

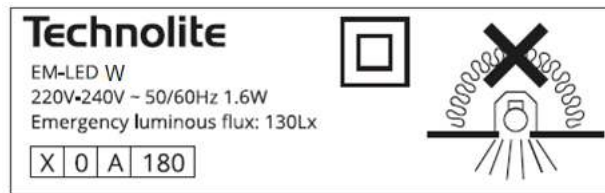
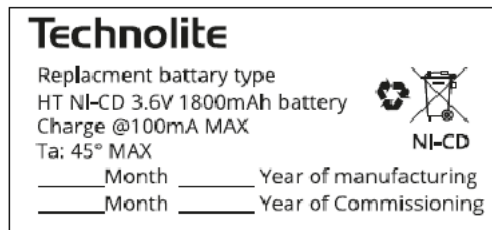
	Test Report issued under the responsibility of:	
NCB TÜV SÜD PSB Pte Ltd. 1 Science Park Drive, 118221 Singapore Singapore		
TEST REPORT IEC 60598-2-22 Luminaires Part 2: Particular requirements Section 22: Luminaires for emergency lighting		
Report Number..... : 083-17101001-000 Date of issue : 2018-02-27 Total number of pages..... : 83		
Name of Testing Laboratory preparing the Report : TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch		
Applicant's name : Technolite Ltd Address : Yahalom St, 73185 Bareket, ISRAEL		
Test specification: Standard..... : IEC 60598-2-22:2014 used in conjunction with IEC 60598-1:2014 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		
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Test item description..... :	Emergency Light	
Trade Mark..... :	N/A	
Manufacturer..... :	Same as applicant	
Model/Type reference..... :	EM-LED W; EM-LED N	
Ratings..... :	220-240V~; 50/60Hz; 1,6W; IP20; Class II; Details see model list	
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
<input checked="" type="checkbox"/> CB Testing Laboratory:	TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch No.151 Heng Tong Road, Shanghai 200070, P.R. China	
Testing location/ address.....:	No.1999, Duhui Road, Shanghai, 201108, P. R. China	
Tested by (name, function, signature).....:	Zhilei GENG	
Approved by (name, function, signature)....:	Huidong ZHANG	
<input type="checkbox"/> Testing procedure: CTF Stage 1:		
Testing location/ address.....:	N/A	
Tested by (name, function, signature).....:	N/A	
Approved by (name, function, signature)....:	N/A	
<input type="checkbox"/> Testing procedure: CTF Stage 2:		
Testing location/ address.....:	N/A	
Tested by (name + signature)	N/A	
Witnessed by (name, function, signature)...	N/A	
Approved by (name, function, signature)....:	N/A	
<input type="checkbox"/> Testing procedure: CTF Stage 3:		
<input type="checkbox"/> Testing procedure: CTF Stage 4:		
Testing location/ address.....:	N/A	
Tested by (name, function, signature).....:	N/A	
Witnessed by (name, function, signature)...	N/A	
Approved by (name, function, signature)....:	N/A	
Supervised by (name, function, signature) :	N/A	

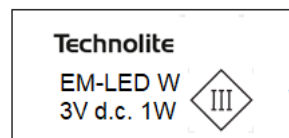
List of Attachments (including a total number of pages in each attachment):	
Summary of testing:	
Tests performed (name of test and test clause): Complete tests The test results comply with the requirements	Testing location: TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch No.1999, Duhui Road, Shanghai, 201108, P. R. China
Summary of compliance with National Differences: List of countries addressed N/A	

Copy of marking plate(sample):

Adhere labelled paper to the wire to lamp



On battery



On lamp



On controlgear



Near the testing switch

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.

Note: Height of letter and numeral not less than 2mm, graphical symbol not less than 5mm, symbol of not covering with thermally insulating material not less than 25x25mm.

Test item particulars : Emergency Light	
Classification of installation and use..... : Class II	
Supply Connection : Terminals	
..... :	
Possible test case verdicts: - test case does not apply to the test object..... : N/A - test object does meet the requirement..... : P (Pass) - test object does not meet the requirement..... : F (Fail)	
Testing :	
Date of receipt of test item..... : 2017-12-11	
Date (s) of performance of tests : 2017-12-11 to 2018-02-27	
General remarks:	
<p>"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.</p> <p>Throughout this report a <input checked="" type="checkbox"/> comma / <input type="checkbox"/> point is used as the decimal separator.</p> <p>Clause numbers between brackets refer to clauses in IEC 60598-1</p> <p>Remark 1: The following contents are included and as appendix of this test report:</p> <ul style="list-style-type: none"> • Test report IEC 60598-2-22:2014 used in conjunction with IEC 60598-1:2014 • Appendix 1: Requirements of IEC 60598-2-2:2011 used in conjunction with IEC 60598-1:2014 • Appendix 2: Requirements of IEC 61347-2-7:2011 used in conjunction with IEC 61347-1:2015 • Appendix 3: Requirements of IEC 62031:2008/A2:2014 • Appendix 4: Requirements of IEC 62493:2015 • Appendix 5: Photographs 	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60598-1:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided.....:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies)..... : Technolite Ltd Yahalom St, 73185 Bareket, ISRAEL	

General product information:

These two products are Class II LED luminaires with same appearance and construction for emergency lighting only

LED source and battery are replaceable in the product

Whilst connected to a live supply, the battery is charging and the lamp is not energized. Only when the normal supply fails, the emergency lighting lamp will be in operation and energized from the battery

Indicator lamp and colour:

- Green light normally on: charging and charging be finished
- Green light off: error

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 <input checked="" type="checkbox"/> No <input type="checkbox"/> Lamp standard: IEC 62031	—
22.4 (0.3)	More sections applicable	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Section/s: IEC 60598-2-2	—
22.4 (-)	Part provide normal lighting, test according relevant part of IEC 60598-2	IEC 60598-2-2	P
22.4 (-)	Adjacent part fulfils relevant part of this part 2		P
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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
22.5 (2.5)	Luminaire for normal use	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	Luminaire for rough service	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
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		P
	Format of symbols/text		P
22.6 (3.3)	Additional information		P
	Language of instructions		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
22.6 (3.3.9)	Power factor and supply current		N/A

IEC 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
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	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		N/A
	Cautionary symbol		N/A
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		P
22.6.4 (-)	Range of ambient temperatures		N/A
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

IEC 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
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
	Green dot with min 5 mm diameter		N/A
	Instruction leaflet 22.6.10 – 22.6.12 and 22.6.14 – 22.6.16		N/A
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		N/A
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		P
22.6.19 (-)	Instruction leaflet specifies if lamp and/or battery is/are non-replaceable		N/A
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)	N/A	—
	After test the lampholder comply with relevant standard sheets and show no damage		N/A

IEC 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	After test on single-capped lampholder the lampholder have not moved from its position and show no permanent deformation		N/A
	- bending test (N):	N/A	—
	After test the lampholder have not moved from its position and show no permanent deformation		N/A
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		P
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

IEC 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
22.7 (4.8)	Switches		P
	- adequate rating		P
	- adequate fixing		P
	- polarized supply		P
	- 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: Heat-shrinkable		P
22.7 (4.9.2)	Insulated linings and sleeves:		N/A
	Resistant to a temperature > 20 °C to the wire temperature or		N/A
	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		P
	- lining in lampholder		N/A
22.7 (4.10.4)	Protective impedance device		N/A
	Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor		N/A
	Y1 or Y2 capacitors comply with IEC 60384-14		N/A

IEC 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	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
	- 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		N/A
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.....:	Enclosure/lamp: 0,5	P
	Torque test: torque (Nm); part.....:		N/A
	Torque test: torque (Nm); part.....:		N/A
22.7 (4.12.2)	Screws with diameter < 3 mm screwed into metal		N/A
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

IEC 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	- other parts; energy (Nm).....:	0,35	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
	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		P
22.7 (4.14.1)	Mechanical load:		P
	A) four times the weight		P
	B) torque 2,5 Nm		N/A
	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		P
22.7 (4.14.2)	Load to flexible cables		N/A
	Mass (kg)	N/A	—
	Stress in conductors (N/mm ²)		N/A
	Mass (kg) of semi-luminaire		N/A
	Bending moment (Nm) of semi-luminaire		N/A
22.7 (4.14.3)	Adjusting devices:		N/A
	- flexing test; number of cycles.....:		N/A

IEC 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	- strands broken		N/A
	- electric strength test afterwards		N/A
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		N/A
	- screen withstanding test of 13.3.1		N/A
	- screen dimensions		N/A
	- no fiercely burning material		P
	- thermal protection		N/A
	- electronic circuits exempted		N/A
22.7 (4.15.2)	Luminaires made of thermoplastic material with lamp control gear		N/A
	a) construction		N/A
	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

IEC 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
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)	Igniters 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
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	EM-LED W: RG1 Lb: 1.192e+002 W/m2/sr	—
	Luminaires with E_{thr} :		N/A
	a) Fixed luminaires		N/A
	- distance x m, borderline between RG1 and RG2...:		N/A
	- 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

IEC 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	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
	Test of adhesive fixing:		N/A
	Max. temperature on adhesive material ($^{\circ}\text{C}$):	N/A	—
	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		N/A
	If protective cover provide protection against electric shock and marked with "caution, electric shock risk" symbol:		N/A

IEC 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
	Minimum two fixing means		N/A
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 \leq ELV		P
	Insulating of SELV circuits from LV supply		P
	Insulating of SELV circuits from other non SELV circuits		N/A
	Insulating of SELV circuits from FELV		N/A
	Insulating of SELV circuits from other SELV circuits		N/A
	SELV circuits insulated from accessible parts according Table X.1		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 \leq ELV		N/A
	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		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Other circuits insulated from accessible parts according Table X.1		P
	Class II construction with equipotential bonding for protection against indirect contacts with live parts:		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.)		N/A
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

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Clause	Requirement + Test	Result - Remark	Verdict
	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		P
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 <input checked="" type="checkbox"/> Category III <input type="checkbox"/>	—

22.9 (7)	PROVISION FOR EARTHING		N/A
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 groove		N/A
	Earth makes contact first		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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)	N/A
	Part of the luminaire	(see Annex 4)	P

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.....	Terminals	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

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Clause	Requirement + Test	Result - Remark	Verdict
22.11 (5.2.2)	Type of cable.....:	PVC	P
	Nominal cross-sectional area (mm ²).....:	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		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
	f) metal screw not directly on cable		N/A
	g) replacement without special tool		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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		P
22.11 (5.2.10.3)	Tests:		P
	- impossible to push cable; unsafe		P
	- pull test: 25 times; pull (N):	2x22AWG: 30N; 2x20AWG: 60N; 4x20AWG: 60N	P
	- torque test: torque (Nm).....:	2x22AWG: 0,08Nm; 2x20AWG: 0,15Nm; 4x20AWG: 0,25Nm	P
	- displacement ≤ 2 mm		P
	- no movement of conductors		P
	- no damage of cable or cord		P
	- function independent of electrical connection		P
22.11 (5.2.11)	External wiring passing into luminaire		P
22.11 (5.2.12)	Looping-in terminals		N/A
22.11 (5.2.13)	Wire ends not tinned		P
	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

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Clause	Requirement + Test	Result - Remark	Verdict
22.11 (5.3)	Internal wiring		N/A
22.11 (5.3.1)	Internal wiring of suitable size and type		N/A
	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		N/A
	Cross-sectional area (mm ²)		N/A
	Insulation thickness		N/A
	Extra insulation added where necessary		N/A
22.11 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		N/A
	Adequate cross-sectional area and insulation thickness		N/A
22.11 (5.3.1.3)	Double or reinforced insulation for class II		N/A
22.11 (5.3.1.4)	Conductors without insulation		N/A
22.11 (5.3.1.5)	SELV current-carrying parts		N/A
22.11 (5.3.1.6)	Insulation thickness other than PVC or rubber		N/A
22.11 (5.3.2)	Sharp edges etc.		N/A
	No moving parts of switches etc.		N/A
	Joints, raising/lowering devices		N/A
	Telescopic tubes etc.		N/A
	No twisting over 360°		N/A
22.11 (5.3.3)	Insulating bushings:		N/A
	- suitable fixed		N/A
	- material in bushings		N/A
	- material not likely to deteriorate		N/A
	- cables with protective sheath		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
22.11 (5.3.4)	Joints and junctions effectively insulated		N/A
22.11 (5.3.5)	Strain on internal wiring		N/A
22.11 (5.3.6)	Wire carriers		N/A
22.11 (5.3.7)	Wire ends not tinned		N/A
	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		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- 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
	- 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 μ F not exceed 50 V 1 min after disconnection		P
	Portable luminaire with capacitor > 0,1 μ F (0.25) not exceed 34 V 1 s after disconnection		N/A
	Other luminaires with capacitor > 0,1 μ F (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	Normal	—
	- test temperature (°C)	35	—
	- total duration (h)	390	—
	- supply voltage: Un factor; calculated voltage (V) ...:	264	—

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Clause	Requirement + Test	Result - Remark	Verdict
	- lamp used	Original lamp	—
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
	- 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)	N/A	—
	- case of abnormal conditions	N/A	—
	- electronic lamp control gear		N/A
	- measured winding temperature (°C): at 1,1 Un	N/A	—
	- 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	N/A	—
	- 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	N/A	—

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Clause	Requirement + Test	Result - Remark	Verdict
	Test according to 12.7.1.1:		N/A
	- case of abnormal conditions	N/A	—
	- Ballast failure at supply voltage (V)	N/A	—
	- 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	N/A	—
	- measured winding temperature (°C): at 1,1 Un	N/A	—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un	N/A	—
	- calculated temperature of fixing point/exposed part (°C)	N/A	—
	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	N/A	—
	- measured winding temperature (°C): at 1,1 Un	N/A	—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un	N/A	—
	- calculated temperature of fixing point/exposed part (°C)	N/A	—
	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	N/A	—
	- 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 <input type="checkbox"/> No <input type="checkbox"/>	—
	- manual reset cut-out.....	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- auto reset cut-out	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- case of abnormal conditions	N/A	—
	- highest measured temperature of fixing point/exposed part (°C):	N/A	—
	Ball-pressure test.....	See Table 22.16 (13.2.1)	N/A
22.13.1 (-)	Endurance test for self-contained luminaire		P

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Clause	Requirement + Test	Result - Remark	Verdict
	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 Vmin according Clause 20 of IEC 61347-2-7 at the end of operation		N/A

22.14 (9)	RESISTANCE TO DUST AND MOISTURE		P
22.14 (-)	The order of tests as specified in clause 22.12		P
22.14 (9.2)	Tests for ingress of dust, solid objects and moisture:		P
	- classification according to IP.....:	IP20	—
	- mounting position during test	Normal	—
	- fixing screws tightened; torque (Nm)	2/3 torque	—
	- 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		P
22.14 (9.3)	Humidity test 48 h		P

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Clause	Requirement + Test	Result - Remark	Verdict
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	covered by metal foil	—
	Insulation resistance (MΩ)		—
	SELV		P
	- between current-carrying parts of different polarity :		N/A
	- between current-carrying parts and mounting surface	>19	P
	- between current-carrying parts and metal parts of the luminaire	>19	P
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts	>19	P
	- Insulation bushings as described in Section 5		N/A
	Other than SELV		P
	- between live parts of different polarity	>19	P
	- between live parts and mounting surface	>19	P
	- between live parts and metal parts	>19	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)		P
	SELV		P
	- between current-carrying parts of different polarity :		N/A
	- between current-carrying parts and mounting surface	500	P
	- between current-carrying parts and metal parts of the luminaire	500	P

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Clause	Requirement + Test	Result - Remark	Verdict
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts	500	P
	- Insulation bushings as described in Section 5		N/A
	Other than SELV		P
	- between live parts of different polarity	1480	P
	- between live parts and mounting surface	2960	P
	- between live parts and metal parts.....	2960	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 (10.3)	Touch current or protective conductor current (mA):	0,02	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	Enclosure, insulation tape	P
	Glow-wire test (850°C) or fire resistant cable if applicable	Insulation layer of wire to battery	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		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
22.17.5 (-)	Internally illuminated emergency safety sign meet requirements of ISO 30061		N/A
	Luminance of permanently illuminated safety sign meet requirements of ISO 3864-1 and ISO 3864-4		N/A
	Luminance measurements according Annex C	(see Annex C)	N/A
22.18 (-)	CHANGEOVER OPERATION		P
	Changeover device comply with Clause 21 of IEC 61347-2-7		P
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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Clause	Requirement + Test	Result - Remark	Verdict

22.8 (11.2)	TABLE: Creepage distances and clearances						P
	Minimum distances (mm) for a.c. (50/60 Hz) sinusoidal 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	3,2	1,5	11,1	3,2	2,5	11,1
Working voltage (V)					240		—
PTI					< 600 ☒ ≥ 600 ☐		—
Pulse voltage if applicable (kV)					N/A		—
Supplementary information: Live parts of different polarity							
Distance 2:	R	5,1	3	11,1	5,1	5	11,1
Working voltage (V)					240		—
PTI					< 600 ☒ ≥ 600 ☐		—
Pulse voltage if applicable (kV)					N/A		—
Supplementary information: Live parts and the outer accessible surface of insulating parts							
Distance 3:	R	14,9	3	11,1	14,9	5	11,1
Working voltage (V)					240		—
PTI					< 600 ☒ ≥ 600 ☐		—
Pulse voltage if applicable (kV)					N/A		—
Supplementary information: Live parts and the supporting surface							

** 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)	
Enclosure		See ANNEX 1	125	1,1	
PCB			125	0,5	
Bobbin			125	0,7	
Supplementary information:					

IEC 60598-2-22					
Clause	Requirement + Test			Result - Remark	Verdict
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	No burning	P
Bobbin		10	No	No burning	P
White connector		10	No	No burning	P
Black connector		10	No	No burning	P
Test switch		10	No	No burning	P
Supplementary information:					

22.16 (13.3.2)	TABLE: Glow-wire test (IEC 60695-2-11)				P
Glow wire temperature:		650°C			—
Object/ Part No./ Material	Manufacturer/ trademark		Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
Lamp cover	See ANNEX 1		No	No burning	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)				Yes	
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:					

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

	Annex A: Batteries for self-contained emergency luminaires		P
A.1	Type of batteries		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:	Max 39,4	P
A.4.2.b	Maximum overcharge rate 0,08 C ₅ A		P
A.4.2.c	Minimum ambient temperature of the cells 5 °C		P
A.4.2.d	Maximum discharge rates		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 ₅ A		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		P
A.9	Battery only replaced by a competent person		P

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Clause	Requirement + Test	Result - Remark	Verdict

	Annex B: Luminaire classification		P
	Classified and marked according Annex B:	X 0 A 180	P

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

	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 <input type="checkbox"/> No <input type="checkbox"/>	—
E.5.1.b	Part of the control unit remains in the base unit	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
E.5.2	Classified according operation		—
E.5.2.a	Automatic initiation with manual control	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
E.5.2.b	Automatic initiation with automatic control	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
E.5.2.c	Manual control	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
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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Clause	Requirement + Test	Result - Remark	Verdict
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 $\leq 0,01C5/h$ of the battery if indicator is used		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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		—

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

ANNEX 1	TABLE: Critical components information						P
Object / part No.	Code	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾	
Terminal block	B	NINGBO ULO ELECTRONICS Co., Ltd.	ULO-TB12	300VAC, T105, 0,2-1,5mm2	EN 60998-1 EN 60998-2-1	TUV/B15029 1061002	
	D	Putian Hanjiang Fucon Electronics Co., Ltd.	CM-250-3.5	450VAC, T120, 0,5-0,75mm2	EN 60998-1 EN 60998-2-2	VDE/400372 57	
Fuse	B	Dongguan Better Electronics Technology Co., Ltd.	932	250V~, 2A	IEC 60127-1 IEC 60127-3	VDE/400333 69	
	D	AEM Components (SuZhou) Co. Ltd	MF2410	250V~, 2A	EN 60127-1 EN 60127-4	VDE/400348 53	
X2 capacitor	B	Dain Electronics Co., Ltd	MEX/MPX/NP X	275V~, 0,1uf, 40/110/21	EN 60384-14	VDE/400187 98	
	D	Shantou High-new Technology Development Zone Songtian	MPX	275V~, 0,1uF, 40/110/56	EN 60384-14	TUV/R 50136379	
	D	Ultra Tech Xiphi Enterprise Co. Ltd.	HQX	275V~, 0,1uF, 40/110/56	EN 60384-14	VDE/400245 34	
Winding	C	NINGBO XINJIAN NEW MATERIAL TECHNOLOGY CO LTD	QA-1	T155	IEC 61347-1 IEC 61347-2-7	Test with appliance UL/E197317	
Bobbin	C	SUMITOMO BAKELITE CO LTD	PM9820	T150	IEC 61347-1 IEC 61347-2-7	Test with appliance UL/E41429	
Insulation tape	C	JINGJIANG JINGYI ADHESIVE PRODUCT CO LTD	JY25-A (b)	PET, T130	IEC 61347-1 IEC 61347-2-7	Test with appliance UL/E246950	
Triple insulated winding wires	B	Shanghai Suran Electronics Factory	TIW-B	T130, reinforced insulation	IEC 62368-1	VDE/400396 47	
Optocoupler	B	Everlight Electronics Co., Ltd.	EL817V	250V, Min, 5mm 55/110/21, DTI≥0.4	IEC 60747-5-5	VDE/132249	

IEC 60598-2-22						
Clause	Requirement + Test			Result - Remark		Verdict
Teflon tube	C	DONGGUAN CITY CHANGJIE METALS & PLASTIC PRODUCTS CO LTD	CJ-TT-L	PTFE, T200	IEC 61347-1 IEC 61347-2-7	Test with appliance UL/E338209
Varnishes	C	SHENZHEN EASTLIGHT CHEMICAL CO LTD	DFL-8033-A	T180	IEC 61347-1 IEC 61347-2-7	Test with appliance UL/E359418
Y1 capacitor	B	Xiamen Sino Faith Electronic Technology Co. Ltd.	HCY series	400V~, 2200pF, 25/125/21	IEC 60384-14	VDE/400347 92
	D	Shantou High-new Technology Development Zone Songtian	CD series	400V~, 2200pF, 25/125/21	IEC 60384-14	VDE/400257 54
	D	Nanjing Yuyue Electronics Co., Ltd.	CT7	400V~, 2200pF, 25/125/21	IEC 60384-14	VDE/400080 10
PCB	C	JIANGSHU YUXING FILM TECHNOLOGY CO LTD	CY25HT	PET, VTM-2	IEC 61347-1 IEC 61347-2-7	Test with appliance UL/E212271
	D	KUNSHAN JINPENG ELECTRONICS CO LTD	JP-1	V-0	IEC 61347-1 IEC 61347-2-7	Test with appliance UL/E306084
	D	MEIZHOU LIANKE CIRCUIT LTD	LK-1	V-0	IEC 61347-1 IEC 61347-2-7	Test with appliance UL/E347584
Output wire to battery	C	WEN ZHOU YUAN YANG WIRE CO.,LTD	--	PVC, 20AWG	IEC 60598-1 IEC 60598-2-22	Test with appliance
Output wire to LED lamp	C	Ningbo Hongjie Electronic Technology CO.,LTD	--	PVC, 20AWG	IEC 60598-1 IEC 60598-2-22	Test with appliance
Enclosure of driver and battery	C	Sabic Innovative Plastics US L L C	925U(f1)	V-0	IEC 60598-1 IEC 60598-2-22	Test with appliance UL E82268
Rechargeable NI-CD battery	B	Zouping Mingbo Power Supply Co.,Ltd	SC1800mAh	3,6V, 1800mAh	IEC 62133 IEC 61951-1	TUV/R 17046767 001 TCT1507091 3009

IEC 60598-2-22						
Clause	Requirement + Test			Result - Remark		Verdict
LED	C	SHENZHEN ONE FIVE EIGHT EIGHT PHOTOELECTRIC CO.,LTD	1588-P3W140TW-PR	3,0-3,1V, 500mA, 4000-4500K	IEC 62031 IEC/TR 62778	Test with appliance
MCPCB	C	998Han-pu Rd,Hi-Tech industrial Park,Kunshan,jiangsu	ELT-EDR01HT-A	V-0	IEC 60598-1 IEC 60598-2-22	Test with appliance
Lamp cover	C	shenzhen pengsen CO ltd	UP-D12	--	IEC 60598-1 IEC 60598-2-22	Test with appliance
Indicator	C	Ningbo Zhenhai Jiajie Electronic Co. Ltd	3020 LED	3.0-3.1V 18mA	IEC 60598-1 IEC 60598-2-22	Test with appliance
	D	Shen Zhen Runfr eeoptoelectronics co.,Ltd	3020 LED	3.0-3.1V 18mA	IEC 60598-1 IEC 60598-2-22	Test with appliance
	D	Zhejiang Jiahui Wire And Cable Co. , Ltd.	3020 LED	3.0-3.1V 18mA	IEC 60598-1 IEC 60598-2-22	Test with appliance
Test switch	C	Yueqing city xin anhui electronics co., LTD	PBS-105	PC	IEC 60598-1 IEC 60598-2-22	Test with appliance
Output wire to switch	C	WEN ZHOU YUAN YANG WIRE CO.,LTD	--	22AWG	IEC 60598-1 IEC 60598-2-22	Test with appliance
White connector	C	Ningbo Hongjie Electronic Technology CO.,LTD	VH-3.96-2P	PVC	IEC 60598-1 IEC 60598-2-22	Test with appliance
White terminal	C	CHI MEI CORPORATION	--	PC	IEC 60598-1 IEC 60598-2-22	Test with appliance
Varistor	B	Brightking (Shenzhen) Co., Ltd.	05D431K	275V~	IEC 61051-1 IEC 61051-2 IEC 61051-2-2	VDE/ 40027827
	D	Guangxi New Future information industry Co, Ltd	05D431K	275V~	IEC 61051-1 IEC 61051-2 IEC 61051-2-2	VDE/ 40030322
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	TABLE: Temperature measurements, thermal tests of Section 12			P			
	Type reference	EM-LED W		—			
	Lamp used.....	Original lamp		—			
	Lamp control gear used	Original driver		—			
	Mounting position of luminaire.....	Recessed		—			
	Supply wattage (W)	1,4		—			
	Supply current (A).....	0,008		—			
	Calculated power factor	0,07		—			
	Table: measured temperatures corrected for ta = 25 °C:			P			
	- abnormal operating mode	Replacement of the internal batteries with a short-circuit link across the battery charger output		—			
	- test 1: rated voltage	N/A		—			
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage.....	254,4 (normal mode)		—			
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage	emergency mode		—			
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage.....	264		—			
	Through wiring or looping-in wiring loaded by a current of A during the test	N/A		—			
Temperature measurements, (°C)							
Part	Ambient	Clause 12.4 – normal				Clause 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
Supply cord	25	--	28,7	26,1	90	--	--
Supply cord stressed	25	--	28,9	26,5	75	--	--
Terminal block	25	--	29,4	26,4	105	--	--
Varistor	25	--	41,4	26,6	85	--	--
X2 capacitor	25	--	42,1	26,6	110	57,2	120
C5	25	--	46,6	26,9	105	54,9	115
Winding	25	--	45,9	27,5	130	48,9	Ref
Bobbin	25	--	47,4	27,2	Ref	--	--
Y capacitor	25	--	40,3	28,2	125	42,9	135
Optocoupler	25	--	43,6	27,5	110	--	--

IEC 60598-2-22							
Clause	Requirement + Test				Result - Remark		Verdict
C6	25	--	37,5	31,5	105	38,3	115
PCB	25	--	34,9	26,7	Ref	--	--
Driver enclosure	25	--	33	28,1	Ref	--	--
Output wire to battery	25	--	27	27,7	90	--	--
Output wire to lamp	25	--	29,3	34,6	90	--	--
Battery	25	--	27,1	29,6	45	--	--
Battery enclosure	25	--	27,2	28,7	Ref	--	--
Mounting surface	25	--	27,2	53,1	90	27,1	130
Supplementary information:							

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Clause	Requirement + Test	Result - Remark	Verdict

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

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

ANNEX 4	Screwless terminals (part of the luminaire)		P
(15)	SCREWLESS TERMINALS		P
(15.2)	Type of terminal.....:	Screwless	—
	Rated current (A).....:	500mA	—
(15.3.1)	Material		P
(15.3.2)	Clamping		P
(15.3.3)	Stop		P
(15.3.4)	Unprepared conductors		N/A
(15.3.5)	Pressure on insulating material		P
(15.3.6)	Clear connection method		P
(15.3.7)	Clamping independently		N/A
(15.3.8)	Fixed in position		P
(15.3.10)	Conductor size		P
	Type of conductor		P
(15.5)	Terminals and connections for internal wiring		N/A
(15.5.1)	Mechanical tests		N/A
(15.5.1.1.1)	Pull test spring-type terminals (4 N, 4 samples).....:		N/A
(15.5.1.1.2)	Pull test pin or tab terminals (4 N, 4 samples)		N/A
	Insertion force not exceeding 50 N		N/A
(15.5.1.2)	Permanent connections: pull-off test (20 N)		N/A
(15.5.2)	Electrical tests		N/A
	Voltage drop (mV) after 1 h (4 samples).....:		N/A
	Voltage drop of two inseparable joints		N/A
	Number of cycles:		—
	Voltage drop (mV) after 10th alt. 25th cycle (4 samples)		N/A
	Voltage drop (mV) after 50th alt. 100th cycle (4 samples)		N/A
	After ageing, voltage drop (mV) after 10th alt. 25th cycle (4 samples).....:		N/A
	After ageing, voltage drop (mV) after 50th alt. 100th cycle (4 samples)		N/A
(15.6)	Terminals and connections for external wiring		P
(15.6.1)	Conductors		P
	Terminal size and rating		P

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Clause	Requirement + Test							Result - Remark		Verdict
15.6.2	Mechanical tests									P
(15.6.2.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N)									N/A
(15.6.2.2)	Pull test pin or tab terminals (4 samples); pull (N)							8		P
(15.6.3)	Electrical tests									P
	Tests according 15.6.3.1 + 15.6.3.2 in IEC 60598-1									P
(15.6.3.1) (15.6.3.2)	TABLE: Contact resistance test / Heating tests									P
	Voltage drop (mV) after 1 h									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)	13,1	11,0	12,2	13,1	12,5	12,4	13,0	11,0	12,4	12,3
	Voltage drop of two inseparable joints									N/A
	Voltage drop after 10th alt. 25th cycle									P
	Max. allowed voltage drop (mV)..... :							22,5		—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)	13,6	11,5	13,0	14,2	13,9	12,8	14,0	12,2	13,9	12,5
	Voltage drop after 50th alt. 100th cycle									N/A
	Max. allowed voltage drop (mV)..... :							N/A		—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Continued ageing: voltage drop after 10th alt. 25th cycle									N/A
	Max. allowed voltage drop (mV)..... :							N/A		—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Continued ageing: voltage drop after 50th alt. 100th cycle									N/A
	Max. allowed voltage drop (mV)..... :							N/A		—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
Supplementary information:										

Appendix 1 - Requirements of IEC 60598-2-2:2011 used in conjunction with IEC 60598-1:2014			
Clause	Requirement + Test	Result - Remark	Verdict
2.13 (12)	ENDURANCE TEST AND THERMAL TEST		N/A
2.13.1 (-)	Wiring, for connection to the supply, not reach unsafe temperature		N/A
	- measured temperature of the cable (°C):		N/A

Appendix 2 - Requirements of IEC 61347-2-7:2011 used in conjunction with IEC 61347-1:2015			
Clause	Requirement + Test	Result - Remark	Verdict
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 <u>independent controlgear enclosure</u> with IEC 60 598-1		P
- (4)	<u>Built-in magnetic ballast</u> with double or reinforced insulation comply with Annex I of IEC 61347-1		N/A
- (4)	<u>Built-in electronic controlgear</u> with double or reinforced insulation comply with Annex O of IEC 61347-1	(see Annex O)	N/A
- (4)	<u>SELV controlgear</u> comply with Annex L of IEC 61347-1	(see Annex L)	N/A
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 <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	Independent controlgear.....	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	Integral controlgear	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	With automatic test function	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—

7	MARKING		P
7.1 (7.1)	Mandatory markings		P
	a) mark of origin		P
	b) model number or type reference		P
	c) symbol for independent controlgear, if applicable		P
	d) correlation between interchangeable parts and controlgear marked		N/A
	e) rated supply voltage (V)		P
	supply frequency (Hz)		P
	supply current (A)		P
	f) earthing symbol		N/A
	k) wiring diagram		P
	l) value of tc		P
7.1 (-)	- open circuit voltage (V)		P

Appendix 2 - Requirements of IEC 61347-2-7:2011 used in conjunction with IEC 61347-1:2015			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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		P
	- symbol if the controlgear is provided with automatic test function		N/A
	- maximum working voltage between output terminals (V)		P
	- maximum working voltage between any output terminal and earth, if applicable (V)		N/A
7.1 (7.2)	Marking durable and legible		P
	Rubbing 15 s water, 15 s petroleum; marking legible		P
7.2 (7.1)	Information to be provided, if applicable		P
	h) declaration of protection against accidental contact		P
	i) cross-section of conductors (mm ²)		P
	j) number, type and wattage of lamp(s)		P
	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)		P
	- for use in luminaries for high-risk task area lighting		N/A
	- proof against supply voltage polarity reversal		P
	- emergency ballast lumen factor (EBLF)		N/A
	- limits of ambient temperature range within which the ballast will start and operate		P
	- type of insulation between the supply and the battery circuit (non, basic or double/reinforced)		P
	- recharge the battery normally after the test of 22.3		P
	- supply current for each lamp		P
	Information for correct battery selection:		P
	- technology of the battery		P
	- type designation		P
	- capacity		P
	- voltage		P
	- maximum charge current		P
	- minimum charge current		P

Appendix 2 - Requirements of IEC 61347-2-7:2011 used in conjunction with IEC 61347-1:2015			
Clause	Requirement + Test	Result - Remark	Verdict
	- charge voltage limits		P
	- maximum discharge current		P
	- minimum discharge current		P
	- discharge voltage limits		P
	- temperature rating		P
	- type and manufacturer		P
	- 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		P
- (A2)	Voltage measured with 50 k Ω	(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 μ F: voltage after 1 min (V): < 50 V :	0,1V	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		N/A
	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 \leq 25 V r.m.s. or \leq 60 V d.c.		P
	If output voltage > 25 V r.m.s. or > 60 V d.c.; No load output \leq 35 V peak or \leq 60 V d.c and touch current does not exceed 0,7 mA (peak) or 2 mA d.c.:		N/A

Appendix 2 - Requirements of IEC 61347-2-7:2011 used in conjunction with IEC 61347-1:2015			
Clause	Requirement + Test	Result - Remark	Verdict
	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		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		N/A
- (8)	Screw terminals according section 14 of IEC 60598-1:		N/A
	Separately approved; component list	Refer to IEC 60598-1 & IEC 60598-2-22	N/A
	Part of the controlgear		N/A
	Screwless terminals according section 15 of IEC 60598-1:		N/A
	Separately approved; component list		N/A
	Part of the controlgear		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

Appendix 2 - Requirements of IEC 61347-2-7:2011 used in conjunction with IEC 61347-1:2015			
Clause	Requirement + Test	Result - Remark	Verdict
	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: $< 0,5 \Omega$		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 mm ² 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: $< 0,5 \Omega$		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 $\geq 2 \text{ M}\Omega$	>19	P
	For double or reinforced insulation $\geq 4 \text{ M}\Omega$	>19	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 $\leq 50 \text{ V}$, test voltage 500 V		P
	Working voltage $> 50 \text{ V} \leq 1000 \text{ V}$, test voltage (V):		P
	Basic insulation, $2U + 1000 \text{ V}$		P

Appendix 2 - Requirements of IEC 61347-2-7:2011 used in conjunction with IEC 61347-1:2015			
Clause	Requirement + Test	Result - Remark	Verdict
	Supplementary insulation, 2U + 1000 V		N/A
	Double or reinforced insulation, 4U + 2000 V		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		P
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		P
	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		P
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

Appendix 2 - Requirements of IEC 61347-2-7:2011 used in conjunction with IEC 61347-1:2015			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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)	166	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
	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 $20\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$		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 $20\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$		P
	Charged at 0,9 times rated supply voltage at maximum ambient temperature for 24 h		P

Appendix 2 - Requirements of IEC 61347-2-7:2011 used in conjunction with IEC 61347-1:2015			
Clause	Requirement + Test	Result - Remark	Verdict
	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 5,5	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 $20\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$		P
	Charged at 0,9 and 1,1 times rated supply voltage at $25\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ for 24 h		P
	Current and voltage characteristics within those declared by controlgear manufacturer		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)	Max 0,1	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)		P
	- Battery voltage (V)	Max 4,1	P
	- Discharge current (A)	Max 0,52	P

24 (-)	INDICATOR		P
	Compliance with 22.6.7 of IEC 60598-2-22		P

Appendix 2 - Requirements of IEC 61347-2-7:2011 used in conjunction with IEC 61347-1:2015			
Clause	Requirement + Test	Result - Remark	Verdict

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
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	P
	- 1 h at maximum ambient temperature (°C)	25	P
26.b (-)	Endurance test 50 h at an ambient that produces tc; ambient temperature (°C)	75	P
	After test, controlgear restart and operate lamps at rated operating voltage		P

27 (-)	POLARITY REVERSAL		P
	If declared to be proof against polarity reversal, operating with reverse supply voltage for 1 h at maximum rated voltage		P
	After test, supply connected correctly, start and operate lamps normally		P

Appendix 2 - Requirements of IEC 61347-2-7:2011 used in conjunction with IEC 61347-1:2015			
Clause	Requirement + Test	Result - Remark	Verdict
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
- (14.4)	Short-circuit across insulation consisting of lacquer, enamel or textile	(see appended table)	P
- (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 $\geq 1 \text{ M}\Omega$	>19	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		P

Appendix 2 - Requirements of IEC 61347-2-7:2011 used in conjunction with IEC 61347-1:2015			
Clause	Requirement + Test	Result - Remark	Verdict
	No dangerous compatibility between output socket-outlet and a plug for socket-outlets for input circuit in relation to installation rules, voltages and frequencies		P
	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:		P
	- plugs not able to enter socket-outlets of other standardised system		P
	- socket-outlets not admit plugs of other standardised system		P
	- 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
	- 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

Appendix 2 - Requirements of IEC 61347-2-7:2011 used in conjunction with IEC 61347-1:2015			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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		P
	Insulation between circuits other than SELV or FELV and accessible conductive parts in according Table 6 in 15.4.5.		P
- (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:		P
	- all conductive parts are connected together		P
	- conductive parts are reliably connected together according test of IEC 60598-1 cl. 7.2.3		P
	- conductive parts comply with requirements of Annex A in case of insulation fault		P
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

Appendix 2 - Requirements of IEC 61347-2-7:2011 used in conjunction with IEC 61347-1:2015			
Clause	Requirement + Test	Result - Remark	Verdict
	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
	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		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

Appendix 2 - Requirements of IEC 61347-2-7:2011 used in conjunction with IEC 61347-1:2015			
Clause	Requirement + Test	Result - Remark	Verdict
	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
32 (18)	RESISTANCE TO HEAT, FIRE AND TRACKING		N/A
- (18.1)	Ball-pressure test:		N/A
	- part tested; temperature (°C).....	Refer to IEC 60598-1 & IEC 60598-2-22	N/A
	- part tested; temperature (°C).....		N/A
- (18.2)	Test of printed boards:		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):		N/A
	- part tested.....		N/A
	- part tested.....		N/A
- (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

Appendix 2 - Requirements of IEC 61347-2-7:2011 used in conjunction with IEC 61347-1:2015			
Clause	Requirement + Test	Result - Remark	Verdict
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
	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		P
	a) no LED module inserted (and all at same time)		N/A
	b) double LED modules in series		P
	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 $\geq 1 \text{ M}\Omega$	>19	P

Appendix 2 - Requirements of IEC 61347-2-7:2011 used in conjunction with IEC 61347-1:2015			
Clause	Requirement + Test		Verdict
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
	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):						N/A
I 1 (mA)	I 2 (mA)	I 3 (mA)	I 4 (mA)	I 5 (mA)	I 6 (mA)	I 7 (mA)	I 8 (mA)

28 (14)	TABLE: tests of fault conditions		
Part	Simulated fault		Hazard
B1	Short-circuited: No work, Emergency mode can work normally		NO
C5	Short-circuited: No work, Emergency mode can't work normally		NO
D1	Short-circuited: No work, Emergency mode can work normally		NO
D2	Short-circuited: No work, Emergency mode can work normally		NO
Q1	Short-circuited: normal work		NO
D6	Short-circuited: No work, Emergency mode can work normally		NO
C7	Short-circuited: normal work, Emergency mode can't work normally		NO
Q2	Short-circuited: normal work, Emergency mode can't work normally		NO
C6	Short-circuited: normal work		NO
D5	Short-circuited: normal work, low output, Emergency mode can't work normally		NO
Q4	Short-circuited: normal work		NO
Q5	Short-circuited: normal work, Emergency mode can't work normally		NO
Q6	Short-circuited: normal work		NO
Q7	Short-circuited: normal work, Emergency mode can't work normally		NO

Appendix 2 - Requirements of IEC 61347-2-7:2011 used in conjunction with IEC 61347-1:2015			
Clause	Requirement + Test	Result - Remark	Verdict
D3	Short-circuited: No work, Emergency mode can work normally		NO
D4	Short-circuited: normal work, Emergency mode can't work normally		NO
D7	Short-circuited: normal work, Emergency mode can work normally		NO
C9	Short-circuited: normal work, Emergency mode can't work normally		NO
LED	Short-circuited: normal work, Emergency mode can't work normally		NO

30 (16)		TABLE: clearance and creepage distance measurements (mm)						P
Applicable part of IEC 61347-1 Table 7 – 11* (refer to Annex L)								
Distances	Insulation type **	Measured clearance	Required		Measured creepage	Required		
			clearance	*Table		creepage	*Table	
Distance 1:	B	3,2	2,5	Refer to Annex L	3,2	2,6	Refer to Annex L	
Working voltage (V)					240		—	
Frequency if applicable (kHz).....					N/A		—	
PTI					< 600 ☒ ≥ 600 ☐		—	
Peak value of the working voltage \hat{U}_{out} if applicable (kV)					N/A		—	
Pulse voltage if applicable (kV)					N/A		—	
Supplementary information: Live parts of different polarity								
Distance 2:	R	5,1	4,7	Refer to Annex L	5,1	5,0	Refer to Annex L	
Working voltage (V)					240		—	
Frequency if applicable (kHz).....					N/A		—	
PTI					< 600 ☒ ≥ 600 ☐		—	
Peak value of the working voltage \hat{U}_{out} if applicable (kV)					N/A		—	
Pulse voltage if applicable (kV)					N/A		—	
Supplementary information: Live parts and the outer accessible surface of insulating parts								
Distance 3:	R	7,2	4,7	Refer to Annex L	7,2	5,0	Refer to Annex L	
Working voltage (V)					240		—	
Frequency if applicable (kHz).....					N/A		—	
PTI					< 600 ☒ ≥ 600 ☐		—	
Peak value of the working voltage \hat{U}_{out} if applicable (kV)					N/A		—	
Pulse voltage if applicable (kV)					N/A		—	
Supplementary information: Input and output								

Appendix 2 - Requirements of IEC 61347-2-7:2011 used in conjunction with IEC 61347-1:2015			
Clause	Requirement + Test	Result - Remark	Verdict

** 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
- (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

Appendix 2 - Requirements of IEC 61347-2-7:2011 used in conjunction with IEC 61347-1:2015			
Clause	Requirement + Test	Result - Remark	Verdict
- (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 (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

Appendix 2 - Requirements of IEC 61347-2-7:2011 used in conjunction with IEC 61347-1:2015			
Clause	Requirement + Test	Result - Remark	Verdict
I (-)	ANNEX I: BATTERIES FOR EMERGENCY LUMINAIRES (Annex numbers between parentheses refer to IEC 60598-2-22)		N/A
(A.1)	Type of batteries	Refer to IEC 60598-1 & IEC 60598-2-22	N/A
(A.2)	Conform to relevant standard		N/A
	Operate within specific tolerance		N/A
(A.3)	Battery capacity for rated duration up to time of replacement		N/A
(A.4)	Sealed nickel cadmium batteries		N/A
(A.4.1)	Conform to IEC 60285		N/A
(A.4.2.a)	Maximum ambient air temperature 50 °C		N/A
(A.4.2.b)	Maximum overcharge rate 0,08 C _{5A}		N/A
(A.4.2.c)	Minimum ambient temperature 5 °C		N/A
(A.4.2.d)	Maximum discharge rates for 1 h: 0,6 C _{5A} and 3 h: 0,25 C _{5A}		N/A
(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		N/A
(A.7)	Evidence of alternative operating parameters		N/A
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
	a) supply failure or disconnection not cause an unwanted discharge		N/A

Appendix 2 - Requirements of IEC 61347-2-7:2011 used in conjunction with IEC 61347-1:2015			
Clause	Requirement + Test	Result - Remark	Verdict
	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 <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	Class II	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	Class III	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	non-inherently short circuit proof controlgear	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	inherently short circuit proof controlgear	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	fail safe controlgear	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	non-short-circuit proof controlgear	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
- (L.4)	Marking		P
	Adequate symbols are used		P
- (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	N/A	—
	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

Appendix 2 - Requirements of IEC 61347-2-7:2011 used in conjunction with IEC 61347-1:2015			
Clause	Requirement + Test	Result - Remark	Verdict
	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:	>19	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:	3750	P
	2) Over basic or supplementary insulation between:		P
	a) live parts having different polarity:	1875	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:	3750	P
- (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

Appendix 2 - Requirements of IEC 61347-2-7:2011 used in conjunction with IEC 61347-1:2015			
Clause	Requirement + Test	Result - Remark	Verdict
	Required distance (mm)		—
	Measured (mm)		N/A
	Supplementary information		—
	2) Supplementary distance through insulation		P
	Required distance (mm)	0,13	—
	Measured (mm)	0,15	P
	Supplementary information		—
	3) Reinforced distance through insulation		P
	Required distance (mm)	0,25 (sheet) / 0,83 (solid)	—
	Measured (mm)	0,45 (sheet) / 0,9 (solid)	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		N/A
- (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		P
	- 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		N/A
	- Separated layers (alternative): Min. 3 layers and 2/3 of the layers fulfil mandrel test of 100N		P
- (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

Appendix 2 - Requirements of IEC 61347-2-7:2011 used in conjunction with IEC 61347-1:2015			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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		N/A
	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
	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

Appendix 2 - Requirements of IEC 61347-2-7:2011 used in conjunction with IEC 61347-1:2015			
Clause	Requirement + Test	Result - Remark	Verdict
	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

Appendix 3 - Requirements of IEC 62031:2008/A2:2014

Clause	Requirement + Test	Result - Remark	Verdict
6	CLASSIFICATION		P
	Built-in module	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	Independent module	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	Integral module	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	For Integral module; Note to 1.2.1 in IEC 60598-1 applies.		P
13.2	Module withstands overpower condition >15 min.	150% rated voltage, thermally stabilised	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
14	TABLE: tests of fault conditions		P
Part	Simulated fault		Hazard
LED bulb	Short circuit: Lighting not work		No

Appendix 4 - Requirements of IEC 62493:2015			
Clause	Requirement + Test	Result - Remark	Verdict
4	LIMITS		P
4.1	General		P
	Comply with Van der Hoofden test limit in 4.2.3 or inherently compliant in 4.2.2 and pass assessment procedure for intentional radiators in 4.3		P
4.2	Unintentional radiating part of lighting equipment		P
4.2.2	Lighting equipment deemed to comply with the Van der Hoofden test without testing		P
	1) electronic controlgear	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	2) incandescent-lamp technology	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	3) LED-light-source technology	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	4) OLED-light-source technology	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	5) high-pressure discharge lamp LED-light-source technologies	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	6) low-pressure discharge lamp technologies with exposure distance ≥ 50 cm	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	7) independent auxiliary	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	Not fulfil any of 1-7 above subject to 4.2.3		—
4.2.3	Applications of limits		N/A
	Not fulfil any of 1-7 in 4.2.2 but the compliance factor F is ≤ 1		N/A
4.3	Intentional radiating part of lighting equipment		N/A
	Comply with one of methods in Clause 7 if intentional radiator		N/A
5	GENERAL		N/A
6	MEASUREMENT PROCEDURE FOR THE VAN DER HOOFDEN TEST		N/A
7	ASSESSMENT PROCEDURE INTENTIONAL RADIATORS		N/A

Appendix 5 - Photographs

Overview

Both models have same appearance and construction except model name



Battery box

Appendix 5 - Photographs



Cord anchorage in battery box



Interview of battery box

Appendix 5 - Photographs



Emergency controlgear

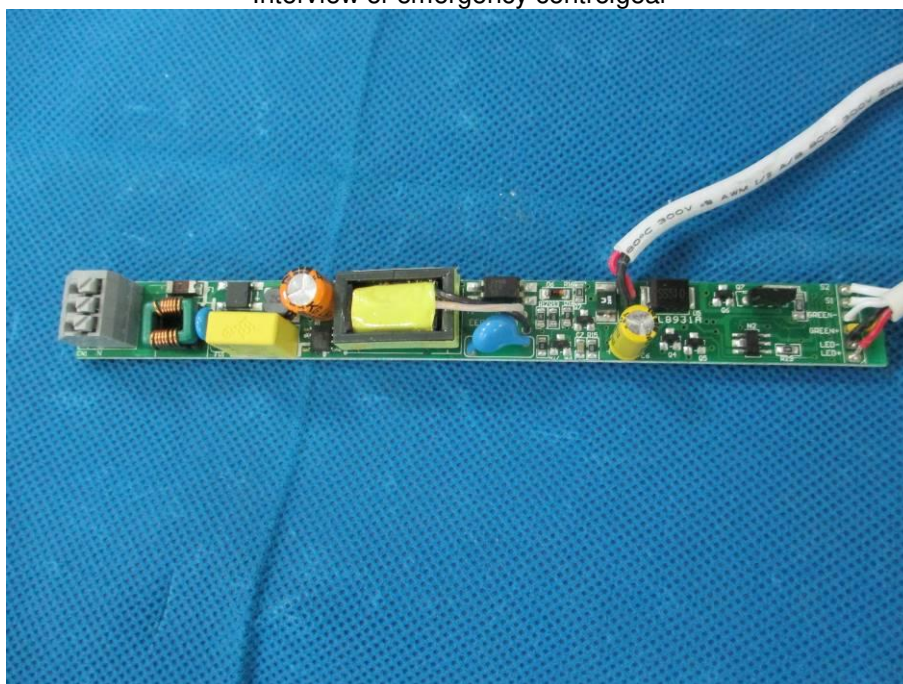


Cord anchorage
The cable is non-replaceable

Appendix 5 - Photographs

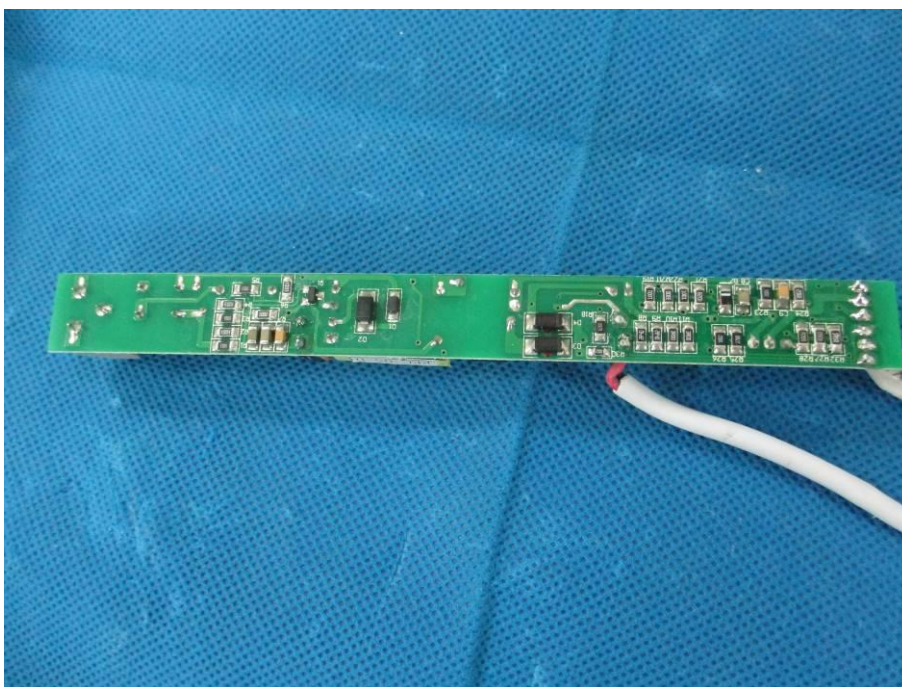


Interview of emergency controlgear

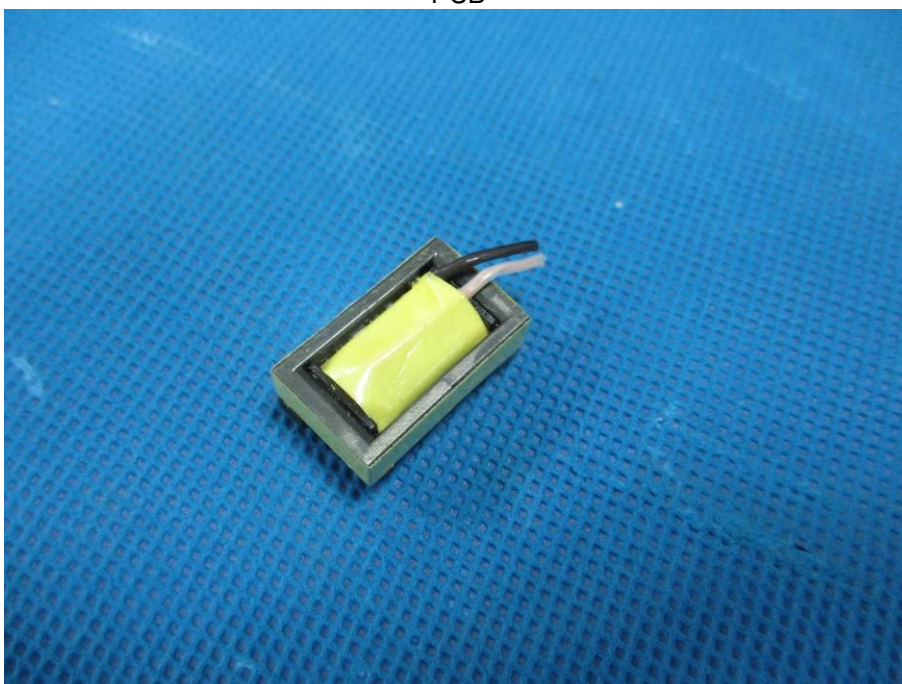


PCB

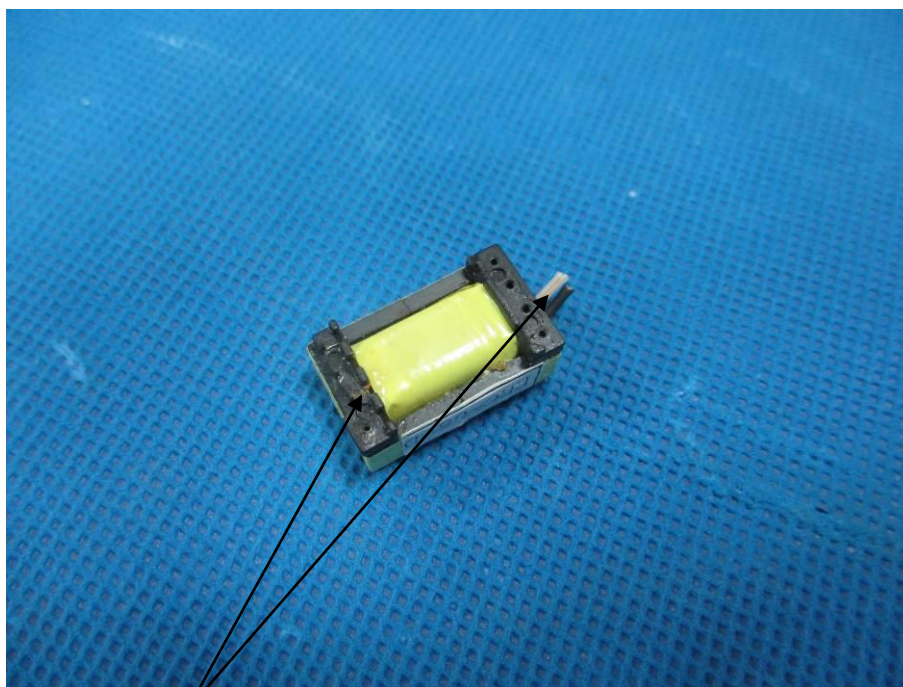
Appendix 5 - Photographs



PCB



Transformer

Appendix 5 - Photographs

Transformer

The extended primary winding and secondary winding are covered by teflon tube



Transformer

Appendix 5 - Photographs

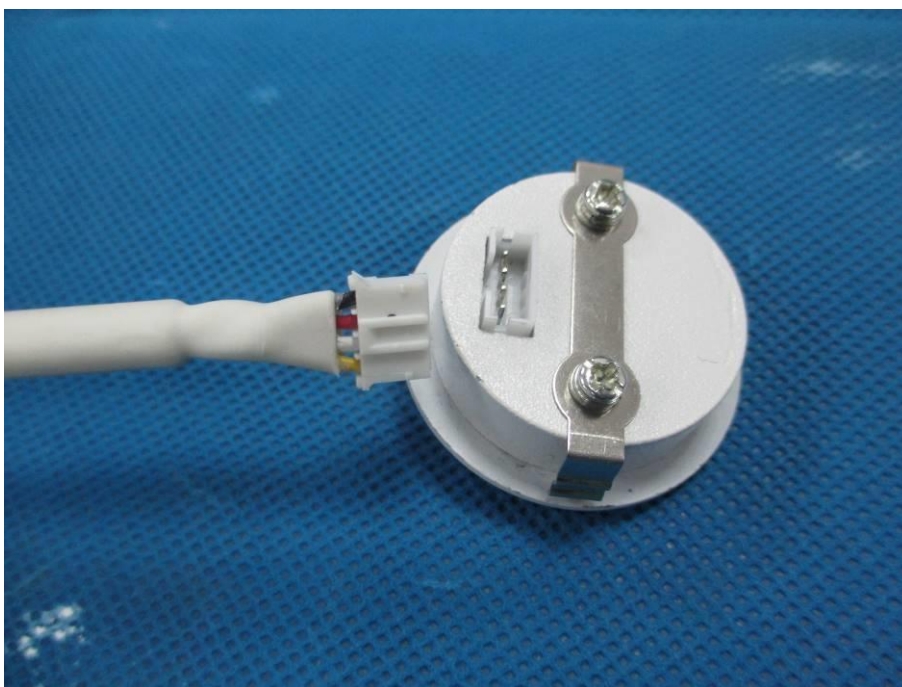


Transformer



Transformer

Appendix 5 - Photographs



Connector of lamp

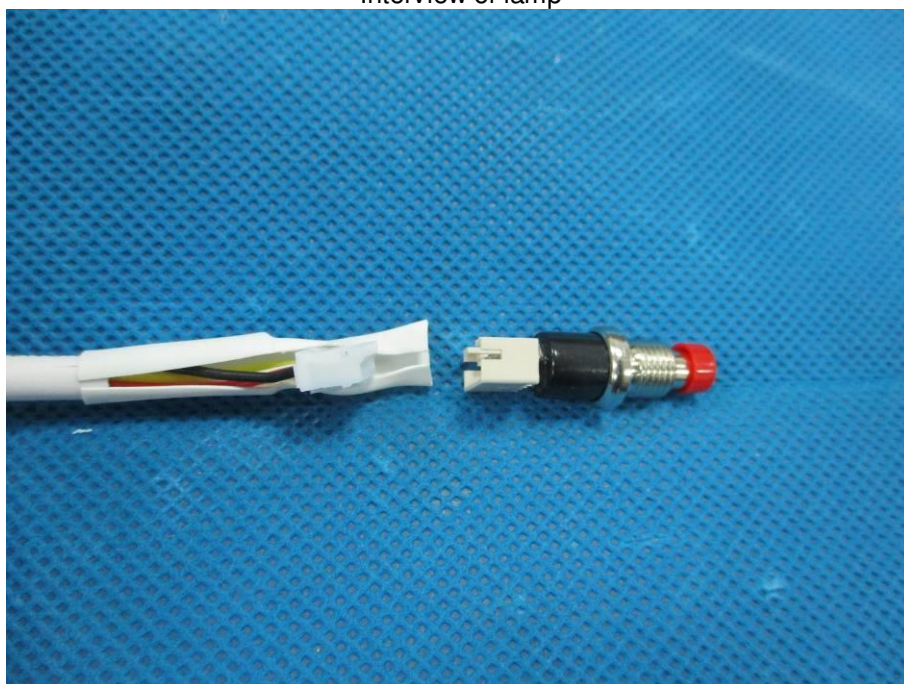


Emergency lamp

Appendix 5 - Photographs

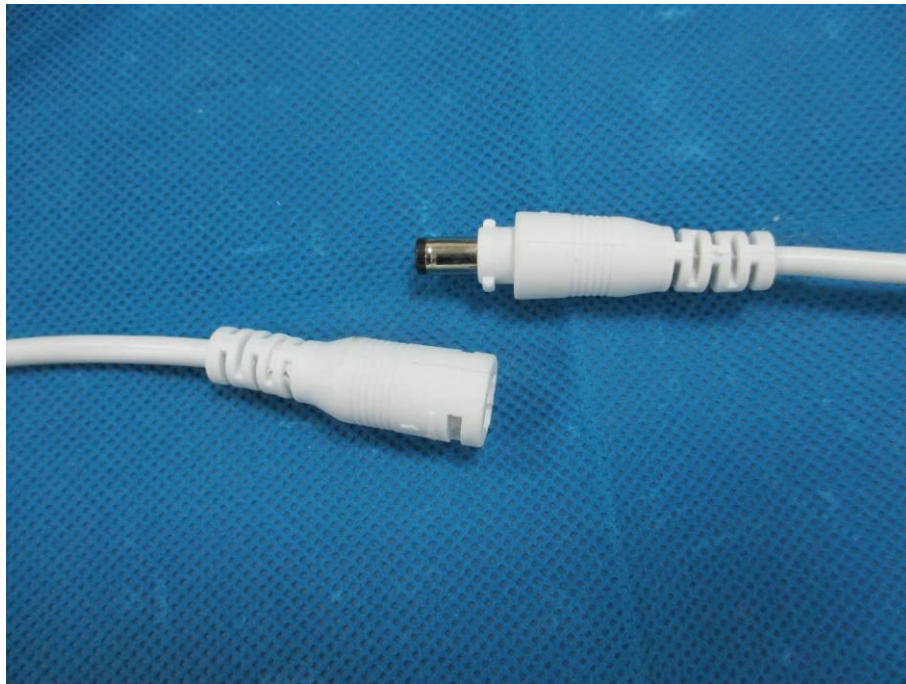


Interview of lamp

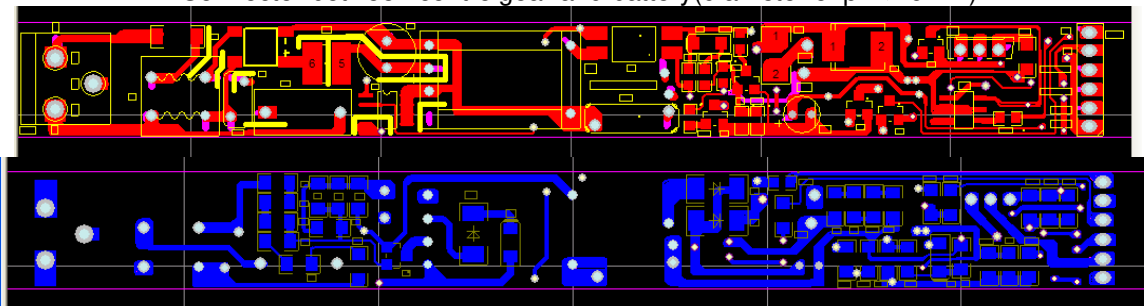


Testing switch

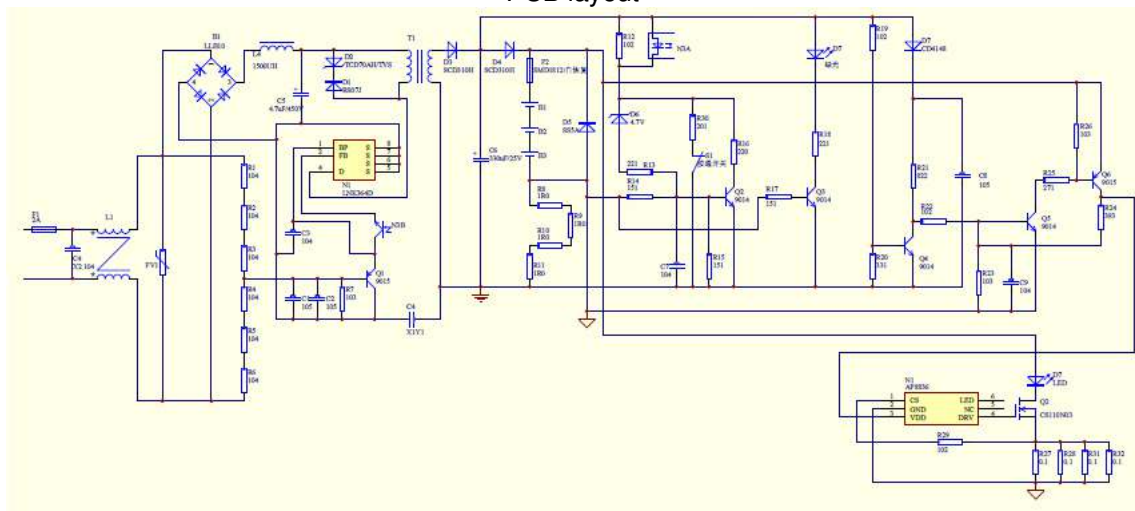
Appendix 5 - Photographs



Connector between controlgear and battery(diameter of pin > 6mm)



PCB layout



Circuit diagram