

<b>Report Number</b>	TRN-14090
<b>Customer</b>	ASD lighting
<b>Contact</b>	John Ryder
<b>Product Type</b>	Street Light
<b>Test Purpose</b>	UMS Energy Performance Test
<b>Sales Order Ref</b>	Q-LUX2014-2116
<b>Works Order Number</b>	WO-4247
<b>Test Item Reference</b>	TI-3698
<b>LAB Test Method Reference</b>	TES-2012
<b>Test Standards</b>	LM-79-08 and UMS charge code process v4.0
<b>Lab Location Reference</b>	LUX-EPC
<b>Tested by</b>	Steve Hunt
<b>Date of Test</b>	15/08/2014
<b>Analysed by</b>	Steve Hunt
<b>Number of products tested</b>	5

Address: LUX-TSI Ltd.,  
Pencoed Technology Park,  
Pencoed, Bridgend,  
CF35 5HZ, UK  
Telephone: +44 (0) 1656 864618  
Authorised by: David Chan  
Email: [dchan@lux-tsi.com](mailto:dchan@lux-tsi.com)  
Signed:




ASD Streetlight - 12 LED

Date: 18/08/2014

#### Disclaimers

This report is for the exclusive use of LUX-TSI's Customer and is provided pursuant to the agreement between LUX-TSI and its Customer. LUX-TSI's responsibility and reliability are limited to the Terms and Conditions of the agreement. LUX-TSI assumes no liability to any other party, other than the Customer in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Customer is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the LUX-TSI name or one of its marks for the sale or advertisement of the tested material, product or service must be approved in writing by LUX-TSI.

The observations and test results in this report are relevant only to the sample tested. Opinions expressed and data supplied in this report, are given in good faith, and are based on the information provided by the Customer. This report does not remove the requirement for the Customer to obtain further independent advice and in particular to instruct a notified or competent body or person to carry out further evaluation work and/or testing. Accordingly, no warranty is given, nor is any term or condition to be implied, that the product, which is the subject of this report, complies with the requirements of any EU directives.

### Nomenclature

Lamp Orientation described below relates to the position in which a lamp is designed to operate for maximum performance and safety, these include:

BD - Base Down (bulb is vertically positioned with the metal base at the bottom, glass up)

BU - Base Up (bulb is vertically positioned with the metal base at the top, glass hanging down)

HBD - Horizontal +15° to Base Down

H45 - Horizontal to -45° only

VBU - Vertical Base Up ±15°

VBD - Vertical Base Down ±15°

HBU - Base Up +/- 90° (bulb can be operated in a base up or horizontal position)

HOR - Horizontal Burn (bulb is positioned with the metal base parallel to the ground)

H75 - Horizontal +/- 75° (bulb should not be operated within 15° of vertical)

U - Universal Burn (burn can be operated in any position)

---

### Test Conditions

Measurements were made with an ambient temperature of 25°C +/- 1°C. Measurements were taken only after sufficient time for thermal stabilisation has been allowed.

---

### Test Equipment

Yokogawa WT210 Power Analyzer. Kikusui PCR2000M Stable AC Power Supply  
with PC control and data recording



Full data control and recording  
using Labview software and full  
integration of the AC Stable Power  
Supply and Power Analyser



LUX-TSI Ltd., Pencoed Technology Park,  
 Pencoed, Bridgend, CF35 5HZ, UK  
 Website: www.lux-tsi.com  
 E-mail: info@lux-tsi.com

Test Report Number: TRN-14090  
 Test Item: TI-3698

<b>Product Name</b>	ASD Streetlight - 12 LED
<b>Part/Serial Number</b>	See (Identifier) below
<b>Type of Product</b>	Street Light
<b>Base Type</b>	N/A
<b>Driver Type</b>	Mains
<b>Driver Model</b>	Meso RMLD-500A-P-AA
<b>Light Engine Model</b>	PO-02-14 Rev.1 PCB 049
<b>Operating Orientation</b>	Base Up
<b>Test Orientation</b>	Base Up
<b>Ambient Temperature</b>	24.0°C
<b>Manufacturer</b>	ASD lighting
<b>Date of Manufacturer</b>	2014
<b>Thermal Management</b>	Passive
<b>Dimmable</b>	Yes
<b>Humidity</b>	<65% RH

Dimension	Sample	Luminous Opening
Diameter/Width	386 mm	298 mm
Length	730 mm	356 mm
Height/Depth	100 mm	18 mm

Test Item	Identifier
TI-3698A	1
TI-3698B	2
TI-3698C	3
TI-3698D	4
TI-3698E	5

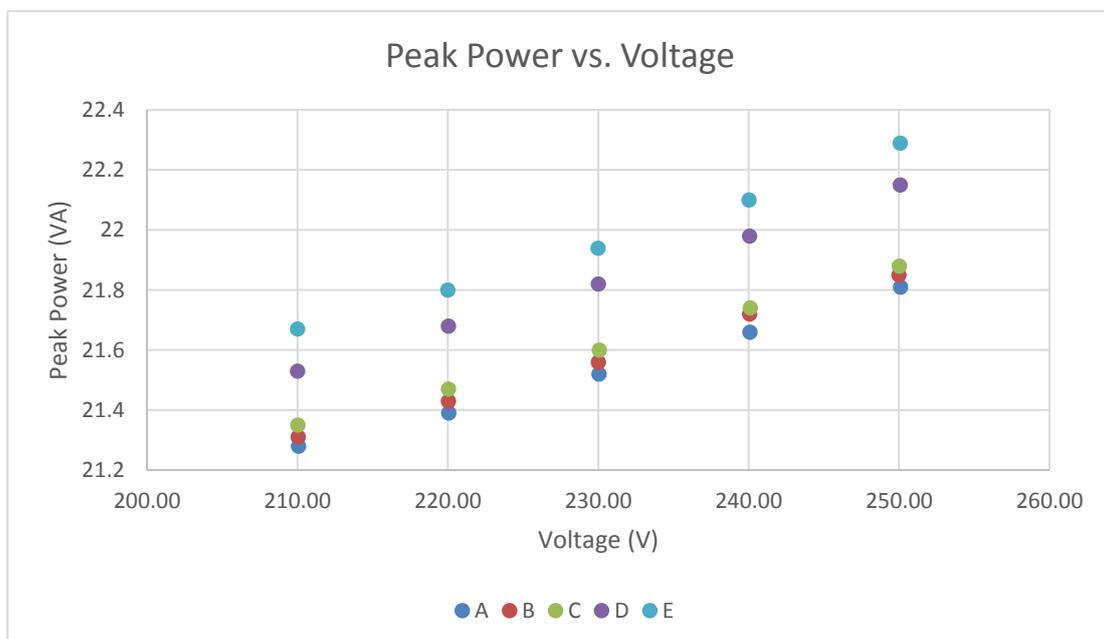
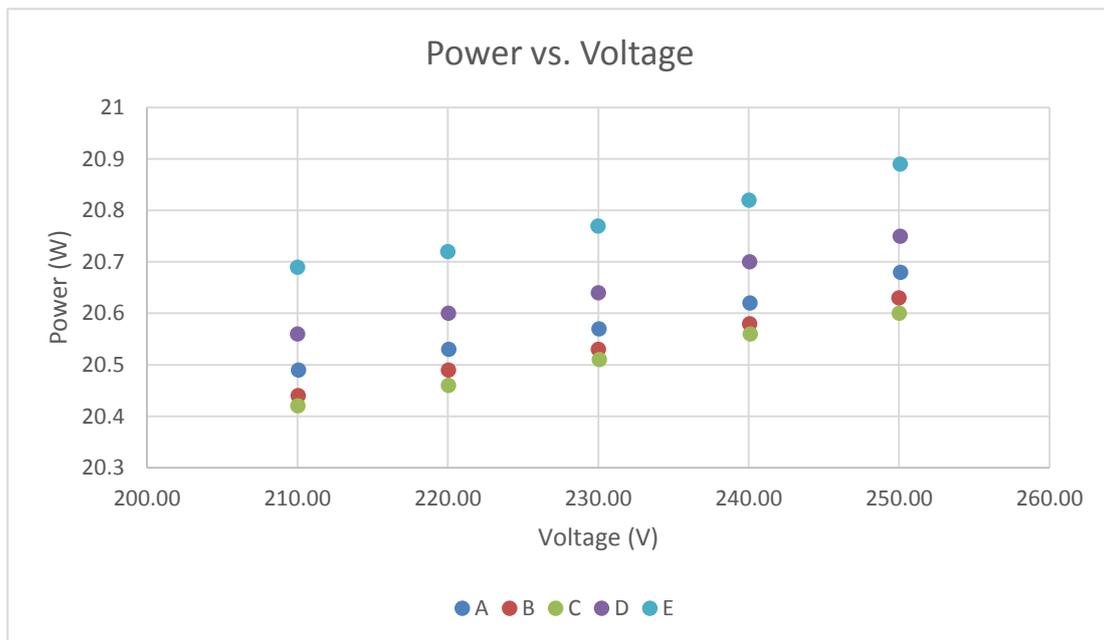
### Test Conditions

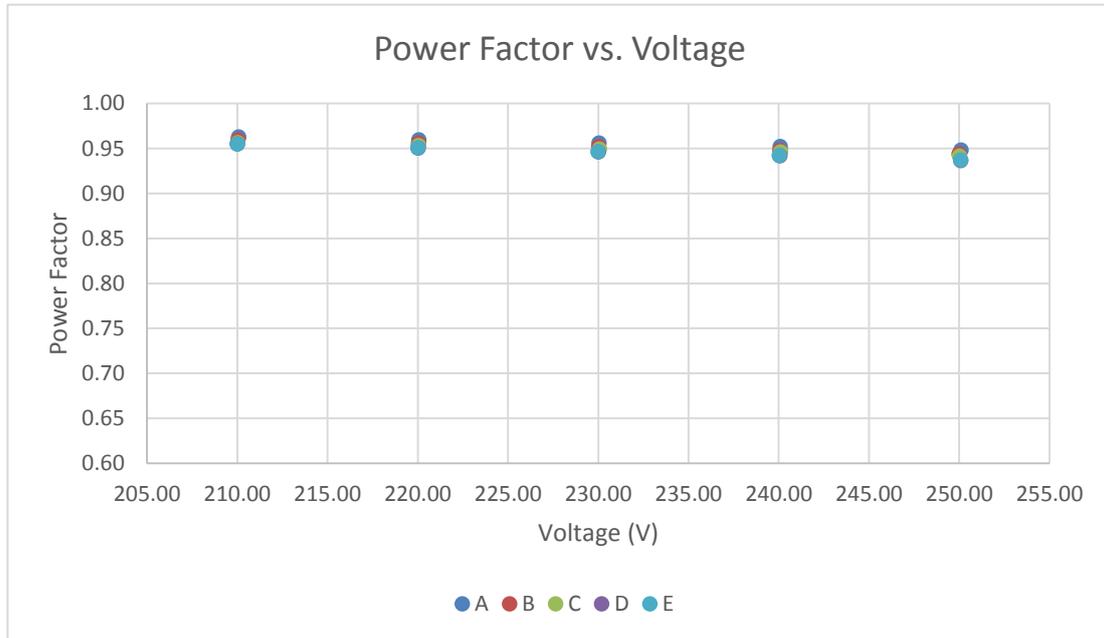
	Before Test	After Test
AC Supply Voltage (V)	249.95V	250.06V
AC Supply Frequency (Hz)	50Hz	50Hz
Voltage RMS Summation of the Harmonic Components (THD)	0.07%	0.09%

The test items were stabilised according to the electrical power stability of LM79-08. Stabilization is achieved when the difference in electrical power measurement is less than 0.5%. Each test item was stabilised at 250V.

### Test Results Summary

These are the summary graphs of the test results for all products tested. The raw results are on page 6 of this test report.





All power factors measured have a Leading phase angle and therefore the driver has capacitive properties.

### Measurement Uncertainty

Parameter	Uncertainty
Voltage (300 V, 50/60 Hz)	$\pm 0.061 V_{rms}$
Current (200 mA, 50/60Hz)	$\pm 0.07 mA_{rms}$
Current (0.5 A, 50/60Hz)	$\pm 0.16 mA_{rms}$
Current (5 A, 50/60Hz)	$\pm 0.0016 A_{rms}$
Power (300 V, 200 mA, 50/60 Hz)	$\pm 0.032 W_{rms}$
Power (300 V, 0.5 A, 50/60 Hz)	$\pm 0.09 W_{rms}$
Power (300 V, 5 A, 50/60 Hz)	$\pm 0.0009 kW_{rms}$
Frequency (50/60 Hz)	$\pm 0.001 Hz$
Power Factor	$\pm 0.0006 PF$

Measurements of power of 0.50W or greater are made with an uncertainty of less than or equal to 2% at the 95% confidence level. Measurements of power less than 0.50W are made with an uncertainty of less than or equal to 0.01W at the 95% confidence level.



LUX-TSI Ltd., Pencoed Technology Park,  
Pencoed, Bridgend, CF35 5HZ, UK  
Website: www.lux-tsi.com  
E-mail: info@lux-tsi.com

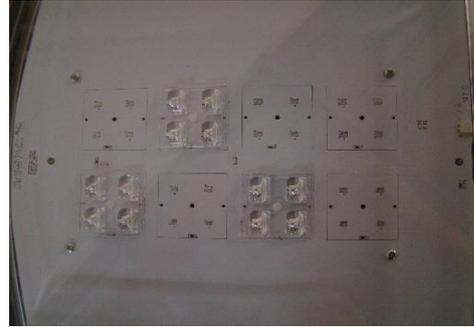
Test Report Number: TRN-14090  
Test Item: TI-3698

### Full Test Results

Test Item	Voltage (V)	Current (mA)	Electrical Power (W)	Ambient Temp (°C)	Peak Power (VA)	Power Factor	Leading / Lagging
A	250.10	87.22	20.68	24.04	21.81	0.948	Leading
B	249.99	87.41	20.63	24.13	21.85	0.944	Leading
C	250.02	87.52	20.60	24.10	21.88	0.942	Leading
D	250.08	88.59	20.75	24.20	22.15	0.937	Leading
E	250.08	89.12	20.89	24.05	22.29	0.937	Leading
A	240.08	90.22	20.62	24.06	21.66	0.952	Leading
B	240.06	90.48	20.58	24.07	21.72	0.948	Leading
C	240.10	90.55	20.56	24.30	21.74	0.946	Leading
D	240.07	91.54	20.70	24.27	21.98	0.942	Leading
E	240.02	92.08	20.82	24.36	22.10	0.942	Leading
A	230.05	93.54	20.57	24.91	21.52	0.956	Leading
B	230.02	93.75	20.53	24.70	21.56	0.952	Leading
C	230.07	93.90	20.51	25.03	21.60	0.949	Leading
D	230.01	94.85	20.64	25.34	21.82	0.946	Leading
E	229.99	95.40	20.77	25.00	21.94	0.947	Leading
A	220.06	97.20	20.53	24.78	21.39	0.960	Leading
B	220.04	97.38	20.49	24.74	21.43	0.956	Leading
C	220.04	97.57	20.46	24.80	21.47	0.953	Leading
D	220.03	98.52	20.60	24.77	21.68	0.950	Leading
E	220.00	99.07	20.72	24.77	21.80	0.951	Leading
A	210.08	101.31	20.49	24.82	21.28	0.963	Leading
B	210.04	101.44	20.44	24.87	21.31	0.960	Leading
C	210.02	101.67	20.42	24.76	21.35	0.956	Leading
D	210.01	102.53	20.56	24.68	21.53	0.955	Leading
E	210.01	103.17	20.69	24.86	21.67	0.955	Leading

### Test Item Photographs

#### Product Details



(Driver fixture and LED module)

#### TI-3698A



#### TI-3698B



**TI-3698C**



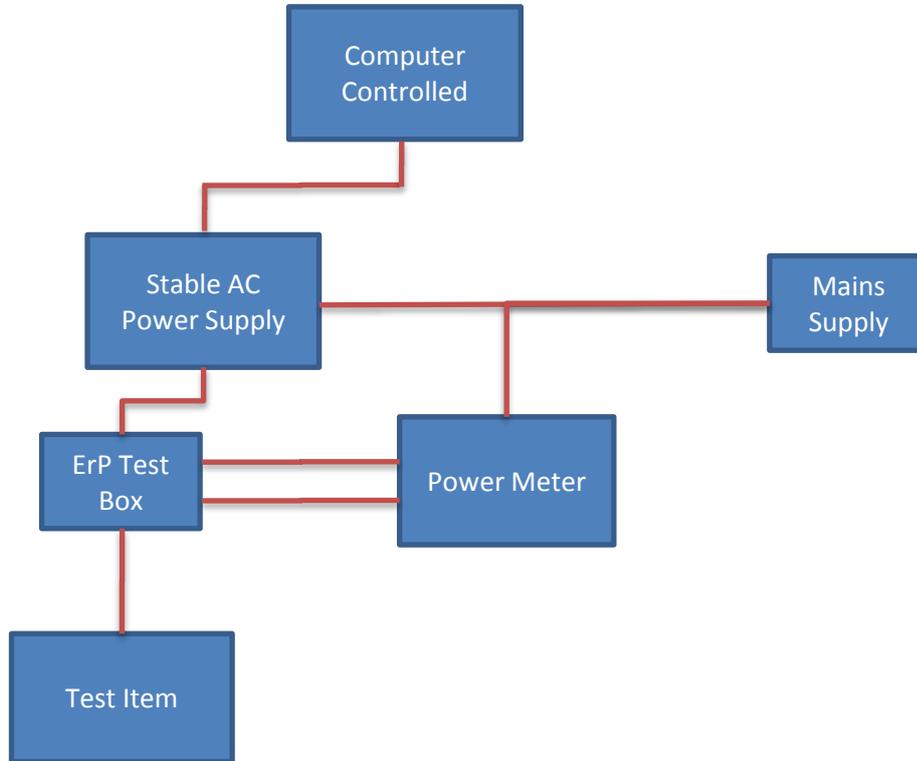
**TI-3698D**



**TI-3698E**



### Appendix 1: Test item set-up



----- END OF REPORT -----