Test Report issued under the responsibility of:

TÜVRheinland®

TEST REPORT
IEC 60598-2-13
Luminaires
Part 2: Particular requirements
Section 13: Ground recessed luminaires

Report Number. .....:	50246153 001
Date of issue .....:	2020-11-26
Total number of pages .....:	43 pages
Name of Testing Laboratory preparing the Report.....:	TÜV Rheinland / CCIC (Ningbo) Co., Ltd. 3F, Building C13, R&D Park, No.32 Lane 299 Guanghua Road, National Hi-Tech Zone, Ningbo 315048, P.R. China.
Applicant's name.....:	NIVISS PHP Sp. z o.o. Sp. K
Address .....:	Rdestowa 53D 81-577 GDYNIA, Poland
Test specification:	
Standard .....:	IEC 60598-2-13:2006, AMD1:2011, AMD2:2016 used in conjunction with IEC 60598-1:2014, AMD1:2017
Test procedure .....:	CB Scheme
Non-standard test method.....:	N/A
Test Report Form No.....:	IEC60598_2_13G
Test Report Form(s) Originator....:	Intertek Semko AB
Master TRF.....:	Dated 2018-04

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

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

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The test results presented in this report relate only to the object tested.
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Test item description.....:	Ground recessed luminaires
Trade Mark.....:	NiViSS
Manufacturer.....:	Same as applicant
Model/Type reference.....:	GROUND-STANDARD-7; GROUND-MEDIUM-20; GROUND-BIG-33; nGROUND-STANDARD-5; nGROUND-MEDIUM-17; nGROUND-BIG-30
Ratings.....:	AC 220-240V, 50/60Hz, Class I, IP65/IP67, ta: 40 °C; for more details see model list on page 6

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):			
☒	**CB Testing Laboratory:**	TÜV Rheinland / CCIC (Ningbo) Co., Ltd.	
Testing location/ address.....:		3F, Building C13, R&D Park, No.32 Lane 299 Guanghua Road, National Hi-Tech Zone, Ningbo 315048, P.R. China.	
Tested by (name, function, signature).....:		Jing Zheng	PE Zheng Jing
Approved by (name, function, signature)..:		Chengchao Huang	Reviewer Chengchao Huang
☐	**Testing procedure: CTF Stage 1:**	N/A	
Testing location/ address.....:			
Tested by (name, function, signature).....:			
Approved by (name, function, signature)..:			
☐	**Testing procedure: CTF Stage 2:**	N/A	
Testing location/ address.....:			
Tested by (name + signature).....:			
Witnessed by (name, function, signature).:			
Approved by (name, function, signature)..:			
☐	**Testing procedure: CTF Stage 3:**	N/A	
☐	**Testing procedure: CTF Stage 4:**	N/A	
Testing location/ address.....:			
Tested by (name, function, signature).....:			
Witnessed by (name, function, signature).:			
Approved by (name, function, signature)..:			
Supervised by (name, function, signature):			

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

1. The complete report consists of 43 pages.
2. Attachment 1: Other national requirements of SASO deviation, page 1, totally 1 page;
3. Attachment 2: The requirements of IEC 62031:2018, page 1 - page 3, totally 3 pages;
4. Attachment 3: Photobiological Safety Of Lamps And Lamp Systems IEC 62471:2006 and IEC/TR 62778:2014, page 1 - page 5, totally 5 pages;
5. Attachment 4: Acceptance test for control circuit according to IEC 61347-2-13:2014+A1:2016 and IEC 61347-1:2015+A1:2017, totally 24 page
6. Attachment 5: Photo documentation, page 1 - page 15, totally 15 pages.

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
1. Unless other specified, full tests were performed on the models GROUND-STANDARD-7; GROUND-MEDIUM-20 and GROUND-BIG-33. 2. Construction check was performed on all models.	TÜV Rheinland / CCIC (Ningbo) Co., Ltd. 3F, Building C13, R&D Park, No.32 Lane 299 Guanghua Road, National Hi-Tech Zone, Ningbo 315048, P.R. China.

Summary of compliance with National Differences:

Copy of marking plate:

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

Model No.: GROUND-BIG-33 Made in Poland
220-240V~ 50/60Hz ta: 40 °C
35W T90°C
IP65 and IP67

NIVISS PHP Sp. z o.o. Sp. K
Rdestowa 53D 81-577 GDYNIA, Poland

On the luminaires surface

On the lamp cover

Remark:

1. The height of letters and numerals was 2mm.
2. The height of the other graphical symbols was 5mm.
3. The minimum height of symbol  shall be 15 mm
4. The others' rating labels are only different from the model name and rated power.

Test item particulars.....:	Ground recessed luminaire
Classification of installation and use.....:	Class I
Supply Connection.....:	Supply cord
.....:	
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.....:	2020.10.20
Date (s) of performance of tests.....:	2020.10.20 to 2020.11.06

General remarks:

"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

Throughout this report a ☒ comma / ☐ point is used as the decimal separator.

Clause numbers between brackets refer to clauses in IEC 60598-1

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided.....:	☐ **Yes** ☒ **Not applicable**

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

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

General product information:

1. The product is a LED Ground Recessed Light. The luminaire designed to be not used in areas where motor vehicles may circulate, carriage ways, parking areas, etc.
2. Rated Max. Static pressure: Max. 5 KN; Rated Max. Surface temperature: T 90ºC.
3. All models are with the same construction, except for rated wattage and circuit diagram. For detail see model list on next page.

Model list							
Item	Model	Rated power (W)	LED type	LED Quantity (PCS)	CCT (K)	Size (mm)	Circuit diagram
1	GROUND-STANDARD-7	LED 7W	CREE XP-G3	3	2700-5000	Φ96x74,3	A
2	GROUND-MEDIUM-20	LED 17W	CREE XP-G3	7	2700-5000	Φ148x89,6	B
3	GROUND-BIG-33	LED 35W	CREE CXB2540	1	2700-5000	Φ216,5x106,5	C
4	nGROUND-STANDARD-5	LED 4,5W	CREE XP-G3	3	2700-5000	Φ92.2x72,3	A
5	nGROUND-MEDIUM-17	LED 16W	CREE XP-G3	7	2700-50 0	Φ148x89,6	B
6	nGROUND-BIG-30	LED 30W	CREE CXB2540	1	2700-5000	Φ216.5x154,1	C

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
13.2	**GENERAL TEST REQUIREMENTS**		P
13.2 (0.3)	More sections applicable..... :	Yes ☐ No ☒ Section/s:	—
13.2 (0.5)	Components	(see Annex 1)	—
13.2 (0.7)	**Information for luminaire design in light sources standards**		—
13.2 (0.7.2)	Light source safety standard ..... :	IEC 62031	—
	Luminaire design in the light source safety standard		—

13.4 (2)	**CLASSIFICATION**		P
13.4 (2.2)	Type of protection ..... :	Class I	P
13.4 (2.3)	Degree of protection..... :	IP67 and IP65	—
13.4 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces ..... :	Yes ☒ No ☐	—
13.4 (2.5)	Luminaire for normal use ..... :	Yes ☒ No ☐	—
	Luminaire for rough service ..... :	Yes ☐ No ☒	—

13.5 (3)	**MARKING**		P
13.5 (3.2)	Mandatory markings		P
	Position of the marking		P
	Format of symbols/text		P
13.5 (3.3)	Additional information		P
	Language of instructions		P
13.5 (3.3.1)	Combination luminaires		N/A
13.5 (3.3.2)	Nominal frequency in Hz	50/60	P
13.5 (3.3.3)	Operating temperature		N/A
13.5 (3.3.5)	Wiring diagram		N/A
13.5 (3.3.6)	Special conditions		N/A
13.5 (3.3.7)	Metal halide lamp luminaire – warning		N/A
13.5 (3.3.8)	Limitation for semi-luminaires		N/A
13.5 (3.3.9)	Power factor and supply current		P
13.5 (3.3.10)	Suitability for use indoors		P
13.5 (3.3.11)	Luminaires with remote control		N/A

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
13.5 (3.3.12)	Clip-mounted luminaire – warning		N/A
13.5 (3.3.13)	Specifications of protective shields		N/A
13.5 (3.3.14)	Symbol for nature of supply		P
13.5 (3.3.15)	Rated current of socket outlet		N/A
13.5 (3.3.16)	Rough service luminaire		N/A
13.5 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments	Type Z	P
13.5 (3.3.18)	Non-ordinary luminaires with PVC cable		N/A
13.5 (3.3.19)	Protective conductor current in instruction if applicable		N/A
13.5 (3.3.20)	Provided with information if not intended to be mounted within arm's reach		N/A
13.5 (3.3.21)	Non-replaceable and non-user replaceable light sources information provided	Non-user replaceable	P
13.5 (3.3.22)	Controllable luminaires, classification of insulation provided		N/A
13.5 (3.3.23)	Luminaire without controlgear provided with necessary information for selection of appropriate component		N/A
13.5 (3.3.24)	If not supplied with terminal block, information on the packaging		P
13.5 (3.4)	Test with water		P
	Test with hexane		P
	Legible after test		P
	Label attached		P
13.5.1 (-)	Rated load in the manufacturer's instruction (N) … :	5000	P
13.5.2 (-)	Rated maximum surface temperature *T* (°C)…….:	90	P
13.5.3 (-)	Information concerning external connection box		P
13.6 (4)	**CONSTRUCTION**		P
13.6 (4.2)	Components replaceable without difficulty		P
13.6 (4.3)	Wireways smooth and free from sharp edges		P
13.6 (4.4)	**Lampholders**		N/A

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
13.6 (4.4.1)	Integral lampholder		N/A
13.6 (4.4.2)	Wiring connection		N/A
13.6 (4.4.3)	Lampholder for end-to-end mounting		N/A
13.6 (4.4.4)	Positioning		N/A
	- pressure test (N) ..... :		—
	After test the lampholder comply with relevant standard sheets and show no damage		N/A
	After test on single-capped lampholder the lampholder have not moved from its position and show no permanent deformation		N/A
	- bending test (N) ..... :		—
	After test the lampholder have not moved from its position and show no permanent deformation		N/A
13.6 (4.4.5)	Peak pulse voltage		N/A
13.6 (4.4.6)	Centre contact		N/A
13.6 (4.4.7)	Parts in rough service luminaires resistant to tracking		N/A
13.6 (4.4.8)	Lamp connectors		N/A
13.6 (4.4.9)	Caps and bases correctly used		N/A
13.6 (4.4.10)	Light source for lampholder or connection according IEC 60061 not connected another way		N/A
13.6 (4.5)	**Starter holders**		N/A
	Starter holder in luminaires other than class II		N/A
	Starter holder class II construction		N/A
13.6 (4.6)	**Terminal blocks**		P
	Tails		P
	Unsecured blocks		N/A
13.6 (4.7)	**Terminals and supply connections**		N/A
13.6 (4.7.1)	Contact to metal parts		N/A
13.6 (4.7.2)	Test 8 mm live conductor		N/A
	Test 8 mm earth conductor		N/A
13.6 (4.7.3)	Terminals for supply conductors		N/A
13.6 (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

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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
13.6 (4.7.4)	Terminals other than supply connection		N/A
13.6 (4.7.5)	Heat-resistant wiring/sleeves		N/A
13.6 (4.7.6)	Multi-pole plug		N/A
	- test at 30 N		N/A
13.6 (4.8)	**Switches**		N/A
	- adequate rating		N/A
	- adequate fixing		N/A
	- polarized supply		N/A
	- compliance with IEC 61058-1 for electronic switches		N/A
13.6 (4.9)	**Insulating lining and sleeves**		**P**
13.6 (4.9.1)	Retainment		P
	Method of fixing ..... :	Heat-shrink	P
13.6 (4.9.2)	Insulated linings and sleeves:		P
	Resistant to a temperature > 20 °C to the wire temperature or		P
	a) & c) Insulation resistance and electric strength		N/A
	b) Ageing test. Temperature (°C)..... :		N/A
13.6 (4.10)	**Double or reinforced insulation**		P
13.6 (4.10.1)	No contact, mounting surface – accessible metal parts – wiring of basic insulation	For Class II construction	P
	Safe installation fixed luminaires		P
	Capacitors and switches		N/A
	Interference suppression capacitors according to IEC 60384-14		N/A
13.6 (4.10.2)	Assembly gaps:		N/A
	- not coincidental		N/A
	- no straight access with test probe		N/A
13.6 (4.10.3)	Retainment of insulation:		P
	- fixed		P

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	- unable to be replaced; luminaire inoperative		P
	- sleeves retained in position		P
	- lining in lampholder		N/A
13.6 (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
	Resistors comply with test (a) in 14.1 of IEC 60065		N/A
13.6 (4.11)	**Electrical connections and current-carrying parts**		**P**
13.6 (4.11.1)	Contact pressure		P
13.6 (4.11.2)	Screws:		N/A
	- self-tapping screws		N/A
	- thread-cutting screws		N/A
13.6 (4.11.3)	Screw locking:		P
	- spring washer		P
	- rivets		N/A
13.6 (4.11.4)	Material of current-carrying parts		P
13.6 (4.11.5)	No contact to wood or mounting surface		P
13.6 (4.11.6)	Electro-mechanical contact systems		N/A
13.6 (4.12)	**Screws and connections (mechanical) and glands**		**P**
13.6 (4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		N/A
	Torque test: torque (Nm); part..... :	Screw fixing the enclosure: 1,8Nm	P
	Torque test: torque (Nm); part..... :	Screw fixing the earthing terminal: 1,2Nm	P
	Torque test: torque (Nm); part..... :	Screw fixing lamp cover: 1,8Nm	P
13.6 (4.12.2)	Screws with diameter < 3 mm screwed into metal		N/A

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
13.6 (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
13.6 (4.12.5)	Screwed glands; force (Nm)..... :	6,25 Nm for models GROUND-STANDARD-7 and nGROUND-STANDARD-5; 3,25 Nm for model other models	P
13.6 (4.13)	**Mechanical strength**		**P**
13.6 (4.13.1)	Impact tests:		P
	- fragile parts; energy (Nm)..... :	0,5Nm for lamp cover	P
	- other parts; energy (Nm) ..... :	0,7Nm for metal enclosure	P
	1) live parts		P
	2) linings		N/A
	3) protection		P
	4) covers		P
13.6 (4.13.2)	Metal parts have adequate mechanical strength		P
13.6 (4.13.3)	Straight test finger		P
13.6 (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
13.6 (4.13.6)	Tumbling barrel		N/A
13.6 (4.14)	**Suspensions, fixings and means of adjusting**		**N/A**
13.6 (4.14.1)	Mechanical load:		N/A
	A) four times the weight		N/A
	B) torque 2,5 Nm		N/A

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	C) bracket arm; bending moment (Nm)..... :		N/A
	D) load track-mounted luminaires		N/A
	E) clip-mounted luminaires, glass-shelve. Thickness (mm) ..... :		N/A
	Metal rod. diameter (mm) ..... :		N/A
	Fixed luminaire or independent control gear without fixing devices		N/A
13.6 (4.14.2)	Load to flexible cables		N/A
	Mass (kg) ..... :		—
	Stress in conductors (N/mm²) ..... :		N/A
	Mass (kg) of semi-luminaire ..... :		N/A
	Bending moment (Nm) of semi-luminaire ..... :		N/A
13.6 (4.14.3)	Adjusting devices:		N/A
	- flexing test; number of cycles..... :		N/A
	- strands broken..... :		N/A
	- electric strength test afterwards		N/A
13.6 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors		N/A
13.6 (4.14.5)	Guide pulleys		N/A
13.6 (4.14.6)	Strain on socket-outlets		N/A
13.6 (4.15)	**Flammable materials**		**P**
	- glow-wire test 650°C..... :	See Test Table 13.15 (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		P
13.6 (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

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
13.6 (4.16)	**Luminaires for mounting on normally flammable surfaces**		**P**
	No lamp control gear ..... :	(compliance with Section 12)	N/A
	Provided with adaptor for a track meet the requirements for direct mounting on normally flammable surfaces		N/A
13.6 (4.16.1)	Lamp control gear spacing:		N/A
	- spacing 35 mm		N/A
	- spacing 10 mm		N/A
13.6 (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
13.6 (4.16.3)	Design to satisfy the test of 12.6	(see clause 12.6)	N/A
13.6 (4.17)	**Drain holes**		N/A
	Clearance at least 5 mm		N/A
13.6 (4.18)	**Resistance to corrosion**		**P**
13.6 (4.18.1)	- rust-resistance		P
13.6 (4.18.2)	- season cracking in copper		P
13.6 (4.18.3)	- corrosion of aluminium		P
13.6 (4.19)	Ignitors compatible with ballast		N/A
13.6 (4.20)	Rough service vibration		N/A
13.6 (4.21)	**Protective shield**		N/A
13.6 (4.21.1)	Shield fitted if tungsten halogen lamps or metal halide lamps		N/A
	Shield of glass if tungsten halogen lamps		N/A
13.6 (4.21.2)	Particles from a shattering lamp not impair safety		N/A
13.6 (4.21.3)	No direct path		N/A
13.6 (4.21.4)	Impact test on shield		N/A

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Glow-wire test on lamp compartment ..... :	See Test Table 13.15 (13.3.2)	N/A
13.6 (4.22)	Attachments to lamps not cause overheating or damage		N/A
13.6 (4.23)	Semi-luminaires comply Class II		N/A
13.6 (4.24)	**Photobiological hazards**		**P**
13.6 (4.24.1)	No excessive UV radiation if tungsten halogen lamps and metal halide lamps (Annex P)		N/A
13.6 (4.24.2)	Retinal blue light hazard		P
	Class of risk group assessed according to IEC/TR 62778 ..... :	Ethr=1237lx for GROUND-BIG-33, nGROUND-BIG-30; Ethr=1228lx for other models	—
	Luminaires with E_{thr} :		P
	a) Fixed luminaires		P
	- distance x m, borderline between RG1 and RG2.. :	d=0,856m for GROUND-BIG-33, nGROUND-BIG-30; d=1,460m for other models	P
	- marking and instruction according 3.2.23		P
	b) Portable and handheld luminaires		N/A
	- marking according 3.2.23 if RG1 exceeded at 200 mm according to IEC/TR 62778		N/A
	Portable luminaires for children IEC 60598-2-10 and Mains socket outlet nightlights IEC 60598-2-12 not exceed RG1 at 200 mm according to IEC/62778		N/A
13.6 (4.25)	**Mechanical hazard**		**P**
	No sharp point or edges		P
13.6 (4.26)	**Short-circuit protection**		N/A
13.6 (4.26.1)	Adequate means of uninsulated accessible SELV parts		N/A
13.6 (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
13.6 (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

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	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
13.6 (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 (°C) ..... :		—
	100 cycles between t min and t max		N/A
	Temperature sensing control still in position		N/A
13.6 (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
13.6 (4.30)	**Luminaires with non-user replaceable light source**		P
	If protective cover provide protection against electric shock and marked with “caution, electric shock risk” symbol:		P
	Minimum two fixing means		P
13.6 (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
13.6 (4.31.1)	SELV circuits		N/A
	Used SELV source		N/A
	Voltage ≤ ELV		N/A
	Insulating of SELV circuits from LV supply		N/A
	Insulating of SELV circuits from other non SELV circuits		N/A
	Insulating of SELV circuits from FELV		N/A
	Insulating of SELV circuits from other SELV circuits		N/A

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	SELV circuits insulated from accessible parts according Table X.1		N/A
	Plugs not able to enter socket-outlets of other voltage systems		N/A
	Socket outlets does not admit plugs of other voltage systems		N/A
	Plugs and socket-outlets does not have protective conductor contact		N/A
13.6 (4.31.2)	FELV circuits		N/A
	Used FELV source		N/A
	Voltage ≤ 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
13.6 (4.31.3)	Other circuits		P
	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
13.6 (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

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	- only connected to protective earth		N/A
13.6.1 (-)	**Resistance to static load**		P
	Withstand the minimum static load		P
	Comply with 4.13.1 of Part 1 after test		P
13.6.2 (-)	**Resistance to torque and shear loads**		N/A
13.6.2.1 (-)	Torque test 50 N 1 min.		N/A
	Comply with 4.13.1 of Part 1 after test		N/A
13.6.3 (-)	**Resistance to thermal shock**		P
	Resistance to thermal shock with iced water		P
13.6.4 (-)	**Edges**		P
	Accessible edges are rounded		P
	Surface of top assembly is smooth and free from burrs, flashes and the like		P
13.6.5 (-)	**Mechanical strength**		P
	Mechanical strength with impact energy of 5 Nm		P
13.7 (11)	**CREEPAGE DISTANCES AND CLEARANCES**		P
13.7 (11.2.1)	Impulse withstand category (Normal category II)	Category II ☒ Category III ☐	—
	Category III according Annex U		N/A
	Protected against pollution, reduced creepage and clearance according Annex P of IEC 61347-1		N/A
13.7 (11.2.2)	Creepage distances for frequency up to 30 kHz	See Test Table 13.7 (11.2) I	P
	Creepage distances for frequency over 30 kHz:		N/A
	- Controlgear marked with $\hat{U}_{OUT}$ and f_{UOUT} according IEC 61347-1, clause 7.1, item w	See Test Table 13.7 (11.2) II	N/A
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 13.7 (11.2) II	N/A
13.7 (11.2.3)	Clearances for frequency up to 30 kHz	See Test Table 13.7 (11.2) I	P
	Clearances distances for frequency over 30 kHz:		N/A
	- Controlgear marked with U_P	See Test Table 13.7 (11.2) II	N/A
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 13.7 (11.2) II	N/A
13.8 (7)	**PROVISION FOR EARTHING**		P

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
13.8 (7.2.1 + 7.2.3)	Accessible metal parts		P
	Metal parts in contact with supporting surface		P
	Resistance < 0,5 Ω..... :	0,05Ω	P
	Self-tapping screws used		N/A
	Thread-forming screws		N/A
	Thread-forming screw used in a grove		N/A
	Earth makes contact first		P
	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N/A
	Protective earthing of the luminaire not via built-in control gear		P
13.8 (7.2.2 + 7.2.3)	Earth continuity in joints, etc.		N/A
13.8 (7.2.4)	Locking of clamping means		P
	Compliance with 4.7.3		P
	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N/A
13.8 (7.2.5)	Earth terminal integral part of connector socket		N/A
13.8 (7.2.6)	Earth terminal adjacent to mains terminals		P
13.8 (7.2.7)	Electrolytic corrosion of the earth terminal		P
13.8 (7.2.8)	Material of earth terminal		P
	Contact surface bare metal		P
13.8 (7.2.10)	Class II luminaire for looping-in		N/A
	Double or reinforced insulation to functional earth		N/A
13.8 (7.2.11)	Earthing core coloured green-yellow		P
	Length of earth conductor		P

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

13.9 (15)	**SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS**		N/A
	Separately approved; component list..... :	(see Annex 1)	N/A

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Part of the luminaire ..... :	(see Annex 4)	N/A
13.10 (5)	**EXTERNAL AND INTERNAL WIRING**		P
13.10 (5.2)	**Supply connection and external wiring**		**P**
13.10 (5.2.1)	Means of connection..... :	Supply cord	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		P
13.10 (5.2.2)	Type of cable..... :	H05RN-F	P
	Nominal cross-sectional area (mm²)..... :	3 x 1,0mm^2	P
	Cables equal to IEC 60227 or IEC 60245		P
13.10 (5.2.3)	Type of attachment, X, Y or Z	Type Z	P
13.10 (5.2.5)	Type Z not connected to screws		P
13.10 (5.2.6)	Cable entries:		P
	- suitable for introduction		P
	- adequate degree of protection		P
13.10 (5.2.7)	Cable entries through rigid material have rounded edges		P
13.10 (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
13.10 (5.2.9)	Locking of screwed bushings		N/A
13.10 (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

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
13.10 (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
	Glands not used as anchorage		N/A
	Labyrinth type anchorages		N/A
13.10 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment	Type Z	P
13.10 (5.2.10.3)	Tests:		N/A
	- impossible to push cable; unsafe		P
	- pull test: 25 times; pull (N) ..... :	60N	P
	- torque test: torque (Nm) ..... :	0,25Nm	P
	- displacement ≤ 2 mm		P
	no movement of conductors		P
	- no damage of cable or cord		P
	- function independent of electrical connection		P
13.10 (5.2.11)	External wiring passing into luminaire		P
13.10 (5.2.12)	Looping-in terminals		N/A
13.10 (5.2.13)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		P
13.10 (5.2.14)	Mains plug same protection		N/A
	Class III luminaire plug		N/A
	No unsafe compatibility		N/A
13.10 (5.2.16)	Appliance inlets (IEC 60320)		N/A
	Installation couplers (IEC 61535)		N/A

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Other appliance inlet or connector according relevant IEC standard		N/A
13.10 (5.2.17)	No standardized interconnecting cables properly assembled		N/A
13.10 (5.2.18)	Used plug in accordance with		N/A
	- IEC 60083		N/A
	- other standard		N/A
13.10 (5.3)	**Internal wiring**		**P**
13.10 (5.3.1)	Internal wiring of suitable size and type		P
	Through wiring		N/A
	- not delivered/ mounting instruction		N/A
	- factory assembled		N/A
	- socket outlet loaded (A)..... :		N/A
	- temperatures ..... :	(see Annex 2)	N/A
	Green-yellow for earth only		P
13.10 (5.3.1.1)	Internal wiring connected directly to fixed wiring		P
	Cross-sectional area (mm²)..... :	See annex 1	P
	Insulation thickness (mm) ..... :	See annex 1	P
	Extra insulation added where necessary		N/A
13.10 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		P
	Cross-sectional area (mm²)..... :	See annex 1	P
13.10 (5.3.1.3)	Double or reinforced insulation for class II		N/A
13.10 (5.3.1.4)	Conductors without insulation		N/A
13.10 (5.3.1.5)	SELV current-carrying parts		N/A
13.10 (5.3.1.6)	Insulation thickness other than PVC or rubber		N/A
13.10 (5.3.2)	Sharp edges etc.		P
	No moving parts of switches etc.		N/A
	Joints, raising/lowering devices		N/A
	Telescopic tubes etc.		N/A

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	No twisting over 360°		P
13.10 (5.3.3)	Insulating bushings:		P
	- suitable fixed		P
	- material in bushings		P
	- material not likely to deteriorate		P
	- cables with protective sheath		P
13.10 (5.3.4)	Joints and junctions effectively insulated		N/A
13.10 (5.3.5)	Strain on internal wiring		N/A
13.10 (5.3.6)	Wire carriers		N/A
13.10 (5.3.7)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		P
13.10 (5.4)	**Test to determine suitability of conductors having a reduced cross-sectional area**		**N/A**
	Under test the temperature of the luminaire wiring insulation not exceed the limits stated in Table 12.2	(see Annex 2)	N/A
	No damage to luminaire wiring after test		N/A
13.10 (-)	Cable for outdoor use provided by the luminaire manufacturer equal to:		P
	- 60245 IEC 57 or 60245 IEC 66		P
	- other rubber sheathed cables 450/750V according to regional Wiring Rules		N/A
13.11 (8)	**PROTECTION AGAINST ELECTRIC SHOCK**		P
13.11 (8.2.1)	Live parts not accessible		P
	Basic insulated parts not used on the outer surface without appropriate protection		P
	Basic insulated parts not accessible with standard test finger on portable, settable and adjustable luminaires		N/A
	Basic insulated parts not accessible with Ø 50 mm probe from outside, other types of luminaires		P
	Lamp and starterholders in portable and adjustable luminaires comply with double or reinforced insulation requirements		N/A

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Basic insulation only accessible under lamp or starter replacement		N/A
	Protection in any position		P
	Double-ended tungsten filament lamp		N/A
	Insulation lacquer not reliable		N/A
	Double-ended high-pressure discharge lamp		N/A
	Relevant warning according to 3.2.18 fitted to the luminaire		N/A
13.11 (8.2.2)	Portable luminaire adjusted in most unfavourable position		N/A
13.11 (8.2.3.a)	Class II luminaire:		P
	- basic insulated metal parts not accessible during starter or lamp replacement		N/A
	- basic insulation not accessible other than during starter or lamp replacement	For Class II construction	P
	- glass protective shields not used as supplementary insulation		N/A
13.11 (8.2.3.b)	BC lampholder of metal in class I luminaires shall be earthed		N/A
13.11 (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
13.11 (8.2.4)	Portable luminaire has protection independent of supporting surface		N/A
13.11 (8.2.5)	Compliance with the standard test finger or relevant probe		N/A
13.11 (8.2.6)	Covers reliably secured		P

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
13.11 (8.2.7)	Luminaire other than below with capacitor > 0,5 μF not exceed 50 V 1 min after disconnection		P
	Portable luminaire with capacitor > 0,1 μF (0.25) not exceed 34 V 1 s after disconnection		N/A
	Other luminaires with capacitor > 0,1 μF (0.25) with plug and track adaptors not exceed 60 V 5 s after disconnection		N/A
13.12 (12)	**ENDURANCE TEST AND THERMAL TEST**		P
13.12 (-)	If IP > IP 20 relevant test of (12.4), (12.5) and (12.6) after (9.2) before (9.3) specified in 13.13		—
13.12 (12.2)	**Selection of lamps and ballasts**		**—**
	Lamp used according Annex B	(Lamp used see Annex 2)	—
	Controlgear if separate and not supplied	(Controlgear used see Annex 2)	—
13.12 (12.3)	**Endurance test**		**P**
	a) mounting-position ..... :	As in normal used	—
	b) test temperature (°C)..... :	50°C	—
	c) total duration (h) ..... :	240h	—
	d) supply voltage (V)..... :	264V	—
	d) if not equipped with controlgear, constant voltage/current (V) or (A) ..... :		—
	e) luminaire ceases to operate		—
13.12 (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
13.12 (12.4)	**Thermal test (normal operation)**	(see Annex 2)	P
13.12 (12.5)	**Thermal test (abnormal operation)**	(see Annex 2)	N/A
13.12 (12.6)	**Thermal test (failed lamp control gear condition):**		N/A
13.12 (12.6.1)	Through wiring or looping-in wiring loaded by a current of (A) ..... :		—

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	- case of abnormal conditions..... :		—
	- electronic lamp control gear		N/A
	- measured winding temperature (°C): at 1,1 Un .... :		—
	- measured mounting surface temperature (°C) at 1,1 Un ..... :		N/A
	- calculated mounting surface temperature (°C) ..... :		N/A
	- track-mounted luminaires		N/A
13.12 (12.6.2)	Temperature sensing control		N/A
	- case of abnormal conditions..... :		—
	- thermal link		N/A
	- manual reset cut-out		N/A
	- auto reset cut-out		N/A
	- measured mounting surface temperature (°C) ..... :		N/A
	- track-mounted luminaires		N/A
13.12 (12.7)	**Thermal test (failed lamp control gear in plastic luminaires):**		N/A
13.12 (12.7.1)	Luminaire without temperature sensing control		N/A
13.12 (12.7.1.1)	Luminaire with fluorescent lamp ≤ 70W		N/A
	Test method 12.7.1.1 or Annex W ..... :		—
	Test according to 12.7.1.1:		N/A
	- case of abnormal conditions..... :		—
	- Ballast failure at supply voltage (V) ..... :		—
	- Components retained in place after the test		N/A
	- Test with standard test finger after the test		N/A
	Test according to Annex W:		N/A
	- case of abnormal conditions..... :		—
	- measured winding temperature (°C): at 1,1 Un..... :		—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un..... :		—
	- calculated temperature of fixing point/exposed part (°C)..... :		—
	Ball-pressure test..... :	See Test Table 13.15 (13.2.1)	N/A

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
13.12 (12.7.1.2)	Luminaire with discharge lamp, fluorescent lamp > 70W, transformer > 10 VA		N/A
	- case of abnormal conditions..... :		—
	- measured winding temperature (°C): at 1,1 Un..... :		—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un ..... :		—
	- calculated temperature of fixing point/exposed part (°C)..... :		—
	Ball-pressure test..... :	See Test Table 13.15 (13.2.1)	N/A
13.12 (12.7.1.3)	Luminaire with short circuit proof transformers ≤ 10 VA		N/A
	- case of abnormal conditions..... :		—
	- Components retained in place after the test		N/A
	- Test with standard test finger after the test		N/A
13.12 (12.7.2)	Luminaire with temperature sensing control		N/A
	- thermal link ..... :	Yes ☐ No ☐	—
	- manual reset cut-out..... :	Yes ☐ No ☐	—
	- auto reset cut-out..... :	Yes ☐ No ☐	—
	- case of abnormal conditions..... :		—
	- highest measured temperature of fixing point/ exposed part (°C):..... :		—
	Ball-pressure test: ..... :	See Test Table 13.15 (13.2.1)	N/A
13.12 (-)	Temperatures of translucent covers and accessible metal parts not exceed rated maximum surface temperature *T*		P

13.13 (9)	**RESISTANCE TO DUST AND MOISTURE**		P
13.13.1 (-)	If IP > IP 20 the order of tests as specified in clause 13.12		P
13.13 (9.2)	Tests for ingress of dust, solid objects and moisture:		P
	- classification according to IP ..... :	IP67 (IPX5 also tested)	—
	- mounting position during test..... :	as normal used	—
	- fixing screws tightened; torque (Nm) ..... :	2/3 of clause 4.12	—
	- tests according to clauses..... :	Cl.9.2.2 & Cl.9.2.8 & Cl. 9.2.6	—
	- electric strength test afterwards		P
	a) no deposit in dust-proof luminaire		N/A

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	b) no talcum in dust-tight luminaire		P
	c) no trace of water on current-carrying parts or on insulation where it could become a hazard		P
	c.1) For luminaires without drain holes – no water entry		P
	c.2) For luminaires with drain holes – no hazardous water entry		N/A
	d) no water in watertight or pressure watertight luminaire		P
	e) no contact with live parts (IP 2X)		N/A
	e) no entry into enclosure (IP 3X and IP 4X)		N/A
	e) no contact with live parts through drain holes and ventilation slots (IP3X and IP4X)		N/A
	f) no trace of water on part of lamp requiring protection from splashing water		N/A
	g) no damage of protective shield or glass envelope		P
13.13 (9.3)	Humidity test 48 h		P
13.13 (-)	Meet IP 65 and IP 67 requirements		P
13.14 (10)	**INSULATION RESISTANCE AND ELECTRIC STRENGTH**		P
13.14 (10.2.1)	Insulation resistance test		P
	Cable or cord covered by metal foil or replaced by a metal rod of mm Ø ..... :	By metal foil	—
	Insulation resistance (MΩ)..... :	See bellow	—
	SELV		N/A
	- between current-carrying parts of different polarity :		N/A
	- between current-carrying parts and mounting surface..... :		N/A
	- between current-carrying parts and metal parts of the luminaire ..... :		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts ..... :		N/A
	- Insulation bushings as described in Section 5 ..... :		N/A
	Other than SELV		P
	- between live parts of different polarity..... :	>100MΩ (removed fuse)	P
	- between live parts and mounting surface ..... :	>100MΩ	P

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	- between live parts and metal parts..... :	>100MΩ	P
	- between live parts of different polarity through action of a switch ..... :		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts ..... :	>100MΩ	P
	- Insulation bushings as described in Section 5 ..... :	>100MΩ	P
13.14 (10.2.2)	Electric strength test		P
	Dummy lamp		N/A
	Luminaires with ignitors after 24 h test		N/A
	Luminaires with manual ignitors		N/A
	Test voltage (V) ..... :	See below	N/A
	SELV		N/A
	- between current-carrying parts of different polarity :		N/A
	- between current-carrying parts and mounting surface..... :		N/A
	- between current-carrying parts and metal parts of the luminaire ..... :		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts ..... :		N/A
	- Insulation bushings as described in Section 5 ..... :		N/A
	Other than SELV		P
	- between live parts of different polarity..... :	1480V (removed fuse)	P
	- between live parts and mounting surface ..... :	1480V	P
	- between live parts and metal parts..... :	1480V 2960V (Class II construction)	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 ..... :	1480V	P
	- Insulation bushings as described in Section 5 ..... :	1480V	P
13.14 (10.3)	Touch current or protective conductor current (mA).:	0,06 mA (protective conductor current)	P

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

13.15 (13)	**RESISTANCE TO HEAT, FIRE AND TRACKING**		P
13.15 (13.2.1)	Ball-pressure test.....:	See Test Table 13.15 (13.2.1)	P
13.15 (13.3.1)	Needle-flame test (10 s).....:	See Test Table 13.15 (13.3.1)	P
13.15 (13.3.2)	Glow-wire test (650°C).....:	See Test Table 13.15 (13.3.2)	P
13.15 (13.4)	Proof tracking test (IEC 60112) .....:	See Test Table 13.15 (13.4)	P

13.7 (11.2)	**TABLE I: Creepage distances and clearances**							**P**
	Minimum distances (mm) for a.c. up to 30 kHz sinusoidal voltages							**P**
	Applicable part of IEC 60598-1 Table 11.1.A*, 11.1.B* and 11.2*							**P**
	Insulation type **	**Measured clearance**	**Required**		**Measured creepage**	**Required**		
			clearance	***Table**		**creepage**	***Table**	
Distance 1:	B	2,7	1,5	11.1.B	2,7	2,5	11.1.A	
Working voltage (V).....:					240V			—
PTI.....:					< 600 ☒ ≥ 600 ☐			—
Pulse voltage or U_P if applicable (kV) .....:					-			—
Supplementary information: Live part of different polarity								
Distance 2:	B	2,7	1,5	11.1.B	2,7	2,5	11.1.A	
Working voltage (V).....:					240V			—
PTI.....:					< 600 ☒ ≥ 600 ☐			—
Pulse voltage or U_P if applicable (kV) .....:					-			—
Supplementary information: Live parts and earth metal parts								
Distance 3:	R	5,2	3,0	11.1.B	5,2	5,0	11.1.A	
Working voltage (V).....:					240V			—
PTI.....:					< 600 ☒ ≥ 600 ☐			—
Pulse voltage or U_P if applicable (kV) .....:					-			—
Supplementary information: Live parts and accessible metal parts (Class II construction)								
Distance 4:	S	3,0	1,5	11.1.B	3,0	2,5	11.1.A	
Working voltage (V).....:					240V			—
PTI.....:					< 600 ☒ ≥ 600 ☐			—
Pulse voltage or U_P if applicable (kV) .....:					-			—

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information: Between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts

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

13.15 (13.2.1)	**TABLE: Ball Pressure Test of Thermoplastics**		P
Allowed impression diameter (mm) .....:		2	—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)
Bobbin	See Annex 1	137,3	1,69
PCB	See Annex 1	131,3	1,65
Supplementary information:-			

13.15 (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
Terminal block	See Annex 1	10	No	0	P
Bobbin	See Annex 1	10	No	0	P
PCB	See Annex 1	10	No	0	P
Supplementary information:					

13.15 (13.3.2)	**TABLE: Glow-wire test (IEC 60695-2-11)**			**P**
Glow wire temperature .....:		650°C		—
Object/ Part No./ Material	Manufacturer/ trademark	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
Lens (for Cl.4.15)	See Annex 1	No	0	P
Epoxy resin	See Annex 1	No	0	P
Supplementary information:				

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

13.15 (13.4)	**TABLE: Proof tracking test (IEC 60112)**					P
Test voltage PTI .....:		175 V				—
Object/ Part No./ Material	Manufacturer/ trademark	Withstand 50 drops without failure on three places or on three specimens				Verdict
Terminal block	See Annex 1	50	50	50		P
Bobbin	See Annex 1	50	50	50		P
PCB	See Annex 1	50	50	50		P
Supplementary information:						

IEC 60598-2-13			
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)]**
Components for GROUND-STANDARD-7, nGROUND-STANDARD-5						
Power cord	B	Dong Guan Recheer Electric Wire & Cable Co., Ltd.	H07RN-F	3x1,0mm^2	EN 50525-2-21	VDE 40015173
Lead wire to LED	B	MEDI KABEL GMBH	1180	300VAC; 200°C; 19AWG	IEC 60598-1 IEC 60598-2-13	UL E223795 and tested with appliance
LED	B	CREE	XP-G3	I_F=350mA; V_F=3,2V; 2700-5000K	IEC 62471	Tested with appliance
LED board	B	POLYTRONICS TECHNOLOGY CORP	TCB-2AL	V-0; Al; 110°C	IEC 60598-1 IEC 60598-2-13	UL E312082 and tested with appliance
Lens	B	FOSHAN NANHAI POLMA ENGINEERING PLASTICS CO LTD	PC-1025	PC; V-0; 2,3mm	IEC 60598-1 IEC 60598-2-13	UL E241821 and tested with appliance
Epoxy resin	B	GUANGZHOU WELLS ELECTRONIC MATERIAL CO LTD	9001A/9001B	90°C, V-0	IEC 60598-1 IEC 60598-2-13	UL E222812 and tested with appliance
PCB	B	KINGBOARD LAMINATES HOLDINGS LTD	KB-5150	V-0; 130°C	IEC 60598-1 IEC 60598-2-13	UL E123995 and tested with appliance
Terminal block	B	NINGBO XINLAIYA ELECTRONIC TECH. CO. , LTD.	XY 301	250V; 1,5mm^2; T80	EN 60998-1 EN 60998-2-1	VDE 40021616
Fuse resistor (F1)	B	BETTER	F212-S-1A	0,2Ω; 0,5W	IEC 60598-1 IEC 60598-2-13	Tested with appliance
Varistor (RV1)	B	Guangdong Fenghua Advanced Technology Holding Co., Ltd.	FNR-07T471K	470V; T85	EN 61051-1	VDE 40008242
X2 capacitor	B	Xiamen Faratronic Co. Ltd.	MKP62	275VAC; T110; 0,068µF	EN 60384-14	VDE 40000358

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

Y2 capacitor (CY1, CY3)	B	Guangdong Fenghua Advanced Technology Holding CO.,LTD	CT7	250VAC; T85; 1000pF	EN 60384-14	VDE 40013869
Transformer (T1)	B	NIVISS PHP	DK160412 VA02	Class B	IEC 60598-1 IEC 60598-2-13	Tested with appliance
Magnet Wire	B	DONG GUAN YIDA INDUSTRIAL CO LTD	xUEW(AL)/130	130°C; Φ0,224mm^2	IEC 60598-1 IEC 60598-2-13	UL E344055 and tested with appliance
Bobbin	B	CHANG CHUN PLASTICS CO LTD	T375J	150°C	IEC 60598-1 IEC 60598-2-13	UL E59481 and tested with appliance
Insulation tape	B	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	PZ* (b)	130°C	IEC 60598-1 IEC 60598-2-13	UL E165111 and tested with appliance
Secondary winding	B	Shenzhen Darun Science and Technology Co., Ltd	DRTIW-B	Triple insulated winding wires:T130; Φ0,35mm^2	EN 60950-1	VDE 40032470
Components for GROUND-MEDIUM-20, nGROUND-MEDIUM-17						
Power cord	B	Dong Guan Recheer Electric Wire & Cable Co., Ltd.	H07RN-F	3x1,0mm^2	EN 50525-2-21	VDE 40015173
Lead wire to LED	B	MEDI KABEL GMBH	1180	300VAC; 200°C; 19AWG	IEC 60598-1 IEC 60598-2-13	UL E223795 and tested with appliance
LED	B	CREE	XP-G3	I_F=350mA; V_F=3,2V; 2700-5000K	IEC 62471	Tested with appliance
LED board	B	POLYTRONICS TECHNOLOGY CORP	TCB-2AL	V-0; Al; 110°C	IEC 60598-1 IEC 60598-2-13	UL E312082 and tested with appliance
Lens	B	FOSHAN NANHAI POLMA ENGINEERING PLASTICS CO LTD	PC-1025	PC; V-0; 80°C; 2,3mm	IEC 60598-1 IEC 60598-2-13	UL E241821 and tested with appliance

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

Epoxy resin	B	GUANGZHOU WELLS ELECTRONIC MATERIAL CO LTD	9001A/9001B	90°C, V-0	IEC 60598-1 IEC 60598-2-13	UL E222812 and tested with appliance
PCB	B	KINGBOARD LAMINATES HOLDINGS LTD	KB-5150	V-0; 130°C	IEC 60598-1 IEC 60598-2-13	UL E123995 and tested with appliance
Terminal block	B	NINGBO XINLAIYA ELECTRONIC TECH. CO. , LTD.	XY 301	250V; 1,5mm²; T80	EN 60998-1 EN 60998-2-1	VDE 40021616
Fuse resistor (F1)	B	Royalohm	RB-1W-0R33	0,33Ω; 1W	IEC 60598-1 IEC 60598-2-13	Tested with appliance
Varistor (VAR1, VAR2)	B	Guangdong Fenghua Advanced Technology Holding Co., Ltd.	FNR-07T391K	390V; T85	EN 61051-1	VDE 40008242
X2 capacitor	B	Xiamen Faratronic Co. Ltd.	MKP62	275VAC; T110; 0,082µF	EN 60384-14	VDE 40000358
Y2 capacitor (CY1, CY2, CY3, CY4)	B	Guangdong Fenghua Advanced Technology Holding CO.,LTD	CT7	250VAC; T85; 3300pF	EN 60384-14	VDE 40013869
Magnet Wire of Inductance	B	DONG GUAN YIDA INDUSTRIAL CO LTD	xUEW(AL)/130	130°C	IEC 60598-1 IEC 60598-2-13	UL E344055 and tested with appliance
Transformer (T1)	B	NIVISS PHP	DK160412 VA02	Class B	IEC 60598-1 IEC 60598-2-13	Tested with appliance
Magnet Wire	B	DONG GUAN YIDA INDUSTRIAL CO LTD	xUEW(AL)/130	130°C; Φ0,224mm²	IEC 60598-1 IEC 60598-2-13	UL E344055 and tested with appliance
Bobbin	B	CHANG CHUN PLASTICS CO LTD	T375J	150°C	IEC 60598-1 IEC 60598-2-13	UL E59481 and tested with appliance
Insulation tape	B	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	PZ* (b)	130°C	IEC 60598-1 IEC 60598-2-13	UL E165111 and tested with appliance

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

Secondary winding	B	Shenzhen Darun Science and Technology Co., Ltd	DRTIW-B	Triple insulated winding wires:T130; Φ0,35mm^2	EN 60950-1	VDE 40032470
Components for GROUND-BIG-33, nGROUND-BIG-30						
Power cord	B	Dong Guan Recheer Electric Wire & Cable Co., Ltd.	H07RN-F	3x1,0mm^2	EN 50525-2-21	VDE 40015173
Lead wire to LED	B	MEDI KABEL GMBH	3512	600VAC; 200°C; 0,75 mm^2	IEC 60598-1 IEC 60598-2-13	UL E223795 and tested with appliance
LED	B	CREE	CXB2540	I_F=1100mA; V_F=34,8-38V; 2700-5000K	IEC 62471	Tested with appliance
LED board	B	POLYTRONICS TECHNOLOGY CORP	TCB-2AL	V-0; Al; 110°C	IEC 60598-1 IEC 60598-2-13	UL E312082 and tested with appliance
Lens	B	FOSHAN NANHAI POLMA ENGINEERING PLASTICS CO LTD	PC-1025	PC; V-0; 80°C; 2,3mm	IEC 60598-1 IEC 60598-2-13	UL E241821 and tested with appliance
Epoxy resin	B	GUANGZHOU WELLS ELECTRONIC MATERIAL CO LTD	9001A/9001B	90°C, V-0	IEC 60598-1 IEC 60598-2-13	UL E222812 and tested with appliance
PCB	B	KINGBOARD LAMINATES HOLDINGS LTD	KB-5150	V-0; 130°C	IEC 60598-1 IEC 60598-2-13	UL E123995 and tested with appliance
Terminal block	B	NINGBO XINLAIYA ELECTRONIC TECH. CO. , LTD.	XY 301	250V; 1,5mm^2; T80	EN 60998-1 EN 60998-2-1	VDE 40021616
Fuse resistor (FR1)	B	Royalohm	RB-1W-0R33	0,33Ω; 1W	IEC 60598-1 IEC 60598-2-13	Tested with appliance
Varistor (VDR1)	B	Guangdong Fenghua Advanced Technology Holding Co., Ltd.	FNR-07T391K	390V; T85	IEC 61051-1 IEC 61051-2 IEC 61051-2-2	VDE 40008242
X2 capacitor	B	Xiamen Faratronic Co. Ltd.	MKP62	275VAC; T110; 0,1µF	EN 60384-14	VDE 40000358

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

Y2 capacitor (CY1, CY2, CY3)	B	Guangdong Fenghua Advanced Technology Holding CO.,LTD	CT7	250VAC; T85; 3300pF	EN 60384-14	VDE 40013869
Magnet Wire of Inductance (L1, L2, L3, L4)	B	DONG GUAN YIDA INDUSTRIAL CO LTD	xUEW(AL)/130	130°C	IEC 60598-1 IEC 60598-2-13	UL E344055 and tested with appliance
Bobbin of Inductance (L3)	B	CHANG CHUN PLASTICS CO LTD	T375J	150°C	IEC 60598-1 IEC 60598-2-13	UL E59481 and tested with appliance
Insulation tape of Inductance (L3)	B	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	PZ* (b)	130°C	IEC 60598-1 IEC 60598-2-13	UL E165111 and tested with appliance
Secondary winding of Inductance (L5)	B	Shenzhen Darun Science and Technology Co., Ltd	DRTIW-B	Triple insulated winding wires:T130	EN 60950-1	VDE 40032470
Transformer (T1)	B	NIVISS PHP	DK160412 VA02	Class B	IEC 60598-1 IEC 60598-2-13	Tested with appliance
Magnet Wire	B	DONG GUAN YIDA INDUSTRIAL CO LTD	xUEW(AL)/130	130°C; Φ0,224mm^2	IEC 60598-1 IEC 60598-2-13	UL E344055 and tested with appliance
Bobbin	B	CHANG CHUN PLASTICS CO LTD	T375J	150°C	IEC 60598-1 IEC 60598-2-13	UL E59481 and tested with appliance
Insulation tape	B	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	PZ* (b)	130°C	IEC 60598-1 IEC 60598-2-13	UL E165111 and tested with appliance
Secondary winding	B	Shenzhen Darun Science and Technology Co., Ltd	DRTIW-B	Triple insulated winding wires:T130; Φ0,35mm^2	EN 60950-1	VDE 40032470

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 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

2.12(12.4)	ANNEX 2: temperature measurements, thermal tests of Section 12		P
	Type reference..... :	GROUND-STANDARD-7	—
	Lamp used..... :	Integral LED	—
	Lamp control gear used..... :	Integral LED driver	—
	Mounting position of luminaire ..... :	As in normal used	—
	Supply wattage (W)..... :	6,22	—
	Supply current (A)..... :	0,03	—
	Calculated power factor..... :	0,81	—
	Table: measured temperatures corrected for ta = 40 °C:		P
	- abnormal operating mode ..... :	---	—
	- test 1: rated voltage..... :	---	—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage..... :	At 1,06xrated voltage 254,4V	—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage..... :	--	—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage..... :	--	—
	Through wiring or lopping-in wiring loaded by a current of (A) during the tests..... :	--	—

temperature (°C) of part	clause 12.4 - normal(°C)				clause 12.5 - abnormal	
	test 1	test 2	test 3	limits	test 4	limit
Power cord (pressed)	--	47,9	--	75	--	--
Lead wire of LED	--	78,7	--	200	--	--
LED board	--	101,6	--	110	--	--
Lens (inside)	--	92,8	--	Ref.	--	--
Lamp cover (tc)	--	80,8	--	90	--	--
Mounting surface	--	72,1	--	90	--	--
Illuminated surface (0.1m)	--	41,5	--	90	--	--
Terminal block	--	44,9	--	80	--	--
Varistor (RV1)	--	80,9	--	85	--	--
CX2	--	72,5	--	110	--	--
CY1	--	74,1	--	85	--	--
E-cap (hottest)	--	92,8	--	105	--	--
Winding	--	76,8	--	130	--	--
Bobbin	--	85,8	--	150	--	--
PCB	--	83,8	--	130	--	--
Ambient	--	40,0	--	--	--	--

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

Observation of abnormal condition:

2.12(12.4)	ANNEX 2: temperature measurements, thermal tests of Section 12		P
	Type reference..... :	GROUND-MEDIUM-20	—
	Lamp used ..... :	Integral LED	—
	Lamp control gear used..... :	Integral LED driver	—
	Mounting position of luminaire ..... :	As in normal used	—
	Supply wattage (W)..... :	18,9	—
	Supply current (A)..... :	0,08	—
	Calculated power factor..... :	0,93	—
	Table: measured temperatures corrected for ta = 40 °C:		P
	- abnormal operating mode ..... :	---	—
	- test 1: rated voltage..... :	---	—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage..... :	At 1,06xrated voltage 254,4V	—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage..... :	--	—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage..... :	--	—
	Through wiring or lopping-in wiring loaded by a current of (A) during the tests..... :	--	—

temperature (°C) of part	clause 12.4 - normal(°C)				clause 12.5 - abnormal	
	test 1	test 2	test 3	limits	test 4	limit
Power cord (pressed)	--	61,6	--	75	--	--
Lead wire of LED	--	85,5	--	200	--	--
LED board	--	94,7	--	110	--	--
LED cover inside	--	90,0	--	Ref.	--	--
Lamp cover (tc)	--	82,7	--	90	--	--
Mounting surface	--	80,4	--	90	--	--
Illuminated surface (0.1m)	--	48,0	--	90	--	--
Terminal block	--	77,9	--	80	--	--
Varistor (RV1)	--	81,5	--	85	--	--
CX2	--	83,1	--	110	--	--
CY1	--	81,9	--	85	--	--
E-cap (hottest)	--	88,1	--	105	--	--
Winding	--	91,8	--	130	--	--
Bobbin	--	92,6	--	150	--	--

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

PCB	--	87,4	--	130	--	--
Ambient	--	40,0	--	--	--	--
Observation of abnormal condition:						

2.12(12.4)	ANNEX 2: temperature measurements, thermal tests of Section 12		P
	Type reference..... :	GROUND-BIG-33	—
	Lamp used ..... :	Integral LED	—
	Lamp control gear used..... :	Integral LED driver	—
	Mounting position of luminaire ..... :	As in normal used	—
	Supply wattage (W)..... :	29,98	—
	Supply current (A)..... :	0,12	—
	Calculated power factor..... :	0,98	—
	Table: measured temperatures corrected for ta = 40 °C:		P
	- abnormal operating mode ..... :	---	—
	- test 1: rated voltage..... :	---	—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage..... :	At 1,06xrated voltage 254,4V	—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage..... :	--	—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage..... :	--	—
	Through wiring or lopping-in wiring loaded by a current of (A) during the tests..... :	--	—

temperature (°C) of part	clause 12.4 - normal(°C)				clause 12.5 - abnormal	
	test 1	test 2	test 3	limits	test 4	limit
Power cord (pressed)	--	65,6	--	75	--	--
Lead wire of LED	--	96,5	--	200	--	--
LED board	--	107,8	--	110	--	--
LED cover inside	--	65,1	--	Ref.	--	--
Lamp cover (tc)	--	57,8	--	90	--	--
Mounting surface	--	74,5	--	90	--	--
Illuminated surface (0.1m)	--	60,7	--	90	--	--
Terminal block	--	78,0	--	80	--	--
Varistor (RV1)	--	84,6	--	85	--	--
CX2	--	99,2	--	110	--	--
CY1	--	82,5	--	125	--	--
E-cap (hottest)	--	103,1	--	105	--	--

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

Winding	--	110,9	--	130	--	--
Bobbin	--	112,3	--	150	--	--
PCB	--	106,3	--	130	--	--
Ambient	--	40,0	--	--	--	--
Observation of abnormal condition:						

ANNEX 3	**Screw terminals (part of the luminaire)**		**N/A**
(14)	**SCREW TERMINALS**		**N/A**
(14.2)	Type of terminal.....:		—
	Rated current (A) .....:		—
(14.3.2.1)	One or more conductors		N/A
(14.3.2.2)	Special preparation		N/A
(14.3.2.3)	Terminal size		N/A
	Cross-sectional area (mm^2).....:		—
(14.3.3)	Conductor space (mm).....:		N/A
(14.4)	Mechanical tests		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 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 4	**Screwless terminals (part of the luminaire)**		**N/A**
(15)	**SCREWLESS TERMINALS**		**N/A**
(15.2)	Type of terminal.....:		—
	Rated current (A).....:		—
(15.3.1)	Material		N/A
(15.3.2)	Clamping		N/A
(15.3.3)	Stop		N/A
(15.3.4)	Unprepared conductors		N/A
(15.3.5)	Pressure on insulating material		N/A
(15.3.6)	Clear connection method		N/A
(15.3.7)	Clamping independently		N/A
(15.3.8)	Fixed in position		N/A
(15.3.10)	Conductor size		N/A
	Type of conductor		N/A
(15.5)	Terminals and connections for internal wiring		N/A
(15.5.1)	Mechanical tests		N/A
(15.5.1.1.1)	Pull test spring-type terminals (4 N, 4 samples).....:		N/A
(15.5.1.1.2)	Pull test pin or tab terminals (4 N, 4 samples).....:		N/A
	Insertion force not exceeding 50 N		N/A
(15.5.1.2)	Permanent connections: pull-off test (20 N)		N/A
(15.5.2)	Electrical tests		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		N/A
(15.6.1)	Conductors		N/A

IEC 60598-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Terminal size and rating		N/A
15.6.2	Mechanical tests		N/A
(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) .....:		N/A
(15.6.3)	Electrical tests		N/A
	Tests according 15.6.3.1 + 15.6.3.2 in IEC 60598-1		N/A

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

---End of Report---

ATTACHMENT 1			
Clause	Requirement + Test	Result - Remark	Verdict

	Checking of deviation requirements for Saudi Arabia.	**P**

1	MAINS VOLTAGE 127 or 220 V or 380V	220-240VAC	P
2	MAINS FREQUENCY 60 Hz	50/60Hz	P
3	INSTRUCTION MANUAL Language of instruction manual according to applicable IEC/SASO standard. (i.e. Manuals will be in the official language of the country where the product is intended to be sold -Arabic)	English and Arabic	P
4	PLUGS Plugs fitted to the supply cords shall have a configuration in accordance with SASO standard 2203/2003 or 2204/2003 (Refer to CD-479 for more information)		N/A
5	COUNTRY OF ORIGIN All appliances shall be marked with Country of Origin (MoCI Royal Decree No. M/5, CD-444R3)	Made in Poland	P
6	CLASSIFICATION MARK For all class I construction equipement. Earthing symbol should be near to earthing connection and on non removable part. For all class II construction appliances, marked  . For class III construction appliances, marked  , in particular luminaires operating at less than 42.4V ac peak and 42.4 V dc.		P

Attachment 2

IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict

	LED modules for general lighting – Safety specifications **IEC 62031:2018**	P

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

IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict

13 (14)	**TABLE: tests of fault conditions**		P
Part	Simulated fault for GROUND-STANDARD-7; 264V; 0,03A; 6,22W		Hazard
One LED	Short-circuit	Test voltage: 264V; 4,2W; 0,03A; Unit shut down; recoverable	YES ☐ NO ☒
One LED	Open-circuit	Test voltage: 264V; 0,1W; 0,02A; Unit shut down; recoverable	YES ☐ NO ☒

13 (14)	**TABLE: tests of fault conditions**		P
Part	Simulated fault for GROUND-MEDIUM-20; 264V; 0,07A; 18,9W		Hazard
One LED	Short-circuit	Test voltage: 264V; 16,7W; 0,07A; Unit shut down; recoverable	YES ☐ NO ☒
One LED	Open-circuit	Test voltage: 264V; 0,1W; 0,02A; Unit shut down; recoverable	YES ☐ NO ☒

13 (14)	**TABLE: tests of fault conditions**		P
Part	Simulated fault for GROUND-BIG-33; 264V; 0,12A; 29,6W		Hazard
One LED	Short-circuit	Test voltage: 264V; 0,1W; 0,03A; Unit shut down; recoverable	YES ☐ NO ☒
One LED	Open-circuit	Test voltage: 264V; 0,1W; 0,02A; Unit shut down; recoverable	YES ☐ NO ☒

Clause 13.2 overpower condition	Position: Appliance positioned on the test corner. Duration: until stable Operation: increased to 150% the rated power, module withstands overpower condition > 15min.		
GROUND-STANDARD-7	Thermocouple point	Measured temperature (°C)	Limited
	LED board	115,1	Ref.
	Mounting surface (flammable surface)	88,0	130
	Observation: Input to LED, Normal: 32,3VDC; 0,25A; 8,2W; Overpower: 39,4V; 0,31A; 12,2W; no fire, smoke or flammable gas is produced.		

Clause 13.2 overpower condition	Position: Appliance positioned on the test corner. Duration: until stable Operation: increased to 150% the rated power, module withstands overpower condition > 15min.		
GROUND-MEDIUM-20	Thermocouple point	Measured temperature (°C)	Limited
	LED board	106,8	Ref.

IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict

	Mounting surface (flammable surface)	87,7	130
	Observation: Input to LED, Normal: 27,1VDC; 0,65A; 16,9W; Overpower: 29,7V; 0,87A; 24,6W; no fire, smoke or flammable gas is produced.		

Clause 13.2 overpower condition	Position: Appliance positioned on the test corner. Duration: until stable Operation: increased to 150% the rated power, module withstands overpower condition > 15min.		
GROUND-BIG-33	Thermocouple point	Measured temperature (°C)	Limited
	LED board	117,7	Ref.
	Mounting surface (flammable surface)	82,1	130
	Observation: Input to LED, Normal: 33,2VDC; 0,77A; 25,6W; Overpower: 42,6V; 0,94A; 38,6W; no fire, smoke or flammable gas is produced.		

Attachment 3

IEC 62471			
Clause	Requirement + Test	Result - Remark	Verdict
	Photobiological Safety Of Lamps And Lamp Systems IEC 62471:2006 and IEC/TR 62778:2014		**P**

Conditions

1. Tests performed on GROUND-MEDIUM-20 (5000K) and GROUND-BIG-33 (5000K) supplied by 240VAC.
2. Ambient temperature: 23±2°C, Humidity: 64±10%.
3. Measurement distance: See below.
4. Angular: See below

GROUND-BIG-33 (5000K): distance=1740,0mm

GROUND-BIG-33 (5000K): angular=0,0252rad

Calculation of the Hazard exposure limits for the Exempt group Lamp

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

1. An actinic ultraviolet hazard (Es) within 8-hours exposure (30000 s), nor
2. A near-UV hazard (EUVA) within 1000 s, (about 16 min), nor
3. A retinal blue-light hazard (LB) within 10000 s (about 2.8 h), nor
4. A retinal thermal hazard (LR) within 10 s, nor
5. An infrared radiation hazard for the eye (EIR) within 1000 s.

These lamps are in the Exempt Group.

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

GROUND-MEDIUM-20 (5000K): distance=2912,0mm

GROUND-MEDIUM-20 (5000K): angular=0,0118rad

Calculation of the Hazard exposure limits for the Risk Group 1 (Low-Risk)

The philosophical basis for this classification is that the lamp does not pose a hazard due to normal behavioral limitations on exposure. This requirement is met by any lamp that exceeds the limits for the Exempt Group but that does not pose

- an actinic ultraviolet hazard (E_S) within 10000 s, nor
- a near ultraviolet hazard (E_{UVA}) within 300 s, nor
- a retinal blue-light hazard (L_B) within 100 s, nor
- a retinal thermal hazard (L_R) within 10 s, nor
- an infrared radiation hazard for the eye (E_{IR}) within 100 s.

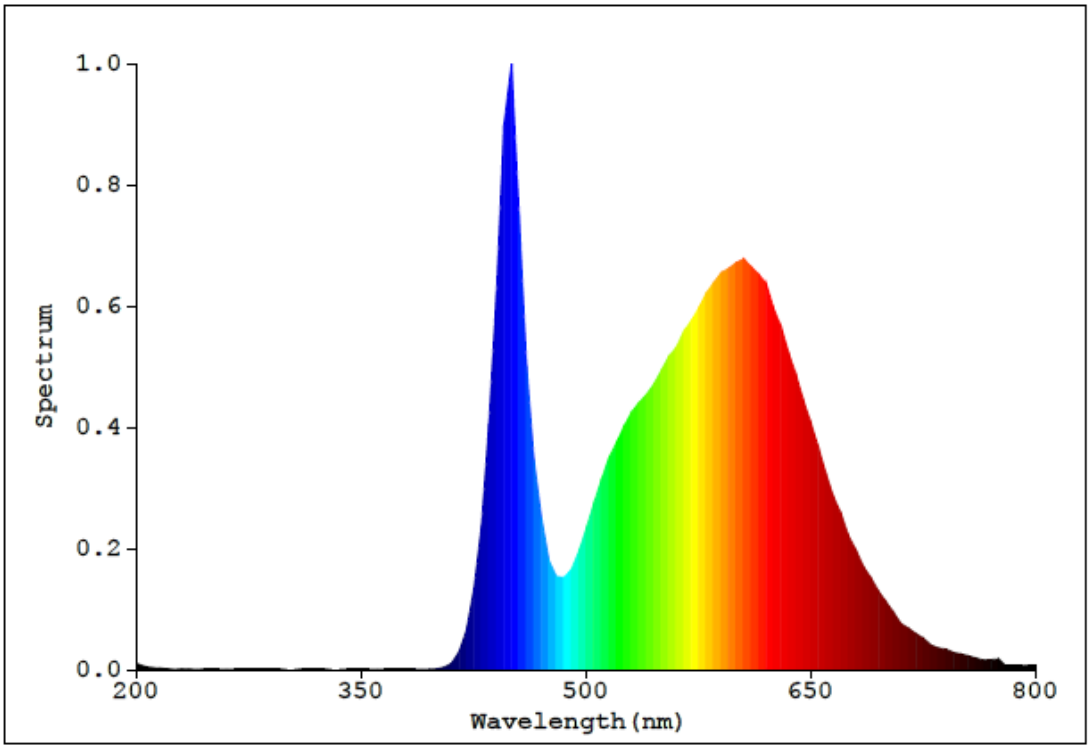
These lamps are in Risk Group 1 (Low-Risk).

Also, lamps that emit infrared radiation without a strong visual stimulus (i.e., less than 10 $cd \cdot m^{-2}$) and do not pose a near-infrared retinal hazard (L_{IR}), within 100 s are in Risk Group 1 (Low-Risk).

See the test data.

IEC 62471			
Clause	Requirement + Test	Result - Remark	Verdict

Model: GROUND-MEDIUM-20 (5000K) is in Risk Group 1 (Low-Risk)..

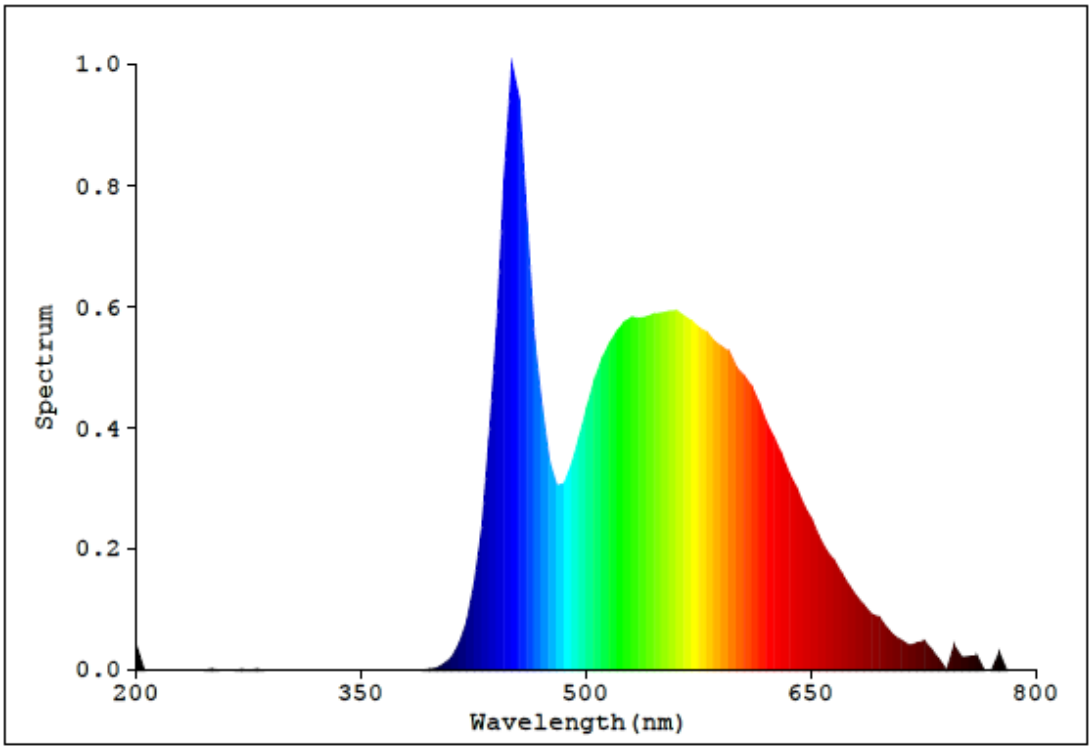


Test data:

Optical hazard	Test result	Used hazard exposure limit		Ref.
1. E_S	3,400e-04 W/m^2	0,003 W/m^2	200-400 nm	**P**
2. E_{UVA}	4,510e-04 W/m^2	33 W/m^2	315-400 nm	**P**
3. L_B	6,992e+03 W/m^{2}sr	10000 W/m^{2}sr	300-700 nm	**P**
4. $E_{B(small\ source)}$	--	--	--	**N/A**
5. L_R	9,254e+04 W/m^{2}sr	2,373x10^6 W/m^{2}sr	380-1400 nm	**P**
6. L_{IR}	2,285e+01 W/m^{2}sr	5,085x10^5 W/m^{2}sr	780-1400 nm	**P**
7. E_{IR}	1,861e-03 W/m^2	3200 W/m^2	780-3000 nm	**P**
8. E_H	1,429e+00 W/m^2	3556,56 W/m^2	380-3000 nm	**P**

IEC 62471			
Clause	Requirement + Test	Result - Remark	Verdict

Model: GROUND-BIG-33 (5000K) is in Exempt Group.



Test data:

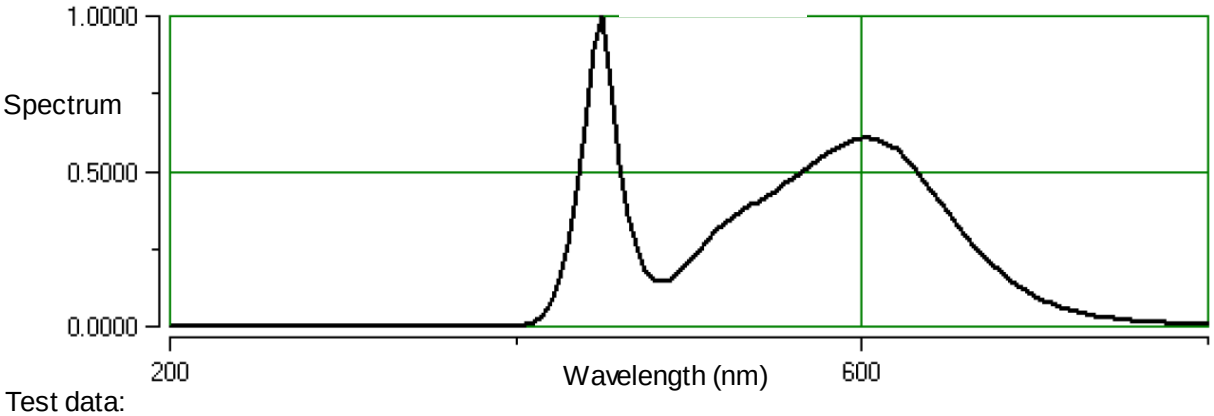
Optical hazard	Test result	Used hazard exposure limit		Ref.
1. E_S	2,846e-04 W/m^2	0,001 W/m^2	200-400 nm	**P**
2. E_{UVA}	2,469e-04 W/m^2	10 W/m^2	315-400 nm	**P**
3. L_B	3,156e+00 W/m^{2}sr	100 W/m^{2}sr	300-700 nm	**P**
4. $E_{B(small\ source)}$	--	--	--	**N/A**
5. L_R	9,613e+02 W/m^{2}sr	1,111e+06 W/m^{2}sr	380-1400 nm	**P**
6. L_{IR}	0,000e+00 W/m^{2}sr	2,381e+05 W/m^{2}sr	780-1400 nm	**P**
7. E_{IR}	0,000e+00 W/m^2	100 W/m^2	780-3000 nm	**P**
8. E_H	1,274e+00 W/m^2	3556,56 W/m^2	380-3000 nm	**P**

Attachment 3

IEC/TR 62778-			
Clause	Requirement + Test	Result - Remark	Verdict
	Blue light hazard		**P**

Conditions
1. Tests performed on GROUND-MEDIUM-20 (5000K), supplied by 240VAC.
2. Ambient temperature: 25±1°C, Humidity: 45±10%
3. Measurement distance: 20cm

Lamp classification group: Ethr=1228lx



Test data:

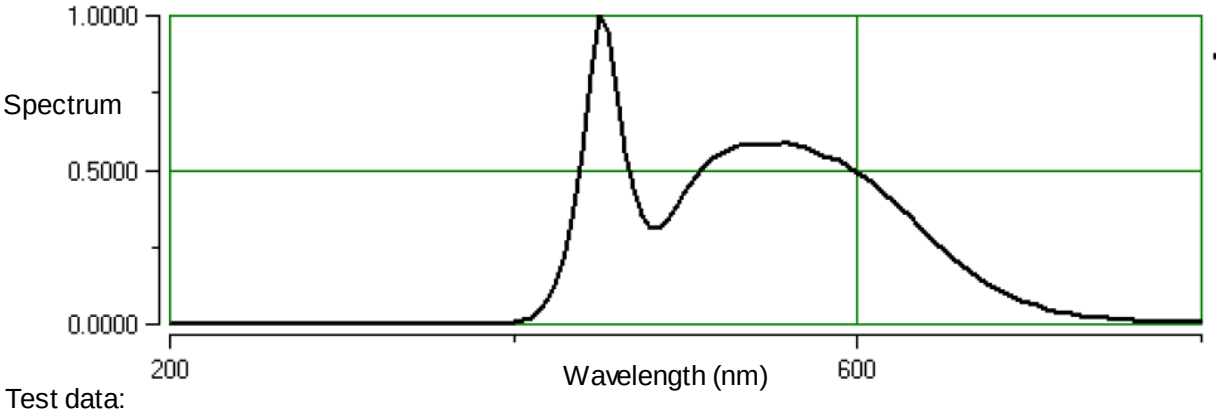
Symbol	Units	Results
Lb (11mrad)	W*m-2*sr-1	1,269e+005
Lv (11mrad)	cd*m-2	1,559e+008
Ethr	lx	--
Dmin	mm	--

Attachment 3

IEC/TR 62778-			
Clause	Requirement + Test	Result - Remark	Verdict

Conditions
1. Tests performed on GROUND-BIG-33 (5000K), supplied by 240VAC.
2. Ambient temperature: 25±1°C, Humidity: 45±10%
3. Measurement distance: 20cm

Lamp classification group: Ethr=1237lx



Test data:

Symbol	Units	Results
Lb (11mrad)	W*m-2*sr-1	1,262e+004
Lv (11mrad)	cd*m-2	1,561e+007
Ethr	lx	--
Dmin	mm	--

Attachment 4

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Particular requirements for d.c. or a.c. supplied electronic controlgear for LED modules IEC 61347-2-13:2014+A1:2016 and IEC 61347-1:2015+A1:2017		**P**
4 (4)	**GENERAL REQUIREMENTS**		**P**
- (4)	Insulation materials according requirements in Annex N of IEC 61347-1	(see Annex N)	N/A
- (4)	Compliance of independent controlgear enclosure with IEC 60 598-1		N/A
- (4)	Built-in electronic controlgear with double or reinforced insulation comply with Annex O of IEC 61347-1	(see Annex O)	N/A
4 (4)	SELV controlgear comply with Annex I of this part 2 and Annex L of IEC 61347-1	(see Annex L)	N/A
4 (-)	Transformer comply with IEC 61558		N/A
	Dielectric strength test of insulated winding wires is limited to 3 kV if input voltage ≤ 300 V		N/A
6 (6)	**CLASSIFICATION**		**P**
	Built-in controlgear .....:	Yes ☐ No ☒	—
	Independent controlgear.....:	Yes ☐ No ☒	—
	Integral controlgear .....:	Yes ☒ No ☐	—
6 (-)	Auto-wound controlgear .....:	Yes ☒ No ☐	—
	Separating controlgear .....:	Yes ☐ No ☒	—
	Isolating controlgear .....:	Yes ☐ No ☒	—
	SELV controlgear .....:	Yes ☐ No ☒	—
7 (7)	**MARKING**		N/A
7.1 (7.1)	**Mandatory markings**		N/A
	a) mark of origin		N/A
	b) model number or type reference		N/A
	c) symbol for independent controlgear, if applicable		N/A
	d) correlation between interchangeable parts and controlgear marked		N/A
	e) rated supply voltage (V)		N/A
	supply frequency (Hz)		N/A
	supply current (A)		N/A
	f) earthing symbol		N/A
	k) wiring diagram		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	l) value of tc		N/A
	m) symbol for declared temperature		N/A
	t) LUM earthing symbol		N/A
	u) if not SELV maximum working voltage U_{out} between:		N/A
	- output terminals (V) .....:		N/A
	- output terminals and earth (V) .....:		N/A
7.1 (-)	Constant voltage type:	Yes ☐ No ☐	—
	- rated output power P_{rated} (W) .....:		N/A
	- rated output voltage U_{rated} (V) .....:		N/A
	Constant current type:	Yes ☐ No ☐	—
	- rated output power P_{rated} (W) .....:		N/A
	- rated output current I_{rated} (A) .....:		N/A
	Indication if for LED modules only		N/A
7.1 (7.2)	Marking durable and legible		N/A
	Rubbing 15 s water, 15 s petroleum; marking legible		N/A
7.2 (7.1)	**Information to be provided, if applicable**		N/A
	h) declaration of protection against accidental contact		N/A
	i) cross-section of conductors (mm²)		N/A
	j) number, type and wattage of lamp(s)		N/A
	s) SELV symbol		N/A
7.2 (-)	- declaration of mains connected windings		N/A

8 (10)	**PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS**		**P**
- (10.1)	Controlgear protected against accidental contact with live parts	Rely on enclosure of luminaire	P
- (A2)	Voltage measured with 50 kΩ	(see Annex A)	N/A
- (A3)	Voltage > 35 V peak or > 60 V d.c. or protective impendance device	(see Annex A)	N/A
- (10.1)	Lacquer or enamel not used for protection or insulation		P
	Adequate mechanical strength on parts providing protection		P
- (10.2)	Capacitors > 0,5 µF: voltage after 1 min (V): < 50 V .....:	Max. 12V	P
- (10.3)	**Controlgear providing SELV**		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Accessible conductive parts are insulated from live parts by double or reinforced insulation in SELV controlgear		N/A
	No connection between output circuit and the body or protective earthing circuit		N/A
	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		N/A
	ELV conductive parts insulated as live parts		N/A
	Tests according Annex L of IEC 61347-1	(see Annex L)	N/A
- (10.4)	**Accessible conductive parts in SELV circuits**		N/A
	Output voltage under load ≤ 25 V r.m.s. or ≤ 60 V d.c.		N/A
	If output voltage > 25 V r.m.s. or > 60 V d.c.; No load output ≤ 35 V peak or ≤ 60 V d.c and touch current does not exceed 0,7 mA (peak) or 2 mA d.c. ……:		N/A
	One conductive part is insulated if output voltage or current exceeding the values above and withstand test voltage 500 V		N/A
	Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor		N/A
	Y1 or Y2 capacitors comply with IEC 60384-14		N/A
	Resistors comply with test (a) in 14.1 of IEC 60065		N/A
9 (8)	**TERMINALS**		P
- (8.1)	**Integral terminals**		P
	Screw terminals according section 14 of IEC 60598-1:		P
	Separately approved; component list	(see Annex 1)	P
	Part of the controlgear	(see Annex 2)	N/A
	Screwless terminals according section 15 of IEC 60598-1:		N/A
	Separately approved; component list	(see Annex 1)	N/A
	Part of the controlgear	(see Annex 2)	N/A
- (8.2)	**Terminals other than integral terminals**		N/A
	Comply with relevant IEC standard	(see Annex 1)	N/A
	Suit the conditions		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Satisfy additional relevant requirements of this standard		N/A
10 (9)	**PROVISION FOR PROTECTIVE EARTHING**		P
- (9.1)	**Provisions for protective earthing**		P
	Terminal complying with clause 8		P
	Locked against loosening and not possible to loosen by hand		P
	Not possible to loosen clamping means unintentionally on screwless terminals		P
	All parts of material minimizing the danger of electrolytic corrosion		P
	Made of brass or equivalent material		N/A
	Contact surface bare metal		N/A
	Test according 7.2.3 of IEC 60598-1		P
- (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**		P
	Test with a current of 25 A between earthing terminal or earthing contact and each of the accessible metal parts; measured resistance (Ω) at ≥ 10 A according 7.2.3 of IEC 60598-1: < 0,5 Ω .....:	Max. 0,05Ω	P
- (9.4)	**Earthing of built-in lamp controlgear**		N/A
	Earth by means of fixing to earthed metal of luminaire in compliance of 7.2 of IEC 60598-1		N/A
	Earthing terminal only for earthing the built-in controlgear		N/A
- (9.5)	**Earthing via independent controlgear**		N/A
- (9.5.1)	Earth connection to other equipment		N/A
	Looping or through connection, conductor min. 1,5 mm² and of copper or equivalent		N/A
	Protective earthing wires in line with 5.3.1.1 and clause 7 of IEC 60598-1		N/A
- (9.5.2)	Earthing of the lamp compartments powered via the independent lamp controlgear		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Test with a current of 25 A between input and output earth terminals; measured resistance (Ω) between earthing terminal or earthing contact and each of the accessible metal parts at ≥ 10 A according 7.2.3 of IEC 60598-1: < 0,5 Ω .....:		N/A
	Output earthing terminal marked as in 7.1 t) of IEC 61347-1		N/A
11 (11)	**MOISTURE RESISTANCE AND INSULATION**		**P**
- (11)	After storage 48 h at 91-95% relative humidity and 20-30 °C measuring of insulation resistance:		P
	For basic insulation ≥ 2 MΩ .....:	>100 MΩ	P
	For double or reinforced insulation ≥ 4 MΩ .....:	--	N/A
	Between primary and secondary circuits in controlgear providing SELV, values in Annex L in IEC 61347-1		N/A
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		N/A
	Working voltage ≤ 50 V, test voltage 500 V		N/A
	Working voltage > 50 V ≤ 1000 V, test voltage (V):		P
	Basic insulation, 2U + 1000 V	Between L & N (remove fuse): 1480V (working voltage: 240V)	P
	Supplementary insulation, 2U + 1000 V	--	N/A
	Double or reinforced insulation, 4U + 2000 V	--	N/A
	No flashover or breakdown		P
	Solid or thin sheet insulation for double or reinforced insulation fulfil the requirements in Annex N in IEC 61347-1		N/A
14 (14)	**FAULT CONDITIONS**		**P**
- (14.1)	When operated under fault conditions the controlgear:		P
	- does not emit flames or molten material		P
	- does not produce flammable gases		P
	- protection against accidental contact not impaired		P
	Thermally protected controlgear does not exceed the marked temperature value		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	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)	N/A
- (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)	N/A
- (14.5)	Short-circuit across electrolytic capacitors	(see appended table)	N/A
14 (-)	Reversed voltage polarity if d.c. supplied control gear	(see appended table)	N/A
- (14.6)	After the tests has been carried out on three samples:		P
	The insulation resistance ≥ 1 MΩ .....:	100 MΩ	P
	No flammable gases		P
	No accessible parts have become live		P
	During the tests, a five-layer tissue paper, where the test specimen is wrapped, does not ignite		P
- (14.7)	Relevant fault condition tests with high-power a.c. supply		—
14 (-)	Temperature declared thermally protected lamp controlgear fulfil requirements in Annex C		N/A

15 (-)	**TRANSFORMER HEATING**		**P**
15.1	**General**		P
	Transformer comply with clause L.6 and L.7 of IEC 61347-1		N/A
	Output voltage of SELV controlgear not exceed limits in 10.4 of IEC 61347-1 during the test of 15.1 and 15.2		N/A
15.2 (-)	**Normal operation**		P
	Comply with clause L.6 of IEC 61347-1		N/A
15.3 (-)	**Abnormal operation**		P
	Comply with clause L.7 of IEC 61347-1		N/A
	Double LED modules or equivalent load connected in parallel to the output terminals of constant voltage type		N/A
	Double LED modules or equivalent load connected in series to the output terminals of constant current type		P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
15 (-)	During and at the end of the tests no defect impairing safety, nor any smoke or flammable gases produced		**P**
16 (15)	**CONSTRUCTION**		**P**
- (15.1)	**Wood, cotton, silk, paper and similar fibrous material**		**P**
	Wood, cotton, silk, paper and similar fibrous material not used as insulation		P
- (15.2)	**Printed circuits**		**P**
	Printed circuits used as internal connections complies with clause 14		P
- (15.3)	**Plugs and socket-outlets used in SELV or ELV circuits**		N/A
	No dangerous compatibility between output socket-outlet and a plug for socket-outlets for input circuit in relation to installation rules, voltages and frequencies		N/A
	Plugs and socket-outlets for SELV comply with IEC 60906-3 and IEC 60884-2-4		N/A
	Plugs and socket-outlets for SELV ≤ 3 A, ≤ 25 V r.m.s. or ≤ 60 V d.c. and ≤ 72 W comply with IEC 60906-3 and IEC 60884-2-4 or:		N/A
	- plugs not able to enter socket-outlets of other standardised system		N/A
	- socket-outlets not admit plugs of other standardised system		N/A
	- socket-outlets without protective earth		N/A
- (15.4)	**Insulation between circuits and accessible parts**		**N/A**
- (15.4.2)	SELV circuits		N/A
	Source used to supply SELV circuits:		N/A
	- 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		N/A
	- another source		N/A
	Voltage in the circuit not higher than ELV		N/A
	SELV circuits insulated from LV by double or reinforced insulation		N/A
	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

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	SELV circuits insulated from accessible conductive parts according Table 6 in 15.4.5		N/A
- (15.4.3)	FELV circuits		N/A
	Source used to supply FELV circuits:		N/A
	- separating transformer in accordance with relevant part 2 of IEC 61558		N/A
	- separating controlgear providing basic insulation between input and output circuits in accordance with relevant part 2 of IEC 61347		N/A
	- another source		N/A
	- source in circuits separated by the LV supply by basic insulation		N/A
	Voltage in the circuit not higher than ELV		N/A
	FELV circuits insulated from LV supply by at least basic insulation		N/A
	FELV circuits insulated from other FELV circuits if functional purpose		N/A
	FELV circuits insulated from accessible conductive parts according Table 6 in 15.4.5		N/A
	Plugs and socket-outlets for FELV system comply with:		N/A
	- plugs not able to enter socket-outlets of other voltage systems		N/A
	- socket-outlets not admit plugs of other voltage systems		N/A
	- socket-outlets have a protective conductor contact		N/A
- (15.4.4)	Other circuits		N/A
	Insulation between circuits other than SELV or FELV and accessible conductive parts in according Table 6 in 15.4.5.		N/A
- (15.4.5)	Insulation between circuits and accessible conductive parts		N/A
	Accessible conductive parts insulated from active parts of electric circuits by insulating according Table 6		N/A
	Requirements for Class II construction with equipotential bonding for protection against indirect contact with live parts:		N/A
	- all conductive parts are connected together		N/A
	- conductive parts are reliably connected together according test of IEC 60598-1 cl. 7.2.3		N/A
	- conductive parts comply with requirements of Annex A in case of insulation fault		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
17 (16)	**CREEPAGE DISTANCES AND CLEARANCES**		**P**
- (16)	Creepage distances and clearances according to 16.2 and 16.3		P
	Controlgears providing SELV comply with additional requirements in Annex L		N/A
	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

18 (17)	**SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS**		**P**
	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

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Screws of insulating material		N/A
	Torque test: torque (Nm); part..... :	--	N/A
	Torque test: torque (Nm); part..... :	--	N/A
	Torque test: torque (Nm); part..... :	--	N/A
(4.12.2)	Screws with diameter < 3 mm screwed into metal		N/A
(4.12.4)	Locked connections:		N/A
	- fixed arms; torque (Nm)..... :	--	N/A
	- lampholder; torque (Nm)..... :	--	N/A
	- push-button switches; torque 0,8 Nm..... :	--	N/A
(4.12.5)	Screwed glands; force (Nm)..... :	--	N/A

19 (18)	**RESISTANCE TO HEAT, FIRE AND TRACKING**		**P**
- (18.1)	Ball-pressure test ..... :	See Test Table 19 (18.1)	P
- (18.2)	Test of printed boards ..... :	See Test Table 19 (18.2)	P
- (18.3)	Glow-wire test ..... :	See Test Table 19 (18.3)	P
- (18.4)	Needle flame test ..... :	See Test Table 19 (18.4)	P
- (18.5)	Tracking test ..... :	See Test Table 19 (18.5)	P

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

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

14	**TABLE: tests of fault conditions** LED driver of GROUND-STANDARD-7: 240V; 0,03A; 6,3W	**P**
Part	Simulated fault	Hazard
DB1	Test voltage: 240Vac Short circuit, 0W; Fuse resistor open immediately; Three times repeat	~~YES/~~NO
Varistor (VR1)	Test voltage: 240Vac Short circuit, 0W; Fuse resistor open immediately; Three times repeat	~~YES/~~NO
D7	Test voltage: 240Vac Short circuit, 0,2W; Unit shut down; recoverable	~~YES/~~NO
E-cap	Test voltage: 240Vac Short circuit, 0W; Fuse resistor open immediately; Three times repeat	~~YES/~~NO

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

LED driver output	Test voltage: 240Vac Short circuit, 0,3W; Unit shut down; recoverable	~~YES~~/NO

14	**TABLE: tests of fault conditions** LED driver of GROUND-MEDIUM-20: 240V; 0,088A; 19,3W	**P**
Part	Simulated fault	Hazard
DB1	Test voltage: 240Vac Short circuit, 0W; Fuse resistor open immediately; Three times repeat	~~YES~~/NO
Varistor (VR1)	Test voltage: 240Vac Short circuit, 0W; Fuse resistor open immediately; Three times repeat	~~YES~~/NO
Q1	Test voltage: 240Vac Short circuit, 0W; Fuse resistor open immediately; Three times repeat	~~YES~~/NO
E-cap (EC2)	Test voltage: 240Vac Short circuit, 0W; Fuse resistor open immediately; Three times repeat	~~YES~~/NO
E-cap (EC4)	Test voltage: 240Vac Short circuit, 2,1W; Unit shut down; recoverable	~~YES~~/NO
D1	Test voltage: 240Vac Short circuit, 0W; Fuse resistor open immediately; Three times repeat	~~YES~~/NO
D2	Test voltage: 240Vac Short circuit, 4,7W; Unit shut down; recoverable	~~YES~~/NO
D4	Test voltage: 240Vac Short circuit, 0,1W; Unit shut down; recoverable	~~YES~~/NO
D5	Test voltage: 240Vac Short circuit, 3,8W; Unit shut down; recoverable	~~YES~~/NO
D7	Test voltage: 240Vac Short circuit, 0,1W; Unit shut down; recoverable	~~YES~~/NO
LED driver output	Test voltage: 240Vac Short circuit, 3,6W; Unit shut down; recoverable	~~YES~~/NO

14	**TABLE: tests of fault conditions** LED driver of GROUND-BIG-33: 240V; 0,160A; 36,4W	**P**
Part	Simulated fault	Hazard
DB1	Test voltage: 240Vac Short circuit, 0W; Fuse resistor open immediately; Three times repeat	~~YES~~/NO
Varistor (VR1)	Test voltage: 240Vac Short circuit, 0W; Fuse resistor open immediately; Three times repeat	~~YES~~/NO
Q1	Test voltage: 240Vac Short circuit, 0W; Fuse resistor open immediately; Three times repeat	~~YES~~/NO
E-cap (EC2)	Test voltage: 240Vac Short circuit, 0W; Fuse resistor open immediately; Three times repeat	~~YES~~/NO

Attachment 4

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

E-cap (EC4)	Test voltage: 240Vac Short circuit, 6,1W; Unit shut down; recoverable	~~YES/~~NO
D1	Test voltage: 240Vac Short circuit, 0W; Fuse resistor open immediately; Three times repeat	~~YES/~~NO
D2	Test voltage: 240Vac Short circuit, 2,3W; Unit shut down; recoverable	~~YES/~~NO
D4	Test voltage: 240Vac Short circuit, 0,1W; Unit shut down; recoverable	~~YES/~~NO
D5	Test voltage: 240Vac Short circuit, 1,8W; Unit shut down; recoverable	~~YES/~~NO
D7	Test voltage: 240Vac Short circuit, 0,5W; Unit shut down; recoverable	~~YES/~~NO
LED driver output	Test voltage: 240Vac Short circuit, 0,1W; Unit shut down; recoverable	~~YES/~~NO

17 (16)	**TABLE: clearance and creepage distance measurements (mm)**							**P**
Applicable part of IEC 61347-1 Table 7 – 11*								
Distances	**Insulation type ****	**Measured clearance**	**Required**		**Measured creepage**	**Required**		
			clearance	***Table**		**creepage**	***Table**	
Distance 1:	B	2,7	1,5	9	2,7	2,5	7	
Working voltage (V)..... :					240Vac			—
Frequency if applicable (kHz)..... :					--			—
PTI..... :					< 600 ☒	≥ 600 ☐		—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) ..... :					--			—
Pulse voltage if applicable (kV) ..... :					--			—
Supplementary information: Between L and N and pins of fuse								
Distance 2:	B	2,7	1,5	9	2,7	2,5	7	
Working voltage (V)..... :					240Vac			—
Frequency if applicable (kHz)..... :					--			—
PTI..... :					< 600 ☒	≥ 600 ☐		—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) ..... :					--			—
Pulse voltage if applicable (kV) ..... :					--			—
Supplementary information: live parts to erath terminal								
Distance 3:	--	--	--	--	--	--	--	
Working voltage (V)..... :					--			—
Frequency if applicable (kHz)..... :					--			—
PTI..... :					< 600 ☐	≥ 600 ☐		—

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) .....:	--	—
Pulse voltage if applicable (kV) .....:	--	—
Supplementary information: --		

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

19 (18.1)	**TABLE: Ball Pressure Test** See Test Table 13.15 (13.2.1)			**P**
Allowed impression diameter (mm).....:		<2,0		—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)	
Supplementary information:				

19 (18.2)	**TABLE: Test of printed boards**				**P**
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (s)	Ignition of specified layer Yes/No	Duration of burning (s)	Verdict
PCB	See Annex 1	30	No	0	P
Supplementary information:					

19 (18.3)	**TABLE: Glow-wire test** See Test Table 13.15 (13.3.2)			**P**
Glow wire temperature .....:		650°C		—
Object/ Part No./ Material	Manufacturer/ trademark	Ignition of specified layer Yes/No	Duration of burning (s)	Verdict
Supplementary information:				

19 (18.4)	**TABLE: Needle-flame test** See Test Table 13.15 (13.3.1)				**P**
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (s)	Ignition of specified layer Yes/No	Duration of burning (s)	Verdict
Supplementary information:					

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

19 (18.5)	**TABLE: Proof tracking test** See Test Table 13.15 (13.4)				P
Test voltage PTI .....:	175V				—
Object/ Part No./ Material	Manufacturer/ trademark	Withstand 50 drops without failure on three places or on three specimens			Verdict
Supplementary information:					

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

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

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
(C6.2)	Declaration of the type of protection provided		N/A
(C7)	**LIMITATION OF HEATING**		N/A
(C7.1)	**Preselection test:**		N/A
	Test sample placed for at least 12 h in an oven having temperature (t_c - 5) K		N/A
	No operation of the protection device		N/A
(C7.2)	**Functioning of protection means:**		N/A
	Normal operation of the sample in a test enclosure according to Annex D at an ambient temperature such that (t_c +0; -5) °C is obtained		N/A
	No operation of the protection device		N/A
	Introducing of the most onerous test condition determined during test of clause 14.2 to 14.5		N/A
	Output of windings connected to the mains supply short-circuited, and other part of the controlgear operated under normal conditions		N/A
	Increasing of the current through the windings continuously until operation of the protection means		N/A
	Continuous measuring of the highest surface temperature		N/A
	Ballasts according to C5 a) or C5 e) operated until stable conditions are achieved		N/A
	Automatic-resetting thermal protectors working 3 times		N/A
	Ballasts according to C5 b) working 6 times		N/A
	Ballasts according to C5 c) and C5) d) working once		N/A
	Highest temperature does not exceed the marked value		N/A
	Any overshoot of 10% over the marked value within 15 min		N/A
	After 15 min value not exceed marked value		N/A

(D)	**ANNEX D – REQUIREMENTS FOR CARRY OUT THE HEATING TESTS OF THERMALLY PROTECTED LAMP CONTROLGEAR**		N/A
	Tests in C7 performed in accordance with Annex D, if applicable		N/A

(F)	**ANNEX F – DRAUGHT-PROOF ENCOSURE**		P
	Draught-proof enclosure in accordance with the description		P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Dimensions of the enclosure		P
	Other design; description		N/A
(H)	**ANNEX H - TESTS**		P
	All tests performed in accordance with the advice given in Annex H, if applicable		P
I (L)	**ANNEX I IN THIS PART 2 – PARTICULAR ADDITIONAL REQUIREMENTS FOR SELV D.C. OR A.C. SUPPLIED ELECTRONIC CONTROLGEARS FOR LED MODULES**		**N/A**
(L.3)	**Classification**		**N/A**
	Class I	Yes ☐ No ☒	—
	Class II	Yes ☐ No ☒	—
	Class III	Yes ☐ No ☒	—
	non-inherently short circuit proof controlgear	Yes ☐ No ☒	—
	inherently short circuit proof controlgear	Yes ☐ No ☒	—
	fail safe controlgear	Yes ☐ No ☒	—
	non-short-circuit proof controlgear	Yes ☐ No ☒	—
(L.4)	**Marking**		N/A
	Adequate symbols are used		N/A
(L.5)	**Protection against electric shock**		N/A
	Comply with clause 9.2 of IEC 61558-1		N/A
(L.6)	**Heating**		N/A
	No excessive temperatures in normal use		N/A
	Value if capacitor t_c marked .....:		—
	Winding insulation classified as Class .....:		—
	Comply with tests of clause 14 of IEC 61558-1 with adjustments		N/A
(L.7)	**Short-circuit and overload protection**		N/A
	Comply with tests of clause 15 of IEC 61558-1 with adjustments		N/A
(L.8)	**Insulation resistance and electric strength**		N/A
(L.8.1)	Conditioned 48 h between 91 % and 95 %		N/A
(L.8.2)	Insulation resistance		N/A
	Between input- and output circuits not less than 5 MΩ .....:		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	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		N/A
	1) Between live parts of input circuits and live parts of output circuits .....:		N/A
	2) Over basic or supplementary insulation between:		N/A
	a) live parts having different polarity .....:		N/A
	b) live parts and body if intended to be connected to protective earth .....:		N/A
	c) accessible metal parts and a metal rod of the same diameter as the flexible cable or cord .....:		N/A
	d) live parts and an intermediate metal part .....:		N/A
	e) intermediate metal parts and the body .....:		N/A
	f) each input circuit and all other input circuits ...:		N/A
	3) Over reinforced insulation between the body and live parts .....:		N/A
(L.9)	**Construction**		N/A
(L.9.1)	Transformer comply with 19.12 of IEC 61558-1 and 19 of IEC 61558-2-6		N/A
	HF transformer comply with 19 of IEC 61558-2-16		N/A
(L.10)	**Components**		N/A
	Protective devices comply with 20.6 – 20.11 of IEC 61558-1		N/A
(L.11)	**Creepage distances, clearances and distances through insulation**		N/A
	Creepage distances and clearances not less than in Clause 16		N/A
	Distance through insulation according Table L.5 in IEC 61347-1		N/A
	1) Basic distance through insulation		N/A
	Required distance (mm) .....:		—
	Measured (mm) .....:		N/A
	Supplementary information		—
	2) Supplementary distance through insulation		N/A
	Required distance (mm) .....:		—
	Measured (mm) .....:		N/A
	Supplementary information		—

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	3) Reinforced distance through insulation		N/A
	Required distance (mm) .....:		—
	Measured (mm) .....:		N/A
	Supplementary information		—
J (-)	**ANNEX J IN THIS PART 2 – PARTICULAR ADDITIONAL SAFETY REQUIREMENTS FOR A.C., A.C./D.C. OR D.C. SUPPLIED ELECTRONIC CONTROLGEAR FOR EMERGENCY LIGHTING**		N/A
J.1	**General**		N/A
	Intended for centralized emergency power supply	Yes ☐ No ☐	—
J.2	**Marking**		N/A
J.2.1	Mandatory markings		N/A
	a) symbol EL		N/A
	b) rated emergency supply voltage (V)		N/A
J.2.2	Information to be provided if applicable		N/A
	a) Limits of ambient temperature		N/A
	b) Emergency output factor (EOF_X)		N/A
	c) Information if intended for use in luminaires for high-risk task area lighting		N/A
J.3	General notes on tests		N/A
	Length of output cable in tests .....:		N/A
	Load instead of LED lamps/modules.....:		N/A
J.4	Starting conditions		N/A
	Start rated load in emergency mode without adversely affecting the performance		N/A
J.5	Operating condition		N/A
	Comply with the requirements of 7.2 of IEC 62384 at 90% and 110% of rated emergency supply voltage		N/A
J.6	Emergency supply current		N/A
	Emergency supply current not differ more than ±15 %		N/A
	Supply of low impedance and low inductance		N/A
J.7	EMC immunity		N/A
	Comply with the requirements of IEC 61547		N/A
J.8	Pulse voltage from central battery systems		N/A
	Withstand pulses according Table J.1		N/A
J.9	Tests for abnormal conditions		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Comply with the requirements of 12 of IEC 62384		N/A
J.10	Comply with the requirements of 13 of IEC 62384		N/A
J.11	Functional safety (EOF_x)		N/A
	Declared emergency output factor (EOF_x) achieved during emergency operation		N/A
(N)	**ANNEX N: REQUIREMENTS FOR INSULATION MATERIALS USED FOR DOUBLE OR REINFORCED INSULATION**		N/A
(N.4)	**General requirements**		N/A
(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 % of 5,5 kV or 1,5 x test voltage in Table N.1		N/A
(N.4.3)	**Thin sheet insulation**		N/A
(N.4.3.1)	Thickness and composition of thin sheet insulation		N/A
	- Inside the ballast and not subjected to handling or abrasion during the production and during maintenance		N/A
	- Non-separated layers: Min. 3 layers and fulfil mandrel test of 150N		N/A
	- Separated layers: Min. 2 layers and each layer fulfil mandrel test of 50N		N/A
	- Separated layers (alternative): Min. 3 layers and 2/3 of the layers fulfil mandrel test of 100N		N/A
(N.4.3.2)	Mandrel test (electric strength test during mechanical stress)		N/A
	Electric strength test after mandrel test:		N/A
	- Non-separated layers: min. 5 kV or 1,35 x test voltage in Table N.1		N/A
	- 2/3 of min. 3 separated layers: min. 5 kV or 1,25 x test voltage in Table N.1		N/A
	- one of 2 separated layers: min. 5 kV or 1,25 x test voltage in Table N.1		N/A
	No flashover or breakdown occurred		N/A
(O)	**ANNEX O: ADDITIONAL REQUIREMENTS FOR BUILT-IN ELECTRONIC CONTROLGEAR WITH DOUBLE OR REINFORCED INSULATION**		N/A
(O.6)	**Marking**		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Marking according clause 7 (7)	See clause 7	N/A
	Special symbol		N/A
	Meaning of the special symbol explained in catalogue		N/A
(O.7)	**Protection against accidental contact with live parts**		N/A
	Requirements of clause 8 (10)	See clause 8	N/A
	Test finger not possible to make contact with basic insulated metal parts		N/A
(O.8)	**Terminals**		N/A
	Clause 9 (8)	See clause 9	N/A
(O.9)	**Provision for earthing**		N/A
	Functional earthing terminals comply with clause 9 of part 1		N/A
	No protective earthing terminal		N/A
(O.10)	**Moisture resistance and insulation**		N/A
	Clause 11 (11)	See clause 11	N/A
(O.11)	**Electric strength**		N/A
	Clause 12 (12)	See clause 12	N/A
(O.13)	**Fault conditions**		N/A
	Clause 14 (14)	See clause 14	N/A
	End of test, between live part and accessible metal parts or external parts of insulating material in contact with the supporting surface comply with dielectric strength test reduced to 35 % of values according Table 1 in part 1		N/A
	Insulation resistance according to O.10 between live part and accessible metal parts or external parts of insulating material in contact with the supporting surface not less than 4 MΩ		N/A
(O.14)	**Construction**		N/A
	Clause 17 (15)	See clause 17	N/A
	Accessible metal parts insulated from live parts by double or reinforced insulation		N/A
	Live part insulated from supporting surface in contact with external faces by double or reinforced insulation		N/A
(O.15)	**Creepage distances and clearances**		N/A
	Clause 18 (16)	See clause 18	N/A
	Comply with corresponding values for luminaries in IEC 60598-1		N/A
(O.16)	**Screws, current-carrying parts and connections**		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Clause 19 (17)	See clause 19	N/A
(O.17)	**Resistance to heat and fire**		N/A
	Clause 20 (18)	See clause 20	N/A
(O.18)	**Resistance to corrosion**		N/A
	Clause 21 (19)	See clause 21	N/A
(P)	**Creepage distances and clearances and distance through isolation (DTI) for lamp controlgear which are protected against pollution by the use of coating or potting**		N/A
(P.1)	**General**		N/A
	P.2 applies if creepage distances less than the minimum in Table 7 and 8		N/A
	P.3 applies if clearance less than the minimum in Table 9, 10 and 11		N/A
(P.2)	**Creepage distances**		N/A
(P.2.2)	Minimum creepage distances for working voltages and rated voltages with frequencies up to 30 kHz (Table P.1)		N/A
	Basic or supplementary insulation:		N/A
	Required creepage .....:		—
	Measured.....:		N/A
	Supplementary information		—
	Reinforced insulation:		N/A
	Required creepage .....:		—
	Measured.....:		N/A
	Supplementary information		—
(P.2.3)	Creepage distances for working voltages with frequencies above 30 kHz (Table P.2)		N/A
	Voltage $\hat{U}_{out}$ kV .....:		—
	Frequency.....:		—
	Required distance .....:		—
	Measured.....:		N/A
	Supplementary information		—
(P.2.4)	Compliance with the required creepage distances		N/A
(P.2.4.1)	Compliance in accordance with 16.3.3 and test according P.2.4.2		N/A
(P.2.4.3)	Electrical tests after conditioning		N/A
(P.2.4.3.1)	Insulation resistance and electric strength according Clause 11 and 12		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
(P.3)	**Distance through isolation**		N/A
(P.3.4)	Electrical tests after conditioning		N/A
(P.3.4.1)	Insulation resistance and electric strength according Clause 11 and 12		N/A
(P.3.4.2)	Impulse voltage dielectrical test		N/A
	Basic or supplementary insulation:		N/A
	Working/rated voltage .....:		—
	Impulse voltage.....:		N/A
	Supplementary information		—
	Reinforced insulation:		N/A
	Working/rated voltage .....:		—
	Impulse voltage.....:		N/A
	Supplementary information		—

ANNEX 2	**Screw terminals (part of the luminaire)**		**N/A**
(14)	**SCREW TERMINALS**		N/A
(14.2)	Type of terminal..... :		—
	Rated current (A)..... :		—
(14.3.2.1)	One or more conductors		N/A
(14.3.2.2)	Special preparation		N/A
(14.3.2.3)	Terminal size		N/A
	Cross-sectional area (mm^2) ..... :		—
(14.3.3)	Conductor space (mm) ..... :		
(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

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Pull test; pull (N)..... :		N/A
(14.4.8)	Without undue damage		N/A

ANNEX 3	**Screwless terminals (part of the luminaire)**		N/A
(15)	**SCREWLESS TERMINALS**		N/A
(15.2)	Type of terminal..... :		—
	Rated current (A)..... :		—
(15.3.1)	Material		N/A
(15.3.2)	Clamping		N/A
(15.3.3)	Stop		N/A
(15.3.4)	Unprepared conductors		N/A
(15.3.5)	Pressure on insulating material		N/A
(15.3.6)	Clear connection method		N/A
(15.3.7)	Clamping independently		N/A
(15.3.8)	Fixed in position		N/A
(15.3.10)	Conductor size		N/A
	Type of conductor		N/A
(15.5)	Terminals and connections for internal wiring		N/A
(15.5.1)	Mechanical tests		N/A
(15.5.1.1.1)	Pull test spring-type terminals (4 N, 4 samples) ..... :		N/A
(15.5.1.1.2)	Pull test pin or tab terminals (4 N, 4 samples)..... :		N/A
	Insertion force not exceeding 50 N		N/A
(15.5.1.2)	Permanent connections: pull-off test (20 N)		N/A
(15.5.2)	Electrical tests		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		N/A
(15.6.1)	Conductors		N/A

Attachment 4

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

	Terminal size and rating		N/A
15.6.2	Mechanical tests		N/A
(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) ..... :		N/A
(15.6.3)	Electrical tests		N/A
	Tests according 15.6.3.1 + 15.6.3.2 in IEC 60598-1		N/A

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

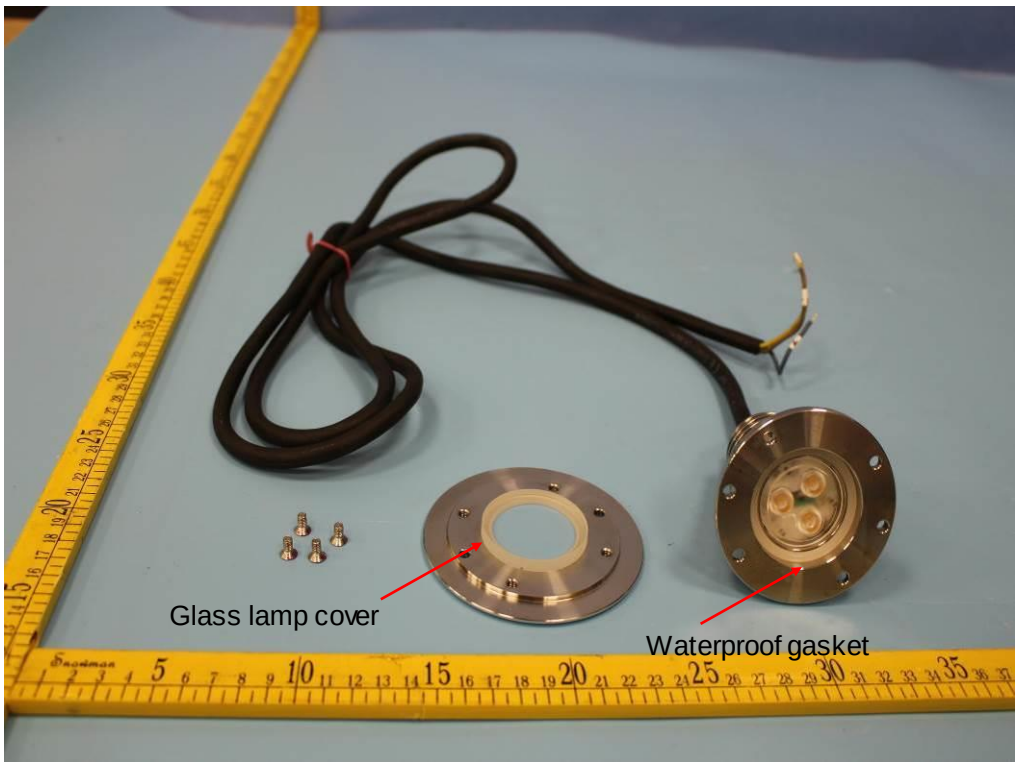
Attachment 5
Report Number: 50246153 001

Model: See model list

Picture 1. Model: GROUND-STANDARD-7, same as nGROUND-STANDARD-5

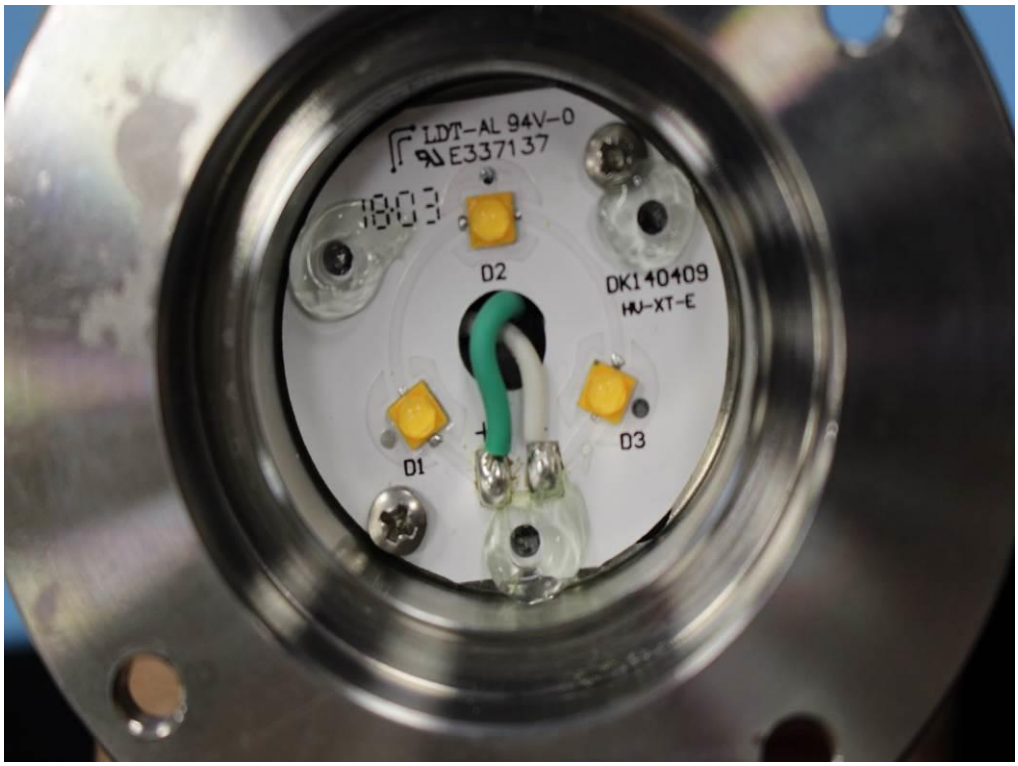

Picture 2.

Picture 3.



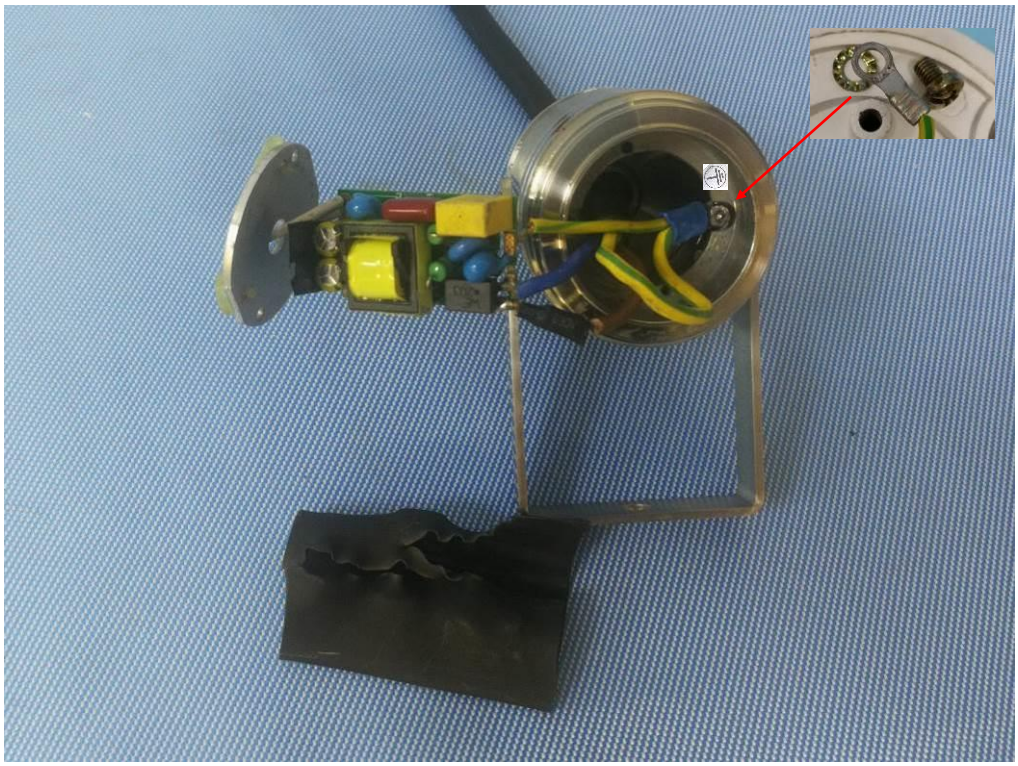
Picture 4.

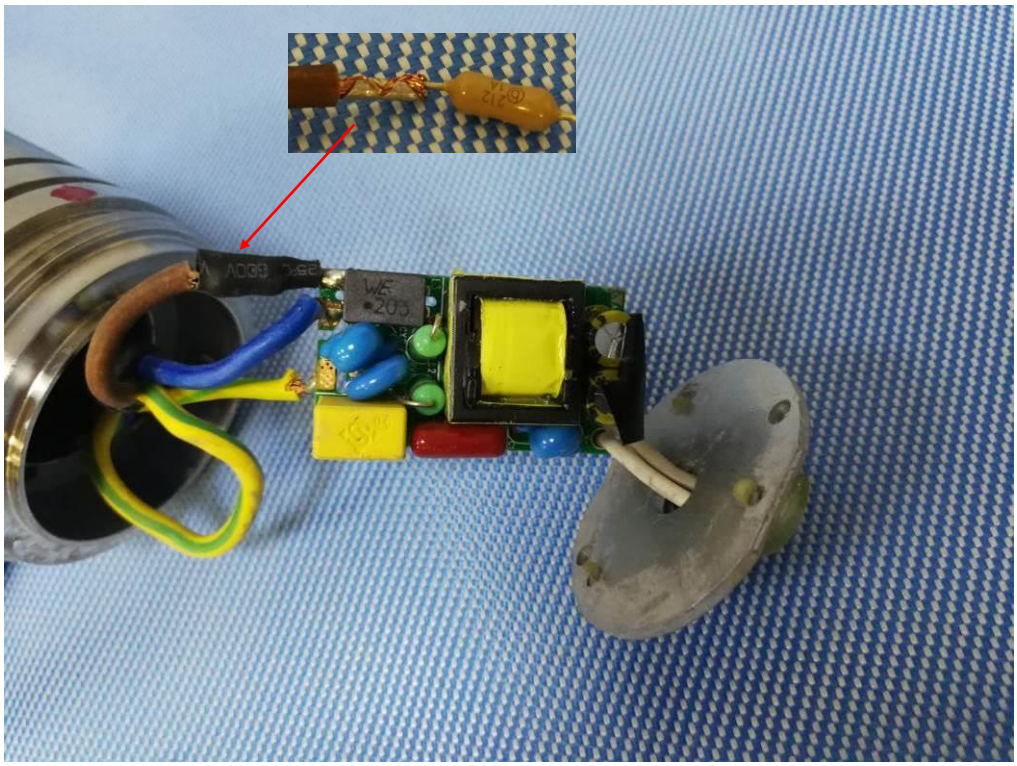
Picture 5.



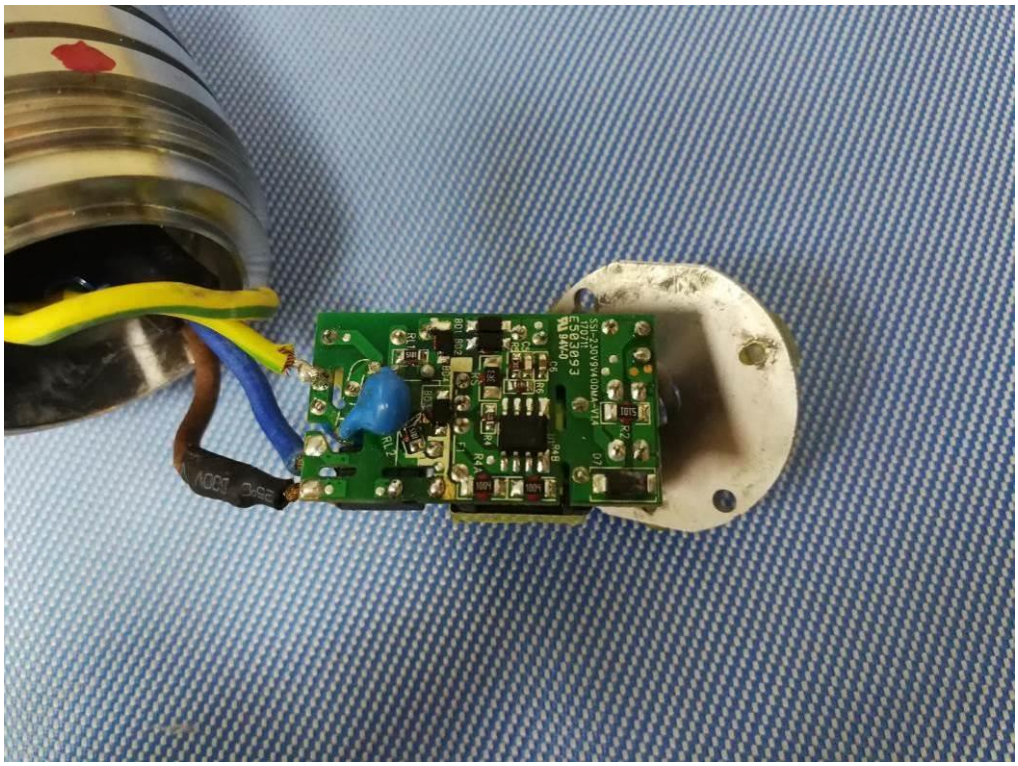
Picture 6.

Picture 7.

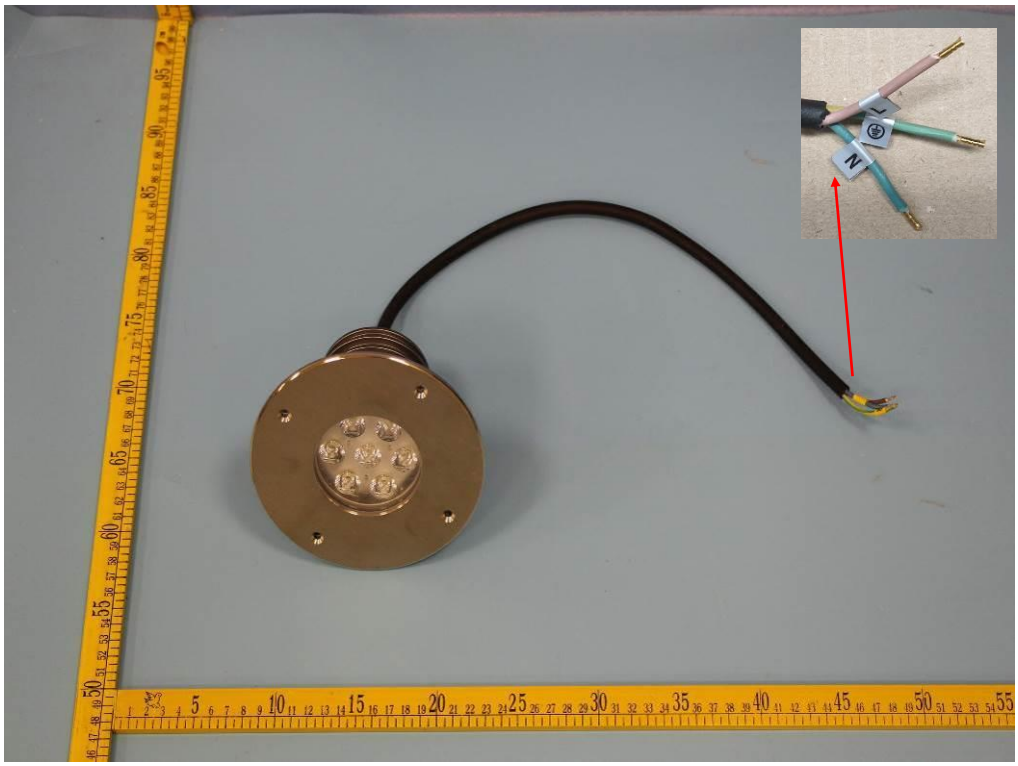

Picture 8. the creepage distances and clearances between the fuse and accessible metal parts (the edge of heat-shrinkable tube) was 3,0mm



Picture 9.

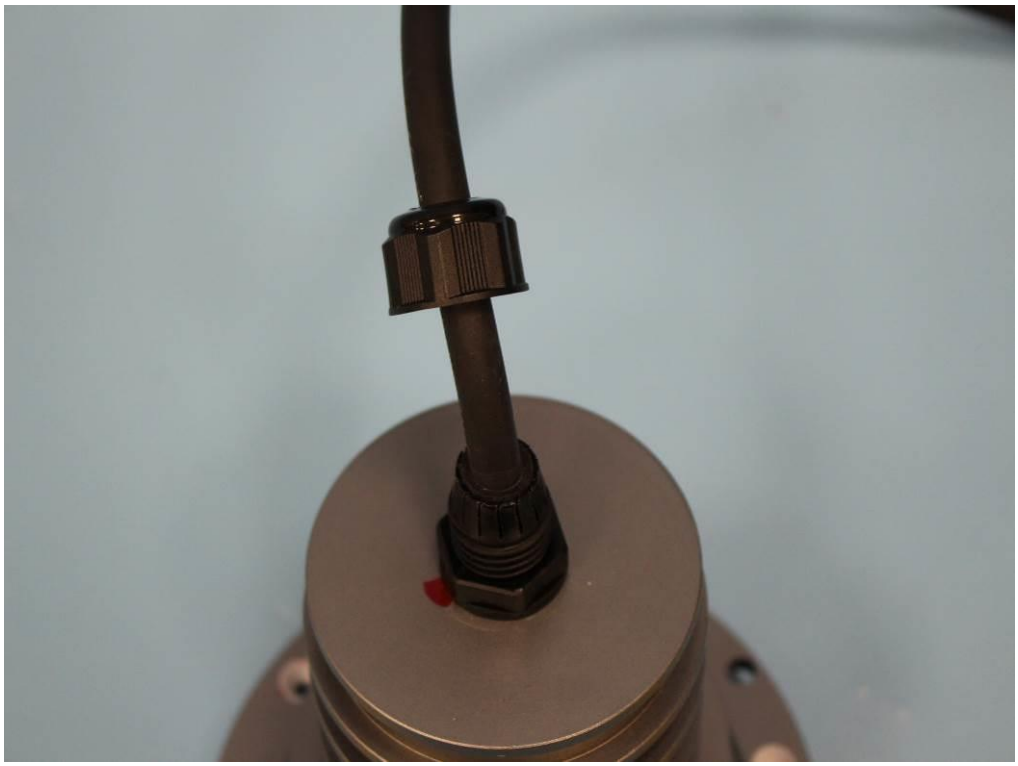


Picture 10. The wire conductor is inserted into a hole in a printed board, bent and soldered, the hole having a diameter slightly greater than the conductor

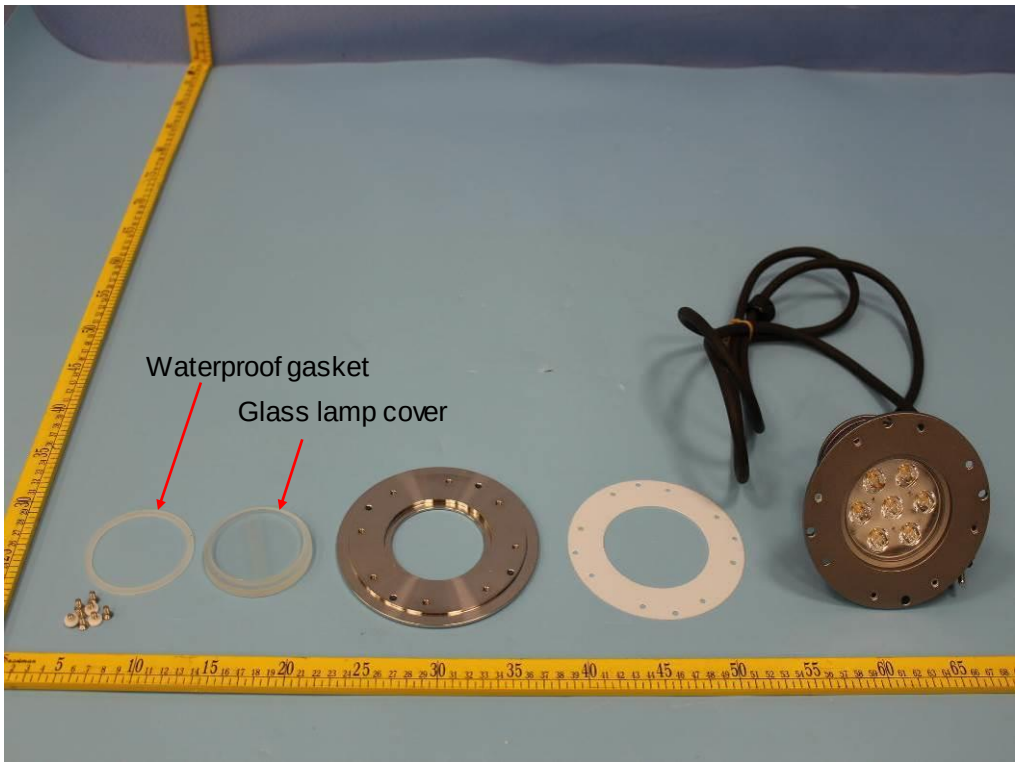


Picture 11. Model: GROUND-MEDIUM-20, same as nGROUND-MEDIUM-17

Picture 12.

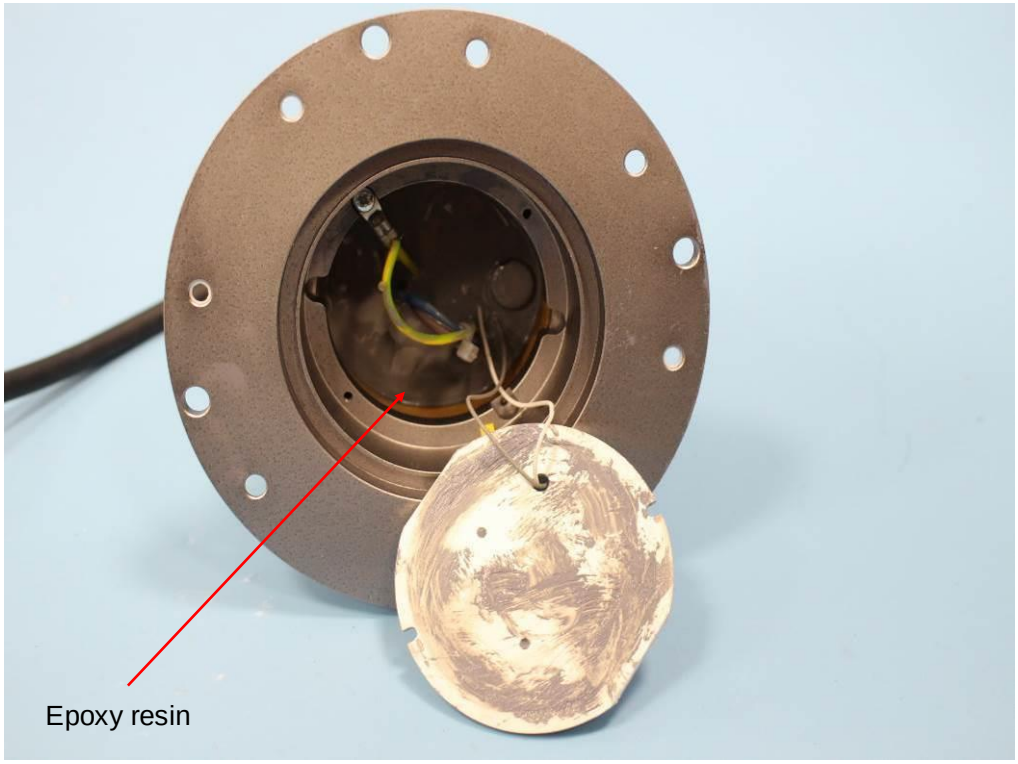


Picture 13.

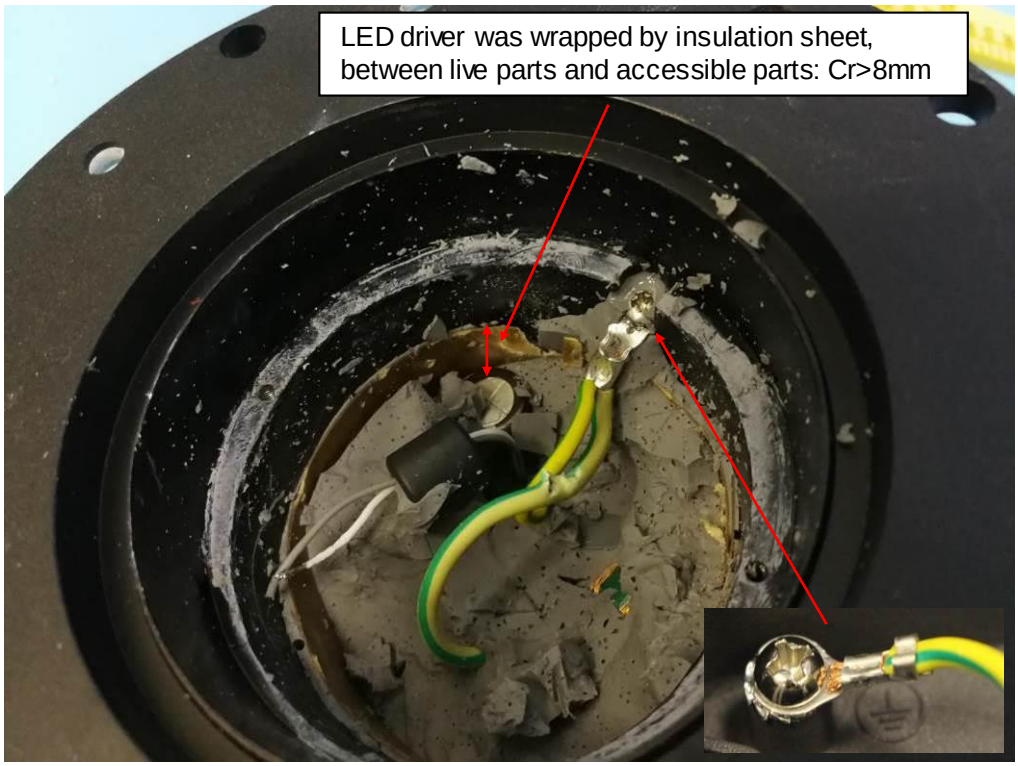


Picture 14.

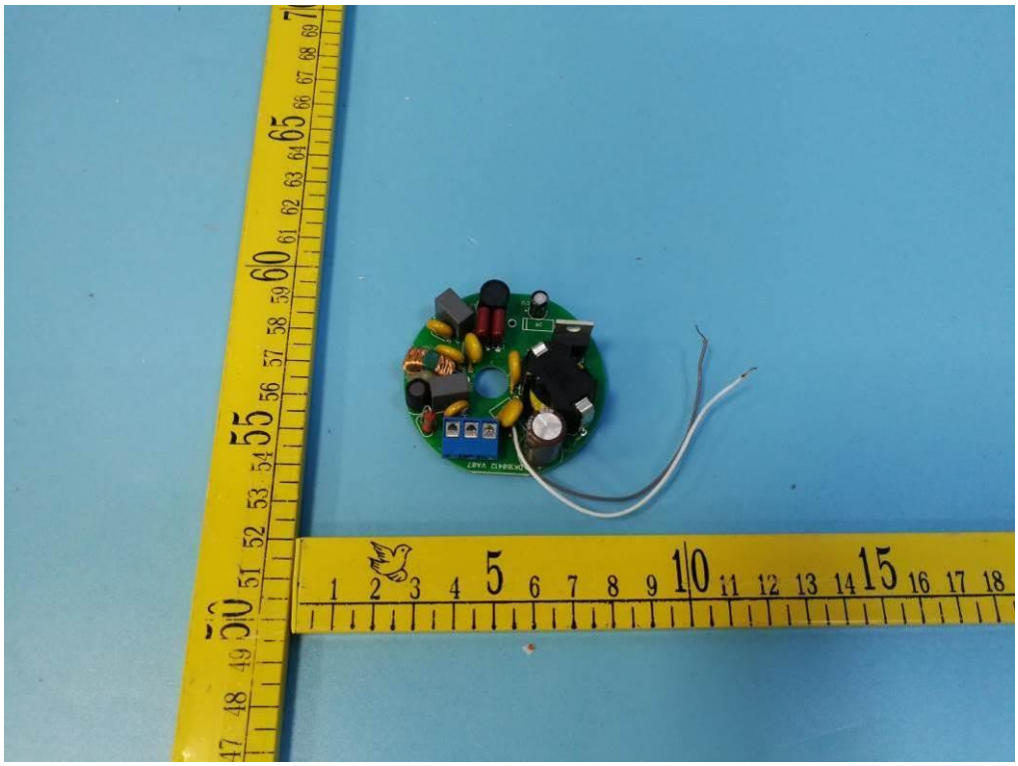
Picture 15.



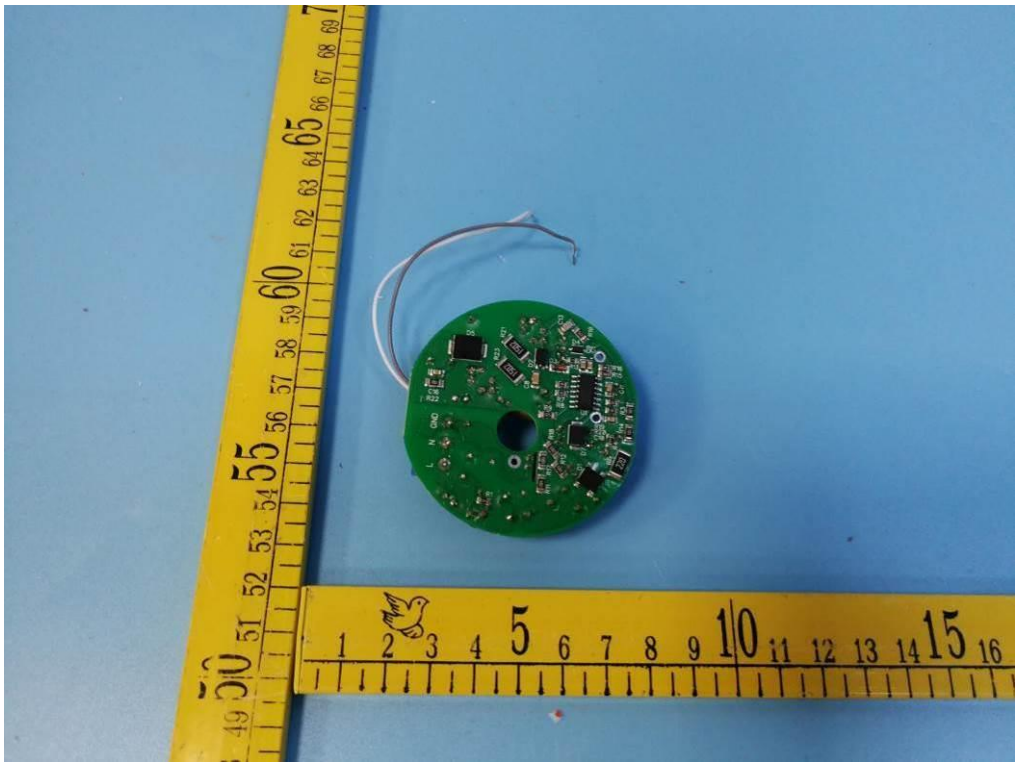
Picture 16.



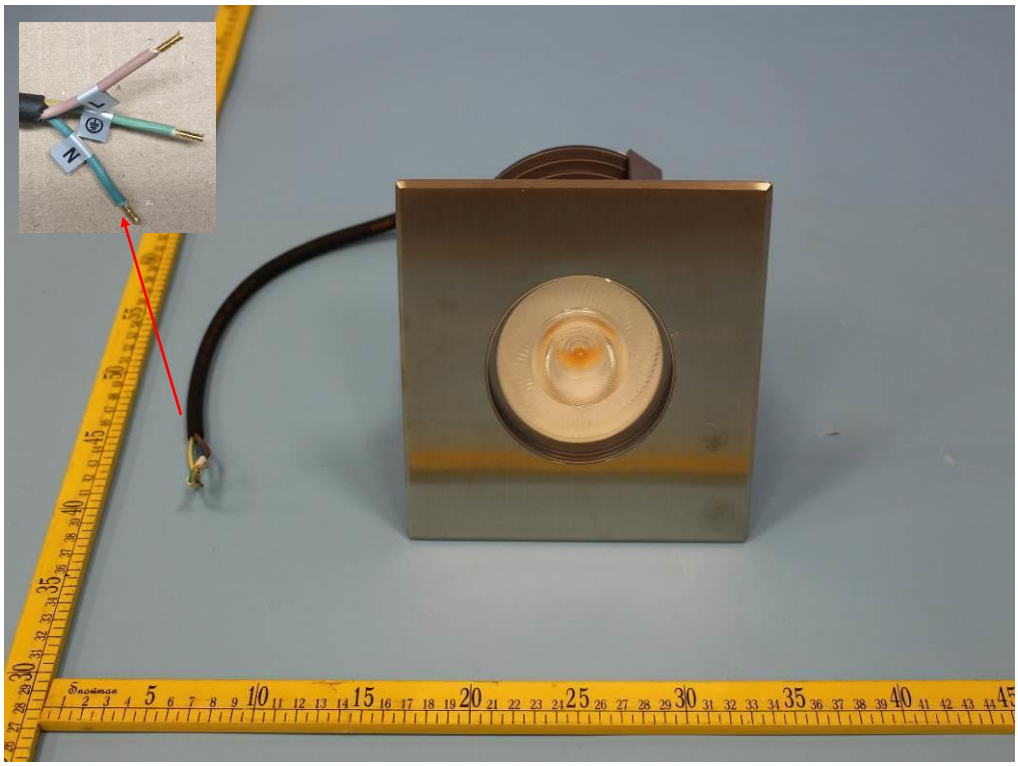
Picture 17.



Picture 18.



Picture 19.

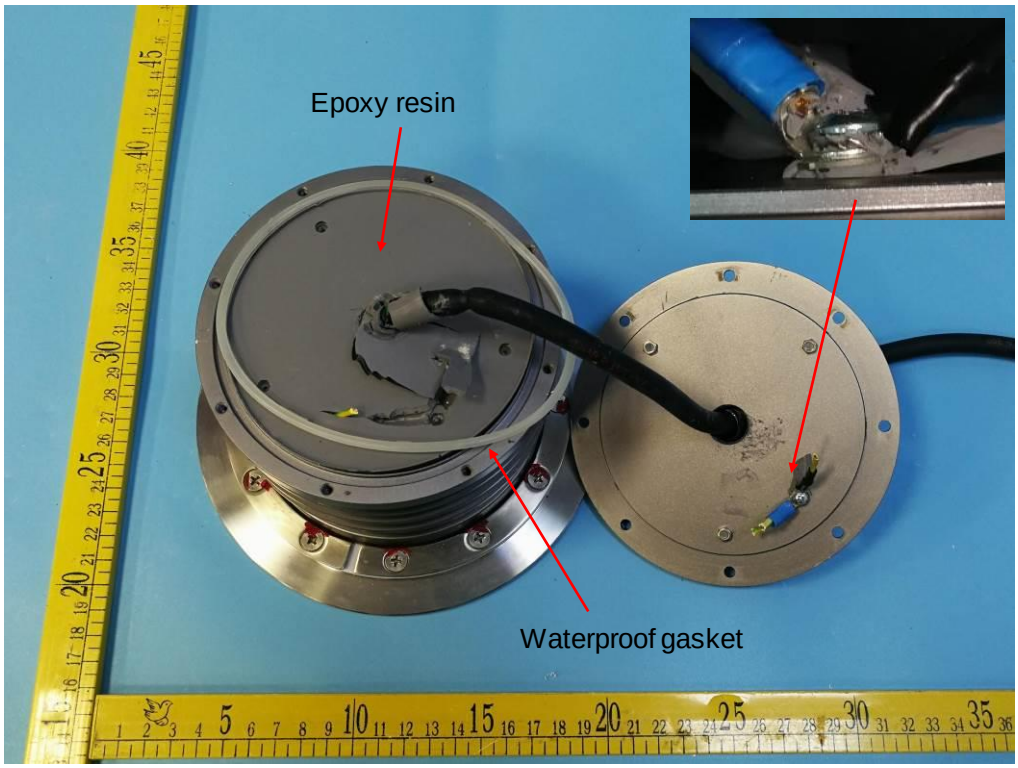


Picture 20. Model: GROUND-BIG-33, same as nGROUND-BIG-30

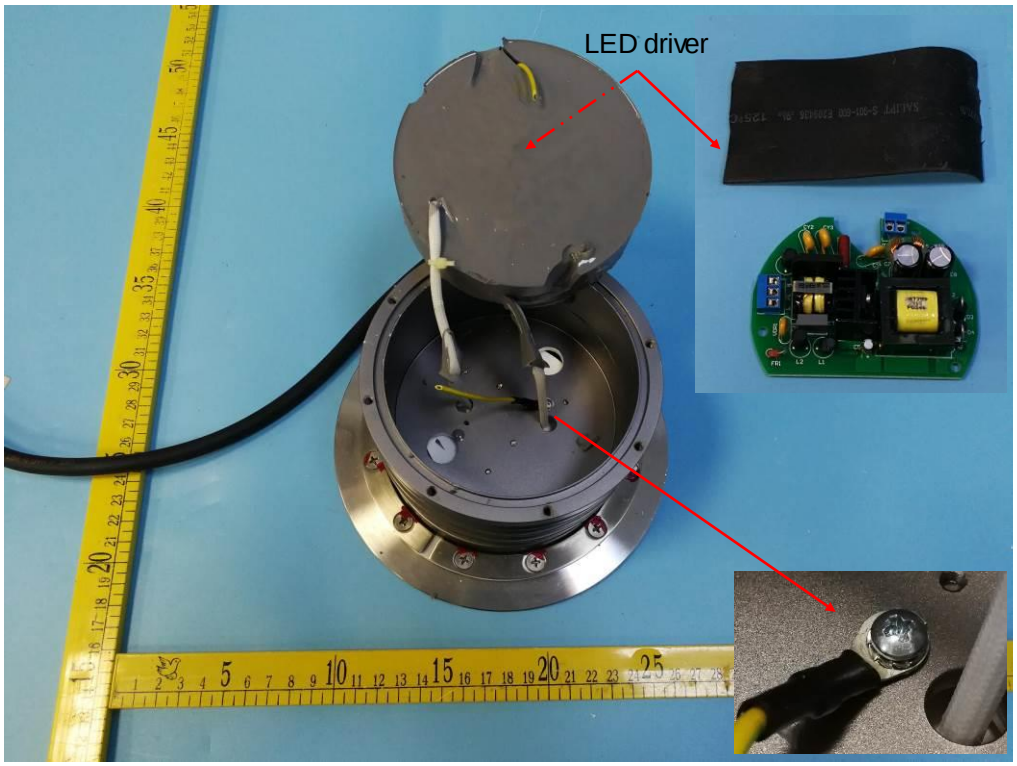
Picture 21.

Picture 22.

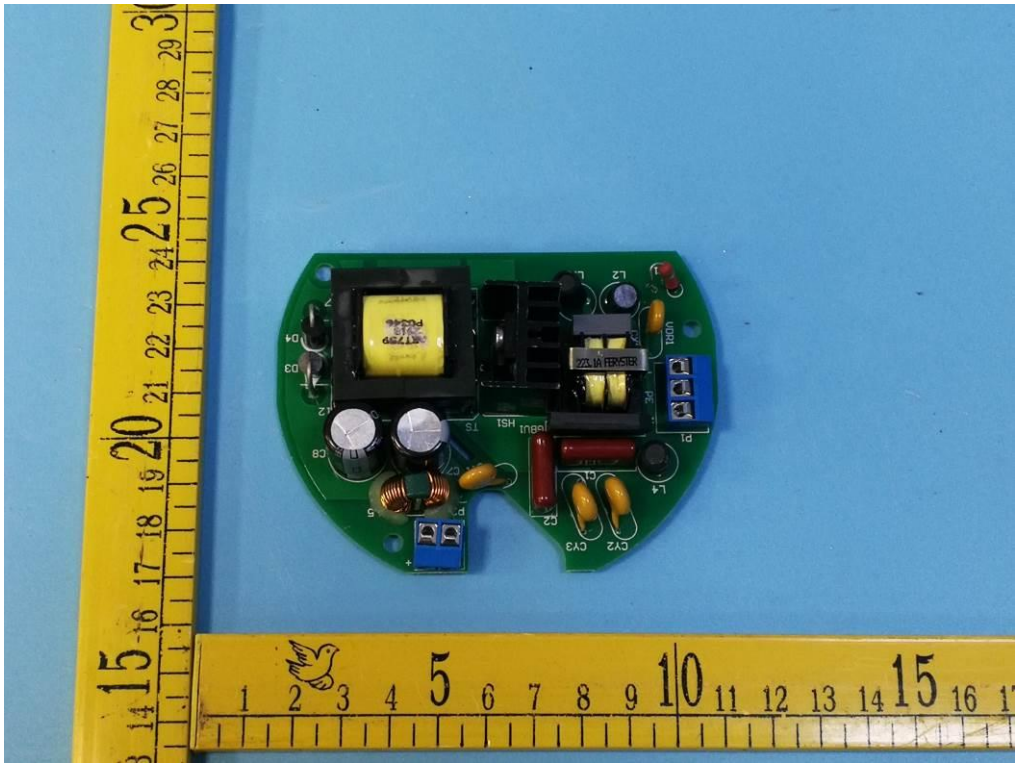
Picture 23.



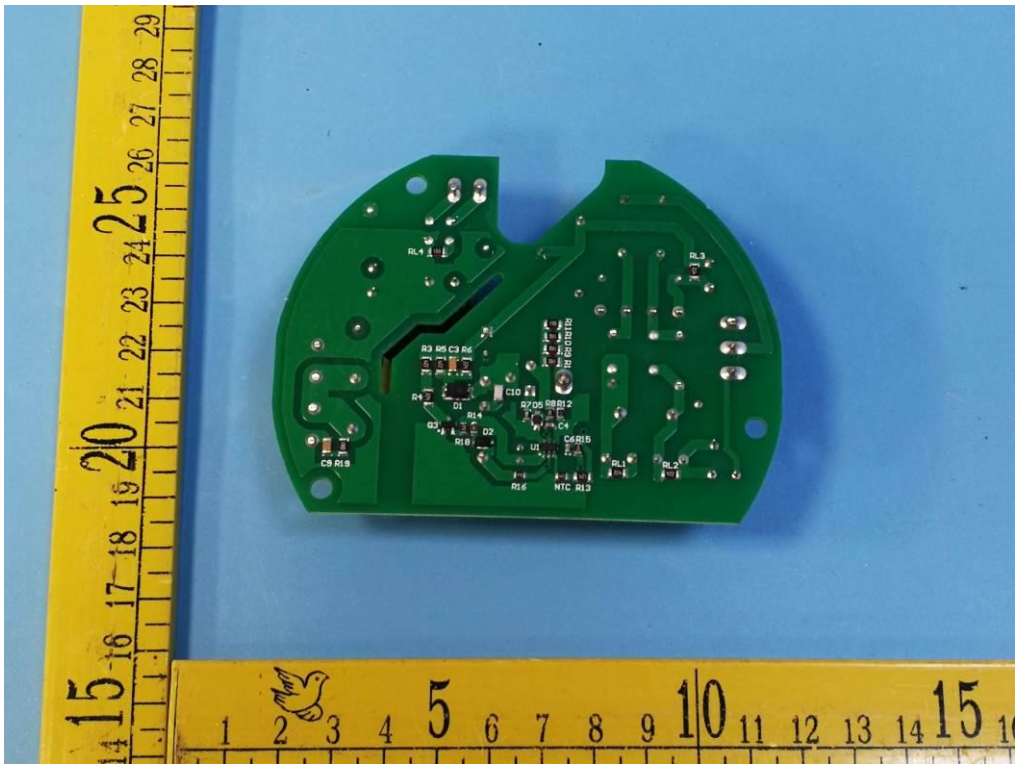
Picture 24.



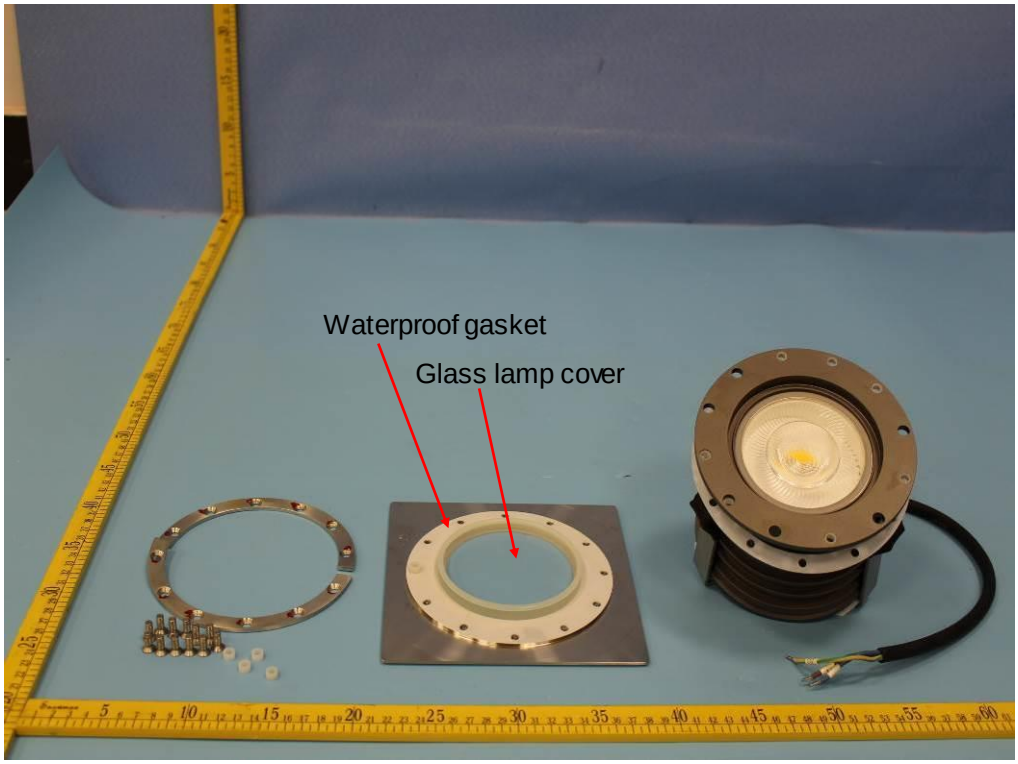
Picture 25. LED driver was wrapped by heat-shrinkable tube, the creepage distances and clearances between live parts and accessible parts: Cr: 3,0mm



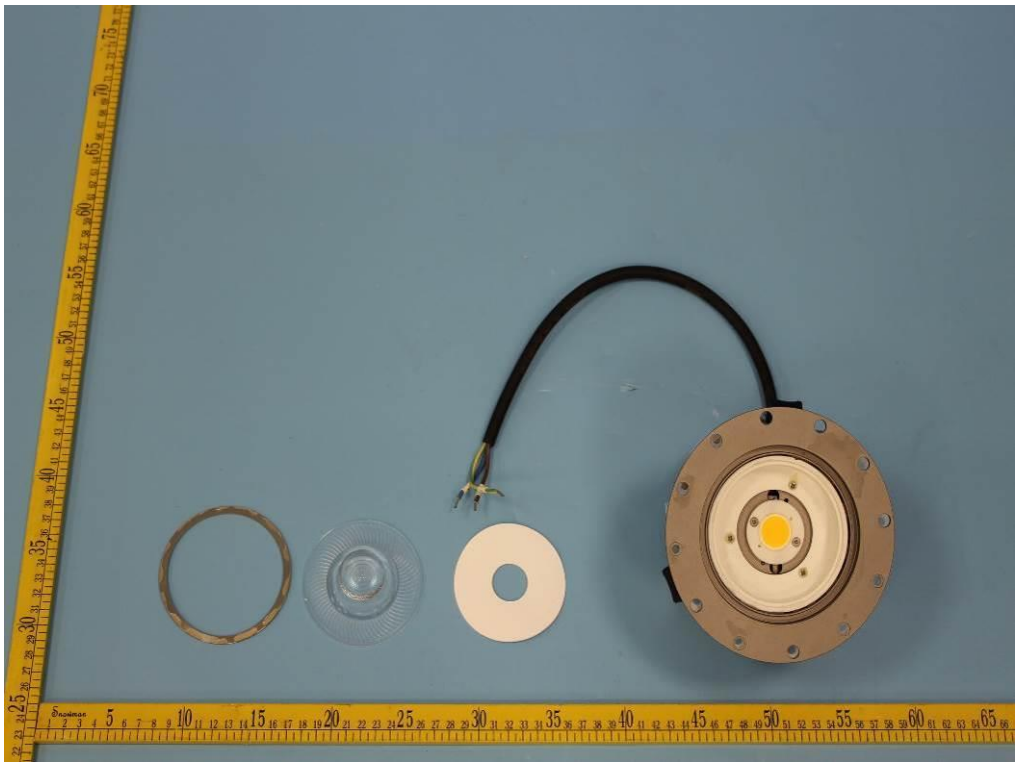
Picture 26.



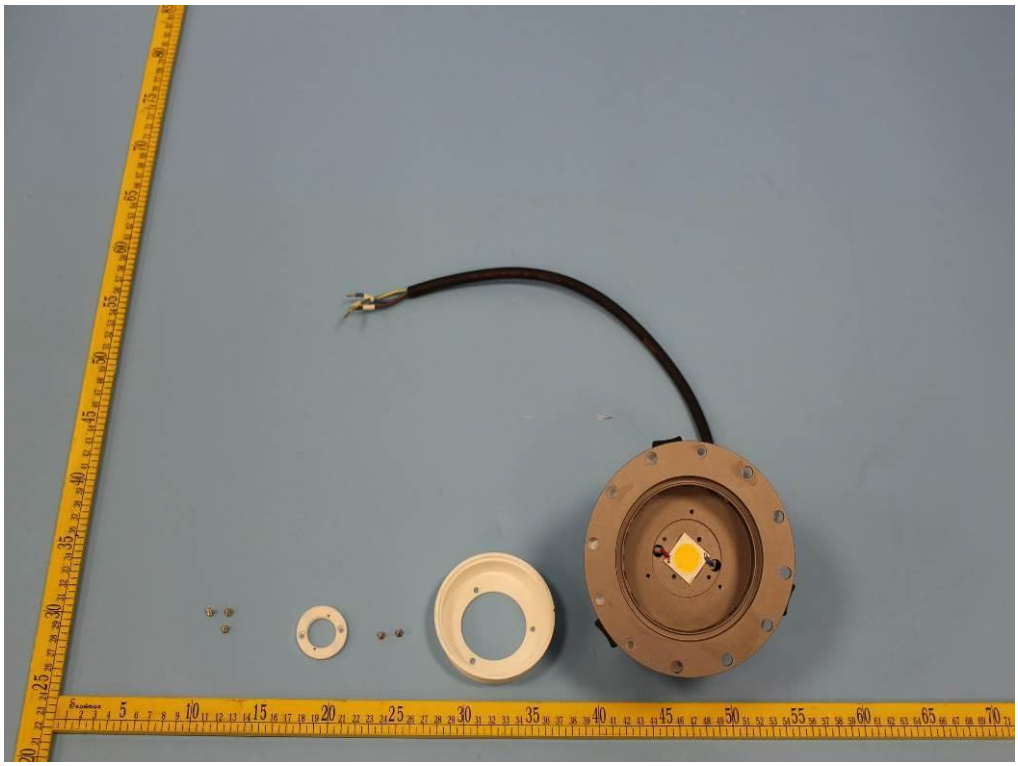
Picture 27.



Picture 28.



Picture 29.



Picture 30.