
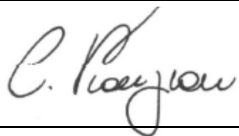
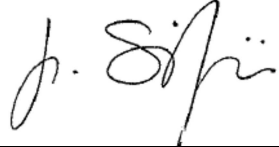


TEST REPORT Performance test Power measurement	
Report Number.....	R2872017_3_03
Date of issue.....	2017-08-11
Total number of pages	22
Name of Testing Laboratory preparing the Report	Analytical S.r.l. (CETACE) Via dei Cadolingi 6 50018 Scandicci (FI), Italy
Applicant's name	CREE Europe S.r.l. a S.U.
Address.....	Via Sandro Pertini, 122 50019 Sesto Fiorentino (FI), Italy
Test specification: Standard : N/A Test procedure : Performance test Non-standard test method : Power measurement – CREE Europe internal procedure	
Test Report Form No.	Power_meas_a
Test Report Form(s) Originator	Analytical S.r.l. (CETACE)
Master TRF	2017/06
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General disclaimer: The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the Analytical S.r.l. (CETACE) laboratory, responsible for this Test Report.	

Test item description :	LED luminaires for road and street lighting	
Trade Mark :		
Manufacturer	CREE Europe S.r.l. a S.U.	
Model/Type reference	XSPM-A-#-#-C-#-#-24-SV-DL-#-#	
Ratings	220-240 Vac, 50/60 Hz, Max 41 W	
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
<input checked="" type="checkbox"/>	Testing Laboratory:	
Testing location/ address :		Analytical S.r.l. (CETACE) Via dei Cadolingi 6, 50018 Scandicci (FI), Italy
Tested by (name, function, signature) :		Cosimo Pianigiani (ENG) 
Approved by (name, function, signature) :		Lorenzo Signorini (REW) 

List of Attachments (including a total number of pages in each attachment):

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Summary of testing:

Tests performed :

XSPM-A-##-C-##-24-SV-##-## (EUT 2872017_011, EUT 2872017_012, EUT 2872017_013, EUT 2872017_014, EUT 2872017_015)

Requirement test	Results
Performance Test Dimmer setting = 100%	Table 1

XSPM-A-##-C-##-24-SV-##-## (EUT 2872017_011, EUT 2872017_012, EUT 2872017_013, EUT 2872017_014, EUT 2872017_015)

Requirement test	Results
Performance Test Dimmer setting = 70%	Table 2

XSPM-A-##-C-##-24-SV-##-## (EUT 2872017_011, EUT 2872017_012, EUT 2872017_013, EUT 2872017_014, EUT 2872017_015)

Requirement test	Results
Performance Test Dimmer setting = 50%	Table 3

XSPM-A-##-C-##-24-SV-##-## (EUT 2872017_011, EUT 2872017_012, EUT 2872017_013, EUT 2872017_014, EUT 2872017_015)

Requirement test	Results
Performance Test Dimmer setting = 30%	Table 4

Testing location:

Analytical S.r.l. (CETACE)
Via dei Cadolingi 6,
50018 Scandicci (FI), Italy

XSPM-A-#-#-C-#-#-24-SV-#-#-# (EUT 2872017_011, EUT 2872017_012, EUT 2872017_013, EUT 2872017_014, EUT 2872017_015)

Requirement test	Results
Performance Test Dimmer setting = 10%	Table 5

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

No marking plate provided

Test item particulars:	LED luminaires for road and street lighting
Classification of installation and use:	LED luminaires for road and street lighting
Supply Connection	Installation coupler
.....:	
Possible test case verdicts:	
- test case does not apply to the test object.....:	N/A
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
Testing:	
Date of receipt of test item	2017-08-04
Date (s) of performance of tests	2017-08-10 – 2017-08-11
General remarks:	
<p>"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.</p> <p>Throughout this report a <input checked="" type="checkbox"/> comma / <input type="checkbox"/> point is used as the decimal separator.</p> <p>Clause numbers between brackets refer to clauses in EN 60068-2-11</p>	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60068-2-11:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided :	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies)	CREE Europe S.r.l. a S.U. Via Sandro Pertini, 122 50019 Sesto Fiorentino (FI) Italy

General product information:

The purpose of the testing procedure is to provide an accurate indication of the load at the distribution network terminals of a particular equipment under normal conditions.

Circuit Watts (W), Volt Ampere (VA), and Power Factor have been measured at five different voltage levels from 210 Vac, increasing in 10 Vac increments, up to 250 Vac (at 50 Hz).

For each voltage level, the LED controlgear installed in each LED luminaire has been set using the Tridonic DALI PS1 and the Master configurator software, with dimmer levels as follows:

Dimmer Position	Rated output Power [W]
10%	4 (minimum rated power)
30%	12
50%	20
70%	29
100%	41 (maximum rated power)

To perform those measures, a stabilized power source has been used.

All measures have been recorded at ambient temperature of 25 °C.

Table 1		Power measures - Dimmer setting = 100%				
Voltage [Vac]	Recordings	EUT 2872017_011	EUT 2872017_012	EUT 2872017_013	EUT 2872017_014	EUT 2872017_015
210	Watt [W]	39,39	39,80	39,28	39,46	39,70
	VA [VA]	40,66	41,22	40,33	40,37	40,50
	Power factor	0,969	0,964	0,974	0,977	0,980
220	Watt [W]	39,48	39,83	39,75	39,47	39,67
	VA [VA]	40,93	41,33	40,91	40,52	40,67
	Power factor	0,964	0,963	0,971	0,974	0,975
230	Watt [W]	39,46	39,88	39,61	39,46	39,65
	VA [VA]	41,25	41,66	40,92	40,71	40,88
	Power factor	0,957	0,958	0,968	0,969	0,969
240	Watt [W]	39,54	39,92	39,63	39,53	39,71
	VA [VA]	41,63	42,06	41,25	41,07	41,25
	Power factor	0,950	0,949	0,960	0,962	0,962
250	Watt [W]	39,66	40,02	39,63	39,54	39,83
	VA [VA]	41,85	42,55	41,74	41,28	41,70
	Power factor	0,947	0,940	0,951	0,957	0,955

Table 2		Power measures - Dimmer setting = 70%				
Voltage [Vac]	Recordings	EUT 2872017_011	EUT 2872017_012	EUT 2872017_013	EUT 2872017_014	EUT 2872017_015
210	Watt [W]	27,40	27,77	27,62	27,47	27,72
	VA [VA]	29,13	29,71	28,98	28,59	28,96
	Power factor	0,939	0,934	0,953	0,960	0,957
220	Watt [W]	27,45	27,83	27,60	27,36	27,67
	VA [VA]	29,50	30,14	29,25	28,82	29,23
	Power factor	0,929	0,923	0,943	0,949	0,946
230	Watt [W]	27,44	27,81	27,68	27,51	27,70
	VA [VA]	29,70	30,34	29,68	29,23	29,40
	Power factor	0,924	0,916	0,932	0,941	0,942
240	Watt [W]	27,45	27,87	27,53	27,60	27,71
	VA [VA]	30,04	30,72	29,76	29,56	29,75
	Power factor	0,913	0,906	0,925	0,933	0,931
250	Watt [W]	27,48	27,90	27,71	27,57	27,74
	VA [VA]	30,53	30,99	30,26	29,78	30,23
	Power factor	0,900	0,900	0,915	0,925	0,917

Table 3		Power measures - Dimmer setting = 50%				
Voltage [Vac]	Recordings	EUT 2872017_011	EUT 2872017_012	EUT 2872017_013	EUT 2872017_014	EUT 2872017_015
210	Watt [W]	19,87	20,24	20,11	20,05	20,18
	VA [VA]	22,28	22,86	21,87	21,68	21,85
	Power factor	0,891	0,885	0,919	0,925	0,923
220	Watt [W]	19,89	20,21	20,09	20,07	20,17
	VA [VA]	22,46	23,09	22,02	21,81	22,01
	Power factor	0,885	0,875	0,912	0,920	0,916
230	Watt [W]	19,90	20,25	20,11	20,09	20,15
	VA [VA]	23,02	23,45	21,33	22,11	22,31
	Power factor	0,864	0,863	0,900	0,908	0,902
240	Watt [W]	19,94	20,31	20,17	20,10	20,24
	VA [VA]	23,79	24,00	23,06	22,60	22,81
	Power factor	0,838	0,846	0,874	0,889	0,887
250	Watt [W]	20,00	20,41	20,14	20,10	20,26
	VA [VA]	24,03	24,50	23,51	23,28	23,25
	Power factor	0,832	0,833	0,856	0,863	0,871

Table 4		Power measures - Dimmer setting = 30%				
Voltage [Vac]	Recordings	EUT 2872017_011	EUT 2872017_012	EUT 2872017_013	EUT 2872017_014	EUT 2872017_015
210	Watt [W]	12,24	12,48	12,35	12,34	12,39
	VA [VA]	15,77	16,16	14,93	14,73	14,71
	Power factor	0,776	0,772	0,826	0,837	0,841
220	Watt [W]	12,27	12,52	12,37	12,35	12,46
	VA [VA]	16,27	16,71	15,42	15,21	15,19
	Power factor	0,752	0,749	0,802	0,812	0,819
230	Watt [W]	12,36	12,57	12,47	12,47	12,52
	VA [VA]	17,04	17,24	16,12	15,67	15,88
	Power factor	0,725	0,728	0,773	0,795	0,788
240	Watt [W]	12,35	12,64	12,53	12,45	12,58
	VA [VA]	17,30	17,99	16,82	16,36	16,58
	Power factor	0,714	0,702	0,745	0,761	0,758
250	Watt [W]	12,44	12,70	12,83	12,55	12,59
	VA [VA]	18,52	18,99	18,02	17,53	17,26
	Power factor	0,671	0,668	0,712	0,715	0,729

Table 5		Power measures - Dimmer setting = 10%				
Voltage [Vac]	Recordings	EUT 2872017_011	EUT 2872017_012	EUT 2872017_013	EUT 2872017_014	EUT 2872017_015
210	Watt [W]	4,65	4,93	4,86	4,82	4,86
	VA [VA]	11,77	12,17	10,73	10,31	10,30
	Power factor	0,395	0,405	0,453	0,467	0,472
220	Watt [W]	4,87	4,95	4,80	4,79	4,88
	VA [VA]	12,55	12,97	11,45	11,02	11,23
	Power factor	0,388	0,381	0,419	0,434	0,434
230	Watt [W]	4,73	4,93	4,80	4,86	4,87
	VA [VA]	13,12	13,56	11,98	11,52	11,74
	Power factor	0,360	0,363	0,400	0,421	0,415
240	Watt [W]	4,81	4,98	4,80	4,85	4,91
	VA [VA]	13,94	14,40	13,22	12,75	12,74
	Power factor	0,345	0,345	0,363	0,380	0,385
250	Watt [W]	4,72	4,96	4,78	4,82	4,86
	VA [VA]	14,76	14,74	13,52	13,53	13,51
	Power factor	0,319	0,336	0,353	0,356	0,359

Annex 1	Critical Components
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ANNEX 1	TABLE: Critical components information			
Object / part No.	Code	Manufacturer/ trademark	Type / model	Technical data
LED controlgear	-	Tridonic	LCA 60W 350-1050mA one4all C PRE OTD	Uin: 220-240 V, fn: 50/60 Hz, Iout = 350-1050 mA, Uout max = 210 Vdc (no-load), tc = 130 °C, SELV
LED	-	CREE	MD-A 1450	1500 mA Max, 5700 K Max, Tj = 150 °C

Appendix 1		List of equipment used		
Clause	Measurement / testing	Testing / measuring equipment / material used	Range used	Expire Calibration date (yyyy/mm/gg)
-	Performance Test	23 – Draught-proof enclosure, A.T.S. Galbusera, AOM	--	2018/02/04
		539 – Stabilized Power Supply, Agilent, 6813B	--	Not under calibration
		228 – Powermeter, AV Power, PA4400-4	--	2018/06/06
		Dimmer, Tridonic, DALI PS1	--	Not under calibration
		Software, Tridonic, Master Configurator v. 2.22.0.1596	--	Not under calibration

Appendix 2	Photographs
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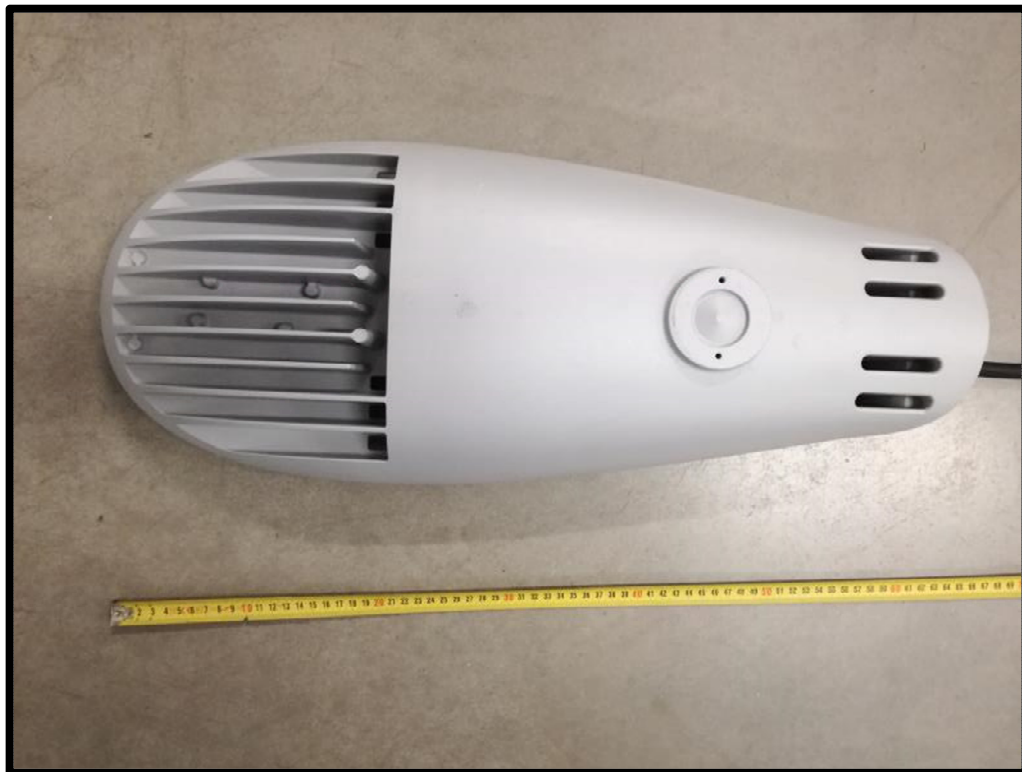


Fig. 1: LED luminaire (EUT 2872017_011) – Top view



Fig. 2: LED luminaire (EUT 2872017_011) – Bottom view

Appendix 2	Photographs
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Fig. 3: LED luminaire (EUT 2872017_011) – Internal view

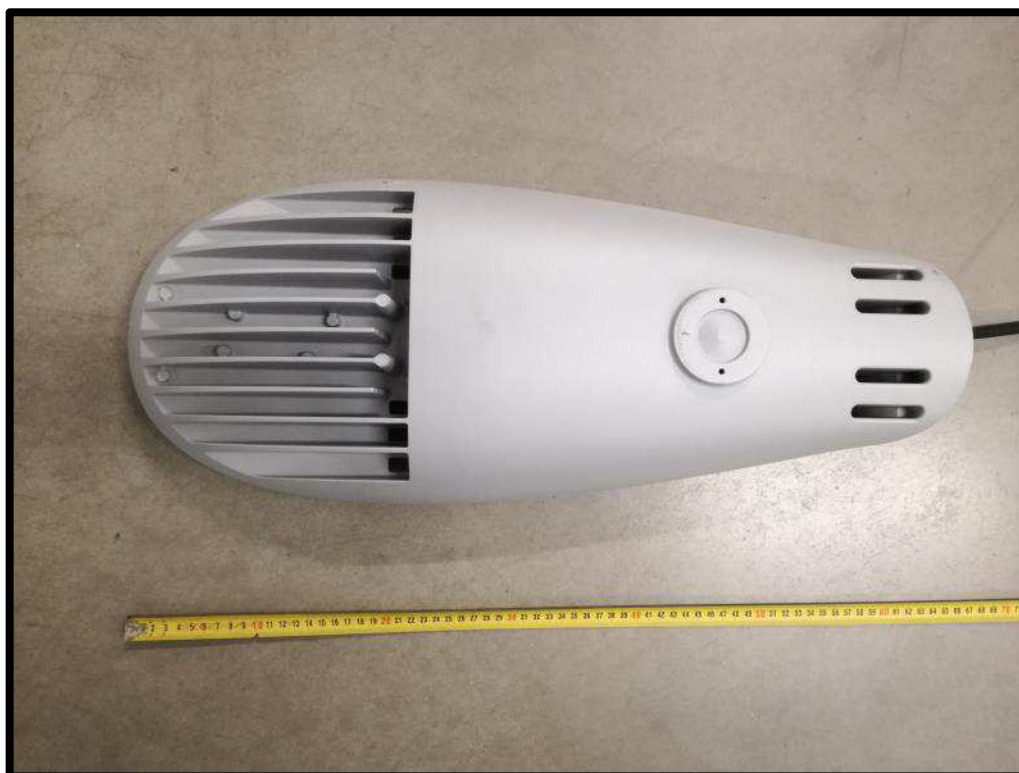


Fig. 4: LED luminaire (EUT 2872017_012) – Top view

Appendix 2	Photographs
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Fig. 5: LED luminaire (EUT 2872017_012) – Bottom view

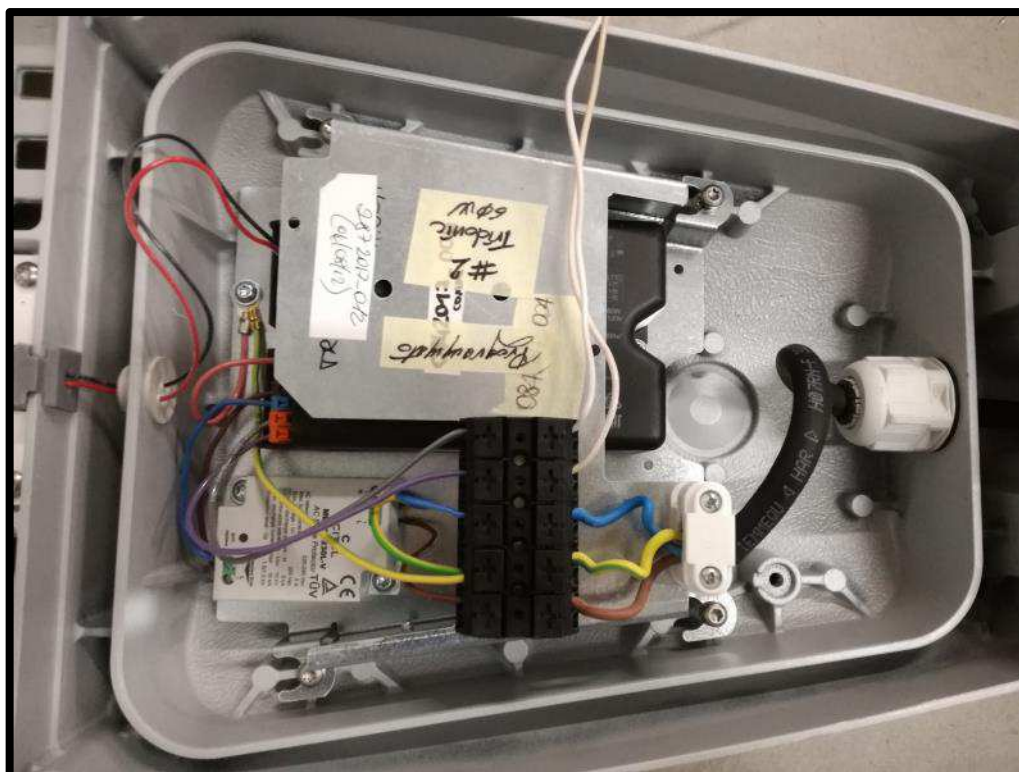


Fig. 6: LED luminaire (EUT 2872017_012) – Internal view

Appendix 2	Photographs
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Fig. 7: LED luminaire (EUT 2872017_013) – Top view



Fig. 8: LED luminaire (EUT 2872017_013) – Bottom view

Appendix 2	Photographs
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Fig. 9: LED luminaire (EUT 2872017_013) – Internal view



Fig. 10: LED luminaire (EUT 2872017_014) – Top view

Appendix 2	Photographs
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Fig. 11: LED luminaire (EUT 2872017_014) – Bottom view

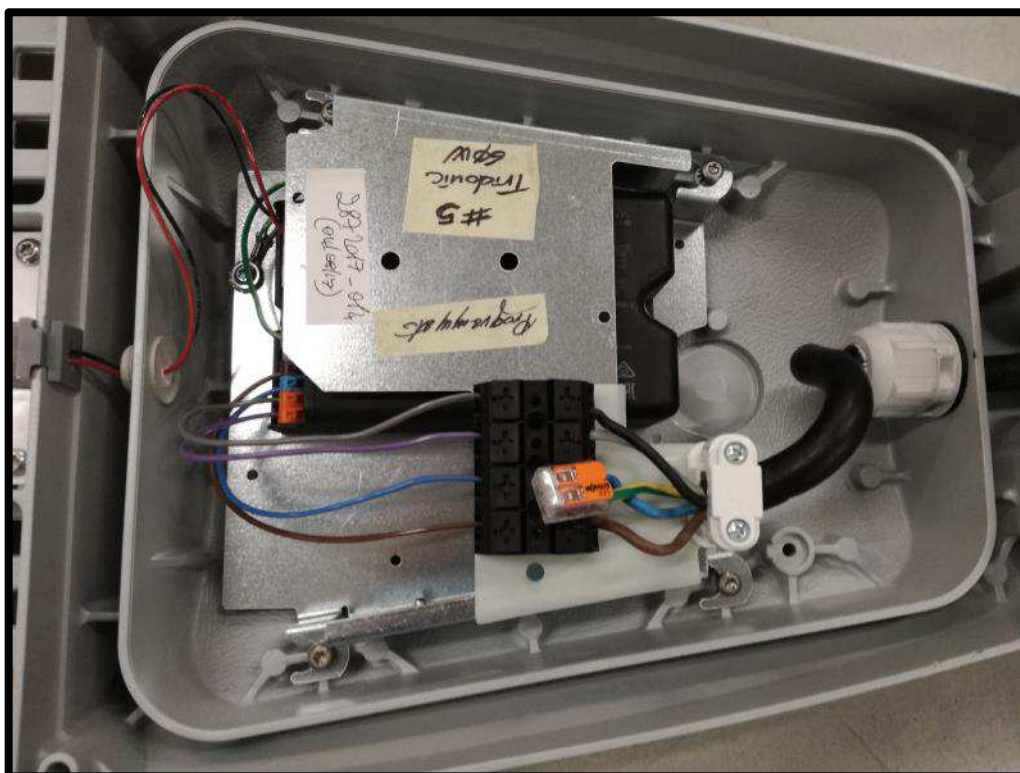


Fig. 12: LED luminaire (EUT 2872017_014) – Internal view

Appendix 2	Photographs
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Fig. 13: LED luminaire (EUT 2872017_015) – Top view



Fig. 14: LED luminaire (EUT 2872017_015) – Bottom view

Appendix 2 | Photographs

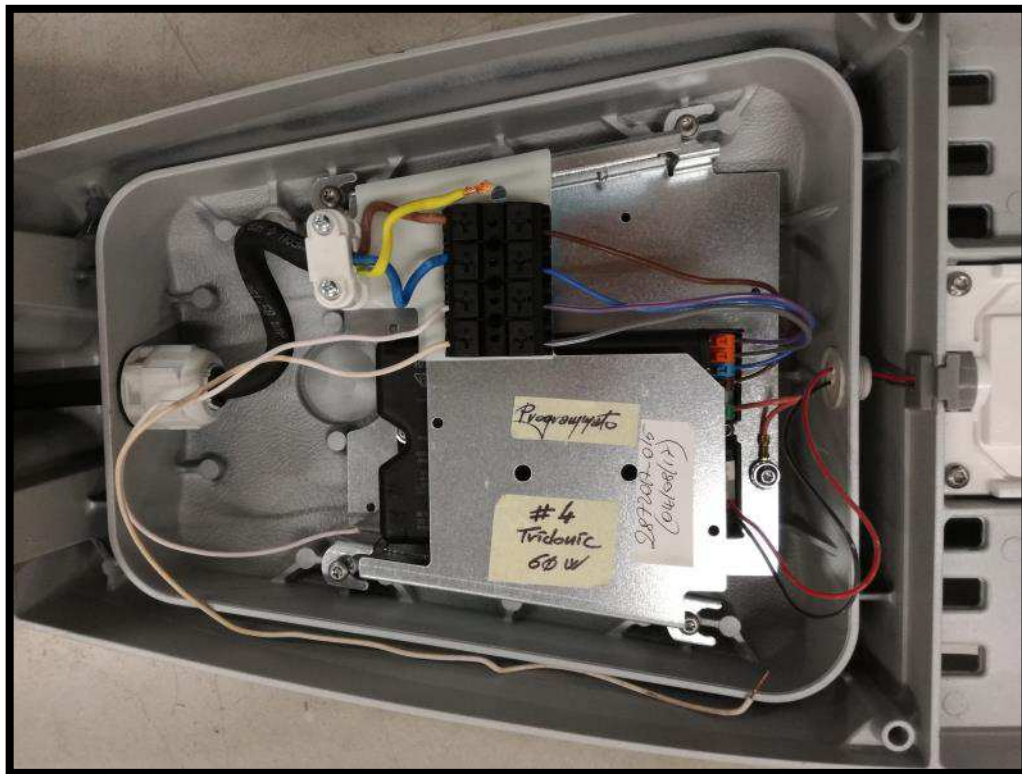


Fig. 15: LED luminaire (EUT 2872017_015) – Internal view



Fig. 16: LED controlgear used

Appendix 2	Photographs
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Fig. 17: LED module view