

Report Number	TRN-15134
Customer	ASD Lighting plc
Contact	Paul Gledhill
Product Type	Street Light
Test Purpose	UMS Energy Performance Test
Sales Order Ref	Q-LUX2014-2520
Works Order Number	WO-5478
Test Item Reference	TI-4543
LAB Test Method Reference	TES-2012
Test Standards	LM-79-08 and UMS charge code process v4.0
Lab Location Reference	UMS
Tested by	Steve Hunt
Date of Test	26/06/2015
Analysed by	Steve Hunt
Number of products tested	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
Signed:




28 LED - 500mA - 50% Output

Date: 26/06/2015

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 $+15^{\circ}$ to Base Down

H45 - Horizontal to -45° only

VBU - Vertical Base Up $\pm 15^{\circ}$

VBD - Vertical Base Down $\pm 15^{\circ}$

HBU - Base Up $\pm 90^{\circ}$ (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 $\pm 75^{\circ}$ (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 $23^{\circ}\text{C} \pm 2^{\circ}\text{C}$. 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

Product Name	28 LED - 500mA - 50% Output
Part/Serial Number	See (Identifier) below
Type of Product	Street Light
Base Type	N/A
Driver Type	Mains
Driver Model	OPTOTRONIC OT 90/220-240/700 3DIMLT+E
Light Engine Model	PCB058 CREE XPG LED
Operating Orientation	Base Up
Test Orientation	Base Up
Ambient Temperature	21.9°C
Manufacturer	ASD Lighting plc
Date of Manufacturer	2015
Thermal Management	Passive
Dimmable	Yes
Humidity	<65% RH

Dimension	Sample	Luminous Opening
Diameter/Width	594 mm	275 mm
Length	232 mm	220 mm
Height/Depth	120 mm	0 mm

Test Item	Identifier
TI-4543A	1
TI-4543B	2
TI-4543C	3
TI-4543D	4
TI-4543E	5

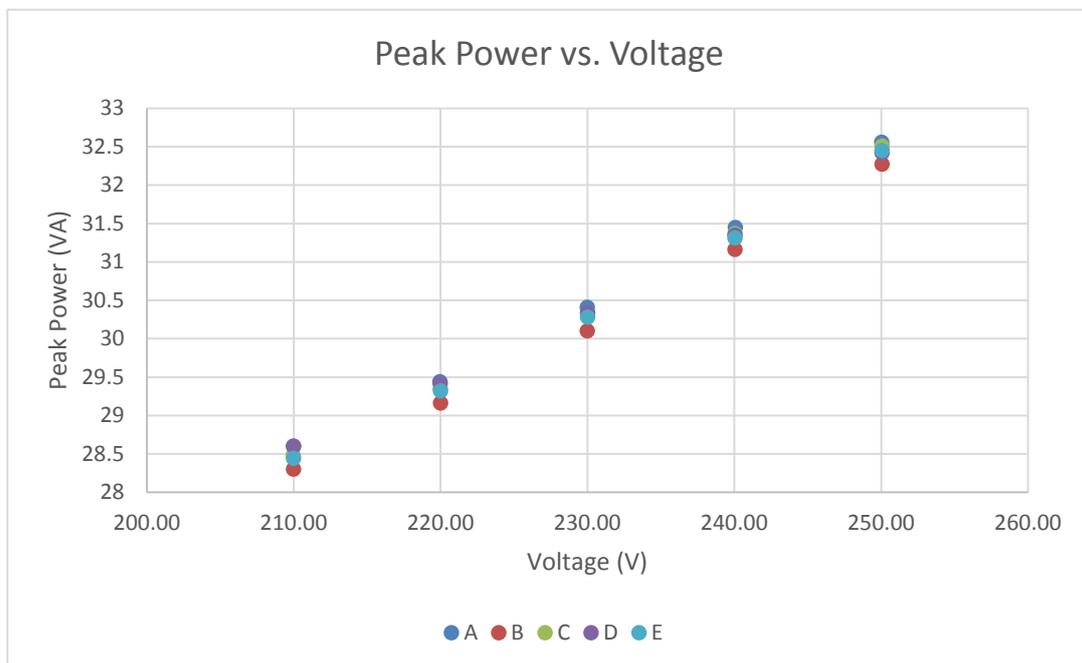
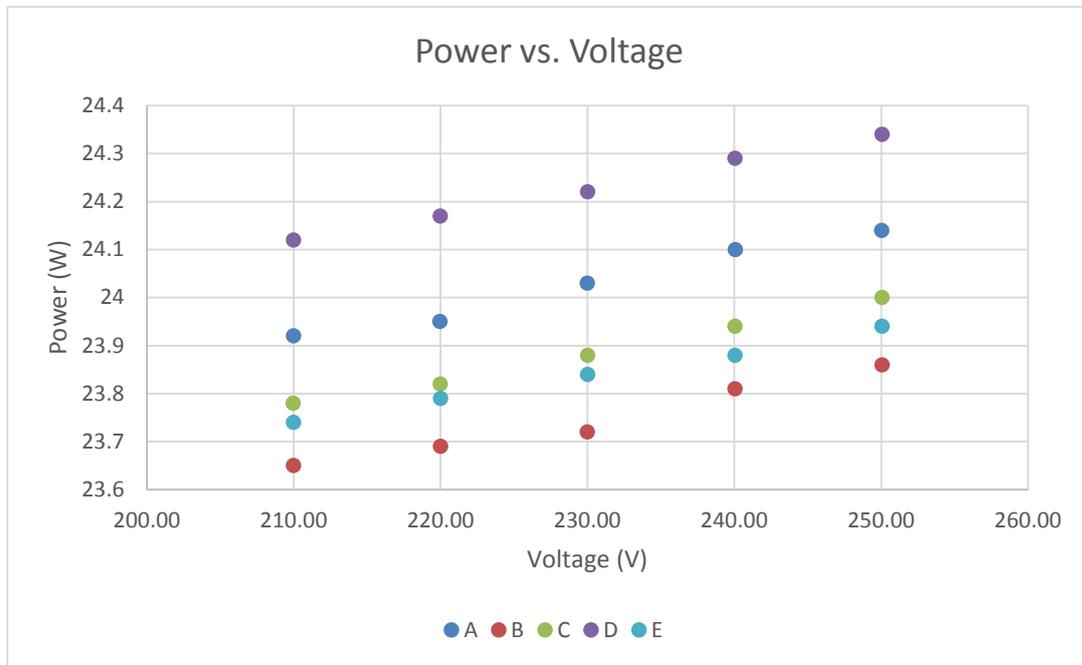
Test Conditions

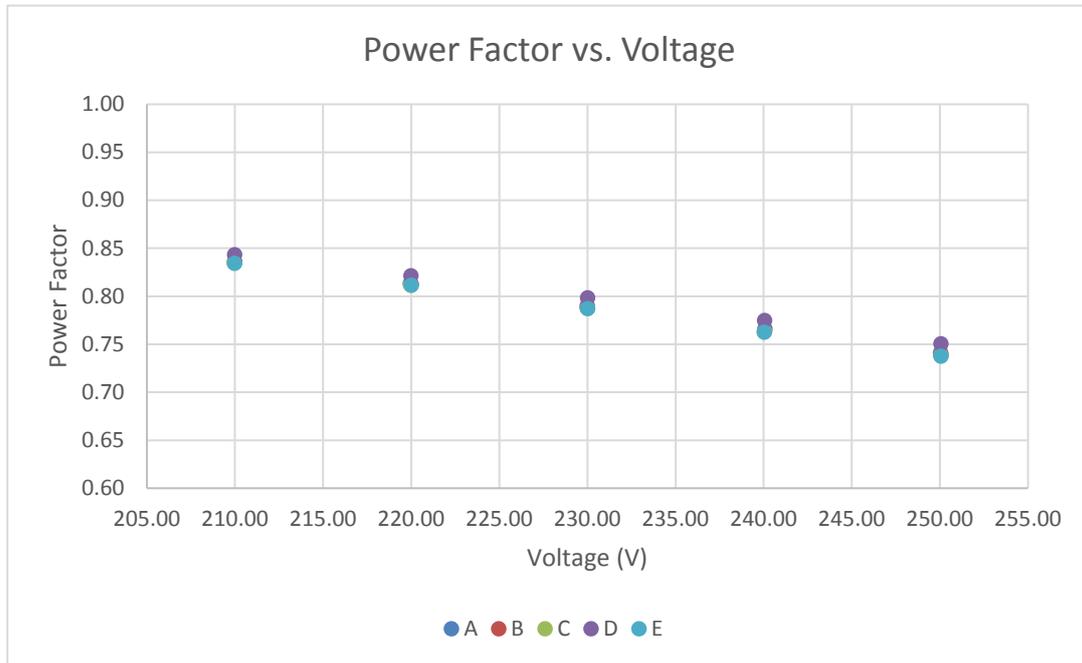
	Before Test	After Test
AC Supply Voltage (V)	250.08V	250.06V
AC Supply Frequency (Hz)	49.99Hz	49.99Hz
Voltage RMS Summation of the Harmonic Components (THD)	0.079%	0.07%

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.





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.

Full Test Results

Test Item	Voltage (V)	Current (mA)	Electrical Power (W)	Ambient Temp (°C)	Peak Power (VA)	Power Factor	Leading / Lagging
A	250.04	130.22	24.14	21.93	32.56	0.741	Leading
B	250.06	129.07	23.86	21.98	32.27	0.739	Leading
C	250.06	130.00	24.00	21.98	32.51	0.738	Leading
D	250.05	129.66	24.34	21.97	32.42	0.751	Leading
E	250.06	129.78	23.94	21.95	32.45	0.738	Leading
A	240.06	131.02	24.10	22.06	31.45	0.766	Leading
B	240.05	129.79	23.81	22.04	31.16	0.764	Leading
C	240.04	130.67	23.94	22.03	31.37	0.763	Leading
D	240.04	130.60	24.29	22.02	31.35	0.775	Leading
E	240.03	130.45	23.88	21.90	31.31	0.763	Leading
A	229.98	132.21	24.03	22.06	30.41	0.790	Leading
B	229.98	130.88	23.72	22.00	30.10	0.788	Leading
C	230.00	131.83	23.88	21.88	30.32	0.788	Leading
D	230.00	131.90	24.22	22.02	30.34	0.799	Leading
E	230.01	131.65	23.84	21.91	30.28	0.787	Leading
A	219.95	133.83	23.95	22.04	29.44	0.814	Leading
B	219.99	132.56	23.69	21.98	29.16	0.812	Leading
C	219.96	133.41	23.82	22.02	29.35	0.812	Leading
D	219.98	133.73	24.17	22.02	29.42	0.822	Leading
E	219.99	133.27	23.79	22.00	29.32	0.811	Leading
A	209.98	136.19	23.92	21.97	28.60	0.836	Leading
B	209.98	134.78	23.65	22.03	28.30	0.836	Leading
C	209.96	135.65	23.78	22.05	28.48	0.835	Leading
D	209.97	136.22	24.12	22.01	28.60	0.843	Leading
E	209.97	135.47	23.74	21.90	28.44	0.835	Leading

Test Item Photographs

TI-4543

Images of Product(s) under test. Identification of each of the products can be found on page 3 of this report





Internal Circuitry including Rating Labels

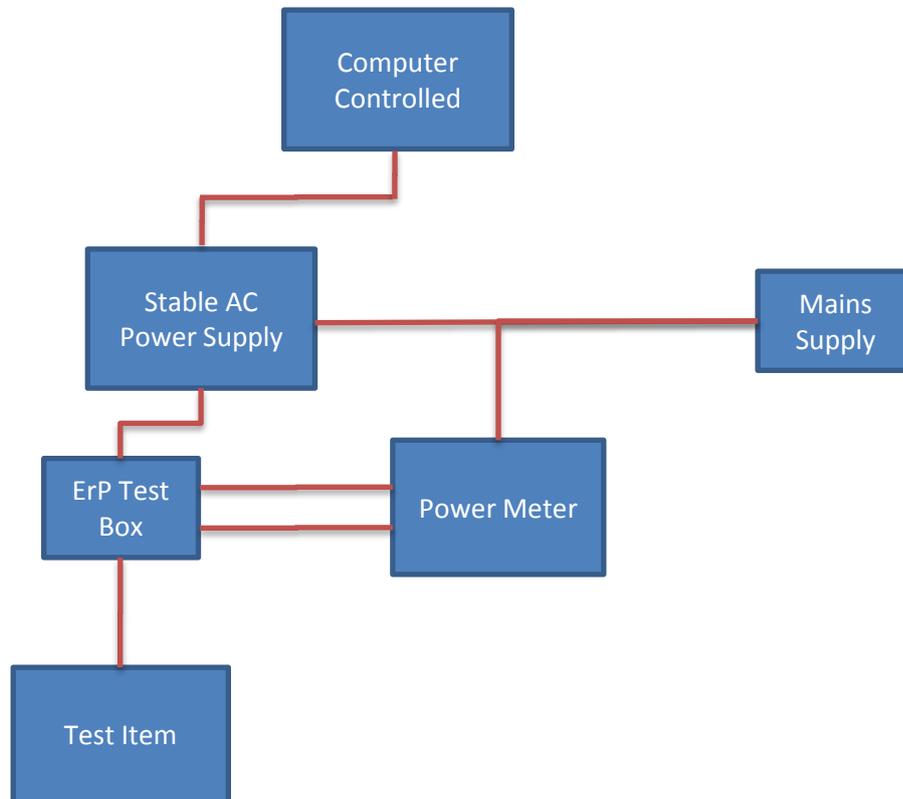


Driver in Situ



Light Engine

Appendix 1: Test item set-up



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