

<b>Report Number</b>	SAF-21331
<b>Customer</b>	Carbon Reduction Technology Ltd
<b>Contact</b>	William Robson
<b>Product Type</b>	Street Light (Gear Tray)
<b>Test Purpose</b>	UMS Energy Performance Test
<b>Sales Order Ref</b>	Q-LUX16-22541
<b>Works Order Number</b>	WO-11978
<b>Test Item Reference</b>	TI-15208
<b>LAB Test Method Reference</b>	TES-201012
<b>Test Standards (if applicable)</b>	LM-79-08 and Elexon UMS Charge Code process V4.0
<b>Lab Location Reference</b>	Safety Lab
<b>Tested by</b>	Mike Sewell
<b>Date of Test</b>	11/07/2018
<b>Reviewed by</b>	Martin Langdown
<b>Number of products tested</b>	5

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XPG3 LED with LCM-40

Date: 11 July 2018

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Product Information		
Product	Street Light (Gear Tray)	
Product Name / Model	XPG3 LED with LCM-40	
Part/Serial Number	See (Identifier) below	
Product Brand	Carbon Reduction Technology Ltd	
Manufacturer	Carbon Reduction Technology Ltd	
Category	LITE	
Rated Input Voltage	200-240	
Rated output:	100V	
Protection Class	II	
Driver Make/Model	MeanWell	LCM-40DA
Light Engine Make/Model	N/A	N/A
Dimmable / Level Tested	Yes	100%
Product Description		
<p>The Streetlight Gear tray are made from a sheet metal frame, of which on the outside fits the LED modules and on the inner side sits the driver and the electrical connections for termination.</p>		

Test Conditions			
Ambient Temperature		23	(°C)
Humidity		39	(%)
	Before Test		After Test
Voltage	250.22V		250.11V
Frequency	50Hz		50Hz
Total Harmonic Distortion	0.08%		0.09%
<p>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.</p> <p>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.</p>			

Product Specifications / TI Ref Numbers			
Dimension	Sample		Luminous opening
Diameter / Width	90 mm		40 mm
Length	225 mm		90 mm
Height / Depth	60 mm		5 mm
Product Test Number	Identifier		Serial Number (if applicable)
Test Item #1	15208A		N/A
Test Item #2	15208B		N/A
Test Item #3	15208C		N/A
Test Item #4	15208D		N/A
Test Item #5	15208E		N/A

### Test Equipment and Description

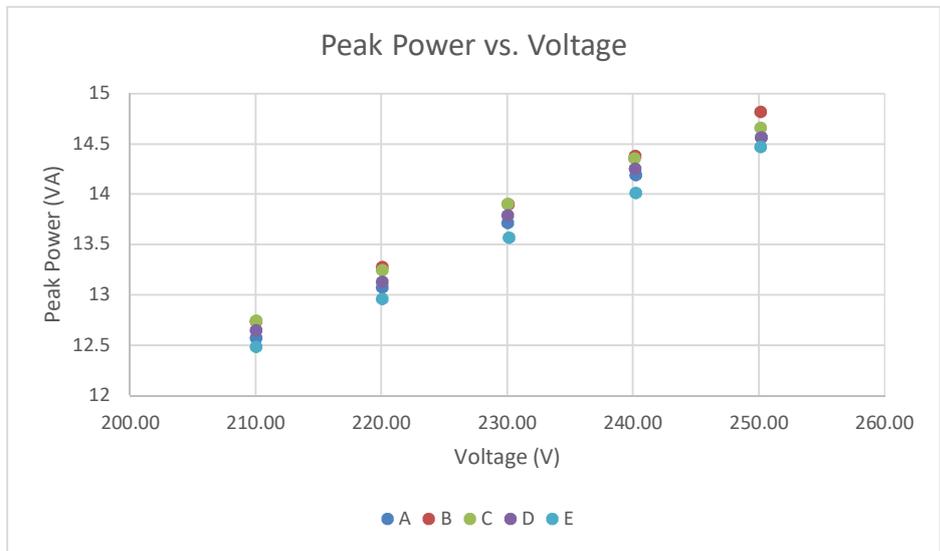
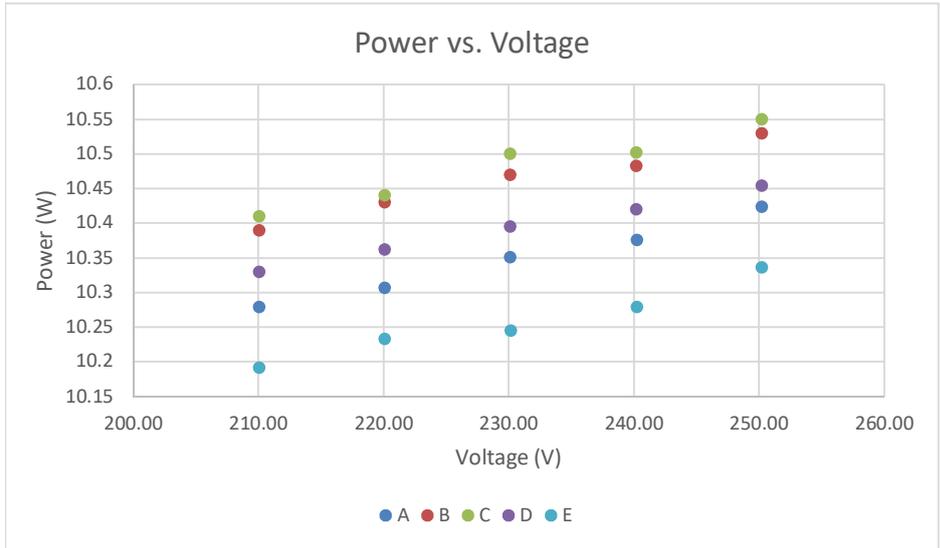
Yokogawa WT210 Power Analyser, Kikusui PCR2000M Stable AC Power Supply with PC control and data recording

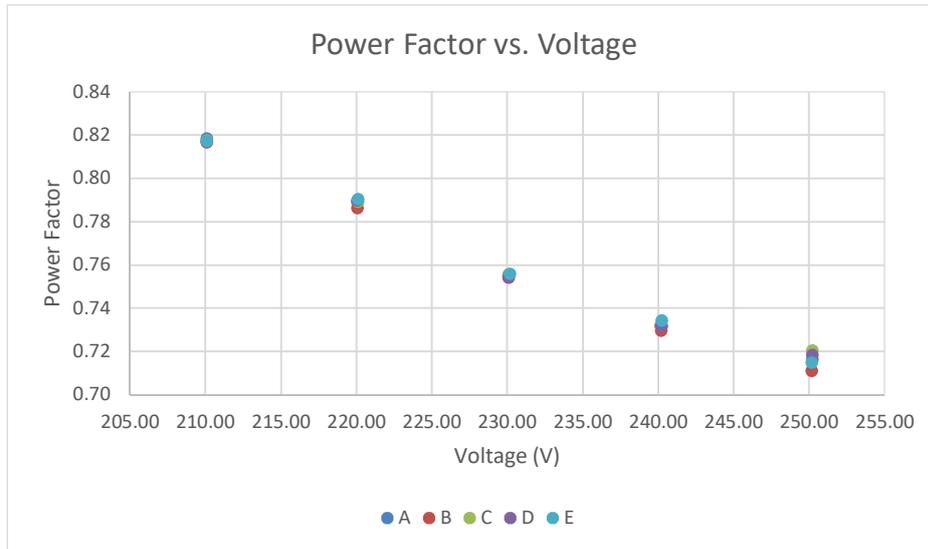


The products under test are connected to the UMS Test system which has full data control and recording using Labview software. This allows full integration of the test equipment used - Kikusui AC Stable Power Supply, Yokogawa Power Analyser, Pico Temperature Logger and a LUX-TSI distribution control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

**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	250.21	58.18	10.42	25.79	14.56	0.716	Leading
B	250.19	59.21	10.53	25.60	14.81	0.711	Leading
C	250.20	58.55	10.55	25.61	14.65	0.720	Leading
D	250.21	58.17	10.45	25.73	14.56	0.718	Leading
E	250.18	57.81	10.34	25.98	14.46	0.715	Leading
A	240.23	59.04	10.38	25.74	14.18	0.732	Leading
B	240.20	59.83	10.48	25.74	14.37	0.729	Leading
C	240.16	59.76	10.50	25.80	14.35	0.732	Leading
D	240.19	59.31	10.42	25.88	14.24	0.732	Leading
E	240.23	58.29	10.28	25.85	14.00	0.734	Leading
A	230.09	59.58	10.35	25.72	13.71	0.755	Leading
B	230.10	60.37	10.47	25.94	13.89	0.754	Leading
C	230.09	60.41	10.50	25.62	13.90	0.755	Leading
D	230.09	59.91	10.40	25.82	13.78	0.754	Leading
E	230.18	58.91	10.24	25.72	13.56	0.756	Leading
A	220.09	59.39	10.31	25.56	13.07	0.789	Leading
B	220.08	60.28	10.43	25.53	13.27	0.786	Leading
C	220.10	60.14	10.44	25.67	13.24	0.789	Leading
D	220.09	59.63	10.36	25.66	13.12	0.789	Leading
E	220.10	58.84	10.23	25.83	12.95	0.790	Leading
A	210.09	59.80	10.28	25.95	12.56	0.818	Leading
B	210.07	60.60	10.39	25.88	12.73	0.816	Leading
C	210.08	60.64	10.41	25.72	12.74	0.817	Leading
D	210.08	60.19	10.33	25.93	12.64	0.817	Leading
E	210.08	59.38	10.19	25.75	12.48	0.817	Leading

Test Item Photographs

TI-15208

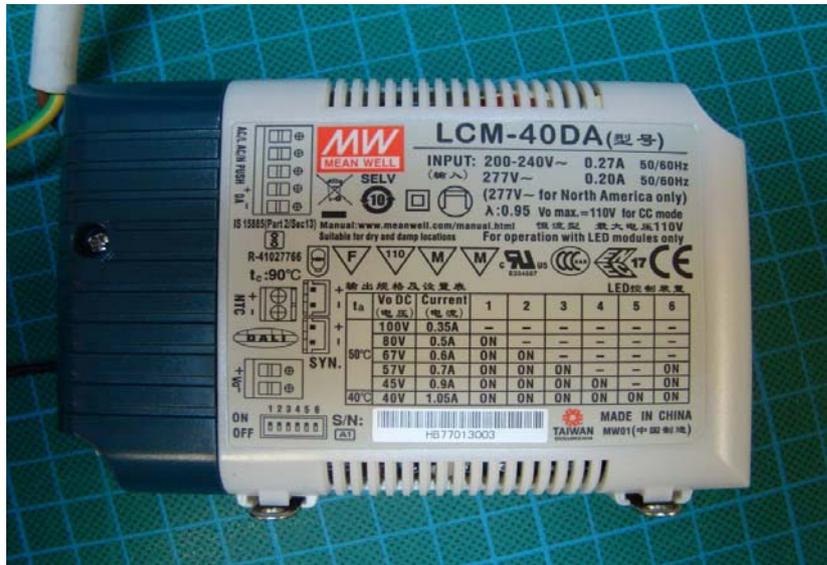
Images of Product(s) under test includes (where possible) labelling, Driver and Light engine details



Product View



Product View (Representative)

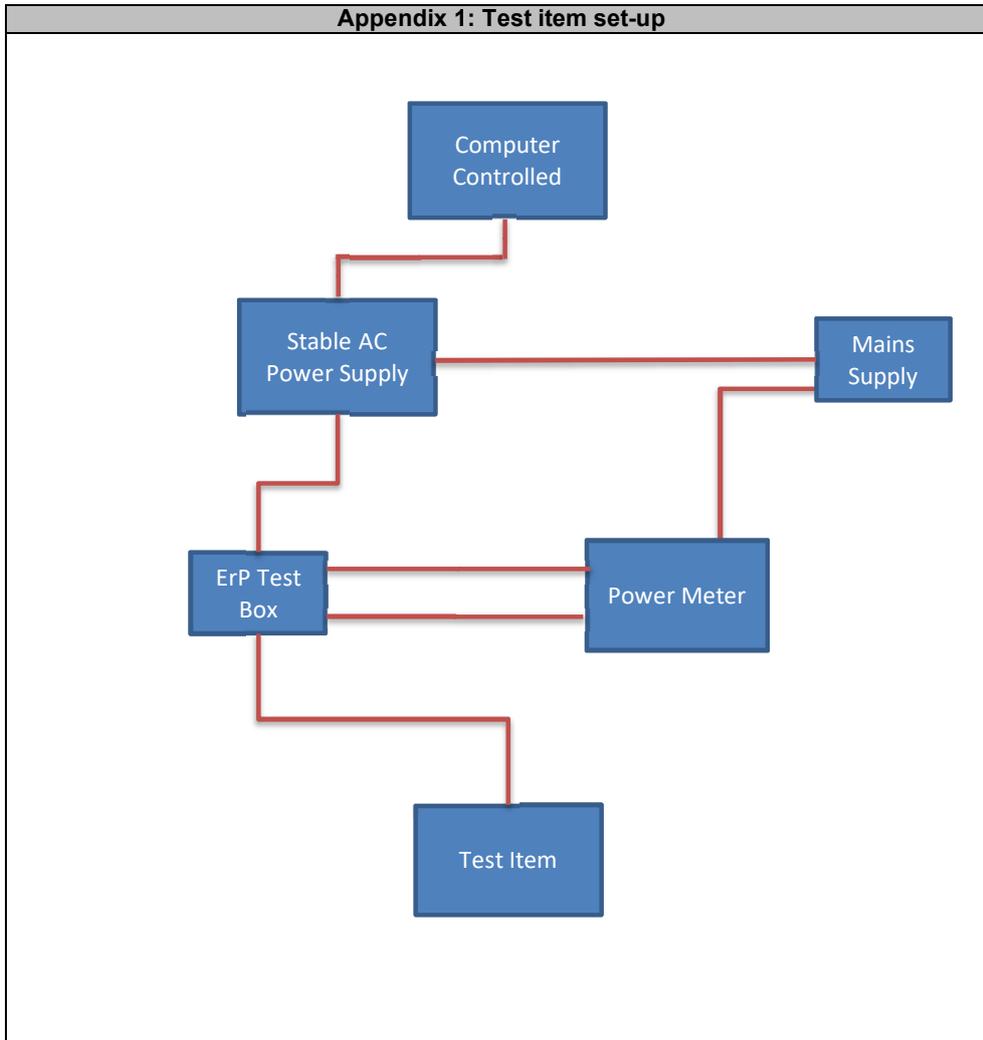


Driver used for test



Light Engine

#### Appendix 1: Test item set-up



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