

<b>Report Number</b>	TRN-16927
<b>Customer</b>	Coughtrie International
<b>Contact</b>	Sam White
<b>Product Type</b>	Street Light
<b>Test Purpose</b>	UMS Energy Performance Test
<b>Sales Order Ref</b>	Q-LUX16-20710
<b>Works Order Number</b>	WO-7574
<b>Test Item Reference</b>	TI-11685
<b>LAB Test Method Reference</b>	TES-20012
<b>Test Standards</b>	LM-79-08 and Elexon UMS Charge Code process V4.0
<b>Lab Location Reference</b>	LUX-TSI - Safety
<b>Tested By</b>	Steve Hunt
<b>Date of Test</b>	8 March 2016
<b>Analysed by</b>	Steve Hunt
<b>Number of products tested</b>	5

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LED Streetlight - Coughtrie International

Date: 5 May 2016

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### 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  $-45^\circ$  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  $15^\circ$  of vertical)

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

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### Test Equipment and Description

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



The products under test are connected to the UMS Test system which has full data control and recording using Labview software. This allows full integration of the test equipment used - Kikusui AC Stable Power Supply, Yokogawa Power Analyser, Pico Temperature Logger and a LUX-TSI distribution control panel

<b>Product Name</b>	LED Streetlight - Coughtrie International
<b>Part/Serial Number</b>	See (Identifier) below
<b>Type of Product</b>	Street Light
<b>Manufacturer</b>	Coughtrie International
<b>Date of Manufacturer</b>	2016
<b>Base Type</b>	N/A
<b>Driver Type</b>	Mains
<b>Driver Model</b>	Tridonic LC17W 250-700mA flexC
<b>Light Engine Model</b>	Tridonic CLE G2 190mm 1500lm
<b>Operating Orientation</b>	Base Up
<b>Test Orientation</b>	Base Up
<b>Ambient Temperature</b>	23.7°C
<b>Humidity</b>	<65% RH
<b>Thermal Management</b>	Passive
<b>Dimmable</b>	Yes
<b>Product Summary</b>	The product is of a street light design consisting of a metal backed enclosure with a large acrylic diffuser at the front. The driver and light engine is situated within the enclosure.

Dimension	Sample	Luminous Opening
Diameter/Width	285 mm	283 mm
Length	285 mm	283 mm
Height/Depth	135 mm	80 mm

Test Item	Identifier
11685A	1
11685B	2
11685C	3
11685D	4
11685E	5

### Test Conditions

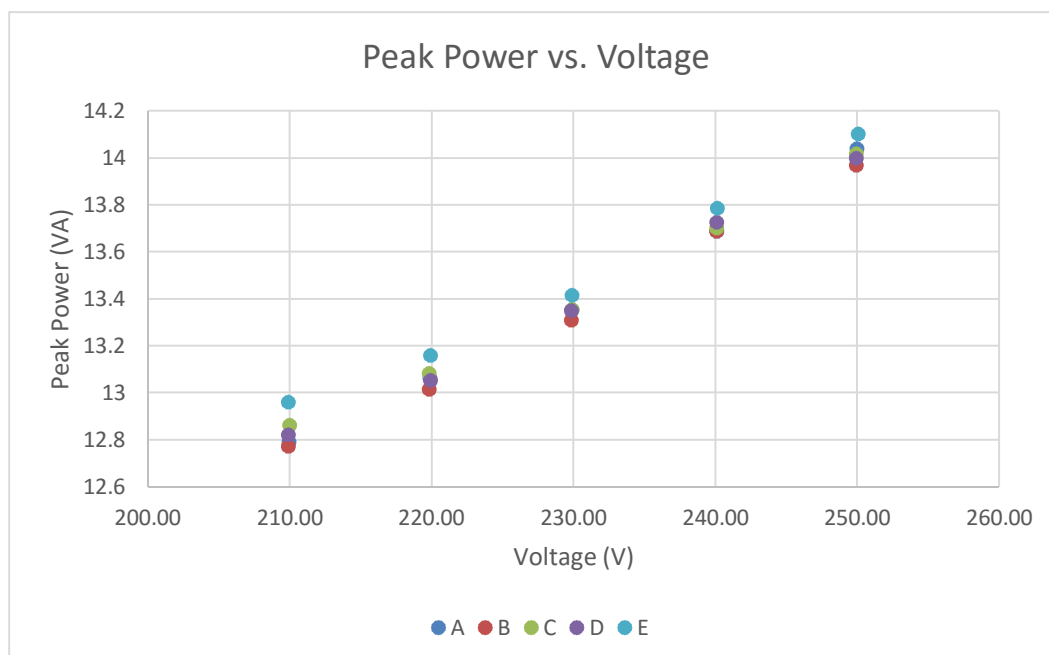
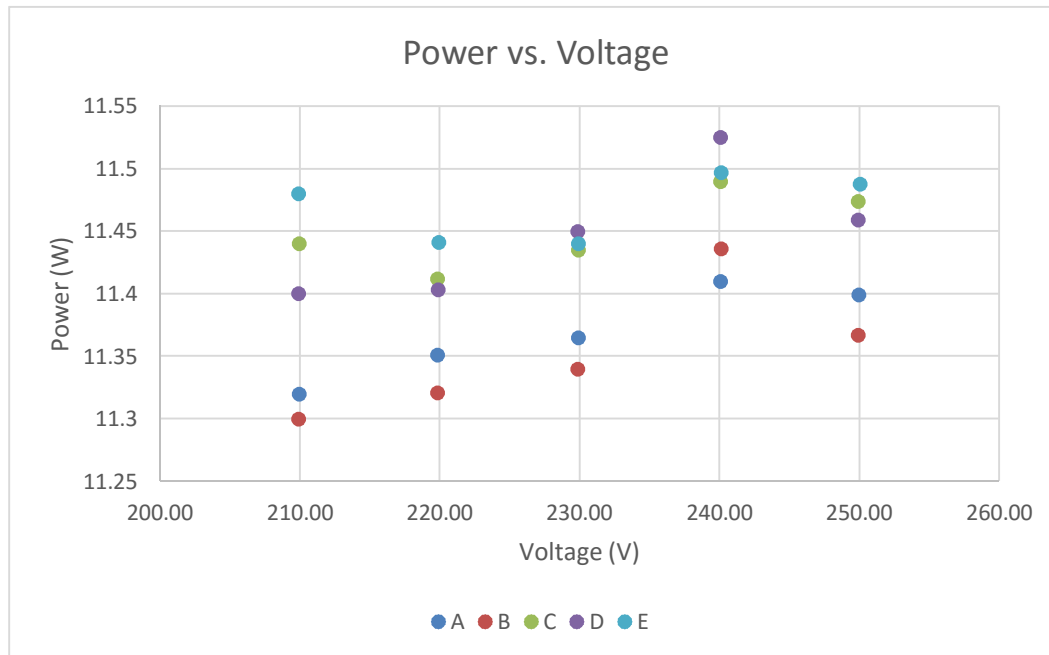
	Before Test	After Test
AC Supply Voltage (V)	249.97V	250.04V
AC Supply Frequency (Hz)	50Hz	50Hz
Voltage RMS Summation of the Harmonic Components (THD)	0.08%	0.07%

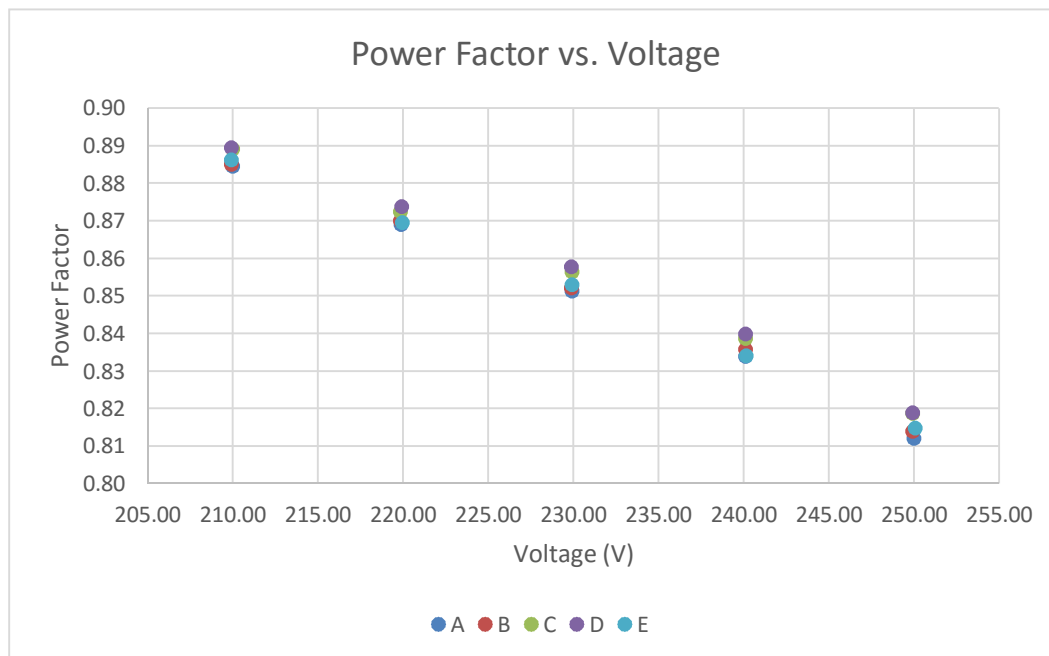
The test items were stabilised according to the electrical power stability of LM79-08. Stabilization is achieved when the difference in electrical power measurement is less than 0.5%. Each test item was stabilised at 250V.

Measurements were made with an ambient temperature of 23°C +/- 2°C. Measurements were taken only after sufficient time for thermal stabilisation has been allowed.

### 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)	$\pm 0.061 \text{ V}_{\text{rms}}$
Current (200 mA, 50/60Hz)	$\pm 0.07 \text{ mA}_{\text{rms}}$
Current (0.5 A, 50/60Hz)	$\pm 0.16 \text{ mA}_{\text{rms}}$
Current (5 A, 50/60Hz)	$\pm 0.0016 \text{ A}_{\text{rms}}$
Power (300 V, 200 mA, 50/60 Hz)	$\pm 0.032 \text{ W}_{\text{rms}}$
Power (300 V, 0.5 A, 50/60 Hz)	$\pm 0.09 \text{ W}_{\text{rms}}$
Power (300 V, 5 A, 50/60 Hz)	$\pm 0.0009 \text{ kW}_{\text{rms}}$
Frequency (50/60 Hz)	$\pm 0.001 \text{ Hz}$
Power Factor	$\pm 0.0006 \text{ PF}$

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	250.02	56.16	11.40	23.71	14.04	0.812	Leading
B	249.95	55.88	11.37	23.88	13.97	0.814	Leading
C	249.96	56.08	11.47	23.85	14.02	0.819	Leading
D	249.96	56.00	11.46	24.09	14.00	0.819	Leading
E	250.09	56.39	11.49	24.10	14.10	0.815	Leading
A	240.11	57.00	11.41	23.84	13.69	0.834	Leading
B	240.14	56.99	11.44	23.71	13.69	0.836	Leading
C	240.13	57.06	11.49	23.73	13.70	0.839	Leading
D	240.12	57.15	11.52	23.92	13.72	0.840	Leading
E	240.15	57.40	11.50	23.94	13.78	0.834	Leading
A	229.93	58.07	11.36	24.06	13.35	0.851	Leading
B	229.90	57.89	11.34	24.34	13.31	0.852	Leading
C	229.94	58.08	11.44	23.98	13.35	0.856	Leading
D	229.90	58.07	11.45	24.38	13.35	0.858	Leading
E	229.94	58.34	11.44	24.20	13.41	0.853	Leading
A	219.89	59.41	11.35	23.96	13.06	0.869	Leading
B	219.86	59.19	11.32	23.91	13.01	0.870	Leading
C	219.87	59.50	11.41	23.91	13.08	0.872	Leading
D	219.94	59.35	11.40	23.71	13.05	0.874	Leading
E	219.97	59.82	11.44	23.95	13.16	0.869	Leading
A	209.99	60.92	11.32	24.16	12.79	0.885	Leading
B	209.92	60.85	11.30	24.10	12.77	0.885	Leading
C	210.01	61.25	11.44	24.14	12.86	0.889	Leading
D	209.93	61.05	11.40	24.08	12.82	0.889	Leading
E	209.94	61.73	11.48	24.24	12.96	0.886	Leading

### Test Item Photographs

#### TI-11685

Images of Product(s) under test includes (where possible) labelling, Driver and Light engine details

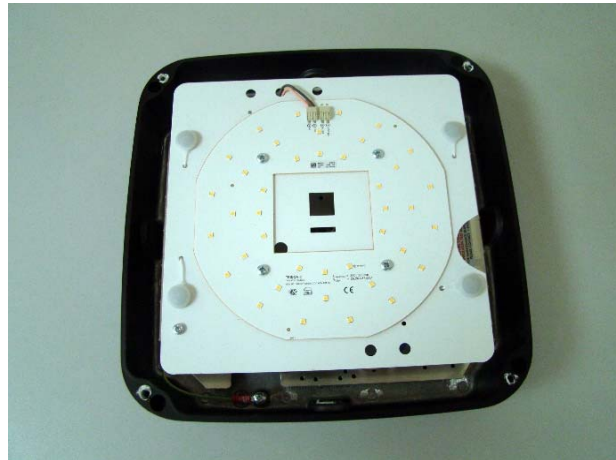


Top of Test Item



Front Face of Test Item





Inside Driver Compartment including driver



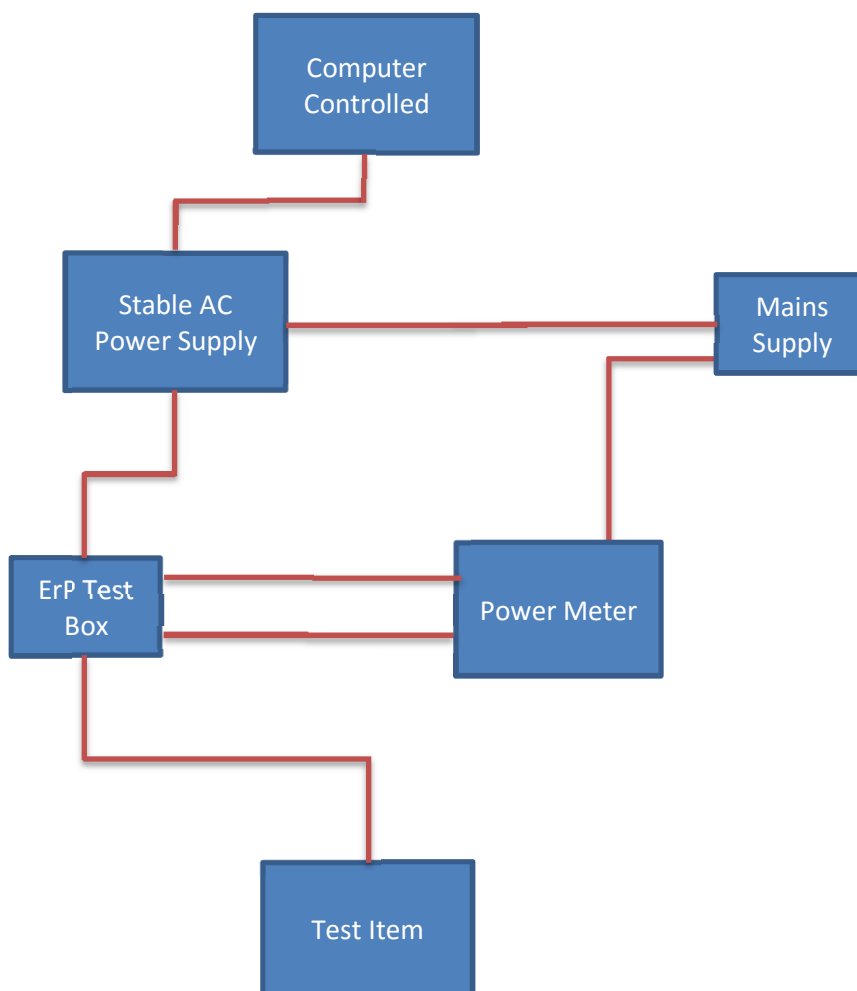
Driver in Situ



Light Engine



## Appendix 1: Test item set-up



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