TÜVRheinland®

Prüfbericht-Nr.: Test Report No. :	16083161 001	Auftrags-Nr.: Order No. :	174065617	Seite 1 von 1 Page 1 of 1
Kunden-Referenz-Nr.: Client Reference No. :	N/A	Auftragsdatum: Order date :	2017.05.08	
Auftraggeber: Client:	Profolux bv led supplier Van Leeuwenhoekweg 8, 5482 TK Schijndel, Netherlands			
Prüfgegenstand: Test item :	Luminaires for emergency lighting			
Bezeichnung / Typ-Nr.: Identification / Type No. :	1002609-P, EC03, EL23, EL48, EL55, EM03, EW03, EW04, WB060-OPAL, WW04-S			
Auftrags-Inhalt: Order content :	CE-LVD CoC			
Prüfgrundlage: Test specification :	EN 60598-2-22:2014, EN 60598-1:2015, EN 62493:2015, EN 62471:2008			

Wareneingangsdatum: Date of receipt :	2017.09.23
Prüfmuster-Nr.: Test sample No. :	A000557528-001 to 016
Prüfzeitraum: Testing period :	2017.09.23 to 2018.05.11
Ort der Prüfung: Place of testing :	TÜV Rheinland (GuangDong) Ltd.
Prüflaboratorium: Testing laboratory :	TÜV Rheinland (GuangDong) Ltd.
Prüfergebnis*: Test result* :	Pass

Detaillierte Fotodokumentation
siehe Anlage zu diesem Bericht

Detailed photo documentation
see appendix to this report

geprüft von / tested by:			kontrolliert von / reviewed by:		
2018-08-24	Mars Yan / Project Engineer	Mars Yan	2018-08-24	Ivy Lu / Technical Certifier	Ivy Lu
Datum Date	Name / Stellung Name / Position	Unterschrift Signature	Datum Date	Name / Stellung Name / Position	Unterschrift Signature

Sonstiges / Other:
This test report includes: Cover page 1 page; Test report of IEC 60598-2-22, totally 51 pages.
Attachment 1: EN deviation of IEC 60598-1:2014, tot ally 2 page;
Attachment 2: IEC 61347-2-7:2011 used in conjunctio n with IEC 61347-1:2015, totally 27 pages;
Attachment 3: IEC 61347-2-13:2016 used in conjuncti on with IEC 61347-1:2015, totally 20 pages;
Attachment 4: Part of IEC 62031: 2008+A1+A2, EN 620 31: 2008+A1+A2, totally 2 pages;
Attachment 5: Part of IEC 61058-1: 2000+A1+A2, EN 6 1058-1:2002+A2, totally 2 pages;
Attachment 6: IEC 62471:2006 EN 62471:2008, totally 3 pages; ☒
Attachment 7: Blue light hazard according to IEC TR 62778:2012, totally 2 pages;
Attachment 8: EMF Assessment according to EN 62493 :2015, totally 1 page.

Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery :	Prüfmuster vollständig und unbeschädigt Test item complete and undamaged

* Legende:	1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut	3 = befriedigend F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	4 = ausreichend N/A = nicht anwendbar	5 = mangelhaft N/T = nicht getestet
Legend:	1 = very good P(ass) = passed a.m. test specification(s)	2 = good	3 = satisfactory F(ail) = failed a.m. test specification(s)	4 = sufficient N/A = not appli cable	5 = poor N/T = not tested

TEST REPORT
IEC 60598-2-22
Luminaires
Part 2: Particular requirements
Section 22: Luminaires for emergency lighting

Report Number. ..... :	See cover page
Date of issue ..... :	Aug. 22, 2018
Total number of pages	See cover page
Name of Testing Laboratory preparing the Report ..... :	TÜV Rheinland (GuangDong) Ltd.
Applicant's name ..... :	Profolux bv led supplier
Address ..... :	Van Leeuwenhoekweg 8, 5482 TK Schijndel, Netherlands
Test specification:	
Standard ..... :	IEC 60598-2-22:2014 used in conjunction with IEC 60 598-1:2014
Test procedure ..... :	CB Scheme
Non-standard test method ..... :	N/A
Test Report Form No ..... :	IEC60598_2_22F
Test Report Form(s) Originator ..... :	Intertek Semko AB
Master TRF ..... :	2016-10

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 on ly to the object tested.
This report shall not be reproduced, except in full , without the written approval of the Issuing CB Te sting Laboratory. The authenticity of this Test Report an d its contents can be verified by contacting the NC B, responsible for this Test Report.

Test item description ..... :	Luminaires for emergency lighting
Trade Mark ..... :	See marking plate
Manufacturer ..... :	Same as applicant
Model/Type reference ..... :	See 'General product information'
Ratings ..... :	See 'General product information'

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):			
☐	**CB Testing Laboratory:**		
Testing location/ address ..... :			
Tested by (name, function, signature) ..... :			
Approved by (name, function, signature) ... :			
☐	**Testing procedure: CTF Stage 1:**		
Testing location/ address ..... :			
Tested by (name, function, signature) ..... :			
Approved by (name, function, signature) ... :			
☐	**Testing procedure: CTF Stage 2:**		
Testing location/ address ..... :			
Tested by (name + signature) ..... :			
Witnessed by (name, function, signature) . :			
Approved by (name, function, signature) ... :			
☐	**Testing procedure: CTF Stage 3:**		
☐	**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 pa ges in each attachment):

See cover page

Summary of testing:

Tests performed (name of test and test clause):	Testing location:
Models EM03-P and EM03-R have been selected for full test. Details see appended clauses and tables.	TÜV Rheinland (GuangDong) Ltd. No.199 Kezhu Road, GZ Science City, Guangzhou 510663, P.R.China

Summary of compliance with National Differences:

List of countries addressed

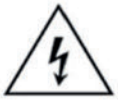
DE=Germany

☒ The product fulfils the requirements of EN 60598-2 -22:2014, EN 60598-1:2015

Copy of marking plate:

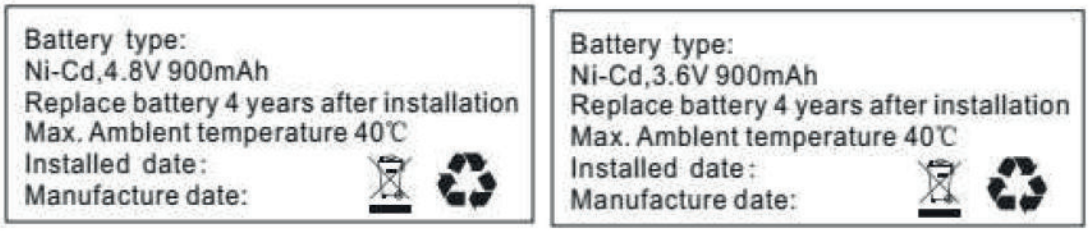
The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

Label for luminaire:



Caution, risk of electric shock

Label for battery:



Remark:

1. The min. height of symbol "  " was 15mm;
2. The height of WEEE rubbish bin symbol was not less than 7 mm, the height of other graphical symbols was not less than 5 mm;
3. The height of letters and numerals either shown separately or with or as part of symbols was not less than 2 mm;
4. The marking was located on the external surface of luminaire body and visible during installation and normal use;
5. As declared by client that the name (or registered trade mark) and address of the certificate holder (manufacturer) or the importer or authorized representative based within the European Economic Area will be clearly affixed on the product or where that is not possible, on the packaging or in a document accompanying the product.

Test item particulars.....:	
Classification of installation and use.....:	Class II
Supply Connection.....:	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 .....:	Sep. 23, 2017
Date (s) of performance of tests.....:	Sep. 23, 2017 — May. 11, 2018

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 ☐ comma / ☒ 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 IECEE 02:

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 ..... :	☐ **Yes** ☒ **Not applicable**

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies) ..... : Same as applicant

General product information:

1. Models covered in this report are fixed luminaires for emergency lighting, with integral electronic control gear with SELV output for battery charging;
2. All models are Self-contained, Maintained luminaire, and for indoor used only;
3. All models with same construction, except for LED driver and battery, detail information as model list below;
4. With non-user replaceable light source;
5. 220-240VAC, 50/60Hz, IP20, detail information refer to model list below.

Model list

No.	Model	Rated Wattage		Battery type	LED module	Rated intensity and luminous flux
1	HT-EM03-P	2.5W		Ni-Cd 900mAh 4.8V (4pcs cell: 900mA, 1.2V)	16 PCS SMD 2835 LED 6000-6500K	30lm, 5.0cd
2	HT-EM03-R	2.5W		(4pcs cell: 900mA, 1.2V)	16 PCS SMD 2835 LED 6000-6500K	30lm, 5.0cd

IEC 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict

22.4 (0)	**GENERAL TEST REQUIREMENTS**		P
22.4 (0.1)	Information for luminaire design considered ..... :	Yes ☐ No ☒ Lamp standard:	—
22.4 (0.3)	More sections applicable..... :	Yes ☐ No ☒ Section/s:--	—
22.4 (-)	Part provide normal lighting, test according relevant part of IEC 60598-2 ..... :	--	N/A
22.4 (-)	Adjacent part fulfils relevant part of this part 2		N/A
22.4 (-)	Self-contained portable emergency luminaires, requirements according Annex E	(see Annex E)	N/A

22.5 (2)	**CLASSIFICATION**		P
22.5 (2.2)	Type of protection ..... :	Class II	P
22.5 (2.3)	Degree of protection..... :	IP 20	P
22.5 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces ..... :	Yes ☒ No ☐	—
22.5 (2.5)	Luminaire for normal use ..... :	Yes ☒ No ☐	—
	Luminaire for rough service ..... :	Yes ☐ No ☒	—
22.5 (-)	Classified as luminaire suitable for direct mounting on normally flammable surfaces		P
22.5 (-)	Classification code according Annex B	(see Annex B)	P

22.6 (3)	**MARKING**		P
22.6 (3.2)	Mandatory markings		P
	Position of the marking	On enclosure	P
	Format of symbols/text		P
22.6 (3.3)	Additional information		P
	Language of instructions	English	P
22.6 (3.3.1)	Combination luminaires		N/A
22.6 (3.3.2)	Nominal frequency in Hz		P
22.6 (3.3.3)	Operating temperature		N/A
22.6 (3.3.4)	Symbol or warning notice		N/A
22.6 (3.3.5)	Wiring diagram		N/A
22.6 (3.3.6)	Special conditions		N/A
22.6 (3.3.7)	Metal halide lamp luminaire – warning		N/A
22.6 (3.3.8)	Limitation for semi-luminaires		N/A

IEC 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
22.6 (3.3.9)	Power factor and supply current		P
22.6 (3.3.10)	Suitability for use indoors		P
22.6 (3.3.11)	Luminaires with remote control		N/A
22.6 (3.3.12)	Clip-mounted luminaire – warning		N/A
22.6 (3.3.13)	Specifications of protective shields		N/A
22.6 (3.3.14)	Symbol for nature of supply		P
22.6 (3.3.15)	Rated current of socket outlet		N/A
22.6 (3.3.16)	Rough service luminaire		N/A
22.6 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments	Type Y	P
22.6 (3.3.18)	Non-ordinary luminaires with PVC cable		N/A
22.6 (3.3.19)	Protective conductor current in instruction if applicable		N/A
22.6 (3.3.20)	Provided with information if not intended to be mounted within arm's reach		N/A
22.6 (3.3.21)	Non replaceable and non-user replaceable light sources information provided	Non-user replaceable	P
	Cautionary symbol		P
22.6 (3.3.22)	Controllable luminaires, classification of insulation provided		N/A
22.6 (3.4)	Test with water		P
	Test with hexane		P
	Legible after test		P
	Label attached		P
22.6.1 (-)	Supply voltage		P
22.6.2 (-)	Classification according to annex B		P
22.6.3 (-)	Correct replacement lamp		N/A
22.6.4 (-)	Range of ambient temperatures		P
22.6.5 (-)	Fuse ratings and/or indicator lamps		N/A
22.6.6 (-)	Facilities to simulate normal supply failure		P
22.6.7 (-)	Marked with correct battery replacement		P
	Non-replaceable batteries		N/A
22.6.8 (-)	Battery marked with date of manufacture		P
	Space provided on battery label		P
22.6.9 (-)	Correct lamp replacement for combined emergency luminaires		N/A

IEC 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	Green dot with min 5 mm diameter		N/A
	Instruction leaflet 22.6.10 – 22.6.12 and 22.6.14 – 22.6.16		P
22.6.10 (-)	Replacement of battery or luminaire		P
22.6.11 (-)	Details of test facilities		P
22.6.12 (-)	Details of connection leads		N/A
22.6.14 (-)	Details of device which changes the mode of operation		P
22.6.15 (-)	Photometric data available according 22.17		P
22.6.16 (-)	Any normal preparation procedure		P
22.6.17 (-)	Marking in 22.6.1, 22.6.2, 22.6.7 and 22.6.20 visible on installed luminaire		P
	Marking in 22.6.5, 22.6.7 and 22.6.9 visible during maintenance		P
22.6.18 (-)	Provided with warning if intended for external plug and socket connections		N/A
22.6.19 (-)	Instruction leaflet specifies if lamp and/or battery is/are non-replaceable		P
22.6.20 (-)	Marking if luminaire mounted on lighting track systems		N/A
	Photometric data in instruction leaflet		N/A
22.7(4)	**CONSTRUCTION**		P
22.7 (4.2)	Components replaceable without difficulty		P
22.7 (4.3)	Wireways smooth and free from sharp edges		P
22.7 (4.4)	**Lampholders**		**N/A**
22.7 (4.4.1)	Integral lampholder		N/A
22.7 (4.4.2)	Wiring connection		N/A
22.7 (4.4.3)	Lampholder for end-to-end mounting		N/A
22.7 (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

IEC 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
22.7 (4.4.5)	Peak pulse voltage		N/A
22.7 (4.4.6)	Centre contact		N/A
22.7 (4.4.7)	Parts in rough service luminaires resistant to tracking		N/A
22.7 (4.4.8)	Lamp connectors		N/A
22.7 (4.4.9)	Caps and bases correctly used		N/A
22.7 (4.4.10)	Light source for lampholder or connection according IEC 60061 not connected another way		N/A
22.7 (4.5)	**Starter holders**		N/A
	Starter holder in luminaires other than class II		N/A
	Starter holder class II construction		N/A
22.7 (4.6)	**Terminal blocks**		N/A
	Tails		N/A
	Unsecured blocks		N/A
22.7 (4.7)	**Terminals and supply connections**		P
22.7 (4.7.1)	Contact to metal parts		N/A
22.7 (4.7.2)	Test 8 mm live conductor		P
	Test 8 mm earth conductor		N/A
22.7 (4.7.3)	Terminals for supply conductors		P
22.7 (4.7.3.1)	Welded method and material		N/A
	- stranded or solid conductor		N/A
	- spot welding		N/A
	- 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
22.7 (4.7.4)	Terminals other than supply connection		P
22.7 (4.7.5)	Heat-resistant wiring/sleeves		N/A
22.7 (4.7.6)	Multi-pole plug		N/A
	- test at 30 N		N/A
22.7 (4.8)	**Switches**		**P**
	- adequate rating		P
	- adequate fixing		P

IEC 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	- polarized supply		N/A
	- compliance with IEC 61058-1 for electronic switches		N/A
22.7 (4.9)	Insulating lining and sleeves		P
22.7 (4.9.1)	Retainment		P
	Method of fixing .....:	By construction	P
22.7 (4.9.2)	Insulated linings and sleeves:		P
	Resistant to a temperature > 20 °C to the wire temperature or	For models EM03-P and EM03-R	P
	a) & c) Insulation resistance and electric strength		N/A
	b) Ageing test. Temperature (°C) .....:		N/A
22.7 (4.10)	Double or reinforced insulation		P
22.7 (4.10.1)	No contact, mounting surface – accessible metal parts – wiring of basic insulation		P
	Safe installation fixed luminaires		P
	Capacitors and switches		N/A
	Interference suppression capacitors according to IEC 60384-14		N/A
22.7 (4.10.2)	Assembly gaps:		P
	- not coincidental		P
	- no straight access with test probe		P
22.7 (4.10.3)	Retainment of insulation:		P
	- fixed		P
	- unable to be replaced; luminaire inoperative		P
	- sleeves retained in position		N/A
	- lining in lampholder		N/A
22.7 (4.10.4)	Protective impedance device		P
	Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor		P
	Y1 or Y2 capacitors comply with IEC 60384-14		P
	Resistors comply with test (a) in 14.1 of IEC 60065		N/A
22.7 (4.11)	Electrical connections and current-carrying parts		P
22.7 (4.11.1)	Contact pressure		P
22.7 (4.11.2)	Screws:		N/A
	- self-tapping screws		N/A

IEC 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	- thread-cutting screws		N/A
22.7 (4.11.3)	Screw locking:		N/A
	- spring washer		N/A
	- rivets		N/A
22.7 (4.11.4)	Material of current-carrying parts		P
22.7 (4.11.5)	No contact to wood or mounting surface		P
22.7 (4.11.6)	Electro-mechanical contact systems		P
22.7 (4.12)	**Screws and connections (mechanical) and glands**		**P**
22.7 (4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		N/A
	Torque test: torque (Nm); part.....:	Fixing screw: 0.5Nm	P
	Torque test: torque (Nm); part.....:	Screw fixed driver PCB: 0.5Nm	P
	Torque test: torque (Nm); part.....:		N/A
22.7 (4.12.2)	Screws with diameter < 3 mm screwed into metal		P
22.7 (4.12.4)	Locked connections:		N/A
	- fixed arms; torque (Nm).....:		N/A
	- lampholder; torque (Nm) .....:		N/A
	- push-button switches; torque 0,8 Nm.....:		N/A
22.7 (4.12.5)	Screwed glands; force (Nm) .....:		N/A
22.7 (4.13)	**Mechanical strength**		**P**
22.7 (4.13.1)	Impact tests:		P
	- fragile parts; energy (Nm).....:	--	N/A
	- other parts; energy (Nm) .....:	Enclosure, 0.35Nm	P
	1) live parts		P
	2) linings		P
	3) protection		P
	4) covers		P
22.7 (4.13.3)	Straight test finger		P
22.7 (4.13.4)	Rough service luminaires		N/A
	- IP54 or higher		N/A
	a) fixed		N/A
	b) hand-held		N/A
	c) delivered with a stand		N/A

IEC 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	d) for temporary installations and suitable for mounting on a stand		N/A
22.7 (4.13.6)	Tumbling barrel		N/A
22.7 (4.14)	Suspensions, fixings and means of adjusting		N/A
22.7 (4.14.1)	Mechanical load:		P
	A) four times the weight	1,1kg x 4=4.4kg	P
	B) torque 2,5 Nm		P
	C) bracket arm; bending moment (Nm).....:		N/A
	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
22.7 (4.14.2)	Load to flexible cables		P
	Mass (kg) .....:	For model EM03-R: 0.88kg	—
	Stress in conductors (N/mm^2) .....:	13.23	P
	Mass (kg) of semi-luminaire .....:		N/A
	Bending moment (Nm) of semi-luminaire .....:		N/A
22.7 (4.14.3)	Adjusting devices:		P
	- flexing test; number of cycles.....:	1500	P
	- strands broken.....:	0%	P
	- electric strength test afterwards		P
22.7 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors		N/A
22.7 (4.14.5)	Guide pulleys		N/A
22.7 (4.14.6)	Strain on socket-outlets		N/A
22.7 (4.15)	Flammable materials		P
	- glow-wire test 650°C .....:	See Test Table 22.16 (13.3.2)	P
	- spacing ≥30 mm		P
	- 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

IEC 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
22.7 (4.15.2)	Luminaires made of thermoplastic material with lamp control gear		P
	a) construction		P
	b) temperature sensing control		N/A
	c) surface temperature		N/A
22.7 (4.16)	**Luminaires for mounting on normally flammable surfaces**		**P**
	No lamp control gear .....:	(compliance with Section 12)	N/A
22.7 (4.16.1)	Lamp control gear spacing:		N/A
	- spacing 35 mm		N/A
	- spacing 10 mm		N/A
22.7 (4.16.2)	Thermal protection:		N/A
	- in lamp control gear		N/A
	- external		N/A
	- fixed position		N/A
	- temperature marked lamp control gear		N/A
22.7 (4.16.3)	Design to satisfy the test of 12.6	(see clause 12.6)	N/A
22.7 (4.17)	**Drain holes**		N/A
	Clearance at least 5 mm		N/A
22.7 (4.18)	**Resistance to corrosion**		N/A
22.7 (4.18.1)	- rust-resistance		N/A
22.7 (4.18.2)	- season cracking in copper		N/A
22.7 (4.18.3)	- corrosion of aluminium		N/A
22.7 (4.19)	Ignitors compatible with ballast		N/A
22.7 (4.20)	Rough service vibration		N/A
22.7 (4.21)	**Protective shield**		N/A
22.7 (4.21.1)	Shield fitted if tungsten halogen lamps or metal halide lamps		N/A
	Shield of glass if tungsten halogen lamps		N/A
22.7 (4.21.2)	Particles from a shattering lamp not impair safety		N/A
22.7 (4.21.3)	No direct path		N/A
22.7 (4.21.4)	Impact test on shield		N/A
	Glow-wire test on lamp compartment .....:	See Test Table 22.16 (13.3.2)	N/A
22.7 (4.22)	Attachments to lamps not cause overheating or damage		N/A
22.7 (4.23)	Semi-luminaires comply Class II		N/A
22.7 (4.24)	**Photobiological hazards**		**P**

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Clause	Requirement + Test	Result - Remark	Verdict
22.7 (4.24.1)	No excessive UV radiation if tungsten halogen lamps and metal halide lamps (Annex P)		N/A
22.7 (4.24.2)	Retinal blue light hazard		P
	Class of risk group assessed according to IEC/TR 62778 ..... :	RG0	—
	Luminaires with E_{thr} :		P
	a) Fixed luminaires		P
	- distance x m, borderline between RG1 and RG2...:	--	P
	- marking and instruction according 3.2.23		N/A
	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
22.7 (4.25)	**Mechanical hazard**		**P**
	No sharp point or edges		P
22.7 (4.26)	**Short-circuit protection**		N/A
22.7 (4.26.1)	Adequate means of uninsulated accessible SELV parts		N/A
22.7 (4.26.2)	Short-circuit test with test chain according 4.26.3		N/A
	Test chain not melt through		N/A
	Test sample not exceed values of Table 12.1 and 12.2		N/A
22.7 (4.27)	**Terminal blocks with integrated screwless earthing contacts**		N/A
	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
22.7 (4.28)	**Fixing of thermal sensing control**		N/A
	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

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Clause	Requirement + Test	Result - Remark	Verdict
	Test of adhesive fixing:		N/A
	Max. temperature on adhesive material (°C) .....:		—
	100 cycles between t min and t max		N/A
	Temperature sensing control still in position		N/A
22.7 (4.29)	**Luminaires with non-replaceable light source**		**N/A**
	Not possible to replace light source		N/A
	Live part not accessible after parts have been opened by hand or tools		N/A
22.7 (4.30)	**Luminaires with non-user replaceable light source**		P
	If protective cover provide protection against electric shock and marked with “caution, electric shock risk” symbol:		P
	Minimum two fixing means		P
22.7 (4.31)	**Insulation between circuits**		**P**
	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		N/A
22.7 (4.31.1)	SELV circuits		P
	Used SELV source		P
	Voltage ≤ ELV		P
	Insulating of SELV circuits from LV supply		P
	Insulating of SELV circuits from other non SELV circuits		P
	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		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
	Plugs and socket-outlets does not have protective conductor contact		N/A
22.7 (4.31.2)	FELV circuits		N/A
	Used FELV source		N/A
	Voltage ≤ ELV		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Insulating of FELV circuits from LV supply		N/A
	FELV 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
	Socket-outlets does not have protective conductor contact		N/A
22.7 (4.31.3)	Other circuits		N/A
	Other circuits insulated from accessible parts according Table X.1		N/A
	Class II construction with equipotential bonding for protection against indirect contacts with live parts:		N/A
	- 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
22.7 (4.32)	**Overvoltage protective devices**		N/A
	Comply with IEC 61643-11		N/A
	External to controlgear and connected to earth:		N/A
	- only in fixed luminaires		N/A
	- only connected to protective earth		N/A
22.7 (-)	Luminaire with automatic testing system complies with IEC 62034		N/A
	Specific items according IEC 61347-2-7 Annex K		N/A
22.7.1 (-)	No glow starters in circuit in start of or during the emergency mode		N/A
22.7.2 (-)	Lamp control gears comply with relevant part 2 of IEC 61347		P
22.7.3 (-)	Protective device disconnect luminaire in case of failure		P
22.7.4 (-)	Impact test min. 0,35 Nm		P
22.7.5 (-)	Circuit separation (self-contained lum.)		P

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Clause	Requirement + Test	Result - Remark	Verdict
22.7.6 (-)	Circuit separation (centrally supplied lum.)		N/A
22.7.7 (-)	Charging device		P
	Indicator lamp and colour		P
22.7.8 (-)	Battery meet requirements in Annex A	(see Annex A)	P
	Battery designed to provide duration for at least four years		P
	Battery only for emergency function		P
22.7.10 (-)	No switch in self-contained emergency luminaire between battery and emergency lighting lamps		P
	No switch in self-contained and central supplied emergency luminaire isolating emergency circuits from mains supply		P
	Installation according IEC 60364-5-56		P
22.7.11 (-)	Failure of lamp(s) not impair operation of the battery		P
22.7.12 (-)	Batteries in self-contained emergency luminaire comply with cl. 23 of IEC 61347-2-7 if applicable		P
22.7.13 (-)	No influence in emergency mode in self-contained emergency luminaire by short-circuit, contact to earth or interruption in normal supply wiring		P
22.7.14 (-)	Self-contained emergency luminaire with remote inhibiting and/or rest mode meet requirements of clause 25 of IEC 61347-2-7		N/A
22.7.19 (-)	Lamp voltage in self-contained emergency luminaire with tungsten filament lamps not exceed 1,05 rated voltage		N/A
22.7.20 (-)	Battery in self-contained emergency luminaire according manufacturers specification and Annex A		P
22.7.21 (-)	Batteries and chargers within self-contained emergency luminaire or in remote box		P
22.7.22 (-)	Remote box in self-contained emergency luminaire comply with same requirements as for the luminaire		N/A
22.7.23 (-)	Locking system for emergency luminaire on track system used for display lighting requires aid of tool		N/A
22.8 (11)	**CREEPAGE DISTANCES AND CLEARANCES**		P
22.8 (11.2)	Creepage distances and clearances .....:	See Table 22.8 (11.2)	P
	Impulse withstand category (Normal category II) (Category III Annex U, Table U.1)	Category II ☒ Category III ☐	—
22.9 (7)	**PROVISION FOR EARTHING**		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
22.9 (7.2.1 + 7.2.3)	Accessible metal parts		N/A
	Metal parts in contact with supporting surface		N/A
	Resistance < 0,5 Ω .....:		N/A
	Self-tapping screws used		N/A
	Thread-forming screws		N/A
	Thread-forming screw used in a grove		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		N/A
22.9 (7.2.2 + 7.2.3)	Earth continuity in joints, etc.		N/A
22.9 (7.2.4)	Locking of clamping means		N/A
	Compliance with 4.7.3		N/A
	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N/A
22.9 (7.2.5)	Earth terminal integral part of connector socket		N/A
22.9 (7.2.6)	Earth terminal adjacent to mains terminals		N/A
22.9 (7.2.7)	Electrolytic corrosion of the earth terminal		N/A
22.9 (7.2.8)	Material of earth terminal		N/A
	Contact surface bare metal		N/A
22.9 (7.2.10)	Class II luminaire for looping-in		N/A
	Double or reinforced insulation to functional earth		N/A
22.9 (7.2.11)	Earthing core coloured green-yellow		N/A
	Length of earth conductor		N/A
22.10 (14)	**SCREW TERMINALS**		P
	Separately approved; component list	(see Annex 1)	P
	Part of the luminaire	(see Annex 3)	N/A
22.10 (15)	**SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS**		P
	Separately approved; component list .....:	(see Annex 1)	P
	Part of the luminaire .....:	(see Annex 4)	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
22.11 (5)	**EXTERNAL AND INTERNAL WIRING**		P
22.11 (5.2)	**Supply connection and external wiring**		**P**
22.11 (5.2.1)	Means of connection .....:	Terminal	P
	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
22.11 (5.2.2)	Type of cable .....:	See Annex 1	P
	Nominal cross-sectional area (mm²).....:	See Annex 1	P
	Cables equal to IEC 60227 or IEC 60245		N/A
22.11 (5.2.3)	Type of attachment, X, Y or Z	Type Y	P
22.11 (5.2.5)	Type Z not connected to screws		N/A
22.11 (5.2.6)	Cable entries:		P
	- suitable for introduction		P
	- adequate degree of protection		P
22.11 (5.2.7)	Cable entries through rigid material have rounded edges		N/A
22.11 (5.2.8)	Insulating bushings:		P
	- suitably fixed		P
	- material in bushings		P
	- material not likely to deteriorate		P
	- tubes or guards made of insulating material		P
22.11 (5.2.9)	Locking of screwed bushings		N/A
22.11 (5.2.10)	Cord anchorage:		P
	- 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
22.11 (5.2.10.1)	Cord anchorage for type X attachment:		N/A
	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

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Clause	Requirement + Test	Result - Remark	Verdict
	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
22.11 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment	Type Y	P
22.11 (5.2.10.3)	Tests:		P
	- impossible to push cable; unsafe		P
	- pull test: 25 times; pull (N).....:	30N	P
	- torque test: torque (Nm) .....:	0,25	P
	- displacement ≤ 2 mm	0.2mm	P
	- no movement of conductors		P
	- no damage of cable or cord		P
	- function independent of electrical connection		P
22.11 (5.2.11)	External wiring passing into luminaire	For model EM03-R	P
22.11 (5.2.12)	Looping-in terminals		N/A
22.11 (5.2.13)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		N/A
22.11 (5.2.14)	Mains plug same protection		N/A
	Class III luminaire plug		N/A
	No unsafe compatibility		N/A
22.11 (5.2.16)	Appliance inlets (IEC 60320)		N/A
	Installation couplers (IEC 61535)		N/A
	Other appliance inlet or connector according relevant IEC standard		N/A
22.11 (5.2.17)	No standardized interconnecting cables properly assembled		N/A
22.11 (5.2.18)	Used plug in accordance with		N/A
	- IEC 60083		N/A
	- other standard		N/A
22.11 (5.3)	Internal wiring		P

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Clause	Requirement + Test	Result - Remark	Verdict
22.11 (5.3.1)	Internal wiring of suitable size and type	See annex 1	P
	Through wiring		N/A
	- 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		N/A
22.11 (5.3.1.1)	Internal wiring connected directly to fixed wiring		P
	Cross-sectional area (mm²) .....:	See annex 1	P
	Insulation thickness		P
	Extra insulation added where necessary		N/A
22.11 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		P
	Adequate cross-sectional area and insulation thickness		P
22.11 (5.3.1.3)	Double or reinforced insulation for class II		P
22.11 (5.3.1.4)	Conductors without insulation		N/A
22.11 (5.3.1.5)	SELV current-carrying parts		P
22.11 (5.3.1.6)	Insulation thickness other than PVC or rubber		N/A
22.11 (5.3.2)	Sharp edges etc.		P
	No moving parts of switches etc.		P
	Joints, raising/lowering devices		N/A
	Telescopic tubes etc.		N/A
	No twisting over 360°		P
22.11 (5.3.3)	Insulating bushings:		P
	- suitable fixed		P
	- material in bushings		P
	- material not likely to deteriorate		P
	- cables with protective sheath		P
22.11 (5.3.4)	Joints and junctions effectively insulated		N/A
22.11 (5.3.5)	Strain on internal wiring		P
22.11 (5.3.6)	Wire carriers		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
22.11 (5.3.7)	Wire ends not tinned		P
	Wire ends tinned: no cold flow		N/A
22.11.1 (-)	Permanently connected		P
22.12 (8)	**PROTECTION AGAINST ELECTRIC SHOCK**		P
22.12 (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
22.12 (8.2.2)	Portable luminaire adjusted in most unfavourable position		N/A
22.12 (8.2.3.a)	Class II luminaire:		P
	- basic insulated metal parts not accessible during starter or lamp replacement		P
	- basic insulation not accessible other than during starter or lamp replacement		P
	- glass protective shields not used as supplementary insulation		N/A
22.12 (8.2.3.b)	BC lampholder of metal in class I luminaires shall be earthed		N/A
22.12 (8.2.3.c)	SELV circuits with exposed current carrying parts:		N/A
	Ordinary luminaire:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- 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:		N/A
	- 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
22.12 (8.2.4)	Portable luminaire have protection independent of supporting surface		N/A
22.12 (8.2.5)	Compliance with the standard test finger or relevant probe		P
22.12 (8.2.6)	Covers reliably secured		P
22.12 (8.2.7)	Luminaire other than below with capacitor > 0,5 µF not exceed 50 V 1 min after disconnection	Max. 12.4V	P
	Portable luminaire with capacitor > 0,1 µF (0.25) not exceed 34 V 1 s after disconnection		N/A
	Other luminaires with capacitor > 0,1 µF (0.25) with plug and track adaptors not exceed 60 V 5 s after disconnection		N/A

22.13 (12)	**ENDURANCE TEST AND THERMAL TEST**		P
22.13.1 (-)	If IP > IP 20 relevant test of (12.4), (12.5) and (12.6) after (9.2) before (9.3) specified in 22.14		—
22.13 (12.3)	Endurance test:		P
	- mounting-position .....:	According to user manual	—
	- test temperature (°C) .....:	50	—
	- total duration (h) .....:	390h	—
	- supply voltage: Un factor; calculated voltage (V) ...:	240	—
	- lamp used .....:	Integral LED module	—
22.13 (12.3.2)	After endurance test:		P
	- no part unserviceable		P
	- luminaire not unsafe		P
	- no damage to track system		N/A
	- marking legible		P

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Clause	Requirement + Test	Result - Remark	Verdict
	- no cracks, deformation etc.		P
22.13 (12.4)	Thermal test (normal operation)	(see Annex 2)	P
22.13 (12.5)	Thermal test (abnormal operation)	(see Annex 2)	P
22.13 (12.6)	Thermal test (failed lamp control gear condition):		N/A
22.13 (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
22.13 (12.6.2)	Temperature sensing control		N/A
	- 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
22.13 (12.7)	Thermal test (failed lamp control gear in plastic luminaires):		N/A
22.13 (12.7.1)	Luminaire without temperature sensing control		N/A
22.13 (12.7.1.1)	Luminaire with fluorescent lamp ≤ 70W		N/A
	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:		N/A
	- case of abnormal conditions.....:		—
	- measured winding temperature (°C): at 1,1 Un.....:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un.....:		—
	- calculated temperature of fixing point/exposed part (°C) .....:		—
	Ball-pressure test..... :	See Table 22.16 (13.2.1)	N/A
22.13 (12.7.1.2)	Luminaire with discharge lamp, fluorescent lamp > 70W, transformer > 10 VA		N/A
	- 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 Table 22.16 (13.2.1)	N/A
22.13 (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
22.13 (12.7.2)	Luminaire with temperature sensing control		N/A
	- thermal link .....:	Yes ☐ No ☐	—
	- manual reset cut-out.....:	Yes ☐ No ☐	—
	- auto reset cut-out.....:	Yes ☐ No ☐	—
	- case of abnormal conditions.....:		—
	- highest measured temperature of fixing point/ exposed part (°C): .....:		—
	Ball-pressure test:.....:	See Table 22.16 (13.2.1)	N/A
22.13.1 (-)	Endurance test for self-contained luminaire		P
	Operate satisfactory during 50 supply switching		P
22.13.2 (-)	Thermal test 12.4 to 12.5 in IEC 60598-1	(see Annex 2)	P
22.13.3 (-)	Condition of tests		—
22.13.4 (-)	Battery discharge		—
22.13.5 (-)	Reduced temperature		—
22.13.6 (-)	Additional thermal test	(see Annex 2)	P
22.13.7 (-)	Provide V_{min} according Clause 20 of IEC 61347-2-7 at the end of operation		P

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Clause	Requirement + Test	Result - Remark	Verdict

22.14 (9)	**RESISTANCE TO DUST AND MOISTURE**		P
22.14 (-)	The order of tests as specified in clause 22.12		
22.14 (9.2)	Tests for ingress of dust, solid objects and moisture:		P
	- classification according to IP.....:	IP20	—
	- mounting position during test .....:	As normal use	—
	- fixing screws tightened; torque (Nm).....:	Two-thirds of specified in 5.6 (4.12.1)	—
	- tests according to clauses.....:	9.2.0	—
	- electric strength test afterwards		P
	a) no deposit in dust-proof luminaire		N/A
	b) no talcum in dust-tight luminaire		N/A
	c) no trace of water on current-carrying parts or on insulation where it could become a hazard		N/A
	c.1) For luminaires without drain holes – no water entry		N/A
	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)		P
	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		N/A
22.14 (9.3)	Humidity test 48 h	25°C, 93%	P

22.15 (10)	**INSULATION RESISTANCE AND ELECTRIC STRENGTH**		P
22.15 (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		P
	- between current-carrying parts of different polarity:	--	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- between current-carrying parts and mounting surface ..... :	100MΩ	P
	- between current-carrying parts and metal parts of the luminaire ..... :	100MΩ	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		P
	- between live parts of different polarity..... :	100MΩ	P
	- between live parts and mounting surface..... :	100MΩ	P
	- between live parts and metal parts..... :	100MΩ	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
22.15 (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		P
	- between current-carrying parts of different polarity :		N/A
	- between current-carrying parts and mounting surface ..... :	500V	P
	- between current-carrying parts and metal parts of the luminaire ..... :		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
	Other than SELV		P
	- between live parts of different polarity..... :	1480V	P
	- between live parts and mounting surface..... :	2960V	P
	- between live parts and metal parts..... :	2960V	P

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	- 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
22.15 (10.3)	Touch current or protective conductor current (mA).:	Max. 0,08mA	P

22.16 (13)	**RESISTANCE TO HEAT, FIRE AND TRACKING**		P
22.16 (13.2.1)	Ball-pressure test.....:	See Test Table 22.16 (13.2.1)	P
22.16 (13.3.1)	Needle-flame test (10 s) .....:	See Test Table 22.16 (13.3.1)	P
22.16 (13.3.2)	Glow-wire test (650°C) .....:	See Test Table 22.16 (13.3.2)	P
22.16 (13.4)	Proof tracking test (IEC 60112) .....:	See Test Table 22.16 (13.4)	N/A
22.16 (-)	Glow-wire test (850°C) if applicable .....:	See Test Table 22.16 (13.3.2)	P
	Glow-wire test (850°C) or fire resistant cable if applicable .....:	See Test Table 22.16 (13.3.2)	P

22.17 (-)	**PHOTOMETRIC DATA**		P
22.17.1 (-)	Intensity distribution data available		P
	At least 50% of level declared photometric data 5 s after failure of supply		P
	100% of level declared photometric data if high-risk task-area lighting 0,5 s after failure of supply		N/A
	Photometric measurements according CIE 121 SP1		P
	All values at least minimum declared data		P
22.17.4 (-)	Colour-rendering index		P
22.17.5 (-)	Internally illuminated emergency safety sign meet requirements of ISO 30061		P
	Luminance of permanently illuminated safety sign meet requirements of ISO 3864-1 and ISO 3864-4		P
	Luminance measurements according Annex C	(see Annex C)	P

22.18 (-)	**CHANGEOVER OPERATION**		P
	Changeover device comply with Clause 21 of IEC 61347-2-7		P

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22.19 (-)	**HIGH TEMPERATURE OPERATION**		P
	Operation at 70°C		P
	Relative light outputs		P
22.20 (-)	**BATTERY CHARGERS FOR SELF-CONTAINED EMERGENCY LUMINAIRES**		P
	Devices for recharging batteries comply with Clause 22 of IEC 61347-2-7		P
22.21 (-)	**TEST DEVICES FOR EMERGENCY OPERATION**		P
22.21.1 (-)	Self-contained luminaire provided with test facility		P
22.21.2 (-)	Remote testing device not influence proper function of safety illumination		N/A
22.21.3 (-)	Indicators colour according IEC 60073		P

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22.8 (11.2)	TABLE: Creepage distances and clearances							P
	Minimum distances (mm) for a.c. (50/60 Hz) sinusoi dal voltages							P
	Applicable part of IEC 60598-1 Table 11.1* and 11. 2*							P
	Insulation type **	Measured clearance	Required		Measured creepage	Required		
			clearance	*Table		creepage	*Table	
Distance 1:	B	3.0	1.5	11.1	3.0	2.5	11.1	
Working voltage (V).....:			240					☒
PTI.....:					< 600 ☒ ≥600 ☐			☒
Pulse voltage if applicable (kV) .....:			--					☒
Supplementary information: between L and N, between two pins of fuse of models EM03-P and EM03-R.								
Distance 2:	R	10.0	3.0	11.1	10.0	5.0	11.1	
Working voltage (V).....:			240					☒
PTI.....:					< 600 ☒ ≥600 ☐			☒
Pulse voltage if applicable (kV) .....:			--					☒
Supplementary information: between live part and accessible part of models EM03-P and EM03-R.								
Distance 3:	B	2.5	1.5	11.1	2.5	2.5	11.1	
Working voltage (V).....:			240					☒
PTI.....:					< 600 ☒ ≥600 ☐			☒
Pulse voltage if applicable (kV) .....:			--					☒
Supplementary information: between L and N, between two pins of fuse of model EM03-P.								
Distance 4:	R	10.0	3.0	11.1	10.0	5.0	11.1	
Working voltage (V).....:			240					☒
PTI.....:					< 600 ☒ ≥600 ☐			☒
Pulse voltage if applicable (kV) .....:								☒
Supplementary information: between live part and accessible part of model EM03-P.								
Distance 5:	B	2.5	1.5	11.1	2.5	2.5	11.1	
Working voltage (V).....:			240					☒
PTI.....:					< 600 ☒ ≥600 ☐			☒
Pulse voltage if applicable (kV) .....:			--					☒
Supplementary information: between L and N, between two pins of fuse of model EM03-R.								
Distance 6:	R	8.0	3.0	11.1	8.0	5.0	11.1	
Working voltage (V).....:			240					☒
PTI.....:					< 600 ☒ ≥600 ☐			☒

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Clause	Requirement + Test	Result - Remark	Verdict

Pulse voltage if applicable (kV) .....:	--	☒
Supplementary information: between live part and accessible part of model EM03-R.		

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

22.16 (13.2.1)	TABLE: Ball Pressure Test of Thermoplastics			P
Allowed impression diameter (mm) ..... :		2,0		☒
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)	
Plastic enclosure	See ANNEX 1	85,8	1.2	
PCB	See ANNEX 1	125	0.6	
Test switch	See ANNEX 1	125	1.0	
Bobbin	See ANNEX 1	125	0.6	
Quick connector	See ANNEX 1	125	1.2	
Supplementary information:				

22.16 (13.3.1)	TABLE: Needle-flame test (IEC 60695-11-5)				P
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
PCB	See ANNEX 1	10	No	0	P
Test switch	See ANNEX 1	10	No	0	P
Quick connector	See ANNEX 1	10	No	0	P
Supplementary information:					

22.16 (13.3.2)	TABLE: Glow-wire test (IEC 60695-2-11)			P
Glow wire temperature ..... :		850°C for Plastic enclosure, Lead wire to battery and Quick connector 650°C for other material		☒
Object/ Part No./ Material	Manufacturer/ trademark	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
Plastic enclosure	See ANNEX 1	No	0	P

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Lead wire to battery	See ANNEX 1	No	0	P
Quick connector	See ANNEX 1	No	0	P
Bobbin	See ANNEX 1	No	0	P
Insulation tape	See ANNEX 1	No	0	P
PCB	See ANNEX 1	No	0	P
Test switch	See ANNEX 1	No	0	P
Any flame or glowing of the sample extinguished within 30 s of withdrawing the glow-wire, and any burning or molten drop did not ignite the underlying parts (Yes/No) ..... :				--
Supplementary information:				

22.16 (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:					

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	Annex A: Batteries for self-contained emergency luminaires		P
A.1	Type of batteries	Sealed nickel cadmium	P
A.2	Battery conform to relevant standard		P
	Luminaire operate within specific tolerances		P
A.3	Battery capacity		P
A.4	**Sealed nickel cadmium batteries**		**P**
A.4.1	Battery conform to IEC 61951-1		P
A.4.2.a	Maximum surface temperature of the battery °C ..... :	50	P
A.4.2.b	Maximum overcharge rate 0,08 C_5A		P
A.4.2.c	Minimum ambient temperature of the cells 5 °C		P
A.4.2.d	Maximum discharge rates	In accordance with the battery manufacturer's data sheet.	P
A.5	**Sealed nickel metal-hydride batteries**		**N/A**
A.5.1	Battery conform to IEC 61951-2		N/A
A.5.2.a	Maximum case temperature of the battery °C ..... :		N/A
A.5.2.b	Maximum overcharge rate 0,08 C_5A		N/A
A.5.2.c	Minimum ambient temperature of the cells 5 °C		N/A
A.5.2.d	Maximum discharge rates		N/A
A.6	**Valve regulated lead acid batteries**		**N/A**
A.6.1	Battery conform to relevant part of IEC 60869-21 or IEC 61056-1		N/A
A.6.2.a	Maximum surface temperature of the battery °C ..... :		N/A
A.6.2.b	Maximum recharge current 0,4 C_{20}		N/A
A.6.2.c	Maximum discharge rates		N/A
A.6.2.d	Maximum r.m.s. ripple current 0,1 C_{20}		N/A
A.6.2.e	Minimum ambient temperature of the cells 5 °C		N/A
A.7	Ambient temperature of the cells measured after 48 h		P
A.8	Alternative operating parameters and evidence if operating outside limits in A.4 and A.5		N/A
A.9	Battery only replaced by a competent person		P

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	Annex B: Luminaire classification					P
	Classified and marked according Annex B..... :	X	1	AG	180	P

	Annex C: Luminance measurements		**P**
C.1	Contrast measurements		P
C.2	On site photometric tests		P
	according to Annex C of ISO 3864-4		P
	Measured values not less than specified in this standard		P

	Annex E: Requirements for self-contained portable emergency luminaires		**N/A**
E.5	**Classification of luminaires**		**N/A**
	Base unit and portable emergency luminaires with mains-voltage supplied integrated charger of Class I or Class II		N/A
	Self-contained portable emergency luminaire without integrated mains-voltage supplied charger of Class III		N/A
E.5.1	Classified according construction		—
E.5.1.a	Control unit contained in the self-contained portable emergency luminaire	Yes ☐ No ☐	—
E.5.1.b	Part of the control unit remains in the base unit	Yes ☐ No ☐	—
E.5.2	Classified according operation		—
E.5.2.a	Automatic initiation with manual control	Yes ☐ No ☐	—
E.5.2.b	Automatic initiation with automatic control	Yes ☐ No ☐	—
E.5.2.c	Manual control	Yes ☐ No ☐	—
E.5.3	Classified according photometric performance		—
	Distribution measured according IEC TR 61341		N/A
E.5.3.a	Narrow beam angels not greater than 15°		N/A
E.5.3.b	Medium beam angels between 15° and 25°		N/A
E.5.3.c	Wide beam angels greater than 25°		N/A
E.5.3.d	Variable beam angels – state the range of angels		N/A
E.6	**Marking**		**N/A**
E.6.1	Marking visible after installation		N/A
	Marking on both parts if separate charging device		N/A
	Class II symbol only on the charger if separate charging device		N/A

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E.6.2	Instruction for electrical, mechanical and use according classification		N/A
E.6.3	Warning notice on both parts to return the luminaire to base unit for recharging after use		N/A
E.6.4	Instruction with photometric data		N/A
E.7	**Construction**		**N/A**
E.7.1	Control unit completely contained in the luminaire or part of the control unit in the base unit		N/A
E.7.2	Mechanical strength tests according 4.13 of IEC 60598-1		N/A
	Mechanical strength tests according 4.13.4 of IEC 60598-1 of portable section		N/A
E.7.3	Base unit permanently connected to unswitched supply		N/A
E.7.4	Integral manual switch used to switch the unit between inhibit mode and emergency mode and vice versa		N/A
	Recharging before supply voltage reach 0,85 times nominal value		N/A
E.7.5	Integral over current protection device connected immediately after the terminals connecting to the supply		N/A
E.7.6	Power supply connection between the luminaire and its base unit made without a tool		N/A
	Connecting devices according relevant standard		N/A
E.7.7	No access to live parts during or after connection or disconnection		N/A
E.7.8	Supply cable disconnected from the portable part before use		N/A
E.7.9	Connection between the portable part and the charger mechanically interlocked to prevent incorrect polarised connection		N/A
E.7.10	At least two independent replaceable lamps if incandescent lamps		N/A
E.7.11	Colour rendering index of any emergency lamps *Ra* 40 or better		N/A
E.7.12	Audible and/or visible warning on re-instatement of normal supply		N/A
E.7.13	Failure of the mains supply the luminaire operate in emergency mode or an indicator identify the location of the luminaire		N/A
	Load ≤ 0,01C5/h of the battery if indicator is used		N/A

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E.7.14	Indicator give warning of low battery capacity remaining		N/A
E.7.15	Adequate stability		N/A
	Test at an angle of 15° to the horizontal		N/A
E.7.16	Adequate stability to illuminate the task area on non-horizontal surface		N/A
	Test at an angle of 15° to the horizontal		N/A
E.8	**Changeover operation**		**N/A**
	Requirements according 22.7.10 excluded if integral manual switch		N/A
	Design avoid switching of charger whilst holding the luminaire		N/A
E.9	**High temperature operation**		—
	Ambient temperature of 40°C in Clause 22.19		—
E.10	**Thermal test**		—
	Test made with portable part either placed on dull black painted wooden floor or rest against a dull black painted wooden wall		—

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ANNEX 1	TABLE: Critical components information					P
Object / part No.	Code	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity [1)]
Plastic enclosure of luminaire	B	Foshan Shunde Lingqi plastic trading CO., LTD	1003R	PC; V-2, min. 1.5mm thickness	IEC/EN 60598-1	Test with appliance
For models EM03-P, EM03-R						
Test Switch	B	Zhongshan Daiwei Electronic Co., Ltd	KFC-A06W1-5.0	DC12V 50mA	IEC/EN 61058-1	Tested with appliance
Indicate LED for models EM03-P, EM03-R	B	ZhongShan Fishiba Electronic Technology Company.LTD	5308GC	IF=20mA; VF=2.9-3.1V; Φ 5, green color	IEC/EN 62471	Tested with appliance
Indicate LED for model EM03-P	B	ZhongShan Fishiba Electronic Technology Company.LTD	5308GC	IF=20mA; VF=2.9-3.1V; Φ 5, green color	IEC/EN 62471	Tested with appliance
LED board (PCB)	B	Zhongshan Lixin Chain-Board Co. Ltd.	CEM-1	V-0; Max 130 °C	--	UL E230073
LED	B	SHENZHEN Chuangda Electronic Co.,Ltd	2835LED	6000-6500K v=2.9~3.3V I=60mA	IEC/EN 62471	Tested with appliance
Input terminal block For model EM03-P	B	Jiang Men Krealux Electrical Applicances Co., Ltd.	P02-2	110 °C, 450V, 0.5mm ^{2}-0.75mm ^{2}	IEC/EN60998-2-2	VDE 40021964
alternative	B	Dongguan Changhe Electronics Co., Ltd.	CS350-00-500	110 °C, 450V, 0.5mm ^{2}-0.75mm ^{2}	IEC/EN60998-2-2	VDE 40022503
Input terminal block For EM03-P, EM03-R	B	Jiang Men Krealux Electrical Appliances Co., Ltd	T16S	PP/ PA66V2, 110 °C/135 °C, 16mm ^{2}/10mm ^{2} 750V,76A	EN60998-1 EN60998-2-2	VDE 40023124
Input lead wire	B	DONGGUAN WENCHANG ELECTRONIC CO LTD	1015	18AWG,105°C, 600V	--	UL E214500
Input connector	B	Joint Tech Electronic Industrial Co., Ltd.	AX1-TY6	250V.AC, 5A, -25°C ~+85°C 16AWG-24AWG	--	TUV R 50004394

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Battery lead wire connector, LED Lead wire connector	B	XIN LIAN ELECTRONIC	VH-2Y	(Nylon)66 UL94V-2(0), 250V.AC/DC, 7.5A	IEC/EN 60598-1	Test with appliance
PCB of emergency control circuit	B	Zhongshan Lixin Chain-Board Co. Ltd.	LX-20	V-0; Max130°C --		UL E230073
Battery of model EM03	B	Profolux bv led supplier	4.8V 900mAh, Ni-Cd ,AA	4.8V 900mAh, Ni-Cd, AA	IEC/EN 62133 IEC / EN 61951-1	JPTUV-085629 Test with appliance refer to report 16083405 001 50129467 001
Battery of model EM03	B	Profolux bv led supplier	3.6V 900mAh, Ni-Cd ,AA	3.6V 900mAh, Ni-Cd, AA	IEC/EN 62133 IEC / EN 61951-1	JPTUV-085629 Test with appliance refer to report 16083404 001 50129467 001
Lead wire of battery	B	DONGGUAN WEN CHANG ELECTRONIC CO.,LTD	1007	22AWG, 80°C, 300V	--	UL E214500
- heat shrinkable tube	B	DONGGUAN SALIPT CO.,LTD.	SALIPT S-901-600/S-901-300	125°C 600V/300V, Φ 0.4~ Φ 0.6	--	UL E209436
Lead wire of LED for model EM03-P, EM03-R	B	DONGGUAN WEN CHANG ELECTRONIC CO.,LTD	1007	24AWG, 80°C, 300V	--	UL E214500
Lead wire of LED for model EM03-P	B	FOSHAN CITY YECONG ELECTRIC WIRE FACTORY CO., LTD	1332	22AWG; 80-200°C, 300V	--	UL E338307
Current fuse(F1)	B	DONGGUAN REOMAX ELECTRONICS CO.,LTD	MTS 250V 1A T	1000mA, 250V	IEC/EN 60127-1, IEC/EN 60127-3	VDE 40039420

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Inductor (L1)	C	ZHONGSHAN DONGFENG LANGGHUANG ELECTRONIC MANUFACTURE R	6*819mH	19mH	--	Test with appliance
- winding	B	DONGGUAN YIDA CO., LTD	QA-*/180 0.120mm	Ø0.120mm	--	UL E344055
Inductor (L2)	B	ZHONGSHAN DONGFENG LANGGHUANG ELECTRONIC MANUFACTURE R	6*8 19mH	19mH	--	Test with appliance
- winding	B	DONGGUAN YIDA CO., LTD	QA-*/180 0.120mm	Ø0.120mm	--	UL E344055
E cap (C1)	B	Aishi	EGS2GM4R7 F12OCG	400V d.c., 4.7uF, 105°C	--	Test with appliance
E cap (C7, C8)	B	Aishi	ERS1EM470D 11OT	25V d.c., 47uF, 105°C	--	Test with appliance
E cap (C3)	B	Aishi	ERS1HM100D 11C33T	50V d.c., 10uF, 5x11mm, 105°C	--	Test with appliance
E cap (C9)	B	Aishi	ERS1CM221E 11C33T	16V d.c., 220uF, 8x8mm, 105°C	--	Test with appliance
E cap (C6)	B	Aishi	ERS1CM471F 12C33T	16V/470uF(8*12), 105°C	--	Test with appliance
Optocoupler (IC2)	B	SHARPCORP ELECTRONIC COMPONENTS GROUP	PC817	IF = 5 mA VCE = 5 V, 110°C	IEC/EN 60747-5-5	VDE 40008087
Alternative	D	Everlight Electronic Co., Ltd.	EL817	IF = 5 mA VCE = 5 V 110°C	IEC/EN 60747-5-5	VDE 40028391
Y1 cap(C4)	B	SHANTOU HIGH-NEW ZONE SONGTIAN ENTERPRISE CO., LTD	CE-Series	400V a.c., Y1, 2200PF,125°C	IEC/EN 60384-14	VDE 40025754
Transformer (T1)	B	ZHONGSHAN XINYOUTAI ELECTRONIC TECHNOLOGY CO., LTD	EE13*8,97:9:10	EE13*8,97:9:10	--	Test with appliance
Components used in T1						
- Bobbin	B	CHANG CHUN PLASTICS CO., LTD(HSINCHU FACTORY)	T375HF	PMC, V-0 150°C	--	Test with appliance

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- Magnet wire	B	DONGGUAN Yida Industrial	UEW	130°C Class B, Ø 0.14/0.18mm	--	UL E344055
- Insulating Tape	B	SHENZHEN XINHUAHUI PLASTIC & INSULATION MATERIAL CO LTD	HMT803	130°C	--	UL E328315
- Tube	B	DONGGUAN CITY NANDIAN INSULATION MATERIAL CO., LTD	HCTIW-B	PTFE	--	UL E345619
- Triple insulated wire	B	Dah Jin Technology Co., Ltd	TLW-B	130°C, Ø 0.35mm		VDE 40008834
For model EM03-R						
Test Switch	B	Zhongshan Daiwei Electronic Co., Ltd	KFC-A06W1-5.0	DC12V 50mA	IEC/EN 61058-1	Tested with appliance
Indicate LED	B	ZhongShan Fishiba Electronic Technology Company.LTD	5308GC	IF=20mA; VF=2.9-3.1V; Ø 5, green color	IEC/ EN 62471	Tested with appliance
LED board (PCB)	B	Zhongshan Lixin Chain-Board Co. Ltd.	CEM-1	V-0; Max130 °C	--	UL E230073
LED	B	SHENZHEN Chuangda Electronic Co.,Ltd	2835LED	6000-6500K v=2.9~3.3V I=60mA	IEC/ EN 62471	Tested with appliance
Input terminal block	B	Jiang Men Krealux Electrical Applicances Co., Ltd.	P02-2	110 °C, 450V, 0.5mm ^{2}-0.75mm ^{2}	IEC/EN60998-2-2	VDE 40021964
Alternative	D	Dongguan Changhe Electronics Co., Ltd.	CS350-00-500	110 °C, 450V, 0.5mm ^{2}-0.75mm ^{2}	IEC/EN60998-2-2	VDE 40022503
PCB of emergency control circuit	B	Zhongshan Lixin Chain-Board Co. Ltd.	LX-20	V-0; Max130°C	--	UL E230073

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Clause	Requirement + Test	Result - Remark	Verdict

Battery	B	Profolux bv led supplier	3.6V 900mAh, Ni-Cd ,AA	3.6V 900mAh, Ni-Cd, AA	IEC/EN 62133 IEC / EN 61951-1	JPTUV-085629 Test with appliance refer to report 16083404 001 50129467 001
Lead wire of battery	B	DONGGUAN WEN CHANG ELECTRONIC CO.,LTD	1007	22AWG, 80°C, 300V	--	UL E214500
- heat shrinkable tube	B	DONGGUAN SALIPT CO.,LTD.	SALIPT S-901-600/S-901-300	125°C 600V/300V, Φ 0.4~ Φ 0.6	--	UL E209436
Lead wire of LED	B	FOSHAN CITY YECONG ELECTRIC WIRE FACTORY CO., LTD	1332	22AWG, 200°C, 300V	--	UL E338307
Lead wire of battery	B	DONGGUAN WEN CHANG ELECTRONIC CO.,LTD	1007	22AWG, 80°C, 300V	--	UL E214500
Current fuse (F1)	B	DONGGUAN REOMAX ELECTRONICS CO.,LTD	MTS 250V 1A T	1000mA, 250V	IEC/EN 60127-1, IEC/EN 60127-3	VDE 40039420
Inductor (L1)	C	ZHONGSHAN DONGFENG LANGGHUANG ELECTRONIC MANUFACTURER	6*8 19mH	19mH	--	Test with appliance
Winding	B	DONGGUAN YIDA CO., LTD	QA-*/180 0.120mm	Ø0.120mm	--	UL E344055
Inductor (L2)	C	ZHONGSHAN DONGFENG LANGGHUANG ELECTRONIC MANUFACTURER	6*8 19mH	19mH	--	Test with appliance
- winding	B	DONGGUAN YIDA CO., LTD	QA-*/180 0.120mm	Ø0.120mm	--	UL E344055
E cap (C1)	B	Aishi	EGS2GM4R7 F12OCG	400V d.c., 4.7uF, 105°C	--	Test with appliance
E cap (C7, C8)	B	Aishi	ERS1EM470D 11C33T	25V d.c., 47uF, 105°C	--	Test with appliance

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Clause	Requirement + Test	Result - Remark	Verdict

E cap (C3)	B	Aishi	ERS1HM100D 11C33T	50V d.c., 10uF, 5x11mm, 105°C		Test with appliance
E cap (C9)	B	Aishi	ERS1CM221E 11C33T	16V d.c., 220uF, 8x8mm, 105°C		Test with appliance
E cap (C6)	B	Aishi	ERS1CM471F 12C33T	16V/470Uf (8*12), 105°C	--	Test with appliance
Y1-capacitor (C4)	B	SHANTOU HIGH-NEW ZONE SONGTIAN ENTERPRISE CO., LTD	Q08F1D222M N0B0S0NS	400V a.c., Y1, 2200PF,125°C	IEC/EN 60384-14	VDE 40025754
Optocoupler (IC2)	B	SHARPCORP ELECTRONIC COMPONENTS GROUP	PC817	IF = 5 mA VCE = 5 V 110°C	IEC/EN 60747-5-5	VDE 40008087
Alternative	D	Everlight Electronic Co., Ltd.	EL817	IF = 5 mA VCE = 5 V 110°C	IEC/EN 60747-5-5	VDE 40028391
DC connector to battery	B	Leqing Fuxun Electronic Co., Ltd	VH-2Y	PA66, 85°C, 250V.AC/DC, 7.5A	--	Test with appliance
Output terminal block	B	Dongguan Changhe Electronics Co., Ltd.	CA350-06-500	105°C, 250V, 0.75mm^2	EN60998-1:2004	VDE 40021481
Transformer (T1)	B	ZHONGSHAN DONGFENG LANGGHUANG ELECTRONIC MANUFACTURER	EE13*8,97:9:10	EE13*8,97:9:10	--	Test with appliance
Components used in T1						
- Bobbin	B	CHANG CHUN PLASTICS CO., LTD(HSINCHU FACTORY)	T375HF	PMC,V-0 150°C	--	Test with appliance
- Magnet wire	B	DONGGUAN Yida Industrial	UEW	130°C Class B, Φ0.14/0.18mm	--	UL E344055
- Insulating Tape	B	SHENZHEN XINHUAHUI PLASTIC & INSULATION MATERIAL CO LTD	HMT803	130°C	--	UL E328315
- Tube	B	DONGGUAN CITY NANDIAN INSULATION MATERIAL CO., LTD	HCTIW-B	PTFE	--	UL E345619

IEC 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict

- Triple insulated wire	B	Dah Jin Technology Co., Ltd	TLW-B	130°C, Φ0.35mm	IEC/EN 60950-1	VDE 40008834

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 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 2-1	TABLE: Temperature measurements, thermal tests of Section 12		P
	Type reference ..... :	EM03-P	☒
	Lamp used..... :	Integral LED	☒
	Lamp control gear used..... :	Integral control circuit	☒
	Mounting position of luminaire ..... :	In test corner	☒
	Supply wattage (W)..... :	See below	☒
	Supply current (A) ..... :	See below	☒
	Calculated power factor..... :	See below	☒
	Table: measured temperatures corrected for ta = 40 °C:		
	- abnormal operating mode..... :	a. cl.22.13.6 short-circuit link across the battery charger output b. SC one LED c. OP one LED d. double load	☒
	- test 1: rated voltage..... :	240V	☒
	- test 2: 1,06 times rated voltage or 1,05 times ra ted wattage..... :	1,06 x 240V=254.4V 0.018A, 2.4W	☒
	- test 3: Load on wiring to socket-outlet, 1,06 tim es voltage or 1,05 times wattage ..... :	--	☒
	- test 4: 1,1 times rated voltage or 1,05 times rat ed wattage..... :	1,1 x 240V=264V a. 0.018A, 3.3W b. 0.018A, 2.3W c. 0.018A, 2.2W d, 0.018A, 2.3W	☒
	Through wiring or looping-in wiring loaded by a current of A during the test ..... :	--	☒

Temperature measurements, (°C)

Part	Ambient	Clause 12.4 – normal					Clause 12.5 – abnormal	
		test 1	test 2 Normal mode	test 2 Emergency mode	test 3	limit	test 4a normal mode	limit
Input terminal block	40	--	47.9	42.4	--	110	--	--
Terminal block between input and control gear	40	--	45.2	42.1	--	110	--	--

IEC 60598-2-22								
Clause	Requirement + Test					Result - Remark		Verdict
Input quick connector	40	--	46.2	43.5	--	85	--	--
E-cap (C1)	40	--	55.6	43.9	--	105	57.3	115
E-cap (C4)	40	--	58.1	44.0	--	105	61.0	115
E-cap (C7)	40	--	57.5	46.0	--	105	68.6	115
E-cap (C8)	40	--	55.3	47.3	--	105	63.7	115
E-cap (C9)	40	--	53.3	51.0	--	105	58.8	115
E-cap (C10)	40	--	53.4	48.9	--	105	57.6	115
Y cap (C4)	40	--	54.5	44.4	--	125	60.9	135
L1 winding	40	--	55.4	43.5	--	120	53.0	175
L2 winding	40	--	55.8	43.8	--	120	53.5	175
Optocoupler (IC2)	40	--	60.3	45.6	--	110	--	--
T1 Bobbin of transformer	40	--	64.6	44.3	--	120	66.7	175
T1 Primary winding of transformer	40	--	66.2	44.7	--	120	69.8	175
T1 Secondary winding of transformer	40	--	65.7	44.9	--	120	70.9	175
Control gear PCB	40	--	65.5	45.1	--	130	--	--
LED board	40	--	57.2	51.6	--	130	--	--
Output quick connector	40	--	50.6	47.5	--	120	--	--
On/off button	40	--	40.7	40.1	--	60	--	--
Control gear input leadwire	40	--	46.4	43.9	--	90	--	--
Lead wire of battery	40	--	44.5	46.7	--	80	--	--
Lead wire of LED board	40	--	49.6	46.5	--	80	--	--
battery surface	40	--	44.6	48.7	--	50	--	--
White enclosure inside	40	--	46.1	42.8	--	130	--	--

IEC 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict

Enclosure cover LED board inside	40	--	52.8	48.0	--	130	--	--
Lighting object (10cm)	40	--	43.3	43.4	--	90	44.7	130
Mounting surface	40	--	44.4	42.3	--	90	46.5	130
Supplementary information:--								

ANNEX 2-2	TABLE: Temperature measurements, thermal tests of Section 12		P
	Type reference ..... :	EM03-R	☒
	Lamp used..... :	Integral LED	☒
	Lamp control gear used..... :	Integral control circuit	☒
	Mounting position of luminaire ..... :	In test corner	☒
	Supply wattage (W)..... :	See below	☒
	Supply current (A) ..... :	See below	☒
	Calculated power factor..... :	See below	☒
	Table: measured temperatures corrected for ta = 40 °C:		
	- abnormal operating mode..... :	a. cl.22.13.6 short-circuit link across the battery charger output b. SC one LED c. OP one LED d. double load	☒
	- test 1: rated voltage..... :	240V	☒
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage..... :	1,06 x 240V=254.4V 0.016A, 2.1W	☒
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage ..... :	--	☒
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage..... :	1,1 x 240V=264V a. 0.018A, 2.6W b. 0.016A, 2.0W c. 0.016A, 2.1W d, 0.016A, 2.1W	☒
	Through wiring or looping-in wiring loaded by a current of A during the test ..... :	--	☒
Temperature measurements, (°C)			

IEC 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict

Part	Ambient	Clause 12.4 – normal					Clause 12.5 – abnormal	
		test 1	test 2 Normal mode	test 2 Emergency mode	test 3	limit	test 4a normal mode	limit
Input terminal block	40	--	48.1	42.9	--	110	--	--
Input quick connector	40	--	49.2	48.3	--	85	--	--
E-cap (C1)	40	--	54.2	43.6	--	105	59.7	115
E-cap (C4)	40	--	55.0	43.8	--	105	65.1	115
E-cap (C7)	40	--	56.1	45.7	--	105	70.5	115
E-cap (C8)	40	--	54.1	46.1	--	105	66.4	115
E-cap (C9)	40	--	51.8	49.0	--	105	63.3	115
E-cap (C10)	40	--	51.2	48.7	--	105	61.2	115
Y cap (C4)	40	--	55.1	44.8	--	125	64.2	135
L1 winding	40	--	50.6	43.4	--	120	54.7	175
L2 winding	40	--	49.8	43.3	--	120	53.7	175
Optocoupler (IC2)	40	--	57.6	45.1	--	110	--	--
T1 Bobbin of transformer	40	--	61.0	44.9	--	120	72.4	175
T1 Primary winding of transformer	40	--	59.3	44.8	--	120	70.2	175
T1 Secondary winding of transformer	40	--	59.4	44.8	--	120	71.9	175
Control gear PCB	40	--	57.8	44.9	--	130	--	--
LED board	40	--	47.5	48.1	--	130	--	--
Output terminal	40	--	47.4	47.9	--	120	--	--
On/off button	40	--	45.0	46.0	--	60	--	--
Lead wire of battery	40	--	45.9	48.2	--	80	--	--
Lead wire of LED board	40	--	44.2	45.0	--	80	--	--

IEC 60598-2-22								
Clause	Requirement + Test					Result - Remark		Verdict
battery surface	40	--	44.0	49.0	--	50	--	--
White enclosure inside	40	--	43.2	46.2	--	130	--	--
Enclosure cover LED board inside	40	--	48.0	48.7	--	130	--	--
Lighting object (10cm)	40	--	42.2	41.7	--	90	42.4	130
Mounting surface	40	--	49.6	43.7	--	90	59.2	130
Supplementary information:--								

IEC 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 3	**Screw terminals (part of the luminaire)**	N/A

ANNEX 4	**Screwless terminals (part of the luminaire)**	N/A

IEC 60598-2-22			
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 Manufacturer Testing Laboratory 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

Remark: testing laboratory is a CBTL

Attachment 1 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict

Attachment 1	**EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES of EN 60598-2-22:2014 used in conjunction with EN 60598-1:2015**	P

ATTACHMENT TO TEST REPORT IEC 60598-2-22
EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES
Luminaires
Part 2: Particular requirements
Section 22: Luminaires for emergency lighting

Differences according to.....	EN 60598-2-22:2014 used in conjunction with EN 60598-1:2015
Annex Form No.....	EU_GD_IEC60598_2_22E
Annex Form Originator	OVE
Master Annex Form	2015-04

	CENELEC COMMON MODIFICATIONS (EN)		P
22.6 (3)	**MARKING**		P
22.6 (3.3.101)	For luminaires not supplied with terminal block: Adequate warning on the package		N/A
22.7 (4)	**CONSTRUCTION**		N/A
22.7 (4.11.6)	Electro-mechanical contact systems		N/A
22.11 (5)	**EXTERNAL AND INTERNAL WIRING**		P
22.11 (5.2.1)	Connecting leads		N/A
	- 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
22.11 (5.2.2)	Cables equal to EN 50525		N/A
	Replace table 5.1 – Supply cord		N/A
22.13 (12)	**ENDURANCE TEST AND THERMAL TEST**		P

Attachment 1 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
22.13 (12.4.2c)	Thermal test (normal operation) see footnote c to table 12.2 relating to unsleeved fixed wiring		P
ZB	**ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)**		N/A
(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
22.6.18 (-) 22.11.1 (-)	FR: Permanent fittings		N/A
22.6.15 (-) 22.17.1 (-)	FR: Photometric characteristics of products are only based on the “rated lumen output”		N/A
ZC	**ANNEX ZC, NATIONAL DEVIATIONS (EN)**		P
(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:		N/A
	- 850°C for luminaires in stairways and horizontal travel paths		N/A
	- 650°C for indoor luminaires		P
	GB: Requirements according to United Kingdom Building Regulation		N/A

Attachment 2 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict

Attachment 2	**IEC 61347-2-7:2011 used in conjunction with IEC 61347-1:2015**	P

4 (4)	**GENERAL REQUIREMENTS**		**P**
- (4)	Insulation materials for double or reinforced insulation according requirements in Annex N of IEC 61347-1	(see Annex N)	P
- (4)	Compliance of independent controlgear enclosure with IEC 60 598-1		N/A
- (4)	Built-in magnetic ballast with double or reinforced insulation comply with Annex I of IEC 61347-1		N/A
- (4)	Built-in electronic controlgear with double or reinforced insulation comply with Annex O of IEC 61347-1	(see Annex O)	N/A
- (4)	SELV controlgear comply with Annex L of IEC 61347-1	(see Annex L)	P
4 (-)	Each lamp type tested according clause 15 – 20, 22 and 34 and lamp with highest rated power in other tests		—
4 (-)	Controlgear with automatic test function tested according Annex K	(see Annex K)	N/A

6 (6)	**CLASSIFICATION**		**P**
	Built-in controlgear ..... :	Yes ☐ No ☒	—
	Independent controlgear..... :	Yes ☐ No ☒	—
	Integral controlgear ..... :	Yes ☒ No ☐	—
	With automatic test function ..... :	Yes ☐ No ☒	—

7	**MARKING**		N/A
7.1 (7.1)	**Mandatory markings**		N/A
	a) mark of origin	Integral control gear used	N/A
	b) model number or type reference		N/A
	c) symbol for independent controlgear, if applicable		N/A
	d) correlation between interchangeable parts and controlgear marked		N/A
	e) rated supply voltage (V)		N/A
	supply frequency (Hz)		N/A
	supply current (A)		N/A

Attachment 2 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	f) earthing symbol		N/A
	k) wiring diagram		N/A
	l) value of tc		N/A
7.1 (-)	- open circuit voltage (V)		N/A
	- controlgear without enclosure marked with a) and b) above		N/A
	- type and current rating of fuse, if applicable		N/A
	- symbol if the controlgear comply with this part 2		N/A
	- symbol if the controlgear is provided with automatic test function		N/A
	- maximum working voltage between output terminals (V)		N/A
	- maximum working voltage between any output terminal and earth, if applicable (V)		N/A
7.1 (7.2)	Marking durable and legible		N/A
	Rubbing 15 s water, 15 s petroleum; marking legible		N/A
7.2 (7.1)	**Information to be provided, if applicable**		N/A
	h) declaration of protection against accidental contact		N/A
	i) cross-section of conductors (mm^2)		N/A
	j) number, type and wattage of lamp(s)		N/A
	n) heat sink required		N/A
7.2 (-)	- suitable for use only on battery supply not having a trickle or intermittent re-charging circuits		N/A
	- rated duration of operation (hr)		N/A
	- for use in luminaries for high-risk task area lighting		N/A
	- proof against supply voltage polarity reversal		N/A
	- emergency ballast lumen factor (EBLF)		N/A
	- limits of ambient temperature range within which the ballast will start and operate		N/A
	- type of insulation between the supply and the battery circuit (non, basic or double/reinforced)		N/A
	- recharge the battery normally after the test of 22.3		N/A
	- supply current for each lamp		N/A
	Information for correct battery selection:		N/A

Attachment 2 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	- technology of the battery		N/A
	- type designation		N/A
	- capacity		N/A
	- voltage		N/A
	- maximum charge current		N/A
	- minimum charge current		N/A
	- charge voltage limits		N/A
	- maximum discharge current		N/A
	- minimum discharge current		N/A
	- discharge voltage limits		N/A
	- temperature rating		N/A
	- type and manufacturer		N/A
	- information regarding the installation, commissioning and use if with automatic test function		N/A
8 (10)	**PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS**		**P**
- (10.1)	Controlgear protected against accidental contact with live parts	Rely upon the luminaire	P
- (A2)	Voltage measured with 50 kΩ	(see Annex A)	N/A
- (A3)	Voltage > 35 V peak or > 60 V d.c.	(see Annex A)	N/A
- (10.1)	Lacquer or enamel not used for protection or insulation		P
	Adequate mechanical strength on parts providing protection		P
- (10.2)	Capacitors > 0,5 µF: voltage after 1 min (V): < 50 V ..... :	Max. 12,4V	P
- (10.3)	**Controlgear providing SELV**		**P**
	Accessible conductive parts are insulated from live parts by double or reinforced insulation in SELV controlgear		P
	No connection between output circuit and the body or protective earthing circuit		P
	No possibility of connection between output circuit and the body or protective earthing circuit through other conductive parts		P
	SELV outputs separated by at least basic insulation		P

Attachment 2 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	ELV conductive parts insulated as live parts		N/A
	Tests according Annex L of IEC 61347-1	(see Annex L)	P
- (10.4)	**Accessible conductive parts in SELV circuits**		**P**
	Output voltage under load ≤ 25 V r.m.s. or ≤ 60 V d.c.		P
	If output voltage > 25 V r.m.s. or > 60 V d.c.; No load output ≤ 35 V peak or ≤ 60 V d.c and touch current does not exceed 0,7 mA (peak) or 2 mA d.c. ..... :		N/A
	One conductive part is insulated if output voltage or current exceeding the values above and withstand test voltage 500 V		N/A
	Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor	Approved Y1 capacitor used	P
	Y1 or Y2 capacitors comply with IEC 60384-14		P
	Resistors comply with test (a) in 14.1 of IEC 60065		N/A
9 (8)	**TERMINALS**		**P**
- (8)	Screw terminals according section 14 of IEC 60598-1:		P
	Separately approved; component list	(see Annex 1)	P
	Part of the controlgear	(see Annex 2)	N/A
	Screwless terminals according section 15 of IEC 60598-1:		**P**
	Separately approved; component list	(see Annex 1)	P
	Part of the controlgear	(see Annex 3)	N/A
10 (9)	**PROVISION FOR PROTECTIVE EARTHING**		**N/A**
- (9.1)	**Provisions for protective earthing**		**N/A**
	Terminal complying with clause 8		N/A
	Locked against loosening and not possible to loosen by hand		N/A
	Not possible to loosen clamping means unintentionally on screwless terminals		N/A
	All parts of material minimizing the danger of electrolytic corrosion		N/A
	Made of brass or equivalent material		N/A
	Contact surface bare metal		N/A

Attachment 2 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	Test according 7.2.3 of IEC 60598-1		N/A
- (9.2)	**Provision for functional earthing**		**N/A**
	Comply with clause 8 and 9.1		N/A
	Functional earth insulated from live parts by double or reinforced insulation		N/A
- (9.3)	**Lamp controlgear with conductors for protective earthing by tracks on printed circuit board**		**N/A**
	Test with a current of 25 A between earthing terminal or earthing contact and each of the accessible metal parts; measured resistance (Ω) at ≥ 10 A according 7.2.3 of IEC 60598-1: < 0,5 Ω ..... :	--	N/A
- (9.4)	**Earthing of built-in lamp controlgear**		**N/A**
	Earth by means of fixing to earthed metal of luminaire in compliance of 7.2 of IEC 60598-1		N/A
	Earthing terminal only for earthing the built-in controlgear		N/A
- (9.5)	**Earthing via independent controlgear**		**N/A**
- (9.5.1)	Earth connection to other equipment		N/A
	Looping or through connection, conductor min. 1,5 mm² and of copper or equivalent		N/A
	Protective earthing wires in line with 5.3.1.1 and clause 7 of IEC 60598-1		N/A
- (9.5.2)	Earthing of the lamp compartments powered via the independent lamp controlgear		N/A
	Test with a current of 25 A between input and output earth terminals; measured resistance (Ω) between earthing terminal or earthing contact and each of the accessible metal parts at ≥ 10 A according 7.2.3 of IEC 60598-1: < 0,5 Ω ..... :		N/A
	Output earthing terminal marked as in 7.1 t) of IEC 61347-1		N/A

11 (11)	**MOISTURE RESISTANCE AND INSULATION**		**P**
- (11)	After storage 48 h at 91-95% relative humidity and 20-30 °C measuring of insulation resistance:		P
	For basic insulation ≥ 2 MΩ ..... :	>100 MΩ	P
	For double or reinforced insulation ≥ 4 MΩ ..... :	>100 MΩ	P

Attachment 2 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	Between primary and secondary circuits in controlgear providing SELV, values in Annex L in IEC 61347-1		P
12 (12)	**ELECTRIC STRENGTH**		**P**
- (12)	Immediately after clause 11 electric strength test for 1 min		P
	Basic insulation for SELV, test voltage 500 V		P
	Working voltage ≤ 50 V, test voltage 500 V		P
	Working voltage > 50 V ≤ 1000 V, test voltage (V):		P
	Basic insulation, 2U + 1000 V	1480V	P
	Supplementary insulation, 2U + 1000 V	1480V	P
	Double or reinforced insulation, 4U + 2000 V	2960V	P
	No flashover or breakdown		P
	Solid or thin sheet insulation for double or reinforced insulation fulfil the requirements in Annex N in IEC 61347-1		N/A
15 (-)	**STARTING CONDITIONS**		**P**
	- after the switching test the ballast operate the lamps at rated operating voltage		P
	- the lamps start and operate from the appropriate mains operation reference ballast/circuit		P
16 (-)	**LAMP CURRENT** (only for fluorescent lamps)		**N/A**
	Lamp current not exceeding 125 % of that delivered to the same lamp when operated with a reference controlgear		N/A
17 (-)	**SUPPLY CURRENT**		**N/A**
	At the rated operating voltage, the supply current from the battery differ not more than ± 15 % from the marked value when operated with reference lamp		N/A

Attachment 2 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict

18 (-)	**MAXIMUM CURRENT IN ANY LEAD (WITH CATHODE PREHEATING)**		**N/A**
	If fluorescent lamp, the current flowing in any cathode termination not exceed the value given in lamp data sheet of IEC 60081 and IEC 60901	(see appended table)	N/A

19 (-)	**LAMP OPERATING CURRENT WAVEFORMS** (only for fluorescent lamps)		**N/A**
	The peak current does not exceed 1,7 times the rated lamp current specified on lamp data sheets of IEC 60081 and IEC 60901 ..... :		N/A
	The peak current does not exceed 3 times the measured r.m.s. lamp current ..... :		N/A

20 (-)	**FUNCTIONAL SAFETY (EBLF)** (only for fluorescent lamps)		**N/A**
	The controlgear provide the necessary light output after change over to the emergency mode		N/A
	- lowest value measured at 60 s and V_1 or in steady conditions at V_{min} be retained and at least the declared EBLF ..... :		N/A
	- value measured at 5 s and V_1 reach at least 50 % of declared EBLF ..... :		N/A

21 (-)	**CHANGEOVER OPERATION**		**P**
	Changeover from normal to emergency mode at not less than 0,6 times and not greater than 0,85 times rated supply voltage		P
	Change over voltage (V) ..... :	150-154V	P
	Supply reduced within 0,5 s to 0,6 times rated voltage, emergency lamps operated		P
	Switching of supply at 0,85 times rated voltage for 500 cycles 2 s ″off″ and 2 s ″on″. After these cycles, supply reduced to 0,6 times rated voltage. Emergency lamps operated during emergency mode and after the test.		P
	Controlgear with rest mode: automatic changeover from rest mode to normal mode at not greater than 0.9 times rated supply voltage		N/A

22 (-)	**RECHARGING DEVICE**		**P**
	Recharging device provide the rated charge performance specified by the battery manufacturer to charge the battery within 24 h		P

Attachment 2 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	Transformers in the recharging device comply with relevant parts of IEC 61558-2-1, IEC 61558-2-6 and IEC 61558-2-16		P
22.1 (-)	Low temperature operation		P
	Charged battery for 48 h and then discharged until voltage indicated in table 1 is achieved at 20 °C ± 5 °C		P
	Charged battery at 0,9 times rated supply voltage at minimum ambient temperature for 24 h		P
	Simulating supply failure, lamp operated for rated duration of operation and at the end the battery voltage is at least V_{min} according clause 20		P
22.2 (-)	High temperature operation		P
	Charged battery for 48 h and then discharged until voltage indicated in table 1 is achieved at 20 °C ± 5 °C		P
	Charged at 0,9 times rated supply voltage at maximum ambient temperature for 24 h		P
	Simulating supply failure, lamp operated for rated duration of operation and at the end the battery voltage is at least V_{min} according clause 20		P
22.3 (-)	Abnormal operating condition		P
	Recharging device operated at 1,1 times rated supply voltage and maximum marked ambient temperature with battery disconnected and output short-circuited		P
	- no flames, molten material or flammable gases		P
	After the test period and short-circuit removed		P
	- the recharging device is safe		P
	- normal recharge if self-resetting or user-replaceable protective devices		P
22.4 (-)	Maximum output voltage		P
	Output voltage of recharging device ≤ 50 V d.c. at 1,1 times rated supply voltage with or without batteries connected (V) ..... :	Max. 8,53V	P
22.5 (-)	Battery charge and discharge characteristics		P
	Charged battery for 48 h and then discharged until voltage indicated in table 1 is achieved at 20 °C ± 5 °C		P
	Charged at 0,9 and 1,1 times rated supply voltage at 25 °C ± 2 °C for 24 h		P

Attachment 2 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	Current and voltage characteristics within those declared by controlgear manufacturer	Value declared by client	P
22.6 (-)	Lamp failure		P
	Lamp failure do not interrupt charging current to battery and not impair the operation of the battery		P
23 (-)	**PROTECTION AGAINST EXCESSIVE DISCHARGE**		**P**
	Protection against polarity reversal of individual cells, limits the discharge current when the battery voltage has fallen to V_{low} according a) to c)		P
	- Discharge current (A) ..... :	0.007	P
	Protection system prevents any further discharge until the normal supply has been restored. Battery voltage not below V_{low} and discharge current not exceed a) to c)		
	- Battery voltage (V) ..... :	3.12	P
	- Discharge current (A) ..... :	0.007	P
24 (-)	**INDICATOR**		**P**
	Compliance with 22.6.7 of IEC 60598-2-22		P
25 (-)	**REMOTE CONTROL, REST MODE, INHIBITION MODE**		**N/A**
25.1 (-)	No other changeover device than the switch between the battery and emergency lighting lamps		N/A
	Not contain manual or non-self-resetting switch isolating the emergency circuit from main supply		N/A
25.2 (-)	If rest mode facility, operation automatically revert to normal mode if restoration of normal supply		N/A
	If remote inhibiting facilities, provided with a means of connection to the remote inhibiting circuit		N/A
25.3 (-)	If for remote inhibiting facilities, in the emergency mode, not influenced by short circuit or contact to earth in the wiring to the remote control		N/A
	- Simulation of above faults in conjunction with tests of 28.2		N/A
25.4 (-)	Operation of remote control independent of the battery and mains supply		N/A
25.5 (-)	If rest mode facility in the emergency mode, not influenced by short circuit, contact to earth or interruption in the wiring to the remote control changeover device		N/A
	- Simulation of above faults in conjunction with tests of 28.2		N/A

Attachment 2 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
25.6 (-)	If rest mode or inhibiting facilities, in rest mode, current drain from batteries not exceed the values in 25.6		N/A
	- Discharge current (A) ..... :		N/A
26 (-)	**TEMPERATURE CYCLING TEST AND ENDURANCE TEST**		**P**
26.a (-)	Temperature cycling test: 5 cycles;		P
	- 1 h at minimum ambient temperature (°C) ..... :	25 (test with the luminaire)	P
	- 1 h at maximum ambient temperature (°C) ..... :	40 (test with the luminaire)	P
26.b (-)	Endurance test 50 h at an ambient that produces tc; ambient temperature (°C) ..... :	40 (test with the luminaire)	P
	After test, controlgear restart and operate lamps at rated operating voltage		P
27 (-)	**POLARITY REVERSAL**		**N/A**
	If declared to be proof against polarity reversal, operating with reverse supply voltage for 1 h at maximum rated voltage		N/A
	After test, supply connected correctly, start and operate lamps normally		N/A
28 (14)	**FAULT CONDITIONS**		**P**
- (14.1)	When operated under fault conditions the controlgear:		P
	- does not emit flames or molten material		P
	- does not produce flammable gases		P
	- protection against accidental contact not impaired		P
	Thermally protected controlgear does not exceed the marked temperature value		N/A
	Fault conditions: capacitors, resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected	(see appended table)	P
- (14.2)	Short-circuit of creepage distances and clearances if less than specified in clause 16 in Part 1 (after any reduction in 14.2 - 14.5)	(see appended table)	P
- (14.3)	Short-circuit or interruption of semiconductor devices	(see appended table)	P

Attachment 2 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
- (14.4)	Short-circuit across insulation consisting of lacquer, enamel or textile	(see appended table)	N/A
- (14.5)	Short-circuit across electrolytic capacitors	(see appended table)	P
- (14.6)	After the tests has been carried out on three samples:		P
	The insulation resistance ≥ 1 MΩ ..... :	>100 MΩ	P
	No flammable gases		P
	No accessible parts have become live		P
	During the tests, a five-layer tissue paper, where the test specimen is wrapped, does not ignite		P
- (14.7)	Relevant fault condition tests with high-power a.c. supply		—
28.2 (-)	Short circuit, contact to earth or interruption in the wiring of the normal supply not influenced the emergency mode		P
29 (15)	**CONSTRUCTION**		**P**
- (15.1)	**Wood, cotton, silk, paper and similar fibrous material**		**P**
	Wood, cotton, silk, paper and similar fibrous material not used as insulation		P
- (15.2)	**Printed circuits**		**P**
	Printed circuits used as internal connections complies with clause 14		P
- (15.3)	**Plugs and socket-outlets used in SELV or ELV circuits**		**N/A**
	No dangerous compatibility between output socket-outlet and a plug for socket-outlets for input circuit in relation to installation rules, voltages and frequencies		N/A
	Plugs and socket-outlets for SELV comply with IEC 60906-3 and IEC 60884-2-4		N/A
	Plugs and socket-outlets for SELV ≤ 3 A, ≤ 25 V r.m.s. or ≤ 60 V d.c. and ≤ 72 W comply with IEC 60906-3 and IEC 60884-2-4 or:		N/A
	- plugs not able to enter socket-outlets of other standardised system		N/A
	- socket-outlets not admit plugs of other standardised system		N/A
	- socket-outlets without protective earth		N/A
- (15.4)	**Insulation between circuits and accessible parts**		**P**
- (15.4.2)	SELV circuits		P

Attachment 2 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	Source used to supply SELV circuits:		P
	- safety isolating transformer in accordance with relevant part 2 of IEC 61558		N/A
	- controlgear providing SELV in accordance with relevant part 2 of IEC 61347		P
	- another source		N/A
	Voltage in the circuit not higher than ELV		P
	SELV circuits insulated from LV by double or reinforced insulation		P
	SELV circuits insulated from non SELV circuits by double or reinforced insulation		N/A
	SELV circuits insulated from FELV circuits by supplementary insulation		N/A
	SELV circuits insulated from other SELV circuits by basic insulation		N/A
	SELV circuits insulated from accessible conductive parts according Table 6 in 15.4.5		P
- (15.4.3)	FELV circuits		N/A
	Source used to supply FELV circuits:		N/A
	- separating transformer in accordance with relevant part 2 of IEC 61558		N/A
	- separating controlgear providing basic insulation between input and output circuits in accordance with relevant part 2 of IEC 61347		N/A
	- another source		N/A
	- source in circuits separated by the LV supply by basic insulation		N/A
	Voltage in the circuit not higher than ELV		N/A
	FELV circuits insulated from LV supply by at least basic insulation		N/A
	FELV circuits insulated from other FELV circuits if functional purpose		N/A
	FELV circuits insulated from accessible conductive parts according Table 6 in 15.4.5		N/A
	Plugs and socket-outlets for FELV system comply with:		N/A
	- plugs not able to enter socket-outlets of other voltage systems		N/A
	- socket-outlets not admit plugs of other voltage systems		N/A

Attachment 2 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	- socket-outlets have a protective conductor contact		N/A
- (15.4.4)	Other circuits		N/A
	Insulation between circuits other than SELV or FELV and accessible conductive parts in according Table 6 in 15.4.5.		N/A
- (15.4.5)	Insulation between circuits and accessible conductive parts		P
	Accessible conductive parts insulated from active parts of electric circuits by insulating according Table 6		P
	Requirements for Class II construction with equipotential bonding for protection against indirect contact with live parts:		N/A
	- all conductive parts are connected together		N/A
	- conductive parts are reliably connected together according test of IEC 60598-1 cl. 7.2.3		N/A
	- conductive parts comply with requirements of Annex A in case of insulation fault		N/A
29.1.1 (-)	Compliance with 22.6.1, 22.6.7, 22.6.9, 22.6.11, 22.6.19 and 22.20 of IEC 60598-2-22 if applicable		P
29.1.2 (-)	Battery comply with Annex I		P
	Battery designed for at least 4 years of operation		P
	Battery only use for emergency functions		P

30 (16)	**CREEPAGE DISTANCES AND CLEARANCES**		**P**
- (16)	Creepage distances and clearances according to 16.2 and 16.3		P
	Controlgears providing SELV comply with additional requirements in Annex L	(see Annex L)	P
	Insulating lining of metallic enclosures		N/A
	Controlgear protected against pollution comply with Annex P	(see Annex P)	N/A
- (16.2)	**Creepage distances**		**P**
- (16.2.2)	Minimum creepage distances for working voltages		P
	Creepage distances according to Table 7	(see appended table)	P
- (16.2.3)	Creepage distances for working voltages with frequencies above 30 kHz		N/A
	Creepage distances according to Table 8	(see appended table)	N/A
- (16.3)	**Clearances**		P
- (16.3.2)	Clearances for working voltages		P

Attachment 2 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict

	Clearances distances according to Table 9	(see appended table)	P
- (16.3.3)	Clearances for ignition voltages and working voltages with higher frequencies		N/A
	Clearances distances for basic or supplementary insulation according to Table 10	(see appended table)	N/A
	Clearances distances for reinforced insulation according to Table 11	(see appended table)	N/A

31 (17)	**SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS**		**P**
- (17)	Screws, current-carrying parts and connections in compliance with IEC 60598-1 (clause numbers between parentheses refer to IEC 60598-1)		P
(4.11)	**Electrical connections**		**P**
(4.11.1)	Contact pressure		P
(4.11.2)	Screws:		N/A
	- self-tapping screws		N/A
	- thread-cutting screws		N/A
(4.11.3)	Screw locking:		N/A
	- spring washer		N/A
	- rivets		N/A
(4.11.4)	Material of current-carrying parts		P
(4.11.5)	No contact to wood or mounting surface		P
(4.11.6)	Electro-mechanical contact systems		P
(4.12)	**Mechanical connections and glands**		P
(4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		N/A
	Torque test: torque (Nm); part ..... :	Fixing screw: 0.5Nm	P
	Torque test: torque (Nm); part ..... :	Screw fixed driver PCB: 0.5Nm	P
	Torque test: torque (Nm); part ..... :		N/A
(4.12.2)	Screws with diameter < 3 mm screwed into metal		P
(4.12.4)	Locked connections:		N/A
	- fixed arms; torque (Nm) ..... :		N/A
	- lampholder; torque (Nm) ..... :		N/A
	- push-button switches; torque 0,8 Nm ..... :		N/A
(4.12.5)	Screwed glands; force (Nm) ..... :		N/A

Attachment 2 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict

32 (18)	**RESISTANCE TO HEAT, FIRE AND TRACKING**		**P**
- (18.1)	Ball-pressure test:		P
	- part tested; temperature (°C)..... :	PCB; Bobbin; 125°C	P
	- part tested; temperature (°C)..... :	Quick connector; 125°C	P
- (18.2)	Test of printed boards:	UL approved material	N/A
	- part tested..... :	--	N/A
	- part tested..... :	--	N/A
- (18.3)	Glow-wire test (650°C):		N/A
	- part tested..... :	--	N/A
	- part tested..... :	--	N/A
- (18.4)	Needle flame test (10 s):		P
	- part tested..... :	PCB, bobbin	P
	- part tested..... :	Quick connector	P
- (18.5)	Tracking test:		N/A
	- part tested..... :		N/A
	- part tested..... :		N/A

33 (19)	**RESISTANCE TO CORROSION**		**N/A**
	- test according 4.18.1 of IEC 60598-1		N/A
	- adequate varnish on the outer surface		N/A

34	**Abnormal lamp conditions**		**P**
34.1	Controlgear not impair safety operated under abnormal conditions		P
34.2	Abnormal conditions for controlgear for fluorescent lamps		N/A
	a) lamp not inserted		N/A
	b) lamp does not start because cathode is broken		N/A
	c) de-active lamp		N/A
	d) lamp operates with rectifying effect		N/A
34.3	Abnormal conditions for d.c. supplied electronic step-down convertors for filament lamps		N/A
	Output voltage of the convertor not exceed 115% of rated output voltage under abnormal conditions		N/A
	a) lamp not inserted		N/A
	b) twice the number of lamps		N/A

Attachment 2 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	c) output terminals short-circuited		N/A
34.4	Abnormal conditions for controlgear for d.c. supplied electronic controlgear for LED modules		P
34.4.1	Length of output cable 20 cm and 200 cm in 34.4.2 or 34.4.3		P
34.4.2	Controlgear of constant voltage type		P
	a) no LED module inserted		P
	b) double LED modules in parallel		P
	c) output terminals short-circuited		P
34.4.3	Controlgear of constant current type		N/A
	a) no LED module inserted (and all at same time)		N/A
	b) double LED modules in series		N/A
	c) output terminals short-circuited		N/A
34.5	Abnormal conditions for ballast for d.c. supplied electronic controlgear for discharge lamps		N/A
	a) lamp not inserted or does not ignite		N/A
	b) burner leaks		N/A
	c) lamp operates, but rectifies		N/A
34.6	Compliance		P
	- does not emit flames or molten material		P
	- does not produce flammable gases		P
	- protection against accidental contact according 10.1 of IEC 61347-1 not impaired		P
	- insulation resistance ≥ 1 MΩ ..... :	>100 MΩ	P

35	**Protection of associated components**		**N/A**
35.1	Peak voltage limits		N/A
	Voltage at output terminals not exceed maximum permitted peak value in Table 2 (V) ..... :	--	N/A
35.2	Working voltage limits		N/A
	Voltage at output terminals not exceed declared maximum working voltage under normal operating, and from 5 s after start (V) ..... :		N/A
35.3	Compliance		N/A
	Voltage in 35.1 and 35.2 in compliance with the limits, measured between output terminal and earth		N/A

Attachment 2 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	Voltage in 35.1 and 35.2 in compliance with the limits, measured between output terminals if the voltage present across insulation barriers within associated components		N/A

18	TABLE: maximum current in any lead						N/A
	Test voltage (V):						
I 1 (mA)	I 2 (mA)	I 3 (mA)	I 4 (mA)	I 5 (mA)	I 6 (m A)	I 7 (mA)	I 8 (mA)

28 (14)	TABLE: tests of fault conditions	
Part	Simulated fault for model (EM03-P, EM03-R) Normal: 264V 0,017A, 2,4W	Hazard
D1	Short circuit, 264V, 0W, fuse open.	~~YES~~/NO
EC C1	Short circuit, 264V, 0W, fuse open.	~~YES~~/NO
EC C4	Short circuit, 264V, 0W, fuse open.	~~YES~~/NO
IC1 Opto-coupler (pri.)	Short circuit, 264V, 0,017A, 2,4W, normal operation .	~~YES~~/NO
IC1 Opto-coupler (sec.)	Short circuit, 264V, 0,016A, 2,4W, normal operation .	~~YES~~/NO
Q1(B-E)	Short circuit, 264V, 0W, fuse open.	~~YES~~/NO
Q1(C-E)	Short circuit, 264V, 0W, fuse open.	~~YES~~/NO
Q1(B-C)	Short circuit, 264V, 0,007A, 0,6W, unit protected.	~~YES~~/NO
EC C7	Short circuit, 264V, 0,017A, 2,4W, normal operation.	~~YES~~/NO
EC C9	Short circuit, 264V, 0,009A, 0,8W, unit protected.	~~YES~~/NO
EC C10	Short circuit, 264V, 0,009A, 0,8W, unit protected.	~~YES~~/NO

30 (16)	TABLE: clearance and creepage distance measurements (mm)						P
Applicable part of IEC 61347-1 Table 7 – 11*							
Distances	Insulation type **	Measured clearance	Required		Measured creepage	Required	
			clearance	*Table		creepage	*Table
Distance 1:	B	3,0	1,5	9	3,0	2,5	7
Working voltage (V)..... .....:					240V		☒
Frequency if applicable (Hz)..... .....:					50/60Hz		☒
PTI..... ..... :					< 600 ☒ ≥600 ☐		☒
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) .....:					--		☒

Attachment 2 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict

Pulse voltage if applicable (kV)					--		☒
Supplementary information: Between L and N, between two pins of fuse of models EM03-P, EM03-R							
Distance 2:	R	8,0	3,0	9	8,0	5,0	7
Working voltage (V).....:					240V		☒
Frequency if applicable (kHz).....:					50/60Hz		☒
PTI.....:					< 600 ☒ ≥600 ☐		☒
Peak value of the working voltage Û if applicable (kV)					--		☒
Pulse voltage if applicable (kV) .....:					--		☒
Supplementary information: Between pri. circuit and sec. circuit on PCB of models EM03-P, EM03-R							L
Distance 3:	R	6,0	4,5	Table 13 of IEC 61558-1	6,0	4,8	Table 13 of IEC 61558-1
Working voltage (V).....:					240V		☒
Frequency if applicable (kHz).....:					50/60Hz		☒
PTI.....: :					< 600 ☒ ≥600 ☐		☒
Peak value of the working voltage Û if applicable (kV)					--		☒
Pulse voltage if applicable (kV) .....:					--		☒
Supplementary information: Between magnetic core and sec. pin of transformer of models EM03-P, EM03-R							
Distance 4:	B	2,5	1,5	9	2,5	2,5	7
Working voltage (V).....:					240V		☒
Frequency if applicable (Hz).....:					50/60Hz		☒
PTI.....:					< 600 ☒ ≥600 ☐		☒
Peak value of the working voltage Û if applicable (kV)					--		☒
Pulse voltage if applicable (kV) .....:					--		☒
Supplementary information: Between L and N, between two pins of fuse of models EM03-P							
Distance 5:	R	7,0	3,0	9	7,0	5,0	7
Working voltage (V).....:					240V		☒
Frequency if applicable (kHz).....:					50/60Hz		☒
PTI.....:					< 600 ☒ ≥600 ☐		☒
Peak value of the working voltage Û if applicable (kV)					--		☒
Pulse voltage if applicable (kV) .....:					--		☒
Supplementary information: Between pri. circuit and sec. circuit on PCB of models EM03-P							
Distance 6:	R	6,0	4,5	Table 13 of IEC 61558-1	6,0	4,8	Table 13 of IEC 61558-1

Attachment 2 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict

Working voltage (V).....:					240V		☒
Frequency if applicable (kHz).....:					50/60Hz		☒
PTI.....:					< 600 ☒ ≥600 ☐		☒
Peak value of the working voltage Û if applicable (kV) .....:					--		☒
Pulse voltage if applicable (kV) .....:					--		☒
Supplementary information: Between magnetic core and sec. pin of transformer of models EM03-P							
Distance 7:	B	2,5	1,5	9	2,5	2,5	7
Working voltage (V).....:					240V		☒
Frequency if applicable (Hz).....:					50/60Hz		☒
PTI.....:					< 600 ☒ ≥600 ☐		☒
Peak value of the working voltage Û if applicable (kV) .....:					--		☒
Pulse voltage if applicable (kV) .....:					--		☒
Supplementary information: Between L and N, between two pins of fuse of models EM03-R							
Distance 8:	R	7,0	3,0	9	7,0	5,0	7
Working voltage (V).....:					240V		☒
Frequency if applicable (kHz).....:					50/60Hz		☒
PTI.....:					< 600 ☒ ≥600 ☐		☒
Peak value of the working voltage Û if applicable (kV) .....:					--		☒
Pulse voltage if applicable (kV) .....:					--		☒
Supplementary information: Between pri. circuit and sec. circuit on PCB of models EM03-R							
Distance 9:	R	6,0	4,5	Table 13 of IEC 61558-1	6,0	4,8	Table 13 of IEC 61558-1
Working voltage (V).....:					240V		☒
Frequency if applicable (kHz).....:					50/60Hz		☒
PTI.....:					< 600 ☒ ≥600 ☐		☒
Peak value of the working voltage Û if applicable (kV) .....:					--		☒
Pulse voltage if applicable (kV) .....:					--		☒
Supplementary information: Between magnetic core and sec. pin of transformer of models EM03-R							

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

A (A)	ANNEX A - TEST TO ESTABLISH WHETHER A CONDUCTIVE PART IS A LIVE PART WHICH MAY CAUSE AN ELECTRIC SHOCK		N/A
- (A.1)	Comply with A.2 or A.3		N/A
- (A.2)	Voltage ≤ 35 V peak or ≤ 60 V d.c .....:	--	N/A

Attachment 2 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
- (A.3)	If voltage measured according Clause A.2 exceeds the limit value; touch current does not exceed 0,7 mA (peak) or 2 mA d.c. ..... :	--	N/A
C (C)	**ANNEX C – PARTICULAR REQUIREMENTS FOR ELECTRONIC LAMP CONTROLGEAR WITH MEANS OF PROTECTION AGAINST OVERHEATING**		N/A
- (C3)	**GENERAL REQUIREMENTS**		N/A
- (C3.1)	Thermal protection means integral with the convertor, protected against mechanical damage		N/A
	Renewable only by means of a tool		N/A
	If function depending on polarity, for cord-connected equipment protection means in both leads		N/A
	Thermal links comply with IEC 60691		N/A
	Electrical controls comply with IEC 60730-2-3		N/A
- (C3.2)	No risk of fire by breaking (clause C7)		N/A
- (C5)	**CLASSIFICATION**		N/A
	a) automatic resetting type		—
	b) manual resetting type		—
	c) non-renewable, non-resetting type		—
	d) renewable, non-resetting type		—
	e) other type of thermal protection; description .. :		—
- (C6)	**MARKING**		N/A
- (C6.1)	Symbol for temperature declared thermally protected ballasts		N/A
- (C6.2)	Declaration of the type of protection provided		N/A
- (C7)	**LIMITATION OF HEATING**		N/A
- (C7.1)	**Preselection test:**		N/A
	Test sample placed for at least 12 h in an oven having temperature (t_c - 5) K		N/A
	No operation of the protection device		N/A
- (C7.2)	**Functioning of protection means:**		N/A
	Normal operation of the sample in a test enclosure according to Annex D at an ambient temperature such that (t_c +0; -5) °C is obtained		N/A
	No operation of the protection device		N/A

Attachment 2 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	Introducing of the most onerous test condition determined during test of clause 14.2 to 14.5		N/A
	Output of windings connected to the mains supply short-circuited, and other part of the controlgear operated under normal conditions		N/A
	Increasing of the current through the windings continuously until operation of the protection means		N/A
	Continuous measuring of the highest surface temperature		N/A
	Ballasts according to C5 a) or C5 e) operated until stable conditions are achieved		N/A
	Automatic-resetting thermal protectors working 3 times		N/A
	Ballasts according to C5 b) working 6 times		N/A
	Ballasts according to C5 c) and C5) d) working once		N/A
	Highest temperature does not exceed the marked value		N/A
	Any overshoot of 10% over the marked value within 15 min		N/A
	After 15 min value not exceed marked value		N/A
D (D)	**ANNEX D – REQUIREMENTS FOR CARRY OUT THE HEATING TESTS OF THERMALLY PROTECTED LAMP CONTROLGEAR**		N/A
	Tests in C7 performed in accordance with Annex D, if applicable		N/A
F (F)	**ANNEX F: DRAUGHT-PROOF ENCLOSURE**		**P**
	Draught-proof enclosure in accordance with the description		P
	Dimensions of the enclosure		P
	Other design; description		N/A
H (H)	**ANNEX H - TESTS**		P
	All tests performed in accordance with the advice given in Annex H, if applicable		P

Attachment 2 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict

I (-)	**ANNEX I: BATTERIES FOR EMERGENCY LUMINAIRES** (Annex numbers between parentheses refer to IEC 60598-2-22)		P
(A.1)	Type of batteries		P
(A.2)	Conform to relevant standard		P
	Operate within specific tolerance		P
(A.3)	Battery capacity for rated duration up to time of replacement		N/A
(A.4)	Sealed nickel cadmium batteries		P
(A.4.1)	Conform to IEC 60285	Instead by IEC 61951-1	P
(A.4.2.a)	Maximum ambient air temperature 50 °C		P
(A.4.2.b)	Maximum overcharge rate 0,08 C_5A		P
(A.4.2.c)	Minimum ambient temperature 5 °C		P
(A.4.2.d)	Maximum discharge rates for 1 h: 0,6 C_5A and 3 h: 0,25 C_5A		P
(A.5)	Valve regulated lead acid batteries		N/A
(A.5.1)	Conform to IEC 60869-2 or IEC 61056-1		N/A
(A.5.2.a)	Maximum ambient air temperature 30 °C with temperature compensation or 25 °C without temperature compensation		N/A
(A.5.2.b)	Minimum recharge current 0,4 C_{20}		N/A
(A.5.2.c)	Maximum discharge rates for 1 h: 0,4 C_{20} and 3 h: 0,17 C_{20}		N/A
(A.5.2.d)	Maximum r.m.s. ripple current 0,1 C_{20}		N/A
(A.5.2.e)	Minimum ambient temperature 5 °C		N/A
(A.6)	Ambient temperature of cells measured after 48 h		P
(A.7)	Evidence of alternative operating parameters		P

J	**ANNEX J: REST MODE AND INHIBITION MODE FACILITIES** (ANNEX D IN IEC 60598-2-22)		N/A
	Rest mode:		N/A
	a) only operate when normal supply has failed		N/A
	b) remote control wiring is fail-safe		N/A
	c) normal mode at restoration of normal supply		N/A
	Inhibition mode:		N/A

Attachment 2 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	a) supply failure or disconnection not cause an unwanted discharge		N/A
	b) protection against interruption of remote control wiring		N/A
	1) safety circuits independent of other circuits		N/A
	2) safety circuits not pass through locations exposed to fire risk or explosion risk		N/A
	3) protection against overload may be omitted		—
	4) overcurrent in one circuit not impair circuits of safety services		N/A
	5) switchgear and controlgear clearly identified and in locations accessible only to competent persons		N/A
	6) Alarm devices clearly identified		N/A

K	**ANNEX K: BALLASTS INCORPORATING AN AUTOMATIC TESTING FUNCTION FOR EMERGENCY LIGHTING OPERATION**		N/A
	Fulfil relevant requirements of Table K.1		N/A

- (L)	**ANNEX L IN PART 1: PARTICULAR ADDITIONAL REQUIREMENTS FOR CONTROLGEARS PROVIDING SELV**		P
- (L.3)	**Classification**		**P**
	Class I	Yes ☐ No ☒	—
	Class II	Yes ☒ No ☐	—
	Class III	Yes ☐ No ☒	—
	non-inherently short circuit proof controlgear	Yes ☒ No ☐	—
	inherently short circuit proof controlgear	Yes ☐ No ☒	—
	fail safe controlgear	Yes ☐ No ☒	—
	non-short-circuit proof controlgear	Yes ☐ No ☒	—
- (L.4)	**Marking**		**N/A**
	Adequate symbols are used		N/A
- (L.5)	**Protection against electric shock**		**P**
	Comply with clause 9.2 of IEC 61558-1		P
- (L.6)	**Heating**		**P**
	No excessive temperatures in normal use		P
	Value if capacitor t_c marked ..... :	X capacitor: 110°C Y capacitor: 125°C	—

Attachment 2 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	Winding insulation classified as Class ..... :	Class B	—
	Comply with tests of clause 14 of IEC 61558-1 with adjustments		P
- (L.7)	**Short-circuit and overload protection**		**P**
	Comply with tests of clause 15 of IEC 61558-1 with adjustments		P
- (L.8)	**Insulation resistance and electric strength**		**P**
- (L.8.1)	Conditioned 48 h between 91 % and 95 %		P
- (L.8.2)	Insulation resistance		P
	Between input- and output circuits not less than 5 MΩ ..... :	>100	P
	Between metal parts of class II convertors which are separated from live parts by basic insulation only and the body not less than 5 MΩ ..... :		N/A
	Between metal foil in contact with the inner and outer surfaces of enclosures of insulating material not less than 2 MΩ ..... :		N/A
- (L.8.3)	Electric strength		P
	1) Between live parts of input circuits and live parts of output circuits ..... :	3750V	P
	2) Over basic or supplementary insulation between:		P
	a) live parts having different polarity ..... :	1480V	P
	b) live parts and body if intended to be connected to protective earth ..... :	--	N/A
	c) accessible metal parts and a metal rod of the same diameter as the flexible cable or cord ..... :	--	N/A
	d) live parts and an intermediate metal part ..... :	--	N/A
	e) intermediate metal parts and the body ..... :	--	N/A
	f) each input circuit and all other input circuits .... :	--	N/A
	3) Over reinforced insulation between the body and live parts ..... :	--	N/A
- (L.9)	**Construction**		**P**
- (L.9.1)	Transformer comply with 19.12 of IEC 61558-1 and 19 of IEC 61558-2-6		P
	HF transformer comply with 19 of IEC 61558-2-16		P
- (L.10)	**Components**		**P**
	Protective devices comply with 20.6 – 20.11 of IEC 61558-1		P

Attachment 2 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
- (L.11)	**Creepage distances, clearances and distances through insulation**		**P**
	Creepage distances and clearances not less than in Clause 16		P
	Distance through insulation according Table L.5 in IEC 61347-1		P
	1) Basic distance through insulation		N/A
	Required distance (mm) ..... :	--	—
	Measured (mm) ..... :	--	N/A
	Supplementary information	--	—
	2) Supplementary distance through insulation		P
	Required distance (mm) ..... :	0,13mm	—
	Measured (mm) ..... :	At least three layer insulation tape used in transformer, min. thickness: 0,15mm	P
	Supplementary information		—
	3) Reinforced distance through insulation		P
	Required distance (mm) ..... :	0,83mm	—
	Measured (mm) ..... :	Enclosure min. thickness: 1,5mm	P
	Supplementary information		—

- (N)	**ANNEX N IN PART 1: REQUIREMENTS FOR INSULATION MATERIALS USED FOR DOUBLE OR REINFORCED INSULATION**		P
- (N.4)	**General requirements**		P
- (N.4.1)	Material comply with IEC 60085 and IEC 60216 series		P
- (N.4.2)	**Solid insulation**		N/A
	Electric strength test at least 5 kV or 1,35 x test voltage in Table N.1		N/A
	If not classified according IEC 60085 and IEC 60216 series: Electric strength test increased 10 % to 5,5 kV or 1,5 x test voltage in Table N.1		N/A
- (N.4.3)	**Thin sheet insulation**		P
- (N.4.3.1)	Thickness and composition of thin sheet insulation		P
	- Inside the ballast and not subjected to handling or abrasion during the production and during maintenance		N/A
	- Non-separated layers: Min. 3 layers and fulfil mandrel test of 150N		N/A

Attachment 2 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	- Separated layers: Min. 2 layers and each layer fulfil mandrel test of 50N		P
	- Separated layers (alternative): Min. 3 layers and 2/3 of the layers fulfil mandrel test of 100N		N/A
- (N.4.3.2)	Mandrel test (electric strength test during mechanical stress)		P
	Electric strength test after mandrel test:		P
	- Non-separated layers: min. 5 kV or 1,35 x test voltage in Table N.1		N/A
	- 2/3 of min. 3 separated layers: min. 5 kV or 1,25 x test voltage in Table N.1		N/A
	- one of 2 separated layers: min. 5 kV or 1,25 x test voltage in Table N.1		P
	No flashover or breakdown occurred		P
- (O)	**ANNEX O IN PART 1: ADDITIONAL REQUIREMENTS FOR BUILT-IN ELECTRONIC CONTROLGEAR WITH DOUBLE OR REINFORCED INSULATION**		N/A
- (O.6)	**Marking**		N/A
	Marking according clause 7 (7)	See clause 7	N/A
	Special symbol		N/A
	Meaning of the special symbol explained in catalogue		N/A
- (O.7)	**Protection against accidental contact with live parts**		N/A
	Requirements of clause 8 (10)	See clause 8	N/A
	Test finger not possible to make contact with basic insulated metal parts		N/A
- (O.8)	**Terminals**		N/A
	Clause 9 (8)	See clause 9	N/A
- (O.9)	**Provision for earthing**		N/A
	Functional earthing terminals comply with clause 9 of part 1		N/A
	No protective earthing terminal		N/A
- (O.10)	**Moisture resistance and insulation**		N/A
	Clause 11 (11)	See clause 11	N/A
- (O.11)	**Electric strength**		N/A
	Clause 12 (12)	See clause 12	N/A
- (O.13)	**Fault conditions**		N/A

Attachment 2 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	Clause - (14)	See clause 28	N/A
	End of test, between live part and accessible metal parts or external parts of insulating material in contact with the supporting surface comply with dielectric strength test reduced to 35 % of values according Table 1 in part 1		N/A
	Insulation resistance according to O.10 between live part and accessible metal parts or external parts of insulating material in contact with the supporting surface not less than 4 MΩ		N/A
- (O.14)	**Construction**		N/A
	Clause 29 (15)	See clause 29	N/A
	Accessible metal parts insulated from live parts by double or reinforced insulation		N/A
	Live part insulated from supporting surface in contact with external faces by double or reinforced insulation		N/A
- (O.15)	**Creepage distances and clearances**		N/A
	Clause 30 (16)	See clause 30	N/A
	Comply with corresponding values for luminaries in IEC 60598-1		N/A
- (O.16)	**Screws, current-carrying parts and connections**		N/A
	Clause 31 (17)	See clause 31	N/A
- (O.17)	**Resistance to heat and fire**		N/A
	Clause 32 (18)	See clause 32	N/A
- (O.18)	**Resistance to corrosion**		N/A
	Clause 33 (19)	See clause 33	N/A

Attachment 3 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict

Attachment 3	**IEC 61347-2-13:2014/AMD1:2016 used in conjunction with IEC 61347-1:2015**	P

4 (4)	**GENERAL REQUIREMENTS**		**P**
- (4)	Insulation materials according requirements in Annex N of IEC 61347-1	(see Annex N)	P
- (4)	Compliance of independent controlgear enclosure with IEC 60 598-1		N/A
- (4)	Built-in electronic controlgear with double or reinforced insulation comply with Annex O of IEC 61347-1	(see Annex O)	N/A
4 (4)	SELV controlgear comply with Annex I of this part 2 and Annex L of IEC 61347-1	(see Annex L)	P
4 (-)	Transformer comply with IEC 61558		P
	Dielectric strength test of insulated winding wires is limited to 3 kV if input voltage ≤ 300 V		P

6 (6)	**CLASSIFICATION**		**P**
	Built-in controlgear ..... :	Yes ☐ No ☒	—
	Independent controlgear ..... :	Yes ☐ No ☒	—
	Integral controlgear ..... :	Yes ☒ No ☐	—
6 (-)	Auto-wound controlgear ..... :	Yes ☐ No ☒	—
	Separating controlgear ..... :	Yes ☐ No ☒	—
	Isolating controlgear ..... :	Yes ☒ No ☐	—
	SELV controlgear ..... :	Yes ☒ No ☐	—

7 (7)	**MARKING**		N/A
7.1 (7.1)	**Mandatory markings**		N/A
	a) mark of origin	Integral control gear used	N/A
	b) model number or type reference		N/A
	c) symbol for independent controlgear, if applicable		N/A
	d) correlation between interchangeable parts and controlgear marked		N/A
	e) rated supply voltage (V)		N/A
	supply frequency (Hz)		N/A

Attachment 3 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	supply current (A)		N/A
	f) earthing symbol		N/A
	k) wiring diagram		N/A
	l) value of tc		N/A
	m) symbol for declared temperature		N/A
	t) LUM earthing symbol		N/A
	u) if not SELV maximum working voltage U_{out} between:		N/A
	- output terminals (V) ..... :	--	N/A
	- output terminals and earth (V) ..... :	--	N/A
7.1 (-)	Constant voltage type:	Yes ☐ No ☐	—
	- rated output power P_{rated} (W) ..... :	--	N/A
	- rated output voltage U_{rated} (V) ..... :	--	N/A
	Constant current type:	Yes ☐ No ☐	—
	- rated output power P_{rated} (W) ..... :	--	N/A
	- rated output current I_{rated} (A) ..... :	--	N/A
	Indication if for LED modules only		N/A
7.1 (7.2)	Marking durable and legible		N/A
	Rubbing 15 s water, 15 s petroleum; marking legible		N/A
7.2 (7.1)	**Information to be provided, if applicable**		N/A
	h) declaration of protection against accidental contact		N/A
	i) cross-section of conductors (mm²)		N/A
	j) number, type and wattage of lamp(s)		N/A
	s) SELV symbol		N/A
7.2 (-)	- declaration of mains connected windings		N/A

8 (10)	**PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS**		P
- (10.1)	Controlgear protected against accidental contact with live parts	Rely upon the luminaire	P
- (A2)	Voltage measured with 50 kΩ	(see Annex A)	N/A
- (A3)	Voltage > 35 V peak or > 60 V d.c. or protective impendance device	(see Annex A)	N/A
- (10.1)	Lacquer or enamel not used for protection or insulation		P

Attachment 3 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	Adequate mechanical strength on parts providing protection		P
- (10.2)	Capacitors > 0,5 µF: voltage after 1 min (V): < 50 V .....:	Max. 12,4V	N/A
- (10.3)	**Controlgear providing SELV**		P
	Accessible conductive parts are insulated from live parts by double or reinforced insulation in SELV controlgear		P
	No connection between output circuit and the body or protective earthing circuit		P
	No possibility of connection between output circuit and the body or protective earthing circuit through other conductive parts		P
	SELV outputs separated by at least basic insulation		P
	ELV conductive parts insulated as live parts		N/A
	Tests according Annex L of IEC 61347-1	(see Annex L)	P
- (10.4)	**Accessible conductive parts in SELV circuits**		P
	Output voltage under load ≤ 25 V r.m.s. or ≤ 60 V d.c.		P
	If output voltage > 25 V r.m.s. or > 60 V d.c.; No load output ≤ 35 V peak or ≤ 60 V d.c and touch current does not exceed 0,7 mA (peak) or 2 mA d.c. .....:		N/A
	One conductive part is insulated if output voltage or current exceeding the values above and withstand test voltage 500 V		N/A
	Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor	Approved Y1 capacitor used	P
	Y1 or Y2 capacitors comply with IEC 60384-14		P
	Resistors comply with test (a) in 14.1 of IEC 60065		N/A

9 (8)	**TERMINALS**		P
	Screw terminals according section 14 of IEC 60598-1:		P
	Separately approved; component list	(see Annex 1)	P
	Part of the controlgear	(see Annex 2)	N/A

Attachment 3 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	Screwless terminals according section 15 of IEC 60598-1:		P
	Separately approved; component list	(see Annex 1)	P
	Part of the controlgear	(see Annex 3)	N/A
10 (9)	**PROVISION FOR PROTECTIVE EARTHING**		N/A
- (9.1)	**Provisions for protective earthing**		N/A
	Terminal complying with clause 8		N/A
	Locked against loosening and not possible to loosen by hand		N/A
	Not possible to loosen clamping means unintentionally on screwless terminals		N/A
	All parts of material minimizing the danger of electrolytic corrosion		N/A
	Made of brass or equivalent material		N/A
	Contact surface bare metal		N/A
	Test according 7.2.3 of IEC 60598-1		N/A
- (9.2)	**Provision for functional earthing**		N/A
	Comply with clause 8 and 9.1		N/A
	Functional earth insulated from live parts by double or reinforced insulation		N/A
- (9.3)	**Lamp controlgear with conductors for protective earthing by tracks on printed circuit board**		N/A
	Test with a current of 25 A between earthing terminal or earthing contact and each of the accessible metal parts; measured resistance (Ω) at ≥ 10 A according 7.2.3 of IEC 60598-1: < 0,5 Ω ..... :	--	N/A
- (9.4)	**Earthing of built-in lamp controlgear**		N/A
	Earth by means of fixing to earthed metal of luminaire in compliance of 7.2 of IEC 60598-1		N/A
	Earthing terminal only for earthing the built-in controlgear		N/A
- (9.5)	**Earthing via independent controlgear**		N/A
- (9.5.1)	Earth connection to other equipment		N/A
	Looping or through connection, conductor min. 1,5 mm² and of copper or equivalent		N/A
	Protective earthing wires in line with 5.3.1.1 and clause 7 of IEC 60598-1		N/A

Attachment 3 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
- (9.5.2)	Earthing of the lamp compartments powered via the independent lamp controlgear		N/A
	Test with a current of 25 A between input and output earth terminals; measured resistance (Ω) between earthing terminal or earthing contact and each of the accessible metal parts at ≥ 10 A according 7.2.3 of IEC 60598-1: < 0,5 Ω ..... :		N/A
	Output earthing terminal marked as in 7.1 t) of IEC 61347-1		N/A
11 (11)	**MOISTURE RESISTANCE AND INSULATION**		P
- (11)	After storage 48 h at 91-95% relative humidity and 20-30 °C measuring of insulation resistance:		P
	For basic insulation ≥ 2 MΩ ..... :	>100 MΩ	P
	For double or reinforced insulation ≥ 4 MΩ ..... :	>100 MΩ	P
	Between primary and secondary circuits in controlgear providing SELV, values in Annex L in IEC 61347-1		P
12 (12)	**ELECTRIC STRENGTH**		P
- (12)	Immediately after clause 11 electric strength test for 1 min		P
	Basic insulation for SELV, test voltage 500 V		P
	Working voltage ≤ 50 V, test voltage 500 V		P
	Working voltage > 50 V ≤ 1000 V, test voltage (V):		P
	Basic insulation, 2U + 1000 V	1480V	P
	Supplementary insulation, 2U + 1000 V	1480V	P
	Double or reinforced insulation, 4U + 2000 V	2960V	P
	No flashover or breakdown		P
	Solid or thin sheet insulation for double or reinforced insulation fulfil the requirements in Annex N in IEC 61347-1		N/A
14 (14)	**FAULT CONDITIONS**		P
- (14.1)	When operated under fault conditions the controlgear:		P
	- does not emit flames or molten material		P
	- does not produce flammable gases		P

Attachment 3 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	- protection against accidental contact not impaired		P
	Thermally protected controlgear does not exceed the marked temperature value		N/A
	Fault conditions: capacitors, resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected		P
- (14.2)	Short-circuit of creepage distances and clearances if less than specified in clause 16 in Part 1 (after any reduction in 14.2 - 14.5)		P
- (14.3)	Short-circuit or interruption of semiconductor devices		P
- (14.4)	Short-circuit across insulation consisting of lacquer, enamel or textile		N/A
- (14.5)	Short-circuit across electrolytic capacitors		P
14 (-)	Reversed voltage polarity if d.c. supplied control gear		N/A
- (14.6)	After the tests has been carried out on three samples:		P
	The insulation resistance ≥ 1 MΩ ..... :	>100 MΩ	P
	No flammable gases		P
	No accessible parts have become live		P
	During the tests, a five-layer tissue paper, where the test specimen is wrapped, does not ignite		P
- (14.7)	Relevant fault condition tests with high-power a.c. supply	Yes	—
14 (-)	Temperature declared thermally protected lamp controlgear fulfil requirements in Annex C		N/A

15 (-)	**TRANSFORMER HEATING**		P
15.1	**General**		P
	Transformer comply with clause L.6 and L.7 of IEC 61347-1		P
	Output voltage of SELV controlgear not exceed limits in 10.4 of IEC 61347-1 during the test of 15.1 and 15.2		P
15.2 (-)	**Normal operation**		P
	Comply with clause L.6 of IEC 61347-1		P
15.3 (-)	**Abnormal operation**		P

Attachment 3 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	Comply with clause L.7 of IEC 61347-1		P
	Double LED modules or equivalent load connected in parallel to the output terminals of constant voltage type		P
	Double LED modules or equivalent load connected in parallel to the output terminals of constant current type		N/A
15 (-)	During and at the end of the tests no defect impairing safety, nor any smoke or flammable gases produced		P
16 (15)	**CONSTRUCTION**		P
- (15.1)	**Wood, cotton, silk, paper and similar fibrous material**		P
	Wood, cotton, silk, paper and similar fibrous material not used as insulation		P
- (15.2)	**Printed circuits**		P
	Printed circuits used as internal connections complies with clause 14		P
- (15.3)	**Plugs and socket-outlets used in SELV or ELV circuits**		N/A
	No dangerous compatibility between output socket-outlet and a plug for socket-outlets for input circuit in relation to installation rules, voltages and frequencies		N/A
	Plugs and socket-outlets for SELV comply with IEC 60906-3 and IEC 60884-2-4		N/A
	Plugs and socket-outlets for SELV ≤ 3 A, ≤ 25 V r.m.s. or ≤ 60 V d.c. and ≤ 72 W comply with IEC 60906-3 and IEC 60884-2-4 or:		N/A
	- plugs not able to enter socket-outlets of other standardised system		N/A
	- socket-outlets not admit plugs of other standardised system		N/A
	- socket-outlets without protective earth		N/A
- (15.4)	**Insulation between circuits and accessible parts**		P
- (15.4.2)	SELV circuits		P
	Source used to supply SELV circuits:		P
	- safety isolating transformer in accordance with relevant part 2 of IEC 61558		N/A
	- controlgear providing SELV in accordance with relevant part 2 of IEC 61347		P

Attachment 3 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	- another source		N/A
	Voltage in the circuit not higher than ELV		P
	SELV circuits insulated from LV by double or reinforced insulation		P
	SELV circuits insulated from non SELV circuits by double or reinforced insulation		N/A
	SELV circuits insulated from FELV circuits by supplementary insulation		N/A
	SELV circuits insulated from other SELV circuits by basic insulation		N/A
	SELV circuits insulated from accessible conductive parts according Table 6 in 15.4.5		P
- (15.4.3)	FELV circuits		N/A
	Source used to supply FELV circuits:		N/A
	- separating transformer in accordance with relevant part 2 of IEC 61558		N/A
	- separating controlgear providing basic insulation between input and output circuits in accordance with relevant part 2 of IEC 61347		N/A
	- another source		N/A
	- source in circuits separated by the LV supply by basic insulation		N/A
	Voltage in the circuit not higher than ELV		N/A
	FELV circuits insulated from LV supply by at least basic insulation		N/A
	FELV circuits insulated from other FELV circuits if functional purpose		N/A
	FELV circuits insulated from accessible conductive parts according Table 6 in 15.4.5		N/A
	Plugs and socket-outlets for FELV system comply with:		N/A
	- plugs not able to enter socket-outlets of other voltage systems		N/A
	- socket-outlets not admit plugs of other voltage systems		N/A
	- socket-outlets have a protective conductor contact		N/A
- (15.4.4)	Other circuits		N/A

Attachment 3 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	Insulation between circuits other than SELV or FELV and accessible conductive parts in according Table 6 in 15.4.5.		N/A
- (15.4.5)	Insulation between circuits and accessible conductive parts		P
	Accessible conductive parts insulated from active parts of electric circuits by insulating according Table 6		P
	Requirements for Class II construction with equipotential bonding for protection against indirect contact with live parts:		N/A
	- all conductive parts are connected together		N/A
	- conductive parts are reliably connected together according test of IEC 60598-1 cl. 7.2.3		N/A
	- conductive parts comply with requirements of Annex A in case of insulation fault		N/A
17 (16)	**CREEPAGE DISTANCES AND CLEARANCES**		P
- (16)	Creepage distances and clearances according to 16.2 and 16.3		P
	Controlgears providing SELV comply with additional requirements in Annex L		P
	Insulating lining of metallic enclosures		N/A
	Controlgear protected against pollution comply with Annex P		N/A
- (16.2)	**Creepage distances**		P
- (16.2.2)	Minimum creepage distances for working voltages		P
	Creepage distances according to Table 7		P
- (16.2.3)	Creepage distances for working voltages with frequencies above 30 kHz		N/A
	Creepage distances according to Table 8		N/A
- (16.3)	**Clearances**		P
- (16.3.2)	Clearances for working voltages		P
	Clearances distances according to Table 9		P
- (16.3.3)	Clearances for ignition voltages and working voltages with higher frequencies		N/A
	Clearances distances for basic or supplementary insulation according to Table 10		N/A
	Clearances distances for reinforced insulation according to Table 11		N/A
18 (17)	**SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS**		P

Attachment 3 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict

	Screws, current-carrying parts and connections in compliance with IEC 60598-1 (clause numbers between parentheses refer to IEC 60598-1)		P
(4.11)	**Electrical connections**		P
(4.11.1)	Contact pressure		N/A
(4.11.2)	Screws:		N/A
	- self-tapping screws		N/A
	- thread-cutting screws		N/A
(4.11.3)	Screw locking:		N/A
	- spring washer		N/A
	- rivets		N/A
(4.11.4)	Material of current-carrying parts		P
(4.11.5)	No contact to wood or mounting surface		P
(4.11.6)	Electro-mechanical contact systems		N/A
(4.12)	**Mechanical connections and glands**		N/A
(4.12.1)	Screws not made of soft metal		N/A
	Screws of insulating material		N/A
	Torque test: torque (Nm); part ..... :	--	N/A
	Torque test: torque (Nm); part ..... :	--	N/A
	Torque test: torque (Nm); part ..... :	--	N/A
(4.12.2)	Screws with diameter < 3 mm screwed into metal		N/A
(4.12.4)	Locked connections:		N/A
	- fixed arms; torque (Nm) ..... :	--	N/A
	- lampholder; torque (Nm) ..... :	--	N/A
	- push-button switches; torque 0,8 Nm ..... :	--	N/A
(4.12.5)	Screwed glands; force (Nm) ..... :	--	N/A

19 (18)	**RESISTANCE TO HEAT, FIRE AND TRACKING**		**P**
- (18.1)	Ball-pressure test ..... :	PCB; Bobbin; Quick connector; 125°C	P
- (18.2)	Test of printed boards ..... :	UL approved material	N/A
- (18.3)	Glow-wire test ..... :	--	N/A
- (18.4)	Needle flame test ..... :	PCB; Bobbin; Quick connector;	P
- (18.5)	Tracking test ..... :	--	N/A

Attachment 3 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict

20 (19)	**RESISTANCE TO CORROSION**		**N/A**
	- test according 4.18.1 of IEC 60598-1		N/A
	- adequate varnish on the outer surface		N/A

21 (-)	**MAXIMUM WORKING VOLTAGE (U_{out}) IN ANY LOAD CONDITION**		P
	Not exceed declared maximum working voltage U_{out} in any load condition		P

Attachment 3 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict

(A)	**ANNEX A - TEST TO ESTABLISH WHETHER A CONDUCTIVE PART IS A LIVE PART WHICH MAY CAUSE AN ELECTRIC SHOCK**		N/A
(A.1)	Comply with A.2 or A.3		N/A
(A.2)	Voltage ≤ 35 V peak or ≤ 60 V d.c ..... :	--	N/A
(A.3)	If voltage measured according Clause A.2 exceeds the limit value; touch current does not exceed 0,7 mA (peak) or 2 mA d.c. ..... :	--	N/A
	Comply with Annex G.2 of IEC 60598-1	--	N/A

(C)	**ANNEX C – PARTICULAR REQUIREMENTS FOR ELECTRONIC LAMP CONTROLGEAR WITH MEANS OF PROTECTION AGAINST OVERHEATING**		N/A
(C3)	**GENERAL REQUIREMENTS**		N/A
(C3.1)	Thermal protection means integral with the convertor, protected against mechanical damage		N/A
	Renewable only by means of a tool		N/A
	If function depending on polarity, for cord-connected equipment protection means in both leads		N/A
	Thermal links comply with IEC 60691		N/A
	Electrical controls comply with IEC 60730-2-3		N/A
(C3.2)	No risk of fire by breaking (clause C7)		N/A
(C5)	**CLASSIFICATION**		N/A
	a) automatic resetting type		—
	b) manual resetting type		—
	c) non-renewable, non-resetting type		—
	d) renewable, non-resetting type		—
	e) other type of thermal protection; description .. :		—
(C6)	**MARKING**		N/A
(C6.1)	Symbol for temperature declared thermally protected ballasts		N/A
(C6.2)	Declaration of the type of protection provided		N/A
(C7)	**LIMITATION OF HEATING**		N/A
(C7.1)	**Preselection test:**		N/A

Attachment 3 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	Test sample placed for at least 12 h in an oven having temperature (t_c - 5) K		N/A
	No operation of the protection device		N/A
(C7.2)	**Functioning of protection means:**		N/A
	Normal operation of the sample in a test enclosure according to Annex D at an ambient temperature such that (t_c +0; -5) °C is obtained		N/A
	No operation of the protection device		N/A
	Introducing of the most onerous test condition determined during test of clause 14.2 to 14.5		N/A
	Output of windings connected to the mains supply short-circuited, and other part of the controlgear operated under normal conditions		N/A
	Increasing of the current through the windings continuously until operation of the protection means		N/A
	Continuous measuring of the highest surface temperature		N/A
	Ballasts according to C5 a) or C5 e) operated until stable conditions are achieved		N/A
	Automatic-resetting thermal protectors working 3 times		N/A
	Ballasts according to C5 b) working 6 times		N/A
	Ballasts according to C5 c) and C5) d) working once		N/A
	Highest temperature does not exceed the marked value		N/A
	Any overshoot of 10% over the marked value within 15 min		N/A
	After 15 min value not exceed marked value		N/A
(D)	**ANNEX D – REQUIREMENTS FOR CARRY OUT THE HEATING TESTS OF THERMALLY PROTECTED LAMP CONTROLGEAR**		N/A
	Tests in C7 performed in accordance with Annex D, if applicable		N/A
(F)	**ANNEX F – DRAUGHT-PROOF ENCOSURE**		P
	Draught-proof enclosure in accordance with the description		P

Attachment 3 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	Dimensions of the enclosure		P
	Other design; description		N/A
(H)	**ANNEX H - TESTS**		P
	All tests performed in accordance with the advice given in Annex H, if applicable		P
I (L)	**ANNEX I IN THIS PART 2 – PARTICULAR ADDITIONAL REQUIREMENTS FOR SELV D.C. OR A.C. SUPPLIED ELECTRONIC CONTROLGEARS FOR LED MODULES**		P
(L.3)	**Classification**		P
	Class I	Yes ☐ No ☒	—
	Class II	Yes ☒ No ☐	—
	Class III	Yes ☐ No ☒	—
	non-inherently short circuit proof controlgear	Yes ☒ No ☐	—
	inherently short circuit proof controlgear	Yes ☐ No ☒	—
	fail safe controlgear	Yes ☐ No ☒	—
	non-short-circuit proof controlgear	Yes ☐ No ☒	—
(L.4)	**Marking**		N/A
	Adequate symbols are used		N/A
(L.5)	**Protection against electric shock**		P
	Comply with clause 9.2 of IEC 61558-1		P
(L.6)	**Heating**		P
	No excessive temperatures in normal use		P
	Value if capacitor t_c marked ..... :	X capacitor: 110°C Y capacitor: 125°C	—
	Winding insulation classified as Class ..... :	Class B	—
	Comply with tests of clause 14 of IEC 61558-1 with adjustments		P
(L.7)	**Short-circuit and overload protection**		P
	Comply with tests of clause 15 of IEC 61558-1 with adjustments		P
(L.8)	**Insulation resistance and electric strength**		P
(L.8.1)	Conditioned 48 h between 91 % and 95 %		P
(L.8.2)	Insulation resistance		P

Attachment 3 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	Between input- and output circuits not less than 5 MΩ ..... :	>100 MΩ	P
	Between metal parts of class II convertors which are separated from live parts by basic insulation only and the body not less than 5 MΩ ..... :		N/A
	Between metal foil in contact with the inner and outer surfaces of enclosures of insulating material not less than 2 MΩ ..... :		N/A
(L.8.3)	Electric strength		P
	1) Between live parts of input circuits and live parts of output circuits ..... :	3750V	P
	2) Over basic or supplementary insulation between:		P
	a) live parts having different polarity ..... :	1480V	P
	b) live parts and body if intended to be connected to protective earth ..... :	--	N/A
	c) accessible metal parts and a metal rod of the same diameter as the flexible cable or cord ..... :	--	N/A
	d) live parts and an intermediate metal part ..... :	--	N/A
	e) intermediate metal parts and the body ..... :	--	N/A
	f) each input circuit and all other input circuits ... :	--	N/A
	3) Over reinforced insulation between the body and live parts ..... :	--	N/A
(L.9)	**Construction**		P
(L.9.1)	Transformer comply with 19.12 of IEC 61558-1 and 19 of IEC 61558-2-6		P
	HF transformer comply with 19 of IEC 61558-2-16		P
(L.10)	**Components**		P
	Protective devices comply with 20.6 – 20.11 of IEC 61558-1		P
(L.11)	**Creepage distances, clearances and distances through insulation**		P
	Creepage distances and clearances not less than in Clause 16		P
	Distance through insulation according Table L.5 in IEC 61347-1		P
	1) Basic distance through insulation		N/A
	Required distance (mm) ..... :	--	—
	Measured (mm) ..... :	--	N/A
	Supplementary information		—

Attachment 3 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	2) Supplementary distance through insulation		P
	Required distance (mm) ..... :	0,13mm	—
	Measured (mm) ..... :	At least three layer insulation tape used in transformer, min. thickness: 0,15mm	P
	Supplementary information		—
	3) Reinforced distance through insulation		N/A
	Required distance (mm) ..... :	0,83mm	—
	Measured (mm) ..... :	Enclosure min. thickness: 1,5mm	N/A
	Supplementary information		—
J (-)	**ANNEX J IN THIS PART 2 – PARTICULAR ADDITIONAL SAFETY REQUIREMENTS FOR A.C., A.C./D.C. OR D.C. SUPPLIED ELECTRONIC CONTROLGEAR FOR EMERGENCY LIGHTING**		N/A
J.1	**General**		N/A
	Intended for centralized emergency power supply	Yes ☐ No ☐	—
J.2	**Marking**		N/A
J.2.1	Mandatory markings		N/A
	a) symbol EL		N/A
	b) rated emergency supply voltage (V)		N/A
J.2.2	Information to be provided if applicable		N/A
	a) Limits of ambient temperature		N/A
	b) Emergency output factor (EOF_X)		N/A
	c) Information if intended for use in luminaires for high-risk task area lighting		N/A
J.3	General notes on tests		N/A
	Length of output cable in tests..... :		N/A
	Load instead of LED lamps/modules..... :		N/A
J.4	Starting conditions		N/A
	Start rated load in emergency mode without adversely affecting the performance		N/A
J.5	Operating condition		N/A
	Comply with the requirements of 7.2 of IEC 62384 at 90% and 110% of rated emergency supply voltage		N/A

Attachment 3 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
J.6	Emergency supply current		N/A
	Emergency supply current not differ more than ±15 %		N/A
	Supply of low impedance and low inductance		N/A
J.7	EMC immunity		N/A
	Comply with the requirements of IEC 61547		N/A
J.8	Pulse voltage from central battery systems		N/A
	Withstand pulses according Table J.1		N/A
J.9	Tests for abnormal conditions		N/A
	Comply with the requirements of 12 of IEC 62384		N/A
J.10	Comply with the requirements of 13 of IEC 62384		N/A
J.11	Functional safety (EOF_x)		N/A
	Declared emergency output factor (EOF_x) achieved during emergency operation		N/A
(N)	**ANNEX N: REQUIREMENTS FOR INSULATION MATERIALS USED FOR DOUBLE OR REINFORCED INSULATION**		P
(N.4)	**General requirements**		P
(N.4.1)	Material comply with IEC 60085 and IEC 60216 series		P
(N.4.2)	**Solid insulation**		N/A
	Electric strength test at least 5 kV or 1,35 x test voltage in Table N.1		N/A
	If not classified according IEC 60085 and IEC 60216 series: Electric strength test increased 10 % of 5,5 kV or 1,5 x test voltage in Table N.1		N/A
(N.4.3)	**Thin sheet insulation**		P
(N.4.3.1)	Thickness and composition of thin sheet insulation		P
	- Inside the ballast and not subjected to handling or abrasion during the production and during maintenance		N/A
	- Non-separated layers: Min. 3 layers and fulfil mandrel test of 150N		N/A
	- Separated layers: Min. 2 layers and each layer fulfil mandrel test of 50N		P
	- Separated layers (alternative): Min. 3 layers and 2/3 of the layers fulfil mandrel test of 100N		N/A
(N.4.3.2)	Mandrel test (electric strength test during mechanical stress)		P

Attachment 3 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict

	Electric strength test after mandrel test:		P
	- Non-separated layers: min. 5 kV or 1,35 x test voltage in Table N.1		N/A
	- 2/3 of min. 3 separated layers: min. 5 kV or 1,25 x test voltage in Table N.1		N/A
	- one of 2 separated layers: min. 5 kV or 1,25 x test voltage in Table N.1		P
	No flashover or breakdown occurred		P

(O)	**ANNEX O: ADDITIONAL REQUIREMENTS FOR BUILT-IN ELECTRONIC CONTROLGEAR WITH DOUBLE OR REINFORCED INSULATION**		N/A
(O.6)	**Marking**		N/A
	Marking according clause 7 (7)	See clause 7	N/A
	Special symbol		N/A
	Meaning of the special symbol explained in catalogue		N/A
(O.7)	**Protection against accidental contact with live parts**		N/A
	Requirements of clause 8 (10)	See clause 8	N/A
	Test finger not possible to make contact with basic insulated metal parts		N/A
(O.8)	**Terminals**		N/A
	Clause 9 (8)	See clause 9	N/A
(O.9)	**Provision for earthing**		N/A
	Functional earthing terminals comply with clause 9 of part 1		N/A
	No protective earthing terminal		N/A
(O.10)	**Moisture resistance and insulation**		N/A
	Clause 11 (11)	See clause 11	N/A
(O.11)	**Electric strength**		N/A
	Clause 12 (12)	See clause 12	N/A
(O.13)	**Fault conditions**		N/A
	Clause 14 (14)	See clause 14	N/A
	End of test, between live part and accessible metal parts or external parts of insulating material in contact with the supporting surface comply with dielectric strength test reduced to 35 % of values according Table 1 in part 1		N/A

Attachment 3 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	Insulation resistance according to O.10 between live part and accessible metal parts or external parts of insulating material in contact with the supporting surface not less than 4 MΩ		N/A
(O.14)	**Construction**		N/A
	Clause 17 (15)	See clause 17	N/A
	Accessible metal parts insulated from live parts by double or reinforced insulation		N/A
	Live part insulated from supporting surface in contact with external faces by double or reinforced insulation		N/A
(O.15)	**Creepage distances and clearances**		N/A
	Clause 18 (16)	See clause 18	N/A
	Comply with corresponding values for luminaries in IEC 60598-1		N/A
(O.16)	**Screws, current-carrying parts and connections**		N/A
	Clause 19 (17)	See clause 19	N/A
(O.17)	**Resistance to heat and fire**		N/A
	Clause 20 (18)	See clause 20	N/A
(O.18)	**Resistance to corrosion**		N/A
	Clause 21 (19)	See clause 21	N/A
(P)	**Creepage distances and clearances and distance through isolation (DTI) for lamp controlgear which are protected against pollution by the use of coating or potting**		N/A
(P.1)	**General**		N/A
	P.2 applies if creepage distances less than the minimum in Table 7 and 8		N/A
	P.3 applies if clearance less than the minimum in Table 9, 10 and 11		N/A
(P.2)	**Creepage distances**		N/A
(P.2.2)	Minimum creepage distances for working voltages and rated voltages with frequencies up to 30 kHz (Table P.1)		N/A
	Basic or supplementary insulation:		N/A
	Required creepage ..... :		—
	Measured ..... :		N/A
	Supplementary information		—

Attachment 3 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	Reinforced insulation:		N/A
	Required creepage ..... :		—
	Measured..... :		N/A
	Supplementary information		—
(P.2.3)	Creepage distances for working voltages with frequencies above 30 kHz (Table P.2)		N/A
	Voltage $\hat{U}_{out}$ kV ..... :		—
	Frequency..... :		—
	Required distance..... :		—
	Measured..... :		N/A
	Supplementary information		—
(P.2.4)	Compliance with the required creepage distances		N/A
(P.2.4.1)	Compliance in accordance with 16.3.3 and test according P.2.4.2		N/A
(P.2.4.3)	Electrical tests after conditioning		N/A
(P.2.4.3.1)	Insulation resistance and electric strength according Clause 11 and 12		N/A
(P.3)	**Distance through isolation**		N/A
(P.3.4)	Electrical tests after conditioning		N/A
(P.3.4.1)	Insulation resistance and electric strength according Clause 11 and 12		N/A
(P.3.4.2)	Impulse voltage dielectrical test		N/A
	Basic or supplementary insulation:		N/A
	Working/rated voltage ..... :		—
	Impulse voltage..... :		N/A
	Supplementary information		—
	Reinforced insulation:		N/A
	Working/rated voltage ..... :		—
	Impulse voltage..... :		N/A
	Supplementary information		—

Attachment 4 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict

Attachment 4	**LED modules for general lighting – Safety specifications IEC 62031: 2008+A1+A2, EN 62031: 2008+A1+A2**	P

13	**FAULT CONDITIONS**		P
13.1	In compliance with EN 61347-1 (clause numbers between parentheses refer to EN 61347-1)		P
	When operated under fault conditions the LED-module:		P
	- does not emit flames or molten material		P
	- does not produce flammable gases		P
	- protection against accidental contact not impaired		P
	Thermally protected controlgear does not exceed the marked temperature value		N/A
	Fault conditions: capacitors, resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected		P
- (14.1)	Short-circuit of creepage distances and clearances if less than specified in clause 16 in Part 1 (except between live parts and accessible metal parts)		N/A
	Distances on printed boards provided with coating according to IEC 60664-3		N/A
- (14.2)	Short-circuit or interruption of semiconductor devices		P
- (14.3)	Short-circuit across insulation consisting of lacquer, enamel or textile		N/A
- (14.4)	Short-circuit across electrolytic capacitors		P
- (14.5)	During the tests, a five-layer tissue paper, where the test specimen is wrapped, does not ignite		P
	After the tests the insulation resistance with d.c. 500 V (MΩ) are ≥ 1 MΩ .....:	100 MΩ	P
	Temperature declared thermally protected LED-modules fulfil the requirements in Annex C of IEC 61437-1		N/A
13.2	Module withstands overpower condition >15 min.	(see appended table)	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

Attachment 4 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict

Clause 13.2 overpower condition	Position: Appliance positioned on the test corner. Duration: until stable Operation: 150% of normal output wattage			
EM03-P	Normal operation for one module: 5,58 V, 0,20A, 1,09W	Setting: 5,60 V, 0,29A, 1,62W		
	Thermocouple point	channel	Measured temperature (°C)	Limited
	LED	1	80,7	Ref.
	Mounting surface (flammable surface)	2	63,7	130
	Observation: no fire, smoke or flammable gas is pro duced			

Clause 13.2 overpower condition	Position: Appliance positioned on the test corner. Duration: until stable Operation: 150% of normal output wattage			
EM03-R	Normal operation for one module: 5,50 V, 0,15A, 0,80W	Setting: 5,50 V, 0,22A, 1,20W		
	Thermocouple point	channel	Measured temperature (°C)	Limited
	LED	1	64,0	Ref.
	Mounting surface (flammable surface)	2	58,9	130
	Observation: no fire, smoke or flammable gas is pro duced			

Attachment 5 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict

Attachment 5	Dimmer and switch – Safety specifications IEC 61058 -1: 2002+A1+A2, EN 61058-1:2002+A1+A2	P

17	Endurance test									
Test condition	a) At ambient lamp 25°C±10°C b) Test with emergency luminaire EM03-P, EM03-R									
17.2.4.5	Increased-voltage test at accelerated speed (TC 5)									
Load	Test with emergency luminaire EM03-P			Test with emergency luminaire EM03-R						
Sample No.	1#	2#	3#	1#	2#	3#				
Input voltage	240V									
Max. current	0.017A	0.017A	0.017A	0.014A	0.015A	0.014A				
20 cycle	P	P	P	P	P	P				
17.2.4.6	Functional test 0.017A (TC6) (N/A)									
Input voltage	--	--	--	--	--	--				
17.2.4.8	Endurance test with emergency luminaire EM03-P(TC 8) (1s on and 3s off.)			Endurance test with emergency luminaire EM03-R (TC 8) (1s on and 3s off.)						
Input voltage	240V									
Max. current	0.018A	0.017A	0.017A	0.015A	0.016A	0.016A				
9980 cycle	P	P	P	P	P	P				

17.2.5.1	Functional compliance (TE1)									
Requirement	After tests of 17.2.4 1) All actions function as declared 2) No loosening of electrical or mechanical connect ion occur 3) Sealing compound shall not flow to such an exten d that live parts are exposed									
	Test with emergency luminaire EM03-P			Test with emergency luminaire EM03-R						
Sample No.	1#	2#	3#	1#	2#	3#				
Result	P	P	P	P	P	P				

Attachment 5 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict

17.2.5.3	Insulating compliance (TE3)		
Test condition	75% of the corresponding test voltage of 15.3		
Sample No.	Test location	Testing voltage(V)	Flash- over or breakdown
1# of EM03-P	Live part and accessible	500	☐ Yes ☒ No
2# of EM03-P	Live part and accessible	500	☐ Yes ☒ No
3# of EM03-P	Live part and accessible	500	☐ Yes ☒ No
1# of EM03-R	Live part and accessible	500	☐ Yes ☒ No
2# of EM03-R	Live part and accessible	500	☐ Yes ☒ No
3# of EM03-R	Live part and accessible	500	☐ Yes ☒ No

Attachment 6 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict

Attachment 6	Photobiological Safety Of Lamps And Lamp Systems IE C 62471:2006 EN 62471:2008	P

Conditions

1. Tests performed on model EM03-P for both normal mode and emergency mode.

2. Ambient temperature: 23±2°C, Humidity: 56±10%.

3. Measurement distance:

Model	EM03-P normal mode	EM03-P emergency mode
Distance (mm)	200	200

4. Angular subtense of whole lamp:

Model	EM03-P normal mode	EM03-P emergency mode
Angular subtense (mrad)	100	100

Calculation of the Hazard exposure limits for the Exempt Group,

The philosophical basis for the exempt group classification is that the lamp does not pose any photobiological hazard for the end points in this standard. This requirement is met by any lamp that does not pose

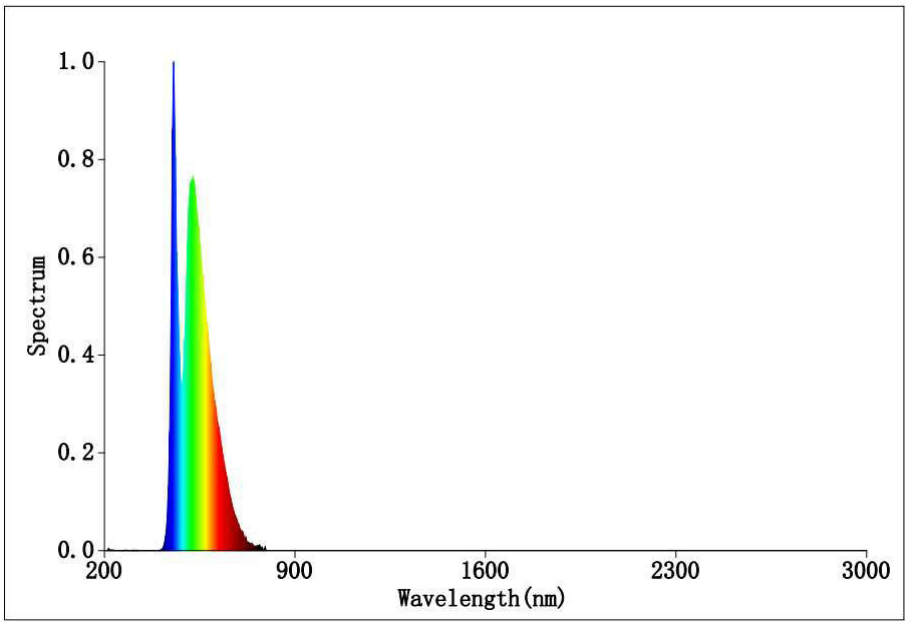
- an actinic ultraviolet hazard (Es) within 8-hours exposure (30000 s), nor
- a near-UV hazard (EUVA) within 1000 s, (about 16 min) nor
- a retinal blue-light hazard (LB) within 10000 s (about 2,8 h), nor
- a retinal thermal hazard (LR) within 10 s, nor
- an infrared radiation hazard for the eye (EIR) within 1000 s.

These lamps are in the Exempt Group.
Also, lamps that emit infrared radiation without a strong visual stimulus (i.e., less than 10 cdm-2) and do not pose a near-infrared retinal hazard (LIR) within 1000 s are in the Exempt Group.

See the test data.

Attachment 6 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict

Model EM03-P normal mode is in Exempt Group.

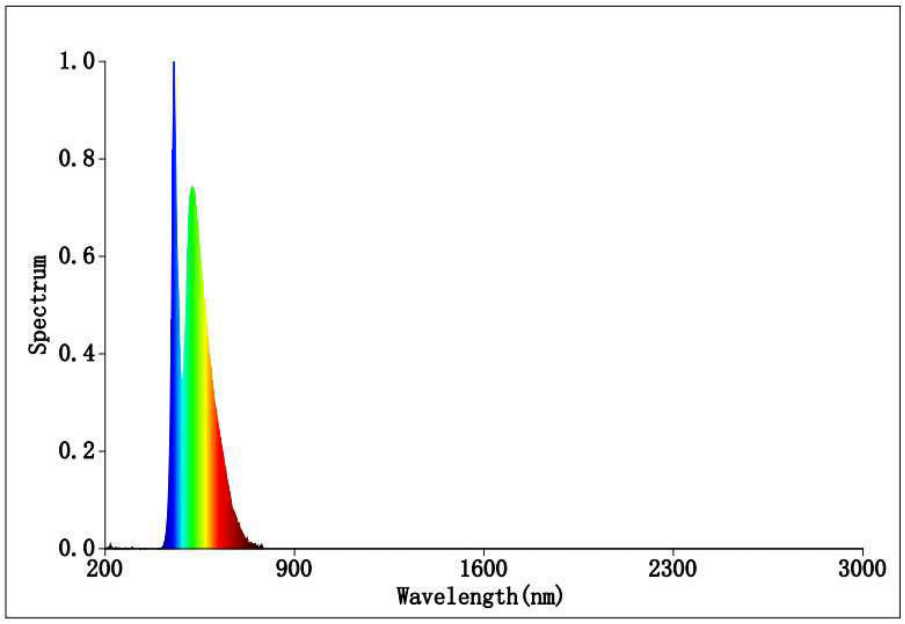


Test data:

Optical hazard	Test result	Used hazard exposure lim it		Ref.
1. E_s	6,2e-05 W/m^2	0,001 W/m ^{2}	200-400 nm	P
2. E_{UVA}	8,5e-05 W/m^2	0,33 W/m ^{2}	315-400 nm	P
3. L_B	2,4e-01 W/m^{2}sr	100 W/m ^{2}sr	300-700 nm	P
4. $E_{B(small\ source)}$	-	-	300-700 nm	N/A
5. L_R	4,0e+00 W/m^{2}sr	2,8 x10 ^{5} W/m^{2}sr	380-1400 nm	P
6. L_{IR}	5,7e-04 W/m^{2}sr	6,0 x10 ^{4} W/m^{2}sr	780-1400 nm	P
7. E_{IR}	2,5e-04 W/m^2	100 W/m ^{2}	780-3000 nm	P
8. E_H	4,0e-01 W/m^2	3556,56 W/m ^{2}	380-3000 nm	P

Attachment 6 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict

Model EM03-P emergency mode is in Exempt Group.



Test data:

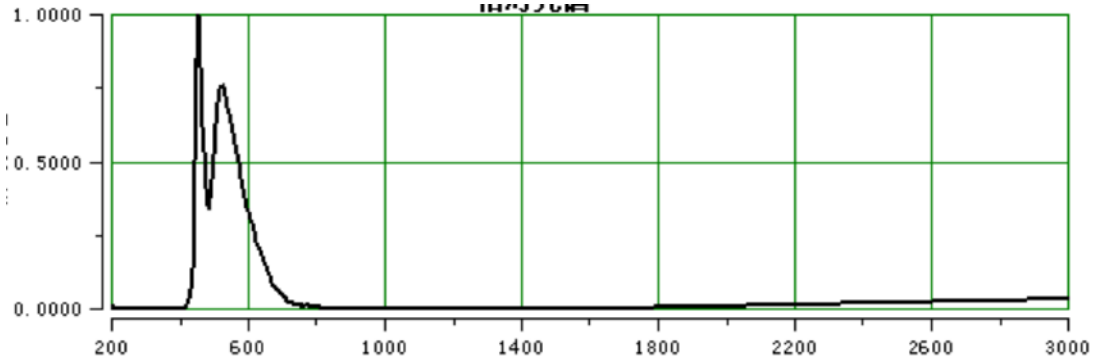
Optical hazard	Test result	Used hazard exposure lim it		Ref.
1. E_s	1,4e-04 W/m^2	0,001 W/m ^{2}	200-400 nm	P
2. E_{UVA}	2,3e-05 W/m^2	0,33 W/m ^{2}	315-400 nm	P
3. L_B	2,2e-01 W/m^{2}sr	100 W/m ^{2}sr	300-700 nm	P
4. $E_{B(small\ source)}$	-	-	300-700 nm	N/A
5. L_R	3,8e+00 W/m^{2}sr	2,8 x10 ^{5} W/m^{2}sr	380-1400 nm	P
6. L_{IR}	2,8e-04 W/m^{2}sr	6,0 x10 ^{4} W/m^{2}sr	780-1400 nm	P
7. E_{IR}	1,1e-04 W/m^2	100 W/m ^{2}	780-3000 nm	P
8. E_H	3,6e-01 W/m^2	3556,56 W/m ^{2}	380-3000 nm	P

Attachment 7 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict

Attachment 7	Blue light hazard according to IEC TR 62778:2012	P

Conditions
1. Tests performed on model EM03-P normal mode.
2. Ambient temperature: 23±2°C, Humidity: 56±10%.
3. Measurement distance: 20cm

Lamp classification group: Exempt group

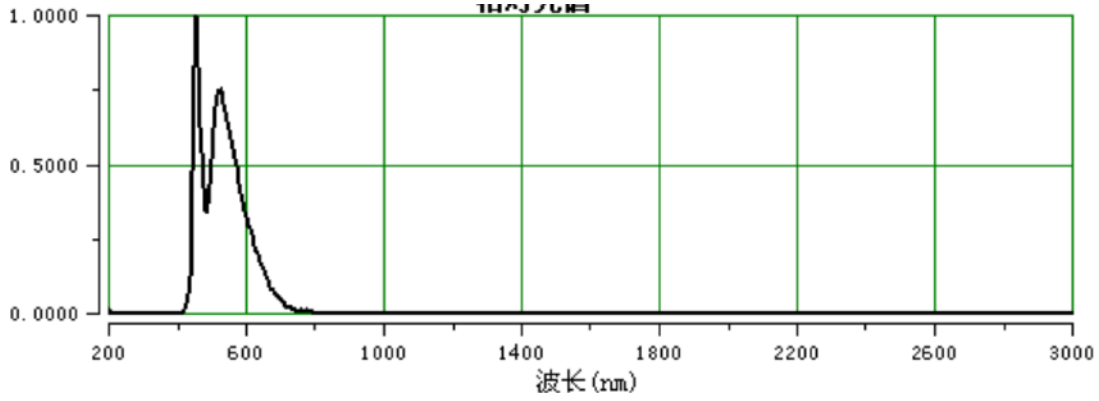


Test Results		
Symbol	Units	Results
Lb (11mrad)	W•m-2•sr-1	<1,0
Lb (100mrad)	W•m-2•sr-1	--
L (11mrad)	cd•m-2	3,699e+02
Ethr	lx	--
dmin	m	--

Attachment 7 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict

Conditions
1. Tests performed on model EM03-P emergency mode .
2. Ambient temperature: 23±2°C, Humidity: 56±10%.
3. Measurement distance: 20cm

Lamp classification group: Exempt group



Test Results		
Symbol	Units	Results
Lb (11mrad)	W•m-2•sr-1	<1,0
Lb (100mrad)	W•m-2•sr-1	--
L (11mrad)	cd•m-2	2,971e+02
Ethr	lx	--
dmin	m	--

Attachment 8 of EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict

EMF Assessment according to EN 62493:2015

Procedure	Products are applications with	If No	If yes
a)	Non-electronic control gear?	☒ see Procedure b)	☐ Pass
b)	Incandescent-lamp technology or halogen?	☒ see Procedure c)	☐ see Procedure h)
c)	LED light-source technology?	☐ see Procedure d)	☒ see Procedure h)
d)	OLED light-source technology?	☐ see Procedure e)	☐ see Procedure h)
e)	High-pressure discharge lamp technology?	☐ see Procedure f)	☐ see Procedure h)
f)	Low-pressure discharge lamp technologies with an exposure distance larger than or equal to 50cm (Distance for Hand lights, table lightings and Self-ballasted lamps is less than 50cm)	☐ see Procedure g)	☐ see Procedure h)
g)	Independent auxiliary?	☐ see Procedure i)	☐ see Procedure h)
h)	Non-wireless technology (exclude infra-red)?	☐ see Procedure i)	☒ Pass
i)	Additional test is performed and result is Pass Test Report with No.: ……..	☐ see Procedure b)	☐ Pass

---End of Report ---