




Test Report issued under the responsibility of:  
Łukasiewicz - IMiF PREDOM Division

Testing Laboratory of IMiF PREDOM Division  
Certificate PCA No. AB 003

**TEST REPORT**  
**IEC 60598-2-3**  
**Luminaires**  
**Part 2: Particular requirements**  
**Section 3: Luminaires for road and street lighting**

<b>Report Number..... :</b>	<b>B5-3/046/B/24/M1</b>
<b>Date of issue..... :</b>	Original Report Reference No. B5-3/046/B/24+ Attachment No. 1 (EU Group Differences and National Differences Report Reference No. 1 B5-3/046/B/1/24): 20.05.2024 Amendment No. 1 Report Reference B5-3/046/B/24/M1 + Attachment No. 1 (EU Group Differences and National Differences Report Reference No. B5-3/046/B/1/24/M1): 26.07.2024
<b>Total number of pages .....</b>	Original Report Reference No. B5-3/046/B/1/24: 76 pages + Attachment No. 1 (EU Group Differences and National Differences Report Reference No. 1 B5-3/046/B/1/24 - 2 pages) Amendment No. 1 Report Reference B5-3/046/B/24/M1: 48 pages + Attachment No. 1 (EU Group Differences and National Differences Report Reference No. B5-3/046/B/1/24/M1 - 2 pages)
<b>Name of Testing Laboratory preparing the Report .....</b>	Łukasiewicz - IMiF PREDOM Division 02-255 Warszawa, ul. Krakowiaków 53, Poland
<b>Applicant's name .....</b>	Lena Lighting S.A
<b>Address..... :</b>	63-000 Środa Wielkopolska., ul. Kórnicka 52, Poland
<b>Test specification:</b>	
<b>Standard .....</b>	IEC 60598-2-3:2002, IEC 60598-2-3:2002/AMD1:2011 used in conjunction with IEC 60598-1:2020
<b>Test procedure .....</b>	CB Scheme
<b>Non-standard test method .....</b>	N/A
<b>TRF template used .....</b>	IECEE OD-2020-F1:2021, Ed.1.4
<b>Test Report Form No. ....</b>	IEC60598_2_3M
<b>Test Report Form(s) Originator ....</b>	Intertek Semko AB
<b>Master TRF .....</b>	2021-11-11
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<b>Test item description..... :</b>	Luminaires for road and street lighting	
<b>Trade Mark(s) ..... :</b>		
<b>Manufacturer ..... :</b>	Lena Lighting S.A. ul. Kórnicka 52; 63-000 Środa Wielkopolska - Poland	
<b>Model/Type reference ..... :</b>	<b>TIARA LED – series</b> – see also “General product information”	
<b>Ratings ..... :</b>	220-240V, 50/60Hz, IP66, cl.I, IK09 – details see pages 4 - 10	
<b>Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):</b>		
<input type="checkbox"/>	<b>CB Testing Laboratory:</b>	Łukasiewicz - IMiF PREDOM Division
<b>Testing location/ address..... :</b>		02-255 Warszawa, ul. Krakowiaków 53, Poland
<b>Tested by (name, function, signature)..... :</b>		J. Śmigrodzki
<b>Approved by (name, function, signature).... :</b>		T. Małyska
<input type="checkbox"/> <b>Testing procedure: CTF Stage 1:</b>		
<b>Testing location/ address..... :</b>		
<b>Tested by (name, function, signature)..... :</b>		
<b>Approved by (name, function, signature).... :</b>		
<input type="checkbox"/> <b>Testing procedure: CTF Stage 2:</b>		
<b>Testing location/ address..... :</b>		
<b>Tested by (name + signature) ..... :</b>		
<b>Witnessed by (name, function, signature) . :</b>		
<b>Approved by (name, function, signature).... :</b>		
<input type="checkbox"/> <b>Testing procedure: CTF Stage 3:</b>		
<input type="checkbox"/> <b>Testing procedure: CTF Stage 4:</b>		
<b>Testing location/ address..... :</b>		
<b>Tested by (name, function, signature)..... :</b>		
<b>Witnessed by (name, function, signature) . :</b>		
<b>Approved by (name, function, signature).... :</b>		
<b>Supervised by (name, function, signature) :</b>		

<b>List of Attachments (including a total number of pages in each attachment):</b> – Attachment No. 1 (Report Reference No. B5-3/046/B/1/24/M1 - 2 pages)	
<b>Summary of testing: Positive</b> <i>According to ISO / IEC Guide 98-4 for the assessment of compliance of the measurement result with the requirements, criterion B was chosen. 50% risk of incorrect assessment decision belongs to the customer and 50% risk of incorrect assessment belongs to the laboratory</i>	
<b>Tests performed (name of test and test clause):</b> IEC 60598-2-3:2002, IEC 60598-2-3:2002/AMD1: 2011 used in conjunction with IEC 60598-1:2020 – clauses: 3.2(0), 3.4(2), 3.5(3), 3.6.5	<b>Testing location:</b> Łukasiewicz - IMiF PREDOM Division 02-255 Warszawa, ul. Krakowiaków 53, Poland
<b>Summary of compliance with National Differences (List of countries addressed):</b> See Attachment No. 1 to this Test Report (Report Reference No. B5-3/046/B/1/24/M1 - 2 pages)	
<input checked="" type="checkbox"/> <b>The product fulfils the requirements of EN 60598-2-3:2003 + A1:2011 used in conjunction with EN IEC 60598-1:2021 + A11:2022</b>	
<b>Use of uncertainty of measurement for decisions on conformity (decision rule) :</b>  <input checked="" type="checkbox"/> No decision rule is specified by the IEC standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty ("simple acceptance" decision rule, previously known as "accuracy method").  <input type="checkbox"/> Other:... (to be specified, for example when required by the standard or client, or if national accreditation requirements apply)	
<b>Information on uncertainty of measurement:</b> The uncertainties of measurement are calculated by the laboratory based on application of criteria given by OD-5014 for test equipment and application of test methods, decision sheets and operational procedures of IECEE. IEC Guide 115 provides guidance on the application of measurement uncertainty principles and applying the decision rule when reporting test results within IECEE scheme, noting that the reporting of the measurement uncertainty for measurements is not necessary unless required by the test standard or customer. Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.	



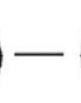


## Copy of marking plate:

LENA LIGHTING S.A. INDEX 982729  
UL.KÓRNICKA 52, 63-000 ŚRODA WLKP.POLAND  
TIARA 2 LED S 13200lm 740 RM7  
IP66 I kl. DALI IK09 (109W)  
~220-240V 50/60Hz

75	WW YY	EEI=A2
09	24	

MADE IN POLAND

UK CA CE



<b>Test item particulars</b> .....: Luminaire for road and street lighting	
<b>Classification of installation and use</b> .....: Normal use	
<b>Supply Connection</b> .....: Connector	
<b>Possible test case verdicts:</b> - 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)	
<b>Testing</b> .....: <b>Date of receipt of test item</b> .....: 2024-07-23 <b>Date (s) of performance of tests</b> .....: 2024-07-23 - 2024-07-26	
<b>General remarks:</b>	
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.  <b>Throughout this report a <input checked="" type="checkbox"/> comma / <input type="checkbox"/> point is used as the decimal separator.</b>  <b>Clause numbers between brackets refer to clauses in IEC 60598-1</b>	
<b>Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60598-1:</b>	
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"/> <b>Yes</b> <input checked="" type="checkbox"/> <b>Not applicable</b>
<b>When differences exist; they shall be identified in the General product information section.</b>	
<b>Name and address of factory (ies)</b> .....: Lena Lighting S.A. ul. Kórnicka 52 63-000 Środa Wielkopolska Poland	

**General product information and other remarks:**

In the original Test Report No. B5-3/046/B/24 dated 20.05.2024, luminaires for road and street lighting TIARA - series have been evaluated.

Amendment No.1 to Test Report No. B5-3/046/B/24/M1 dated 26.07.2024.

The original Test Report No. B5-3/046/B/24 dated 20.05.2024 was modified on 26.07.2024.

Scope of modifications of this Test Report:

1. Choice sheet have been modified

old:

Position 2 Luminous flux [lm]                      Value in [lm] in steps of 5 lm

new:

Position 2 Luminous flux [lm] \*                      TIARA LED M – series from 900lm to 24225lm  
    TIARA LED L – series from 5900lm to 44675lm  
    TIARA LED M EVO - series from 900lm to 22775lm  
    TIARA LED L EVO – series from 5925lm to 42275lm  
    TIARA LED M PRO– series from 875lm to 24225lm  
    TIARA LED L PRO– series from 4075lm to 51375lm  
    TIARA 2 LED M– series from 875lm to 25925lm  
    TIARA 2 LED S – series from 900lm to 15600lm  
    TIARA 2 LED XS– series from 850lm to 9000lm

old:

Position 7 Control On / off:                      DALI  
    DIM  
    ST  
    1DIM

new:

Position 7 Control On / off:                      DALI  
    DIM  
    ST  
    1DIM  
    2DIM

old:

Position 8 Connector / sensor:                      NEMA  
    ZG  
    RCR  
    empty space

new:

Position 8 Type of used lamp:                      NEMA  
    ZG  
    ZG-down  
    RCR  
    empty space

\*Corrected Luminous flux [lm] – error in the specifications received from the applicant.

Date of the correction 29.07.2024. J. Śmigrodzki

new options added:

Position 9 IK degree: IK09

change of position Luminaire power [W]

old:

Position 9

new:

Position 10

old:

Position 9 Luminaire power [W] Value in [W] in steps of 1 W

new:

Position 10 Luminaire power [W] TIARA LED M family – series from 18W to 175W  
 TIARA LED L family – series from 108W to 330W  
 TIARA LED M EVO family – series from 8W to 175W  
 TIARA LED L EVO family – series from 35W to 330W  
 TIARA LED M PRO family – series from 8W to 175W  
 TIARA LED L PRO family – series from 35W to 330W  
 TIARA2 LED M family – series from 8W to 175W  
 TIARA2 LED S family – series from 8W to 109W  
 TIARA 2 LED XS family – series from 8W to 54W

change of position Body colour

old:

Position 10

new:

Position 11

The choice sheet has been modified. List of system configuration have been revised.

After review of the luminaires documentation, the additional tests for clauses 3.2(0), 3.4(2), 3.5(3), 3.6.5, according to IEC 60598-2-3:2002 + AMD1:2011 used in conjunction with IEC 60598-1:2020 were considered necessary.

Also the tests related to differences derive from EN 60598-2-3:2003 + A1:2011 used in conjunction with EN IEC 60598-1:2021 + A1:2022 were considered necessary (see Attachment No.1 to this test Report No. B5-3/046/B/1/24/M1)

<b>Name and address of the license holder:</b>	<b>Lena Lighting S.A.</b> <b>ul. Kórnicka 52; 63-000 Środa Wielkopolska - Poland</b>
<b>Address of the factory:</b>	<b>Lena Lighting S.A.</b> <b>ul. Kórnicka 52; 63-000 Środa Wielkopolska - Poland</b>
<b>Name of product:</b>	<b>Luminaires for road and street lighting</b>
<b>Type (model):</b>	<b>TIARA LED – series</b>
<b>Trade mark :</b>	<b>Lena Lighting</b>
<b>Technical data:</b>	
<i>Rated voltage</i>	220-240V
<i>Rated frequency:</i>	50/60Hz
<i>Protection against electric shock:</i>	Class I
<i>Degree of protection:</i>	IP66, IK09
<i>ta</i>	25°C

### Choice sheet of the luminaires TIARA 2 LED – series:

#### Example of symbol:

**TIARA 2 LED S 12875lm 757 RM7 IP66 I kl. DALI ZG IK09 (109W) RAL7016**

1                      2                      3                      4                      5                      6                      7                      8                      9                      10                      11

Designations used on the marking of luminaires (some designation may not appear in the name) :

Position 1	Basic name	TIARA LED M	
		TIARA LED L	
		TIARA LED M PRO	
		TIARA LED L PRO	
		TIARA LED M EVO	
		TIARA LED L EVO	
		TIARA 2 LED S	
		TIARA 2 LED M	
		TIARA 2 LED XS	
Position 2	Luminous flux [lm] *	TIARA LED M – series from 900lm to 24225lm TIARA LED L – series from 5900lm to 44675lm TIARA LED M EVO - series from 900lm to 22775lm TIARA LED L EVO – series from 5925lm to 42275lm TIARA LED M PRO– series from 875lm to 24225lm TIARA LED L PRO– series from 4075lm to 51375lm TIARA 2 LED M– series from 875lm to 25925lm TIARA 2 LED S – series from 900lm to 15600lm TIARA 2 LED XS– series from 850lm to 9000lm	
Position 3	Ra / CCT	722	7 – Ra > 70 22 – 2200 K 27 – 2700 K 30 – 3000 K 35 – 3500 K 40 – 4000 K 50 – 5000 K 57 – 5700 K 65 – 6500 K
		727	
		730	
		735	
		740	
		750	
		757	
		765	

\*Corrected Luminous flux [lm] – error in the specifications received from the applicant.

Date of the correction 29.07.2024. J. Śmigrodzki



			822	8 – Ra > 80 22 – 2200 K 27 – 2700 K 30 – 3000 K 35 – 3500 K 40 – 4000 K 50 – 5000 K 57 – 5700 K 65 – 6500 K
			827	
			830	
			835	
			840	
			850	
			857	
			865	
			922	9 – Ra > 90 22 – 2200 K 27 – 2700K 30 – 3000 K 35 – 3500 K 40 – 4000 K 50 – 5000 K 57 – 5700 K 65 – 6500 K
			927	
			930	
			935	
			940	
			950	
			957	
			965	
	Position 4	Optics	WXYZ	<b>W:</b>
				S – symmetric
				AS – asymmetric
				R – road
				P – pedestrian crossing
				<b>X:</b>
				N – narrow
				M – average
				W – wide
				L – left
				P – right
				<b>Y:</b>
				number in steps of 1 from 0-99
				<b>Z:</b>
				HE
				+HE
				+
				empty
	Position 5	IP degree	IP65	
			IP66	
	Position 6	Protection class	Class I	

	Position 7	Control On / off	DALI	
			DIM	
			ST	
			1DIM	
			2DIM	
	Position 8	Connector / sensor	NEMA	NEMA - socket NEMA ZG – socket Zhaga ZG-down – down socket Zhaga RCR – motion sensor empty space – without sensor
			ZG	
			ZG-down	
			RCR	
			empty space	
	Position 9	IK degree	IK09	
	Position 10	Luminaire power [W]	TIARA LED M family – series from 18W to 175W TIARA LED L family – series from 108W to 330W TIARA LED M EVO family – series from 8W to 175W TIARA LED L EVO family – series from 35W to 330W TIARA LED M PRO family – series from 8W to 175W TIARA LED L PRO family – series from 35W to 330W TIARA2 LED M family – series from 8W to 175W TIARA2 LED S family – series from 8W to 109W TIARA 2 LED XS family – series from 8W to 54W	
	Position 11	Body colour	RAL7016	
			RAL9005	

After review of technical documentation, model series, characteristic of particular models, differences between models, technical parameters, class of luminaires, IP code, light sources, components, etc., luminaire: TIARA 2 LED S 13200lm 740 RM7 IP66 I kl. DALI IK09 (109W) has been tested as the representative of all models of luminaires.

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
<b>3.2 (0)</b>	<b>GENERAL TEST REQUIREMENTS</b>		P
3.2 (0.3)	More sections applicable..... :	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Section/s:	—
3.2 (0.5)	Components	(see Annex 1)	—
<b>3.2 (0.7)</b>	<b>Information for luminaire design in light sources standards</b>		—
3.2 (0.7.2)	Light source safety standard .....	EN62031	—
	Luminaire design in the light source safety standard		P

<b>3.4 (2)</b>	<b>CLASSIFICATION OF LUMINAIRES</b>		P
3.4 (2.2)	Type of protection .....	Class I	P
3.4 (2.3)	Degree of protection .....	IP66	P
3.4 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces .....	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
3.4 (2.5)	Luminaire for normal use .....	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	Luminaire for rough service .....	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
3.4 (-)	Modes of installation of road or street lighting		—
	a) on a pipe	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	b) on a mast arm	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	c) on a post top	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	d) on span or suspension wires	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	e) on a wall	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—

<b>3.5 (3)</b>	<b>MARKING</b>		P
3.5 (3.2)	Mandatory markings		P
	Position of the marking		P
	Format of symbols/text		P
3.5 (3.3)	Additional information		P
	Language of instructions		P
3.5 (3.3.1)	Combination luminaires		N/A
3.5 (3.3.2)	Nominal frequency in Hz		P
3.5 (3.3.3)	Operating temperature		P
3.5 (3.3.5)	Wiring diagram		P
3.5 (3.3.6)	Special conditions		N/A
3.5 (3.3.7)	Metal halide lamp luminaire – warning		N/A
3.5 (3.3.8)	Limitation for semi-luminaires		N/A