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Accredited for compliance with ISO/IEC 17025
Accreditation No. 19541

Test Report: 216115

Testing of Street Light Power for AEMO's NEM Load Table and other tests on optical systems

for HUB NOVA 14W Category P Luminaire Catalogue No. HUB.NOVA 14

Type of product: Category P Street Light

Prepared for: HUB Street Equipment

Description: HUB NOVA 14W Category P luminaire. Horizontal spigot street light with aluminium housing and driven from a Philips Xitanium LED driver model 9290 009 408.

Test objective and Method

Determination of the luminaire supply operating parameters Voltage, Current, Power and Power Factor when tested at nominal test voltages of 250V. By the method of LEDLab Electrical Parameter Determination and AEMO Unmetered_Load_Guideline_v1_0.

Test configuration

The ten luminaires were operated at 25°C ambient temperature in their normal operational orientation at 250VAC until the monitored luminaire stabilised as defined in IES LM79. Twenty readings were taken ten seconds apart and the average found. The average value is multiplied by the Calibration Correction given in the latest NATA endorsed calibration report then has Voltmeter losses subtracted based on Watt-meter input impedance and test voltage. The other nine luminaires having operated for the same or more time are switched one by one to Watt-meter for their twenty readings.

Client:

HUB Street Equipment contact Mark West, 10 Regent Street, Chippendale NSW 2008

Tested by: Alain Yetendje On 02/06/2016 Authorised Signatory Date: 07/06/2016

Alain Yetendje

Conclusions

Test results are given in following Tables.
The Average Load (Watts) is 14.54 Watts at 0.86 Power Factor.

Results

Time till stabilisation: 6h

Electrical Measurements

Sample 1	Supply Voltage (Vrms)	Input Current (Arms)	Input Power (W)	Power Factor
Average	250.292	0.068	14.697	0.865
Min	249.790	0.068	14.675	0.863
Max	250.560	0.068	14.706	0.866
Calibration correction (see Newton 4th calibration report 221983)	0.9998	0.9998	0.9999	1.0001
Instrument impedance correction (N4)		0.00024	0.0576	
Final value	250.24	0.0676	14.64	0.866

Sample 2	Supply Voltage (Vrms)	Input Current (Arms)	Input Power (W)	Power Factor
Average	249.661	0.066	14.470	0.876
Min	249.380	0.066	14.468	0.875
Max	250.030	0.066	14.472	0.876
Calibration correction (see Newton 4th calibration report 221983)	0.9998	0.9998	0.9999	1.0001
Instrument impedance correction (N4)		0.00024	0.0576	
Final value	249.61	0.0659	14.41	0.876

Sample 3	Supply Voltage (Vrms)	Input Current (Arms)	Input Power (W)	Power Factor
Average	250.015	0.068	14.623	0.865
Min	249.780	0.068	14.619	0.865
Max	250.190	0.068	14.629	0.866
Calibration correction (see Newton 4th calibration report 221983)	0.9998	0.9998	0.9999	1.0001
Instrument impedance correction (N4)		0.00024	0.0576	
Final value	249.96	0.0673	14.56	0.866

Sample 4	Supply Voltage (Vrms)	Input Current (Arms)	Input Power (W)	Power Factor
Average	250.281	0.066	14.534	0.878
Min	249.920	0.066	14.530	0.878
Max	250.430	0.066	14.537	0.879
Calibration correction (see Newton 4th calibration report 221983)	0.9998	0.9998	0.9999	1.0001
Instrument impedance correction (N4)		0.00024	0.0576	
Final value	250.23	0.0659	14.47	0.878

Sample 5	Supply Voltage (Vrms)	Input Current (Arms)	Input Power (W)	Power Factor
Average	249.573	0.069	14.709	0.859
Min	249.360	0.069	14.704	0.859
Max	249.730	0.069	14.726	0.860
Calibration correction (see Newton 4th calibration report 221983)	0.9998	0.9998	0.9999	1.0001
Instrument impedance correction (N4)		0.00024	0.0576	
Final value	249.52	0.0683	14.65	0.859

Sample 6	Supply Voltage (Vrms)	Input Current (Arms)	Input Power (W)	Power Factor
Average	250.227	0.069	14.437	0.832
Min	249.540	0.068	14.411	0.817
Max	250.720	0.071	14.450	0.853
Calibration correction (see Newton 4th calibration report 221983)	0.9998	0.9998	0.9999	1.0001
Instrument impedance correction (N4)		0.00024	0.0576	
Final value	250.18	0.0691	14.38	0.832

Sample 7	Supply Voltage (Vrms)	Input Current (Arms)	Input Power (W)	Power Factor
Average	249.739	0.068	14.570	0.856
Min	249.290	0.068	14.558	0.851
Max	250.520	0.068	14.589	0.858
Calibration correction (see Newton 4th calibration report 221983)	0.9998	0.9998	0.9999	1.0001
Instrument impedance correction (N4)		0.00024	0.0576	
Final value	249.69	0.0679	14.51	0.856

Sample 8	Supply Voltage (Vrms)	Input Current (Arms)	Input Power (W)	Power Factor
Average	250.069	0.069	14.717	0.855
Min	249.700	0.069	14.713	0.854
Max	250.260	0.069	14.722	0.857
Calibration correction (see Newton 4th calibration report 221983)	0.9998	0.9998	0.9999	1.0001
Instrument impedance correction (N4)		0.00024	0.0576	
Final value	250.02	0.0686	14.66	0.855

Sample 9	Supply Voltage (Vrms)	Input Current (Arms)	Input Power (W)	Power Factor
Average	249.889	0.068	14.532	0.855
Min	249.690	0.068	14.530	0.854
Max	250.070	0.068	14.534	0.856
Calibration correction (see Newton 4th calibration report 221983)	0.9998	0.9998	0.9999	1.0001
Instrument impedance correction (N4)		0.00024	0.0576	
Final value	249.84	0.0678	14.47	0.855

Sample 10	Supply Voltage (Vrms)	Input Current (Arms)	Input Power (W)	Power Factor
Average	250.304	0.068	14.680	0.856
Min	250.120	0.068	14.675	0.856
Max	250.480	0.069	14.687	0.857
Calibration correction (see Newton 4th calibration report 221983)	0.9998	0.9998	0.9999	1.0001
Instrument impedance correction (N4)		0.00024	0.0576	
Final value	250.25	0.0682	14.62	0.856

Electrical operating parameters of HUB NOVA 14W

Sample No.	Supply Voltage (Vrms)	Input Current (Arms)	Input Power (W)	Power Factor
Sample 1	250.24	0.068	14.638	0.865
Sample 2	249.61	0.066	14.411	0.876
Sample 3	249.96	0.067	14.565	0.865
Sample 4	250.23	0.066	14.475	0.878
Sample 5	249.52	0.068	14.650	0.859
Sample 6	250.18	0.069	14.378	0.832
Sample 7	249.69	0.068	14.511	0.856
Sample 8	250.02	0.069	14.658	0.855
Sample 9	249.84	0.068	14.473	0.855
Sample 10	250.25	0.068	14.621	0.856
Average	**249.95**	**0.068**	**14.538**	**0.860**

Illustration 1: Electrical operating parameters of HUB NOVA 14W

Uncertainties

At a Confidence Level of 95% with a Coverage Factor of 2

Supply Voltage: ± 0.07%
Supply Current: ± 0.14%
Supply Power: ± 0.19%
Power Factor: ± 0.05
Ambient Temperature: ± 1°C

Test Equipment Used

Power meter: Newton 4th Power Analyser KinetiQ Model PPA2520 SN 133-00467
Power meter integration time (s): 5
Calibration Report: Ausgrid 221983
Luminaire thermometer: AMA S No. 1086110-0.1deg

General Photographs

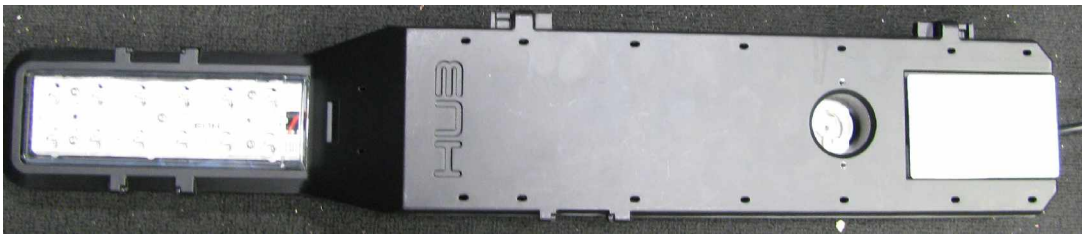

Illustration 2: Luminaire

Illustration 3: Philips Xitanium driver

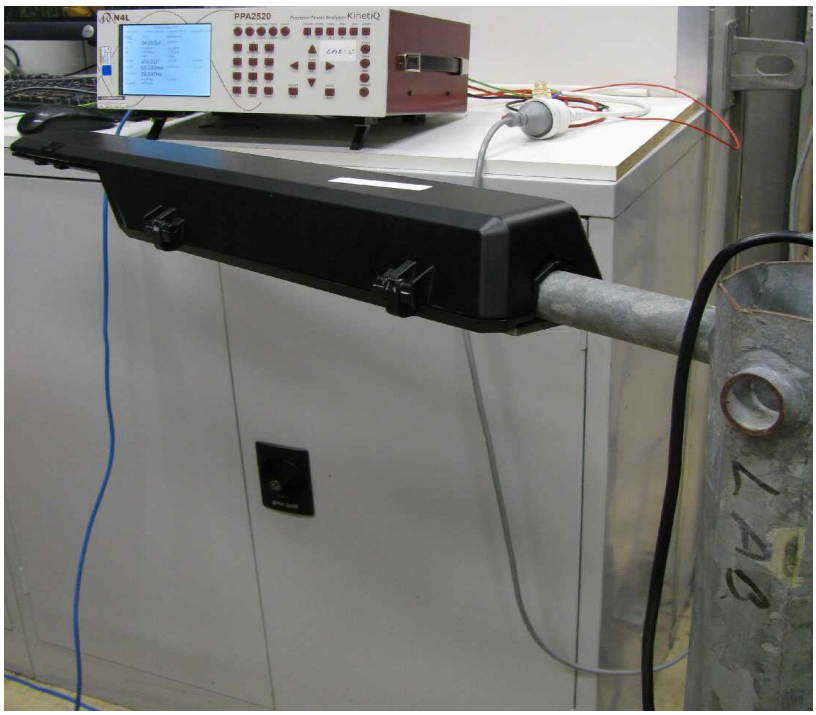

Illustration 4: Luminaire setup on a pole