

Light Emission Distribution Laboratory

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Test Report: 210354LCP

Testing of Wireless NB-IOT Lighting Controller Power for AEMO's NEM Load Table and other tests on optical systems

for CIMCON Intelligent wireless NB-IOT lighting controller

Type of product: NB-IOT Wireless Lighting Controller

Prepared for: Sylvania Schréder, Bldg 4A, Parklands Estate, 21-23 South Street, Rydalmere NSW 2116 Australia

Model number: iSLC3100-7P-N-AD-G-IO-CATC-05-SW

Description: CIMCON Intelligent wireless NB-IOT lighting controller to control ON/OFF switching, dimming control, GPS, power metering, sensor inputs, status and health monitoring of Streetlight.

Test objective and Method

Determination of the device 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 nodes supplied by the client were mounted into the test jig and operated at 25°C ambient temperature at 250VAC, 50Hz, until the monitored sample stabilised (30 minutes). 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. The other nine units having operated for the same or more time are switched one by one to the Wattmeter for their twenty readings. Note that, 5 samples were supplied with their relays ON and the 5 others with their relays OFF.

Client contact: Swati Dhembre, Bldg 4A Parklands Estate | 21-23 South St Rydalmere, NSW 2116, Australia.

Conclusion

The Average Load (W) with relay ON is 2.03W at 0.47 Power Factor.

The Average Load (W) with relay OFF is 1.43W at 0.38 Power Factor.

Tested by: David Orwin On 07/04/2021 Authorised Signatory

Date: 09/04/2021

Alain Yetendje

The data specified in this report relates to the sample measured as received from the client under standard conditions specified in the Test Specification, and may not necessarily relate to other similar luminaires or other operating conditions. The tests and measurements covered by this document are traceable to Australian national standards of measurement. This report shall only be reproduced in full unless approved in writing by Light Emission Distribution Laboratory (LEDLab).

Results

Time till stabilisation: 30min

Electrical Measurements

Sample 1 Average Min Max	Supply Voltage (Vrms) 249.997 249.040 251.380	Input Current (Arms) 0.016 0.016 0.016	Input Power (W) 1.452 1.433 1.477	Power Factor 0.385 0.384 0.388
Calibration correction (see Newton 4 th calibration	1.00025	0.99958	1.00010	1.0000
Instrument impedance correction (N4)		0.00024	0.0000	
Final value	250.06	0.0156	1.45	0.385
Sample 2 Average Min Max	Supply Voltage (Vrms) 250.014 248.620 250.790	Input Current (Arms) 0.016 0.015 0.016	Input Power (W) 1.380 1.358 1.449	Power Factor 0.385 0.384 0.388
Calibration correction (see Newton 4 $^{ m th}$ calibra	1.00025	0.99958	1.00010	1.0000
Instrument impedance correc		0.00024	0.0000	
Final value	250.08	0.0153	1.38	0.385
Sample 3 Average Min Max	Supply Voltage (Vrms) 250.534 249.710 251.320	Input Current (Arms) 0.016 0.016 0.016	Input Power (W) 1.415 1.395 1.441	Power Factor 0.385 0.384 0.388
Calibration correction (see Newton 4 th calibra Instrument impedance correc Final value	1.00025 tion (N4) 250.60	0.99958 0.00024 0.0157	1.00010 0.0000 1.42	1.0000 0.385

Sample 4 Average Min Max	Supply Voltage (Vrms) 250.144 249.020 251.450	Input Current (Arms) 0.017 0.017 0.017	(W) 1.467 (1.454 (er Factor 0.385 0.384 0.388
Calibration correction (see Newton 4^{th} calibra	1.00025	0.99958		L.0000
Instrument impedance corre	. ,	0.00024	0.0000	
Final value	250.21	0.0165	1.47 (0.385
Sample 5 Average	Supply Voltage (Vrms) 250.089	Input Current (Arms) 0.016	(W) 1.432 (er Factor 0.385
Min	249.210	0.016		0.384
Max	250.560	0.017	1.588 (0.388
Calibration correction (see Newton 4 th calibra Instrument impedance corre		0.99958 0.00024	0.0000	.0000
Final value	250.15	0.0162	1.43 (0.385
Sample 6 Average Min Max	Supply Voltage (Vrms) 250.403 249.570 251.080	Input Current (Arms) 0.020 0.020 0.021	(W) 2.089 (2.030 (er Factor 0.470 0.467 0.476
Average Min	Voltage (Vrms) 250.403 249.570 251.080 1.00025	Current (Arms) 0.020 0.020	(W) 2.089 (2.030 (2.184 (0.470 0.467
Average Min Max Calibration correction (see Newton 4 th calibra	Voltage (Vrms) 250.403 249.570 251.080 1.00025	Current (Arms) 0.020 0.020 0.021 0.99958	(W) 2.089 (2.030 (2.184 (1.00010 1 0.0000	0.470 0.467 0.476
Average Min Max ^{Calibration correction (see Newton 4th calibra Instrument impedance corre Final value Sample 7}	Voltage (Vrms) 250.403 249.570 251.080 1.00025 ction (N4) 250.46 Supply Voltage (Vrms)	Current (Arms) 0.020 0.021 0.99958 0.00024 0.0197 Input Current (Arms)	(W) 2.089 (2.030 (2.184 (1.00010 1 0.0000 2.09 (Input Power (W) Power	0.470 0.467 0.476 0000 0.470 er Factor
Average Min Max ^{Calibration correction (see Newton 4th calibra Instrument impedance corre Final value Sample 7 Average}	Voltage (Vrms) 250.403 249.570 251.080 1.00025 ction (N4) 250.46 Supply Voltage (Vrms) 250.112	Current (Arms) 0.020 0.021 0.99958 0.00024 0.0197 Input Current (Arms) 0.020	(W) 2.089 (2.030 (2.184 (1.00010 1 0.0000 2.09 (Input Power (W) Power (W) 1.955 (0.470 0.467 0.476 0000 0.470 er Factor 0.470
Average Min Max Calibration correction (see Newton 4 th calibra Instrument impedance corre Final value Sample 7 Average Min	Voltage (Vrms) 250.403 249.570 251.080 1.00025 ction (N4) 250.46 Supply Voltage (Vrms) 250.112 249.380	Current (Arms) 0.020 0.021 0.99958 0.00024 0.0197 Input Current (Arms) 0.020 0.020	(W) 2.089 (2.030 (2.184 (1.00010 1 0.0000 2.09 (Input Power (W) Power (W) Power (W) 1.955 (1.946 (0.470 0.467 0.476 0000 0.470 er Factor 0.470 0.467
Average Min Max ^{Calibration correction (see Newton 4th calibra Instrument impedance corre Final value Sample 7 Average}	Voltage (Vrms) 250.403 249.570 251.080 1.00025 ction (N4) 250.46 Supply Voltage (Vrms) 250.112	Current (Arms) 0.020 0.021 0.99958 0.00024 0.0197 Input Current (Arms) 0.020	(W) 2.089 (2.030 (2.184 (1.00010 1 0.0000 2.09 (Input Power (W) Power (W) Power (W) 1.955 (1.946 (0.470 0.467 0.476 0000 0.470 er Factor 0.470
Average Min Max Calibration correction (see Newton 4 th calibra Instrument impedance corre Final value Sample 7 Average Min	Voltage (Vrms) 250.403 249.570 251.080 1.00025 ction (N4) 250.46 Supply Voltage (Vrms) 250.112 249.380 250.680 1.00025	Current (Arms) 0.020 0.021 0.99958 0.00024 0.0197 Input Current (Arms) 0.020 0.020	(W) 2.089 (0 2.030 (0 2.184 (0 1.00010 1 0.0000 2.09 (0 1.955 (0 1.946 (0 2.006 (0 1.00010 1 0.0000 1	0.470 0.467 0.476 0000 0.470 er Factor 0.470 0.467

Sample 8 Average Min Max	Supply Voltage (Vrms) 249.972 248.640 251.070	Input Current (Arms) 0.020 0.020 0.021	Input Power (W) 2.095 2.076 2.111	Power Factor 0.470 0.467 0.476
Calibration correction (see Newton 4 th calibra	1.00025	0.99958	1.00010	1.0000
Instrument impedance correc Final value	250.03	0.00024 0.0200	0.0000 2.10	0.470
Sample 9	Supply Voltage (Vrms)	Input Current (Arms)	Input Power (W)	Power Factor
Average	250.262	0.020	1.992	0.470
Min	249.260	0.020	1.978	0.467
Max	250.770	0.020	2.013	0.476
Calibration correction (see Newton 4 th calibra Instrument impedance correc Final value	1.00025 tion (N4) 250.32	0.99958 0.00024 0.0197	1.00010 0.0000 1.99	1.0000 0.470
Sample 10 Average Min	Supply Voltage (Vrms) 249.866 248.630	Input Current (Arms) 0.020 0.019	Input Power (W) 2.031 1.856	Power Factor 0.470 0.467
Max	251.070	0.021	2.115	0.476
Calibration correction (see Newton 4 th calibra Instrument impedance correct Final value	1.00025 tion (N4) 249.93	0.99958 0.00024 0.0202	1.00010 0.0000 2.03	1.0000 0.470

Sample No.	Serial No.	Relay State (ON/OFF)	Supply Voltage (Vrms)	Input Current (Arms)	Input Power (W)	Power Factor
Sample 1	1342177281	OFF	249.997	0.016	1.452	0.385
Sample 2	1342177289	OFF	250.014	0.015	1.380	0.385
Sample 3	1342177286	OFF	250.534	0.016	1.415	0.385
Sample 4	1342177288	OFF	250.144	0.017	1.467	0.385
Sample 5	1342177287	OFF	250.089	0.016	1.432	0.385
Sample 6	1342177641	ON	250.403	0.020	2.090	0.470
Sample 7	1342177639	ON	250.112	0.019	1.955	0.470
Sample 8	1342177638	ON	249.972	0.020	2.095	0.470
Sample 9	1342177637	ON	250.262	0.020	1.992	0.470
Sample 10	1342177681	ON	249.866	0.020	2.031	0.470

Electrical operating parameters of CIMCON intelligent wireless NB-IOT Lighting Controller (iSLC3100-7P-

Illustration 1: Electrical operating parameters of CIMCON Intelligent wireless NB-IOT lighting controller (iSLC3100-7P-N-AD-G-IO-CATC-05-SW)

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: ± 0.005 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: PlusEs report no. 2020002794 *Luminaire thermometer:* AMA S No. 1086110-0.1°

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Illustration 2: Nodes (Relay ON/Relay OFF)



Illustration 3: Label



Illustration 4: Setup