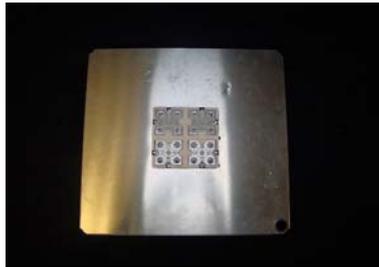


<b>Report Number</b>	SAF-20315
<b>Customer</b>	Smart Systems UK
<b>Contact</b>	Roger Ismay
<b>Product Type</b>	Retrofit (Gear Tray)
<b>Test Purpose</b>	UMS Energy Performance Test
<b>Sales Order Ref</b>	Q-LUX17-22031
<b>Works Order Number</b>	WO-10962
<b>Test Item Reference</b>	TI-14406
<b>LAB Test Method 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>	Steve Hunt
<b>Date of Test</b>	09/11/2017
<b>Reviewed by</b>	Menno Schakel
<b>Number of products tested</b>	5

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Date: 9 November 2017



ZALEX134 LED Retrofit fixed output gear  
tray

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Product Information		
Product	Retrofit (Gear Tray)	
Product Name / Model	ZALEX134 LED Retrofit fixed output gear tray	
Part/Serial Number	See (Identifier) below	
Product Brand	Smart Systems UK	
Manufacturer	Smart Systems UK	
Category	LITE	
Rated Input Voltage	240V ac	
Rated output:	35 -72V dc	
Protection Class	I	
Driver Make/Model	VS Lighting Solutions	ECXe 700.156
Light Engine Make/Model	N/A	N/A
Dimmable / Level Tested	Yes	100%
Product Description		
The Retrofit LED Gear tray is made from Stainless Steel, of which on the outside fits the LED modules and on the inner side sits the driver and the electrical connections for termination.		

Test Conditions		
Ambient Temperature	24	(°C)
Humidity	45	(%)
Test Results		
	<i>Before Test</i>	<i>After Test</i>
Voltage	249.95V	249.94V
Frequency	50Hz	50Hz
Total Harmonic Distortion	0.08%	0.08%
<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		
<i>Dimension</i>	<i>Sample</i>	<i>Luminous opening</i>
Diameter / Width	3800 mm	120 mm
Length	3800 mm	120 mm
Height / Depth	50 mm	10 mm
<i>Product Test Number</i>	<i>Identifier</i>	<i>Serial Number (if applicable)</i>
Test Item #1	14406A	N/A
Test Item #2	14406B	N/A
Test Item #3	14406C	N/A
Test Item #4	14406D	N/A
Test Item #5	14406E	N/A

### Test Equipment and Description

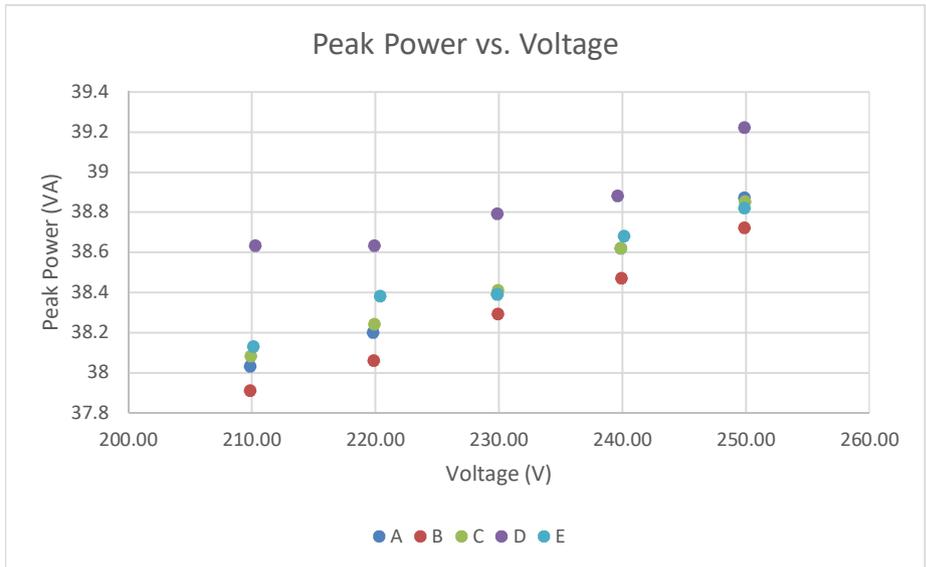
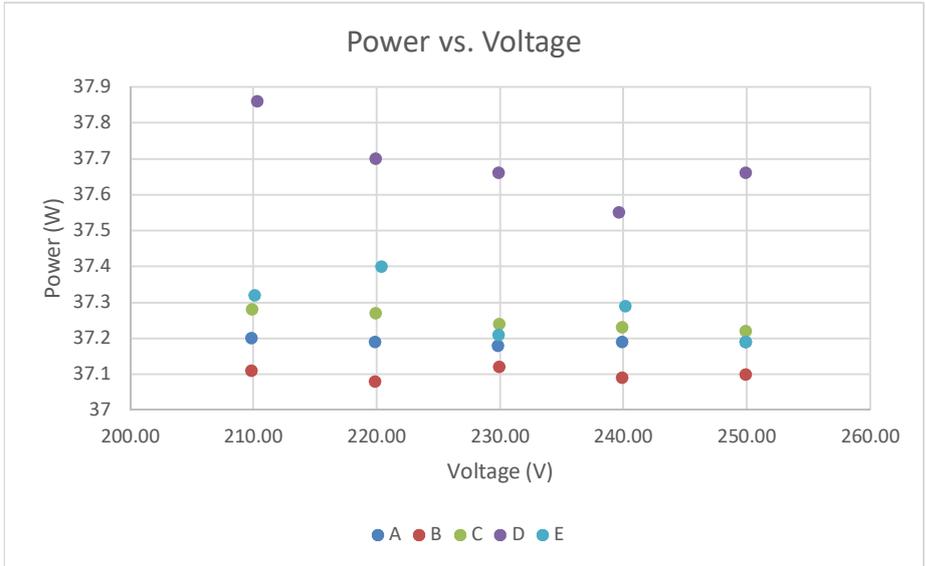
Yokogawa WT210 Power Analyser, Kikusui PCR2000M Stable AC Power Supply with PC control and data recording

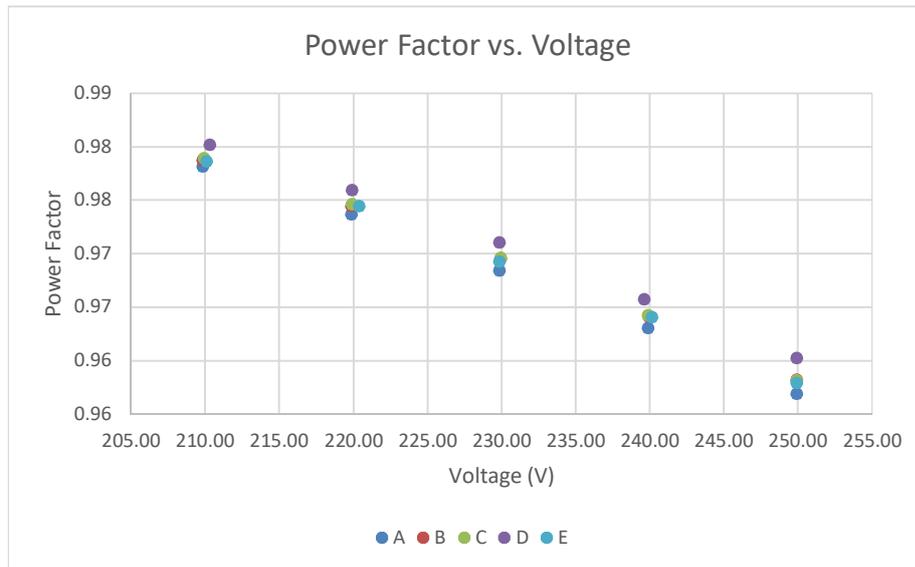


The products under test are connected to the UMS Test system which has full data control and recording using Labview software. This allows full integration of the test equipment used - Kikusui AC Stable Power Supply, Yokogawa Power Analyser, Pico Temperature Logger and a LUX-TSI distribution control 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 Lagging phase angle and therefore the driver has inductive 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)	$\pm 0.032 W_{rms}$
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.



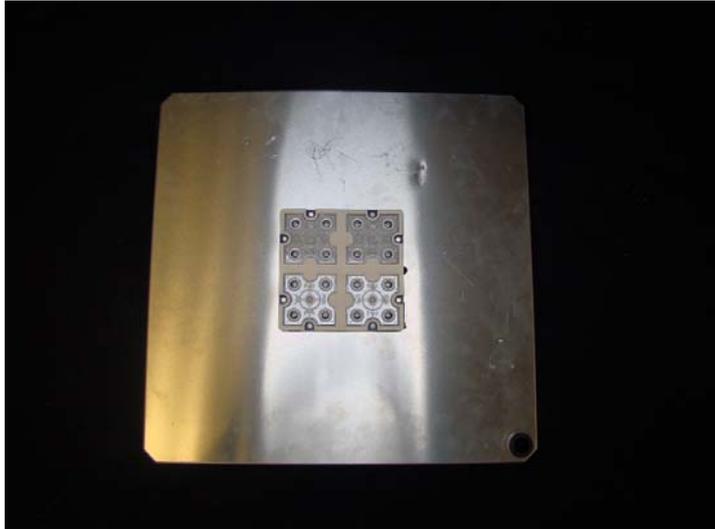
**Full Test Results**

Test Item	Voltage (V)	Current (mA)	Electrical Power (W)	Ambient Temp (°C)	Peak Power (VA)	Power Factor	Leading / Lagging
A	249.96	155.49	37.19	22.77	38.87	0.957	Lagging
B	249.95	154.91	37.10	22.71	38.72	0.958	Lagging
C	249.97	155.41	37.22	23.08	38.85	0.958	Leading
D	249.96	156.92	37.66	23.06	39.22	0.960	Leading
E	249.94	155.33	37.19	22.92	38.82	0.958	Leading
A	239.93	160.97	37.19	22.59	38.62	0.963	Lagging
B	239.96	160.32	37.09	22.71	38.47	0.964	Lagging
C	239.92	160.95	37.23	22.63	38.62	0.964	Leading
D	239.66	162.25	37.55	22.70	38.88	0.966	Leading
E	240.20	161.05	37.29	22.50	38.68	0.964	Leading
A	229.90	167.01	37.18	22.86	38.39	0.968	Lagging
B	229.98	166.50	37.12	22.95	38.29	0.970	Lagging
C	229.96	167.05	37.24	22.94	38.41	0.970	Leading
D	229.91	168.72	37.66	22.91	38.79	0.971	Leading
E	229.91	166.98	37.21	22.63	38.39	0.969	Leading
A	219.89	173.73	37.19	22.75	38.20	0.974	Lagging
B	219.91	173.06	37.08	22.86	38.06	0.974	Lagging
C	219.96	173.86	37.27	22.74	38.24	0.975	Leading
D	219.97	175.64	37.70	22.92	38.63	0.976	Leading
E	220.44	174.11	37.40	22.92	38.38	0.974	Leading
A	209.89	181.20	37.20	22.94	38.03	0.978	Lagging
B	209.89	180.63	37.11	23.06	37.91	0.979	Lagging
C	209.96	181.38	37.28	23.07	38.08	0.979	Leading
D	210.35	183.66	37.86	23.04	38.63	0.980	Leading
E	210.15	181.45	37.32	23.07	38.13	0.979	Leading

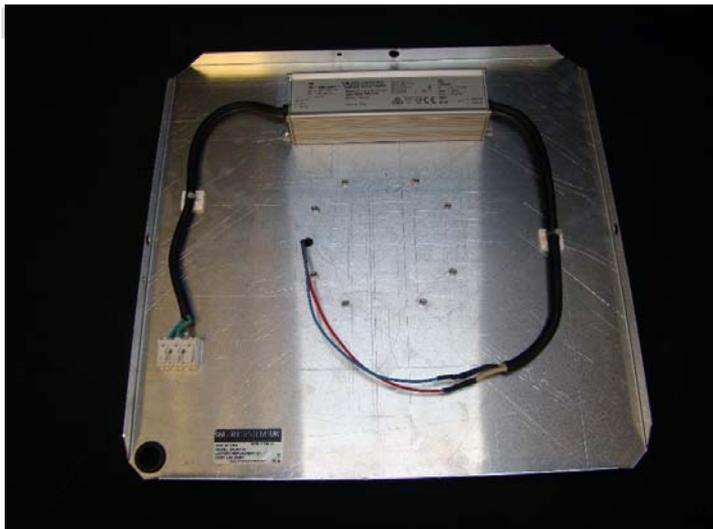
**Test Item Photographs**

**TI-14406**

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



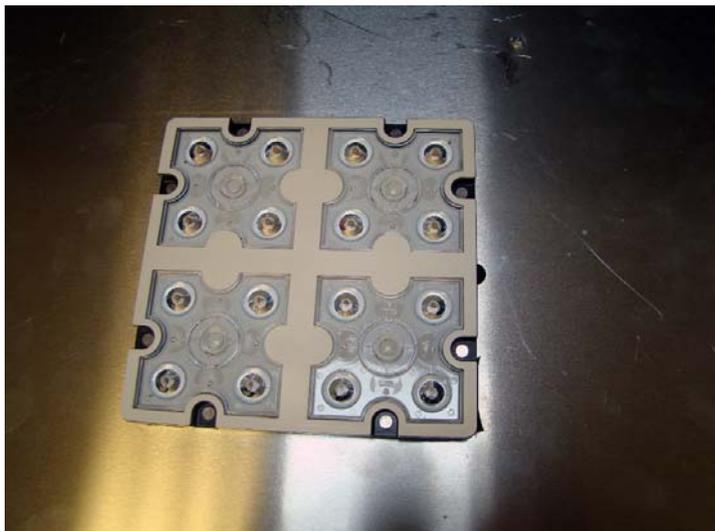
Led Module fitment



Driver and terminal fitment

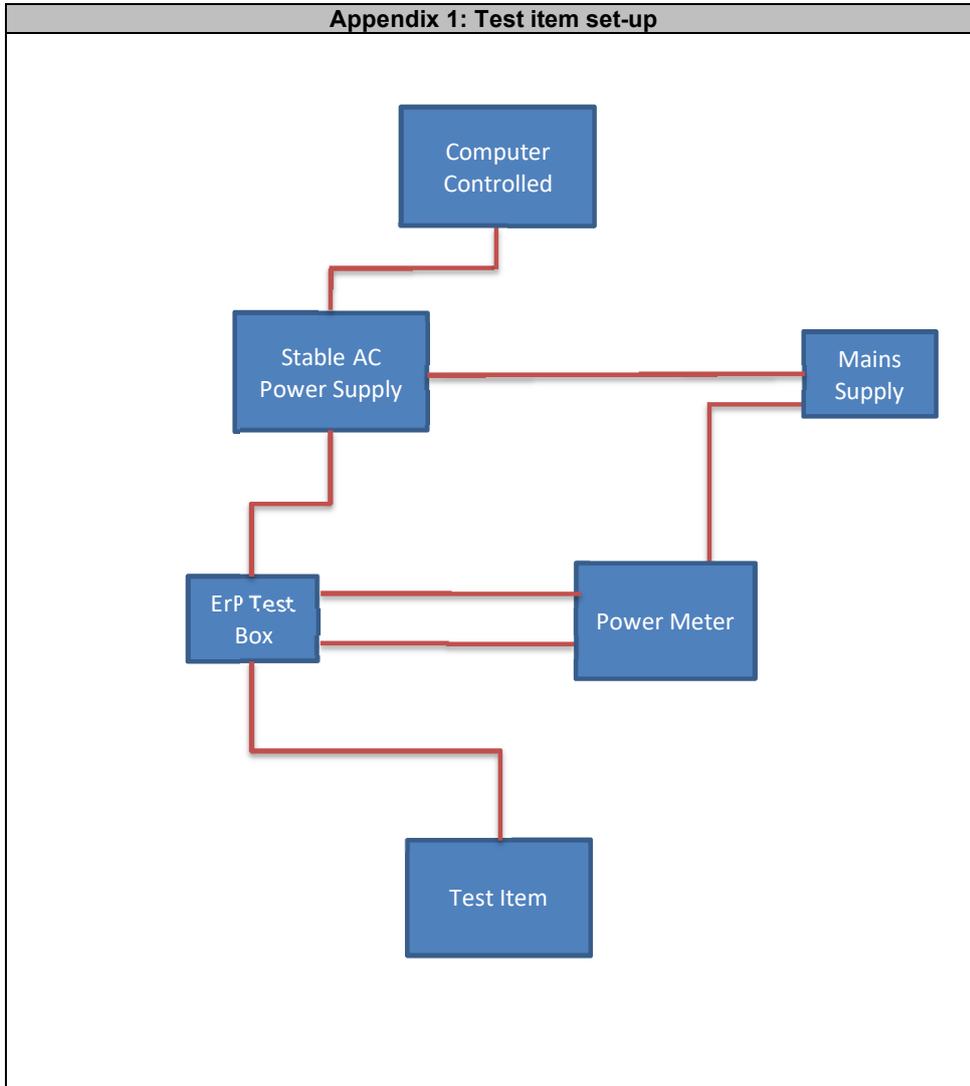


Driver fitted



LED Module(s) fitted

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



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