



EMC

TEST REPORT

REPORT NO. : F89041108
MODEL NO. : EUT-15W, EUT-20W, EUT-25W
DATE OF TEST : April 14, 2000

MULTIPLE LISTING MODELS: Please refer to pg. 4.

PREPARED FOR : SUPER TREND LIGHTING LTD.

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PREPARED BY: ADVANCE DATA TECHNOLOGY CORPORATION



Accredited Laboratory

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**1. CERTIFICATION**

Issue Date: April 17, 2000

Product : ENERGY SAVING LAMPS
Trade Name : LUXTEK
Model No. : EUT-15W, EUT-20W, EUT-25W
Applicant : SUPERTREND TREND LIGHTING LTD.
Standard : FCC Part 18 (RF Lighting device)

We hereby certify that one sample of the designation has been tested in our facility on April 14, 2000. The test record, data evaluation and Equipment Under Test (EUT) configurations represent herein are true and accurate representation of the measurements of the sample's EMC characteristics under the conditions herein specified.

The test results show that the EUT as described in this report is in compliance with the Class B limits of conducted and radiated emission of applicable standards.

TESTED BY: Eric Chang, DATE: 2/18/2000
(Eric Chang)

CHECKED BY: Sharon Hsieh, DATE: 2/18/2000
(Ariel Hsieh)

APPROVED BY: Mike Su, DATE: 2/18/2000
(Mike Su)

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2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product : ENERGY SAVING LAMPS
 Model No. : EUT-15W, EUT-20W, EUT-25W
 Power Rating : 110-130Vac, 60 Hz
 Model: EUT-15W (15W)
 Model: EUT-20W (20W)
 Model: EUT-25W (25W)

Note: The EUT is a Energy Saving Lamp which has the following features:

- Over-current protector
- Radio-interference suppressed
- High Efficiency - upto 80% energy saving
- Ten times lamp life of incandescence
- Flicker-free instant start and operation
- Nominal operating frequency: on/over 40 kHz

The EUT was pretested with the following model names which differ in their wattage and the outer appearance:

Model Name	Wattage (W)
EUT-15W, EUS-15W, EB-15W, EG-15W, EU-15W, EF-15W, EC-15W	15
EUT-20W, EUS-20W, EB-20W, EG-20W, EU-20W, EF-20W, EC-20W	20
EUT-25W, EB-25W, EG-25W, EU-25W, EF-25W, EC-25W	25

From the above models, model: EUT-25W had the highest emission levels and therefore the data of only this model is recorded in this report.

For more detailed features description, please refer to Manufacturer's Specification or User's Manual.



2.2 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit.

2.3 TEST METHODOLOGY AND CONFIGURATION

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4: 1992. Radiated testing was performed at an antenna to EUT distance of 3 m on an open area test site.

Please refer to the photos of test configuration in Item 5.



3. TEST INSTRUMENTS

3.1 TEST INSTRUMENTS (EMISSION)

CONDUCTED EMISSION MEASUREMENT

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
ROHDE & SCHWARZ Test Receiver	ESHS30	828109/007	July 13, 2000
ROHDE & SCHWARZ Artificial Mains Network	ESH3-Z5	839135/006	July 7, 2000
EMCO-L.I.S.N.	3825/2	9204-1964	July 7, 2000
Shielded Room	Site 2	ADT-C02	NA

Note: 1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per NAMAS document NIS81.

2. The calibration interval of the above test instruments is 12 months.

And the calibrations are traceable to NML/ROC and NIST/USA.

RADIATED EMISSION MEASUREMENT

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
HP Spectrum Analyzer	8590L	3544A01042	April 6, 2001
HP Preamplifier	8447D	2944A08313	Sept. 19, 2000
HP Preamplifier	8347A	3307A01088	Aug. 30, 2000
HP Preamplifier	8449B	3008A01201	Dec. 14, 2000
ROHDE & SCHWARZ TEST RECEIVER	ESVS 30	841977/008	Oct. 5, 2000
SCHWARZBECK Tunable Dipole Antenna	VHA 9103 UHA 9105	E101051 E101055	Nov. 23, 2000
ROHDE & SCHWARZ TEST RECEIVER	ESMI	839013/007 839379/002	Aug. 30, 2000
EMCO Double Ridged Guide Antenna	3115	9312-4192	March 29, 2001
CHASE BILOG Antenna	CBL6111A	1647	July 3, 2000
EMCO Turn Table	1016	1722	NA
EMCO Tower	1051	1825	NA
Open Field Test Site	Site 4	ADT-R04	June 11, 2000

Note: 1. The measurement uncertainty is less than +/- 3dB, which is calculated as per NAMAS document NIS81.

2. The calibration interval of the above test instruments is 12 months.

And the calibrations are traceable to NML/ROC and NIST/USA.



3.2 LIMITS OF CONDUCTED AND RADIATED EMISSION

LIMIT OF FIELD STRENGTH

FREQUENCY (MHz) (Consumer equipment)	Field strength limit at 30m (uV/m)
30-88	10
88-216	15
216-1000	20

Note: (1) The tighter limit shall apply at the boundary between two frequency bands.

LIMITS OF CONDUCTED EMISSION

FREQUENCY (MHz) (Consumer equipment)	Maximum RF line voltage measured with a 50 uH/50 ohm LISN (uV)
0.45 to 30	250

Note: (1) The tighter limit shall apply at the boundary between two frequency bands.



4. TEST RESULTS (EMISSION)

4.1 RADIO DISTURBANCE

Frequency Range : 0.45 - 30 MHz (Conduction Emission)
30 - 1000 MHz (Field strength)
Input Voltage : 120 Vac, 60 Hz
Temperature : 24 Degree C
Humidity : 80 %
Atmospheric Pressure : 1000 mbar

TEST RESULT	Remarks
PASS	Minimum passing margin of conducted emission: -16.3 dB at 1.760 MHz Minimum passing margin of radiated emission: -13.8 dB at 34.80 MHz

4.2 EUT OPERATION CONDITION

1. Turn on the power of EUT.



4.3 TEST DATA OF CONDUCTED EMISSION

EUT: **ENERGY SAVING LAMPS**MODEL: **EUT-25W**6 dB Band Width: **10 kHz**PHASE: **LINE (L)**

Freq.	Corr.	Meter Reading [dB (uV)]				Limit		Margin	
[MHz]	Factor	Reading Data		Total		[dB (uV)]		(dB)	
	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.489	0.2	27.4	-	27.6	-	48.0	-	-20.4	-
0.771	0.2	30.0	-	30.2	-	48.0	-	-17.8	-
1.760	0.2	31.5	-	31.7	-	48.0	-	-16.3	-
6.209	0.4	22.6	-	23.0	-	48.0	-	-25.0	-
9.827	0.7	26.0	-	26.7	-	48.0	-	-21.3	-
27.998	1.7	24.1	-	25.8	-	48.0	-	-22.2	-

Remarks:

1. "*": Undetectable
2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
3. "-": Not applicable.
4. The emission levels of other frequencies were very low against the limit.
5. Margin value = Emission level - Limit value



TEST DATA OF CONDUCTED EMISSION

EUT: ENERGY SAVING LAMPSMODEL: EUT-25W6 dB Band Width: 10 kHzPHASE: NEUTRAL (N)

Freq.	Corr.	Meter Reading [dB (uV)]				Limit		Margin	
[MHz]	Factor	Reading Data		Total		[dB (uV)]		(dB)	
	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.489	0.2	26.2	-	26.4	-	48.0	-	-21.6	-
0.771	0.2	29.6	-	29.8	-	48.0	-	-18.2	-
1.760	0.2	30.5	-	30.7	-	48.0	-	-17.3	-
6.209	0.4	21.6	-	22.0	-	48.0	-	-26.0	-
9.827	0.6	20.0	-	20.6	-	48.0	-	-27.4	-
27.998	1.5	25.2	-	26.7	-	48.0	-	-21.3	-

Remarks:

1. "*": Undetectable
2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
3. "-": Not applicable.
4. The emission levels of other frequencies were very low against the limit.
5. Margin value = Emission level - Limit value



4.4 TEST DATA OF RADIATED EMISSION

EUT: ENERGY SAVING LAMPSMODEL: EUT-25WANT.POLARITY: HorizontalDETECTOR FUNCTION: Quasi-peak6 dB BANDWIDTH: 120 kHzFREQUENCY RANGE: 30-1000 MHzMEASURED DISTANCE: 3 M

Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
30.23	19.9	-15.2	4.7	20.0	-15.3	400	251
34.80	18.1	-11.9	6.2	20.0	-13.8	400	262
48.08	11.6	-12.8	-1.2	20.0	-21.2	400	249
74.70	7.8	-15.9	-8.1	20.0	-28.1	384	346
87.22	9.8	-14.9	-5.1	20.0	-25.1	384	332
120.00	12.5	-18.9	-6.4	23.5	-29.9	202	280
252.00	14.2	-19.0	-4.8	26.0	-30.8	120	341

- REMARKS:
1. Emission level (dBuV/m) = Correction Factor (dB)
+ Reading value (dBuV).
 2. Correction Factor (dB) = Ant. Factor (dB)+Cable loss (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. The above readings are taken at 3 m and converted to 30m readings.



TEST DATA OF RADIATED EMISSION

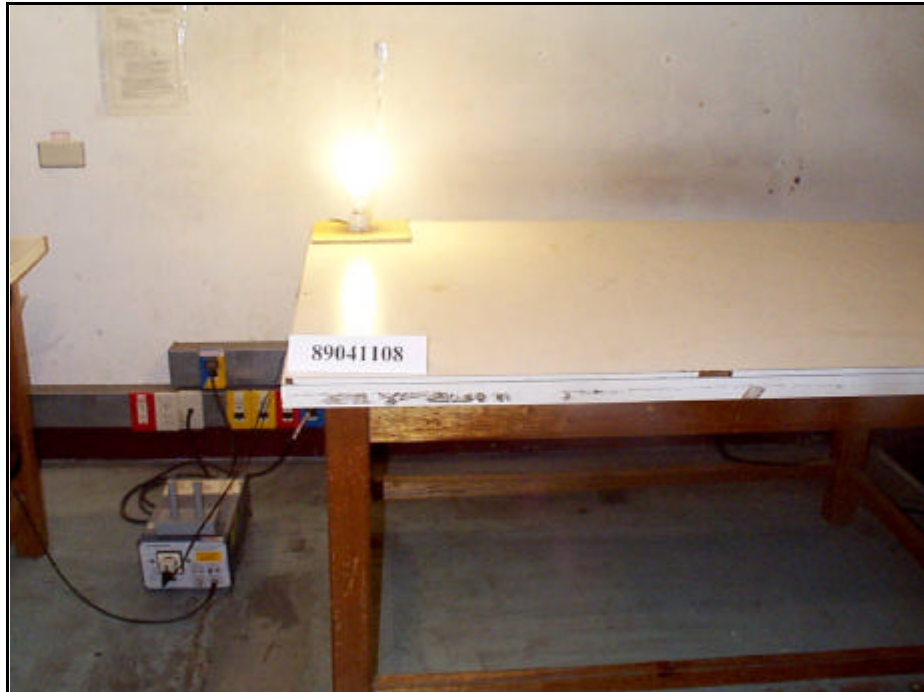
EUT: **ENERGY SAVING LAMPS**MODEL: **EUT-25W**ANT.POLARITY: VerticalDETECTOR FUNCTION: Quasi-peak6 dB BANDWIDTH: 120 kHzFREQUENCY RANGE: 30-1000 MHzMEASURED DISTANCE: 3 M

Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
31.31	19.5	-16.7	2.8	20.0	-17.2	100	351
34.79	18.1	-12.2	5.9	20.0	-14.1	100	343
51.46	9.8	-5.7	4.1	20.0	-15.9	173	359
73.36	7.4	-5.7	1.7	20.0	-18.3	167	0
85.68	9.6	-4.6	5.0	20.0	-15.0	117	0
119.99	12.5	-15.4	-3.0	23.5	-26.5	100	354
229.21	12.5	-18.9	-6.4	26.0	-32.4	100	298

- REMARKS:
1. Emission level (dBuV/m) = Correction Factor (dB)
+ Reading value (dBuV).
 2. Correction Factor (dB) = Ant. Factor (dB)+Cable loss (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. The above readings are taken at 3 m and converted to 30m readings.

5. PHOTOGRAPHS OF THE TEST CONFIGURATION WITH MINIMUM MARGIN

CONDUCTED EMISSION TEST



RADIATED EMISSION TEST





6. APPENDIX - INFORMATION OF THE TESTING LABORATORY

Information of the testing laboratory

We, ADT Corp., are founded in 1988, to provide our best service in EMC and Safety consultation. Our laboratory is accredited by the following approval agencies according to ISO/IEC Guide 25 or EN 45001:

- | | |
|---------------|--------------------------------------|
| ● USA | FCC, UL, NVLAP |
| ● Germany | TUV Rheinland
TUV Product Service |
| ● Japan | VCCI |
| ● New Zealand | RFS |
| ● Norway | NEMKO, DNV |
| ● U.K. | INCHCAPE, SGS |
| ● R.O.C. | BSMI |

Enclosed please find some certificates of our laboratory obtained from approval agencies. If you have any comments, please feel free to contact us with the following:

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