EN 55015:2013
EN 61547:2009
EN 61000-3-2:2014
EN 61000-3-3:2013

TEST REPORT

For

Hong Li Zhihui Group Co., Ltd.

No.1,Xianke Yi Road,Huadong Town,Huadu District,Guangzhou,China

Model: HL-LE004D46W-30B2C86(Ra2)

Report Type:	**Product Type:**
Original Report	High Power AC LED Module

Test Engineer:	Tracy Hu
Report Number:	RSZ160901556-01
Report Date:	2016-09-14
Reviewed By:	Hill He EMC Engineer
Prepared By:	Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F, the 3rd Phase of WanLi Industrial Building ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Hong Li Zhihui Group Co., Ltd.'s* product, model: *HL-LE004D46W-30B2C86(Ra2)* or the "EUT" in this report is a *High Power AC LED Module,* which was measured approximately: 45 mm (L) x 45 mm (W) x 3.5 mm (H), rate with the input voltage: 230V/50Hz.

** All measurement and test data in this report was gathered from production sample serial number: 1609001 (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2016-09-01.*

Objective

The following Declaration of Conformity report is prepared on behalf of *Hong Li Zhihui Group Co., Ltd.* in accordance with EN 55015, Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment, EN 61547, Equipment for general lighting purposed – EMC immunity requirements, EN 61000-3-2, Limits – Limits for harmonic current emissions (equipment input current up to and including 16 A per phase), and also in accordance with EN 61000-3-3, Limits Section 3; Limitation of voltage fluctuations and flicker in low-voltage supply systems for equipment with rated current<16A.

The objective of the manufacturer is to determine the compliance of the EUT with EN 55015, EN 61547, EN 61000-3-2 and EN 61000-3-3.

Related Submittal(s)/Grant(s)

No related submittal(s).

Test Methodology

All measurements contained in this report were conducted with CISPR 16-1-1:2010, specification for radio disturbance and immunity measuring apparatus and methods P1-1: radio disturbance and immunity measuring apparatus – measuring apparatus. CISPR 16-2-1:2013, Specification for radio disturbance and immunity measuring apparatus and methods – Part 2-1: Methods of measurement of disturbances and immunity – Conducted disturbance measurements. CISPR 16-2-3:2010, specification for radio disturbance and immunity measuring apparatus and methods P2-3 methods of measurement of disturbances and immunity- radiated disturbance measurements. CISPR 16-2-4:2003 Specification for radio disturbance and immunity measuring apparatus and methods – Part 2-4: Methods of measurement of disturbances and immunity – Immunity measurements. CISPR 16-4-2:2011 Specification for radio disturbance and immunity measuring apparatus and methods – Part 4-2: Uncertainties, statistics and limit modeling – Uncertainty in EMC measurements

All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratories Corp. The radiated testing was performed at an antenna-to-EUT distance of 3 Meters.

Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on October 31, 2013. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Justification

The system was configured for testing in normal mode.

EUT Exercise Software

No exercise software was made to the EUT tested.

Equipment Modifications

No modifications were made to the EUT tested.

Support Equipment List and Details

No Support Equipment was made to the EUT tested.

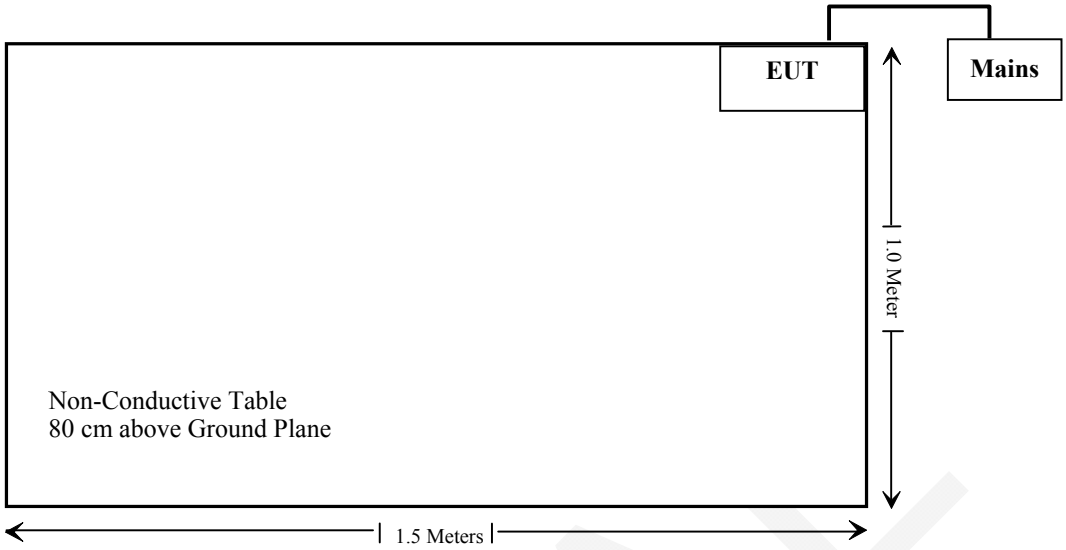
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
/	/	/	/

External I/O Cable

Cable Description	Length (m)	From/Port	To
Un-shielding Detachable AC Cable	1.8	Mains	EUT

Block Diagram of Test Setup



Operating condition for lighting equipment

When measurements of disturbances or insertion loss of lighting equipment are being made, the equipment shall be operated under the following conditions

Items	Requirements	Results
on equipment	The lighting equipment is to be tested as delivered by the manufacturer under normal operating conditions, for example, as given in IEC 60598 for luminaires.	Compliance
Supply voltage and frequency	The supply voltage shall be within ±2 % of the rated voltage. In the case of a voltage range, measurement shall be carried out within ±2 % of each of the nominal supply voltages of that range. The nominal frequency of the mains supply shall be as rated for the equipment.	Compliance
Ambient conditions	Measurements shall be carried out in normal laboratory conditions. The ambient temperature shall be within the range 15 °C to 25 °C.	Compliance
Type of lamp used	Terminal disturbance voltage and radiated field measurements shall be carried out with the lamps for which the lighting equipment is designed. Lamps of the highest wattage rating allowed for the lighting equipment shall be used.	Compliance
Ageing time of lamps	Measurements shall be carried out with lamps which have been in operation for at least ☐ 2 h for incandescent lamps ☒ 100 h for fluorescent and other discharge lamps	Compliance
Stabilization time of lamps	Prior to a measurement, the lamp(s) shall be operated until stabilization has been reached. Unless otherwise stated in this standard or specified by the manufacturer, the following stabilization times shall be observed: ☐ 5 min for incandescent lamps ☐ 15 min for fluorescent lamps ☒ 30 min for other discharge lamps	Compliance
Replaceable starters	When IEC 60155 glow-switch starters are used, the capacitor is replaced by a capacitor of 0,005 µF ± 5 %. The starter shall be retained in its socket, unless otherwise specified. Care shall be taken that it maintains its characteristics over the whole frequency range covered by the measurements. If the manufacturer fits a capacitor external to the starter, the luminaire is measured as manufactured including the starter capacitor.	Compliance

SUMMARY OF TEST REPORT

EN 55015

Rule	Description	Results
§ 4.3.1	Disturbance Voltages (Mains Terminals)	Compliance
§ 4.4.1	Radiated Electromagnetic Disturbances (9 kHz to 30 MHz)	Compliance
§ 4.4.2	Radiated Electromagnetic Disturbances (30 MHz to 300 MHz)	Compliance

EN 61547

Rule	Description	Results
§ 5.2	Electrostatic Discharge, IEC 61000-4-2	Compliance
§ 5.3	Radio Frequency Electromagnetic Fields, IEC 61000-4-3	Compliance
§ 5.4	Power frequency Magnetic Fields, IEC 61000-4-8	Not Applicable*
§ 5.5	Fast Transients, IEC 61000-4-4	Compliance
§ 5.6	Injected Currents, IEC 61000-4-6	Compliance
§ 5.7	Surges, IEC 61000-4-5	Compliance
§ 5.8	Voltage Dips and Interruptions, IEC 61000-4-11	Compliance

Not Applicable *: EUT is not susceptible to magnetic fields, not contains critical components such as CRT monitors, Hall elements, electrodynamic microphones, magnetic field sensors, etc.

EN 61000-3-2

Rule	Description	Results
§7	Harmonic Current Emissions	Compliance

EN 61000-3-3

Rule	Description	Results
§5	Voltage Fluctuation and Flicker	Compliance

EN 55015 §4.3.1- DISTURBANCE VOLTAGES (MAINS TERMINALS)

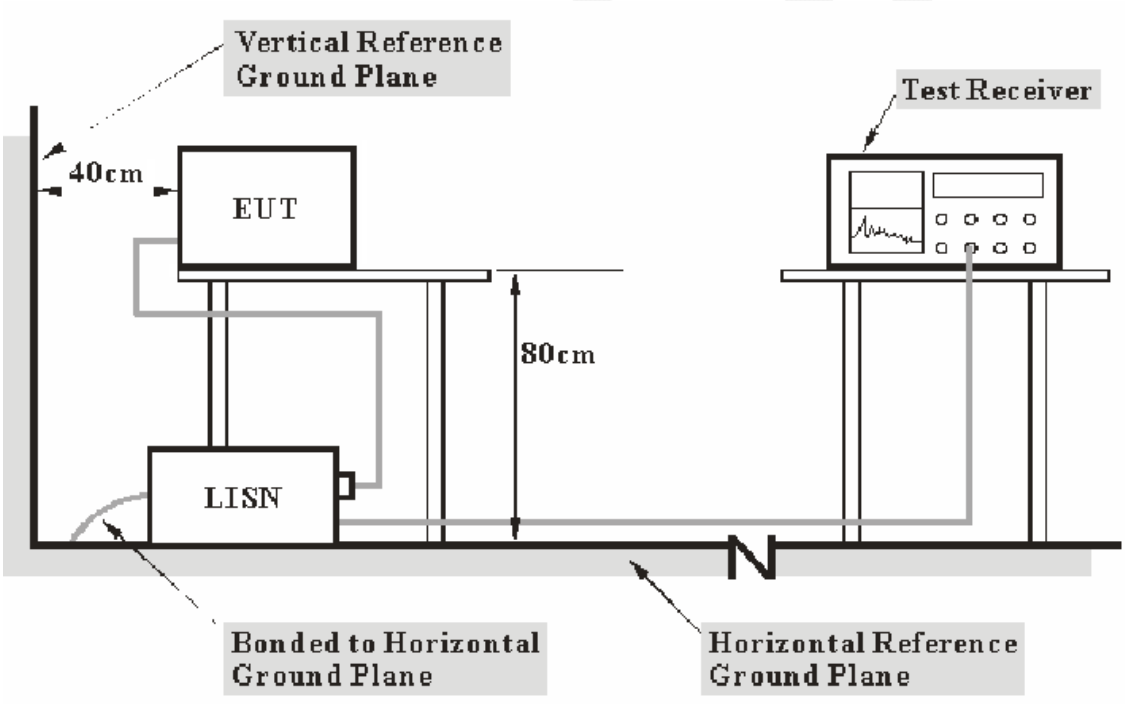
Measurement Uncertainty

Input quantities to be considered for conducted disturbance measurements maybe receiver reading, attenuation of the connection between LISN and receiver, LISN voltage division factor, LISN VDF frequency interpolation and receiver related input quantities, etc.

Based on CISPR 16-4-2:2011, the expended combined standard uncertainty of conducted disturbance test at Bay Area Compliance Laboratories Corp. (Shenzhen) is shown as below. And the uncertainty will not be taken into consideration for the test data recorded in the report

Port	Expanded Measurement uncertainty
AC Mains	3.34 dB (k=2, 95% level of confidence)

Test System Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with CISPR 16-2-1:2013 measurement procedure. The specification used was the EN 55015 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

EMI Test Receiver Setup

The EMI Test Receiver was set to investigate the spectrum from 9 kHz to 30 MHz.

During the conducted emission test, the EMI Test Receiver was set with the following configurations:

Frequency Range	IF B/W
9 kHz – 150 kHz	200 Hz
150 kHz – 30 MHz	9 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS30	100176	2016-06-01	2017-05-31
Rohde & Schwarz	LISN	ENV216	3560.6650.12-101613-Yb	2015-12-15	2016-12-14
Rohde & Schwarz	Transient Limiter	ESH3Z2	DE25985	2016-05-14	2017-05-14
Rohde & Schwarz	CE Test software	EMC 32	V8.53	NCR	NCR

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Procedure

During the conducted emission test, the EUT was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance using all installation combination.

All final data was recorded in the Quasi-peak and average detection mode.

Corrected Factor & Margin Calculation

The Corrected factor is calculated by adding LISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

Correction Factor = LISN VDF + Cable Loss + Transient Limiter Attenuation

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

Margin = Limit – Corrected Amplitude

Test Results Summary

According to the data in the following table, the worst margin reading as below:

14.1 dB at **0.150000&0.154000MHZ** in the **Neutral** conducted mode

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level complies with the limit if

$$L_m + U_{(Lm)} \leq L_{lim} + U_{cispr}$$

In BACL, $U_{(Lm)}$ is less than U_{cispr}, if L_m is less than L_{lim}, it implies that the EUT complies with the limit.

Test Data

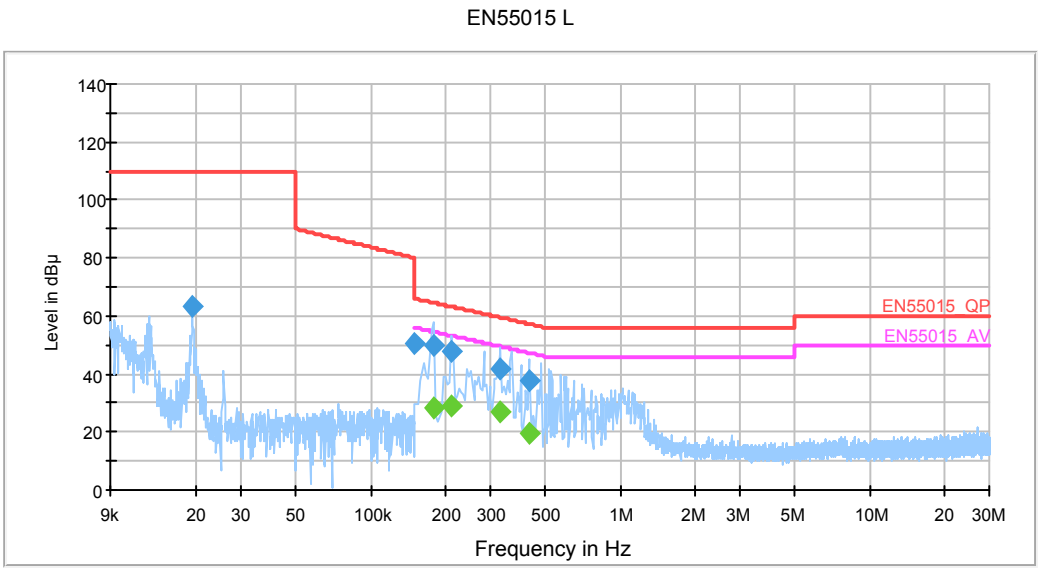
Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Tracy Hu on 2016-09-13.

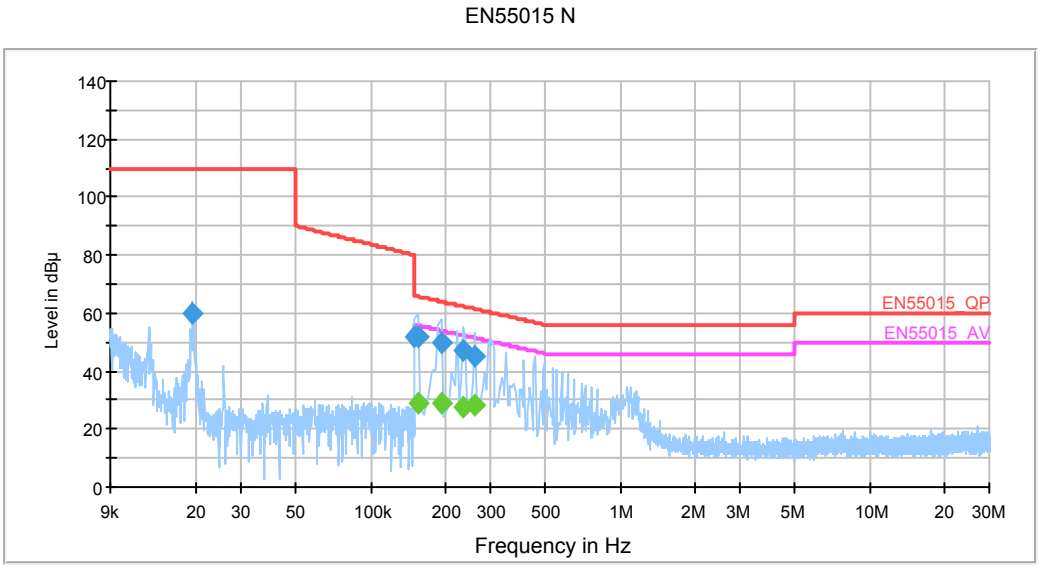
Test Mode: Lighting

AC 230V/50Hz, Line:



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.019215	63.0	19.9	110.0	47.0	QP
0.150000	50.3	20.0	66.0	15.7	QP
0.178000	49.8	20.0	64.6	14.8	QP
0.210000	48.1	20.0	63.2	15.1	QP
0.330000	41.4	19.9	59.5	18.0	QP
0.430000	37.6	19.9	57.3	19.7	QP
0.178000	28.5	20.0	54.6	26.1	Ave.
0.210000	28.8	20.0	53.2	24.4	Ave.
0.330000	26.6	19.9	49.5	22.9	Ave.
0.430000	19.6	19.9	47.3	27.7	Ave.

AC 230V/50Hz, Neutral:



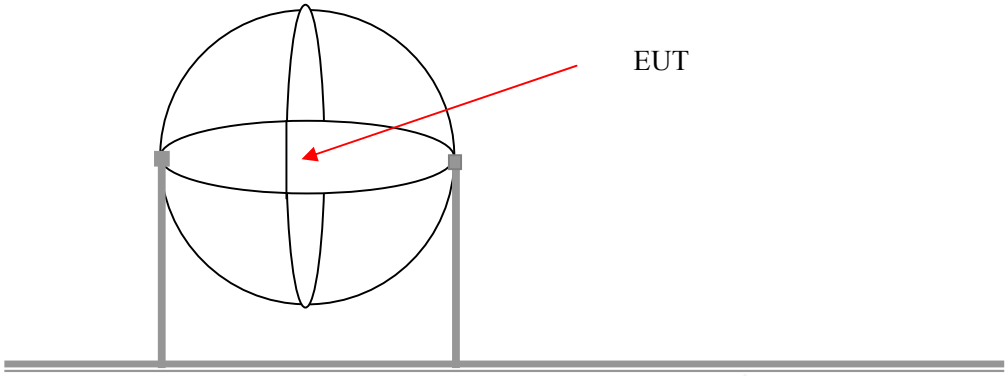
Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.019063	60.0	19.9	110.0	50.0	QP
0.150000	51.9	20.0	66.0	14.1	QP
0.154000	51.7	20.0	65.8	14.1	QP
0.190000	49.7	20.0	64.0	14.3	QP
0.234000	47.3	20.0	62.3	15.0	QP
0.262000	45.2	19.9	61.4	16.2	QP
0.154000	29.2	20.0	55.8	26.6	Ave.
0.190000	28.6	20.0	54.0	25.4	Ave.
0.234000	27.8	20.0	52.3	24.5	Ave.
0.262000	28.0	19.9	51.4	23.4	Ave.

Note:

1) Corrected Amplitude = Reading + Correction Factor
2) Correction Factor = LISN VDF + Cable Loss + Transient Limiter Attenuation
3) Margin = Limit – Corrected Amplitude

EN 55015 §4.4.1 - RADIATED ELECTROMAGNETIC DISTURBANCES

EUT System Setup



EMI Test Receiver Setup

During the radiated emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
9 kHz – 150 kHz	200 Hz
150 kHz – 30 MHz	9 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	HP8447E	1937A01046	2016-05-06	2017-05-06
TDK	Chamber	Chamber A	2#	2015-10-15	2018-10-15
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2015-12-15	2016-12-14
EVERFINE	Triple-Loop	LLA-2	903002	2015-06-1	2018-05-31
Rohde & Schwarz	CE Test software	EMC 32	V8.53.0	NCR	NCR

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

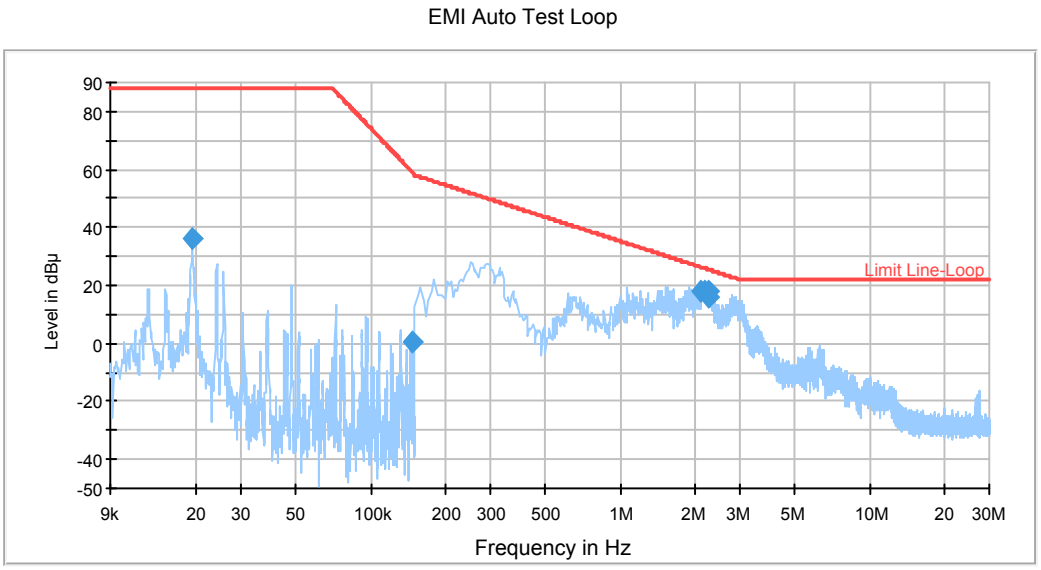
The testing was performed by Tracy Hu on 2016-09-13.

Test Result: Compliance.

Please refer to the following table and spectrum plots.

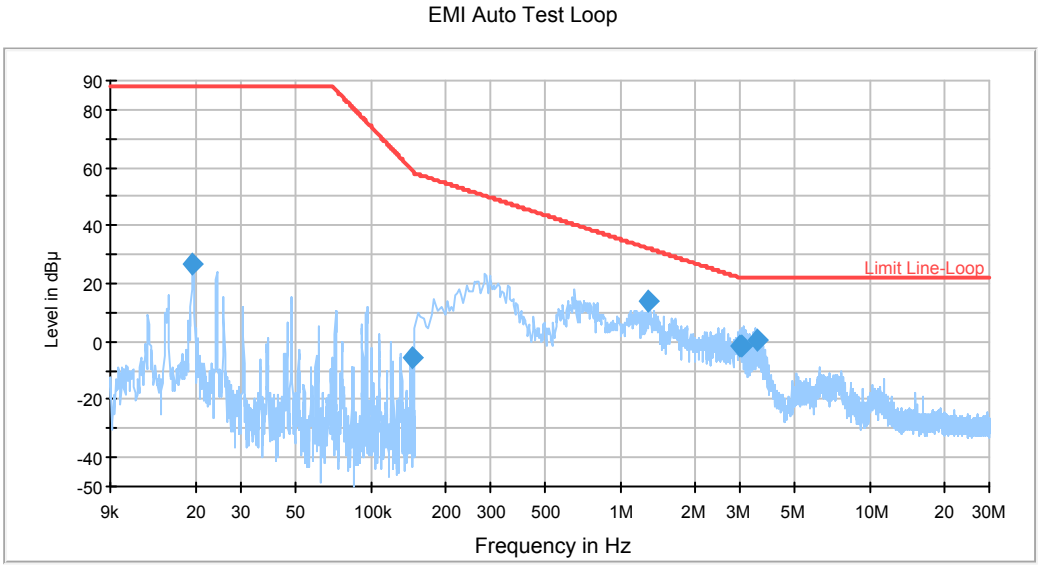
Test Mode: Lighting

X:



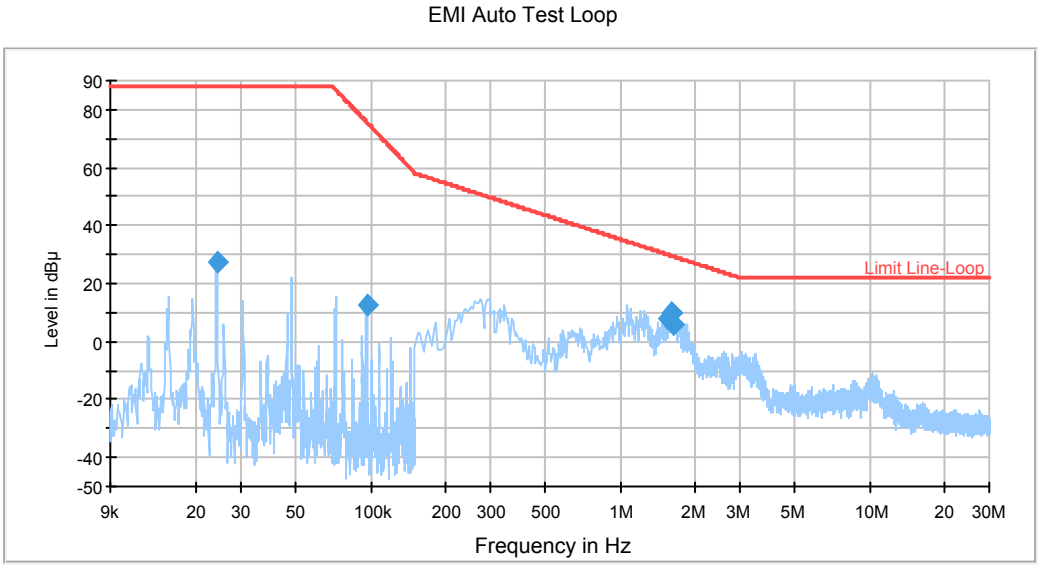
Radiated Electromagnetic Disturbances				EN 55015	
Frequency (MHz)	**Amplitude (dBµA)**	**Correction Factor (dB)**	**Limit (dBµA)**	**Margin (dB)**	**Detector (PK/Ave./QP)**
0.019240	35.9	-24.1	88.0	52.1	QP
0.145880	0.6	-24.1	59.1	58.5	QP
2.112000	17.9	-24.0	26.2	8.3	QP
2.160000	18.1	-24.0	25.9	7.8	QP
2.236000	18.0	-24.0	25.5	7.5	QP
2.240000	16.1	-24.0	25.5	9.4	QP

Y:



Radiated Electromagnetic Disturbances				EN 55015	
Frequency (MHz)	**Amplitude (dBµA)**	**Correction Factor (dB)**	**Limit (dBµA)**	**Margin (dB)**	**Detector (PK/Ave./QP)**
0.019240	27.1	-24.1	88.0	60.9	QP
0.145960	-5.9	-24.1	59.1	65.0	QP
1.284000	13.8	-24.0	32.2	18.4	QP
2.980000	-1.5	-24.0	22.1	23.6	QP
3.036000	-1.4	-24.0	22.0	23.4	QP
3.500000	0.3	-24.0	22.0	21.7	QP

Z:



Radiated Electromagnetic Disturbances				EN 55015	
Frequency (MHz)	**Amplitude (dBµA)**	**Correction Factor (dB)**	**Limit (dBµA)**	**Margin (dB)**	**Detector (PK/Ave./QP)**
0.024040	27.1	-24.1	88.0	60.9	QP
0.096120	12.8	-24.1	75.5	62.7	QP
1.552000	7.6	-24.0	29.9	22.3	QP
1.608000	10.1	-24.0	29.5	19.4	QP
1.612000	10.1	-24.0	29.5	19.4	QP
1.628000	6.1	-24.0	29.3	23.2	QP

EN 55015 §4.4.2 - RADIATED ELECTROMAGNETIC DISTURBANCES

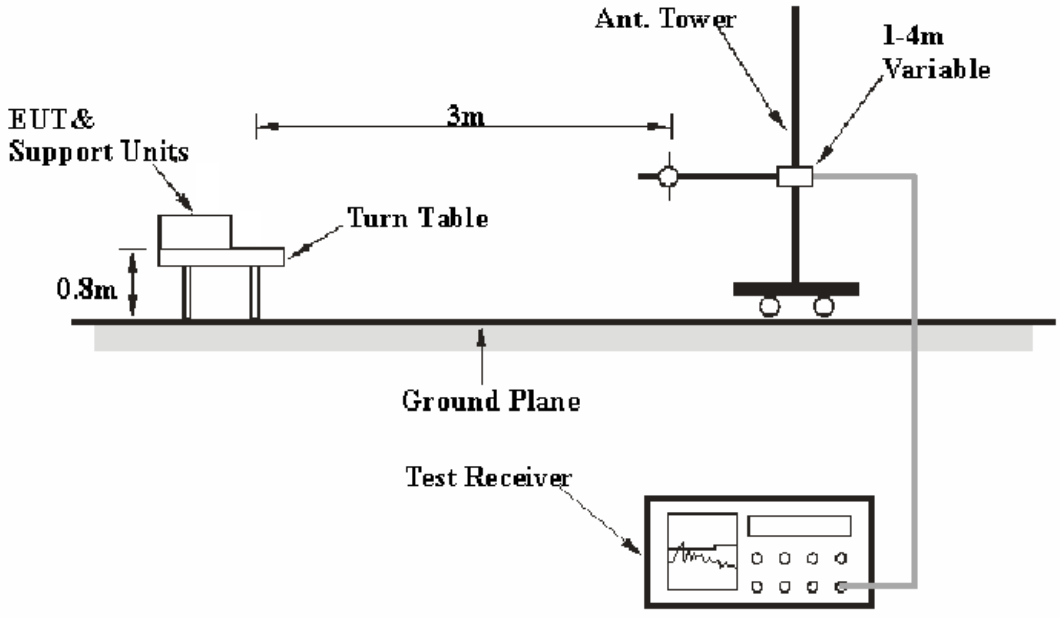
Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on CISPR 16-4-2:2011, the expended combined standard uncertainty of radiation emissions at Bay Area Compliance Laboratories Corp. (Shenzhen) is shown in below table. And the uncertainty will not be taken into consideration for the test data recorded in the report.

Frequency	Polarity	Measurement uncertainty
30MHz~200MHz	Horizontal	4.04 dB (k=2, 95% level of confidence)
	Vertical	4.52 dB (k=2, 95% level of confidence)
200MHz~1GHz	Horizontal	4.72 dB (k=2, 95% level of confidence)
	Vertical	5.81 dB (k=2, 95% level of confidence)

Test System Setup



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the CISPR16-1-4:2012, CISPR 16-2-3:2010. The specification used was EN 55015.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 300 MHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 300 MHz	100 kHz	300 kHz	120 kHz	QP

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
TDK	Chamber	Chamber A	2#	2015-10-15	2018-10-15
HP	Amplifier	HP8447E	1937A01046	2016-05-06	2017-05-06
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2015-12-15	2016-12-14
Sunol Sciences	Bi-log Antenna	JB1	A040904-2	2014-12-07	2017-12-06
R&S	Auto test Software	EMC32	V9.10.0.0	NCR	NCR

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the Quasi-peak detection mode.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Corrected Amplitude = Meter Reading + Antenna Factor + Cable Loss - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

Margin = Limit – Corrected Amplitude

Test Results Summary

According to the data in the following table, the worst margin reading as below:

17.22 dB at **30.063125 MHz** in the **Horizontal** polarization

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level complies with the limit if

$$L_m + U_{(Lm)} \leq L_{lim} + U_{cispr}$$

In BACL, $U_{(Lm)}$ is less than U_{cispr}, if L_m is less than L_{lim}, it implies that the EUT complies with the limit.

Test Data

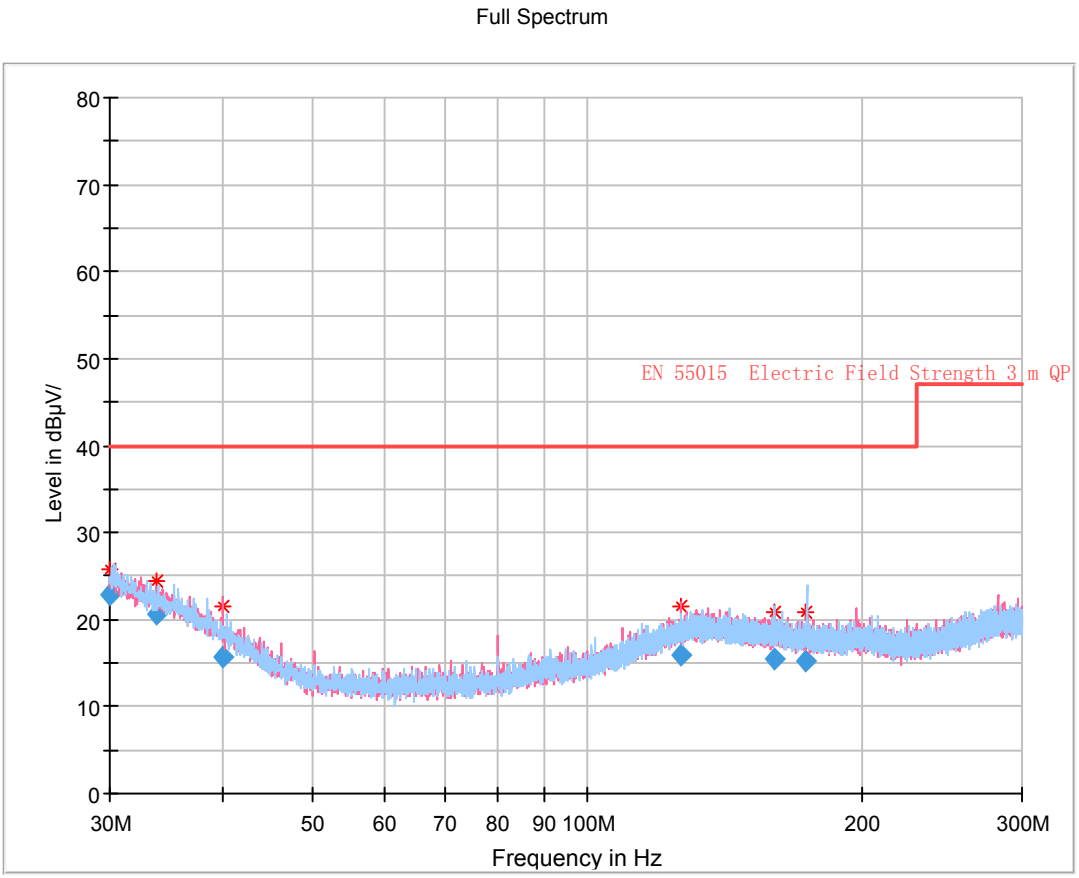
Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Tracy Hu on 2016-09-12.

Test Mode: Lighting

Below 1 GHz:_



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna height (cm)	Antenna Polarity	Turntable position (degree)	Correction Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
30.063125	22.78	387.0	H	231.0	-1.8	40.00	17.22
33.790812	20.53	100.0	H	89.0	-3.9	40.00	19.47
39.955938	15.77	148.0	V	111.0	-7.7	40.00	24.23
126.747125	15.93	164.0	V	81.0	-7.3	40.00	24.07
160.655125	15.50	277.0	H	134.0	-7.7	40.00	24.50
174.059312	15.16	161.0	H	226.0	-8.1	40.00	24.84

Note:
1) Corrected Amplitude = Meter Reading + Correction Factor
2) Correction Factor = Antenna Factor + Cable Loss - Amplifier Gain
3) Margin = Limit – Corrected Amplitude

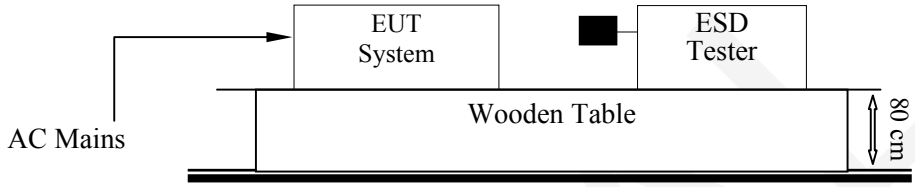
EN 61547 §5.2-ELECTROSTATIC DISCHARGE (IEC 61000-4-2)

Test Equipment

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
EM Test	ESD Tester	Dito	302105	2015-11-04	2016-11-04

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test System Setup



Remark: ■ is the tip of the electrode

IEC 61000-4-2 specifies that a tabletop EUT shall be placed on a non-conducting table which is 80 centimeters above a ground reference plane and that floor mounted equipment shall be placed on a insulating support approximately 10 centimeters above a ground plane. During the tests, the EUT is positioned over a ground reference plane in conformance with this requirement.

For tabletop equipment, a 1.6 by 0.8-meter metal sheet (HCP) is placed on the table and connected to the ground plane via a metal strap with two 470 k Ohms resistors in series. The EUT and attached cables are isolated from this metal sheet by *0.5-millimeter* thick insulating material. A Vertical Coupling Plane (VCP) grounded on the ground plane through the same configuration as in the HCP is used.

Test Standard

EN 61547:2009 (IEC 61000-4-2:2008)
Air Discharge at ±2 kV, ±4 kV, ±8 kV
Contact Discharge at ±2 kV, ±4 kV

Test Level

Level	Test Voltage Contact Discharge (±kV)	Test Voltage Air Discharge (±kV)
1.	2	2
2.	4	4
3.	6	8
4.	8	15
X.	Special	Special

Performance criterion: B

Test Procedure

Air Discharge:

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

Contact Discharge:

All the procedure shall be same as Section 8.3.1 of IEC 61000-4-2, except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

Indirect discharge for horizontal coupling plane

At least 50 single discharges shall be applied to the horizontal coupling plane, at points on each side of the EUT. The discharge electrode positions vertically at a distance of 0.1 m from the EUT and with the discharge electrode touching the coupling plane.

Indirect discharge for vertical coupling plane

At least 50 single discharges shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

Test Data and Setup Photo

Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Tracy Hu on 2016-09-13.

Test Mode: Lighting

Table 1: Electrostatic Discharge Immunity (Air Discharge)

IEC 61000-4-2 Test Points	Test Levels							
	-2Kv	+2Kv	-4Kv	+4Kv	-8Kv	+8Kv	-15Kv	+15Kv
/	/	/	/	/	/	/	/	/

Table 2: Electrostatic Discharge Immunity (Direct Contact)

IEC 61000-4-2 Test Points	Test Levels							
	-2 kV	+2 kV	-4 kV	+4 kV	-6 kV	+6 kV	-8 kV	+8 kV
/	/	/	/	/	/	/	/	/

Table 3: Electrostatic Discharge Immunity (Indirect Contact HCP)

IEC 61000-4-2 Test Points		Test Levels							
		-2 kV	+2 kV	-4 kV	+4 kV	-6 kV	+6 kV	-8 kV	+8 kV
Front Side	(4 point)	A	A	A	A	/	/	/	/
Back Side	(4 point)	A	A	A	A	/	/	/	/
Left Side	(4 point)	A	A	A	A	/	/	/	/
Right Side	(4 point)	A	A	A	A	/	/	/	/

Table 4: Electrostatic Discharge Immunity (Indirect Contact VCP)

IEC 61000-4-2 Test Points		Test Levels							
		-2 kV	+2 kV	-4 kV	+4 kV	-6 kV	+6 kV	-8 kV	+8 kV
Front Side	(4 point)	A	A	A	A	/	/	/	/
Back Side	(4 point)	A	A	A	A	/	/	/	/
Left Side	(4 point)	A	A	A	A	/	/	/	/
Right Side	(4 point)	A	A	A	A	/	/	/	/

Test Setup Photo

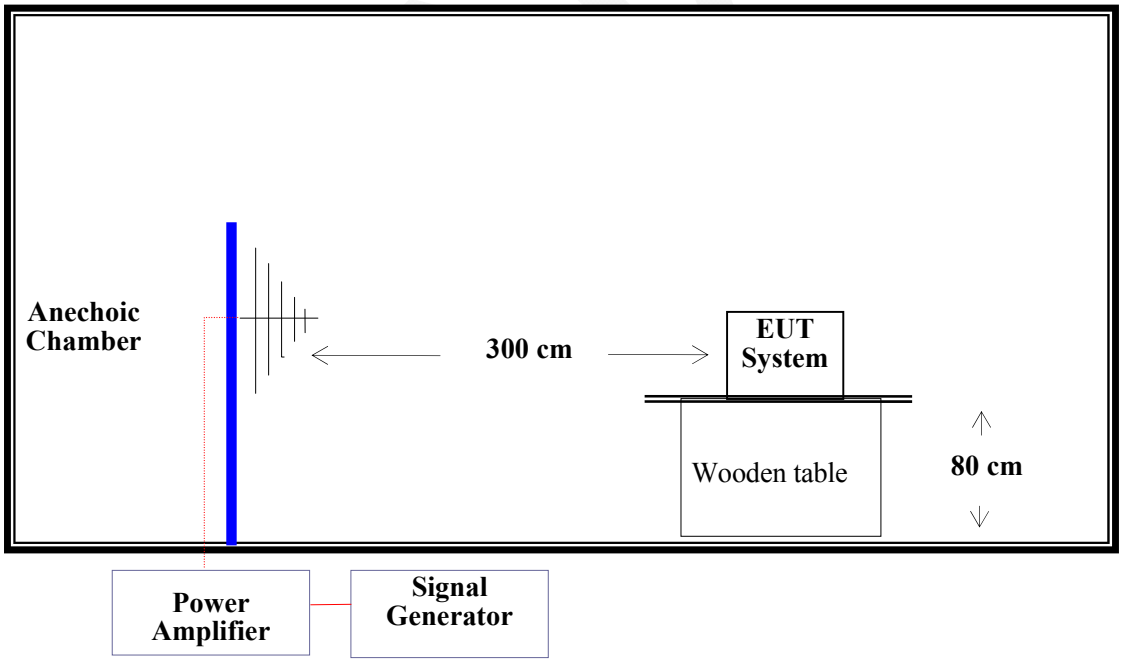
EN 61547 §5.3-RADIO FREQUENCY ELECTROMAGNETIC FIELDS (IEC 61000-4-3)

Test Equipment

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Amplifier Research	Power Amplifier	200W1000/M2	H1004497	2015-11-03	2016-11-03
ETS	Fully Anechoic Chamber	N/A	N/A	2016-05-26	2019-05-26
HP	Signal Generator	8648C	3426A01345	2016-04-14	2017-04-14
Amplifier Research	Field Monitor	FM5004	302149	2016-01-08	2019-01-08
ETS-Lindgreen	Isotropic Field Probe	HI-6005	00069461	2016-01-08	2019-01-08
Sunol Sciences	Bi-log Antenna	JB1	A040904-2	2014-12-07	2017-12-06
Frank Hoppert	RS test Software	RSUS	2.133	NCR	NCR

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test System Setup



Test Standard

EN 61547:2009 (IEC 61000-4-3:2006+A1:2007)
Test level 2 at 3 V/ m (unmodulated, r.m.s.)

Test Level

Level	Field Strength V/m
1.	1
2.	3
3.	10
X.	Special

Performance criterion: A

Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above the ground. The EUT is set 3 meters away from the transmitting antenna which is mounted on an antenna tower. Both horizontal and vertical polarizations of the antenna are set on test. Each of the four sides of EUT must be faced this transmitting antenna and measured individually.
In order to judge the EUT performance, a CCD camera is used to monitor the EUT.
All the scanning conditions are as follows**:**

	Condition of Test	Remarks
1.	Field Strength	3 V/m (Test level 2)
2.	Radiated Signal	80% AM (1 kHz)
3.	Scanning Frequency	80 – 1000 MHz
4.	Sweeping time of radiated	0.0015decade/s
5.	Dwell Time	1Sec.

Test Data and Setup Photo

Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Tracy Hu on 2016-09-13.

Test Mode: Lighting

Frequency Range (MHz)	Front Side (3 V/m)		Rear Side (3 V/m)		Left Side (3 V/m)		Right Side (3 V/m)	
	VERT	HORI	VERT	HORI	VERT	HORI	VERT	HORI
80-1000	A	A	A	A	A	A	A	A

Test Setup Photo

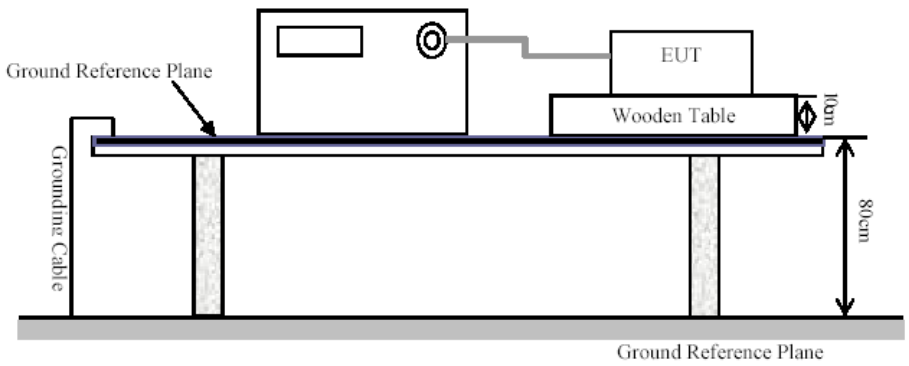
EN 61547 §5.5-ELECTRICAL FAST TRANSIENTS (IEC 61000-4-4)

Test Equipment

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
EM Test	EMS Combination Tester	UCS 500 N5	V0939105172	2015-12-15	2016-12-14
EM Test	AC Source	MV2616	V0939105173	2015-12-15	2016-12-14
EM Test	Auto test Software	Iec Control	V5.0.3.0	NCR	NCR

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test System Setup



Test Standard

EN 61547:2009 (IEC 61000-4-4:2004)
Test Level 2 at 1 kV

Test level

Open Circuit Output Test Voltage ±10%		
Level	**On Power Supply Lines**	**On I/O (Input/Output) Signal data and control lines**
1	0.5 kV	0.25 kV
2	1 kV	0.5 kV
3	2 kV	1 kV
4	4 kV	2 kV
X	Special	Special

Performance criterion: B

Test Procedure

The EUT was arranged for Power Line Coupling and for I/O Line Coupling through a capacitive clamp, where applicable. (Note: The I/O coupling test using a capacitive clamp is performed on the I/O interface cables that are longer in length than 3 meters.) A metal ground plane 2.4 meter by 2.0 meter was placed between the floor and the table and is connected to the earth by a 2.0 meter ground rod. The ground rod is connected to the test facility's electrical earth.

Test Data and Setup Photo

Environmental Conditions

Temperature:	24℃
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Tracy Hu on 2016-09-13.

Test Mode: Lighting

IEC 61000-4-4 Test Points		**Test Levels (kV)**							
		+0. 5	**-0. 5**	**+1.0**	**-1.0**	**+2.0**	**-2.0**	**+4.0**	**-4.0**
AC Mains Power Supply Input Port	L1	/	/	/	/	/	/	/	/
	N	/	/	/	/	/	/	/	/
	PE	/	/	/	/	/	/	/	/
	L1/N	/	/	A	A	/	/	/	/
	L1/PE	/	/	/	/	/	/	/	/
	N/PE	/	/	/	/	/	/	/	/
	L1/N/PE	/	/	/	/	/	/	/	/

Test Setup Photo

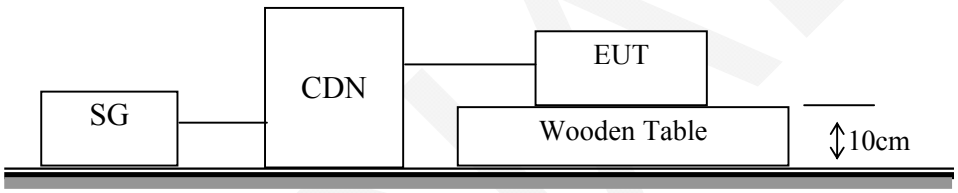
EN 61547 §5.6-INJETED CURRENTS (IEC 61000-4-6)

Test Equipment

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Signal Generator	8657A	3217A04699	2015-12-09	2016-12-08
COM-POWER	CDN	COM-POWER	521145	2016-01-18	2017-01-17
Tektronix	Oscilloscope	TDS 7104	B020518	2016-06-07	2017-06-07
N/A	6dB Attenuator	N/A	N/A	2015-12-15	2016-12-14

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test setup



Test Standard

EN 61547:2009 (IEC 61000-4-6:2008)
Test Level 2 at 3 V r.m.s. (unmodulated), 0.15 MHz ~ 80 MHz

Test level

Level	Voltage Level (r.m.s.)V
1	1
2	3
3	10
X	Special

Performance criterion: A

Test Procedure

1) Let the EUT work in test mode and test it.
2) The EUT are placed on an insulating support 0.1 m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3 m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
3) The disturbance signal described below is injected to EUT through CDN.
4) The EUT operates within its operational mode(s) under intended climatic conditions after power on.
5) The frequency range is swept from 150 kHz to 80 MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1 kHz sine wave.
6) The rate of sweep shall not exceed 1.5*10-3decades/s. Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.
7) Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

Test Data and Setup Photo

Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Tracy Hu on 2016-09-13.

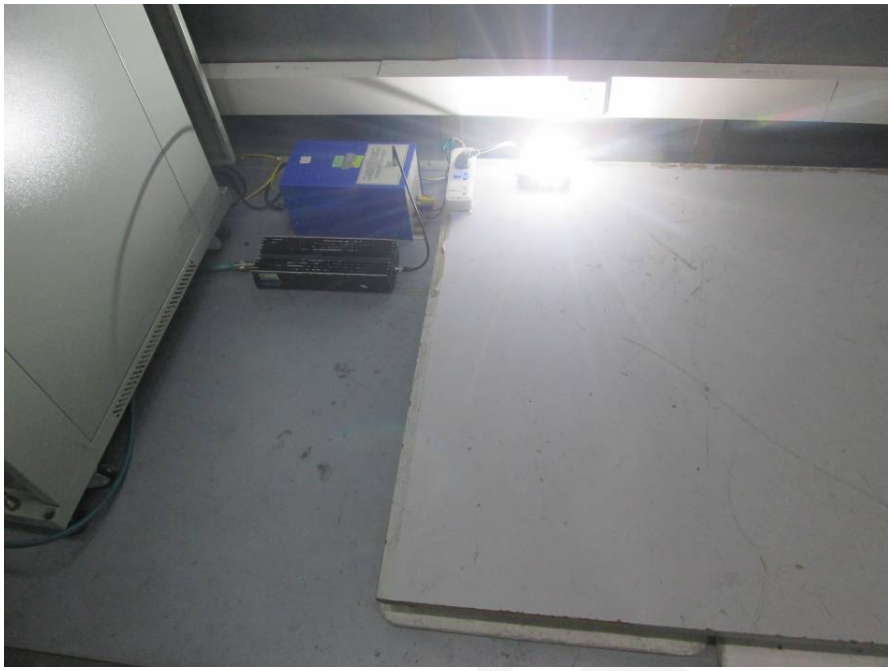
Test Mode: Lighting

Power Supply: AC 230V/50Hz

Modulation: Amplitude 80%, 1 kHz sine wave

Test Level: 3V r.m.s. (unmodulated)

Level	Voltage Level (r.m.s.) U_0	Pass	Fail
1	1	/	/
2	3	A	/
3	10	/	/
X	Special	/	/



Test Setup Photo

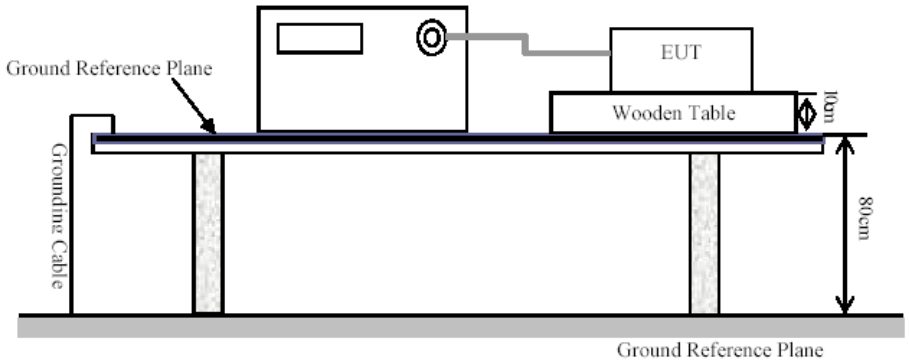
EN 61547 §5.7-SURGES (IEC 61000-4-5)

Test Equipment

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
EM Test	EMS Combination Tester	UCS 500 N5	V0939105172	2015-12-15	2016-12-14
EM Test	AC Source	MV2616	V0939105173	2015-12-15	2016-12-14
EM Test	Auto test Software	Iec Control	V5.0.3.0	NCR	NCR

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test system Setup



Test Standard

EN 61547:2009 (IEC 61000-4-5:2005)
AC mains: Line to Line at 0.5kV, 1kV；

Test level

Level	Open Circuit Output Test Voltage ±10%	Performance Criterion
		AC Mains
1	0.5 kV	C
2	1 kV	C
3	2 kV	C
4	4 kV	C
X	Special	/

Test Procedure

1) For line to line coupling mode, provide a 1.2/50μs voltage surge (at open-circuit condition) and a 8/20 μs current surge into a short circuit.
2) For telecommunication port, provide a 10/700μs voltage surge (at open-circuit condition) and a 5/320 μs current surge into a short circuit.
3) At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
4) Different phase angles are done individually.
5) Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

Test Data and Setup Photo

Environmental Conditions

Temperature:	26℃
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Tracy Hu on 2016-09-13.

Test Mode: Lighting

Table 1: AC mains power input port

Level	Voltage	Poll	Path	Pass	Fail
1	0.5kV	±	L1/N	A	/
2	1kV	±	L1/N	A	/
3	2kV	±	L1/PE, N/PE, L1/N/PE	/	/
4	4kV	±	L1/N ,L1/PE, N/PE, L1/N/PE	/	/

Test Setup Photo

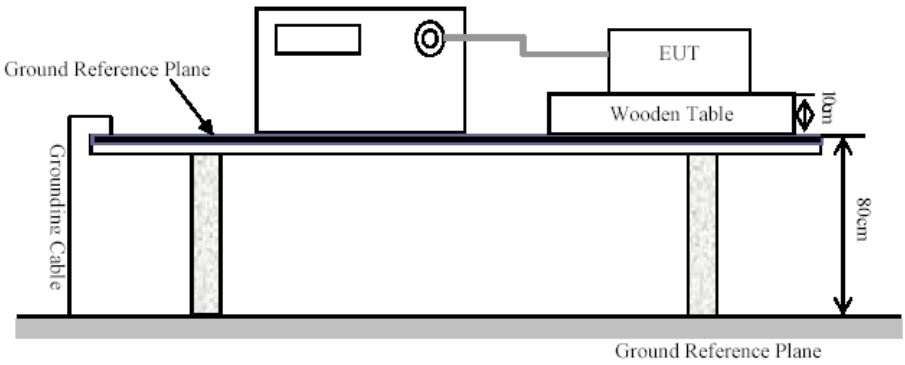
EN 61547 §5.8-VOLTAGE DIPS AND INTERRUPTIONS (IEC 61000-4-11)

Test Equipment

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
EM Test	EMS Combination Tester	UCS 500 N5	V0939105172	2015-12-15	2016-12-14
EM Test	AC Source	MV2616	V0939105173	2015-12-15	2016-12-14
EM Test	Auto test Software	Iec Control	V5.0.3.0	NCR	NCR

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test setup



Test Standard

EN 61547:2009 (IEC 61000-4-11:2004)

Test Levels and Performance Criterion

Level	Voltage dip and short interruptions %UT	Duration (in period)	Performance criterion
1	70	10	C
2	0	0.5	B

Test Procedure

1) The interruption is introduced at selected phase angles with specified duration.
2) Record any degradation of performance.

Test Data and Setup Photo

Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

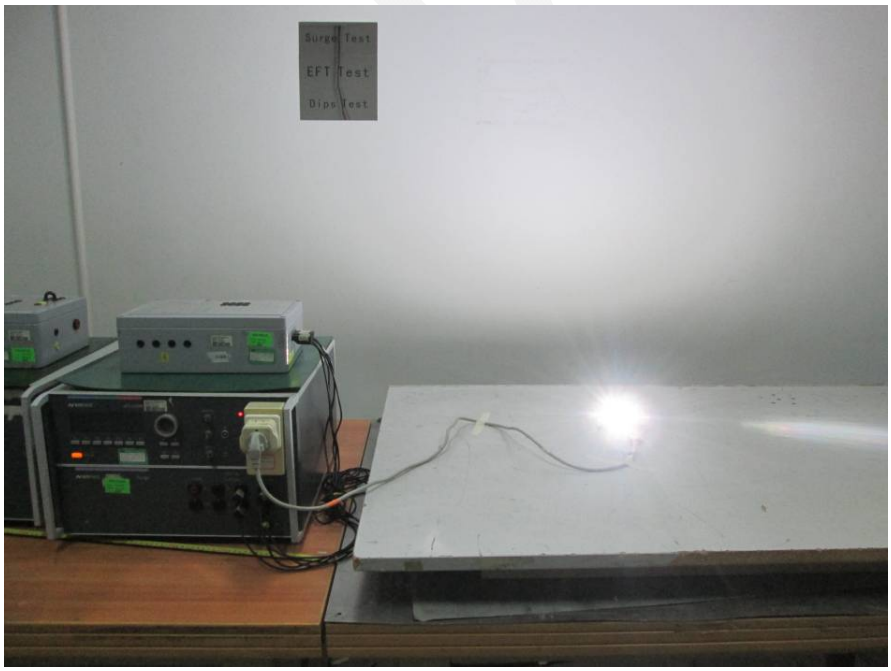
The testing was performed by Tracy Hu on 2016-09-13.

Test Mode: Lighting

Voltage Tips/Interruptions Test

Level	Voltage dip and short interruptions %UT	Number of periods	Phase Angle	N	Pass	Fail
1	0	0.5	0/180	3	B	/
2	70	10	0/180	3	B	/

Note：B represent it will come back after the light flash for a while.



Test Setup Photo

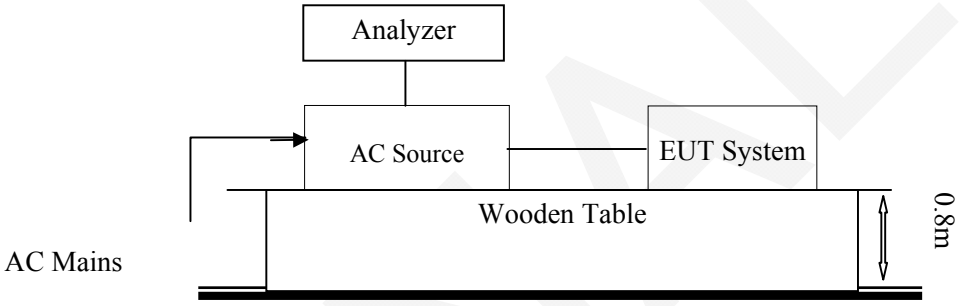
EN 61000-3-2 – HARMONIC CURRENT EMISSIONS

Test Equipment

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
EM Test	Harmonic/Flicker Analyzer	DPA 500N	V0939105176	2015-12-15	2016-12-14
EM Test	AC Source	ACS500	303276	2015-12-15	2016-12-14

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test System Setup



Test Standard

EN 61000-3-2:2014

Test product class:

Class A: - Balanced three-phase equipment
- Household appliances excluding equipment identified as class D
- Tools excluding portable tools
- Dimmers for incandescent lamps
- Audio equipment

Class B: - Portable tools
- Arc welding equipment, which is not professional equipment

Class C: - Lighting equipment

Class D: Equipment having a specified power less than or equal to 600w, of the following type:
- Personal computer and personal computer monitors
- Television receivers

Application of limits:

The average values for the individual harmonic currents, taken over the entire test observation period shall be less than or equal to the applicable limits. For each harmonic order, all 1,5 s smoothed r.m.s. harmonic current values, shall be either:
a) less than or equal to 150 % of the applicable limits, or

b) Less than or equal to 200 % of the applicable limits under the following conditions, which apply all together:

1) the EUT belongs to Class A for harmonics;
2) the excursion beyond 150 % of the applicable limits lasts less than 10 % of the test observation period or in total 10 min (within the test observation period), whichever is smaller, and
3) the average value of the harmonic current, taken over the entire test observation period, is less than 90 % of the applicable limits.

Harmonic currents less than 0.6 % of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

For the 21st and higher odd order harmonics, the average value obtained for each individual odd harmonic over the full observation period, calculated from the 1,5 s smoothed r.m.s. values , may exceed the applicable limits by 50 % provided that the following conditions are met:

* the measured partial odd harmonic current does not exceed the partial odd harmonic current which can be calculated from the applicable limits;
* all 1,5 s smoothed r.m.s. individual harmonic current values shall be less than or equal to 150 % of the applicable limits.

Test Data and Setup Photo

Environmental Conditions

Temperature:	25°C
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

Test Mode: Lighting

Date of test:	8:41 13 Sep 2016
Measurement file name:	hongli.rsd
Tester:	Tracy Hu
Standard used:	EN/IEC 61000-3-2 Ed.3 Quasi-stationary Equipment class C
Observation time:	600s
Windows width:	10 periods - (EN/IEC 61000-4-7 Edition 2002 + A1:2008)
Customer:	Hong Li Zhihui Group Co., Ltd.
E. U. T.:	High Power AC LED Module
Model:	HL-LE004D46W-30B2C86(Ra2)
Test Mode:	Lighting
Measurement smoothed data	Fund. Current: 0.128 A Power Factor : 0.991

Average harmonic current results				
Hn	**Ieff [A]**	**Ieff [%]**	**Limit [%]**	**Result**
1	122.242E-3	95.664		
2	1.011E-3	0.791	2.00	PASS
3	10.407E-3	8.144	29.73	PASS
4	720.571E-6	0.564		PASS
5	9.021E-3	7.060	10.00	PASS
6	671.840E-6	0.526		PASS
7	7.584E-3	5.935	7.00	PASS
8	662.169E-6	0.518		PASS
9	3.338E-3	2.612	5.00	PASS
10	655.316E-6	0.513		PASS
11	1.122E-3	0.878	3.00	PASS
12	575.579E-6	0.450		PASS
13	1.267E-3	0.992	3.00	PASS
14	593.864E-6	0.465		PASS
15	1.312E-3	1.027	3.00	PASS
16	630.246E-6	0.493		PASS
17	1.264E-3	0.989	3.00	PASS
18	575.072E-6	0.450		PASS
19	2.386E-3	1.867	3.00	PASS
20	556.441E-6	0.435		PASS
21	2.495E-3	1.953	4.50	PASS
22	558.104E-6	0.437		PASS
23	2.018E-3	1.579	4.50	PASS
24	539.422E-6	0.422		PASS
25	1.009E-3	0.790	4.50	PASS
26	546.013E-6	0.427		PASS
27	1.881E-3	1.472	4.50	PASS
28	543.650E-6	0.425		PASS
29	3.462E-3	2.709	4.50	PASS
30	540.852E-6	0.423		PASS
31	2.704E-3	2.116	4.50	PASS
32	551.713E-6	0.432		PASS
33	876.075E-6	0.686	4.50	PASS
34	542.698E-6	0.425		PASS
35	837.862E-6	0.656	4.50	PASS
36	550.079E-6	0.430		PASS
37	959.769E-6	0.751	4.50	PASS
38	562.851E-6	0.440		PASS
39	953.181E-6	0.746	4.50	PASS
40	557.006E-6	0.436		PASS

Maximum harmonic current results				
Hn	**Ieff [A]**	**Ieff [%]**	**Limit [%]**	**Result**
1	127.783E-3	100.000		PASS
2	1.728E-3	1.352	3.00	PASS
3	14.484E-3	11.335	44.59	PASS
4	1.216E-3	0.951		PASS
5	11.008E-3	8.615	15.00	PASS
6	1.172E-3	0.917		PASS
7	9.220E-3	7.215	10.50	PASS
8	979.243E-6	0.766		PASS
9	4.513E-3	3.532	7.50	PASS
10	990.066E-6	0.775		PASS
11	1.912E-3	1.496	4.50	PASS
12	820.122E-6	0.642		PASS
13	2.338E-3	1.830	4.50	PASS
14	889.222E-6	0.696		PASS
15	2.635E-3	2.062	4.50	PASS
16	1.001E-3	0.783		PASS
17	2.522E-3	1.974	4.50	PASS
18	837.165E-6	0.655		PASS
19	2.929E-3	2.292	4.50	PASS
20	825.744E-6	0.646		PASS
21	2.934E-3	2.296	4.50	PASS
22	859.237E-6	0.672		PASS
23	2.920E-3	2.285	4.50	PASS
24	791.290E-6	0.619		PASS
25	1.811E-3	1.417	4.50	PASS
26	798.628E-6	0.625		PASS
27	2.912E-3	2.279	4.50	PASS
28	792.386E-6	0.620		PASS
29	3.892E-3	3.046	4.50	PASS
30	792.794E-6	0.620		PASS
31	3.193E-3	2.499	4.50	PASS
32	784.763E-6	0.614		PASS
33	1.238E-3	0.969	4.50	PASS
34	842.671E-6	0.659		PASS
35	1.257E-3	0.984	4.50	PASS
36	804.368E-6	0.629		PASS
37	1.272E-3	0.996	4.50	PASS
38	789.933E-6	0.618		PASS
39	1.410E-3	1.103	4.50	PASS
40	823.022E-6	0.644		PASS

Maximum harmonic voltage results				
Hn	**Ieff [A]**	**Ieff [%]**	**Limit [%]**	**Result**
1	233.08	101.338		
2	49.98E-3	0.022	0.2	PASS
3	89.25E-3	0.039	0.9	PASS
4	16.84E-3	0.007	0.2	PASS
5	72.22E-3	0.031	0.4	PASS
6	20.13E-3	0.009	0.2	PASS
7	36.43E-3	0.016	0.3	PASS
8	13.28E-3	0.006	0.2	PASS
9	39.96E-3	0.017	0.2	PASS
10	15.42E-3	0.007	0.2	PASS
11	32.01E-3	0.014	0.1	PASS
12	14.07E-3	0.006	0.1	PASS
13	32.82E-3	0.014	0.1	PASS
14	15.36E-3	0.007	0.1	PASS
15	44.08E-3	0.019	0.1	PASS
16	13.83E-3	0.006	0.1	PASS
17	42.35E-3	0.018	0.1	PASS
18	14.54E-3	0.006	0.1	PASS
19	38.42E-3	0.017	0.1	PASS
20	14.60E-3	0.006	0.1	PASS
21	39.55E-3	0.017	0.1	PASS
22	14.21E-3	0.006	0.1	PASS
23	35.78E-3	0.016	0.1	PASS
24	12.95E-3	0.006	0.1	PASS
25	40.59E-3	0.018	0.1	PASS
26	16.26E-3	0.007	0.1	PASS
27	47.65E-3	0.021	0.1	PASS
28	12.80E-3	0.006	0.1	PASS
29	44.25E-3	0.019	0.1	PASS
30	14.85E-3	0.006	0.1	PASS
31	30.77E-3	0.013	0.1	PASS
32	15.32E-3	0.007	0.1	PASS
33	30.40E-3	0.013	0.1	PASS
34	13.61E-3	0.006	0.1	PASS
35	36.05E-3	0.016	0.1	PASS
36	12.03E-3	0.005	0.1	PASS
37	38.75E-3	0.017	0.1	PASS
38	12.33E-3	0.005	0.1	PASS
39	43.17E-3	0.019	0.1	PASS
40	11.90E-3	0.005	0.1	PASS

Test Setup Photo

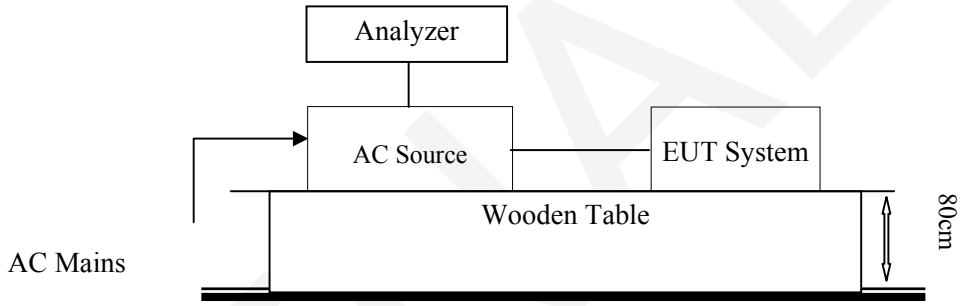
EN 61000-3-3- VOLTAGE FLUCTUATION AND FLICKER

Test Equipment

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
EM Test	Harmonic/Flicker Analyzer	DPA 500N	V0939105176	2015-12-15	2016-12-14
EM Test	AC Source	ACS500	303276	2015-12-15	2016-12-14
EM Test	Auto test Software	Dpa Control	V5.1.3.0	NCR	NCR

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test System Setup



Test Standard

EN 61000-3-3:2013

Flicker Test Limits：

The limits shall be applicable to voltage fluctuations and flicker at the supply terminals of the equipment under test, measured or calculated according to clause 4 under test conditions described in clause 6 and annex A. Tests made to prove compliance with the limits are considered to be type tests.
The following limits apply:
– the value of Pst shall not be greater than 1,0;
– the value of Plt shall not be greater than 0,65;
– the value of d(t) during a voltage change shall not exceed 3,3 % for more than 500 ms;
– the relative steady-state voltage change, dc, shall not exceed 3,3 %;
– the maximum relative voltage change dmax, shall not exceed
a) 4 % without additional conditions;
b) 6 % for equipment which is:

– switched manually, or
– switched automatically more frequently than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds), or manual restart, after a power supply interruption.
NOTE: The cycling frequency will be further limited by the Pst and Plt limit. For example: a dmax of 6 % producing a rectangular voltage change characteristic twice per hour will give a Plt of about 0,65.

c) 7 % for equipment which is
– attended whilst in use (for example: hair dryers, vacuum cleaners, kitchen equipment such as mixers, garden equipment such as lawn mowers, portable tools such as electric drills), or
– switched on automatically, or is intended to be switched on manually, no more than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds) or manual restart, after a power supply interruption.

In the case of equipment having several separately controlled circuits in accordance with 6.6, limits b) and c) shall apply only if there is delayed or manual restart after a power supply interruption; for all equipment with automatic switching which is energized immediately on restoration of supply after a power supply interruption, limits a) shall apply; for all equipment with manual switching, limits b) or c) shall apply depending on the rate of switching. Pst and Plt requirements shall not be applied to voltage changes caused by manual switching. The limits shall not be applied to voltage changes associated with emergency switching or emergency interruptions.

Test Data and Setup Photo

Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

Date of test:	14:43 12.Sep 2016
Tester:	Tracy Hu
Standard used:	EN/IEC 61000-3-3 Flicker
Short time (Pst):	10 min
Observation time:	120 min (12 Flicker measurements)
Flicker meter:	230V / 50Hz
Flicker Impedance:	Zref (IEC 60725)
Customer:	Hong Li Zhihui Group Co., Ltd.
E. U. T.:	High Power AC LED Module
Model:	HL-LE004D46W-30B2C86(Ra2)
Test Mode:	lighting

Maximum Flicker results

	EUT values	Limit	Result
Plt	0.028	1.00	Pass
Pst	0.028	0.65	Pass
dc [%]	0.016	3.30	Pass
dmax [%]	0.283	4.00	Pass
dt [s]	0.000	0.50	Pass

Test Setup Photo

EXHIBIT A - PRODUCT LABELING

Label Specification

CE

Specifications: The marking set out above must be affixed to the apparatus or to its data plate and have a minimum height of 5 mm. The elements should be easily readable and indelible. They may be placed anywhere on the apparatus case or in its battery compartment. No tool should be needed to view the marking.

Proposed Label Location on EUT

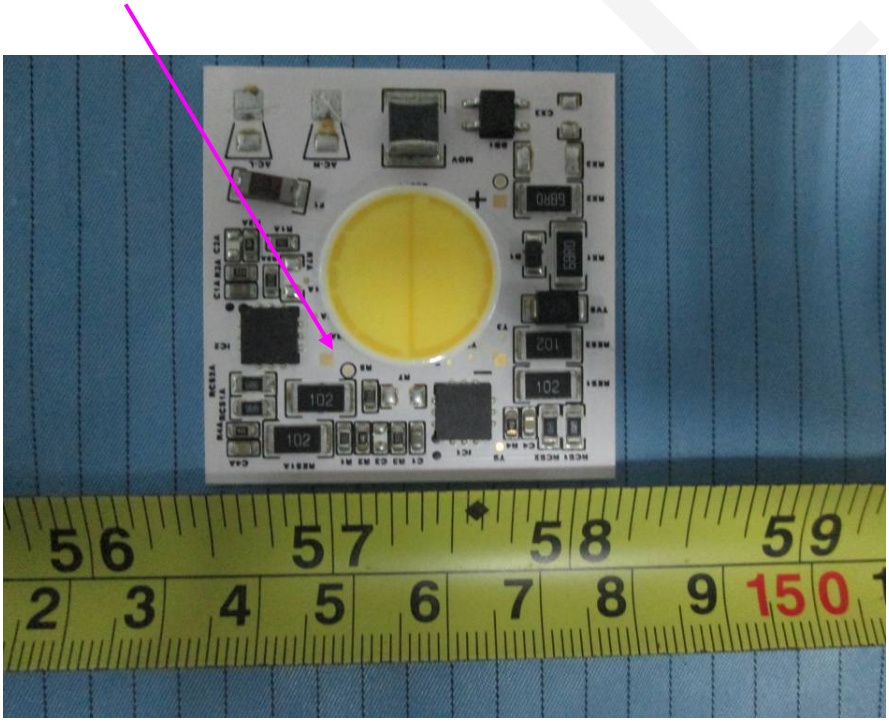
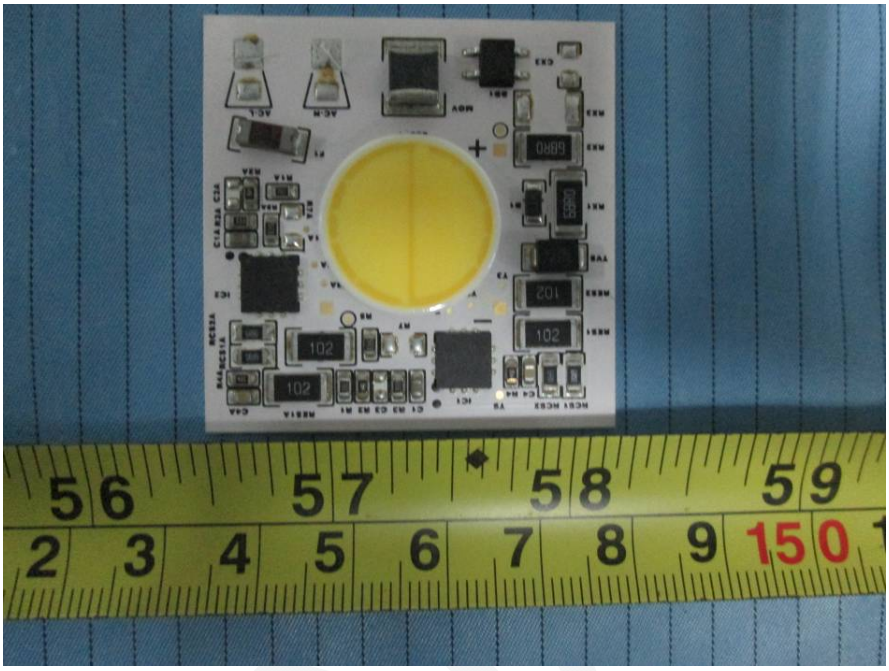


EXHIBIT B - EUT PHOTOGRAPHS

EUT – Top View



EUT – Bottom View

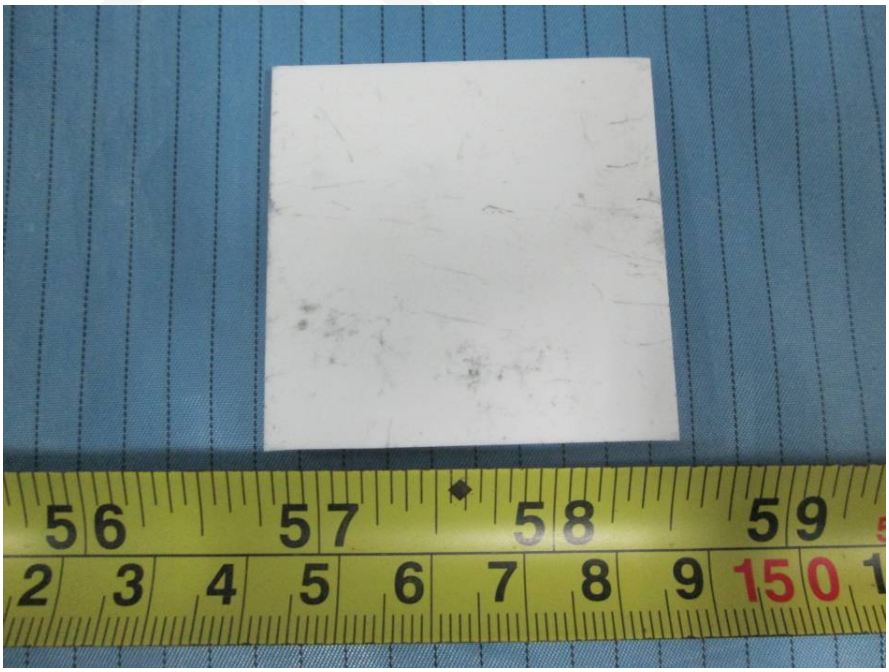
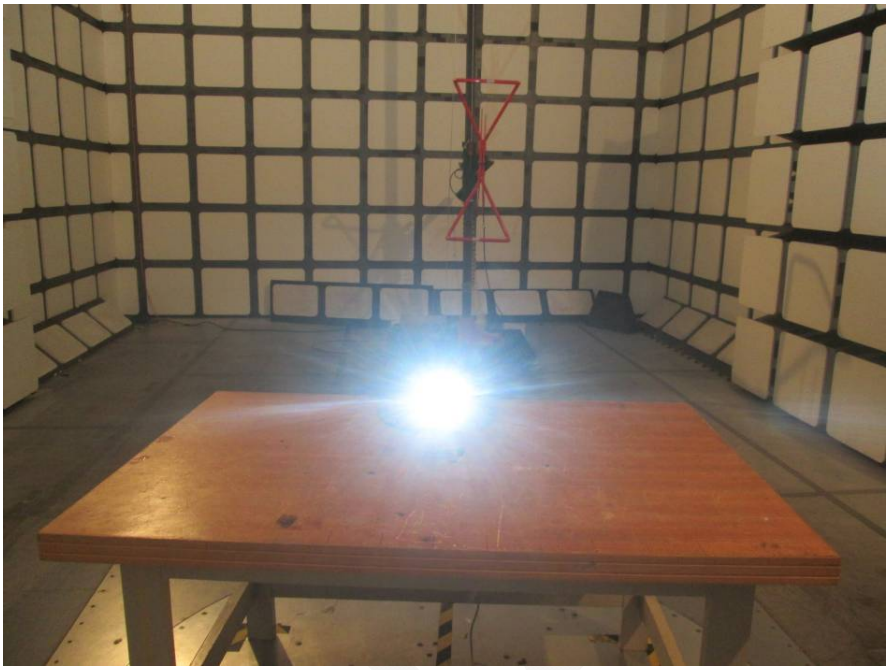


EXHIBIT C - TEST SETUP PHOTOGRAPHS

Conducted Disturbance Front View

Conducted Disturbance Side View

Radiated Disturbance - Front (Below 1G) View



Radiated Disturbance - Rear (Below 1G) View

******* END OF REPORT *******