC 220-240V	48mA	E27
66	G95-7W-E27	7W	AC 220-240V	56mA	E27
67	G95-8W-E27	8W	AC 220-240V	64mA	E27
68	G95-4W-B22	4W	AC 220-240V	34mA	B22
69	G95-5W-B22	5W	AC 220-240V	40mA	B22
70	G95-6W-B22	6W	AC 220-240V	48mA	B22
71	G95-7W-B22	7W	AC 220-240V	56mA	B22
72	G95-8W-B22	8W	AC 220-240V	64mA	B22
73	G125-4W-E27	4W	AC 220-240V	34mA	E27
74	G125-5W-E27	5W	AC 220-240V	40mA	E27
75	G125-6W-E27	6W	AC 220-240V	48mA	E27
76	G125-7W-E27	7W	AC 220-240V	56mA	E27
77	G125-8W-E27	8W	AC 220-240V	64mA	E27
78	G125-4W-B22	4W	AC 220-240V	34mA	B22
79	G125-5W-B22	5W	AC 220-240V	40mA	B22
80	G125-6W-B22	6W	AC 220-240V	48mA	B22
81	G125-7W-B22	7W	AC 220-240V	56mA	B22
82	G125-8W-B22	8W	AC 220-240V	64mA	B22



China

83	R50-2W-E14	2W	AC 220-240V	18mA	E14
84	R50-4W-E14	4W	AC 220-240V	34mA	E14
85	R63-4W-E27	4W	AC 220-240V	34mA	E27
86	R63-6W-E27	6W	AC 220-240V	48mA	E27
87	R63-4W-B22	4W	AC 220-240V	34mA	B22
88	R63-6W-B22	6W	AC 220-240V	48mA	B22
89	R80-4W-E27	4W	AC 220-240V	34mA	E27
90	R80-5W-E27	5W	AC 220-240V	40mA	E27
91	R80-6W-E27	6W	AC 220-240V	48mA	E27
92	R80-7W-E27	7W	AC 220-240V	56mA	E27
93	R80-8W-E27	8W	AC 220-240V	64mA	E27
94	R80-4W-B22	4W	AC 220-240V	34mA	B22
95	R80-5W-B22	5W	AC 220-240V	40mA	B22
96	R80-6W-B22	6W	AC 220-240V	48mA	B22
97	R80-7W-B22	7W	AC 220-240V	56mA	B22
98	R80-8W-B22	8W	AC 220-240V	64mA	B22
99	ST64-4W-E27	4W	AC 220-240V	34mA	E27
100	ST64-5W-E27	5W	AC 220-240V	40mA	E27
101	ST64-6W-E27	6W	AC 220-240V	48mA	E27
102	ST64-7W-E27	7W	AC 220-240V	56mA	E27
103	ST64-8W-E27	8W	AC 220-240V	64mA	E27
104	ST64-4W-B22	4W	AC 220-240V	34mA	B22
105	ST64-5W-B22	5W	AC 220-240V	40mA	B22
106	ST64-6W-B22	6W	AC 220-240V	48mA	B22
107	ST64-7W-B22	7W	AC 220-240V	56mA	B22
108	ST64-8W-B22	8W	AC 220-240V	64mA	B22
109	ST58-4W-E27	4W	AC 220-240V	34mA	E27
110	ST58-5W-E27	5W	AC 220-240V	40mA	E27



China

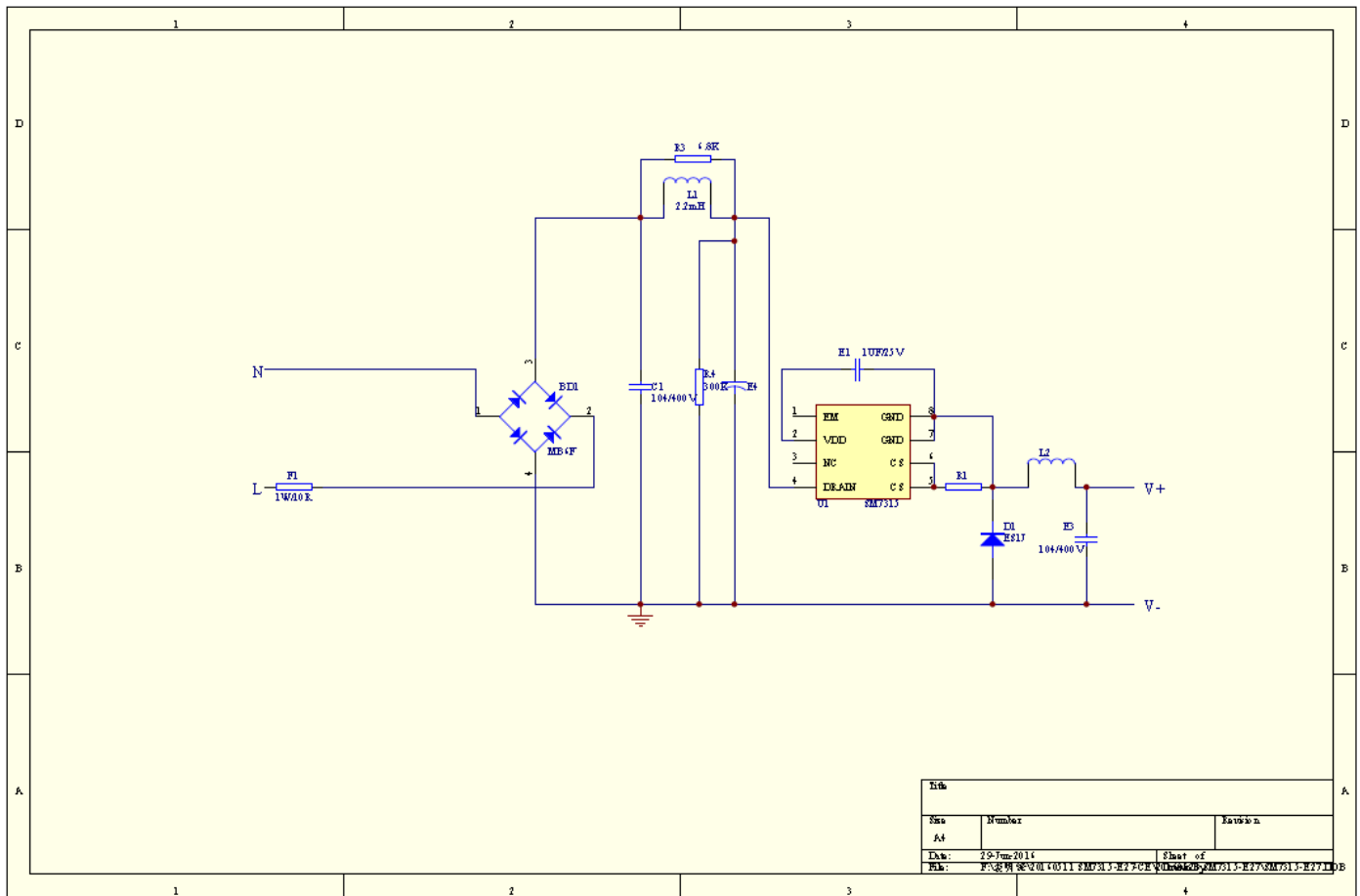
111	ST58-6W-E27	6W	AC 220-240V	48mA	E27
112	ST58-7W-E27	7W	AC 220-240V	56mA	E27
113	ST58-8W-E27	8W	AC 220-240V	64mA	E27
114	ST58-4W-B22	4W	AC 220-240V	34mA	B22
115	ST58-5W-B22	5W	AC 220-240V	40mA	B22
116	ST58-6W-B22	6W	AC 220-240V	48mA	B22
117	ST58-7W-B22	7W	AC 220-240V	56mA	B22
118	ST58-8W-B22	8W	AC 220-240V	64mA	B22
119	T8-2W-E14	2W	AC 220-240V	18mA	E14
120	T8-4W-E14	4W	AC 220-240V	34mA	E14
121	T8-2W-E27	2W	AC 220-240V	18mA	E27
122	T8-4W-E27	4W	AC 220-240V	34mA	E27
123	T8-2W-B22	2W	AC 220-240V	18mA	B22
124	T8-4W-B22	4W	AC 220-240V	34mA	B22
125	ST26-1W-E14	1W	AC 220-240V	9mA	E14



China

Bauteil / Kind of component	Hersteller / Manufacturer	Angaben über Typ, Stromstärke, Leistung, Transformatorspezifikationsnummer, Isolationsklasse / Information about type, current, power, transformer specification number, insulating class	Prüfzeichen von Test mark from (VDE, BSI, UL etc.)
Fuse resistor	Shenzhen Great Electronics Co., Ltd.	RXF-1W 10 Ω/ 1W	Tested with appliance
Heating shrinkable tube	Shenzhen Woer Heat-Shrinkable Material Co., Ltd.	RSFR-H 600 V, 125 °C	Tested with appliance
PCB	Yuyao Lianda Electronic Co., Ltd.	LD0008 V-0	Tested with appliance
WIRE	Huzhou Lian Zhenda cable factory CO.,LTD	QA-1 155°C	Tested with appliance
cover	Chenjia paoke co.,ltd	Diameter:59.5-60MM Diameter:34.5-60MM Diameter:44.5-60MM	Tested with appliance
LED	Shenzheng Tiandian	8.9-9Vd.c, 100mA 2700k-7000k	Tested with appliance

Circuit Diagram



Appendix C

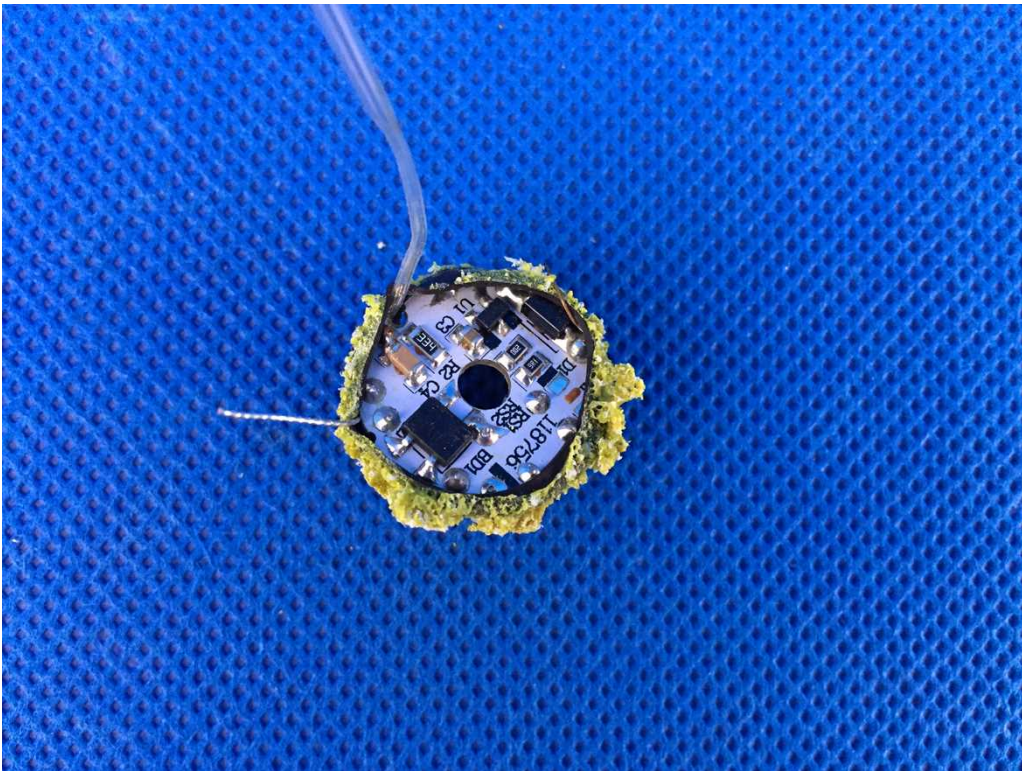
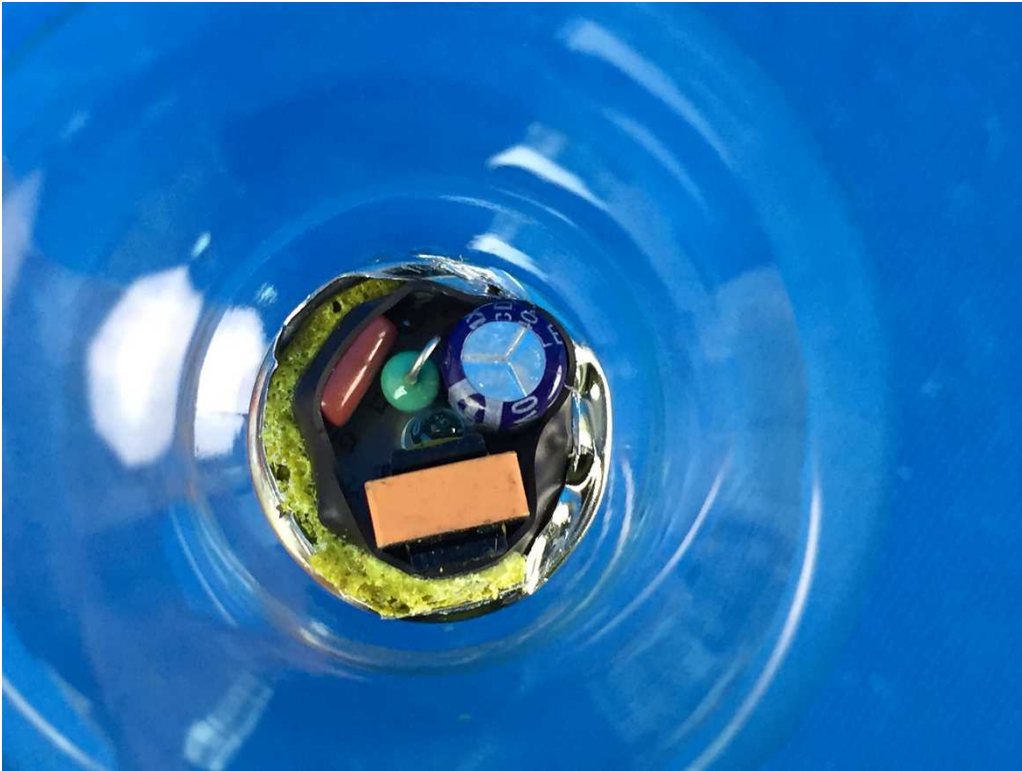
Constructional Photographs

C37-2W-E14



A60-8W-E27







China

EMC IMMUNITY TEST REPORT

Report Number : 708881669201-00-Part 2 Date of Issue: Aug 16, 2016

Model : Detail model name see Appendix A

Product Type : LED Lamps

Applicant : Haiyan Yaohua Lighting Co.,Ltd.

Manufacturer : Haiyan Yaohua Lighting Co.,Ltd.

License holder : Haiyan Yaohua Lighting Co.,Ltd.

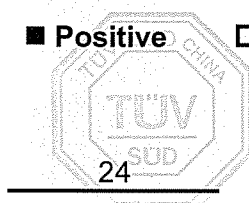
South of Jiuqugang, Tongbei Village, Tongyuan Town 314306

Address : Haiyan, Zhejiang

: People's Republic of China

Test Result : Positive Negative

Total pages including
Appendices



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This report is the confidential property of the client. As a mutual protection to our clients, the public and ourselves, extracts from the test report shall not be reproduced except in full without our written approval.



China

DIRECTORY - IMMUNITY

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China

IMMUNITY TEST REGULATIONS :

The immunity tests were performed according to the following regulations :

■ - EMC - Directive 2014/30/EU

-
- EN 61000-6-1: 2007
 - EN 61000-6-2: 2005
 - EN 55014-2: 1997+A1: 2001+A2: 2008
 - EN 55020: 2007+A11: 2011
 - EN 55024: 2010
 - EN 61326-1: 2013
 - - EN 61547: 2009

-
- - IEC 61000-4-2: 2008
 - - IEC 61000-4-3: 2006+A1:2007+A2:2010
 - - IEC 61000-4-4: 2012
 - - IEC 61000-4-5: 2014
 - - IEC 61000-4-6: 2013
 - IEC 61000-4-8: 2003
 - - IEC 61000-4-11: 2004

Symbol Definitions:

- - Applicable
- Not Applicable

Note: For undated references, the latest edition of the publication at the time of testing (including amendments) was applied.



China

Environmental Conditions In The Laboratory:

	<u>Actual</u>
Temperature:	: 20~25°C
Relative Humidity:	: 40~60%
Atmospheric Pressure:	: 1000~1040mBar

Power Supply Utilized:

Power supply system : 220-240V~, 50 or 60 Hz / 1φ

Symbol Definitions:

- - Applicable
- - Not Applicable



China

Immunity Test Conditions: ELECTROSTATIC DISCHARGE (ESD)

The immunity against *ELECTROSTATIC DISCHARGE (ESD)* events was performed in the following location:

- Test not applicable

■ - Test Area -O

Test Equipment Used :

Model Number	Manufacturer	Description	TUV PS Number
■ - ESD30N	EM test	ESD generator	S1503120-YQ-EMC
■ - ---	TÜV Product Service	Horizontal Coupling Plane	---
■ - ---	TÜV Product Service	Vertical Coupling Plane	---
■ - ZJ1-2A	Shanghai meteorological instrument	T/H record	S1503201-YQ-EMC

Remarks: Test equipment used is calibrated on a regular basis.

Test Specification:

Discharge Voltage (Air): - 2 kV ■ - 8 kV - 6 kV
 - 4 kV - 15 kV - _ kV

Discharge Voltage (Contact): - 2 kV - 6 kV - _ kV
 - 4 kV - 8 kV

Discharge Impedance: ■ - 330 ### / 150 pF - 150 ### / 150 pF

Discharge Repetition Rate: ■ - ### 1 sec.

Number of Discharges: ■ - ### 10 at all locations

Kind of Discharges: ■ - Air discharge ■ - Conducted discharge (relay)
 - Direct ■ - Indirect

Polarity: ■ - Positive ■ - Negative

Location of Discharge: - See Data Record(s) in Appendix A
 - Each location on the surface touchable by hand
 - See drawing in Appendix A
 - HCP, VCP

Result :

■ - No degradation of function - Met Criterion A
 - Distortion of function - Met Criterion B
 - Error of function - Met Criterion C
 - Loss of function - Unrecoverable Failure

Remarks: _____



China

Immunity Test Conditions: RADIATED ELECTROMAGNETIC FIELDS

The immunity against *RADIATED ELECTROMAGNETIC FIELDS* exposure was performed in the following location:

- Test not applicable

■ - Test Area -O

Test Equipment Used :

Model Number	Manufacturer	Description	TUV PS Number
■ - SMB 100A	R&S	Signal generator	S1503055-YQ-EMC
■ - 1000W1000EM1	R&S	Amplifier	S1503076-YQ-EMC
■ - NRP2	R&S	Power meter	S1503062-YQ-EMC
<input type="checkbox"/> - 125S1G4	AR	Amplifier	S1503078-YQ-EMC
■ - DC6280AM1	AR	Dual directional coupler	S1503077-YQ-EMC
<input type="checkbox"/> - DC7144A	AR	Dual directional coupler	S1503079-YQ-EMC
■ - HL046E	R&S	High gain log-periodic antenna	S1503083-SB-EMC
<input type="checkbox"/> - STLP 9149	SCHWARZBECK	Stacked double log-per antenna	S1503082-SB-EMC
<input type="checkbox"/> - ATH800M6G	AR	High gain horn antenna	S1503084-SB-EMC
<input type="checkbox"/> - FL7006	AR	Isotropic probe	S1503089-YQ-EMC
■ - NRP-Z81	R&S	Wideband power sensor	S1503097-YQ-EMC
■ - NRP-Z81	R&S	Wideband power sensor	S1503098-YQ-EMC

Remarks: Test equipment used is calibrated on a regular basis.

Test Specification:

Frequency Range:

- 27 MHz - 500 MHz
- 9 kHz - 27 MHz
- 26 MHz - 1000 MHz
- - 80 MHz - 1000 MHz

Field Strength:

- 1 V/m
- 10 V/m
- - 3 V/m
- _ V/m

Distance Antenna - EUT:

- 1 m
- - 3 m

Modulation:

- - AM : 80 % 1 kHz
- FM : ___ kHz dev. ___ kHz
- - sine wave:
- unmodulated
- Pulse ON/OFF Duty Cycle: ___ %

Step:

- - 1%

Polarization of Antenna:

- - Horizontal
- - Vertical

Result :

- - No degradation of function - Met Criterion A
- Distortion of function - Met Criterion B
- Error of function - Met Criterion C
- Loss of function - Unrecoverable Failure

Remarks: _____



China

Immunity Test Conditions: FAST TRANSIENTS (BURST)

The immunity against *FAST TRANSIENTS (BURST)* events was performed in the following test location:

- Test not applicable

■ - Test Area -O

Test Equipment Used :

Model Number	Manufacturer	Description	TUV PS Number
■ - UCS 500N5T	EM test	Ultra compact simulator	S1503171-YQ-EMC
<input type="checkbox"/> - CNI 503A	EM test	3-phase coupling decoupling network	S1503172-YQ-EMC
<input type="checkbox"/> - HFK	EM test	Capacitive coupling clamp	S1503173-YQ-EMC

Remarks: Test equipment used is calibrated on a regular basis.

Test Specification:

<u>Pulse Amplitude - AC Power Port:</u>	■ - 1,0 kV	<input type="checkbox"/> - 2,0 kV	
	<input type="checkbox"/> - 4,0 kV	<input type="checkbox"/> - ___ kV	
<u>Pulse Amplitude - DC Power Port:</u>	<input type="checkbox"/> - 1,0 kV	<input type="checkbox"/> - 2,0 kV	
	<input type="checkbox"/> - 4,0 kV	<input type="checkbox"/> - ___ kV	
<u>Pulse Amplitude - Signal/Data Non control Port:</u>	<input type="checkbox"/> - 0,5 kV	<input type="checkbox"/> - 1,0 kV	
	<input type="checkbox"/> - 2,0 kV	<input type="checkbox"/> - ___ kV	
<u>Pulse Amplitude - Process: Measurement & Control Port</u>	<input type="checkbox"/> - 0,5 kV	<input type="checkbox"/> - 1,0 kV	
	<input type="checkbox"/> - 2,0 kV	<input type="checkbox"/> - ___ kV	
<u>Burst Frequency:</u>	<input type="checkbox"/> - 2,5 kHz	■ - 5,0 kHz	<input type="checkbox"/> - ___ kHz
<u>Time of Coupling:</u>	<input type="checkbox"/> - 60 seconds	■ - 120 seconds	
<u>Coupling Method:</u>	■ - Coupling/decoupling network		<input type="checkbox"/> - Coupling clamp
<u>Polarity:</u>	■ - Positive	■ - Negative	



China

Immunity Test Conditions: FAST TRANSIENTS (BURST), continued

Location of Coupling:

name of lines:	<u>Input A.C. power line</u>	
type of lines:	<input type="checkbox"/> - shielded	<input checked="" type="checkbox"/> - unshielded
status of lines:	<input type="checkbox"/> - passive	<input checked="" type="checkbox"/> - active
kind of transmission:	<input checked="" type="checkbox"/> - analog	<input type="checkbox"/> - digital
length of lines:	<u>0.5m</u>	

name of lines:	_____	
type of lines:	<input type="checkbox"/> - shielded	<input type="checkbox"/> - unshielded
status of lines:	<input type="checkbox"/> - passive	<input type="checkbox"/> - active
kind of transmission:	<input type="checkbox"/> - analog	<input type="checkbox"/> - digital
length of lines:	_____	

name of lines:	_____	
type of lines:	<input type="checkbox"/> - shielded	<input type="checkbox"/> - unshielded
status of lines:	<input type="checkbox"/> - passive	<input type="checkbox"/> - active
kind of transmission:	<input type="checkbox"/> - analog	<input type="checkbox"/> - digital
length of lines:	_____	

Result :

- | | |
|--|-------------------------|
| <input checked="" type="checkbox"/> - No degradation of function | - Met Criterion A |
| <input type="checkbox"/> - Distortion of function | - Met Criterion B |
| <input type="checkbox"/> - Error of function | - Met Criterion C |
| <input type="checkbox"/> - Loss of function | - Unrecoverable Failure |

Remarks: _____



China

Immunity Test Conditions: SURGE TRANSIENTS

The immunity against *SURGE TRANSIENTS* events was performed in the following test location:

- Test not applicable

■ - Test Area -O

Test Equipment Used :

Model Number	Manufacturer	Description	TUV PS Number
■ - UCS 500N5T	EM test	Ultra compact simulator	S1503171-YQ-EMC
<input type="checkbox"/> - CNI 503A	EM test	3-phase coupling decoupling network	S1503172-YQ-EMC
<input type="checkbox"/> - CNV 504N1	EM test	Coupling network for surge to signal and datalines	S1503174-YQ-EMC

Remarks: Test equipment used is calibrated on a regular basis.

Test Specification:

Pulse Amplitude - AC Power Port: ■ - 0,5 kV (phase and phase)
(phase and neutral)
 - 4,0 kV
 - 1,0 kV (phase and protective earth)
(neutral and protective earth)
 - 0,5 kV

Pulse Amplitude - DC Power Port: - 1,0 kV
 - 4,0 kV
 - 2,0 kV
 - ___ kV

Pulse Amplitude - Signal/Data Non control Port: - 0,5 kV
 - 2,0 kV
 - 1,0 kV
 - ___ kV

Pulse Amplitude - Process: Measurement & Control Port - 0,5 kV
 - 2,0 kV
 - 1,0 kV
 - ___ kV

Source Impedance: ■ - 2 Ω + 18 μF (phase and phase)
(phase and neutral)
 - 42 Ω + 0,1 μF
 - 12 Ω + 9 μF (phase and protective earth)
(neutral and protective earth)
 - 42 Ω + 0,5 μF

Number of Surges: - 10 surges/angle
■ - 5 surges /angle

Angle: - 0 °
■ - 270 °
■ - 90 °

Repetition Rate: ■ - 60 sec.
 - ___ sec.

Polarity: ■ - Positive
■ - Negative



Immunity Test Conditions: SURGE TRANSIENTS, continued

Location of Coupling:

name of lines: Input A.C. power line
type of lines: - shielded - unshielded
status of lines: - passive - active
kind of transmission: - analog - digital
length of lines: 1m

name of lines: _____
type of lines: - shielded - unshielded
status of lines: - passive - active
kind of transmission: - analog - digital
length of lines: _____

name of lines: _____
type of lines: - shielded - unshielded
status of lines: - passive - active
kind of transmission: - analog - digital
length of lines: _____

Result:

- No degradation of function - Met Criterion A
- Distortion of function - Met Criterion B
- Error of function - Met Criterion C
- Loss of function - Unrecoverable Failure

Remarks: _____



China

Immunity Test Conditions: CONDUCTED DISTURBANCE

The immunity against *CONDUCTED DISTURBANCE* events, induced by radio frequency fields above 9 kHz, was performed in the following test location:

- Test not applicable

■ - Test Area -O

Test Equipment Used :

Model Number	Manufacturer	Description	TUV PS Number
■ - NSG 2070	SCHAFFNER	Signal generator	S1507207-YQ-EMC
■ - ATT 6/80	EM test	6dB Attenuator	S1503180-SB-EMC
■ - CDN M2/M3	EM test	Coupling and decoupling network	S1503186-YQ-EMC
<input type="checkbox"/> - EM 101	EM test	EM coupling clamp	S1503189-YQ-EMC
<input type="checkbox"/> - FTC 101	EM test	Decoupling clamp for EM 101 coupling clamp	S1503192-SB-EMC
<input type="checkbox"/> - F-120-9A	Fischer custom communications, INC.	Bulk current injection probe	S1503183-YQ-EMC
<input type="checkbox"/> - F-33-2	Fischer custom communications, INC.	RF current probe	S1503185-YQ-EMC

Remarks: Test equipment used is calibrated on a regular basis.

Test Specification:

Frequency Range: - 0,15 MHz - 230 MHz - 0,15 MHz - 80 MHz

Voltage Level (EMF): - 1 V - 3 V
 - 10 V - __ V

Modulation: - AM : 80 % 1 kHz
 - FM : __ kHz dev. __ kHz
 - sine wave:
 - unmodulated
 - Pulse ON/OFF Duty Cycle: __ %

Step: - 1%



China

Immunity Test Conditions: CONDUCTED DISTURBANCE, continued

Location of Coupling:

name of lines:	<u>Input A.C. power line</u>	
type of lines:	<input type="checkbox"/> - shielded	<input checked="" type="checkbox"/> - unshielded
status of lines:	<input type="checkbox"/> - passive	<input checked="" type="checkbox"/> - active
kind of transmission:	<input checked="" type="checkbox"/> - analog	<input type="checkbox"/> - digital
length of lines:	<u>0.3m</u>	

name of lines:	_____	
type of lines:	<input type="checkbox"/> - shielded	<input type="checkbox"/> - unshielded
status of lines:	<input type="checkbox"/> - passive	<input type="checkbox"/> - active
kind of transmission:	<input type="checkbox"/> - analog	<input type="checkbox"/> - digital
length of lines:	_____	

name of lines:	_____	
type of lines:	<input type="checkbox"/> - shielded	<input type="checkbox"/> - unshielded
status of lines:	<input type="checkbox"/> - passive	<input type="checkbox"/> - active
kind of transmission:	<input type="checkbox"/> - analog	<input type="checkbox"/> - digital
length of lines:	_____	

Result :

- | | |
|--|-------------------------|
| <input checked="" type="checkbox"/> - No degradation of function | - Met Criterion A |
| <input type="checkbox"/> - Distortion of function | - Met Criterion B |
| <input type="checkbox"/> - Error of function | - Met Criterion C |
| <input type="checkbox"/> - Loss of function | - Unrecoverable Failure |

Remarks: _____



China

Immunity Test Conditions: POWER FREQUENCY MAGNETIC FIELD

The immunity against *POWER FREQUENCY MAGNETIC FIELD* exposure, induced by power frequency magnetic fields, was performed in the following test location:

- Test not applicable

- Test Area -

Test Equipment Used :

Model Number	Manufacturer	Description	TUV PS Number
<input type="checkbox"/> - UCS 500N5T	EM test	Ultra compact simulator	S1503171-YQ-EMC
<input type="checkbox"/> - MS 100N	EM test	Magnetic field coil	S1503177-YQ-EMC
<input type="checkbox"/> - MC 2630	EM test	Current transformer	S1503176-YQ-EMC

Remarks: Test equipment used is calibrated on a regular basis.

Test Specification:

- Frequency Range: - 50 Hz - 60 Hz - 400 Hz
- Field level (EMF): - 1 A/m - 3 A/m - 10 A/m
 - 30 A/m - 100 A/m - ___ A/m
- Short Field (1-3 sec): - 300 A/m - 1000 A/m - ___ A/m
- Duration: - __ seconds
- Axis of Orientation: - X-axis - Y-axis - Z-axis

Result :

- | | |
|---|-------------------------|
| <input type="checkbox"/> - No degradation of function | - Met Criterion A |
| <input type="checkbox"/> - Distortion of function | - Met Criterion B |
| <input type="checkbox"/> - Error of function | - Met Criterion C |
| <input type="checkbox"/> - Loss of function | - Unrecoverable Failure |

Remarks: _____



China

Immunity Test Conditions: VOLTAGE DIPS, INTERRUPTIONS & VARIATIONS

The immunity against *VOLTAGE DIPS, INTERRUPTIONS & VARIATIONS* events, induced by radio frequency fields above 9 kHz, was performed in the following test location:

- Test not applicable

■ - Test Area -O

Test Equipment Used :

Model Number	Manufacturer	Description	TUV PS Number
■ - UCS 500N5T	EM test	Ultra compact simulator	S1503171-YQ-EMC
■ - MV 2616	EM test	Motor driven AC source	S1503175-YQ-EMC

Remarks: Test equipment used is calibrated on a regular basis.

Test Specification:

Nominal Mains Voltage (U_T): ■ - 230 Vac □ - ___ Vac □ - ___ Vdc

Level of Reduction (dip): □ - 1000 ms voltage dips in 30% of U_T
 □ - 200 ms voltage dips in 60% of U_T
 ■ - 200 ms voltage dips in 30% of U_T

Duration of Interruption ($>.95*U_T$): □ - 5000 ms ■ - 10 ms

Voltage Fluctuation: □ - $U_T + 10\%$ □ - $U_T - 10\%$

Result :

- - No degradation of function - Met Criterion A
- - Distortion of function - Met Criterion B
- - Error of function - Met Criterion C
- - Loss of function - Unrecoverable Failure

Remarks: _____



China

Equipment Under Test (EUT) Test Operation Mode - Immunity Tests:

The equipment under test was operated under the following conditions during immunity testing:

- Standby
- Test Program (H - Pattern)
- Test Program (Color Bar)
- Test Program (Customer Specified)
- Normal Operating Mode

- Power on

Configuration of the equipment under test:

- See Constructional Data Form in Appendix A
- See Product Information Form(s) in Appendix A

The following peripheral devices and interface cables were connected during the testing:

- | | |
|----------------------------------|--------------|
| <input type="checkbox"/> - _____ | Type : _____ |
| <input type="checkbox"/> - _____ | Type : _____ |
| <input type="checkbox"/> - _____ | Type : _____ |
| <input type="checkbox"/> - _____ | Type : _____ |
| <input type="checkbox"/> - _____ | Type : _____ |
| <input type="checkbox"/> - _____ | Type : _____ |
| <input type="checkbox"/> - _____ | Type : _____ |
| <input type="checkbox"/> - _____ | Type : _____ |

- unshielded power cable
- unshielded cables
- shielded cables TÜVPS. No.: _____
- customer specific cables
- _____
- _____



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GENERAL REMARKS:

According to the client's declaration, all models have the similar electronic construction except their rated power, LED quantities and appearance.

So model A60-8W-E27 with the highest power were chosen to perform all the tests.

SUMMARY:

All tests according to the regulations cited on page 3 were

■ - Performed

□ - **Not** Performed

The Equipment Under Test

■ - **Fulfills** the general approval requirements cited on page 3.

□ - **Does not** fulfill the general approval requirements cited on page 3.

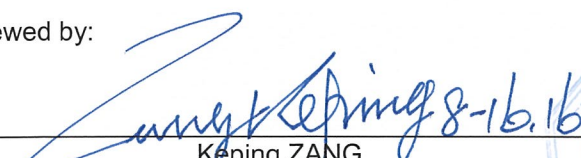

Testing Start Date: July 13, 2016

Testing End Date: July 20, 2016

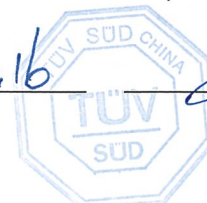
- TÜV SÜD CERTIFICATION AND TESTING (CHINA) CO., LTD. SHANGHAI BRANCH-

Reviewed by:

Prepared by:

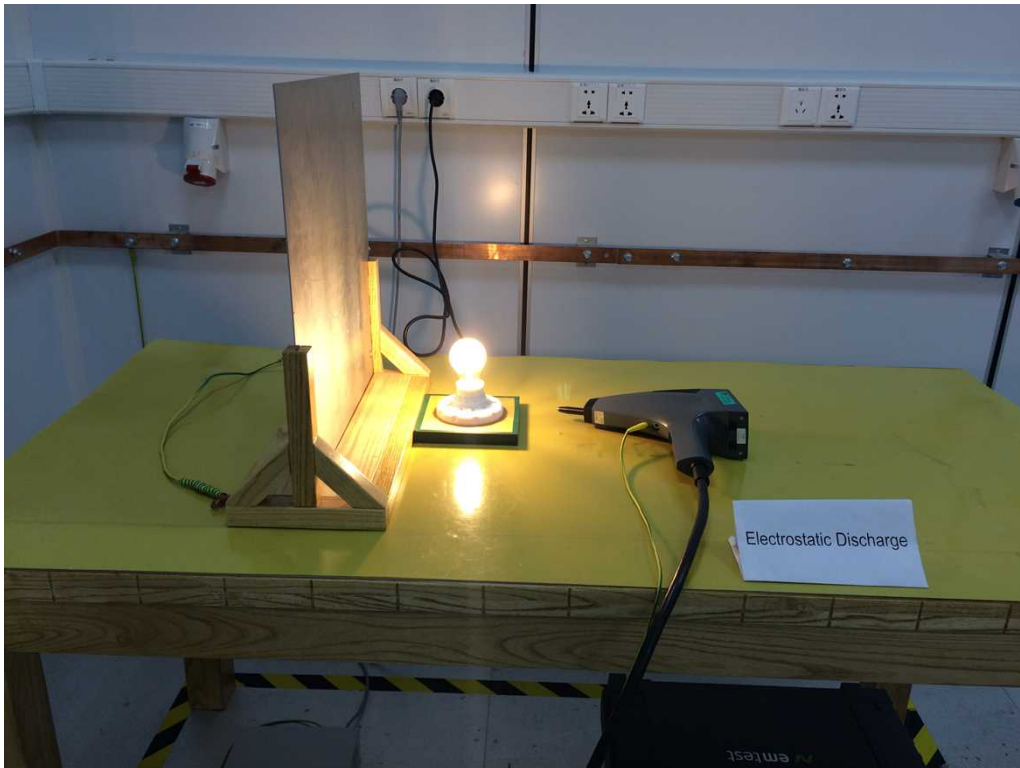
Keping ZANG
 Review Engineer


 Zhining ZHANG
 Project Engineer

Photograph of Test Setup:
Electrostatic Discharge (ESD)

- Test not applicable

IEC 61000-4-2
EN 61000-4-2



Photograph of Test Setup:
Radiated Electromagnetic Field

- Test not applicable

IEC 61000-4-3
EN 61000-4-3



Photograph of Test Setup:
Fast transients (BURST)

- Test not applicable

IEC 61000-4-4
EN 61000-4-4



Photograph of Test Setup:
SURGE transients

- Test not applicable

IEC 61000-4-5
EN 61000-4-5



Photograph of Test Setup:
Conducted disturbance

- Test not applicable

IEC 61000-4-6
EN 61000-4-6



Photograph of Test Setup:
Voltage Dips, Interruptions & Variations

- Test not applicable

IEC 61000-4-11
EN 61000-4-11





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Appendix A

Product Information Form(s)

Please refer to EMC EMISSION-TEST REPORT Appendix B



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Appendix B

Photo documents
of
Equipment Under Test (EUT)

Please refer to EMC EMISSION-TEST REPORT Appendix C