

FCC TEST REPORT

FCC ID : P6CFSL0703

Applicant : **Foshan Electrical and Lighting Co., Ltd.**
15 North Fenjiang Road, Foshan, Guangdong, P.R.China

Equipment Under Test (EUT) :

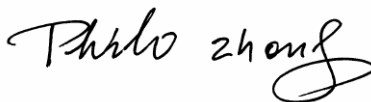
Product description : Energy Saving Lamp

Model No. : ELS-M24(ELS-M23), ELS-M22, ELS-M20, ELS-M18, ELS-M15

Standards : FCC Part18

Date of Test : March 14, 2007

Test Engineer : **Tiger Su**

Reviewed By : 

PERPARED BY:

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9 FCC ID LABEL31

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: **Foshan Electrical and Lighting Co., Ltd.**
Address of Applicant: North Fenjiang Road, Roshan, Guangdong, P.R.China

4.2 General Description of E.U.T.

Product description: Energy Saving Lamp
Model No.: ELS-M24(ELS-M23), ELS-M22, ELS-M20, ELS-M18,
ELS-M15

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 an Energy Saving Lamp. 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.: 97379**

Shenzhen Academy Of Metrology and Quality Inspection 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 97379, April 20, 2006.

4.8 Test Location

All Emissions tests were performed at:-

Bldg, of Metrology and Quality Inspection ,Longzhu Road ,Nanshan
District ,Shenzhen ,Guangdong ,China

5 Equipment Used during Test

	Conducted Emission Test					
Item	Test Equipment	Manufacturer	Model No.	Series No.	Specification	Last Cal.
1	EMI Test Receiver	Rohde&schwarz	ESCS30	100038	9 kHz to 2750 MHz	2007.11.05
2	Artificial Mains	Rohde&schwarz	ESH2-Z5	100028	9kHz-30 MHz, Continuous Current 4*25 A	2007.11.05
3	Pulse Limiter	Rohde&schwarz	ESHSZ2	100044		2007.11.05
4	EMI Test Software	Rohde&schwarz	ESK1	N/A	Version1.60	N/A
5	LISN	R&S	ENV216	N/A		2007.8.30

6 Conducted Emission Test

Product Name:	Energy Saving Lamp
Test Requirement:	FCC Part 18
Test Method:	Based on FCC Part 18
Test Date:	March 14, 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

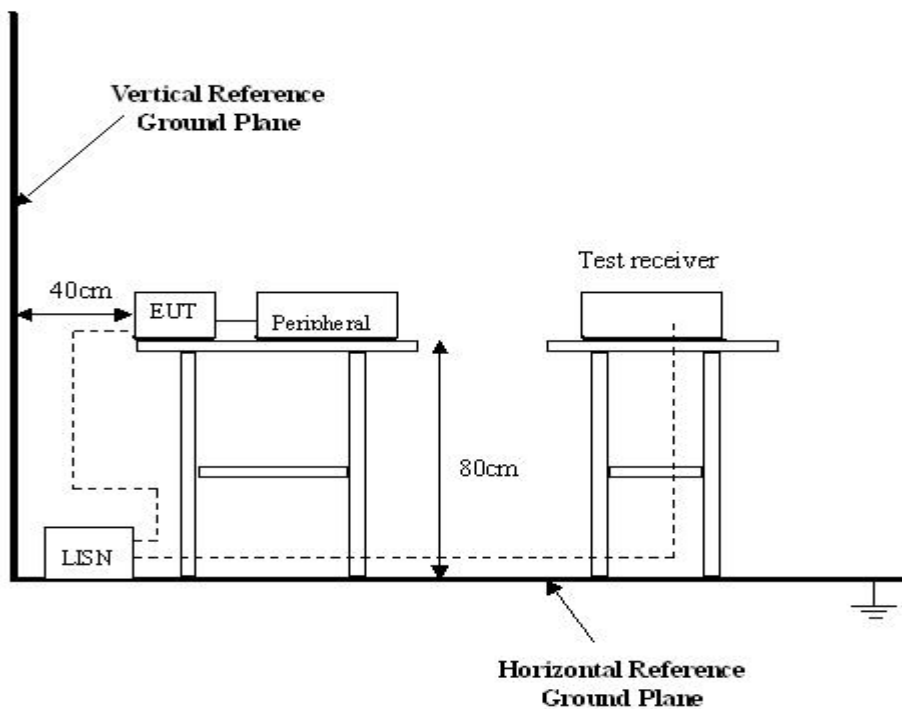
1. During the conducted emission test, the power cord of the EUT is connected to the auxiliary outlet of the LISN.
2. The EUT was tested according to FCC MP-5. The frequency spectrum from 150kHz to 30MHz was investigated.
3. The maximised peak emissions from the EUT was scanned and measured for both 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.

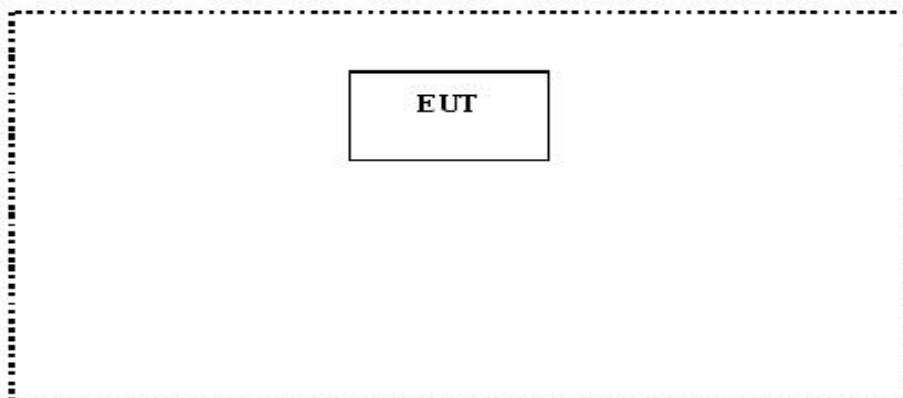
The power supply used by the EUT is connected to a 120VAC / 60Hz power source.



6.4 EUT Operating Condition

Operating condition is according to FCC MP-5.

- Setup the EUT and simulators as shown on follow.
- Enable RF signal and confirm EUT active.
- 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

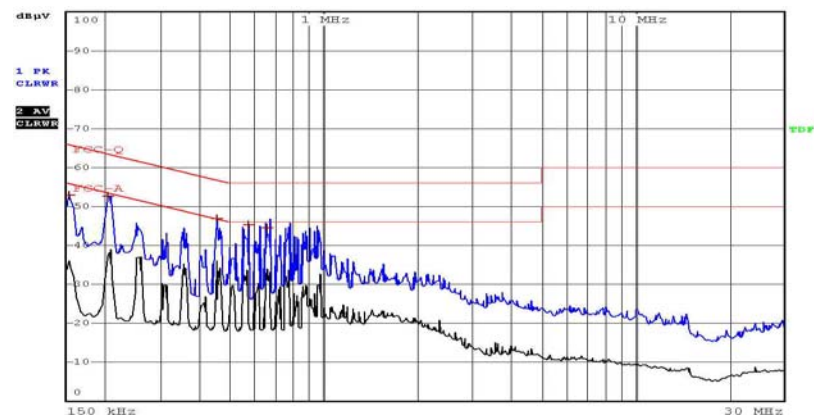
6.8.1 Measurement Data

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

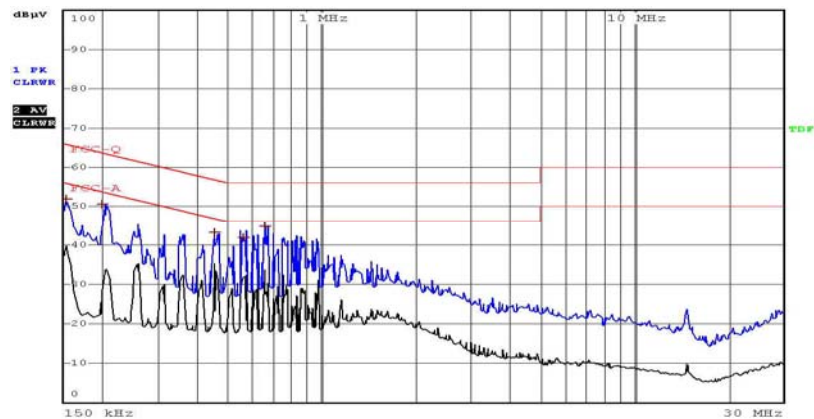
No further quasi-peak or average measurements were performed since no peak emissions were detected within 10dB line below the average limit.

Please refer to the following peak scan graph for reference.

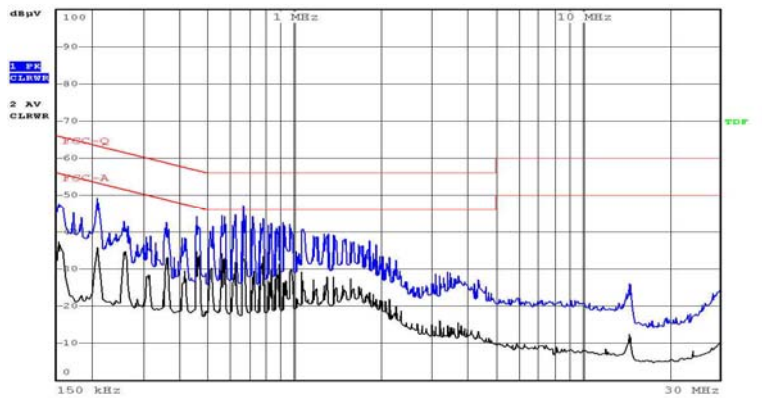
Live Line for ELS-M15



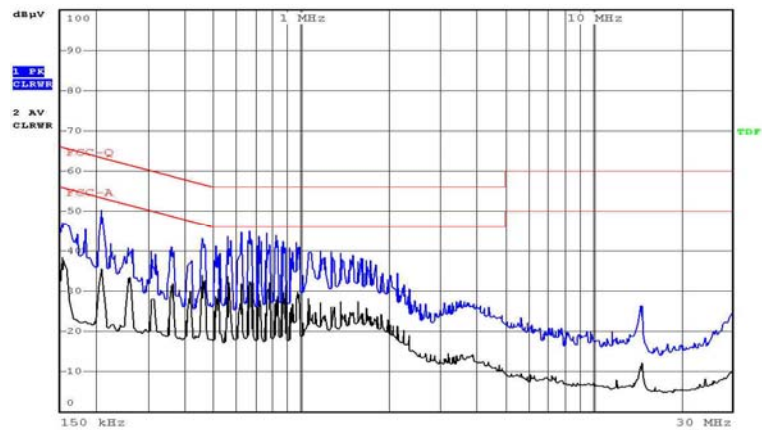
Neutral Line for ELS-M15



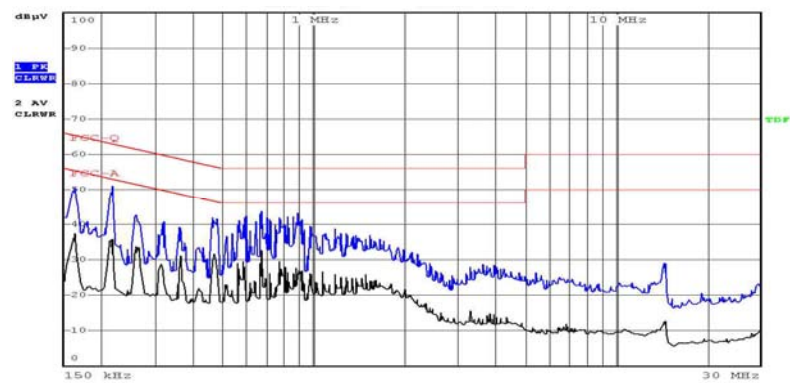
Live Line for ELS-M18



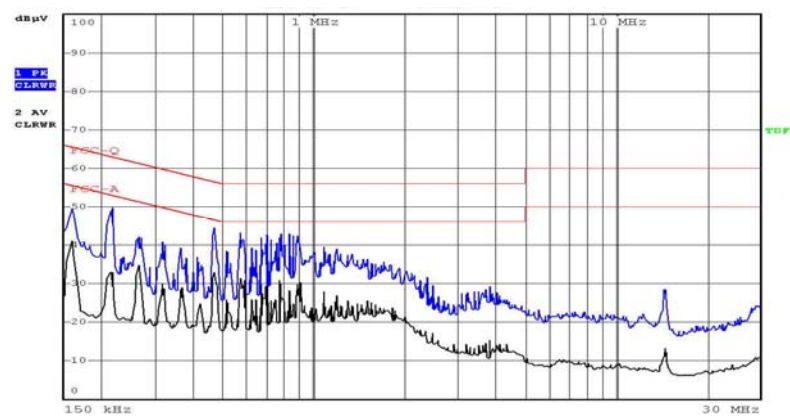
Neutral Line for ELS-M18



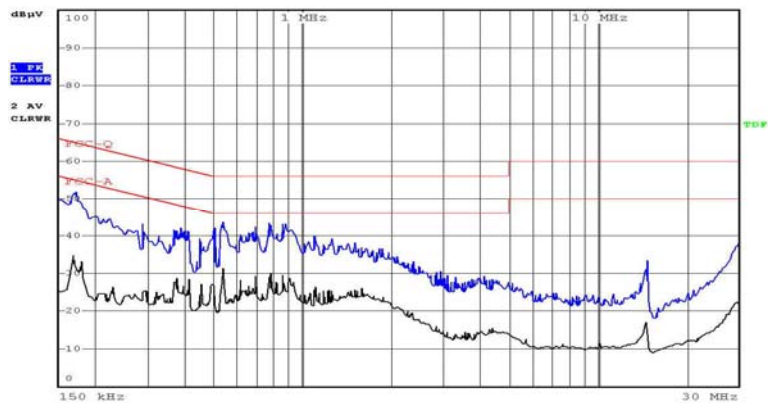
Live Line for ELS-M20



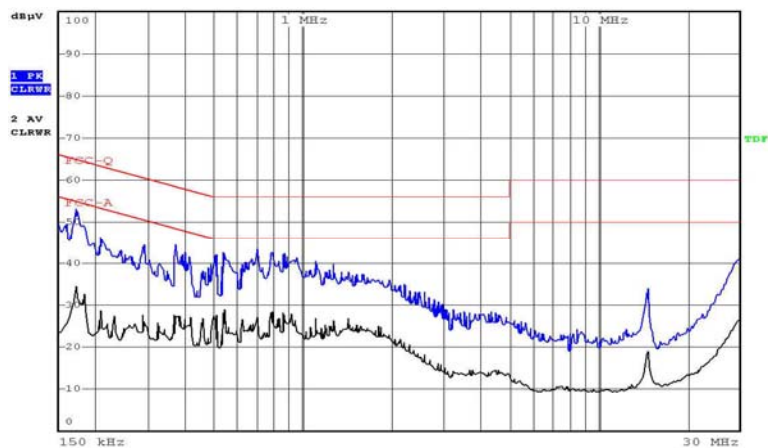
Neutral Line for ELS-M20



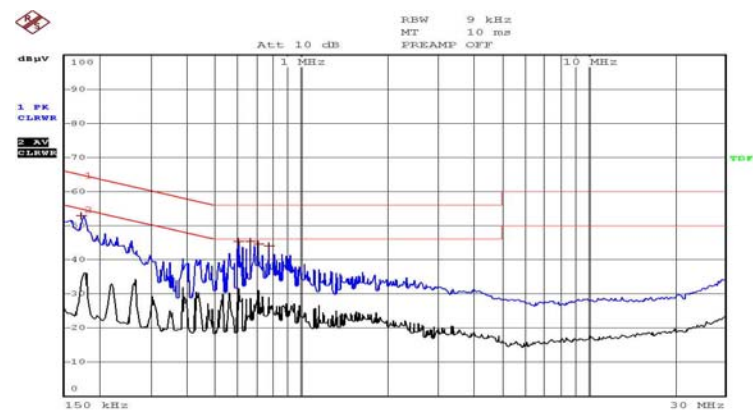
Live Line for ELS-M22



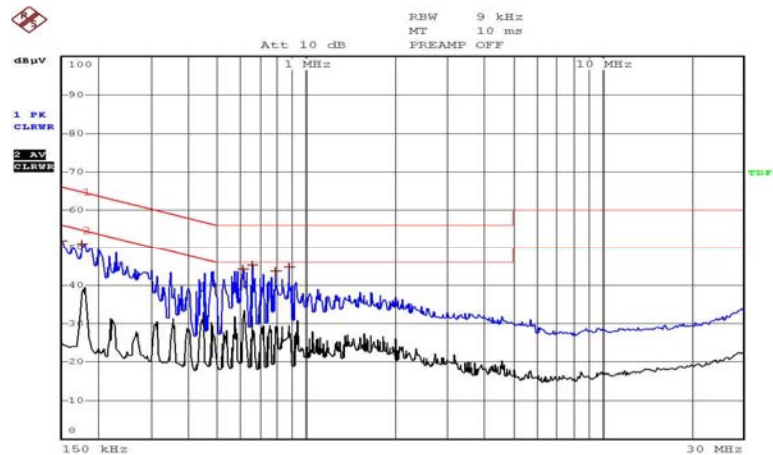
Neutral Line for ELS-M22



Live Line for ELS-M24



Neutral Line for ELS-M24



6.8.2 Conducted Emissions Test Data

Live Line for ELS-M15

NO.	Frequency [MHz]	QP Level [dBuV]	AV Level [dBuV]	QP Limit [dBuV]	AV Limit [dBuV]	QP margin [dB]	AV margin [dB]
1	0.154	50.71	36.72	65.78	45.78	15.07	9.06
2	0.206	49.53	37.17	63.38	53.38	13.85	16.21
3	0.450	43.94	33.69	56.93	46.93	12.99	13.24
4	0.570	42.95	31.44	56.00	46.00	13.05	14.56
5	0.654	43.66	33.52	56.00	46.00	12.34	12.48

Neutral Line for ELS-M15

NO.	Frequency [MHz]	QP Level [dBuV]	AV Level [dBuV]	QP Limit [dBuV]	AV Limit [dBuV]	QP margin [dB]	AV margin [dB]
1	0.154	49.73	39.68	65.78	55.78	16.05	16.10
2	0.202	48.35	34.59	63.54	53.54	15.19	18.99
3	0.454	41.12	34.95	56.86	46.86	15.74	11.91
4	0.558	38.49	31.24	56.00	46.00	17.51	14.76
5	0.654	41.67	31.76	56.00	46.00	14.33	14.24

Live Line for ELS-M18

NO.	Frequency [MHz]	QP Level [dBuV]	AV Level [dBuV]	QP Limit [dBuV]	AV Limit [dBuV]	QP margin [dB]	AV margin [dB]
1	0.214	48.89	36.71	63.07	53.07	14.18	16.36
2	0.376	43.37	33.28	58.42	48.42	15.05	15.14
3	0.460	44.59	35.26	56.75	46.75	12.16	11.49
4	0.570	45.03	34.63	56.00	46.00	10.97	11.37
5	0.654	44.23	32.64	56.00	46.00	11.77	13.36

Neutral Line for ELS-M18

NO.	Frequency [MHz]	QP Level [dBuV]	AV Level [dBuV]	QP Limit [dBuV]	AV Limit [dBuV]	QP margin [dB]	AV margin [dB]
1	0.214	50.03	36.10	63.07	53.07	13.04	16.97
2	0.358	41.17	32.89	58.82	48.82	17.65	15.93
3	0.460	43.35	33.53	56.75	46.75	13.40	13.22
4	0.558	44.46	32.64	56.00	46.00	11.54	13.35
5	0.654	43.37	31.89	56.00	46.00	12.63	14.11

Live Line for ELS-M20

NO.	Frequency [MHz]	QP Level [dBuV]	AV Level [dBuV]	QP Limit [dBuV]	AV Limit [dBuV]	QP margin [dB]	AV margin [dB]
1	0.174	49.92	37.79	64.78	54.78	14.86	16.99
2	0.224	50.73	36.62	62.69	52.69	11.96	16.07
3	0.462	42.10	32.12	56.72	46.72	14.62	14.60
4	0.501	42.00	33.18	56.00	46.00	14.00	12.82
5	0.674	43.39	33.23	56.00	46.00	12.61	12.77

Neutral Line for ELS-M20

NO.	Frequency [MHz]	QP Level [dBuV]	AV Level [dBuV]	QP Limit [dBuV]	AV Limit [dBuV]	QP margin [dB]	AV margin [dB]
1	0.174	48.82	41.94	64.78	54.78	15.96	12.84
2	0.237	49.26	33.68	62.23	52.23	12.97	18.55
3	0.474	43.94	33.34	56.51	46.51	12.57	13.17
4	0.567	42.65	31.85	56.00	46.00	13.35	14.15
5	0.700	42.32	29.93	56.00	46.00	13.68	16.07

Live Line for ELS-M22

NO.	Frequency [MHz]	QP Level [dBuV]	AV Level [dBuV]	QP Limit [dBuV]	AV Limit [dBuV]	QP margin [dB]	AV margin [dB]
1	0.185	52.28	35.00	64.27	54.27	11.99	19.27
2	0.286	43.39	25.04	60.74	50.74	17.35	25.70
3	0.540	44.11	30.32	56.00	46.00	11.89	15.68
4	0.696	42.86	29.52	56.00	46.00	13.14	16.48

Neutral Line for ELS-M22

NO.	Frequency [MHz]	QP Level [dBuV]	AV Level [dBuV]	QP Limit [dBuV]	AV Limit [dBuV]	QP margin [dB]	AV margin [dB]
1	0.185	52.31	34.89	64.27	54.27	9.96	19.38
2	0.212	46.92	28.46	63.15	53.15	16.23	24.69
3	0.374	44.79	27.00	58.46	48.46	13.67	20.00
4	0.547	42.03	28.78	56.00	46.00	13.97	17.22

Live Line for ELS-M24

NO.	Frequency [MHz]	QP Level [dBuV]	AV Level [dBuV]	QP Limit [dBuV]	AV Limit [dBuV]	QP margin [dB]	AV margin [dB]
1	0.150	49.73	38.61	66.00	56.00	16.27	17.39
2	0.158	47.84	31.34	65.57	55.57	17.73	24.23
3	0.602	38.38	27.13	56.00	46.00	17.62	18.87
4	0.668	40.48	25.55	56.00	46.00	15.52	20.45
5	0.702	39.00	24.60	56.00	46.00	17.00	21.40

Neutral Line for ELS-M24

NO.	Frequency [MHz]	QP Level [dBuV]	AV Level [dBuV]	QP Limit [dBuV]	AV Limit [dBuV]	QP margin [dB]	AV margin [dB]
1	0.150	46.25	35.92	66.00	56.00	19.75	20.08
2	0.158	40.23	31.67	65.57	55.57	25.34	23.90
3	0.602	41.98	27.76	56.00	46.00	14.02	18.24
4	0.668	39.03	26.57	56.00	46.00	16.97	19.43
5	0.798	40.79	25.20	56.00	46.00	15.21	20.80

7 Photographs of Testing

7.1 Conducted Emission Test View for ELS-M15



7.2 Conducted Emission Test View for ELS-M18



7.3 Conducted Emission Test View for ELS-M20



7.4 Conducted Emission Test View for ELS-M22



7.5 Conducted Emission Test View for ELS-M24

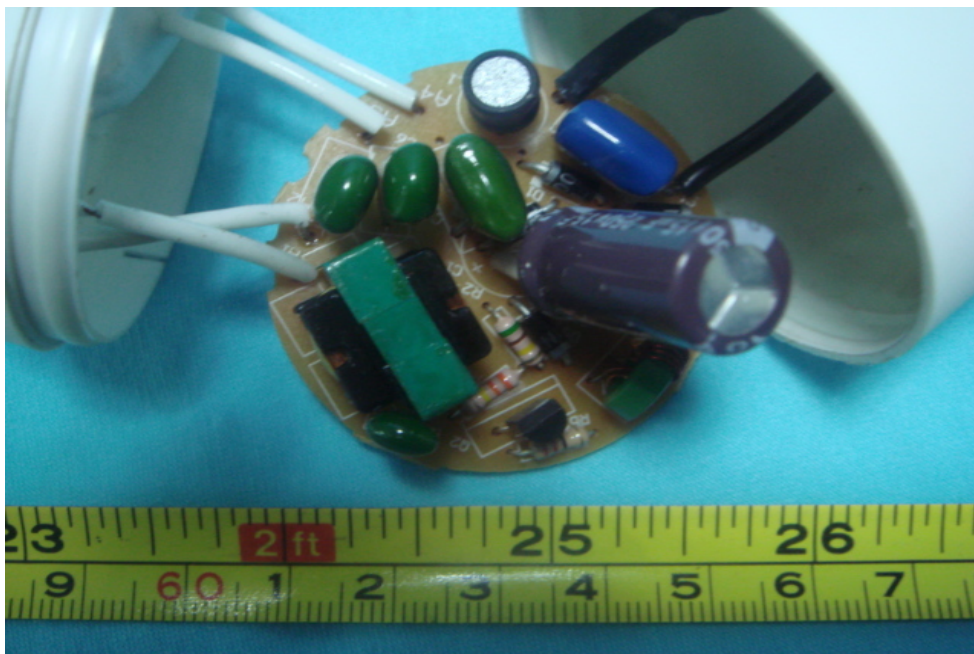


8 Photographs-Constructional Details

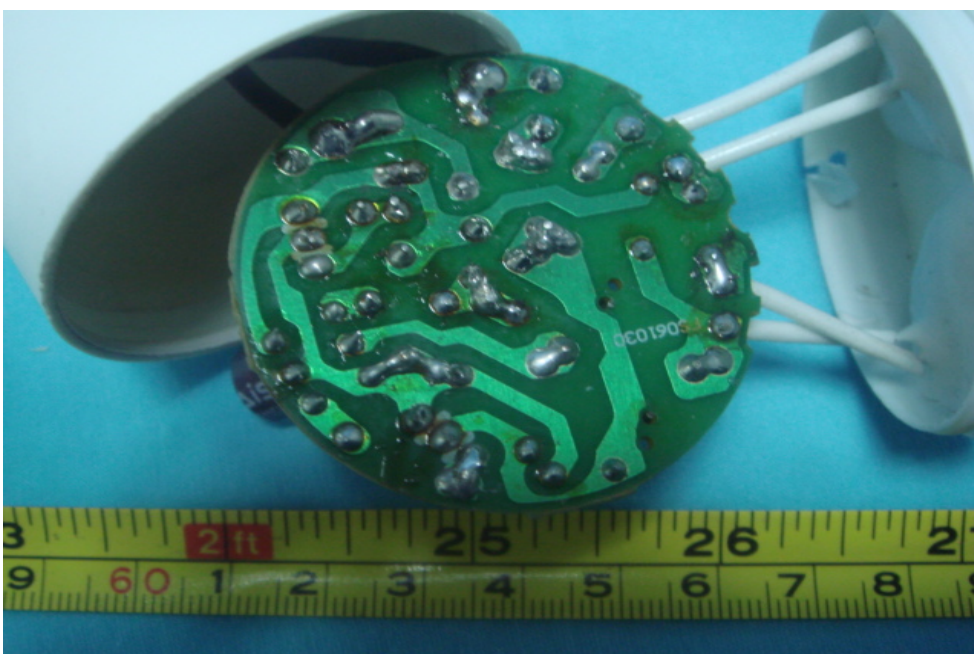
8.1 EUT



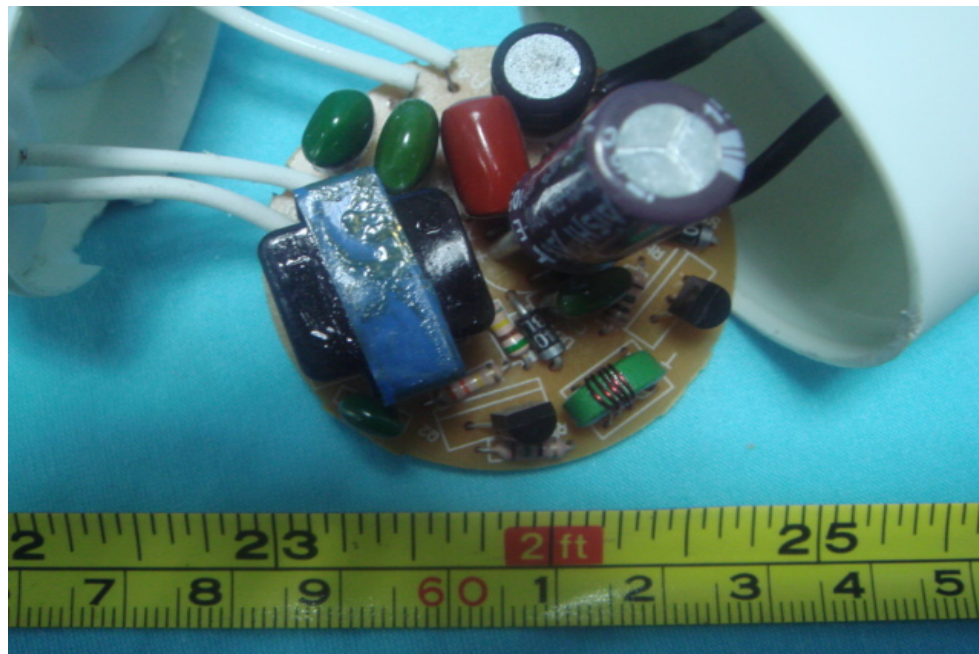
8.2 PCB-Front View for ELS-M15



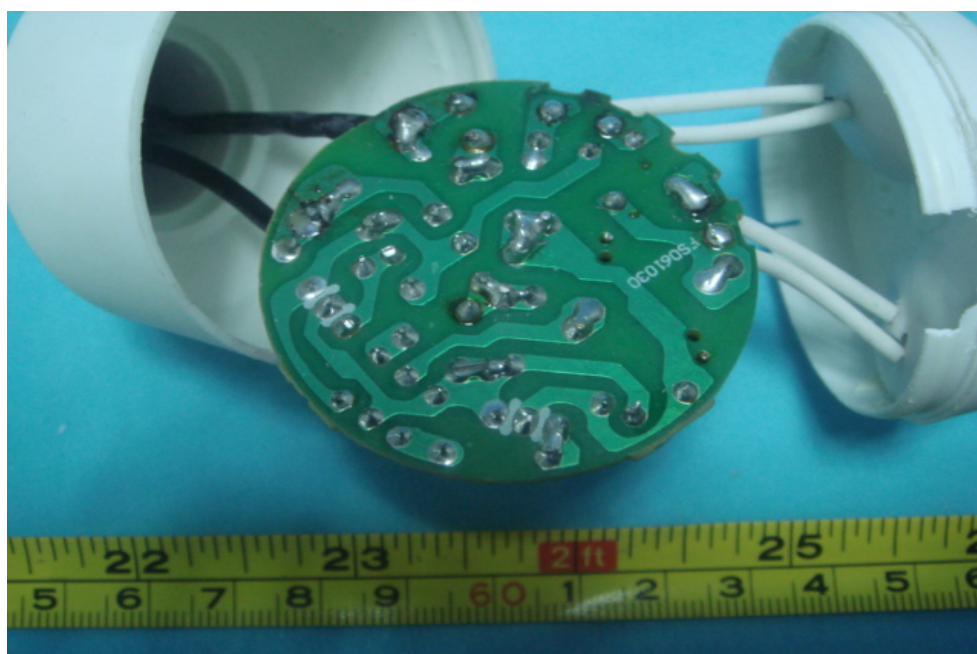
8.3 PCB-Back View for ELS-M15



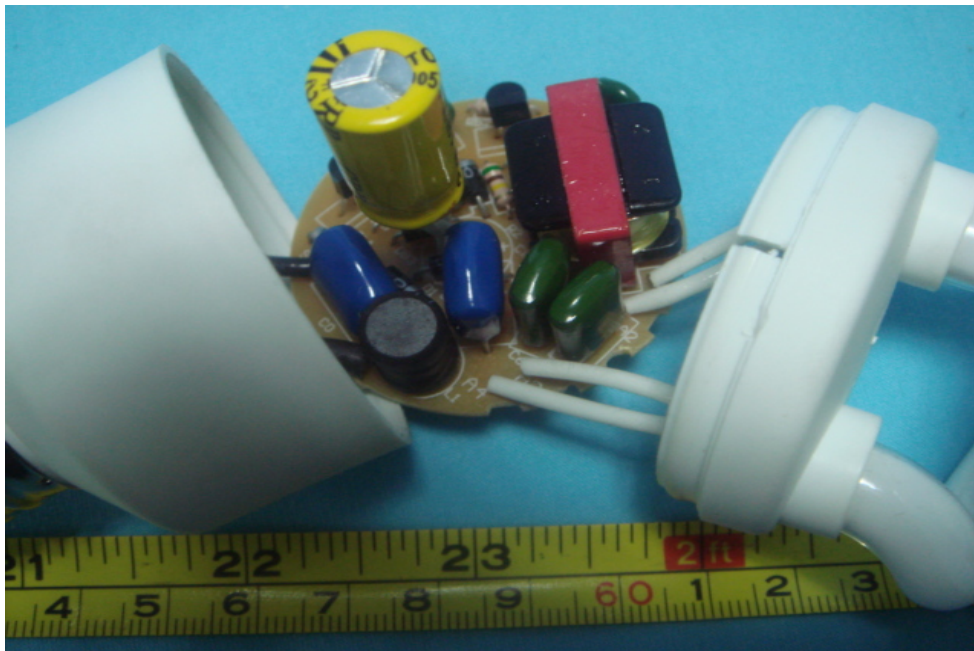
8.4 PCB-Front View for ELS-M18



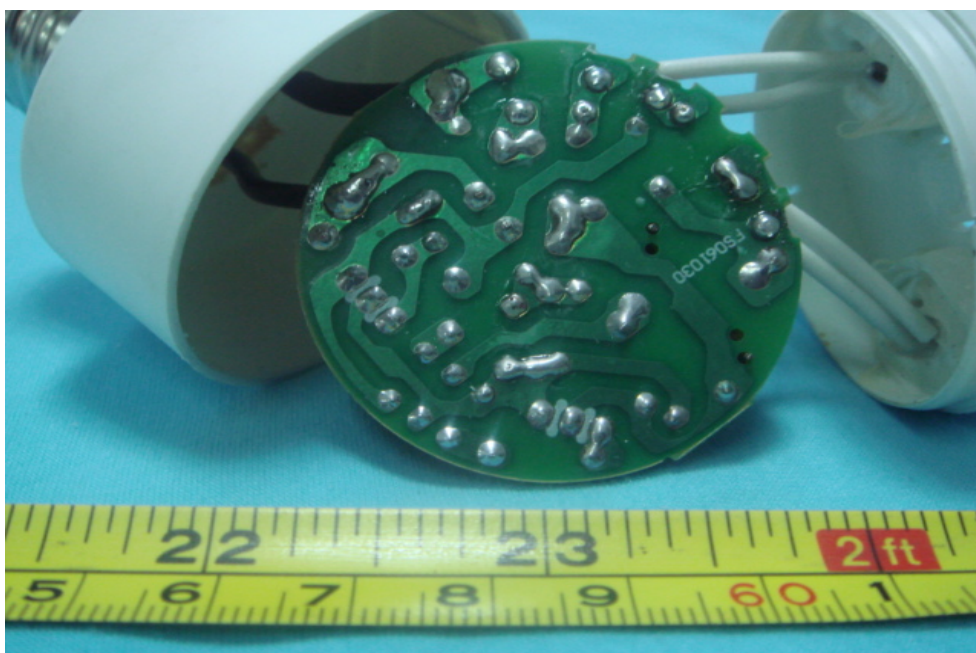
8.5 PCB-Back View for ELS-M18



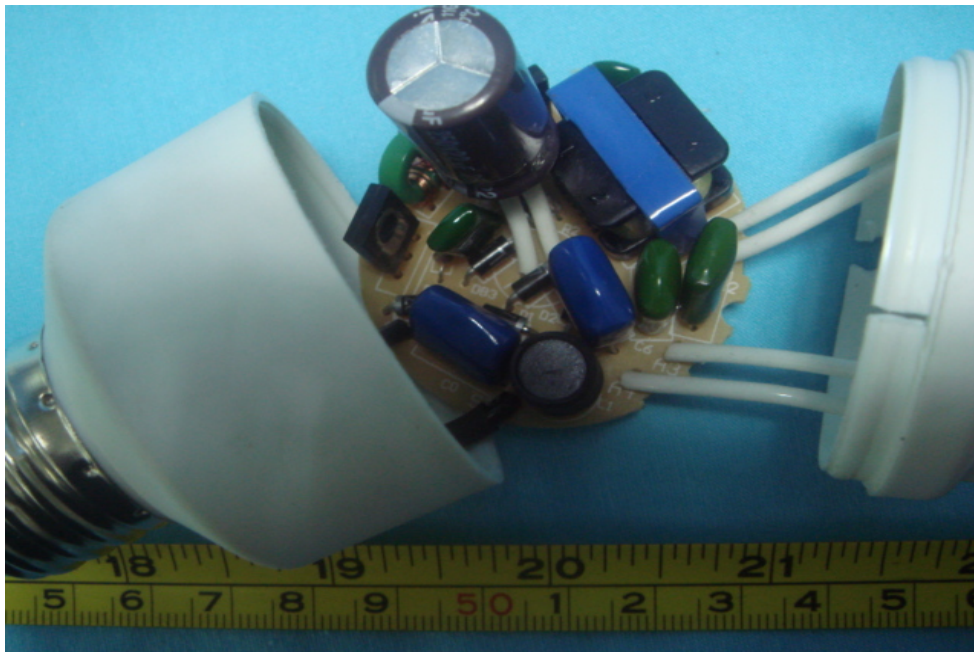
8.6 PCB-Front View for ELS-M20



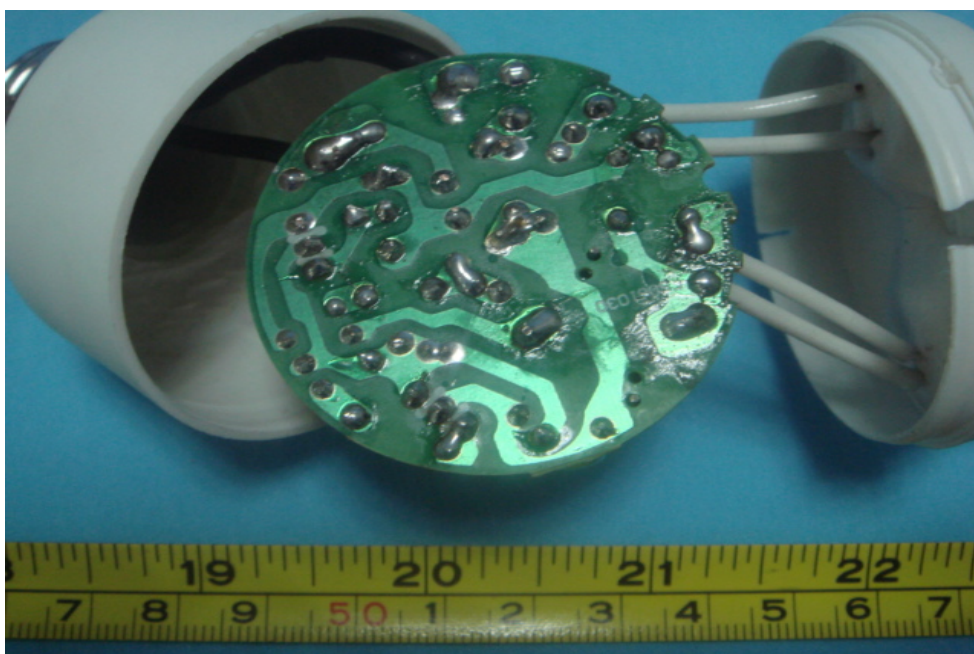
8.7 PCB-Back View for ELS-M20



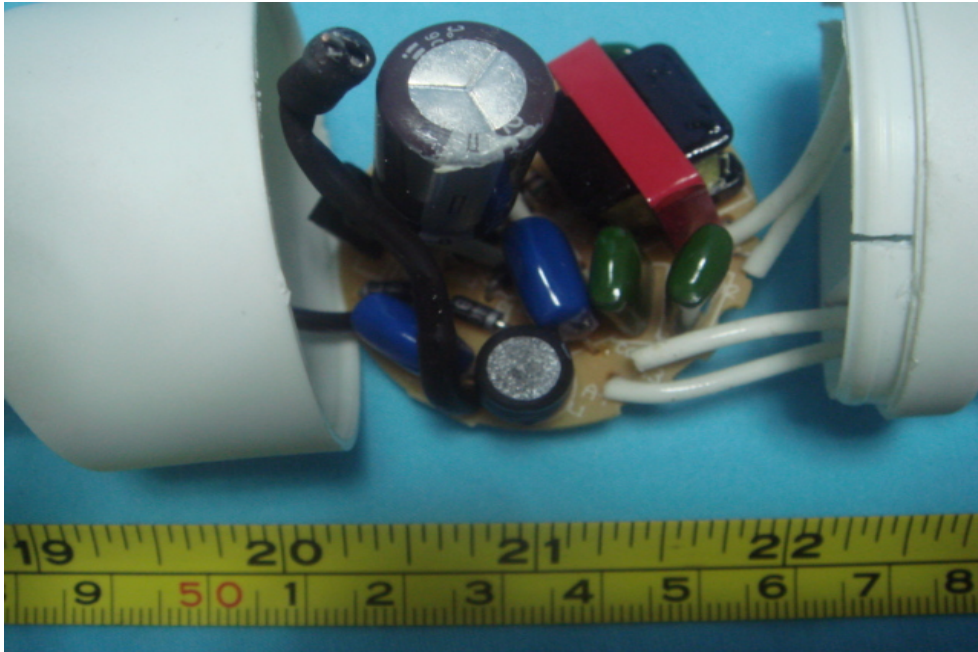
8.8 PCB-Front View for ELS-22



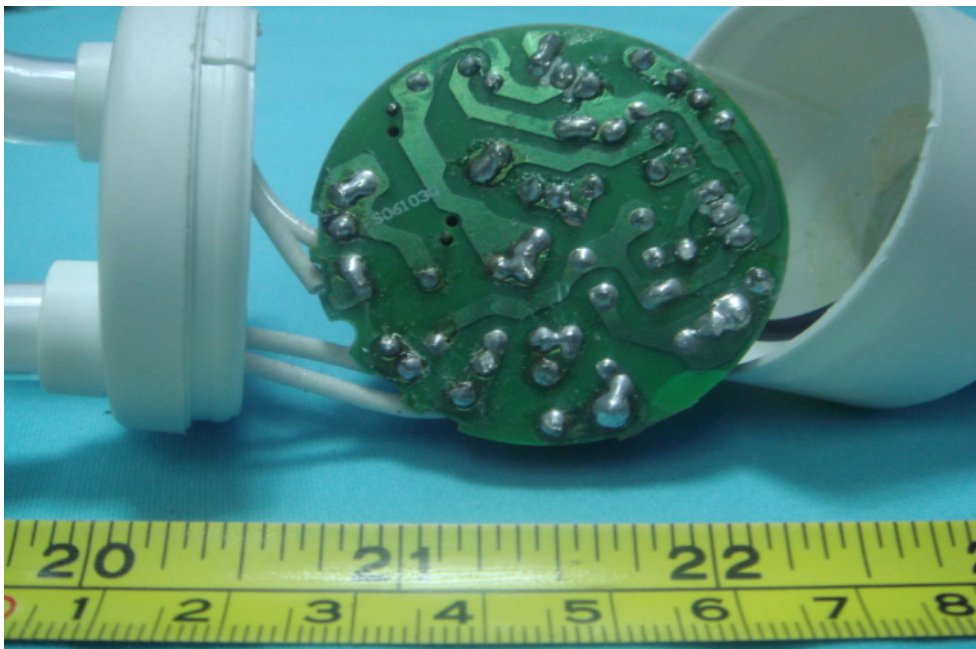
8.9 PCB-Back View for ELS-M22



8.10 PCB-Front View for ELS-M24(ELS-M23)



8.11 PCB-Back View for ELS-M24(ELS-M23)



9 FCC ID Label

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

