

FCC TEST REPORT

FCC ID : VL4-MAX-2X36W

Applicant : **DONGGUAN HOPESTAR ELECTRONIC CO., LTD.**
SANJIANG INDUSTRIAL PARK HENGLI TOWN DONGGUAN
GUANGDONG 523000 CHINA

Equipment Under Test (EUT) :

Product description : FLUORESCENT ELECTRONIC BALLAST

Model No. : LEB-204~213, LEB-214~218, LEB-219~236

Standards : FCC Part 18

Date of Test : Sep.3, 2007

Test Engineer : Tiger Su

Reviewed By : 

PERPARED BY:

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3 Test Summary

Test	Test Requirement	Test Method	Class / Severity	Result
Radiated Emission (30MHz to 1GHz)	FCC PART 18: 2003	ANSI C63.4:2003	Class B	N/A
Conducted Emission (150KHz to 30MHz)	FCC PART 18: 2003	ANSI C63.4:2003	Class B	PASS

4 General Information

4.1 Client Information

Applicant: **DONGGUAN HOPESTAR ELECTRONIC CO., LTD.**
Address of Applicant: SANJIANG INDUSTRIAL PARK HENGLI TOWN
DONGGUAN, GUANGDONG 523000 CHINA

4.2 General Description of E.U.T.

Product description: FLUORESCENT ELECTRONIC BALLAST
Model No.: LEB-204~213, LEB-214~218, LEB-219~236

4.3 Details of E.U.T.

Power Supply: 120VAC / 60Hz

4.4 Description of Support Units

The EUT has been tested as an independent unit.

4.5 Standards Applicable for Testing

The customer requested FCC tests for a FLUORESCENT ELECTRONIC BALLAST. The standards used were FCC Part18.

4.6 Test Methodology

All measurements contained in this report are conducted with FCC Measurement Procedure MP-5, technical requirements for Methods of Measurement of Radio-Noise Emission from ISM Equipment.

4.7 Test Facility

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

- **FCC – Registration No.: 759397**
Solid Industrial (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 759397, December 28, 2006.

4.8 Test Location

All Emissions tests were performed at:-

Solid Industrial (Shenzhen) Co., Ltd. at 333 Bulong Highway Buji Longgang, Shenzhen, Guangdong, China.

5 Equipment Used during Test

	Conducted Emission Test				
Item	Test Equipment	Manufacturer	Model No.	Series No.	Last Cal.
1	EMI Test Receiver	R&S	ESS	100038	2007-8
2	LISN	Kyoritsu	KNW-403D	N/A	2007-8
3	Pulse Limiter	R&S	ESHSZ2	100044	2007-8

6 Conducted Emission Test

Product Name:	FLUORESCENT ELECTRONIC BALLAST
Test Requirement:	FCC Part 18
Test Method:	Based on FCC Part 18
Test Date:	Sep.3, 2007
Frequency Range:	150kHz to 30MHz
Class:	Class B
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth) Quasi-Peak & Average if maximised peak within 6dB of Average Limit

6.1 Test Equipment

Please refer to Section 5 this report.

6.2 Test Procedure

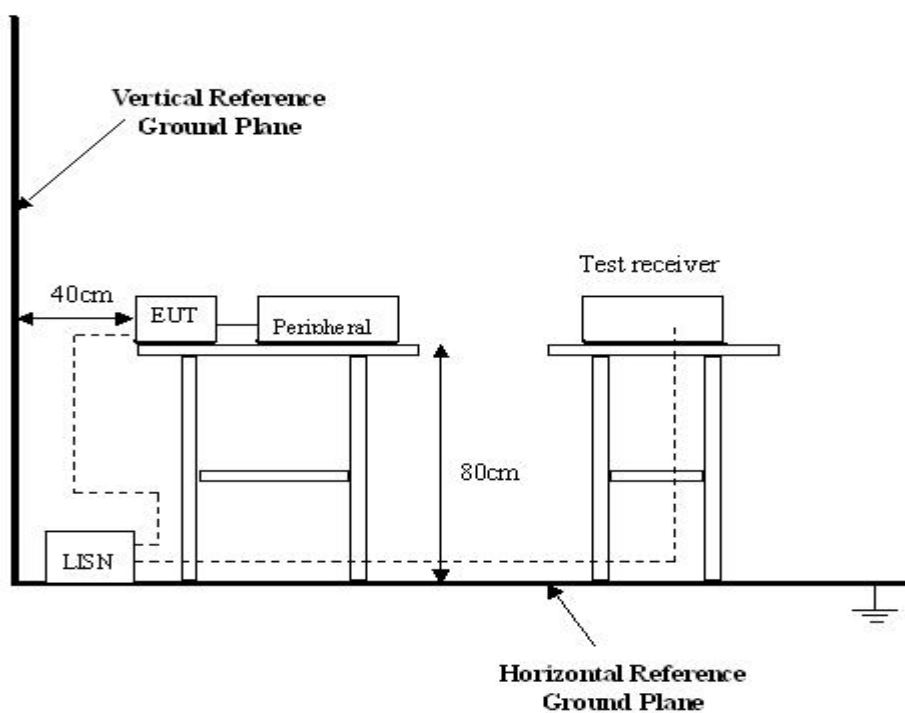
1. During the conducted emission test, the power cord of the EUT is connected to the auxiliary outlet of the LISN.
2. The EUT was tested according to FCC MP-5. The frequency spectrum from 150kHz to 30MHz was investigated.
3. The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

6.3 Conducted Test Setup

The conducted emission tests were performed using the setup accordance with the FCC MP-5 measurement procedure.

The EUT is tested independently.

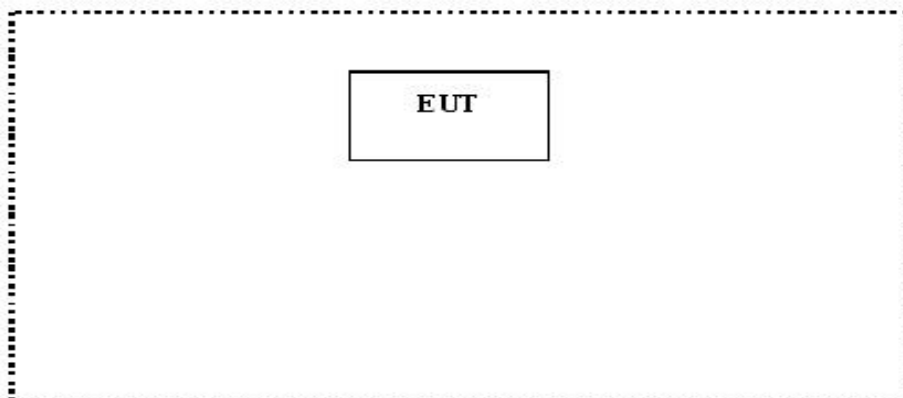
The power supply used by the EUT is connected to a 120VAC / 60Hz power source.



6.4 EUT Operating Condition

Operating condition is according to FCC MP-5.

- A. Setup the EUT and simulators as shown on follow.
- B. Enable RF signal and confirm EUT active.
- C. Modulate output capacity of EUT up to specification.



6.5 Conducted Emission Limits

Frequency of Emission (MHz)	Conducted Limit (dBuV)- Quasi-peak
0.15— 0.5	66-56
0.5 — 5.0	56
5.0 — 30	60

Note: In the above limits, the tighter limit applies at the band edges.

6.6 Spectrum Analyzer

The spectrum analyzer is configured during the conduction test is as follows:

Start Frequency..... 150 kHz
Stop Frequency 30 MHz
Sweep Speed..... Auto
IF Bandwidth 9 kHz
Video Bandwidth 100 kHz
Quasi-Peak Adaptor Bandwidth..... 9 kHz
Quasi-Peak Adaptor Mode..... Normal

6.7 Frequency Range Of Measurements

Frequency band in which device operates (MHz)	Range of frequency measurements	
	Lowest frequency	Highest frequency
Below 1.705	Lowest frequency generated in the device, but not lower than 9 kHz.	30MHz.
1.705 to 30	Lowest frequency generated in the device, but not lower than 9 kHz.	400MHz.
30 to 500	Lowest frequency generated in the device or 25MHz, whichever is lower.	Tenth harmonic or 1,000MHz, whichever is higher.
500 to 1,000	Lowest frequency generated in the device or 100MHz, whichever is lower.	Tenth harmonic.
Above 1,000	do	Tenth harmonic or highest detectable emission.

6.8 Conducted Emission Test Result

Test Item:	Conducted Emission Test
Test Voltage:	120VAC / 60Hz
Test Mode:	Normal
Temperature:	24 °C
Humidity:	52%RH
Test Result:	PASS

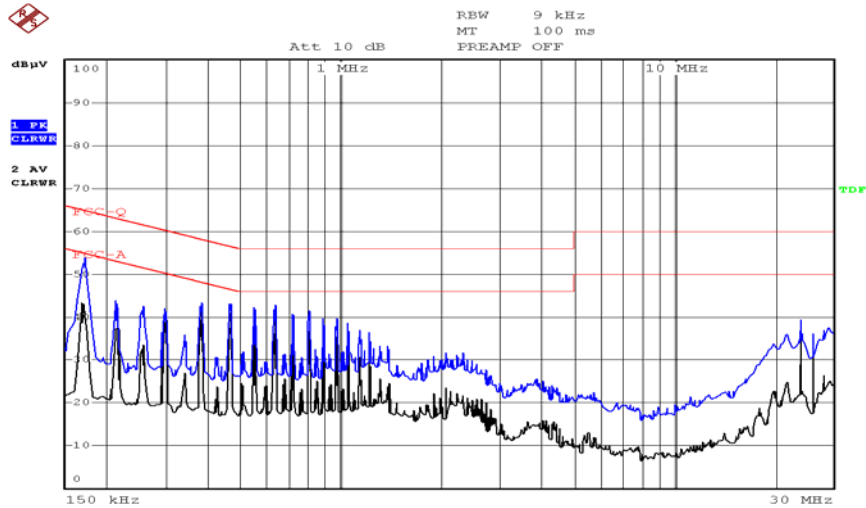
6.8.1 Measurement Data

An initial pre-scan was performed on the live and neutral lines.

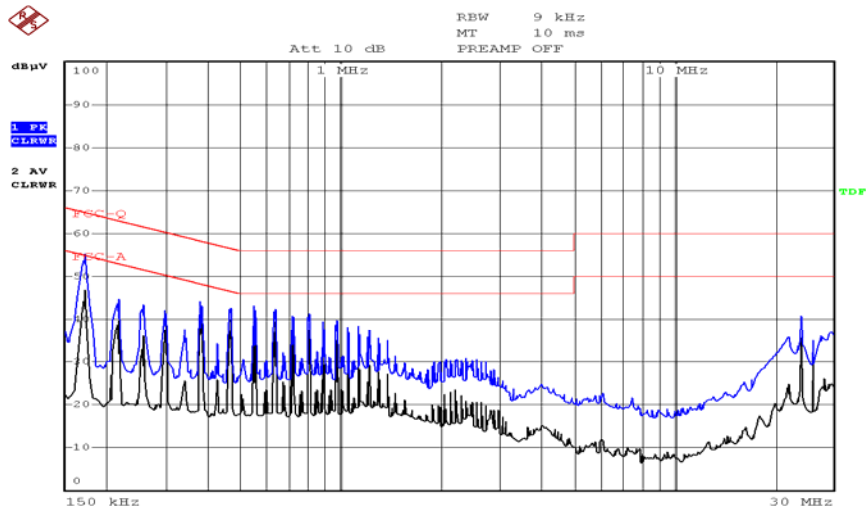
No further quasi-peak or average measurements were performed since no peak emissions were detected within 10dB line below the average limit.

Please refer to the following peak scan graph for reference.

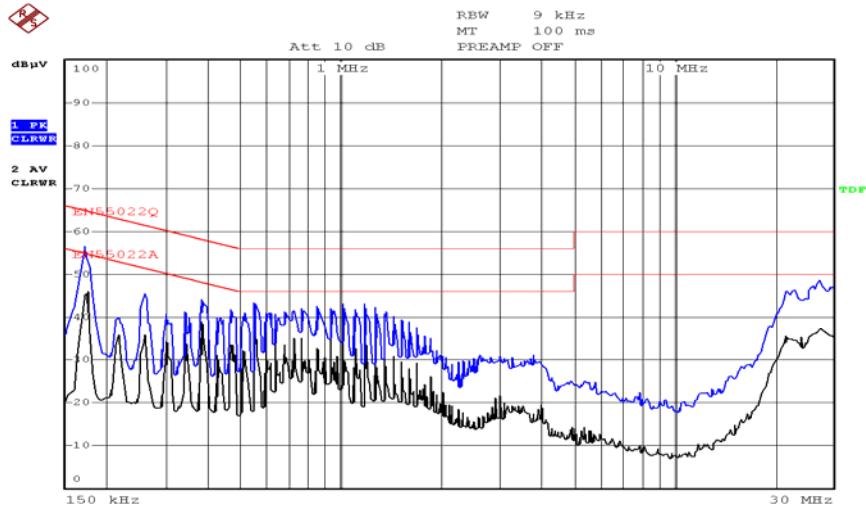
Live Line for LEB-204~213



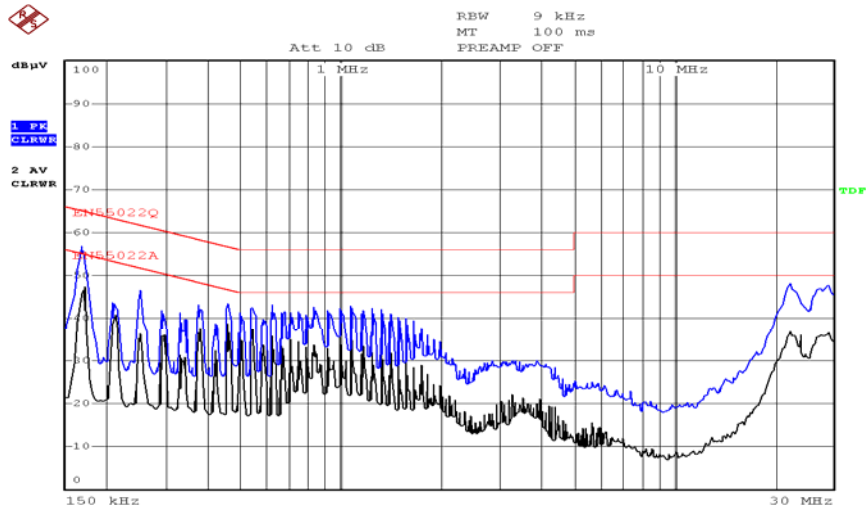
Neutral Line for LEB-204~213



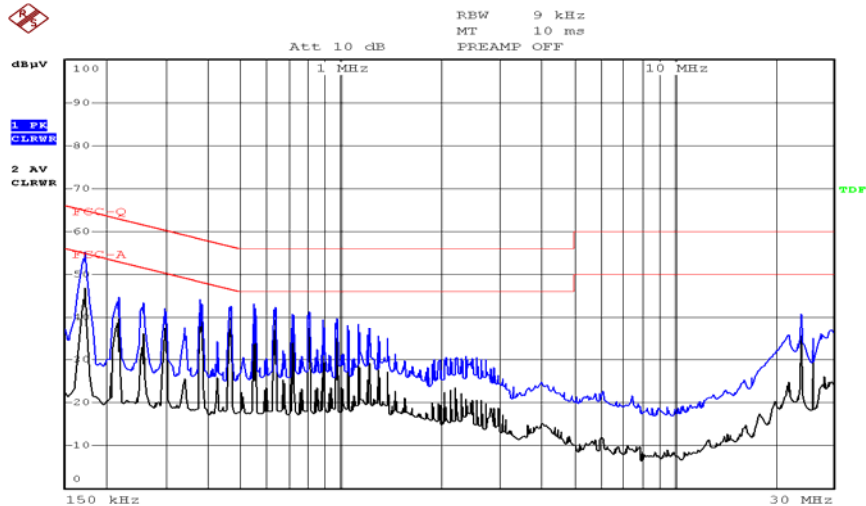
Live Line for LEB-214~218



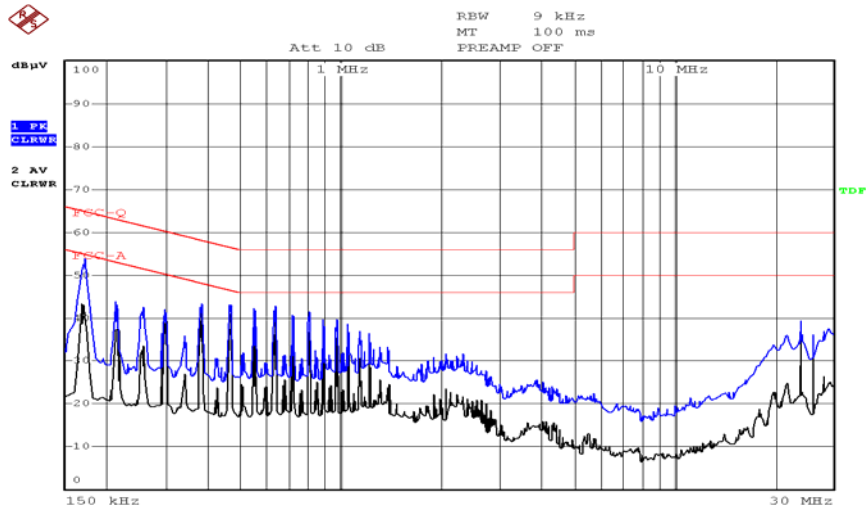
Neutral Line for LEB-214~218



Live Line for LEB-219~236



Neutral Line for LEB-219~236



Conducted Test Data Live Line for LEB-204~213

NO.	Frequency [MHz]	QP Level [dBuV]	AV Level [dBuV]	QP Limit [dBuV]	AV Limit [dBuV]	QP margin [dB]	AV margin [dB]
1	0.170	53.2	43.3	64.9	54.9	11.7	11.6
2	0.220	43.8	37.1	62.8	52.8	19.0	15.7
3	0.384	42.3	39.9	58.2	48.2	15.9	8.3
4	0.465	42.2	38.4	56.6	46.6	14.4	8.2
5	0.550	41.8	36.2	56.0	46.0	14.2	9.8

Conducted Test Data Neutral Line for LEB-204~213

NO.	Frequency [MHz]	QP Level [dBuV]	AV Level [dBuV]	QP Limit [dBuV]	AV Limit [dBuV]	QP margin [dB]	AV margin [dB]
1	0.165	55.0	46.7	65.2	55.2	10.2	8.5
2	0.220	44.7	38.2	62.8	52.8	18.1	14.6
3	0.372	43.1	37.9	58.5	48.5	15.4	10.6
4	0.550	44.0	36.2	56.0	46.0	12.0	9.8
5	0.621	42.9	37.1	56.0	46.0	13.1	8.9

Conducted Test Data Live Line for LEB-214~218

NO.	Frequency [MHz]	QP Level [dBuV]	AV Level [dBuV]	QP Limit [dBuV]	AV Limit [dBuV]	QP margin [dB]	AV margin [dB]
1	0.166	57.0	46.1	65.2	55.2	8.2	9.2
2	0.249	46.0	35.3	61.2	51.2	15.2	15.9
3	0.380	45.5	38.0	58.3	48.3	12.8	10.3
4	0.550	42.3	35.0	56.0	46.0	13.7	11.0

Conducted Test Data for Neutral Line LEB-214~218

NO.	Frequency [MHz]	QP Level [dBuV]	AV Level [dBuV]	QP Limit [dBuV]	AV Limit [dBuV]	QP margin [dB]	AV margin [dB]
1	0.165	56.2	48.0	65.2	55.2	9.0	7.2
2	0.144	46.2	36.2	66.3	56.3	20.1	20.1
3	0.450	43.0	38.1	56.9	46.9	13.9	8.8
4	0.627	42.5	37.2	56.0	46.0	13.5	8.8

Conducted Test Data Live Line for LEB-219~236

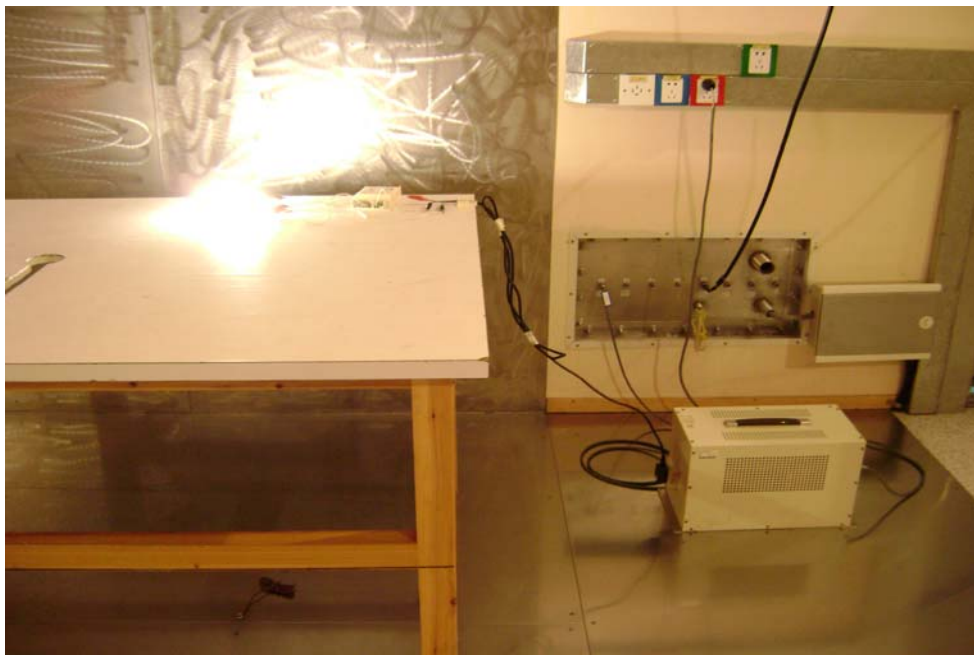
NO.	Frequency [MHz]	QP Level [dBuV]	AV Level [dBuV]	QP Limit [dBuV]	AV Limit [dBuV]	QP margin [dB]	AV margin [dB]
1	0.170	54.9	46.7	64.9	54.9	10.0	8.2
2	0.220	44.2	39.8	62.8	52.8	18.6	13.0
3	0.380	43.5	38.4	58.3	48.3	14.7	9.9
4	0.460	42.0	37.3	56.7	46.7	14.7	9.4

Conducted Test Data for Neutral Line LEB-219~236

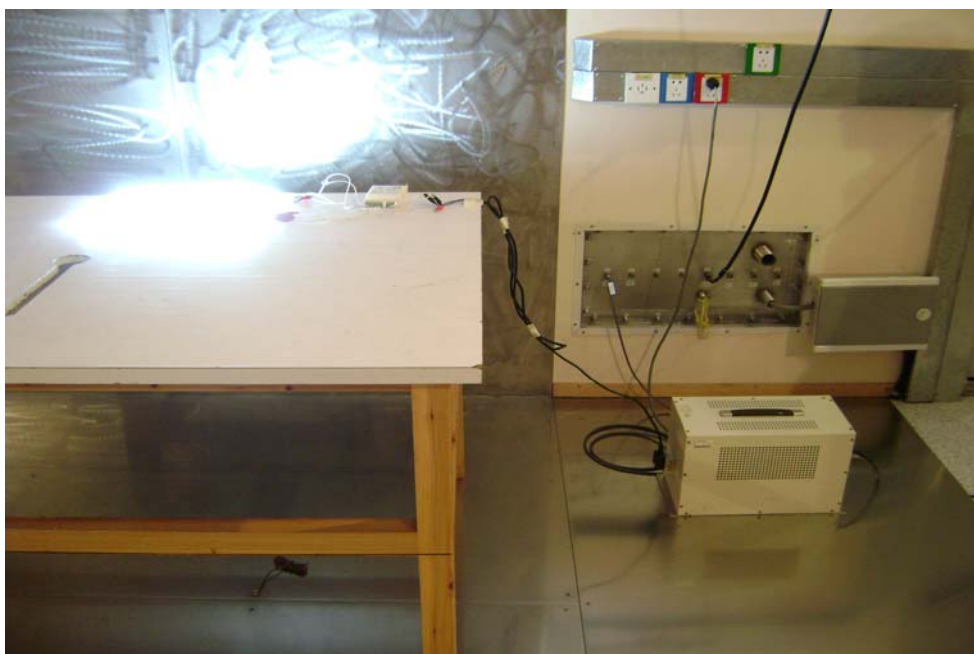
NO.	Frequency [MHz]	QP Level [dBuV]	AV Level [dBuV]	QP Limit [dBuV]	AV Limit [dBuV]	QP margin [dB]	AV margin [dB]
1	0.167	53.7	43.2	65.1	55.1	11.4	11.9
2	0.220	43.4	37.5	62.8	52.8	19.4	15.3
3	0.370	43.1	38.2	58.8	48.8	15.7	10.6
4	0.461	42.5	36.7	56.7	46.7	14.2	10.0

7 Photographs of Testing

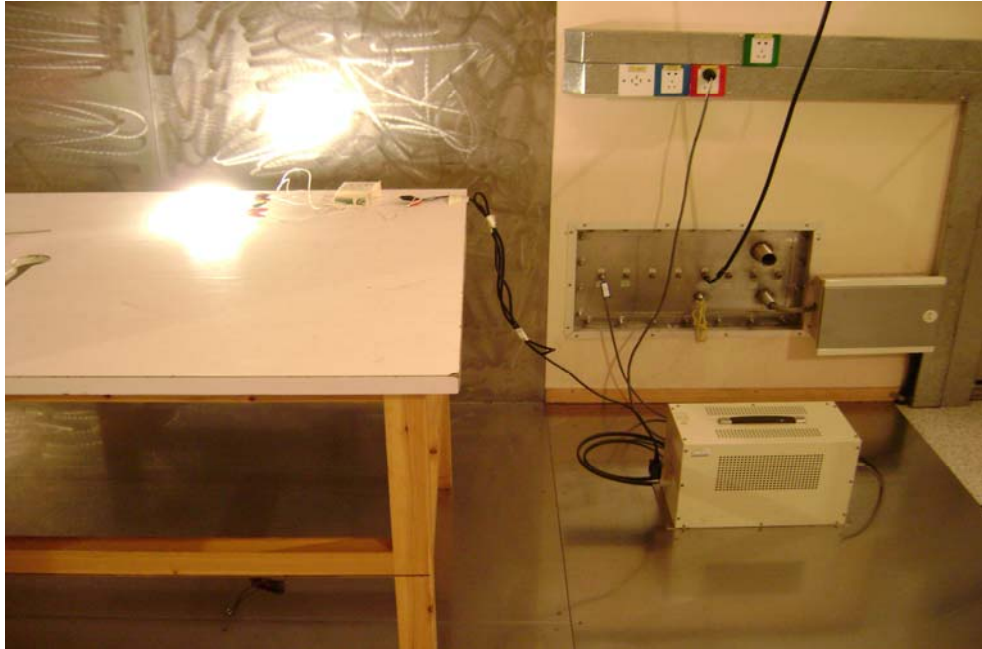
7.1 Conducted Emission Test View for LEB-204~213



7.2 Conducted Emission Test View for LEB-214~218

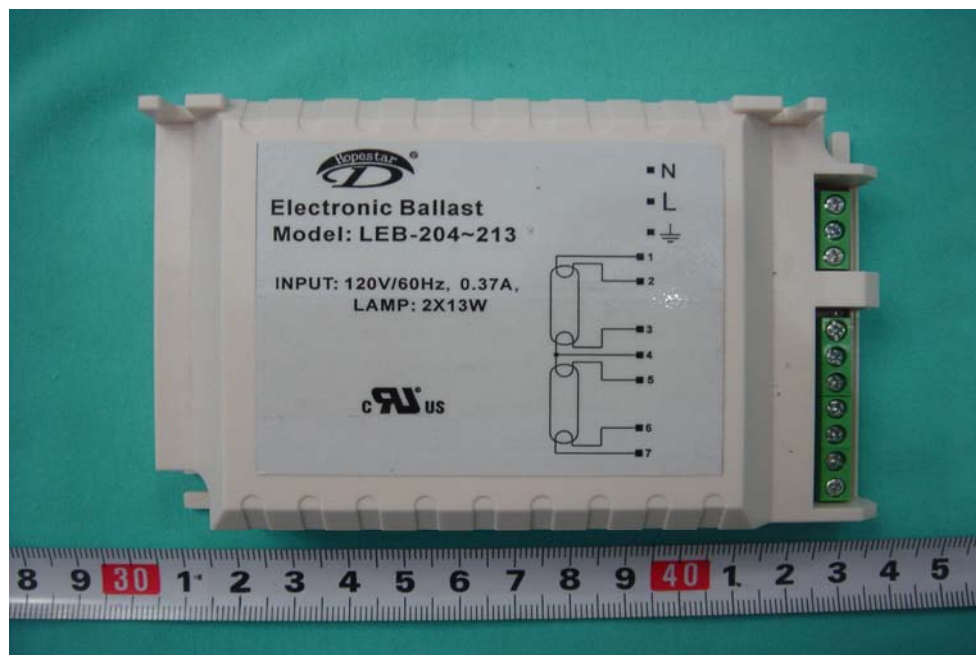


7.3 Conducted Emission Test View for LEB-219~236



8 Photographs-Constructional Details

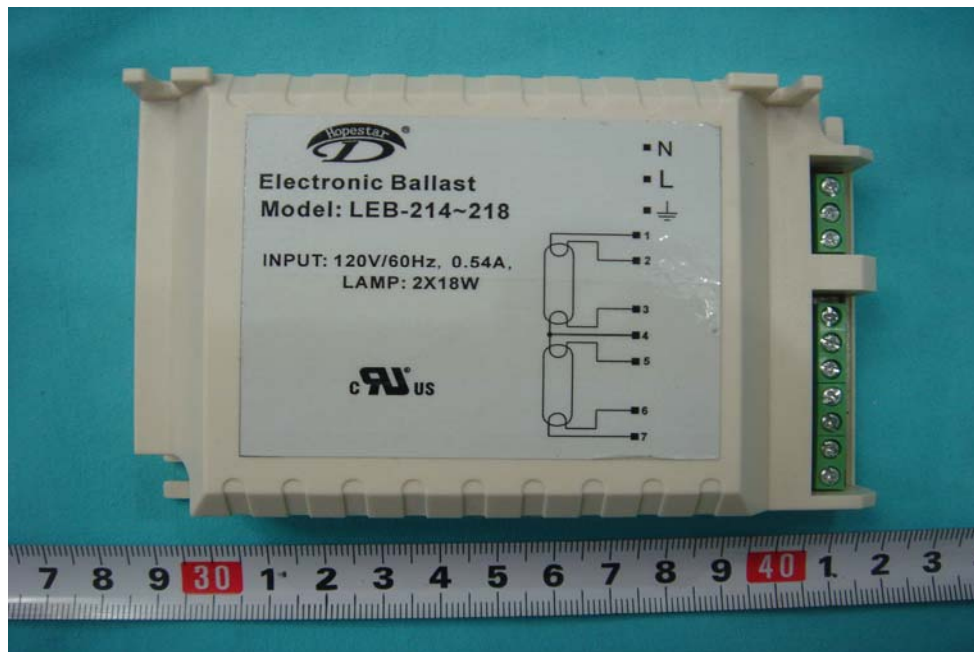
8.1 EUT-Front View for LEB-204~213



8.2 EUT-Back View for LEB-204~213



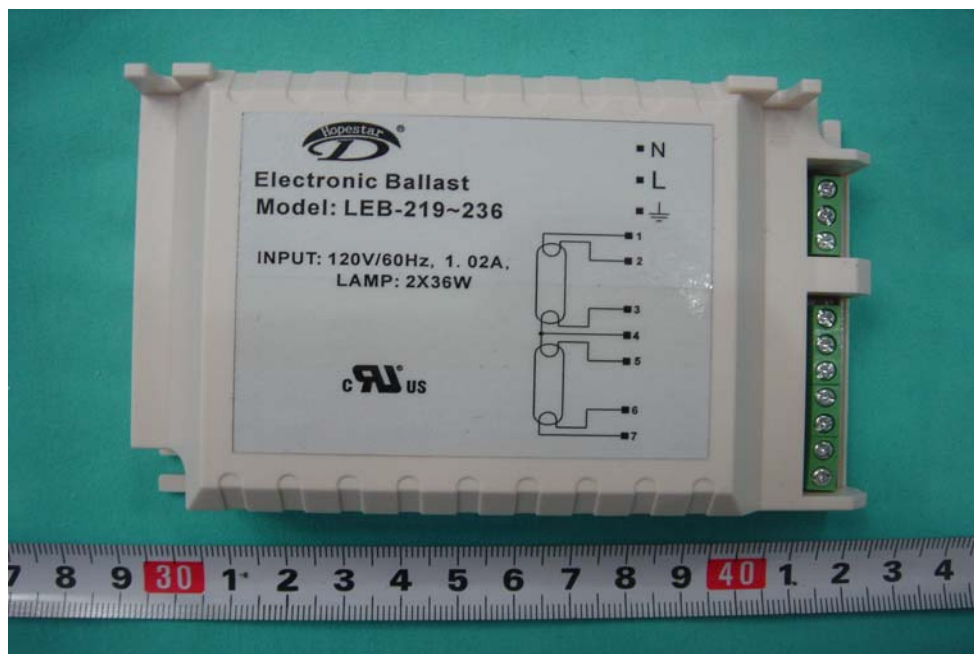
8.3 EUT-Front View for LEB-214~218



8.4 EUT-Back View for LEB-214~218



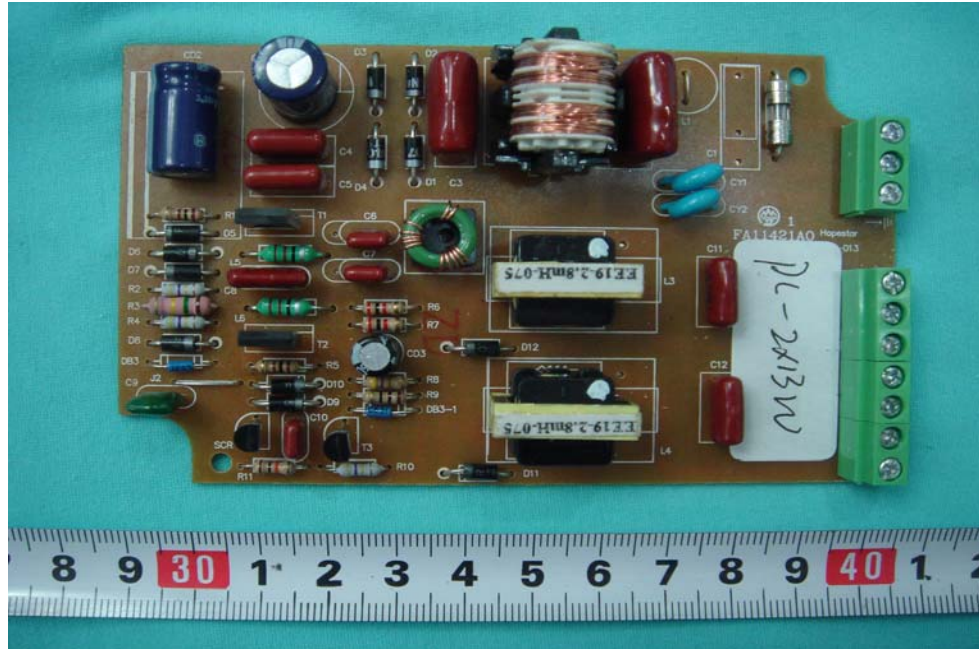
8.5 EUT-Front View for LEB-219~236



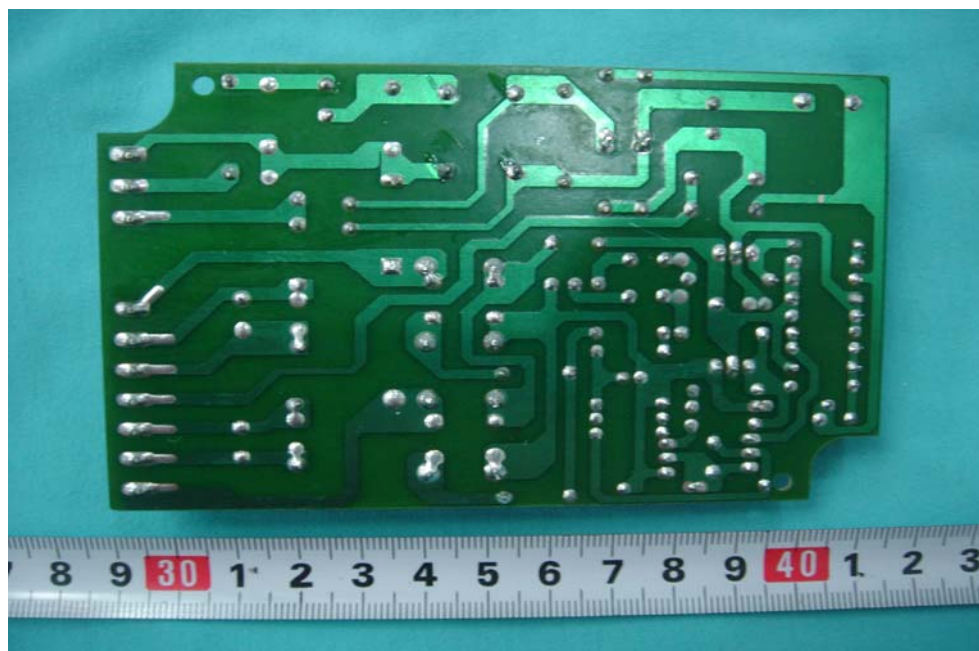
8.6 EUT-Back View for LEB-219~236



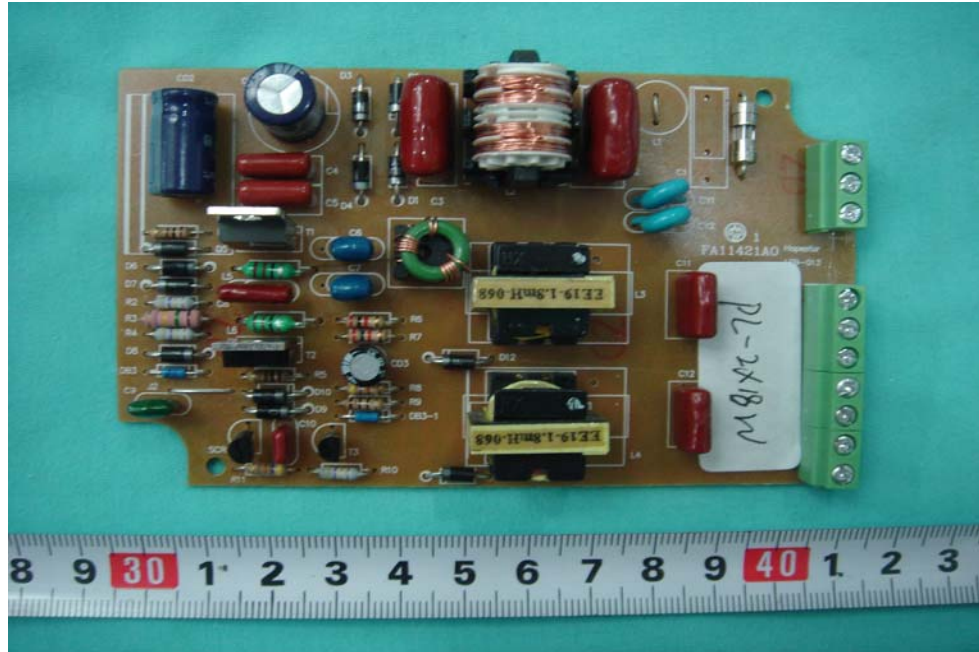
8.7 PCB-Front View for LEB-204~213



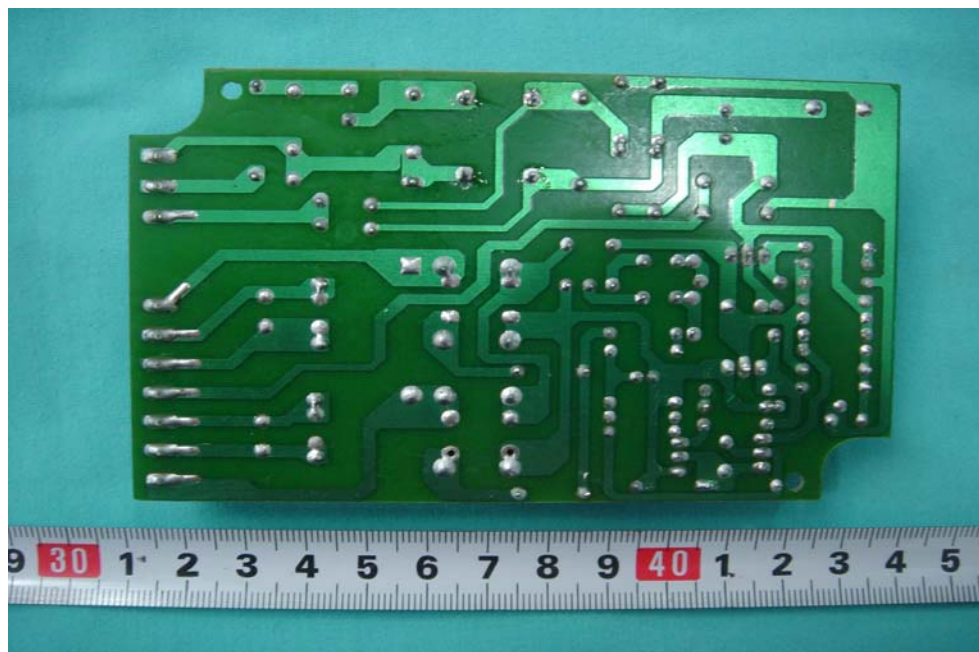
8.8 PCB-Back View for LEB-204~213



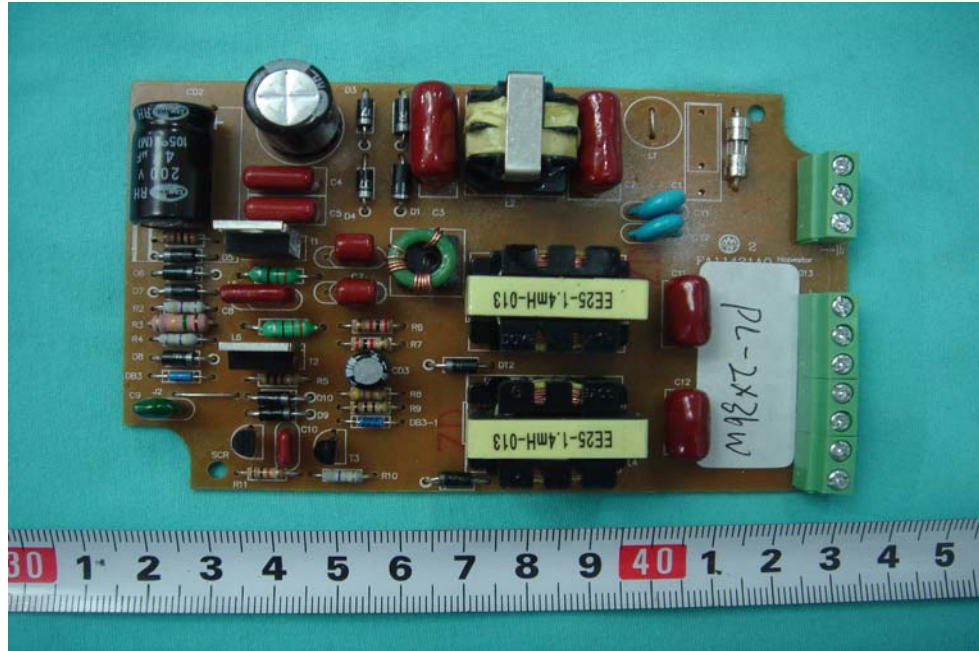
8.9 PCB-Front View for LEB-214~218



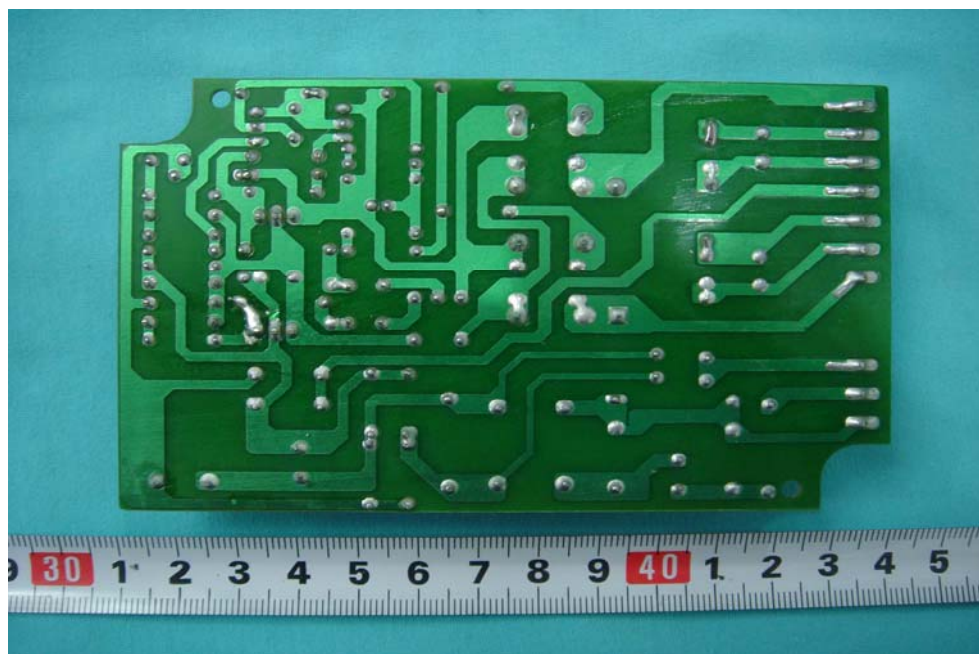
8.10 PCB-Back View for LEB-214~218



8.11 PCB-Front View for LEB-219~236



8.12 PCB-Back View for LEB-219~236



9 FCC ID Label

This device complies with Part 18 of the FCC Rules. Operation is subject to the following two conditions:(1)this device may not cause harmful interference,and (2) this device must accept any interference received, including interference that may cause undesired operation.

The Label must not be a stick-on paper. The Label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

Proposed Label Location on EUT
EUT Top View/ proposed FCC Mark Location

