




OD ECS 40-1
May 2018



Responsible CB

TEST REPORT SUMMARY

Report Number	LO-18.027/18.011/E
Date of issue	2018-08-23
Tested by (name, function, signature):	Marek Kozłowski (specialist) <i>M. Kozłowski</i>
Witnessed by (name, function, signature):	
Approved by (name, function, signature):	Weronika Sadłowska (specialist) <i>Sadłowska</i>
Supervised by (name, function, signature):	
Testing Laboratory	Stowarzyszenie Elektryków Polskich, Biuro Badawcze ds. Jakości Association of Polish Electricians, Quality Testing Office
Address	ul. M. Pożaryskiego 28, 04-703 Warszawa, POLAND
Testing procedure	<input checked="" type="checkbox"/> ENEC/CCA-TL <input type="checkbox"/> IECEE-CBTL
Customer Testing Procedure	<input type="checkbox"/> TMP/CTF Stage 1 <input type="checkbox"/> WMT/CTF Stage 2 <input type="checkbox"/> SMT/CTF Stage 3
Applicant	AUTOKAUSTA, UAB
Address	Marveles g. 199B, LT-46204 Kaunas, LITHUANIA
Manufacturer	Yellow Energy LT, UAB
Address	Jonavis g. 16, Kaunas; LITHUANIA
Product	Luminaires for road and street lighting with non-user replaceable LED module
Model/Type reference	Series MaxFlux LED MF-SL-...
Trademark	
Ratings	180-253V, 50/60Hz, IP66, safety class I, 40,75,120W, ta=35°C, glass IK08
Certification Scheme	<input checked="" type="checkbox"/> ENEC <input type="checkbox"/> CCA <input type="checkbox"/> Other: _____
Standard(s)	EN 60598-2-3:2003+A1:2011 used in conjunction with EN 60598-1:2015+A1:2018
<input type="checkbox"/> The text of the a.m. European Standard was approved by CENELEC under the Unique Acceptance Procedure and is identical with the corresponding IEC Publication.	
<input checked="" type="checkbox"/> The text of the a.m. European Standard was approved by CENELEC with agreed common modifications and is <u>not</u> identical with the corresponding IEC Publication. An EU Deviation Addendum has to be issued.	
This EN test report consists of the following parts:	
<input checked="" type="checkbox"/> IEC Test Report Number	IEC60598_2_3L LO-18.027/18.011/E
<input checked="" type="checkbox"/> EU Deviation Addendum	EU_GD_IEC60598_2_3K LO-18.027/18.011/E
Copyright © 2018, Brussels, Belgium. All rights reserved. This ECS document together with the test report is only valid if signed by an approved ENEC or CCA Testing Laboratory and accompanied by the associated ENEC Licence or CCA Notification of Test Results, issued by a Certification Body member of ECS.	



Test Report issued under the responsibility of:



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

Report Number.: LO-18.027/18.011/E

Date of issue: 2018-08-23

Total number of pages: 49

Name of Testing Laboratory
preparing the Report.....: Stowarzyszenie Elektryków Polskich, Biuro Badawcze ds.
Jakości
Association of Polish Electricians, Quality Testing Office
ul. M.Pożaryskiego 28, 04-703 Warszawa, POLAND

Applicant's name.....: AUTOKAUSTA, UAB

Address: Marveles g. 199B, LT-46204 Kaunas, LITHUANIA

Test specification:

Standard: IEC 60598-2-3:2002, AMD1:2011 used in conjunction with
IEC 60598-1:2014, AMD1:2017

Test procedure: CB Scheme

Non-standard test method: N/A

Test Report Form No.....: IEC60598_2_3L

Test Report Form(s) Originator: Intertek Semko AB

Master TRF.....: Dated 2018-03-09

**Copyright © 2018 IEC System of Conformity Assessment Schemes for Electrotechnical
Equipment and Components (IECEE System). All rights reserved.**

This publication may be reproduced in whole or in part for non-commercial purposes as long as the IECEE is acknowledged as copyright owner and source of the material. IECEE takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.

**This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory
and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.**

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 CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.



Test item description	Luminaires for road and street lighting with non-user replaceable LED module
Trade Mark.....	
Manufacturer	Yellow Energy LT, UAB
Model/Type reference.....	Series MaxFlux LED MF-SL-... (see page 4)
Ratings.....	180-253V, 50/60Hz, IP66, safety class I, 40,75,120W, ta=35°C, glass IK08

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):

<input checked="" type="checkbox"/>	CB Testing Laboratory:	Stowarzyszenie Elektryków Polskich, Biuro Badawcze ds. Jakości Association of Polish Electricians, Quality Testing Office	
Testing location/ address		ul. M.Pożaryskiego 28, 04-703 Warszawa, POLAND	
Tested by (name, function, signature)		Marek Kozłowski (specialist)	<i>M. Kozłowski</i>
Approved by (name, function, signature) ..		Weronika Sadiłowska (specialist)	<i>Sadłowska</i>

<input type="checkbox"/>	Testing procedure: CTF Stage 1:		
Testing location/ address			
Tested by (name, function, signature)			
Approved by (name, function, signature) ..			

<input type="checkbox"/>	Testing procedure: CTF Stage 2:		
Testing location/ address			
Tested by (name + signature).....			
Witnessed by (name, function, signature) . :			
Approved by (name, function, signature) .. :			

<input type="checkbox"/>	Testing procedure: CTF Stage 3:		
<input type="checkbox"/>	Testing procedure: CTF Stage 4:		
Testing location/ address			
Tested by (name, function, signature)			
Witnessed by (name, function, signature) . :			
Approved by (name, function, signature) .. :			
Supervised by (name, function, signature) :			

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

ATTACHMENT TO TEST REPORT IEC 60598-2-3 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES – 2 pages

Annex A: Tests of overpower condition according to EN 62031:2008+A1:2013+A2:2015

Annex B: Photographs of the products – 9 pages

Summary of testing:
Tests performed (name of test and test clause):

All applicable tests were performed with positive results

Testing location:

Stowarzyszenie Elektryków Polskich, Biuro
Badawcze ds. Jakości
Association of Polish Electricians, Quality Testing
Office
ul. M. Pożaryskiego 28,
04-703 Warszawa,
POLAND

IK test for glass:
Zakład Aparatów Niskiego Napięcia
20-150 Lublin, ul. M. Rapackiego 13, POLAND

Summary of compliance with National Differences:
List of countries addressed

ATTACHMENT TO TEST REPORT IEC 60598-2-3 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES

☐ The product fulfils the requirements of _____ (insert standard number and edition and delete the text in parenthesis, leave it blank or delete the whole sentence, if not applicable)

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.





Test item particulars									
Classification of installation and use: For normal use									
Supply Connection: Screwless terminal block									
.....:									
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: 2018-05-11, 2018-07-09, 2018-07-11, 2018-08-01									
Date (s) of performance of tests: 2018-06-11 + 2018-08-03									
.....									
General remarks:									
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.									
Throughout this report a <input checked="" type="checkbox"/> comma / <input type="checkbox"/> point is used as the decimal separator.									
Clause numbers between brackets refer to clauses in IEC 60598-1									
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60598-1:									
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): Yellow Energy LT, UAB Jonavis g. 16, Kaunas; LITHUANIA									
General product information:									
Luminaires for road and street lighting with non-user replaceable LED module in class I, IP66, $t_a=35^{\circ}\text{C}$									
Variants of type MAXFlux LED street luminaire covered by this test report:									
<table border="1"><thead><tr><th>Model</th><th>Power</th></tr></thead><tbody><tr><td>MF-SL-040*</td><td>40W</td></tr><tr><td>MF-SL-075*</td><td>75W</td></tr><tr><td>MF-SL-120*</td><td>120W</td></tr></tbody></table>		Model	Power	MF-SL-040*	40W	MF-SL-075*	75W	MF-SL-120*	120W
Model	Power								
MF-SL-040*	40W								
MF-SL-075*	75W								
MF-SL-120*	120W								
*) models with added letter „K“ (e.g. MF-SL-040K) are equipped with a knife switch									
Tested models:									
1) MF-SL-120 2) MF-SL-075									



IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
3.2 (0)	GENERAL TEST REQUIREMENTS		
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)	—
3.2 (0.7)	Information for luminaire design in light sources standards		—
3.2 (0.7.2)	Light source safety standard	EN 62031	—
	Luminaire design in the light source safety standard		P

3.4 (2)	CLASSIFICATION OF LUMINAIRES		
3.4 (2.2)	Type of protection	Class I	P
3.4 (2.3)	Degree of protection	IP 66	—
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 type="checkbox"/> No <input checked="" 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"/>	—

3.5 (3)	MARKING		
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	English	P
3.5 (3.3.1)	Combination luminaires		N/A
3.5 (3.3.2)	Nominal frequency in Hz	50	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
3.5 (3.3.9)	Power factor and supply current		P
3.5 (3.3.10)	Suitability for use indoors		N/A
3.5 (3.3.11)	Luminaires with remote control		N/A



IEC 60598-2-3

Clause	Requirement + Test	Result - Remark	Verdict
3.5 (3.3.12)	Clip-mounted luminaire – warning		N/A
3.5 (3.3.13)	Specifications of protective shields		N/A
3.5 (3.3.14)	Symbol for nature of supply	~	P
3.5 (3.3.15)	Rated current of socket outlet		N/A
3.5 (3.3.16)	Rough service luminaire		N/A
3.5 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments		N/A
3.5 (3.3.18)	Non-ordinary luminaires with PVC cable		N/A
3.5 (3.3.19)	Protective conductor current in instruction if applicable		N/A
3.5 (3.3.20)	Provided with information if not intended to be mounted within arm's reach		N/A
3.5 (3.3.21)	Non-replaceable and non-user replaceable light sources information provided	Non-user replaceable LED module	P
3.5 (3.3.22)	Controllable luminaires, classification of insulation provided	DALI	P
3.5 (3.3.23)	Luminaire without controlgear provided with necessary information for selection of appropriate component		N/A
3.5 (3.3.24)	If not supplied with terminal block, information on the packaging		N/A
3.5 (3.4)	Test with water		P
	Test with hexane		P
	Legible after test		P
	Label attached		P
3.5 (-)	Additional information in instruction leaflet		—
	a) Design attitude		P
	b) Weight	MF-SL-120: 7kg; MF-SL-075: 5 kg; MF-SL-040: 5 kg	P
	c) Overall dimensions		P
	d) Maximum projected area if applicable	MF-SL-120: max. 0,143m ² ; MF-SL-075: max. 0,106m ² ; MF-SL-040: max. 0,106m ²	P
	e) Cross-sectional area of wires if applicable		N/A
	f) Suitability for indoors use		N/A
	g) Dimensions of the compartment		N/A
	h) Torque setting to be applied to bolts or screws	13Nm	P
	i) Maximum mounting height	12m	P



IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
3.6 (4)	CONSTRUCTION		
3.6 (4.2)	Components replaceable without difficulty	Non-user replaceable LED module	P
3.6 (4.3)	Wireways smooth and free from sharp edges		P
3.6 (4.4)	Lampholders		—
3.6 (4.4.1)	Integral lampholder		N/A
3.6 (4.4.2)	Wiring connection		N/A
3.6 (4.4.3)	Lampholder for end-to-end mounting		N/A
3.6 (4.4.4)	Positioning		N/A
	- pressure test (N)		—
	After test the lampholder comply with relevant standard sheets and show no damage		N/A
	After test on single-capped lampholder the lampholder have not moved from its position and show no permanent deformation		N/A
	- bending test (N)		—
	After test the lampholder have not moved from its position and show no permanent deformation		N/A
3.6 (4.4.5)	Peak pulse voltage		N/A
3.6 (4.4.6)	Centre contact		N/A
3.6 (4.4.7)	Parts in rough service luminaires resistant to tracking		N/A
3.6 (4.4.8)	Lamp connectors		N/A
3.6 (4.4.9)	Caps and bases correctly used		N/A
3.6 (4.4.10)	Light source for lampholder or connection according IEC 60061 not connected another way		N/A
3.6 (4.5)	Starter holders		—
	Starter holder in luminaires other than class II		N/A
	Starter holder class II construction		N/A
3.6 (4.6)	Terminal blocks		—
	Tails		N/A
	Unsecured blocks		N/A
3.6 (4.7)	Terminals and supply connections		—
3.6 (4.7.1)	Contact to metal parts		P
3.6 (4.7.2)	Test 8 mm live conductor		P
	Test 8 mm earth conductor		P
3.6 (4.7.3)	Terminals for supply conductors	screwless terminal block	P
3.6 (4.7.3.1)	Welded method and material		—
	- stranded or solid conductor		N/A
	- spot welding		N/A



IEC 60598-2-3

Clause	Requirement + Test	Result - Remark	Verdict
	- welding between wires		N/A
	- Type Z attachment		N/A
	- mechanical test according to 15.6.2		N/A
	- electrical test according to 15.6.3		N/A
	- heat test according to 15.6.3.2.3 and 15.6.3.2.4		N/A
3.6 (4.7.4)	Terminals other than supply connection		N/A
3.6 (4.7.5)	Heat-resistant wiring/sleeves		N/A
3.6 (4.7.6)	Multi-pole plug		N/A
	- test at 30 N		N/A
3.6 (4.8)	Switches		—
	- adequate rating		N/A
	- adequate fixing		N/A
	- polarized supply		N/A
	- compliance with IEC 61058-1 for electronic switches		N/A
3.6 (4.9)	Insulating lining and sleeves		—
3.6 (4.9.1)	Retainment	Insulating lining / sleeves	P
	Method of fixing.....: glued		P
3.6 (4.9.2)	Insulated linings and sleeves:		—
	Resistant to a temperature > 20 °C to the wire temperature or		N/A
	a) & c) Insulation resistance and electric strength		P
	b) Ageing test. Temperature (°C).....:		N/A
3.6 (4.10)	Double or reinforced insulation		—
3.6 (4.10.1)	No contact, mounting surface – accessible metal parts – wiring of basic insulation		N/A
	Safe installation fixed luminaires		N/A
	Capacitors and switches		N/A
	Interference suppression capacitors according to IEC 60384-14		N/A
3.6 (4.10.2)	Assembly gaps:		—
	- not coincidental		N/A
	- no straight access with test probe		N/A
3.6 (4.10.3)	Retainment of insulation:		—
	- fixed		N/A
	- unable to be replaced; luminaire inoperative		N/A
	- sleeves retained in position		N/A
	- lining in lampholder		N/A





IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
3.6 (4.10.4)	Protective impedance device		—
	Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor		N/A
	Y1 or Y2 capacitors comply with IEC 60384-14		N/A
	Resistors comply with test (a) in 14.1 of IEC 60065		N/A
3.6 (4.11)	Electrical connections and current-carrying parts		—
3.6 (4.11.1)	Contact pressure		P
3.6 (4.11.2)	Screws:		—
	- self-tapping screws		P
	- thread-cutting screws		N/A
3.6 (4.11.3)	Screw locking:		—
	- spring washer	earthing terminal	P
	- rivets		N/A
3.6 (4.11.4)	Material of current-carrying parts		P
3.6 (4.11.5)	No contact to wood or mounting surface		P
3.6 (4.11.6)	Electro-mechanical contact systems		N/A
3.6 (4.12)	Screws and connections (mechanical) and glands		—
3.6 (4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		N/A
	Torque test: torque (Nm); part..... :	earthing terminal; 0,4Nm	P
	Torque test: torque (Nm); part..... :	mounting screw for pipe and for spigot; 17Nm (Ø=9,6mm)	P
	Torque test: torque (Nm); part..... :	screw of LED module cover; 2,5Nm (Ø=5,9mm)	P
	Torque test: torque (Nm); part..... :	screw for LED module; 0,5Nm (Ø=2,9mm)	P
3.6 (4.12.2)	Screws with diameter < 3 mm screwed into metal		P
3.6 (4.12.4)	Locked connections:		—
	- fixed arms; torque (Nm)		N/A
	- lampholder; torque (Nm)		N/A
	- push-button switches; torque 0,8 Nm.....		N/A
3.6 (4.12.5)	Screwed glands; force (Nm)..... :	Plastic gland; 3,25Nm	P
3.6 (4.13)	Mechanical strength		—
3.6 (4.13.1)	Impact tests:		—
	- fragile parts; energy (Nm)		N/A
	- other parts; energy (Nm)	body, cover – 0,7Nm	P
	1) live parts		P



IEC 60598-2-3

Clause	Requirement + Test	Result - Remark	Verdict
	2) linings		N/A
	3) protection		P
	4) covers		N/A
3.6 (4.13.2)	Metal parts have adequate mechanical strength		P
3.6 (4.13.3)	Straight test finger		P
3.6 (4.13.4)	Rough service luminaires		—
	- IP54 or higher		N/A
	a) fixed		N/A
	b) hand-held		N/A
	c) delivered with a stand		N/A
	d) for temporary installations and suitable for mounting on a stand		N/A
3.6 (4.13.6)	Tumbling barrel		N/A
3.6 (4.14)	Suspensions, fixings and means of adjusting		—
3.6 (4.14.1)	Mechanical load:		—
	A) four times the weight		N/A
	B) torque 2,5 Nm		N/A
	C) bracket arm; bending moment (Nm)	40N; 20Nm	P
	D) load track-mounted luminaires		N/A
	E) clip-mounted luminaires, glass-shelve. Thickness (mm)		N/A
	Metal rod. diameter (mm)		N/A
	Fixed luminaire or independent control gear without fixing devices		N/A
3.6 (4.14.2)	Load to flexible cables		—
	Mass (kg)		—
	Stress in conductors (N/mm ²)		N/A
	Mass (kg) of semi-luminaire		N/A
	Bending moment (Nm) of semi-luminaire		N/A
3.6 (4.14.3)	Adjusting devices:		—
	- flexing test; number of cycles	45	P
	- strands broken	No	P
	- electric strength test afterwards		P
3.6 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors		N/A
3.6 (4.14.5)	Guide pulleys		N/A
3.6 (4.14.6)	Strain on socket-outlets		N/A
3.6 (4.15)	Flammable materials		—
	- glow-wire test 650°C	See Test Table 3.15 (13.3.2)	P



IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- spacing ≥ 30 mm		N/A
	- screen withstanding test of 13.3.1		N/A
	- screen dimensions		N/A
	- no fiercely burning material		P
	- thermal protection		N/A
	- electronic circuits exempted		N/A
3.6 (4.15.2)	Luminaires made of thermoplastic material with lamp control gear		—
	a) construction		N/A
	b) temperature sensing control		N/A
	c) surface temperature		N/A
3.6 (4.16)	Luminaires for mounting on normally flammable surfaces		—
	No lamp control gear : (compliance with Section 12)		N/A
	Provided with adaptor for a track meet the requirements for direct mounting on normally flammable surfaces		N/A
3.6 (4.16.1)	Lamp control gear spacing:		—
	- spacing 35 mm		P
	- spacing 10 mm		N/A
3.6 (4.16.2)	Thermal protection:		—
	- in lamp control gear		P
	- external		N/A
	- fixed position		N/A
	- temperature marked lamp control gear		P
3.6 (4.16.3)	Design to satisfy the test of 12.6	(see clause 12.6)	N/A
3.6 (4.17)	Drain holes		—
	Clearance at least 5 mm		N/A
3.6 (4.18)	Resistance to corrosion		—
3.6 (4.18.1)	- rust-resistance		P
3.6 (4.18.2)	- season cracking in copper		N/A
3.6 (4.18.3)	- corrosion of aluminium		P
3.6 (4.19)	Igniters compatible with ballast		N/A
3.6 (4.20)	Rough service vibration		N/A
3.6 (4.21)	Protective shield		—
3.6 (4.21.1)	Shield fitted if tungsten halogen lamps or metal halide lamps		N/A
	Shield of glass if tungsten halogen lamps		N/A



IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
3.6 (4.21.2)	Particles from a shattering lamp not impair safety		N/A
3.6 (4.21.3)	No direct path		N/A
3.6 (4.21.4)	Impact test on shield		N/A
	Glow-wire test on lamp compartment	See Test Table 3.15 (13.3.2)	N/A
3.6 (4.22)	Attachments to lamps not cause overheating or damage		N/A
3.6 (4.23)	Semi-luminaires comply Class II		N/A
3.6 (4.24)	Photobiological hazards		—
3.6 (4.24.1)	No excessive UV radiation if tungsten halogen lamps and metal halide lamps (Annex P)	LED module	N/A
3.6 (4.24.2)	Retinal blue light hazard		—
	Class of risk group assessed according to IEC/TR 62778	RG 2 – for LED module	—
	Luminaires with E_{thr} :		—
	a) Fixed luminaires		P
	- distance x m, borderline between RG1 and RG2....	$d_{thr} > 0,5m$	P
	- marking and instruction according 3.2.23		P
	b) Portable and handheld luminaires		N/A
	- marking according 3.2.23 if RG1 exceeded at 200 mm according to IEC/TR 62778		N/A
	Portable luminaires for children IEC 60598-2-10 and Mains socket outlet nightlights IEC 60598-2-12 not exceed RG1 at 200 mm according to IEC/62778		N/A
3.6 (4.25)	Mechanical hazard		—
	No sharp point or edges		P
3.6 (4.26)	Short-circuit protection		—
3.6 (4.26.1)	Adequate means of uninsulated accessible SELV parts		N/A
3.6 (4.26.2)	Short-circuit test with test chain according 4.26.3		—
	Test chain not melt through		N/A
	Test sample not exceed values of Table 12.1 and 12.2		N/A
3.6 (4.27)	Terminal blocks with integrated screwless earthing contacts		—
	Test according Annex V		N/A
	Pull test of terminal fixing (20 N)		N/A
	After test, resistance < 0,05 Ω		N/A
	Pull test of mechanical connection (50 N)		N/A
	After test, resistance < 0,05 Ω		N/A
	Voltage drop test, resistance < 0,05 Ω		N/A
3.6 (4.28)	Fixing of thermal sensing control		—



IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Not plug-in or easily replaceable type		N/A
	Reliably kept in position		N/A
	No adhesive fixing if UV radiations from a lamp can degrade the fixing		N/A
	Not outside the luminaire enclosure		N/A
	Test of adhesive fixing:		—
	Max. temperature on adhesive material (°C) :		—
	100 cycles between t min and t max		N/A
	Temperature sensing control still in position		N/A
3.6 (4.29)	Luminaires with non-replaceable light source		—
	Not possible to replace light source		N/A
	Live part not accessible after parts have been opened by hand or tools		N/A
3.6 (4.30)	Luminaires with non-user replaceable light source		—
	If protective cover provide protection against electric shock and marked with "caution, electric shock risk" symbol:		P
	Minimum two fixing means		P
3.6 (4.31)	Insulation between circuits		—
	Circuits insulated from LV supply fulfil requirements according 4.31.1 – 4.31.3		P
	Controllable luminaires requiring same level of insulation for all components, the insulation between control terminals and LV supply fulfil requirements according 4.31.1 – 4.31.3		P
3.6 (4.31.1)	SELV circuits		—
	Used SELV source		N/A
	Voltage ≤ ELV		N/A
	Insulating of SELV circuits from LV supply		N/A
	Insulating of SELV circuits from other non SELV circuits		N/A
	Insulating of SELV circuits from FELV		N/A
	Insulating of SELV circuits from other SELV circuits		N/A
	SELV circuits insulated from accessible parts according Table X.1		N/A
	Plugs not able to enter socket-outlets of other voltage systems		N/A
	Socket outlets does not admit plugs of other voltage systems		N/A
	Plugs and socket-outlets does not have protective conductor contact		N/A
3.6 (4.31.2)	FELV circuits		—



IEC 60598-2-3

Clause	Requirement + Test	Result - Remark	Verdict
	Used FELV source		P
	Voltage \leq ELV		P
	Insulating of FELV circuits from LV supply		P
	FELV circuits insulated from accessible parts according Table X.1	DALI circuit	P
	Plugs not able to enter socket-outlets of other voltage systems		N/A
	Socket outlets does not admit plugs of other voltage systems		N/A
	Socket-outlets does not have protective conductor contact		N/A
3.6 (4.31.3)	Other circuits		—
	Other circuits insulated from accessible parts according Table X.1		P
	Class II construction with equipotential bonding for protection against indirect contacts with live parts:		—
	- conductive parts are connected together		N/A
	- test according 7.2.3		N/A
	- conductive part not cause an electric shock in case of an insulation fault		N/A
	- equipotential bonding in master/slave applications		N/A
	- master luminaire provided with terminal for accessible conductive parts of slave luminaires		N/A
	- slave luminaire constructed as class I		N/A
3.6 (4.32)	Overvoltage protective devices		—
	Comply with IEC 61643-11		N/A
	External to controlgear and connected to earth:		—
	- only in fixed luminaires		N/A
	- only connected to protective earth		N/A
3.6.1 (-)	At least IP X3 or X5 respectively. IP :	IPX6	P
	Column-integrated luminaires:		—
	- parts below 2,5 m. IP :		N/A
	- parts above 2,5 m. IP :		N/A
3.6.2 (-)	Suspension on span wires		N/A
3.6.3 (-)	Means for attaching the luminaire or external parts to its support appropriate to the weight		P
3.6.3.1 (-)	Static load test		—
	- drag coefficient :	1,2	P
	- loaded area (m ²) :	MF-SL-120: 0,143; MF-SL-075: 0,106	P



IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- used load (N)	MF-SL-120: 284,2; MF-SL-075: 210,7	P
	- measured deformation (cm/m)	<1,4cm/m	P
	- no rotation		P
3.6.4 (-)	Adjustable lampholders		N/A
3.6.5 (-)	Luminaires installed above 5 m, glass covers shall be:		—
	a) glass that fractures into small pieces (test according to 3.6.5.1), or		N/A
	b) glass having a high impact shock resistance (test according to 3.6.5.2), or	IK08	P
	c) protected by any means to retain glass fragments		N/A
	For tunnel luminaires 3.6.5.1 apply		N/A
	Method of protection declared by the manufacturer	Acc. to 3.6.5 (-) b)	P
3.6.5.1 (-)	Protection by the use of glass that fractures into small pieces		—
	- number of particles is more than 40		N/A
3.6.5.2 (-)	Protection by the use of high impact resistant glass		—
3.6.5.2.1 (-)	Glass covers have high mechanical strength		P
	Test according IEC 62262 with test apparatus according IEC 60068-2-75 with impact energy of 5J on preconditioned sample	IK08	P
3.6.5.2.2 (-)	Glass covers not break into large pieces		N/A
	- test according 3.6.5.1, number of particles is more than 20		N/A
3.6.6 (-)	Connection compartment of column-integrated luminaire		—
	- provides adequate space		N/A
	- means for attachment		N/A
	- means for attachment of metal corrosion-resistant		N/A
3.6.7 (-)	Compliance with ISO standard or other		N/A
3.6.8 (-)	Doors of column-integrated luminaires:		—
	- corrosion-resistant		N/A
	- opening only possible for an authorized person		N/A
	- impact test 5 Nm		N/A
	- sample show no damage		N/A
3.6.9 (-)	Column-integrated luminaire:		—
	- dimension of the cable entry slot (mm)		N/A
	- cable path from the slot to the connection compartment (mm)		N/A
	- cable path free from obstruction that might cause abrasion of the cable		N/A



IEC 60598-2-3

Clause	Requirement + Test	Result - Remark	Verdict
3.7 (11)	CREEPAGE DISTANCES AND CLEARANCES		
3.7 (11.2.1)	Impulse withstand category (Normal category II)	Category II <input checked="" type="checkbox"/> Category III <input type="checkbox"/>	—
	Category III according Annex U		N/A
	Protected against pollution, reduced creepage and clearance according Annex P of IEC 61347-1		N/A
3.7 (11.2.2)	Creepage distances for frequency up to 30 kHz	See Test Table 3.7 (11.2) I	P
	Creepage distances for frequency over 30 kHz:		N/A
	- Controlgear marked with \hat{U}_{OUT} and f_{OUT} according IEC 61347-1, clause 7.1, item w	See Test Table 3.7 (11.2) II	N/A
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 3.7 (11.2) II	N/A
3.7 (11.2.3)	Clearances for frequency up to 30 kHz	See Test Table 3.7 (11.2) I	P
	Clearances distances for frequency over 30 kHz:		N/A
	- Controlgear marked with U_p	See Test Table 3.7 (11.2) II	N/A
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 3.7 (11.2) II	N/A

3.8 (7)	PROVISION FOR EARTHING		
3.8 (7.2.1 + 7.2.3)	Accessible metal parts		P
	Metal parts in contact with supporting surface		P
	Resistance $< 0,5 \Omega$	$R < 0,35 \Omega$	P
	Self-tapping screws used		P
	Thread-forming screws		N/A
	Thread-forming screw used in a groove		N/A
	Earth makes contact first		N/A
	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N/A
	Protective earthing of the luminaire not via built-in control gear		P
3.8 (7.2.2 + 7.2.3)	Earth continuity in joints, etc.		N/A
3.8 (7.2.4)	Locking of clamping means		P
	Compliance with 4.7.3		P
	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N/A
3.8 (7.2.5)	Earth terminal integral part of connector socket		N/A
3.8 (7.2.6)	Earth terminal adjacent to mains terminals		P
3.8 (7.2.7)	Electrolytic corrosion of the earth terminal		P
3.8 (7.2.8)	Material of earth terminal		P

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Contact surface bare metal		P
3.8 (7.2.10)	Class II luminaire for looping-in		N/A
	Double or reinforced insulation to functional earth		N/A
3.8 (7.2.11)	Earthing core coloured green-yellow		N/A
	Length of earth conductor		N/A
3.8.1 (-)	Attachment prevented from rotation		N/A

3.9 (14)	SCREW TERMINALS		
	Separately approved; component list	(see Annex 1)	P
	Part of the luminaire	(see Annex 3)	N/A

3.9 (15)	SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS		
	Separately approved; component list..... :	(see Annex 1)	P
	Part of the luminaire	(see Annex 4)	N/A

3.10 (5)	EXTERNAL AND INTERNAL WIRING		
3.10 (5.2)	Supply connection and external wiring		—
3.10 (5.2.1)	Means of connection	screwless terminal block	—
	Outdoor luminaire has not PVC insulated external wiring if not class III or SELV ≤ 25 V a.c./60 V d.c. or protected from outdoor environment		N/A
3.10 (5.2.2)	Type of cable		N/A
	Nominal cross-sectional area (mm ²)		N/A
	Cables equal to IEC 60227 or IEC 60245		N/A
3.10 (5.2.3)	Type of attachment, X, Y or Z		N/A
3.10 (5.2.5)	Type Z not connected to screws		N/A
3.10 (5.2.6)	Cable entries:		—
	- suitable for introduction		P
	- adequate degree of protection	IP66	P
3.10 (5.2.7)	Cable entries through rigid material have rounded edges		P
3.10 (5.2.8)	Insulating bushings:		—
	- suitably fixed		N/A
	- material in bushings		N/A
	- material not likely to deteriorate		N/A
	- tubes or guards made of insulating material		N/A
3.10 (5.2.9)	Locking of screwed bushings		N/A
3.10 (5.2.10)	Cord anchorage:		—



IEC 60598-2-3

Clause	Requirement + Test	Result - Remark	Verdict
	- covering protected from abrasion		P
	- clear how to be effective		P
	- no mechanical or thermal stress		P
	- no tying of cables into knots etc.		P
	- insulating material or lining		P
3.10 (5.2.10.1)	Cord anchorage for type X attachment:		—
	a) at least one part fixed		N/A
	b) types of cable		N/A
	c) no damaging of the cable		N/A
	d) whole cable can be mounted		N/A
	e) no touching of clamping screws		N/A
	f) metal screw not directly on cable		N/A
	g) replacement without special tool		N/A
	Glands not used as anchorage		N/A
	Labyrinth type anchorages		N/A
3.10 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment		N/A
3.10 (5.2.10.3)	Tests:		—
	- impossible to push cable; unsafe		P
	- pull test: 25 times; pull (N): 60N		P
	- torque test: torque (Nm): 0,25Nm		P
	- displacement ≤ 2 mm		P
	- no movement of conductors		P
	- no damage of cable or cord		P
	- function independent of electrical connection		P
3.10 (5.2.11)	External wiring passing into luminaire		P
3.10 (5.2.12)	Looping-in terminals		N/A
3.10 (5.2.13)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		N/A
3.10 (5.2.14)	Mains plug same protection		N/A
	Class III luminaire plug		N/A
	No unsafe compatibility		N/A
3.10 (5.2.16)	Appliance inlets (IEC 60320)		N/A



IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Installation couplers (IEC 61535)		N/A
	Other appliance inlet or connector according relevant IEC standard		N/A
3.10 (5.2.17)	No standardized interconnecting cables properly assembled		N/A
3.10 (5.2.18)	Used plug in accordance with		—
	- IEC 60083		N/A
	- other standard		N/A
3.10 (5.3)	Internal wiring		—
3.10 (5.3.1)	Internal wiring of suitable size and type	1x1,0mm ²	P
	Through wiring		—
	- not delivered/ mounting instruction		N/A
	- factory assembled		N/A
	- socket outlet loaded (A)		N/A
	- temperatures	(see Annex 2)	N/A
	Green-yellow for earth only		P
3.10 (5.3.1.1)	Internal wiring connected directly to fixed wiring		—
	Cross-sectional area (mm ²)		N/A
	Insulation thickness (mm)		N/A
	Extra insulation added where necessary		N/A
3.10 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		—
	Cross-sectional area (mm ²)	1x1,0mm ²	P
3.10 (5.3.1.3)	Double or reinforced insulation for class II		N/A
3.10 (5.3.1.4)	Conductors without insulation		N/A
3.10 (5.3.1.5)	SELV current-carrying parts		N/A
3.10 (5.3.1.6)	Insulation thickness other than PVC or rubber		N/A
3.10 (5.3.2)	Sharp edges etc.		P
	No moving parts of switches etc.		N/A
	Joints, raising/lowering devices	gland	P
	Telescopic tubes etc.		N/A
	No twisting over 360°		N/A
3.10 (5.3.3)	Insulating bushings:		—
	- suitable fixed	gland	N/A

IEC 60598-2-3

Clause	Requirement + Test	Result - Remark	Verdict
	- material in bushings		N/A
	- material not likely to deteriorate		N/A
	- cables with protective sheath		N/A
3.10 (5.3.4)	Joints and junctions effectively insulated		N/A
3.10 (5.3.5)	Strain on internal wiring		N/A
3.10 (5.3.6)	Wire carriers		N/A
3.10 (5.3.7)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		N/A
3.10 (5.4)	Test to determine suitability of conductors having a reduced cross-sectional area		—
	Under test the temperature of the luminaire wiring insulation not exceed the limits stated in Table 12.2	(see Annex 2)	N/A
	No damage to luminaire wiring after test		N/A
3.10.1 (-)	Cord anchorage if applicable		P
	- pull test: 25 times; pull (N)	60N	P
	- torque test: torque (Nm)	0,25Nm	P

3.11 (8)	PROTECTION AGAINST ELECTRIC SHOCK		
3.11 (8.2.1)	Live parts not accessible		P
	Basic insulated parts not used on the outer surface without appropriate protection		P
	Basic insulated parts not accessible with standard test finger on portable, settable and adjustable luminaires		N/A
	Basic insulated parts not accessible with Ø 50 mm probe from outside, other types of luminaires		P
	Lamp and starterholders in portable and adjustable luminaires comply with double or reinforced insulation requirements		N/A
	Basic insulation only accessible under lamp or starter replacement		P
	Protection in any position		P
	Double-ended tungsten filament lamp		N/A
	Insulation lacquer not reliable		P
	Double-ended high-pressure discharge lamp		N/A
	Relevant warning according to 3.2.18 fitted to the luminaire		N/A
3.11 (8.2.2)	Portable luminaire adjusted in most unfavourable position		N/A
3.11 (8.2.3.a)	Class II luminaire:		—



IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- basic insulated metal parts not accessible during starter or lamp replacement		N/A
	- basic insulation not accessible other than during starter or lamp replacement		N/A
	- glass protective shields not used as supplementary insulation		N/A
3.11 (8.2.3.b)	BC lampholder of metal in class I luminaires shall be earthed		N/A
3.11 (8.2.3.c)	SELV circuits with exposed current carrying parts:		—
	Ordinary luminaire:		—
	- voltage under load (V)		N/A
	- no-load voltage (V)		N/A
	- touch current if applicable (mA)		N/A
	One conductive part insulated if required		N/A
	Other than ordinary luminaire:		—
	- nominal voltage (V)		N/A
	Class III luminaire only for connection to SELV		N/A
	Class III luminaire not provided with means for protective earthing		N/A
3.11 (8.2.4)	Portable luminaire has protection independent of supporting surface		N/A
3.11 (8.2.5)	Compliance with the standard test finger or relevant probe		P
3.11 (8.2.6)	Covers reliably secured		P
3.11 (8.2.7)	Luminaire other than below with capacitor > 0,5µF not exceed 50 V 1 min after disconnection		N/A
	Portable luminaire with capacitor >0,1 µF (or 0,25 µF with nominal power supply less than 150V) not exceed 34 V 1 s after disconnection		N/A
	Other luminaires with capacitor >0,1 µF (or 0,25 µF with nominal power supply less than 150V) with plug and track adaptors not exceed 60 V 5 s after disconnection		N/A

3.12 (12)	ENDURANCE TEST AND THERMAL TEST		
3.12.2 (-)	If IP > IP 20 relevant test of (12.4), (12.5) and (12.6) after (9.2) before (9.3) specified in 3.13		---
3.12 (12.2)	Selection of lamps and ballasts		—
	Lamp used according Annex B	(Lamp used see Annex 2)	—
	Controlgear if separate and not supplied	(Controlgear used see Annex 2)	—
3.12 (12.3)	Endurance test		P



IEC 60598-2-3

Clause	Requirement + Test	Result - Remark	Verdict
	a) mounting-position	on a mast arm	—
	b) test temperature ((C)	47°C	—
	c) total duration (h)	240h	—
	d) supply voltage (V)	253V; 1,1; 278V	—
	d) if not equipped with controlgear, constant voltage/current (V) or (A)		—
	e) luminaire ceases to operate		—
3.12 (12.3.2)	After endurance test:		—
	- no part unserviceable		P
	- luminaire not unsafe		P
	- no damage to track system		N/A
	- marking legible		P
	- no cracks, deformation etc.		P
3.12 (12.4)	Thermal test (normal operation)	(see Annex 2)	P
3.12 (12.5)	Thermal test (abnormal operation)	(see Annex 2)	N/A
3.12 (12.6)	Thermal test (failed lamp control gear condition):		—
3.12 (12.6.1)	Through wiring or looping-in wiring loaded by a current of (A)		—
	- case of abnormal conditions		—
	- electronic lamp control gear		N/A
	- measured winding temperature (°C): at 1,1 Un		—
	- measured mounting surface temperature (°C) at 1,1 Un		N/A
	- calculated mounting surface temperature (°C)		N/A
	- track-mounted luminaires		N/A
3.12 (12.6.2)	Temperature sensing control		—
	- case of abnormal conditions		—
	- thermal link		N/A
	- manual reset cut-out		N/A
	- auto reset cut-out		N/A
	- measured mounting surface temperature (°C)		N/A
	- track-mounted luminaires		N/A
3.12 (12.7)	Thermal test (failed lamp control gear in plastic luminaires):		—
3.12 (12.7.1)	Luminaire without temperature sensing control		—
3.12 (12.7.1.1)	Luminaire with fluorescent lamp ≤ 70W		—



IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Test method 12.7.1.1 or Annex W		—
	Test according to 12.7.1.1:		N/A
	- case of abnormal conditions		—
	- Ballast failure at supply voltage (V)		—
	- Components retained in place after the test		N/A
	- Test with standard test finger after the test		N/A
	Test according to Annex W:		—
	- case of abnormal conditions		—
	- measured winding temperature (°C): at 1,1 Un		—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un.....		—
	- calculated temperature of fixing point/exposed part (°C)		—
	Ball-pressure test.....	See Test Table 3.15 (13.2.1)	N/A
3.12 (12.7.1.2)	Luminaire with discharge lamp, fluorescent lamp > 70W, transformer > 10 VA		—
	- case of abnormal conditions		—
	- measured winding temperature ((C): at 1,1 Un.....		—
	- measured temperature of fixing point/exposed part ((C): at 1,1 Un.....		—
	- calculated temperature of fixing point/exposed part ((C).....		—
	Ball-pressure test.....	See Test Table 3.15 (13.2.1)	N/A
3.12 (12.7.1.3)	Luminaire with short circuit proof transformers ≤ 10 VA		N/A
	- case of abnormal conditions		—
	- Components retained in place after the test		N/A
	- Test with standard test finger after the test		N/A
3.12 (12.7.2)	Luminaire with temperature sensing control		—
	- thermal link	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- manual reset cut-out	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- auto reset cut-out	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- case of abnormal conditions		—
	- highest measured temperature of fixing point/ exposed part (°C):		—
	Ball-pressure test.....	See Test Table 3.15 (13.2.1)	N/A
3.12.1 (-)	Temperature reduction if for outdoor use only	-10°C	P
3.12.2 (-)	(See above)		—

IEC 60598-2-3

Clause	Requirement + Test	Result - Remark	Verdict
3.12.3 (-)	Glass covers used within the thermal limits declared by the glass manufacturer		N/A

3.13 (9)	RESISTANCE TO DUST AND MOISTURE		
3.13.1 (-)	If IP > IP 20 the order of tests as specified in clause 3.12		P
3.13 (9.2)	Tests for ingress of dust, solid objects and moisture:		—
	- classification according to IP	IP 66	—
	- mounting position during test.....	on a mast arm	—
	- fixing screws tightened; torque (Nm).....		—
	- tests according to clauses	9.2.2, 9.2.7	—
	- electric strength test afterwards	1506V	P
	a) no deposit in dust-proof luminaire		N/A
	b) no talcum in dust-tight luminaire	IP6X	P
	c) no trace of water on current-carrying parts or on insulation where it could become a hazard	IPX6	P
	c.1) For luminaires without drain holes – no water entry	IPX6	P
	c.2) For luminaires with drain holes – no hazardous water entry		N/A
	d) no water in watertight or pressure watertight luminaire		N/A
	e) no contact with live parts (IP 2X)		N/A
	e) no entry into enclosure (IP 3X and IP 4X)		N/A
	e) no contact with live parts through drain holes and ventilation slots (IP3X and IP4X)		N/A
	f) no trace of water on part of lamp requiring protection from splashing water		N/A
	g) no damage of protective shield or glass envelope	IPX6	P
3.13 (9.3)	Humidity test 48 h	IP66	P

3.14 (10)	INSULATION RESISTANCE AND ELECTRIC STRENGTH		
3.14 (10.2.1)	Insulation resistance test		P
	Cable or cord covered by metal foil or replaced by a metal rod of mm Ø		—
	Insulation resistance (MΩ)		—
	SELV		—
	- between current-carrying parts of different polarity:	>1,3 MΩ (DALI circuit)	P
	- between current-carrying parts and mounting surface	>1,3 MΩ (DALI circuit)	P



IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- between current-carrying parts and metal parts of the luminaire	>1,3 MΩ (DALI circuit)	P
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts		N/A
	- Insulation bushings as described in Section 5		N/A
	Other than SELV		—
	- between live parts of different polarity.....	>2,6 MΩ	P
	- between live parts and mounting surface	>2,6 MΩ	P
	- between live parts and metal parts	>2,6 MΩ	P
	- between live parts of different polarity through action of a switch		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts		N/A
	- Insulation bushings as described in Section 5		N/A
3.14 (10.2.2)	Electric strength test		P
	Dummy lamp		N/A
	Luminaires with ignitors after 24 h test		N/A
	Luminaires with manual ignitors		N/A
	Test voltage (V)		N/A
	SELV		—
	- between current-carrying parts of different polarity:	500V (DALI circuit)	P
	- between current-carrying parts and mounting surface	500V (DALI circuit)	P
	- between current-carrying parts and metal parts of the luminaire	500V (DALI circuit)	P
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts		N/A
	- Insulation bushings as described in Section 5		N/A
	Other than SELV		—
	- between live parts of different polarity.....	1506V/1600V	P
	- between live parts and mounting surface	1506V/1600V	P
	- between live parts and metal parts	1506V/1600V	P
	- between live parts of different polarity through action of a switch		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts		N/A
	- Insulation bushings as described in Section 5		N/A



IEC 60598-2-3

Clause	Requirement + Test	Result - Remark	Verdict
3.14 (10.3)	Touch current or protective conductor current (mA):	Itouch <0,49mA; Iearth<2,45mA	P

3.15 (13)	RESISTANCE TO HEAT, FIRE AND TRACKING		
3.15 (13.2.1)	Ball-pressure test..... :	See Test Table 3.15 (13.2.1)	N/A
3.15 (13.3.1)	Needle-flame test (10 s) :	See Test Table 3.15 (13.3.1)	N/A
3.15 (13.3.2)	Glow-wire test (650°C)..... :	See Test Table 3.15 (13.3.2)	P
3.15 (13.4)	Proof tracking test (IEC 60112) :	See Test Table 3.15 (13.4)	N/A

3.7 (11.2)	TABLE I: Creepage distances and clearances						P
	Minimum distances (mm) for a.c. up to 30 kHz sinusoidal voltages						P
	Applicable part of IEC 60598-1 Table 11.1.A*, 11.1.B* and 11.2*						P
	Insulation type **	Measured clearance	Required		Measured creepage	Required	
			clearance	*Table		creepage	*Table
Distance 1:	B	> 1,52	1,17	11.1.B	> 3,25	2,5	11.1.A
Working voltage (V)..... :					U _{in} = 253V AC		—
PTI..... :					< 600 <input checked="" type="checkbox"/> ≥ 600 <input type="checkbox"/>		—
Pulse voltage or U _P if applicable (kV) :					—		—
Supplementary information: (1) live parts of different polarity							
Distance 2:	B	> 1,95	1,5	11.1.B	> 3,9	3,0	11.1.A
Working voltage (V)..... :					U _{out} = 300V DC		—
PTI..... :					< 600 <input checked="" type="checkbox"/> ≥ 600 <input type="checkbox"/>		—
Pulse voltage or U _P if applicable (kV) :					—		—
Supplementary information: (1) live parts of different polarity							
Distance 3:	B	> 1,52	1,17	11.1.B	> 3,25	2,5	11.1.A
Working voltage (V)..... :					U _{in} = 253V AC		—
PTI..... :					< 600 <input checked="" type="checkbox"/> ≥ 600 <input type="checkbox"/>		—
Pulse voltage or U _P if applicable (kV) :					—		—
Supplementary information: 2a) live parts and accessible metal parts, (6) live parts and other metal parts between them and the supporting surface							
Distance 4:	B	> 1,95	1,5	11.1.B	> 3,9	3,0	11.1.A
Working voltage (V)..... :					U _{out} = 300V DC		—
PTI..... :					< 600 <input checked="" type="checkbox"/> ≥ 600 <input type="checkbox"/>		—
Pulse voltage or U _P if applicable (kV) :					—		—
Supplementary information: (2a) live parts and accessible metal parts, (6) live parts and other metal parts between them and the supporting surface							

** Insulation type: B – Basic; S – Supplementary; R – Reinforced. See also IEC 60598-1 Annex M.



IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

3.7 (11.2)	TABLE II: Creepage distances and clearances						N/A
Minimum distances (mm) for a.c. higher than 30 kHz sinusoidal voltages							
Applicable part of IEC 61347-1 Table 7 and 8* or IEC 60664-4 Table 1 and 2							
Distances	Insulation type **	Measured clearance	Required		Measured creepage	Required	
			clearance	*Table		creepage	*Table
Distance 1:							
Working voltage (V)							—
Frequency if applicable (kHz)							—
PTI					< 600 <input type="checkbox"/> ≥ 600 <input type="checkbox"/>		—
Peak value of the working voltage \hat{U}_{out} if applicable (kV)							—
Supplementary information:							
Distance 2:							
Working voltage (V)							—
Frequency if applicable (kHz)							—
PTI					< 600 <input type="checkbox"/> ≥ 600 <input type="checkbox"/>		—
Peak value of the working voltage \hat{U}_{out} if applicable (kV)							—
Supplementary information:							
Distance 3:							
Working voltage (V)							—
Frequency if applicable (kHz)							—
PTI					< 600 <input type="checkbox"/> ≥ 600 <input type="checkbox"/>		—
Peak value of the working voltage \hat{U}_{out} if applicable (kV)							—
Supplementary information:							

** Insulation type: B – Basic; S – Supplementary; R – Reinforced.

3.15 (13.2.1)	TABLE: Ball Pressure Test of Thermoplastics			N/A
Allowed impression diameter (mm) :		2		—
Object/ Part No. / Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)	
Supplementary information:				



IEC 60598-2-3

Clause	Requirement + Test	Result - Remark	Verdict
--------	--------------------	-----------------	---------

3.15 (13.3.1)	TABLE: Needle-flame test (IEC 60695-11-5)				N/A
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (ta); (s)	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
Supplementary information:					


3.15 (13.3.2)	TABLE: Glow-wire test (IEC 60695-2-11)				P
Glow wire temperature			650°C		—
Object/ Part No./ Material	Manufacturer/ trademark		Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
Lens	Ledil		No	-	P
Supplementary information:					

3.15 (13.4)	TABLE: Proof tracking test (IEC 60112)				N/A
Test voltage PTI		175 V			—
Object/ Part No./ Material	Manufacturer/ trademark	Withstand 50 drops without failure on three places or on three specimens			Verdict
Supplementary information:					



IEC 60598-2-3

Clause	Requirement + Test	Result - Remark	Verdict
--------	--------------------	-----------------	---------

ANNEX 1		TABLE: Critical components information					
Object / part No.	Code	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾	
Lamp control gear (with integrated wiring)	B	OSRAM	OT 110/120-277/1A4 2DIMLT2P	U _{out} 35-85 Vdc; I _{out} 600-1400mA; P _{out} 110 W; T _c 85°C; U _{out} max 120VDC 	EN 61347-1; EN 61347-2-13; EN 62384	ENEC 15	



IEC 60598-2-3

Clause	Requirement + Test			Result - Remark		Verdict
Description:						
LED module (based on LED chips)	B	YELLOW ENERGY	OSG3	tc 85 °C; RG2 Ethr = 767lx; Max. 1400 mA 3000K+6500K	EN 60598-1	Tested in sample
	B	YELLOW ENERGY	OSG3a	tc 85 °C; RG2 Ethr = 767lx; Max. 720 mA 3000K+6500K	EN 60598-1	Tested in sample
LED module (based on LED chips)	B	YELLOW ENERGY	L5050	tc 85 °C; RG2 Ethr = 767lx; Max. 800 mA 2700K+5700K	EN 60598-1	Tested in sample
PBC	A		LJ-A1	Aluminium; CTI 400V; thickness: 1,38- 1,41 Mm; breakdown voltage: 2,5 – 3,8 kV; V-0	EN 60598-1	Tested in sample

IEC 60598-2-3						
Clause	Requirement + Test			Result - Remark		Verdict
Screwless terminal block	B		2060	130V; 9 A; T85; 0,75 mm ²	EN 60998-1 EN 60998-2-2	DEKRA
LED optics	A	LEDIL	Strada 2x2 Stradella 8 series	PMMA	EN 60598-1	Tested in sample
Description:						
Screwless terminal block	B		293	16A/400V ; 2,5 mm ²	EN 60998-1 EN 60998-2-2	VDE
Knife switch	B		M29 3 pole	400V 16A	EN 60598-1	IMQ
Description:						
Insulation lining (under terminal block)	A		K85x50-R	Polipropilen	EN 60598-1	Tested in sample
Screw gasket	A		K-170SG	Silicone	EN 60598-1	Tested in sample
Insulation lining (under LED modules)	A		TCP150	Thermal Conductive Pad	EN 60598-1	Tested in sample
Description:						
Wire (green/yellow)	A		H05V-K 1x1mm ²	300/500V	EN 50525-2-31	B-BBJ

Supplementary information:
¹⁾ Provided evidence ensures the agreed level of compliance. See OD-CB2039.

The codes above have the following meaning:

- A - The component is replaceable with another one, also certified, with equivalent characteristics
- B - The component is replaceable if authorised by the test house
- C - Integrated component tested together with the appliance
- D - Alternative component



IEC 60598-2-3

Clause	Requirement + Test	Result - Remark	Verdict
--------	--------------------	-----------------	---------

ANNEX 2	TABLE: Thermal tests of Section 12		P
	Type reference.....:	MF-SL-120	---
	Lamp used.....:	OSG3 LED Module	---
	Lamp control gear used.....:	OSRAM Optotronic OT 110/120-277/1A4 2DIMLT2 P	---
	Mounting position of luminaire.....:	On a mast arm	---
	Supply wattage (W).....:	---	---
	Supply current (A).....:	---	---
	Temperatures in test 1 - 4 below are corrected for t_a (°C).....:		---
	- abnormal operating mode.....:		---
1.12 (12.4)	- test 1: rated voltage.....:	253V AC	---
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current.....:	1,06x253V = 268V AC	---
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage.....:	---	---
	Through wiring or looping-in wiring loaded by a current of A during the test.....:	---	---
1.12 (12.5)	- test 4: 1,1 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current.....:	---	---

Temperature measurements (°C)

Part	Ambient	Cl. 12.4 – normal				Cl. 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
LED module T_c	35	56	---	---	85	---	---
Lamp control gear T_c		64	---	---	85	---	---
Supply wire		---	39	---	90	---	---
Internal wire (LED module chamber)		---	45	---	90	---	---
Internal wire (lamp control gear chamber)		---	52	---	90	---	---
Screwless terminal		---	39	---	85	---	---
Led module connector		---	50	---	85	---	---



IEC 60598-2-3

Clause	Requirement + Test	Result - Remark	Verdict
--------	--------------------	-----------------	---------

	Type reference	MF-SL-075	---
	Lamp used	OSG3a LED Module	---
	Lamp control gear used	OSRAM Optotronic OT 110/120-277/800 2DIMLT2 P	---
	Mounting position of luminaire	On a mast arm	---
	Supply wattage (W)	---	---
	Supply current (A)	---	---
	Temperatures in test 1 - 4 below are corrected for ta (°C)		---
	- abnormal operating mode		---
1.12 (12.4)	- test 1: rated voltage	253V AC	---
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current	1,06x253V = 268V AC	---
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage	---	---
	Through wiring or looping-in wiring loaded by a current of A during the test	---	---
1.12 (12.5)	- test 4: 1,1 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current	---	---

Temperature measurements (°C)

Part	Ambient	Cl. 12.4 – normal				Cl. 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
LED module Tc	35	57	---	---	85	---	---
Lamp control gear Tc		56	---	---	85	---	---
Supply wire		---	40	---	90	---	---
Internal wire (LED module chamber)		---	51	---	90	---	---
Internal wire (lamp control gear chamber)		---	44	---	90	---	---
Screwless terminal		---	45	---	85	---	---
Led module connector		---	55	---	85	---	---



IEC 60598-2-3

Clause	Requirement + Test	Result - Remark	Verdict
ANNEX 3	Screw terminals (part of the luminaire)		N/A
(14)	SCREW TERMINALS		—
(14.2)	Type of terminal		—
	Rated current (A)		—
(14.3.2.1)	One or more conductors		N/A
(14.3.2.2)	Special preparation		N/A
(14.3.2.3)	Terminal size		N/A
	Cross-sectional area (mm ²)		—
(14.3.3)	Conductor space (mm)		N/A
(14.4)	Mechanical tests		—
(14.4.1)	Minimum distance		N/A
(14.4.2)	Cannot slip out		N/A
(14.4.3)	Special preparation		N/A
(14.4.4)	Nominal diameter of thread (metric ISO thread).....	M	N/A
	External wiring		N/A
	No soft metal		N/A
(14.4.5)	Corrosion		N/A
(14.4.6)	Nominal diameter of thread (mm).....		N/A
	Torque (Nm).....		N/A
(14.4.7)	Between metal surfaces		N/A
	Lug terminal		N/A
	Mantle terminal		N/A
	Pull test; pull (N).....		N/A
(14.4.8)	Without undue damage		N/A



IEC 60598-2-3

Clause	Requirement + Test	Result - Remark	Verdict
ANNEX 4	Screwless terminals (part of the luminaire)		N/A
(15)	SCREWLESS TERMINALS		—
(15.2)	Type of terminal.....:		—
	Rated current (A).....:		—
(15.3.1)	Material		N/A
(15.3.2)	Clamping		N/A
(15.3.3)	Stop		N/A
(15.3.4)	Unprepared conductors		N/A
(15.3.5)	Pressure on insulating material		N/A
(15.3.6)	Clear connection method		N/A
(15.3.7)	Clamping independently		N/A
(15.3.8)	Fixed in position		N/A
(15.3.10)	Conductor size		N/A
	Type of conductor		N/A
(15.5)	Terminals and connections for internal wiring		N/A
(15.5.1)	Mechanical tests		N/A
(15.5.1.1.1)	Pull test spring-type terminals (4 N, 4 samples).....:		N/A
(15.5.1.1.2)	Pull test pin or tab terminals (4 N, 4 samples)		N/A
	Insertion force not exceeding 50 N		N/A
(15.5.1.2)	Permanent connections: pull-off test (20 N)		N/A
(15.5.2)	Electrical tests		—
	Voltage drop (mV) after 1 h (4 samples).....:		N/A
	Voltage drop of two inseparable joints		N/A
	Number of cycles:		—
	Voltage drop (mV) after 10th alt. 25th cycle (4 samples).....:		N/A
	Voltage drop (mV) after 50th alt. 100th cycle (4 samples).....:		N/A
	After ageing, voltage drop (mV) after 10th alt. 25th cycle (4 samples)		N/A
	After ageing, voltage drop (mV) after 50th alt. 100th cycle (4 samples)		N/A
(15.6)	Terminals and connections for external wiring		N/A
(15.6.1)	Conductors		—
	Terminal size and rating		N/A
15.6.2	Mechanical tests		—
(15.6.2.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N)		N/A



IEC 60598-2-3

Clause	Requirement + Test	Result - Remark	Verdict
(15.6.2.2)	Pull test pin or tab terminals (4 samples); pull (N)		N/A
(15.6.3)	Electrical tests		—
	Tests according 15.6.3.1 + 15.6.3.2 in IEC 60598-1		N/A

(15.6.3.1) (15.6.3.2)	TABLE: Contact resistance test / Heating tests										N/A
Voltage drop (mV) after 1 h											—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
Voltage drop of two inseparable joints											
Voltage drop after 10th alt. 25th cycle											
Max. allowed voltage drop (mV).....:											(
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
Voltage drop after 50th alt. 100th cycle											
Max. allowed voltage drop (mV).....:											(
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
Continued ageing: voltage drop after 10th alt. 25th cycle											
Max. allowed voltage drop (mV).....:											(
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
Continued ageing: voltage drop after 50th alt. 100th cycle											
Max. allowed voltage drop (mV).....:											(
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
Supplementary information:											



IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

List of test equipment used:

A completed list of used test equipment shall be provided in the Test Reports when a Customer's Testing Facility according to CTF stage 1 or CTF stage 2 procedure has been used.

Other forms with a different layout but containing corresponding information are also acceptable.

Note: This page may be removed when CTF stage 1 CTF stage 2 are not used. See also clause 4.8 in OD 2020 for more details.

Clause	Measurement / testing	Testing / measuring equipment / material used, (Equipment ID)	Range used	Last Calibration date	Calibration due date



IEC60598_2_3K - ATTACHMENT

Clause	Requirement + Test	Result - Remark	Verdict
--------	--------------------	-----------------	---------

ATTACHMENT TO TEST REPORT IEC 60598-2-3
EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES
LUMINAIRES
PART 2: PARTICULAR REQUIREMENTS
SECTION 3: LUMINAIRES FOR ROAD AND STREET LIGHTING

Differences according to : EN 60598-2-3:2003 + A1:2011 used in conjunction with
 EN 60598-1:2015

Annex Form No. : EU_GD_IEC60598_2_3K

Annex Form Originator..... : IMQ S.p.A.

Master Annex Form..... : 2016-12

Copyright © 2016 IEC System for Conformity Testing and Certification of Electrical Equipment
 (IECEE), Geneva, Switzerland. All rights reserved.

	CENELEC COMMON MODIFICATIONS (EN)	
--	--	--

3.5 (3)	MARKING	
3.5 (3.3.101)	For luminaires not supplied with terminal block: Adequate warning on the package	N/A

3.6 (4)	CONSTRUCTION	
3.6 (4.11.6)	Electro-mechanical contact systems	knife switch
		P

3.10 (5)	EXTERNAL AND INTERNAL WIRING	
3.10 (5.2.1)	Connecting leads	screwless terminal block
	- without a means for connection to the supply	N/A
	- terminal block specified	N/A
	- relevant information provided	N/A
	- compliance with 4.6, 4.7.1, 4.7.2, 4.10.1, 11.2, 12 and 13.2 of Part 1	N/A
3.10 (5.2.2)	Cables equal to EN 50525	N/A
	Replace table 5.1 – Supply cord	N/A

3.12 (12)	ENDURANCE TESTS AND THERMAL TESTS	
3.12 (12.4.2c)	Thermal test (normal operation) see footnote c to table 12.2 relating to unsleeved fixed wiring	P



IEC60598_2_3K - ATTACHMENT

Clause	Requirement + Test	Result - Remark	Verdict
--------	--------------------	-----------------	---------

ZB	ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)		
(3.3)	DK: power supply cords of class I luminaires with label		N/A
(4.5.1)	DK: socket-outlets		N/A
(5.2.1)	CY, DK, FI, GB: type of plug		N/A

ZC	ANNEX ZC, NATIONAL DEVIATIONS (EN)		
(4 & 5)	FR: Shuttered socket-outlets 10/16A		N/A
	FR: Safety requirements for high buildings (Arrêté du 30 décembre 2011 portant règlement de sécurité pour la construction des immeubles de grande hauteur et leur protection contre les risques d'incendie et de panique; Section VIII; Article GH 48, Eclairage) Glow-wire test for outer parts of luminaires:		
	- 850°C for luminaires in stairways and horizontal travel paths		N/A
	- 650°C for indoor luminaires		N/A
	GB: Requirements according to United Kingdom Building Regulation		N/A



IEC 60598_2_3

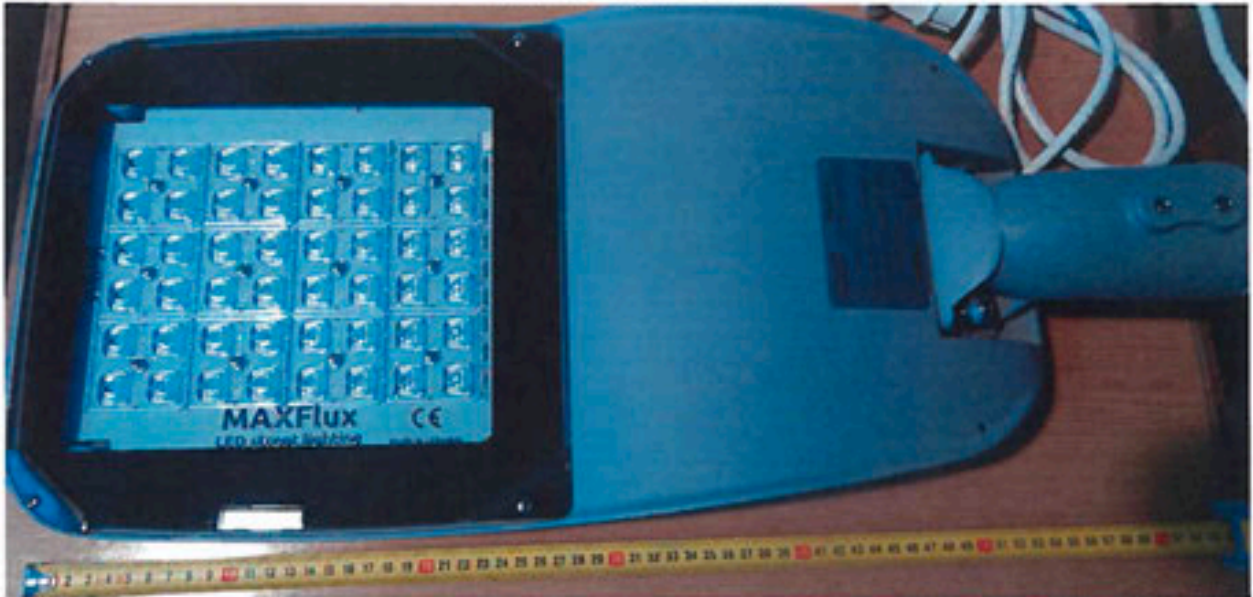
Clause	Requirement + Test	Result - Remark	Verdict
--------	--------------------	-----------------	---------

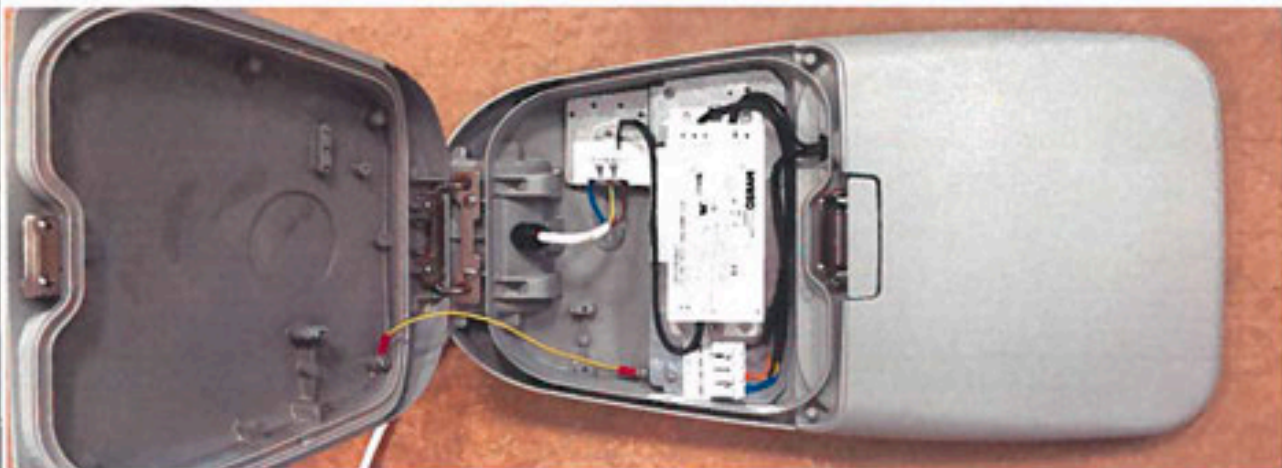
**Annex A: Tests of overpower condition according to
EN 62031:2008+A1:2013+A2:2015**

13.2	Module withstands overpower condition >15 min.		P
	Module with automatic protective device or power limiter, test performed 15 min. at limit.		N/A
	During the tests, tissue paper, spread below module, does not ignite		P

ANNEX B: Photographs of the products

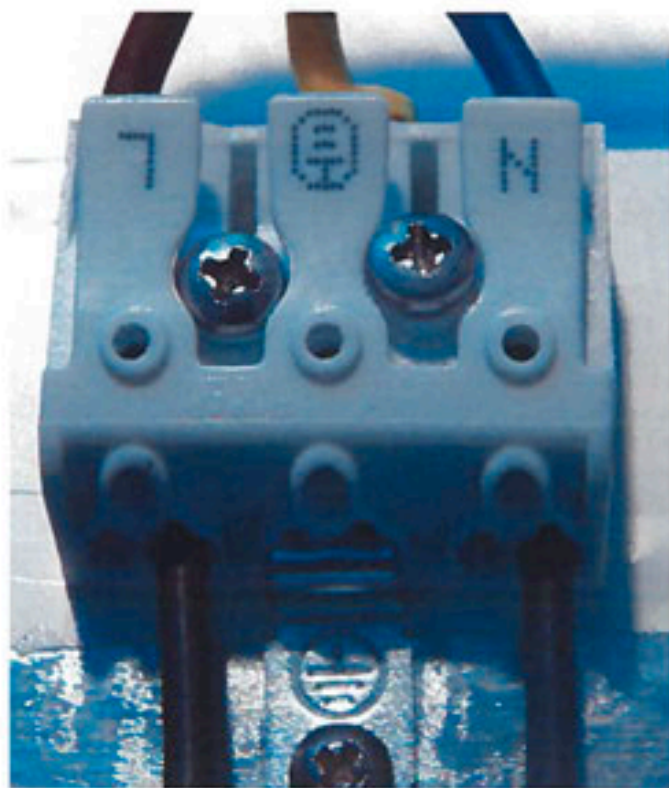
General view (MF-SL-120)



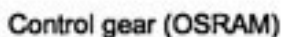


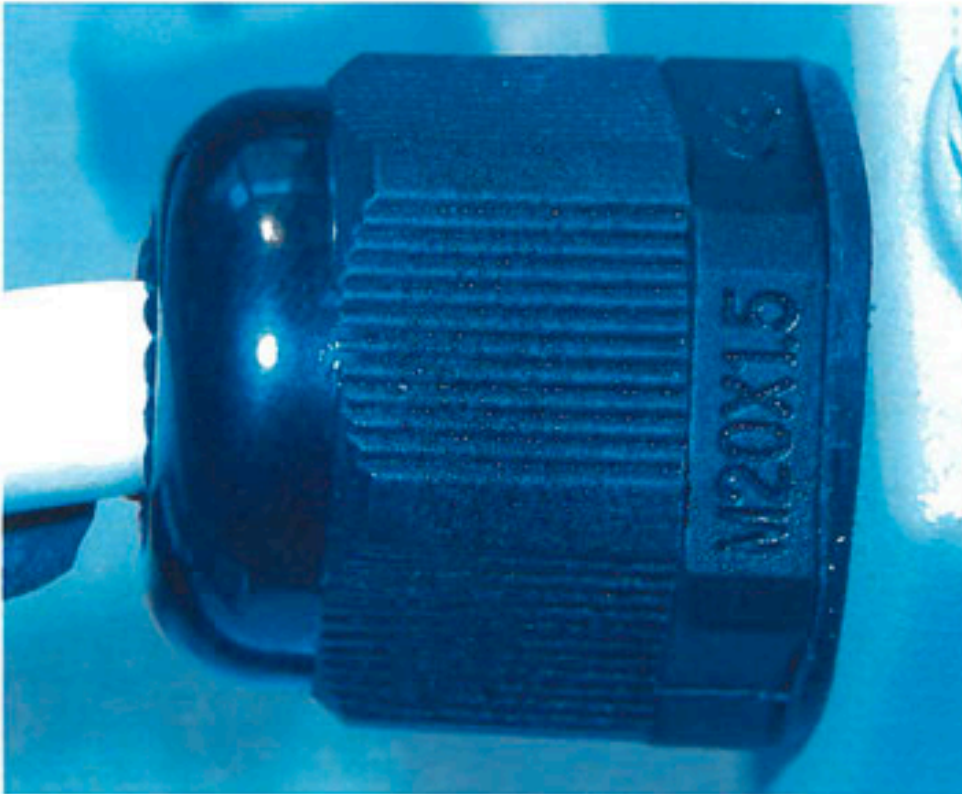
General view (MF-SL-075)





Screwless terminal block





Gland



L5050 LED Module



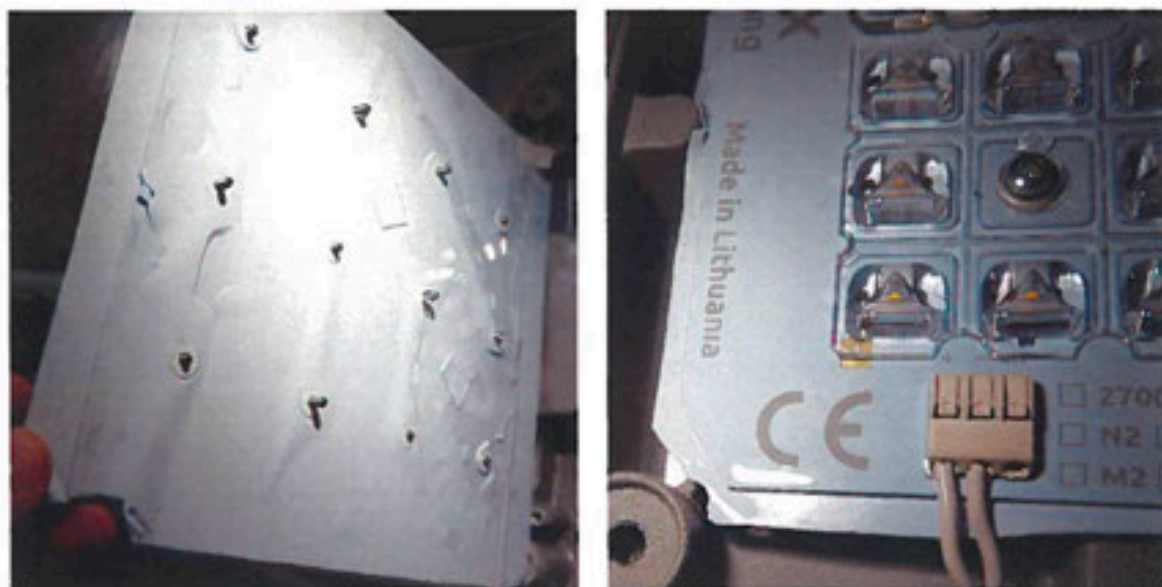
OSG3 LED Module



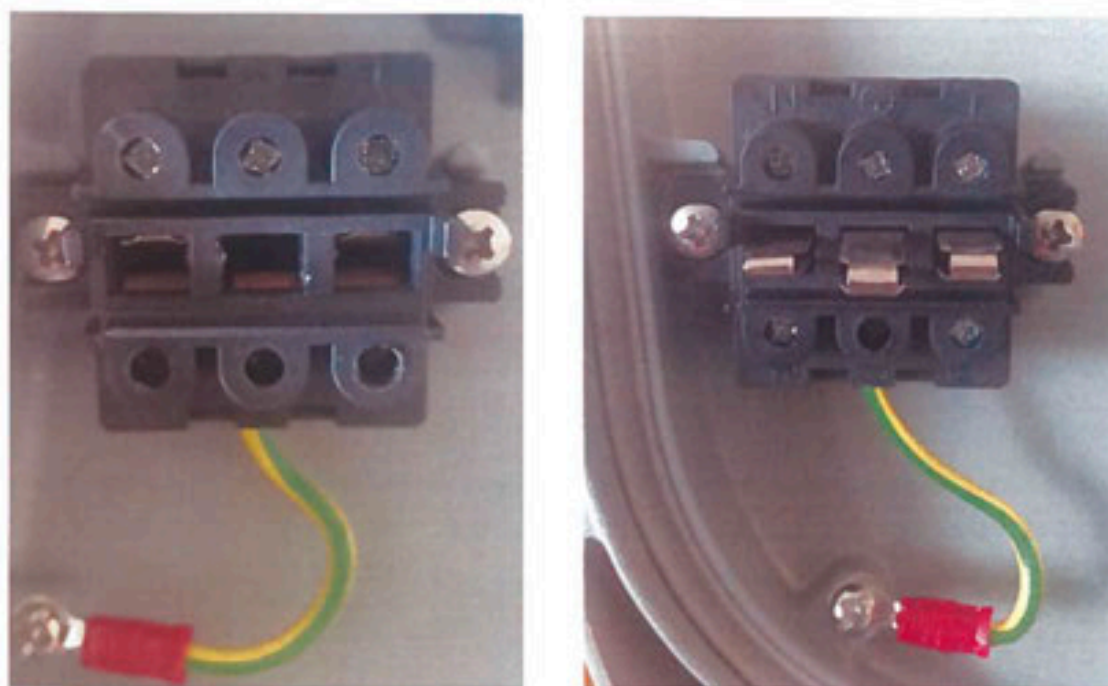
OSG3a LED Module



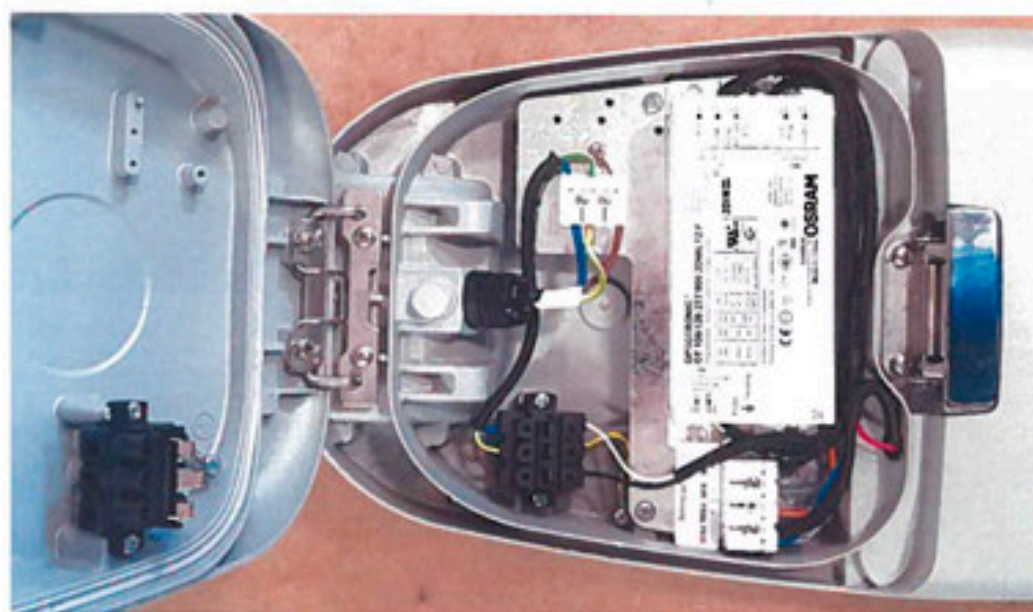
Cautionary symbol on LED module cover



Additional isolation for LED modules



Optional knife switch



Luminaire with optional knife switch