



TEST REPORT
IEC 60598-2-17
Luminaires
Part 2: Particular requirements
Section 17: Luminaires for stage lighting, television and
film studios (outdoor and indoor)

Report Number.....: LCSB061223018S

Date of issue.....: July 14, 2023

Total number of pages.....: 95 pages

Name of Testing Laboratory
preparing the Report.....: Shenzhen Southern LCS Compliance Testing Laboratory Ltd.

Applicant's name.....: MEDIAPRO INTERNATIONAL LLC

Address.....: P.O.Box 114657 | Dubai | United Arab Emirates

Test specification:

Standard.....: IEC 60598-2-17:2017 used in conjunction with IEC 60598-1:2020

Test procedure.....: CE-LVD

Non-standard test method.....: N/A

TRF template used.....: IECEE OD-2020-F1:2021, Ed.1.4

Test Report Form No.....: IEC60598_2_17G

Test Report Form(s) Originator.....: Intertek Semko AB

Master TRF.....: Dated 2022-06-10

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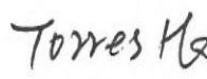
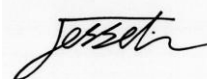
Shenzhen Southern LCS Compliance Testing Laboratory Ltd.

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Test item description.....:	Stage luminaire	
Trade Mark.....:	KRYPTON	
Manufacturer.....:	MEDIAPRO INTERNATIONAL LLC	
Address.....:	P.O.Box 114657 Dubai United Arab Emirates	
Model/Type reference.....:	See model list on page 5	
Ratings.....:	See model list on page 5	
☒ Testing Laboratory:		
Testing location/ address.....:	Shenzhen Southern LCS Compliance Testing Laboratory Ltd. 101-201, No.39 Building, Xialang Industrial Zone, Heshuikou Community, Matian Street, Guangming District, Shenzhen, China	
Tested by.....:	Alyson Zhang (Engineer)	
Check by.....:	Torres He (Director)	
Approved by.....:	Jesse Liu (Manager)	
List of Attachments (including a total number of pages in each attachment):		
Attachment No. 1: 2 pages of European group differences and national differences according to EN IEC 60598-2-17:2018 used in conjunction with EN IEC 60598-1:2021+A11:2022		
Attachment No. 2: 2 pages of report IEC/EN IEC 62031.		
Attachment No. 3: 4 pages of report IEC/EN 62471 & IEC TR 62778.		
Attachment No. 4: 23 pages of report IEC/EN 61347-2-13.		
Attachment No. 5: 18 pages of photo documentation.		
Summary of testing:		
Tests performed (name of test and test clause):	Testing location:	
IEC 60598-2-17:2017 IEC 60598-1:2020 IEC 62471:2006 IEC TR 62778:2014 IEC 62031:2018 IEC 62493:2015+A1:2022 IEC 61347-2-13:2014+A1:2016 IEC 61347-1:2015+A1:2017	Shenzhen Southern LCS Compliance Testing Laboratory Ltd. 101-201, No.39 Building, Xialang Industrial Zone, Heshuikou Community, Matian Street, Guangming District, Shenzhen, China	
Summary of compliance with National Differences:		
List of countries addressed		
European Group differences		
☒ The product fulfils the requirements of		
EN IEC 60598-2-17:2018; EN IEC 60598-1:2021+A11:2022; EN 62493:2015+A1:2022; EN 62471:2008;		



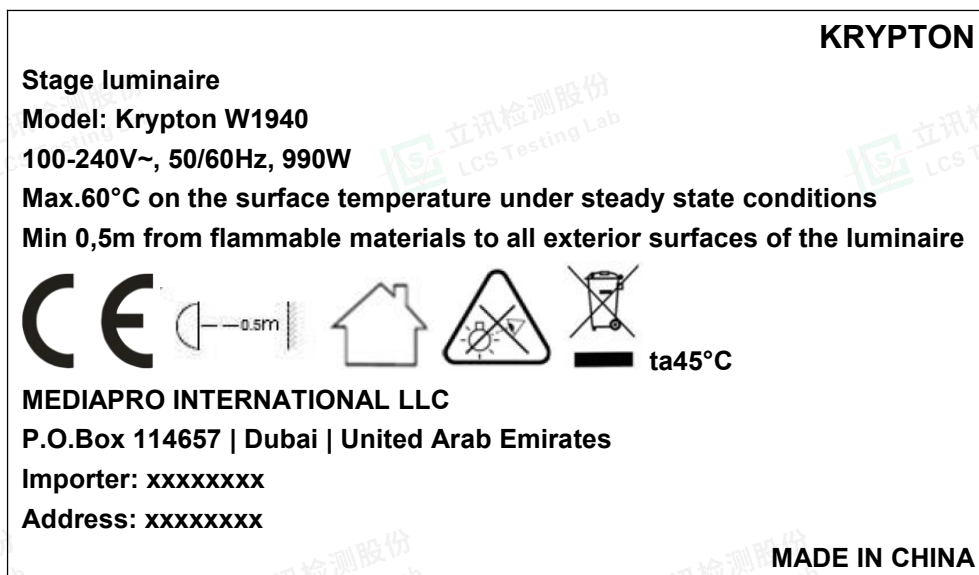
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EN IEC 62031:2020+A11:2021; EN 61347-1:2015+A1:2021; EN 61347-2-13:2014+A1:2017

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.



: "caution, electric shock risk" symbol, height of this marks least 15mm.

Remarks:

1. Representative markings of Krypton W1940, markings of all models are identical except for the model name and rating.
2. Height of CE mark at least 5mm, height of WEEE symbol should not less than 7mm, height of other marks at least 5mm, height of letters and numerals at least 2mm.





Test item particulars..... :									
Classification of installation and use.....:	Luminaires for stage lighting, television and film studios (indoor)								
Supply Connection.....:	Appliance inlet								
Protection Class.....:	Class I								
Degree of Protection.....:	IP20								
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..... :	June 12, 2023								
Date (s) of performance of tests..... :	June 12, 2023 - June 30, 2023								
General remarks:									
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. Clause numbers with "*" were not within the scope of CNAS recognition. Clause numbers between brackets refer to clauses in IEC/EN IEC 60598-1. The general information of applicant and manufacturer (such as the name and address), product name, model/type reference, trademark and other similar information contained in this report are all provided by the applicant, the laboratory is not responsible for verifying its authenticity. This report only contain assessment for LITE, the result for other construction part, like IT, have been included in other safety test report. Throughout this report a ☒ comma / ☐ point is used as the decimal separator. According to the EU directives which have been aligned with EU NLF (new legislative framework), both of manufacturer and importer's name and address shall be affixed on the product or, where that is not possible, on its packaging or in a document accompanying the product before the product is placed on the EU market. Modified Information <table border="1"><thead><tr><th>Version</th><th>Report No.</th><th>Revision Date</th><th>Summary</th></tr></thead><tbody><tr><td>V1.0</td><td>LCSB061223018S</td><td>/</td><td>Original Version</td></tr></tbody></table>		Version	Report No.	Revision Date	Summary	V1.0	LCSB061223018S	/	Original Version
Version	Report No.	Revision Date	Summary						
V1.0	LCSB061223018S	/	Original Version						
Manufacturer's Declaration per sub-clause 4.2.5 of IECIEE 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)..... : CKC Lighting Co., Ltd(Lite Angle Limited)
Guan Keng Gongye Yuan, Building#A, 2nd Floor,
Dashi, Panyu, Guangzhou 510300, China

General product information:

- Ratings: 100-240V~, 50/60Hz, IP20, ta45°C, Class I, and used with SELV LED driver, luminaire suitable for direct mounting on normally flammable surfaces, suitable for indoor use.
- Max. Interconnected Load: 5A
- The battery only powers the display.
- Per requirement from applicant, this report only include the assessments according the standards mentioned in page 2, conformity against other applicable standards should ref to relevant test report.
- All models have similar appearance and structure except size and power.
- Unless otherwise specified, the model Krypton W1940 was chosen as representative model to perform all test.

Model List:

Model	Rating
Krypton W1940	100-240V~, 50/60Hz, 990W, IP20, ta45°C
Krypton W740	100-240V~, 50/60Hz, 360W, IP20, ta45°C
Krypton Y1640	100-240V~, 50/60Hz, 720W, IP20, ta45°C





IEC 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
17.4 (0)	GENERAL TEST REQUIREMENTS		P
17.4 (0.3)	More sections applicable.....:	Yes ☐ No ☒ Section/s:	—
17.4 (0.5)	Components	(see Annex 1)	—
17.4 (0.7)	Information for luminaire design in light sources standards		—
17.4 (0.7.2)	Light source safety standard	IEC/EN IEC 62031	—
	Luminaire design in the light source safety standard		P
17.5 (2)	CLASSIFICATION OF LUMINAIRES		P
17.5 (2.2)	Type of protection	Class I	P
17.5 (2.3)	Degree of protection.....:	IP20	—
17.5 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces.....:	Yes ☒ No ☐	—
17.5 (2.5)	Luminaire for normal use	Yes ☒ No ☐	—
	Luminaire for rough service	Yes ☐ No ☒	—
17.6 (3)	MARKING		P
17.6 (3.2)	Mandatory markings		P
	Position of the marking		P
	Format of symbols/text		P
17.6 (3.3)	Additional information		P
	Language of instructions	English	P
17.6 (3.3.1)	Combination luminaires		N/A
17.6 (3.3.2)	Nominal frequency in Hz	50/60Hz	P
17.6 (3.3.3)	Operating temperature		N/A
17.6 (3.3.5)	Wiring diagram		N/A
17.6 (3.3.6)	Special conditions		N/A
17.6 (3.3.7)	Metal halide lamp luminaire – warning		N/A
17.6 (3.3.8)	Limitation for semi-luminaires		N/A
17.6 (3.3.9)	Power factor and supply current		P
17.6 (3.3.10)	Suitability for use indoors		N/A
17.6 (3.3.11)	Luminaires with remote control		N/A





IEC 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
17.6 (3.3.12)	Clip-mounted luminaire – warning		N/A
17.6 (3.3.13)	Specifications of protective shields		N/A
17.6 (3.3.14)	Symbol for nature of supply	~	P
17.6 (3.3.15)	Rated current of socket outlet		N/A
17.6 (3.3.16)	Rough service luminaire		N/A
17.6 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments		N/A
17.6 (3.3.18)	Non-ordinary luminaires with PVC cable		N/A
17.6 (3.3.19)	Protective conductor current in instruction if applicable		N/A
17.6 (3.3.20)	Provided with information if not intended to be mounted within arm's reach		N/A
17.6 (3.3.21)	Non replaceable and non-user replaceable light sources information provided	Non-user replaceable	P
17.6 (3.3.22)	Controllable luminaires, classification of insulation provided	DMX (SELV)	P*
17.6 (3.3.23)	Luminaires without control gear provided with necessary information for selection of appropriate component		N/A
17.6 (3.3.24)	If not supplied with terminal block, information on the packaging		N/A
17.6 (3.3.25)	Luminaires employing light sources emitting UV on mains wiring, information provided		N/A
17.6 (3.3.26)	Wall mounted luminaire using external flexible cable or cord longer than 0.3 m, information provided		N/A
17.6 (3.4)	Test with water		P
	Test with hexane		P
	Legible after test		P
	Label attached		P
17.6.1 (-)	If luminaire design imposes restriction of use the luminaire is marked with		N/A
	a) Indication of the “top”		N/A
	b) Designed position or range of angle		N/A





IEC 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
	c) Mounting arrangements		N/A
17.6.2 (-)	Warnings if replaceable light sources		N/A
17.6.3 (-)	Maximum ambient temperature t_a	45°C	P
17.6.4 (-)	Minimum distances from flammable materials	0,5m	P
17.6.5 (-)	Warning against opening immediately if applicable		N/A
17.6.6 (-)	Highest exterior surface temperature if exceeds 70 °C		N/A
17.6.7 (-)	Instruction leaflets contain warnings		P
	a) Visibly damaged shields shall be changed		N/A
	b) Damaged or thermally deformed lamp shall be changed		N/A
	c) Only intended for professional use		P

17.7 (4)	CONSTRUCTION		P
17.7 (4.2)	Components replaceable without difficulty		P
17.7 (4.3)	Wireways smooth and free from sharp edges		P
17.7 (4.4)	Lamp holders		N/A
17.7 (4.4.1)	Integral lamp holder		N/A
17.7 (4.4.2)	Wiring connection		N/A
17.7 (4.4.3)	Lamp holder for end-to-end mounting		N/A
17.7 (4.4.4)	Positioning		N/A
	- pressure test (N)		—
	After test the lamp holder comply with relevant standard sheets and show no damage		N/A
	After test on single-capped lamp holder the lamp holder has not moved from its position and show no permanent deformation		N/A
	- bending test (N)		—
	After test the lamp holder has not moved from its position and show no permanent deformation		N/A
17.7 (4.4.5)	Peak pulse voltage		N/A
17.7 (4.4.6)	Centre contact		N/A
17.7 (4.4.7)	Parts in rough service luminaires resistant to tracking		N/A
17.7 (4.4.8)	Lamp connectors		N/A
17.7 (4.4.9)	Caps and bases correctly used		N/A



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IEC 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
17.7 (4.4.10)	Light source for lamp holder or connection according IEC 60061 not connected another way		N/A
17.7 (4.5)	Starter holders		N/A
	Starter holder in luminaires other than class II		N/A
	Starter holder class II construction		N/A
17.7 (4.6)	Terminal blocks		N/A
	Tails		N/A
	Unsecured blocks		N/A
17.7 (4.7)	Terminals and supply connections		P
17.7 (4.7.1)	Contact to metal parts		N/A
17.7 (4.7.2)	Test 8 mm live conductor		N/A
	Test 8 mm earth conductor		N/A
17.7 (4.7.3)	Terminals for supply conductors		P
17.7 (4.7.3.1)	Welded method and material		N/A
	- stranded or solid conductor		N/A
	- spot welding		N/A
	- welding between wires		N/A
	- Type Z attachment		N/A
	- mechanical test according to 15.6.2		N/A
	- electrical test according to 15.6.3		N/A
	- heat test according to 15.6.3.2.3 and 15.6.3.2.4		N/A
17.7 (4.7.4)	Terminals other than supply connection		N/A
17.7 (4.7.5)	Heat-resistant wiring/sleeves		N/A
17.7 (4.7.6)	Multi-pole plug		N/A
	- test at 30 N		N/A
17.7 (4.8)	Switches		P
	- adequate rating	Conform to 10000 cycles test	P
	- adequate fixing		P
	- polarized supply		N/A
	- compliance with IEC 61058-1 for electronic switches		N/A
17.7 (4.9)	Insulating lining and sleeves		P
17.7 (4.9.1)	Retainment		P



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IEC 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
	Method of fixing.....:	Heat-shrinkable / By self construction	P
17.7 (4.9.2)	Insulated linings and sleeves:		N/A
	Resistant to a temperature > 20 °C to the wire temperature or		N/A
	a) & c) Insulation resistance and electric strength		N/A
	b) Ageing test. Temperature (°C).....:		N/A
17.7 (4.10)	Double or reinforced insulation		N/A
17.7 (4.10.1)	No contact, mounting surface – accessible metal parts – wiring of basic insulation		N/A
	Safe installation fixed luminaires		N/A
	Capacitors and switches		N/A
17.7 (4.10.2)	Assembly gaps:		N/A
	- not coincidental		N/A
	- no straight access with test probe		N/A
17.7 (4.10.3)	Retainment of insulation:		N/A
	- fixed		N/A
	- unable to be replaced; luminaire inoperative		N/A
	- sleeves retained in position		N/A
	- lining in lamp holder		N/A
17.7 (4.10.4)	Protective impedance device		N/A
	Basic and supplementary insulation bridged by resistor(s) or appropriate capacitor		N/A
	Double or reinforced insulation bridged by at least two separate resistors in series or appropriate capacitor(s)		N/A
	Capacitors comply with IEC 60384-14		N/A
	Resistors comply with test (a) in 14.2 of IEC 60065		N/A
17.7 (4.11)	Electrical connections and current-carrying parts		P
17.7 (4.11.1)	Contact pressure		P
17.7 (4.11.2)	Screws:		N/A





IEC 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
	- self-tapping screws		N/A
	- thread-cutting screws		N/A
17.7 (4.11.3)	Screw locking:		P
	- spring washer		P
	- rivets		N/A
17.7 (4.11.4)	Material of current-carrying parts		P
17.7 (4.11.5)	No contact to wood or mounting surface		P
17.7 (4.11.6)	Electro-mechanical contact systems		N/A
17.7 (4.12)	Screws and connections (mechanical) and glands		P
17.7 (4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		N/A
	Torque test: torque (Nm); part.....:	Fixed enclosure: 0,6Nm	P
	Torque test: torque (Nm); part.....:	Fixed LED PCB: 0,5Nm	P
	Torque test: torque (Nm); part.....:	Fixed Controller PCB: 0,6Nm	P
	Torque test: torque (Nm); part.....:	Fixed fan module: 0,5Nm	P
	Torque test: torque (Nm); part.....:	Fixed Driver PCB: 0,6Nm	P
	Torque test: torque (Nm); part.....:	Fixed earthing: 0,6Nm	P
17.7 (4.12.2)	Screws with diameter < 3 mm screwed into metal		N/A
17.7 (4.12.4)	Locked connections:		N/A
	- fixed arms; torque (Nm).....:		N/A
	- lamp holder; torque (Nm).....:		N/A
	- push-button switches; torque 0,8 Nm.....:		N/A
17.7 (4.12.5)	Screwed glands; force (Nm).....:		N/A
17.7 (4.13)	Mechanical strength		P
17.7 (4.13.1)	Impact tests:		P
	- fragile parts; energy (Nm).....:		N/A
	- other parts; energy (Nm).....:	0,5Nm, no damage	P





IEC 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
	1) live parts		P
	2) linings		P
	3) protection		P
	4) covers		P
17.7 (4.13.2)	Metal parts have adequate mechanical strength		P
17.7 (4.13.3)	Straight test finger		P
17.7 (4.13.4)	Rough service luminaires		N/A
	- IP54 or higher		N/A
	a) fixed		N/A
	b) hand-held		N/A
	c) delivered with a stand		N/A
	d) for temporary installations and suitable for mounting on a stand		N/A
17.7 (4.13.6)	Tumbling barrel		N/A
17.7 (4.14)	Suspensions, fixings and means of adjusting		P
17.7 (4.14.1)	Mechanical load:		P
	A) four times the weight	4 x Max.18,05kg	P
	B) torque 2,5 Nm		N/A
	C) bracket arm; bending moment (Nm)..... :		N/A
	D) load track-mounted luminaires		N/A
	E) clip-mounted luminaires, glass-shelve. Thickness (mm)		N/A
	Metal rod. diameter (mm)		N/A
	Fixed luminaire or independent control gear without fixing devices		N/A
17.7 (4.14.2)	Load to flexible cables		N/A
	Mass (kg)		—
	Stress in conductors (N/mm ²)		N/A
	Mass (kg) of semi-luminaire		N/A
	Bending moment (Nm) of semi-luminaire		N/A





IEC 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
17.7 (4.14.3)	Adjusting devices:		P
	- flexing test; number of cycles..... :	1500 cycles	P
	- strands broken..... :	No broken	P
	- electric strength test afterwards		P
17.7 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors		N/A
17.7 (4.14.5)	Guide pulleys		N/A
17.7 (4.14.6)	Strain on socket-outlets		N/A
17.7 (4.15)	Flammable materials		P
	- glow- wire test 650°C..... :	See Test Table 17.16 (13.3.2)	P
	- spacing ≥ 30 mm		N/A
	- screen withstanding test of 13.3.1		N/A
	- screen dimensions		N/A
	- no fiercely burning material		P
	- thermal protection		N/A
	- electronic circuits exempted		N/A
17.7 (4.15.2)	Luminaires made of thermoplastic material with lamp control gear		N/A
	a) construction		N/A
	b) temperature sensing control		N/A
	c) surface temperature		N/A
17.7 (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
17.7 (4.16.1)	Lamp control gear spacing:		N/A
	- spacing 35 mm		N/A
	- spacing 10 mm		N/A
17.7 (4.16.2)	Thermal protection:		N/A
	- in lamp control gear		N/A





IEC 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
	- external		N/A
	- fixed position		N/A
	- temperature marked lamp control gear		N/A
17.7 (4.16.3)	Design to satisfy the test of 12.6	(see clause 12.6)	N/A
17.7 (4.17)	Drain holes		N/A
	Clearance at least 5 mm		N/A
17.7 (4.18)	Resistance to corrosion		P
17.7 (4.18.1)	- rust-resistance		N/A
17.7 (4.18.2)	- season cracking in copper		P
17.7 (4.18.3)	- corrosion of aluminium		N/A
17.7 (4.19)	Igniters compatible with ballast		N/A
17.7 (4.20)	Rough service vibration		N/A
17.7 (4.21)	Protective shield		N/A
17.7 (4.21.1)	Shield fitted if tungsten halogen lamps or metal halide lamps		N/A
	Shield of glass if tungsten halogen lamps		N/A
17.7 (4.21.2)	Particles from a shattering lamp not impair safety		N/A
17.7 (4.21.3)	No direct path		N/A
17.7 (4.21.4)	Impact test on shield		N/A
	Glow-wire test on lamp compartment.....:	See Test Table 17.16 (13.3.2)	N/A
17.7 (4.22)	Attachments to lamps not cause overheating or damage		N/A
17.7 (4.23)	Semi-luminaires comply Class II		N/A
17.7 (4.24)	Photobiological hazards		P
17.7 (4.24.1)	No excessive UV radiation if tungsten halogen lamps and metal halide lamps (Annex P)		N/A
17.7 (4.24.2)	Retinal blue light hazard		P
	Class of risk group assessed according to IEC/TR 62778	RG2	—





IEC 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
	Luminaires with E_{thr} :		P
	a) Fixed luminaires		P
	- distance x m, borderline between RG1 and RG2... :	3,881	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
17.7 (4.25)	Mechanical hazard		P
	No sharp point or edges		P
17.7 (4.26)	Short-circuit protection		N/A
17.7 (4.26.1)	Adequate means of uninsulated accessible SELV / PELV parts		N/A
17.7 (4.26.2)	Short-circuit test with test chain according 4.26.3:		N/A
	Supply source ES1 PSE		N/A
	Test chain not melt through		N/A
	Test sample not exceed values of Table 12.1 and 12.2		N/A
17.7 (4.27)	Terminal blocks with integrated screwless protective earthing contacts		N/A
	Test according Annex V		N/A
	Pull test of terminal fixing (20 N)		N/A
	After test, resistance < 0,05 Ω		N/A
	Pull test of mechanical connection (50 N)		N/A
	After test, resistance < 0,05 Ω		N/A
	Voltage drop test, resistance < 0,05 Ω		N/A
17.7 (4.28)	Fixing of thermal sensing control		N/A
	Not plug-in or easily replaceable type		N/A
	Reliably kept in position		N/A
	No adhesive fixing if UV radiations from a lamp can degrade the fixing		N/A
	Not outside the luminaire enclosure		N/A
	Test of adhesive fixing:		N/A





IEC 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
	Max. temperature on adhesive material (°C) :		—
	100 cycles between t min and t max		N/A
	Temperature sensing control still in position		N/A
17.7 (4.29)	Luminaires with non-replaceable light source		N/A
	Not possible to replace light source		N/A
	Live part not accessible after parts have been opened by hand or tools		N/A
17.7 (4.30)	Luminaires with non-user replaceable light source		P
	If protective cover provide protection against electric shock and marked with “caution, electric shock risk” symbol:		P
	At least one fixing means requiring use of tool		P
17.7 (4.31)	Insulation between circuits		P
	Circuits insulated from LV supply fulfil requirements according 4.31.1 – 4.31.3		P
	Controllable luminaires requiring same level of insulation for all components, the insulation between control terminals and LV supply fulfil requirements according 4.31.1 – 4.31.3		P
17.7 (4.31.1)	SELV or PELV circuits		P
	Used SELV/PELV source		P
	Voltage ≤ ELV		P
	Insulating of SELV/PELV circuits from LV supply		P
	Insulating of SELV/PELV circuits from other non SELV/PELV circuits		P
	Insulating of SELV/PELV circuits from FELV		N/A
	Insulating of SELV/PELV circuits from other SELV/PELV circuits		N/A
	SELV/PELV circuits insulated from accessible parts according Table X.1		P
	Plugs not able to make any electrical contact with 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
17.7 (4.31.2)	FELV circuits		N/A





IEC 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
	Used FELV source		N/A
	Voltage $\leq$ ELV		N/A
	Insulating of FELV circuits from LV supply		N/A
	FELV circuits insulated from accessible parts according Table X.1		N/A
	Plugs not able to make any electrical contact with socket-outlets of other voltage systems		N/A
	Socket outlets does not admit plugs of other voltage systems		N/A
	Socket-outlets have protective conductor contact		N/A
17.7 (4.31.3)	Other circuits		N/A
	Other circuits insulated from accessible parts according Table X.1		N/A
	Class II construction with equipotential bonding for protection against indirect contacts with live parts:		N/A
	- conductive parts are connected together		N/A
	- test according 7.2.3		N/A
	- conductive part not cause an electric shock in case of an insulation fault		N/A
	- equipotential bonding in master/slave applications		N/A
	- master luminaire provided with terminal for accessible conductive parts of slave luminaires		N/A
	- slave luminaire constructed as class I		N/A
17.7 (4.32)	Overvoltage protective devices		N/A
	Comply with IEC 61643-11		N/A
	External to controlgear and connected to earth:		N/A
	- only in fixed luminaires		N/A
	- only connected to protective earth		N/A
17.7 (4.33)	Luminaire powered via information technology communication cabling		N/A
	Requirements for Class III luminaire		N/A
	Rated voltage within the range of ES1 and does not exceed maximum voltage of used connector		N/A
	Luminaire does not create any hazard from overvoltage	(see Annex 2)	N/A
17.7 (4.34)	Electromagnetic fields (EMF)		P





IEC 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
	No harmful electromagnetic fields		P
17.7 (4.35)	Protection against moving fan blades		P
	Test with a standard test finger		P
	Test with test probe acc. to Figure 13 (IEC 61032) for portable luminaire		N/A
	Blades rounded with radius ≥ 0.5 mm and:		N/A
	-hardness less than D60 Shore		N/A
	-peripheral speed less than 15 m/s		N/A
	-input power of fan ≤ 2 W at rated voltage		N/A
17.7 (4.36)	Track-mounted luminaires		N/A
	Test in accordance with Annex A of IEC60570:2003/AMD2:2019		N/A
17.7.1 (-)	Not possible to insert a lamp into a "live" lamp holder if applicable		N/A
17.7.2 (-)	Prevent immediate access to the lamp or marked according 17.6.5 if applicable		N/A
17.7.3 (-)	Retain particles of glass or quarts produced in the event of the lamp shattering if glass bulb lamp		N/A
	Comply with test 4.21.4 in IEC 60598-1 with 0,5 Nm		N/A
17.7.4 (-)	Bearing parts of hanger are capable to support six time the weight of the luminaire		P
	Non-combustible materials		P
	Parts of hanger carrying a proportion of the weight of the luminaire are capable to support six time the proportion of weight		P
	Connection between hanger and luminaire locked		P
	Test 1 h with six times the weight of the luminaire		P
17.7.5 (-)	Removable accessories cannot fall out of the luminaire from any position		N/A
17.7.6 (-)	If applicable a secondary suspension provided and passed the test		N/A
17.8 (11)	CREEPAGE DISTANCES AND CLEARANCES		P
17.8 (11.2.1)	Impulse withstand category (Normal category II)	Category II ☒ Category III ☐	—
	Category III according Annex U		N/A





IEC 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
	Protected against pollution, reduced creepage and clearance according Annex P of IEC 61347-1		N/A
17.8 (11.2.2)	Creepage distances for frequency up to 30 kHz	See Test Table 17.8 (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 17.8 (11.2) II	N/A
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 17.8 (11.2) II	N/A
17.8 (11.2.3)	Clearances for frequency up to 30 kHz	See Test Table 17.8 (11.2) I	P
	Clearances distances for frequency over 30 kHz:		N/A
	- Controlgear marked with U_P	See Test Table 17.8 (11.2) II	N/A
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 17.8 (11.2) II	N/A

17.9 (7)	PROVISION FOR EARTHING		P
17.9 (7.2.1 + 7.2.3)	Accessible metal parts		P
	Metal parts in contact with supporting surface		P*
	Resistance < 0,5 Ω:	0,036 Ω	P
	Self-tapping screws used		N/A
	Thread-forming screws		N/A
	Thread-forming screw used in a grove		N/A
	Protective earth makes contact first		N/A
	Terminal blocks with integrated screwless protective earthing contacts tested according Annex V		N/A
	Protective earthing of the luminaire not via built-in control gear		P
17.9 (7.2.2 + 7.2.3)	Protective earth continuity in joints, etc.		P
17.9 (7.2.4)	Locking of clamping means		P
	Compliance with 4.7.3		P
17.9 (7.2.5)	Protective earth terminal integral part of connector socket		P
17.9 (7.2.6)	Protective earth terminal adjacent to mains terminals		P
17.9 (7.2.7)	Electrolytic corrosion of the protective earth terminal		N/A



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IEC 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
17.9 (7.2.8)	Material of protective earth terminal		P
	Contact surface bare metal		P
17.9 (7.2.10)	Class II luminaire for looping-in		N/A
	Double or reinforced insulation to functional earth		N/A
17.9 (7.2.11)	Protective earthing core coloured green-yellow		P
	Length of protective earthing conductor	Checked by user installation manual	P
17.9 (7.2.12)	PELV circuit connected to protective earth for functional purpose		N/A

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

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

17.11 (5)	EXTERNAL AND INTERNAL WIRING		P
17.11 (5.2)	Supply connection and external wiring		P
17.11 (5.2.1)	Means of connection.....:	Appliance inlet	P
	Outdoor luminaire has not PVC insulated external wiring if not Class III or SELV/PELV circuits ≤ 25 V AC/60 V DC/25 V peak interrupted DC voltage with frequency 10Hz -200 Hz or protected from outdoor environment		N/A
17.11 (5.2.2)	Type of cable.....:		N/A
	Nominal cross-sectional area (mm ²).....:		N/A
	Cables equal to IEC 60227 or IEC 60245		N/A
17.11 (5.2.3)	Type of attachment, X, Y or Z		N/A
17.11 (5.2.5)	Type Z not connected to screws		N/A





IEC 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
17.11 (5.2.6)	Cable entries:		N/A
	- suitable for introduction		N/A
	- adequate degree of protection		N/A
17.11 (5.2.7)	Cable entries through rigid material have rounded edges		N/A
17.11 (5.2.8)	Insulating bushings:		N/A
	- suitably fixed		N/A
	- material in bushings		N/A
	- material not likely to deteriorate		N/A
	- tubes or guards made of insulating material		N/A
17.11 (5.2.9)	Locking of screwed bushings		N/A
17.11 (5.2.10)	Cord anchorage:		N/A
	- covering protected from abrasion		N/A
	- clear how to be effective		N/A
	- no mechanical or thermal stress		N/A
	- no tying of cables into knots etc.		N/A
	- insulating material or lining		N/A
17.11 (5.2.10.1)	Cord anchorage for type X attachment:		N/A
	a) at least one part fixed		N/A
	b) types of cable		N/A
	c) no damaging of the cable		N/A
	d) whole cable can be mounted		N/A
	e) no touching of clamping screws		N/A
	f) metal screw not directly on cable		N/A
	g) replacement without special tool		N/A
	Glands not used as anchorage		N/A
	Labyrinth type anchorages		N/A
17.11 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment		N/A
17.11 (5.2.10.3)	Tests:		N/A





IEC 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
	- impossible to push cable; unsafe		N/A
	- pull test: 25 times; pull (N)..... :		N/A
	- torque test: torque (Nm)..... :		N/A
	- displacement ≤ 2 mm		N/A
	- no movement of conductors		N/A
	- no damage of cable or cord		N/A
	- function independent of electrical connection		N/A
17.11 (5.2.10.4)	Luminaire with/designed for use with supply cord with maximum current of 2A:		N/A
	- Ordinary Class III luminaire supplied with SELV ≤ 25 V RMS/60V DC		N/A
	- Ordinary Class III luminaire supplied with PELV ≤ 12 V RMS/30V DC		N/A
	- Other than ordinary Class III luminaire supplied with voltage ≤ 12 V RMS/30V DC		N/A
	Pull test of 30N		N/A
17.11 (5.2.11)	External wiring passing into luminaire		N/A
17.11 (5.2.12)	Looping-in terminals		N/A
17.11 (5.2.13)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		N/A
17.11 (5.2.14)	Mains plug same protection		N/A
	Class III luminaire plug		N/A
	No unsafe compatibility		N/A
17.11 (5.2.15)	Connectors for Class III luminaires (IEC 60603 or IEC 62680)		N/A
17.11 (5.2.16)	Appliance inlets (IEC 60320)		N/A
	Installation couplers (IEC 61535)		N/A
	Appliance inlet or connector systems (IEC 61984)		P
17.11 (5.2.17)	No standardized interconnecting cables properly assembled		N/A
17.11 (5.2.18)	Used plug in accordance with		N/A





IEC 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
	- IEC 60083		N/A
	- other standard		N/A
17.11 (5.3)	Internal wiring		P
17.11 (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 protective earth only		P
17.11 (5.3.1.1)	Internal wiring connected directly to fixed wiring		N/A
	Cross-sectional area (mm ²)..... :		N/A
	Insulation thickness (mm) :		N/A
	Extra insulation added where necessary		N/A
17.11 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		P
	Cross-sectional area (mm ²)..... :		P
17.11 (5.3.1.3)	Double or reinforced insulation for class II		N/A
17.11 (5.3.1.4)	Conductors without insulation		N/A
17.11 (5.3.1.5)	SELV/PELV current-carrying parts		P
17.11 (5.3.1.6)	Insulation thickness other than PVC or rubber		N/A
17.11 (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
	No twisting over 360°		P
17.11 (5.3.3)	Insulating bushings:		N/A
	- suitable fixed		N/A





IEC 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
	- material in bushings		N/A
	- material not likely to deteriorate		N/A
	- cables with protective sheath		N/A
17.11 (5.3.4)	Joints and junctions effectively insulated		N/A
17.11 (5.3.5)	Strain on internal wiring		N/A
17.11 (5.3.6)	Wire carriers		N/A
17.11 (5.3.7)	Wire ends not tinned		P
	Wire ends tinned: no cold flow		N/A
17.11 (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
17.11.1 (-)	Cross-sectional area - current (A) : - area (mm ²) :	> 3A 1,5mm ²	P
17.11.2 (-)	Plugs and sockets not interchangeable		N/A

17.12 (8)	PROTECTION AGAINST ELECTRIC SHOCK		P
17.12 (8.2.1)	Live parts not accessible		P
	Basic insulated parts not used on the outer surface without appropriate protection		P
	Basic insulated parts not accessible with standard test finger on portable, settable and adjustable luminaires		P
	Basic insulated parts not accessible with Ø 50 mm probe from outside, other types of luminaires		N/A
	Lamp and starter holders in portable and adjustable luminaires comply with double or reinforced insulation requirements		N/A
	Basic insulation only accessible under lamp or starter replacement		N/A
	Protection in any position		P





IEC 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
	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
17.12 (8.2.2)	Portable luminaire adjusted in most unfavourable position		N/A
17.12 (8.2.3.a)	Class II luminaire:		N/A
	- basic insulated metal parts not accessible		N/A
	- required insulation from live parts in compliance with Table X.1		N/A
			N/A
	- glass protective shields not used as supplementary insulation		N/A
17.12 (8.2.3.b)	BC lamp holder of metal in class I luminaires shall be connected to protective earth		N/A
17.12 (8.2.3.c)	SELV circuits with exposed current carrying parts:		N/A
	Ordinary luminaire:		N/A
	- voltage under load/ no-load AC (V).....:		N/A
	- voltage under load/ no-load DC (V).....:		N/A
	- interrupted DC 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
	- voltage under load/ no-load AC (V).....:		N/A
	- voltage under load/ no-load DC (V).....:		N/A
	- interrupted DC voltage (V)		N/A
	Class III luminaire only for connection to SELV/PELV		N/A
17.12 (8.2.3.d)	PELV circuits with exposed current carrying parts:		N/A
	Ordinary luminaire:		N/A
	- voltage under load/ no-load AC (V).....:		N/A
	- voltage under load/ no-load DC (V).....:		N/A
	Other than ordinary luminaire:		N/A





IEC 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
	- voltage under load/ no-load AC (V).....:		N/A
	- voltage under load/ no-load DC (V).....:		N/A
	One pole insulated if required		N/A
17.12 (8.2.4)	Portable luminaire has protection independent of supporting surface		N/A
17.12 (8.2.5)	Compliance with the standard test finger or relevant probe		P
17.12 (8.2.6)	Covers reliably secured		P
17.12 (8.2.7)	Luminaire other than below with capacitor > 0,5 μ F does not exceed 50 V 1 min after disconnection	0V	P
	Portable luminaire with capacitor > 0,1 μ F (0.25) not exceed 34 V 1 s after disconnection		N/A
	Other luminaires with capacitor > 0,1 μ F (0.25) with plug and track adaptors do not exceed 60 V 5 s after disconnection	While used with plug	P

17.13 (12)	ENDURANCE TEST AND THERMAL TEST		P
17.13 (12.2)	Selection of lamps and ballasts		—
	Lamp used according to Annex B	(Lamp used see Annex 2)	—
	Control gear if separate and not supplied	(Control gear used see Annex 2)	—
17.13 (12.3)	Endurance test		P
	a) mounting- position	As normal used	—
	b) test temperature (°C).....:	45°C+10°C	—
	c) total duration (h)	240h	—
	d) supply voltage (V).....:	1,1x240V	—
	d) if not equipped with control gear, constant voltage/current (V) or (A)		—
17.13 (12.3.1d)	d) Class III luminaires powered via information technology communication cable:		N/A
	- voltage under normal operation (V).....:		—
	- voltage under abnormal operation (V).....:		—
	e) luminaire ceases to operate		—
	f) luminaire with constant light output function		N/A





IEC 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
17.13 (12.3.2)	After endurance test:		P
	- no part unserviceable		P
	- luminaire not unsafe		P
	- no damage to track system		N/A
	- marking legible		P
	- no cracks, deformation etc.		P
17.13 (12.4)	Thermal test (normal operation)	(see Annex 2)	P
17.13 (12.5)	Thermal test (abnormal operation)	(see Annex 2)	P
17.13 (12.6)	Thermal test (failed lamp control gear condition):		N/A
17.13 (12.6.1)	Through wiring or looping-in wiring loaded by a current of (A)		—
	- case of abnormal conditions.....		—
	- electronic lamp control gear		N/A
	- measured winding temperature (°C): at 1,1 Un		—
	- measured mounting surface temperature (°C) at 1,1 Un		N/A
	- calculated mounting surface temperature (°C)		N/A
	- track-mounted luminaires		N/A
17.13 (12.6.2)	Temperature sensing control		N/A
	- case of abnormal conditions.....		—
	- thermal link		N/A
	- manual reset cut-out		N/A
	- auto reset cut-out		N/A
	- measured mounting surface temperature (°C)		N/A
	- track-mounted luminaires		N/A
17.13 (12.7)	Thermal test (failed lamp control gear in plastic luminaires):		N/A
17.13 (12.7.1)	Luminaire without temperature sensing control		N/A
17.13 (12.7.1.1)	Luminaire with fluorescent lamp ≤ 70W		N/A





IEC 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
	Test method 12.7.1.1 or Annex W		—
	Test according to 12.7.1.1:		N/A
	- case of abnormal conditions.....		—
	- Ballast failure at supply voltage (V)		—
	- Components retained in place after the test		N/A
	- Test with standard test finger after the test		N/A
	Test according to Annex W:		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 17.16 (13.2.1)	N/A
17.13 (12.7.1.2)	Luminaire with discharge lamp, fluorescent lamp > 70W, transformer > 10 VA		N/A
	- case of abnormal conditions.....		—
	- measured winding temperature (°C): at 1,1 Un.....		—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un.....		—
	- calculated temperature of fixing point/exposed part (°C).....		—
	Ball-pressure test.....	See Test Table 17.16 (13.2.1)	N/A
17.13 (12.7.1.3)	Luminaire with short circuit proof transformers ≤ 10 VA		N/A
	- case of abnormal conditions.....		—
	- Components retained in place after the test		N/A
	- Test with standard test finger after the test		N/A
17.13 (12.7.2)	Luminaire with temperature sensing control		N/A
	- thermal link.....	Yes ☐ No ☐	—
	- manual reset cut-out.....	Yes ☐ No ☐	—
	- auto reset cut-out.....	Yes ☐ No ☐	—
	- case of abnormal conditions.....		—





IEC 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
	- highest measured temperature of fixing point/ exposed part (°C):..... :		—
	Ball-pressure test:..... :	See Test Table 17.16 (13.2.1)	N/A
17.13.1 (-)	If IP > IP 20 relevant test of (12.4), (12.5), (12.6) and (12.7) after (9.2) before (9.3) specified in 17.14		P
17.13.2 (-)	Exterior surface temperature	(see Annex 2)	P

17.14 (9)	RESISTANCE TO DUST AND MOISTURE		P
17.14 (-)	If IP > IP 20 the order of tests as specified in clause 17.13		—
17.14 (9.2)	Tests for ingress of dust, solid objects and moisture:		P
	- classification according to IP..... :	IP20	—
	- mounting position during test..... :	According to manual	—
	- fixing screws tightened; torque (Nm)..... :	--	—
	- tests according to clauses..... :	Clause 9.2.0	—
	- electric strength test afterwards		P
	a) no deposit in dust-proof luminaire		N/A
	b) no talcum in dust-tight luminaire		N/A
	c) no trace of water on current-carrying parts or on insulation where it could become a hazard		N/A
	c.1) For luminaires without drain holes – no water entry		N/A
	c.2) For luminaires with drain holes – no hazardous water entry		N/A
	d) no water in watertight, pressure watertight, high pressure and temperature water jet-proof or high pressure and cold water jet-proof luminaire		N/A
	e) no contact with live parts (IP 2X)		P
	e) no entry into enclosure (IP 3X and IP 4X)		N/A
	e) no contact with live parts through drain holes and ventilation slots (IP3X and IP4X)		N/A
	f) no trace of water on part of lamp requiring protection from splashing water		N/A
	g) no damage of protective shield or glass envelope		N/A
17.14 (9.3)	Humidity test 48 h		P





IEC 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
17.15 (10)	INSULATION RESISTANCE AND ELECTRIC STRENGTH		P
17.15 (10.2.1)	Insulation resistance test		P
	Cable or cord covered by metal foil or replaced by a metal rod of mm Ø	Supply covered by metal foil	—
	Insulation resistance (MΩ):		P
	SELV/PELV:		P
	- between current-carrying parts of different polarity:		N/A
	- between current-carrying parts and mounting surface.....	>100MΩ, limit: 1 MΩ	P
	- between current-carrying parts and metal parts of the luminaire.....	>100MΩ, limit: 1 MΩ	P
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts.....		N/A
	- Insulation bushings as described in Section 5		N/A
	Other than SELV/PELV:		P
	- between live parts of different polarity.....	>100MΩ, limit: 2 MΩ	P
	- between live parts and mounting surface.....	>100MΩ, limit: 2 MΩ	P
	- between live parts and metal parts.....	>100MΩ, limit: 2 MΩ	P
	- between live parts of different polarity through action of a switch.....		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts.....		N/A
	- Insulation bushings as described in Section 5		N/A
17.15 (10.2.2)	Electric strength test		P
	Dummy lamp		N/A
	Luminaires with ignitors after 24 h test		N/A
	Luminaires with manual ignitors		N/A
	Test voltage (V):		P
	SELV/PELV:		P
	- between current-carrying parts of different polarity:		N/A
	- between current-carrying parts and mounting surface.....	500Vac, no breakdown	P





IEC 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
	- between current-carrying parts and metal parts of the luminaire..... :	500Vac, no breakdown	P
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts..... :		N/A
	- Insulation bushings as described in Section 5 :		N/A
	Other than SELV/PELV:		P
	- between live parts of different polarity..... :	1480Vac, no breakdown	P
	- between live parts and mounting surface..... :	1480Vac, no breakdown	P
	- between live parts and metal parts..... :	1480Vac, no breakdown	P
	- between live parts of different polarity through action of a switch..... :		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts..... :		N/A
	- Insulation bushings as described in Section 5 :		N/A
17.15 (10.3)	Touch current (mA)..... :		N/A
	Protective conductor current (mA)..... :	0,16mA, limit: 3,5mA	P
17.16 (13)	RESISTANCE TO HEAT, FIRE AND TRACKING		P
17.16 (13.2.1)	Ball-pressure test..... :	See Test Table 17.16 (13.2.1)	P
17.16 (13.3.1)	Needle-flame test (10 s)..... :	See Test Table 17.16 (13.3.1)	P
17.16 (13.3.2)	Glow-wire test (650°C)..... :	See Test Table 17.16 (13.3.2)	P
17.16 (13.4)	Proof tracking test (IEC 60112)..... :	See Test Table 17.16 (13.4)	N/A





IEC 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict

17.8 (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	3,0	1,5	Table 11.1.B	3,0	2,5	Table 11.1.A
Distance 2:	B	3,9	1,5	Table 11.1.B	3,9	2,5	Table 11.1.A
Distance 3:	B	3,9	1,5	Table 11.1.B	3,9	2,5	Table 11.1.A
Distance 4:	B	>4	1,5	Table 11.1.B	>4	2,5	Table 11.1.A
Working voltage (V)..... :					240V		—
PTI..... :					< 600 ☒ ≥ 600 ☐		—
Pulse voltage or U_P if applicable (kV)					--		—
Supplementary information:							
Distance 1: Between current-carrying parts of different polarity.							
Distance 2: Between current-carrying parts and accessible parts.							
Distance 3: Between current-carrying parts and mounting surface.							
Distance 4: Between input/SELV output circuit and DMX dimming circuit.							

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





IEC 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict

17.16 (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)	
DMX inlet	See Annex 1	125°C	0,8mm	
DMX outlet	See Annex 1	125°C	0,8mm	
USB outlet	See Annex 1	125°C	0,9mm	
Quick connector	See Annex 1	125°C	1,0mm	
Controller PCB	See Annex 1	125°C	0,9mm	
Driver PCB	See Annex 1	125°C	0,8mm	
Bobbin	See Annex 1	125°C	0,9mm	
LED cover	See Annex 1	104°C	1,0mm	
Supplementary information:				

17.16 (13.3.1)	TABLE: Needle-flame test				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
DMX inlet	See Annex 1	10s	No	0s	P
DMX outlet	See Annex 1	10s	No	0s	P
USB outlet	See Annex 1	10s	No	0s	P
Quick connector	See Annex 1	10s	No	0s	P
Controller PCB	See Annex 1	10s	No	0s	P
Driver PCB	See Annex 1	10s	No	0s	P
Bobbin	See Annex 1	10s	No	0s	P
Supplementary information:					

17.16 (13.3.2)	TABLE: Resistance to heat and fire - Glow wire tests				P
Object/ Part No./ Material	Manufacturer/ trademark	GWT (°C): 650			Verdict
		t _E (s)	t _I (s)	t _R (s)	
LED cover	See Annex 1	0s	0s	0s	P
Ignition of the specified layer placed underneath the test specimen (Yes/No).....:					No





IEC 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information:

17.16 (13.4)	TABLE: Proof tracking test			N/A
Test voltage PTI		175 V		—
Object/ Part No./ Material	Manufacturer/ trademark	Withstand 50 drops without failure on three places or on three specimens		Verdict
--	--	--	--	--
Supplementary information:				





IEC 60598-2-17

Clause	Requirement + Test	Result - Remark	Verdict
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ANNEX 1		TABLE: Critical components information					
Object / part No.	Code	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾	
Appliance inlet & Power outlet	B	Ningbo Seetronic Electronic Technology Co., Ltd.	SAC3PX	250V, 16A	DIN EN 61984	VDE 40044166	
DMX inlet	C	Ningbo Fenghua Shengda Electronics Co.,Ltd	SA205	3pin, male, 50V, 6A	--	Test with appliance	
DMX outlet	C	Ningbo Fenghua Shengda Electronics Co.,Ltd	SA201	3pin, female, 50V, 6A	--	Test with appliance	
DMX inlet	C	Ningbo Fenghua Shengda Electronics Co.,Ltd	SA205-5P	5pin, male, 50V, 3A	--	Test with appliance	
DMX outlet	C	Ningbo Fenghua Shengda Electronics Co.,Ltd	SA201-5P	5pin, female, 50V, 3A	--	Test with appliance	
USB outlet	C	Ningbo Haishu District Seetronic Electronic Co.,Ltd	MAUSB-W-B	30V, 1A	--	Test with appliance	
Fuse holder	B	Littelfuse Inc.	656	250Vac, 16A	IEC 60127-1 IEC 60127-6	VDE 40056151	
Fuse	B	Dongguan Hongda Electronic Technology Co., Ltd.	52 TD / 52 TDP	250V, 12A	IEC 60127-1 IEC 60127-2	VDE 40034356	
Internal wire	C	GUANG DONG XIN LONG ENTERPRISE CO	1569	26AWG, 300V, 105°C	--	UL E207567	
Internal wire	C	GUANG DONG XIN LONG ENTERPRISE CO	1015	16AWG/14AWG, 300V, 105°C	--	UL E207567	
Grounding wire	C	GUANG DONG XIN LONG ENTERPRISE CO	1015	14AWG, 300V, 105°C	--	UL E207567	
LED PCB	C	Rayben Technologies (Zhuhai) Ltd	RB-AL05	94V-0, 90°C	--	UL E173761	
LED	C	OSRAM	LE RTDUW S2WN	Vf: 1.8-3.4V, If: 1000mA	IEC TR 62778	Test with appliance	



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IEC 60598-2-17						
Clause	Requirement + Test			Result - Remark		Verdict
LED cover	C	Chang chun Sb(Changshu) CO LTD	EME-5051	V-0, 130°C	--	UL E223871
Controller PCB	C	GOLDENMAX INTERNATIONAL TECHNOLOGY (ZHUHAI) LTD	GDM-C3	V-0, 130°C	--	UL E330731
Quick connector	C	Japan Solderless Terminal Mfg Co Ltd	PA2.0-4P	250Vac, 3A	--	UL E60389
Quick connector	C	Japan Solderless Terminal Mfg Co Ltd	PA2.0-3P	250Vac, 3A	--	UL E60389
Quick connector	C	Japan Solderless Terminal Mfg Co Ltd	PA2.0-10P	250Vac, 3A	--	UL E60389
Heat shrinkable tube	C	GUANGZHOU KAIHENG NEW MATERIAL CO LTD	K-102	600V, 125°C	--	UL E321827
Fiberglass sleeving	C	DONGGUAN JUYOU INSULATION MATERIALS CO LTD	JYT	1200V, 250°C	--	UL E255729
DC Fan	C	Dongguan Xingdong Electronics Co Ltd	DFH9025B	12VDC, 0.25A, class A	--	UL E347104
			DFH6010B	12VDC, 0.23A, class A		
Motor	C	Guangzhou Besset Co.,Ltd	25PL001T2.47-99	4.8VDC, 0.6A, class F.	--	UL
			24HC4002-25BM4-PQ-E	8.25VDC, 1.5-2.5A, class F.	--	UL
Battery (only powers the display)	B	GUANGZHOU GREAT POWER ENERGY&TECHNOLOGY CO LTD	ICR14430	Lithium Batteries, 3.7V, 500mA.	IEC 62133	CB
LED driver (For front end)	C	Guangzhou Zhuotai Electronic Technology Co.,Ltd	RUP1000F38 0A558	Input:100-240V~, 50/60Hz Output: 380Vdc, 2.6A	EN 61347-1 EN 61347-2-13	Test with appliance
LED driver (For back end)	C	Guangzhou Zhuotai Electronic Technology Co.,Ltd	VUP1000D36 A559	Input:380VDC, Output: 36Vdc, 27.7A	EN 61347-1 EN 61347-2-13	Test with appliance





IEC 60598-2-17						
Clause	Requirement + Test			Result - Remark		Verdict
Driver PCB	C	GOLDENMAX INTERNATIONAL TECHNOLOGY (ZHUHAI) LTD	GDM-C3	V-0, 130°C	--	UL E330731
Fuse	B	XC Electronics (Shen Zhen) Corp. Ltd.	5F	T16A, 250V	DIN EN 60127-1 DIN EN 60127-2	VDE 40046969
Heat shrinkable tube	C	SHENZHEN WOER HEAT-SHRINKABLE MATERIAL CO LTD	RSFR-H	600V, 125°C, VW-1	--	UL E525286
X-capacitor	B	Huizhou Rongda Electronics Co. Ltd.	MPX	310VAC, max.1,0uF, 110°C, X2 type.	IEC/EN 60384-14	VDE 40038670
Y-capacitor	B	WALSIN TECHNOLOGY CORP	AC	Min. 300Vac, max. 1000pF, 125°C	DIN EN 60384-14	VDE 40001829
Varistor	B	Thinking Electronic Industrial Co Ltd	TVR10471-M	Min. 300Vac, 105°C, coating V-0	IEC 61051-1 IEC 61051-2 IEC 61051-2-2	VDE 40036061
Transformer (T1)	C	Guangxi Qinzhou Xingda Weiye Technology Co Ltd	ZT-PQ3535A559	130UH, 130°C	--	Test with appliance
-Bobbin	C	SUMITOMO BAKELITE CO LTD	PM-9630, PM-9820, PM-9825	130°C	--	UL E181247
-Magnet Wire	C	SHANTOU SHENGANG ELECTRICAL INDUSTRIAL CO LTD	xUEW/130, QA- x/130	130°C	--	UL E239508
-Insulation tape	C	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	PZ* (b)	130°C	--	UL E165111
-Tube	C	CHANGYUAN ELECTRONICS GROUP CO LTD	CB-TT-S	200°C, 600V, VW-1	--	UL E180908
-Varnish	C	SUZHOU TAIHU ELECTRIC ADVANCED MATERIAL CO LTD	T-4260(a)	180°C, 600V, VW-1	--	UL E228349
-Triple insulation wire	B	Furukawa Electric Co., Ltd.	TEX-E	Reinforced, 130°C	IEC 62368-1	VDE 006735





IEC 60598-2-17						
Clause	Requirement + Test			Result - Remark		Verdict
Inductor	C	SHENZHEN SANSHANYUAN TECHNOLOGY CO LTD	SSY-TT22- 002	130°C	--	Test with appliance
Supplementary information: 1) Provided evidence ensures the agreed level of compliance. See OD-CB2039. The codes above have the following meaning: A - The component is replaceable with another one, also certified, with equivalent characteristics B - The component is replaceable if authorised by the test house C - Integrated component tested together with the appliance D - Alternative component						





IEC 60598-2-17

Clause	Requirement + Test	Result - Remark	Verdict
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ANNEX 2	TABLE: Thermal tests of Section 12		P				
	Type reference.....:	Krypton W1940	—				
	Lamp used.....:	LED module	—				
	Lamp control gear used.....:	integral LED controlgear	—				
	Mounting position of luminaire.....:	See product manual	—				
	Supply wattage (W)	901,3W	—				
	Supply current (A)	3,718A	—				
	Temperatures in test 1 - 4 below are corrected for ta (°C)	45	—				
	- abnormal operating mode.....:	1) Lock fan motor 2) 30N force	—				
17.13 (12.4)	- test 1: rated voltage		—				
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current	1,06x240V	—				
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage.....:		—				
	Through wiring or looping-in wiring loaded by a current of A during the test	Max.5A	—				
17.13 (12.5)	- test 4: 1,1 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current or 130/150% of rated input voltage.....:	1,1x240V	—				
Temperature measurements (°C)							
Part	Ambient	Cl. 12.4 – normal				Cl. 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
Appliance inlet & Power outlet	45	--	50,8	--	70	--	--
DMX inlet	45	--	52,9	--	Ref.	--	--
DMX outlet	45	--	55,0	--	Ref.	--	--
USB outlet	45	--	51,6	--	Ref.	--	--
LED PCB	45	--	85,9	--	90	--	--
LED cover	45	--	79,0	--	Ref.	--	--
Internal wire near LED	45	--	81,3	--	105	--	--
Quick connector	45	--	65,0	--	Ref.	--	--





IEC 60598-2-17							
Clause	Requirement + Test			Result - Remark			Verdict
Enclosure (Exterior hottest surface)	45	--	57,2	--	60	--	--
Battery (only powers the display)	45	--	56,0	--	60	--	--
Controller PCB	45	--	73,3	--	130	--	--
Driver PCB (front end)	45	--	81,5	--	130	--	--
Output connector	45	--	72,0	--	Ref.	--	--
Input wire of driver PCB	45	--	61,1	--	105	--	--
Output wire of driver PCB	45	--	65,4	--	105	--	--
CX1	45	--	67,2	--	110	--	--
RV1	45	--	66,8	--	85	--	--
CY1	45	--	74,3	--	125	--	--
CY3	45	--	61,5	--	125	--	--
C1	45	--	73,7	--	105	--	--
TP3 bobbin	45	--	85,5	--	130	--	--
TP3 winding	45	--	86,7	--	130	--	--
LF1 bobbin	45	--	87,1	--	130	--	--
LF1 winding	45	--	88,9	--	130	--	--
Driver PCB (back end)	45	--	82,6	--	130	--	--
CY1	45	--	77,4	--	125	--	--
C13	45	--	65,3	--	105	--	--
C18	45	--	78,9	--	105	--	--
T1 bobbin	45	--	90,6	--	130	--	--
T1 winding	45	--	91,3	--	130	--	--
Mounting surface	45	--	48,7	--	90	50,2	130
Lighting surface (0.5m)	45	--	67,5	--	90	69,1	175
Supplementary information:							





IEC 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 3	Screw terminals (part of the luminaire)		N/A
(14)	SCREW TERMINALS		N/A
(14.2)	Type of terminal..... :		—
	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 60598-2-17			
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



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IEC 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
(15.6.1)	Conductors		N/A
	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										
	Voltage drop (mV) after 1 h										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
	Voltage drop of two inseparable joints										
	Voltage drop after 10th alt. 25th cycle										
	Max. allowed voltage drop (mV).....:										
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
	Voltage drop after 50th alt. 100th cycle										
	Max. allowed voltage drop (mV).....:										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
	Continued ageing: voltage drop after 10th alt. 25th cycle										
	Max. allowed voltage drop (mV).....:										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
	Continued ageing: voltage drop after 50th alt. 100th cycle										
	Max. allowed voltage drop (mV).....:										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											





IEC 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information:

	ANNEX 5: EMF test result according to IEC/EN 62493		P
4	LIMITS		P
4.1	General		P
	Comply with Van der Hoofden test limit in 4.2.3 or inherently compliant in 4.2.2 and pass assessment procedure for intentional radiators in 4.3		P
4.2	Unintentional radiating part of lighting equipment		P
4.2.2	Lighting equipment deemed to comply with the Van der Hoofden test without testing		P
	1) electronic controlgear	Yes ☐ No ☒	—
	2) incandescent-lamp technology	Yes ☐ No ☒	—
	3) LED-light-source technology	Yes ☒ No ☐	—
	4) OLED-light-source technology	Yes ☐ No ☒	—
	5) high-pressure discharge lamp LED-light-source technologies	Yes ☐ No ☒	—
	6) low-pressure discharge lamp technologies with exposure distance ≥ 50 cm	Yes ☐ No ☒	—
	7) independent auxiliary	Yes ☐ No ☒	—
	Not fulfil any of 1-7 above subject to 4.2.3		—
4.2.3	Applications of limits		N/A
	Not fulfil any of 1-7 in 4.2.2 but the compliance factor F is ≤ 1		N/A
4.3	Intentional radiating part of lighting equipment		N/A
	Comply with one of methods in Clause 7 if intentional radiator		N/A

6	MEASUREMENT PROCEDURE FOR THE VAN DER HOOFDEN TEST		N/A
6.1	General		N/A
	Measurements carried out under conditions according Clause 6.1 – 6.6	See Table 6	N/A

7	ASSESSMENT PROCEDURE INTENTIONAL RADIATORS		N/A
7.2	Low-power exclusion method		N/A
7.2.1	Input $P_{\text{int,rad}}$:		—



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IEC 60598-2-17			
Clause	Requirement + Test	Result - Remark	Verdict
	Exclusion level $P_{\max}$:		—
	Input power $P_{\text{int,rad}} < \text{exclusion level } P_{\max}$		N/A
7.3	Application of the EMF product standard for body worn-equipment		N/A
	If not Clause 7.2 is met and expose distance ≤ 0.05 m, comply with IEC 62209-2		N/A
7.4	Application of the EMF product standard for base stations		N/A
	If not Clause 7.2 is met and if intentional radiator is base station, comply with IEC 62232		N/A
7.5	Application of another EMF standard		N/A
	If not Clause 7.2 is met and if intentional radiator cannot be considered as in Clause 7.3 or 7.4, comply with IEC 62311		N/A

6	TABLE: Measurement results with Van der Hoofden test head					N/A
Location of EUT		Test model	Measuring distance	Result(F)	Limit(F)	Verdict
Reference Annex B of IEC/EN 62493:2015+A1:2022		--	--	--	≤1.0	N/A





Attachment No.1

IEC 60598_2_17G-ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT IEC 60598-2-17
EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES
Luminaires
Part 2: Particular requirements
Section 17: LUMINAIRES FOR STAGE LIGHTING, TELEVISION AND
FILM STUDIOS (OUTDOOR AND INDOOR)

Differences according to..... : EN IEC 60598-2-17:2018 used in conjunction with
EN IEC 60598-1:2021+A11:2022

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

17.6 (4)	CONSTRUCTION	N/A
17.6 (4.11.6)	Electro-mechanical contact systems	N/A

17.10 (5)	EXTERNAL AND INTERNAL WIRING	N/A
17.10 (5.2.2)	Cables equal to EN 50525	N/A
	Replace table 5.1 – Supply cord	N/A

17.12 (12)	ENDURANCE TESTS AND THERMAL TESTS	P
17.12 (12.4.2c)	Thermal test (normal operation) see footnote c to table 12.2 relating to unsleeved fixed wiring	P
ZB	ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)	N/A
(3.3)	DK: power supply cords of class I luminaires with label	N/A
(4.5.1)	DK: socket-outlets	N/A
(5.2.1)	CY, DK, FI, GB: type of plug	N/A

ZC	ANNEX ZC, NATIONAL DEVIATIONS (EN)	N/A
(4 & 5)	FR: Shuttered socket-outlets 10/16A	N/A



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Attachment No.1

IEC 60598_2_17G-ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	FR: Safety requirements for high buildings (Arrêté du 30 décembre 2011 portant règlement de sécurité pour la construction des immeubles de grande hauteur et leur protection contre les risques d'incendie et de panique; Section VIII; Article GH 48, Eclairage) Glow-wire test for outer parts of luminaires:		N/A
	- 850°C for luminaires in stairways and horizontal travel paths		N/A
	- 650°C for indoor luminaires		N/A
	GB: Requirements according to United Kingdom Building Regulation		N/A



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Attachment No.2

IEC/EN IEC 62031 LED modules for general lighting - Safety specifications			
Clause	Requirement + Test	Result - Remark	Verdict
4.2	Classification		---
	Built-in.....: Yes ☐ No ☒		—
	Independent.....: Yes ☐ No ☒		—
	Integral.....: Yes ☒ No ☐		—
4.6	Independent modules comply with requirements in IEC 60598-1:2020		N/A
4.8	Modules with integrated controlgear providing SELV comply with requirements according to IEC 61347-1:2015/AMD1:2017 clause L.5 to L.11.	(see Annex 1)	N/A
6	Marking		N/A
6.2	Contents of marking for built-in and for independent LED modules		N/A
6.3	Location of marking for built-in LED modules		N/A
6.4	Location of marking for independent LED modules		N/A
6.5	Marking of integral LED modules		P
6.6	Durability and legibility of marking		N/A
7	Terminals		N/A
8 (9)	EARTHING		N/A
9 (10)	Protection against accidental contact with live parts		N/A
10 (11)	Moisture resistance and insulation		P
11 (12)	Electric strength		P
12 (14)	Fault conditions		P
12.1	Fault conditions according to IEC 61347-1, Clause 14		P
12.2	Overpower condition	No damage	P
14 (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



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Attachment No.2

IEC/EN IEC 62031 LED modules for general lighting - Safety specifications			
Clause	Requirement + Test	Result - Remark	Verdict
15 (16)	Creepage distances and clearances		N/A
16 (17)	Screws, current-carrying parts and connections		N/A
17 (18)	Resistance to heat, fire and tracking		N/A
18	Resistance to corrosion		N/A
20	Heat management		N/A
22	Photobiological safety		P
22.1	UV radiation		N/A
22.2	Blue light hazard		P
	Assessed according to IEC TR 62778		P
22.3	Infrared radiation		N/A



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Attachment No.3

IEC/EN 62471 Photobiological safety of lamps and lamp systems			
Clause	Requirement + Test	Result - Remark	Verdict
4	EXPOSURE LIMITS (EL'S)		---
4.2	Specific factors involved in the determination and application of retinal exposure limits		P
4.2.1	Pupil diameter		P
4.2.2	Angular subtense of source and measurement field-of-view		P
4.3	Hazard exposure limits		P
4.3.1	Actinic UV hazard exposure limit for the skin and eye		P
4.3.2	Near-UV hazard exposure limit for the eye		P
4.3.3	Retinal blue light hazard exposure limit		P
4.3.4	Retinal blue light hazard exposure limit - small source		N/A
4.3.5	Retinal thermal hazard exposure limit		P
4.3.6	Retinal thermal hazard exposure limit – weak visual stimulus		N/A
4.3.7	Infrared radiation hazard exposure limits for the eye		P
4.3.8	Thermal hazard exposure limit for the skin		P
5	MEASUREMENT OF LAMPS AND LAMP SYSTEMS		P
5.1	Measurement conditions		P
5.1.1	Lamp ageing (seasoning)		P
5.1.2	Test environment		P
5.1.3	Extraneous radiation		P
5.1.4	Lamp operation		P
5.1.5	Lamp system operation		N/A
5.2	Measurement procedure		P
5.2.1	Irradiance measurements		P
5.2.2	Radiance measurements		P
5.2.3	Measurement of source size		P
5.2.4	Pulse width measurement for pulsed sources		N/A
5.3	Analysis methods		P
5.3.1	Weighting curve interpolations		P



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Attachment No.3

IEC/EN 62471									
Photobiological safety of lamps and lamp systems									
Clause		Requirement + Test				Result - Remark			Verdict
5.3.2		Calculations							P
5.3.3		Measurement uncertainty							P
6		LAMP CLASSIFICATION							P
6.1		Continuous wave lamps							P
6.1.1		Exempt group							N/A
6.1.2		Risk Group 1 (Low-Risk)							N/A
6.1.3		Risk Group 2 (Moderate-Risk)							P
6.1.4		Risk Group 3 (High-Risk)							N/A
6.2		Pulsed lamps							N/A
Annex A		SUMMARY OF BIOLOGICAL EFFECTS							--
Annex B		MEASUREMENT METHOD							--
Annex C		UNCERTAINTY ANALYSIS							--
Annex D		GENERAL REFERENCES							--
		CENELEC COMMON MODIFICATIONS (EN)							P
4		EXPOSURE LIMITS							P
		Contents of the whole Clause 4 of IEC 62471:2006 moved into a new informative Annex ZB							—
		Clause 4 replaced by the following:							P
		Limits of the Artificial Optical Radiation Directive (2006/25/EC) have been applied instead of those fixed in IEC 62471:2006				See appended Table 6.1			P
4.1		General							P
		First paragraph deleted							—
Table 6.1		Emission limits for risk groups of continuous wave lamps							--
Risk	Action spectrum	Symbol	Units	Emission Measurement					
				Exempt		Low risk		Mod risk	
				Limit	Result	Limit	Result	Limit	Result



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Attachment No.3

IEC/EN 62471 Photobiological safety of lamps and lamp systems			
Clause	Requirement + Test	Result - Remark	Verdict

Table 6.1	Emission limits for risk groups of continuous wave lamps								--
Actinic UV	SUV(λ)	E_s	$W \cdot m^{-2}$	0,001	-	-	-	-	-
Near UV		E_{UVA}	$W \cdot m^{-2}$	0,33	-	-	-	-	-
Blue light	B(λ)	L_B	$W \cdot m^{-2} \cdot sr^{-1}$	100	-	10000	-	4000000	4,50e+05
Blue light, small source	B(λ)	E_B	$W \cdot m^{-2}$	0,01*	-	1,0	-	400	-
Retinal thermal	R(λ)	L_R	$W \cdot m^{-2} \cdot sr^{-1}$	28000/ α	-	28000/ α	-	71000/ α	3,7e+06
Retinal thermal, weak visual stimulus**	R(λ)	L_{IR}	$W \cdot m^{-2} \cdot sr^{-1}$	545000 0,0017 $\leq \alpha \leq$ 0,011	-	-	-	-	-
				6000/ α 0,011 $\leq$ $\alpha \leq 0.1$	-	-	-	-	-
IR radiation, eye		E_{IR}	$W \cdot m^{-2}$	100	-	570	-	3200	1,9e-01
* Small source defined as one with $\alpha < 0,011$ radian. Averaging field of view at 10000 s is 0,1 radian. ** Involves evaluation of non-GLS source Note: The action functions: see Table 4.1 and Table 4.2 The applicable aperture diameters: see 4.2.1 The limitations for the angular subtenses: see 4.2.2 The related measurement condition 5.2.3 and the range of acceptance angles: see Table 5.5									

Table 17.6 (4.24)	Spectroradiometric measurement (IEC 62778)		--
	Measurement performed on:	Luminaire	--
	Model number.....	Krypton W1940	--
	Test voltage (V).....	240V	--
	Test current (mA).....	--	--
	Test frequency (Hz).....	50	--
	Ambient, t (°C).....	25,0	--



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Attachment No.3

IEC/EN 62471				
Photobiological safety of lamps and lamp systems				
Clause	Requirement + Test		Result - Remark	Verdict
	Measurement distance.....		☒ 20 cm ☐ ... cm	--
	Source size		☒ Non-small ☐ Small : mm	--
	Field of view		☐ 100 mrad ☒ 11 mrad ☐ 1,7 mrad (for small sources)	--
Item	Symbol	Units	Result	Risk Group
Correlated colour temperature	CCT	K	--	--
x/y colour coordinates	--	--	--	--
Blue light hazard radiance	L _B	W/(m ² •sr ¹)	298686	☐ RG0: <100 ☐ RG1: <10000 ☒ RG2: <4000000
Blue light hazard irradiance	E _B	W/m ²	--	--
Luminance	L	cd/m ²	--	--
Illuminance	E	lx	--	--
Supplementary information:				



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Attachment No.4

IEC/EN 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
4 (4)	GENERAL REQUIREMENTS		P
- (4)	<u>Insulation materials</u> for double or reinforced insulation according requirements in Annex N of IEC 61347-1	(see Annex N)	N/A
- (4)	Compliance of <u>independent controlgear enclosure</u> with IEC 60598- 1		N/A
- (4)	<u>Built-in electronic controlgear</u> with double or reinforced insulation comply with Annex O of IEC 61347-1	(see Annex O)	N/A
4 (4)	<u>SELV controlgear</u> comply with Annex I of this part 2 and Annex L of IEC 61347-1	(see Annex L)	P
4 (-)	Transformer comply with IEC 61558		P
	Dielectric strength test of insulated winding wires is limited to 3 kV if input voltage ≤ 300 V		P

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

7 (7)	MARKING		N/A
7.1 (7.1)	Mandatory markings		N/A
	a) mark of origin		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



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Attachment No.4

IEC/EN 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	f) earthing symbol		N/A
	k) wiring diagram		N/A
	l) value of t_c		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 on protection against accidental contact		N/A
	i) cross-section of conductors (mm^2)		N/A
	j) number, type and wattage of lamp(s)		N/A
	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 luminaries enclosure	N/A
- (A2)	Voltage measured with 50 k Ω	(see Annex A)	N/A
- (A3)	Voltage > 35 V peak or > 60 V d.c. or protective impedance device	(see Annex A)	N/A





Attachment No.4

IEC/EN 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
- (10.1)	Lacquer or enamel not used for protection or insulation		N/A
	Adequate mechanical strength on parts providing protection		N/A
- (10.2)	Capacitors > 0,5 μ F: voltage after 1 min (V): < 50 V :	0V, 1min	P
- (10.3)	Controlgear providing SELV		P
	Accessible conductive parts are insulated from live parts by double or reinforced insulation in SELV controlgear		P
	No connection between output circuit and the body or protective earthing circuit		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		P
	ELV conductive parts insulated as live parts		N/A
	Tests according Annex L of IEC 61347-1	(see Annex L)	P
- (10.4)	Accessible conductive parts in SELV circuits		P
	Output voltage under load ≤ 25 V r.m.s. or ≤ 60 V d.c.	Max.36Vdc	P
	If output voltage > 25 V r.m.s. or > 60 V d.c.; No load output ≤ 35 V peak or ≤ 60 V d.c and touch current does not exceed 0,7 mA (peak) or 2 mA d.c. :		N/A
	One conductive part is insulated if output voltage or current exceeding the values above and withstand test voltage 500 V		N/A
	Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor	Y1 capacitor	P
	Y1 or Y2 capacitors comply with IEC 60384-14		P
	Resistors comply with test (a) in 14.1 of IEC 60065		N/A





Attachment No.4

IEC/EN 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
9 (8)	TERMINALS		N/A
- (8.1)	Integral terminals		N/A
	Screw terminals according section 14 of IEC 60598-1:		N/A
	Separately approved; component list	(see Annex 1)	N/A
	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 3)	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
	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		P
	Contact surface bare metal		P
	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





Attachment No.4

IEC/EN 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Test with a current of 25 A between earthing terminal or earthing contact and each of the accessible metal parts; measured resistance (Ω) at ≥ 10 A according 7.2.3 of IEC 60598-1: $< 0,5 \Omega$	0,036 Ω	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 mm ² and of copper or equivalent		N/A
	Protective earthing wires in line with 5.3.1.1 and clause 7 of IEC 60598-1		N/A
- (9.5.2)	Earthing of the lamp compartments powered via the independent lamp controlgear		N/A
	Test with a current of 25 A between input and output earth terminals; measured resistance (Ω) between earthing terminal or earthing contact and each of the accessible metal parts at ≥ 10 A according 7.2.3 of IEC 60598-1: $< 0,5 \Omega$		N/A
	Output earthing terminal marked as in 7.1 t) of IEC 61347-1		N/A

11 (11)	MOISTURE RESISTANCE AND INSULATION		P
	After storage 48 h at 91-95% relative humidity and 20-30 °C measuring of insulation resistance with d.c. 500 V (M Ω):		P
	For basic insulation ≥ 2 M Ω	> 100 M Ω	P
	For double or reinforced insulation ≥ 4 M Ω		N/A
	Between primary and secondary circuits in controlgear providing SELV, values in Annex L in IEC 61347-1		P

12 (12)	ELECTRIC STRENGTH		P
	Immediately after clause 11 electric strength test for 1 min		P
	Basic insulation for SELV, test voltage 500 V		P



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Attachment No.4

IEC/EN 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	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	1480V	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
	Fault conditions: capacitors, resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected	(see appended table)	P
- (14.2)	Short-circuit of creepage distances and clearances if less than specified in clause 16 in Part 1 (after any reduction in 14.2 - 14.5)	(see appended table)	P
- (14.3)	Short-circuit or interruption of semiconductor devices	(see appended table)	P
- (14.4)	Short-circuit across insulation consisting of lacquer, enamel or textile	(see appended table)	N/A
- (14.5)	Short-circuit across electrolytic capacitors	(see appended table)	P
- (14.6)	After the tests has been carried out on three samples:		P
	The insulation resistance ≥ 1 M Ω	>100 M Ω	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





Attachment No.4

IEC/EN 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
- (14.7)	Relevant fault condition tests with high-power 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	See Annex L	P
	Output voltage of SELV controlgear not exceed limits in 10.4 of IEC 61347-1 during the test of 15.1 and 15.2	See Annex L	P
15.2 (-)	Normal operation		P
	Comply with clause L.6 of IEC 61347-1	See Annex L	P
15.3 (-)	Abnormal operation		P
	Comply with clause L.7 of IEC 61347-1	See Annex L	P
	Double LED modules or equivalent load connected in parallel to the output terminals of constant voltage type		P
	Double LED modules or equivalent load connected in series to the output terminals of constant current type		N/A
15 (-)	During and at the end of the tests no defect impairing safety, nor any smoke or flammable gases produced		P

16 (15)	CONSTRUCTION		P
- (15.1)	Wood, cotton, silk, paper and similar fibrous material		P
	Wood, cotton, silk, paper and similar fibrous material not used as insulation		P
- (15.2)	Printed circuits		P
	Printed circuits used as internal connections complies with clause 14		P
- (15.3)	Plugs and socket-outlets used in SELV or ELV circuits		N/A
	No dangerous compatibility between output socket-outlet and a plug for socket-outlets for input circuit in relation to installation rules, voltages and frequencies		N/A
	Plugs and socket-outlets for SELV comply with IEC 60906-3 and IEC 60884-2-4		N/A



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IEC/EN 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Plugs and socket-outlets for SELV ≤ 3 A, ≤ 25 V r.m.s. or ≤ 60 V d.c. and ≤ 72 W comply with IEC 60906-3 and IEC 60884-2-4 or:		N/A
	- plugs not able to enter socket-outlets of other standardised system		N/A
	- socket-outlets not admit plugs of other standardised system		N/A
	- socket-outlets without protective earth		N/A
- (15.4)	Insulation between circuits and accessible parts		P
- (15.4.2)	SELV circuits		P
	Source used to supply SELV circuits:		P
	- safety isolating transformer in accordance with relevant part 2 of IEC 61558		N/A
	- controlgear providing SELV in accordance with relevant part 2 of IEC 61347		P
	- another source		N/A
	Voltage in the circuit not higher than ELV		P
	SELV circuits insulated from LV by double or reinforced insulation		P
	SELV circuits insulated from non SELV circuits by double or reinforced insulation		N/A
	SELV circuits insulated from FELV circuits by supplementary insulation		N/A
	SELV circuits insulated from other SELV circuits by basic insulation		N/A
	SELV circuits insulated from accessible conductive parts according Table 6 in 15.4.5		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





Attachment No.4

IEC/EN 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	- source in circuits separated by the LV supply by basic insulation		N/A
	Voltage in the circuit not higher than ELV		N/A
	FELV circuits insulated from LV supply by at least basic insulation		N/A
	FELV circuits insulated from other FELV circuits if functional purpose		N/A
	FELV circuits insulated from accessible conductive parts according Table 6 in 15.4.5		N/A
	Plugs and socket-outlets for FELV system comply with:		N/A
	- plugs not able to enter socket-outlets of other voltage systems		N/A
	- socket-outlets not admit plugs of other voltage systems		N/A
	- socket-outlets have a protective conductor contact		N/A
-(15.4.4)	Other circuits		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 shall be insulated from active parts of electric circuit by an insulation according to Table 6		N/A
	Class II construction with equipotential bonding for protection against indirect contacts with live parts:		N/A
	- all conductive parts are connected together		N/A
	- conductive parts are reliably connected together according test of IEC 60598-1 cl. 7.2.3		N/A
	- conductive parts comply with requirements of Annex A in case of insulation fault		N/A
17 (16)	CREEPAGE DISTANCES AND CLEARANCES		P
- (16.1)	General		P
	Creepage distances and clearances according to 16.2 and 16.3		P
	Controlgears providing SELV comply with additional requirements in Annex L		P



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IEC/EN 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Insulating lining of metallic enclosures		P
	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		N/A
(4.11.2)	Screws:		N/A
	- self-tapping screws		N/A
	- thread-cutting screws		N/A
(4.11.3)	Screw locking:		N/A
	- spring washer		N/A
	- rivets		N/A
(4.11.4)	Material of current-carrying parts		P
(4.11.5)	No contact to wood or mounting surface		P
(4.11.6)	Electro-mechanical contact systems		N/A
(4.12)	Mechanical connections and glands		P
(4.12.1)	Screws not made of soft metal		P



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IEC/EN 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Screws of insulating material		N/A
	Torque test: torque (Nm); part.....:	Fixed Driver PCB (and earth): 0,5Nm	P
	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 report IEC 60598-2-17	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)	N/A
- (18.4)	Needle flame test	See report IEC 60598-2-17	P
- (18.5)	Tracking test	See Test Table 19 (18.5)	N/A

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
Driver PCB	See Annex 1	30s	No	0s	P
Supplementary information:					

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



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Attachment No.4

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

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

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



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IEC/EN 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Test sample placed for at least 12 h in an oven having temperature ($t_c - 5$) K		N/A
	No operation of the protection device		N/A
(C7.2)	Functioning of protection means:		N/A
	Normal operation of the sample in a test enclosure according to Annex D at an ambient temperature such that ($t_c + 0; - 5$) °C is obtained		N/A
	No operation of the protection device		N/A
	Introducing of the most onerous test condition determined during test of clause 14.2 to 14.5		N/A
	Output of windings connected to the mains supply short-circuited, and other part of the controlgear operated under normal conditions		N/A
	Increasing of the current through the windings continuously until operation of the protection means		N/A
	Continuous measuring of the highest surface temperature		N/A
	Ballasts according to C5 a) or C5 e) operated until stable conditions are achieved		N/A
	Automatic-resetting thermal protectors working 3 times		N/A
	Ballasts according to C5 b) working 6 times		N/A
	Ballasts according to C5 c) and C5) d) working once		N/A
	Highest temperature does not exceed the marked value		N/A
	Any overshoot of 10% over the marked value within 15 min		N/A
	After 15 min value not exceed marked value		N/A
(D)	ANNEX D – REQUIREMENTS FOR CARRY OUT THE HEATING TESTS OF THERMALLY PROTECTED LAMP CONTROLGEAR		N/A
	Tests in C7 performed in accordance with Annex D, if applicable		N/A
(F)	ANNEX F – DRAUGHT-PROOF ENCLOSURE		P
	Draught-proof enclosure in accordance with the description		P



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IEC/EN 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		P
(L.3)	Classification		P
	Class I	Yes ☐ No ☐	—
	Class II	Yes ☐ No ☐	—
	Class III	Yes ☐ No ☐	—
	non-inherently short circuit proof controlgear	Yes ☒ No ☐	—
	inherently short circuit proof controlgear	Yes ☐ No ☐	—
	fail safe controlgear	Yes ☐ No ☐	—
	non-short-circuit proof controlgear	Yes ☐ No ☐	—
(L.4)	Marking		N/A
	Adequate symbols are used		N/A
(L.5)	Protection against electric shock		P
	Comply with clause 9.2 of IEC 61558-1		P
(L.6)	Heating		P
	No excessive temperatures in normal use		P
	Value if capacitor t_c marked	X capacitor: 110°C Y capacitor: 125°C Electrolytic capacitor: 105°C	—
	Winding insulation classified as Class	Class B	—
	Comply with tests of clause 14 of IEC 61558-1 with adjustments		P
(L.7)	Short-circuit and overload protection		P
	Comply with tests of clause 15 of IEC 61558-1 with adjustments		P



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IEC/EN 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
(L.8)	Insulation resistance and electric strength		P
(L.8.1)	Conditioned 48 h between 91 % and 95 %		P
(L.8.2)	Insulation resistance		P
	Between input- and output circuits not less than 5 MΩ:	>100MΩ	P
	Between metal parts of class II convertors which are separated from live parts by basic insulation only and the body not less than 5 MΩ		N/A
	Between metal foil in contact with the inner and outer surfaces of enclosures of insulating material not less than 2 MΩ		N/A
(L.8.3)	Electric strength		P
	1) Between live parts of input circuits and live parts of output circuits	3750V	P
	2) Over basic or supplementary insulation between:		P
	a) live parts having different polarity	1875V	P
	b) live parts and body if intended to be connected to protective earth	1875V	P
	c) accessible metal parts and a metal rod of the same diameter as the flexible cable or cord		N/A
	d) live parts and an intermediate metal part		N/A
	e) intermediate metal parts and the body		N/A
	f) each input circuit and all other input circuits		N/A
	3) Over reinforced insulation between the body and live parts		N/A
(L.9)	Construction		P
(L.9.1)	Transformer comply with 19.12 of IEC 61558-1 and 19 of IEC 61558-2-6		P
	HF transformer comply with 19 of IEC 61558-2-16		P
(L.10)	Components		P
	Protective devices comply with 20.6 – 20.11 of IEC 61558-1		P
(L.11)	Creepage distances, clearances and distances through insulation		P
	Creepage distances and clearances not less than in Clause 16		P



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IEC/EN 61347-2-13

Clause	Requirement + Test	Result - Remark	Verdict
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	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		—
	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



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IEC/EN 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	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 $\pm 15\%$		N/A
	Supply of low impedance and low inductance		N/A
J.7	EMC immunity		N/A
	Comply with the requirements of IEC 61547		N/A
J.8	Pulse voltage from central battery systems		N/A
	Withstand pulses according Table J.1		N/A
J.9	Tests for abnormal conditions		N/A
	Comply with the requirements of 12 of IEC 62384		N/A
J.10	Comply with the requirements of 13 of IEC 62384		N/A
J.11	Functional safety (EOF _x)		N/A
	Declared emergency output factor (EOF _x) achieved during emergency operation		N/A

(N)	ANNEX N: REQUIREMENTS FOR INSULATION MATERIALS USED FOR DOUBLE OR REINFORCED INSULATION		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 % to 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



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





Attachment No.4

IEC/EN 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
(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 according clause 12 reduced to 35 % of values according Table 3 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
	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



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



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Attachment No.4

IEC/EN 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Supplementary information		—
	Reinforced insulation:		N/A
	Working/rated voltage		—
	Impulse voltage.....		N/A
	Supplementary information		—



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Attachment No.4

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

14	TABLE: tests of fault conditions (for front end)		P
Part	Simulated fault	Test result	Hazard
BD1	s-c	Fuse open, no flame, no flammable gas, no molten parts, no hazard.	NO
C1	s-c	Fuse open, no flame, no flammable gas, no molten parts, no hazard.	NO
Q1(G-D)	s-c	Fuse open, no flame, no flammable gas, no molten parts, no hazard.	NO
Q1(G-S)	s-c	Fuse open, no flame, no flammable gas, no molten parts, no hazard.	NO
Q1(S-D)	s-c	Shut down, unrecoverable, no flame, no flammable gas, no molten parts, recoverable, no hazard.	NO
D4	s-c	Fuse open, no flame, no flammable gas, no molten parts, no hazard.	NO
U1	s-c	Shut down, recoverable, no flame, no flammable gas, no molten parts, recoverable, no hazard.	NO
C2	s-c	Shut down, recoverable, no flame, no flammable gas, no molten parts, recoverable, no hazard.	NO
Output	s-c	Shut down, recoverable, no flame, no flammable gas, no molten parts, recoverable, no hazard.	NO

14	TABLE: tests of fault conditions (for back end)		P
Part	Simulated fault	Test result	Hazard
PC1	s-c	Fuse open, no flame, no flammable gas, no molten parts, no hazard.	NO
C13	s-c	Fuse open, no flame, no flammable gas, no molten parts, no hazard.	NO
D1	s-c	Fuse open, no flame, no flammable gas, no molten parts, no hazard.	NO
U2	s-c	Fuse open, no flame, no flammable gas, no molten parts, no hazard.	NO
C14	s-c	Shut down, recoverable, no flame, no flammable gas, no molten parts, recoverable, no hazard.	NO
C18	s-c	Shut down, recoverable, no flame, no flammable gas, no molten parts, recoverable, no hazard.	NO

17 (16)	TABLE: clearance and creepage distance measurements (mm) (for front end)	P
Applicable part of IEC 61347-1 Table 7 – 11*		



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Attachment No.4

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

Distances	Insulation type **	Measured clearance	Required		Measured creepage	Required	
			clearance	*Table		creepage	*Table
Distance 1:	B	3,0	1,5	Table 7-11	3,0	2,5	Table 7-11
Distance 2:	B	3,0	1,5	Table 7-11	3,0	2,5	Table 7-11
Distance 3:	B	3,0	1,5	Table 7-11	3,0	2,5	Table 7-11
Distance 4:	B	3,9	1,5	Table 7-11	3,9	2,5	Table 7-11
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: Distance 1: between L/N; Distance 2: between fuse pins; Distance 3: between L/N and earth circuits; Distance 4: between live parts and enclosure							

17 (16)		TABLE: clearance and creepage distance measurements (mm) (for back end)					P
Applicable part of IEC 61347-1 Table 7 – 11*							
Distances	Insulation type **	Measured clearance	Required		Measured creepage	Required	
			clearance	*Table		creepage	*Table
Distance 1:	B	3,9	1,5	Table 7-11	3,9	2,5	Table 7-11
Distance 2:	R	6,8	3,0	Table 7-11	6,8	5,0	Table 7-11
Distance 3:	R	6,9	3,0	Table 7-11	6,9	5,0	Table 7-11
Distance 4:	R	6,9	3,0	Table 7-11	6,9	5,0	Table 7-11
Working voltage (V)..... :					380VDC		—
Frequency if applicable (kHz)..... :					--		—
PTI..... :					< 600 ☒ ≥ 600 ☐		—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) :					--		—
Pulse voltage if applicable (kV) :					--		—





Attachment No.4

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

Supplementary information:

Distance 1: between live parts and enclosure;

Distance 2: between Input circuits and output circuits;

Distance 3: Transformer secondary pin to core;

Distance 4: Transformer PRI-SEC.



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Attachment No.5

Photo Documentation

Model: Krypton W1940



Photo 1



Photo 2





Attachment No.5

Photo Documentation



Photo 3



Photo 4





Attachment No.5

Photo Documentation



Photo 5



Photo 6





Attachment No.5

Photo Documentation

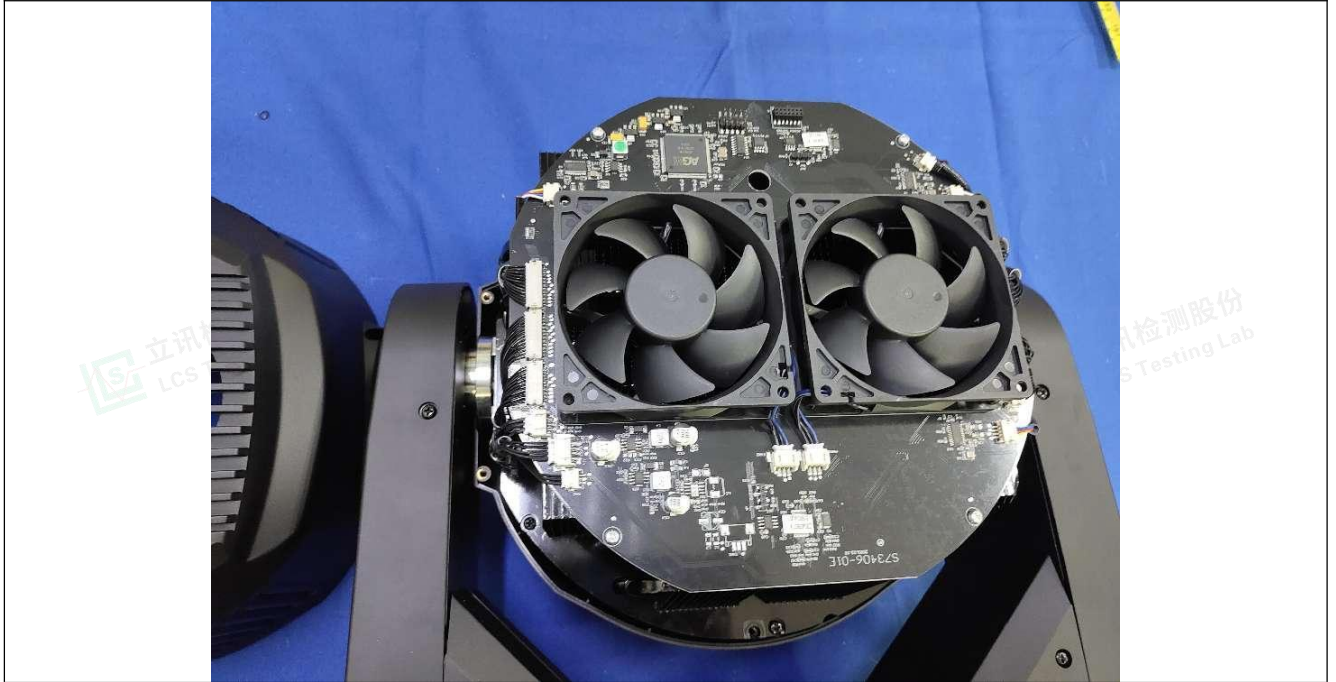


Photo 7

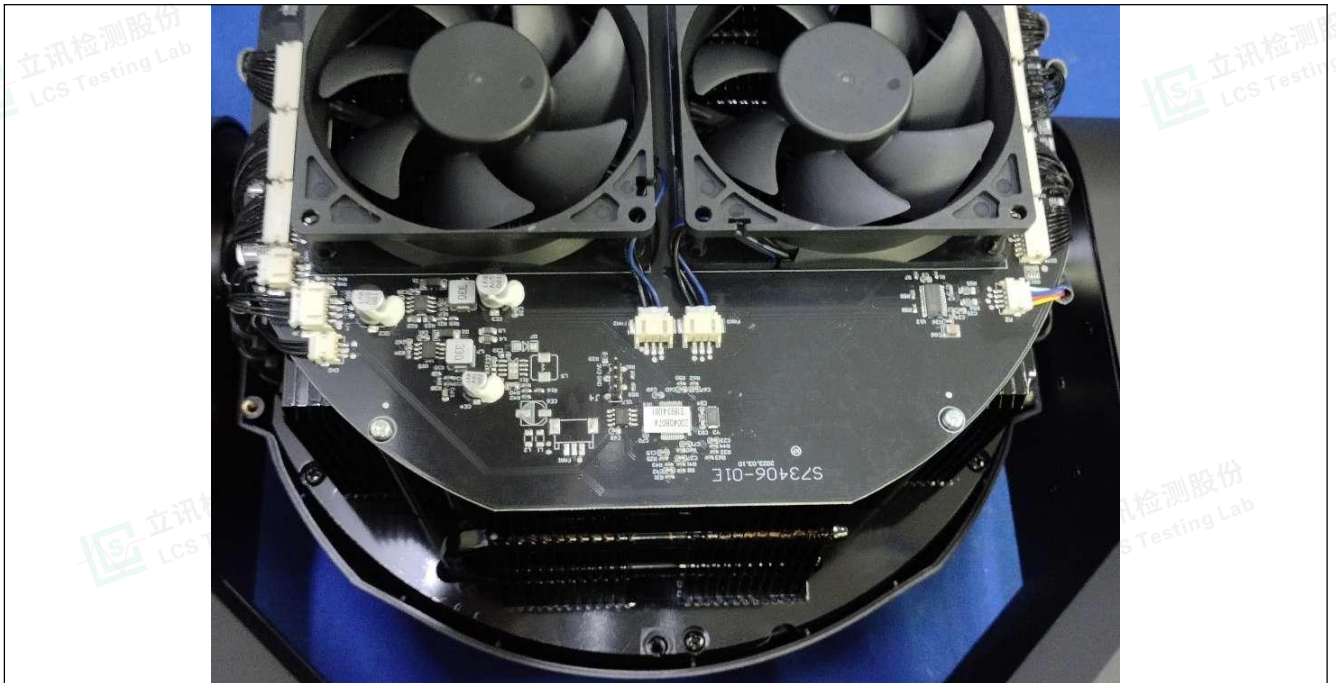


Photo 8



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Photo Documentation

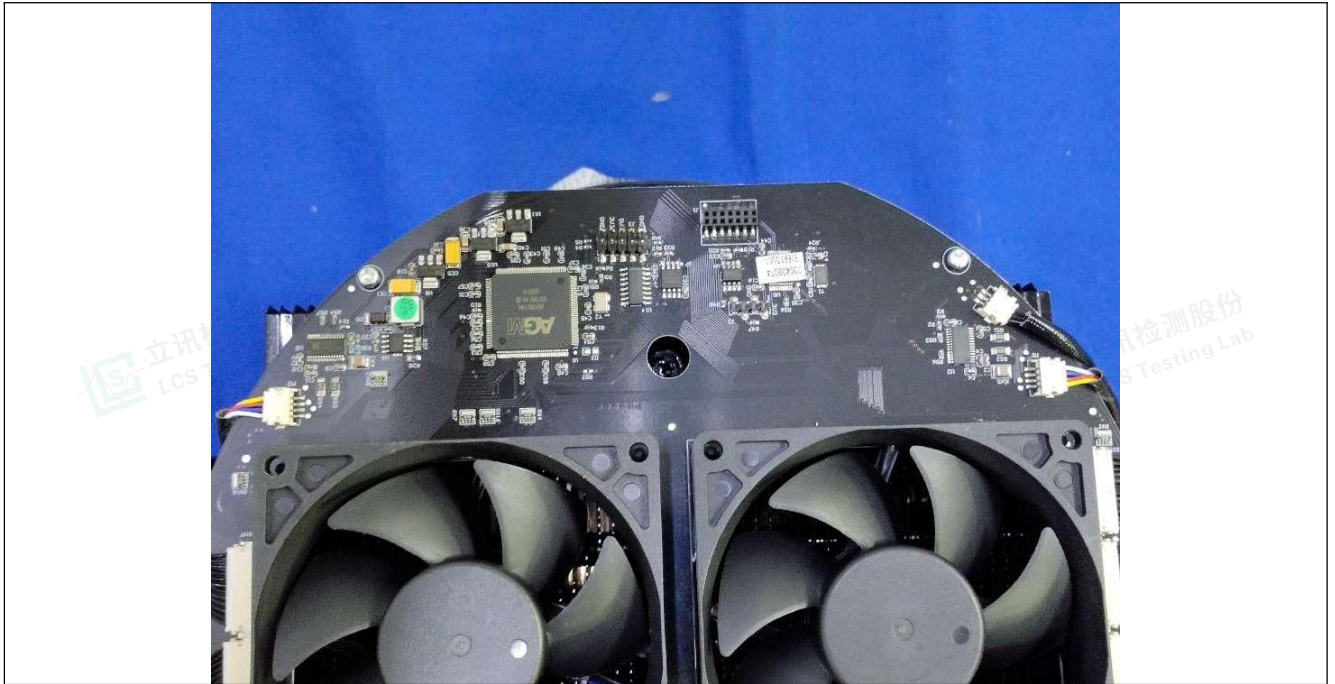


Photo 9



Photo 10





Attachment No.5

Photo Documentation



Photo 11

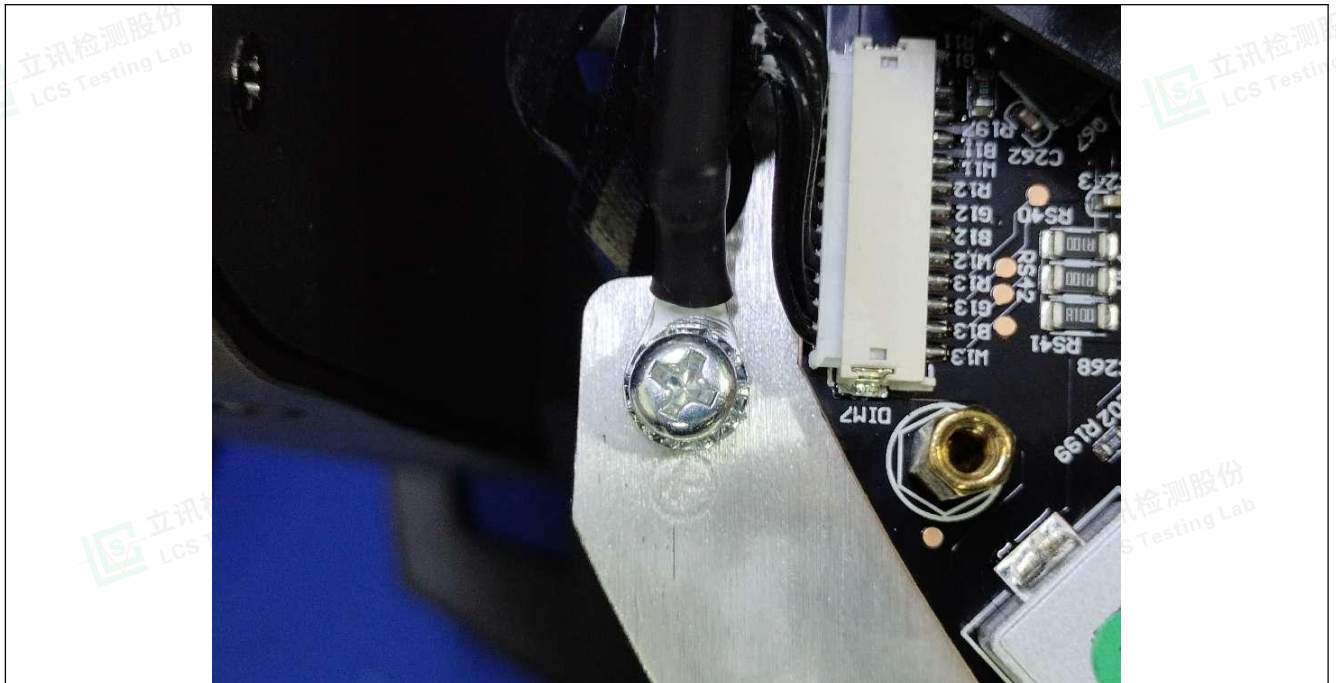


Photo 12





Attachment No.5

Photo Documentation

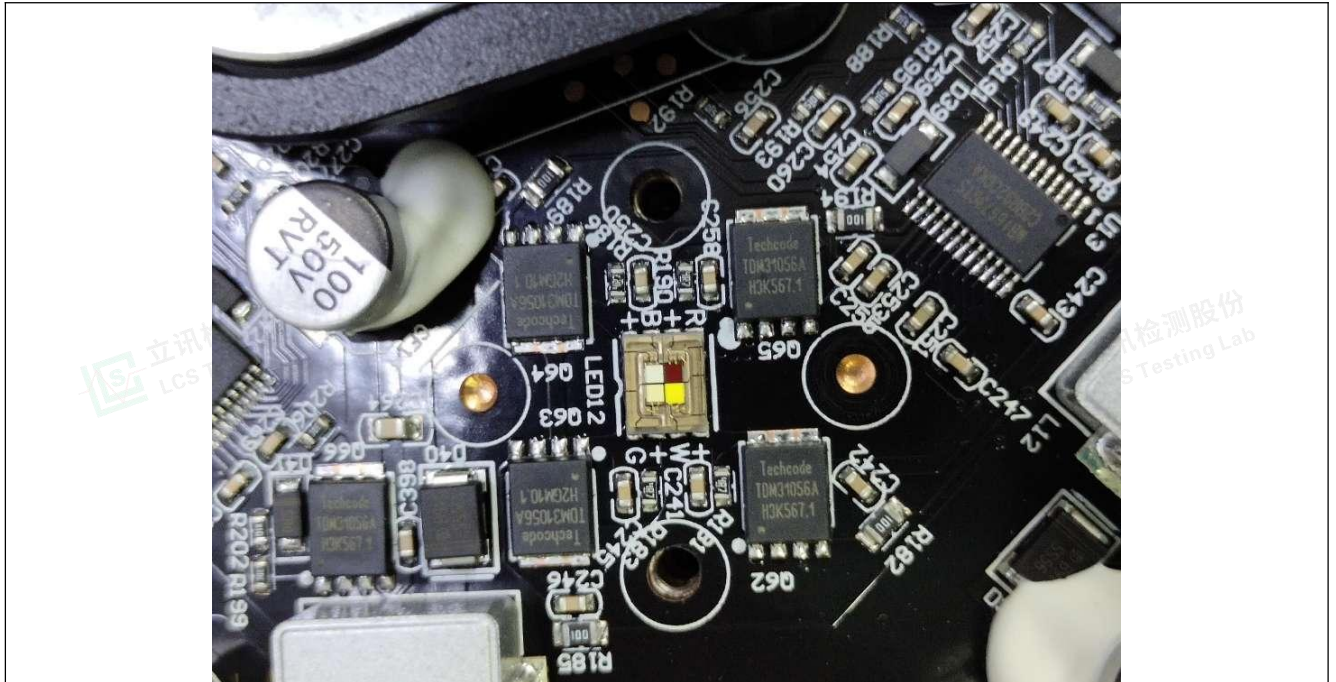


Photo 13



Photo 14





Attachment No.5

Photo Documentation



Photo 15

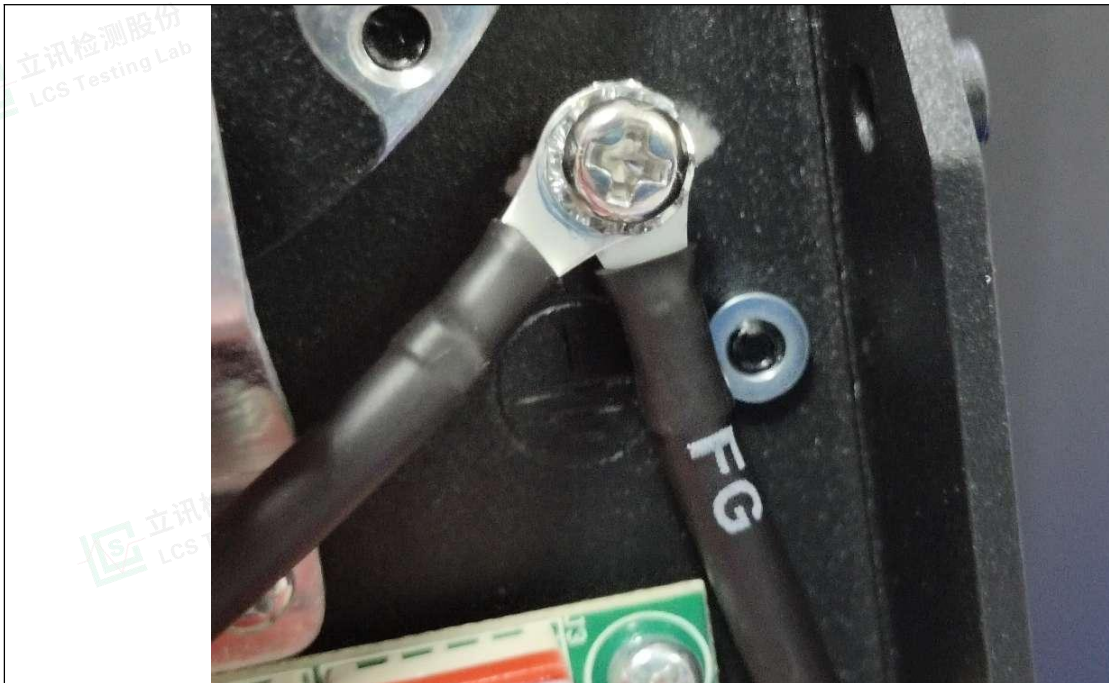


Photo 16



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Photo 17

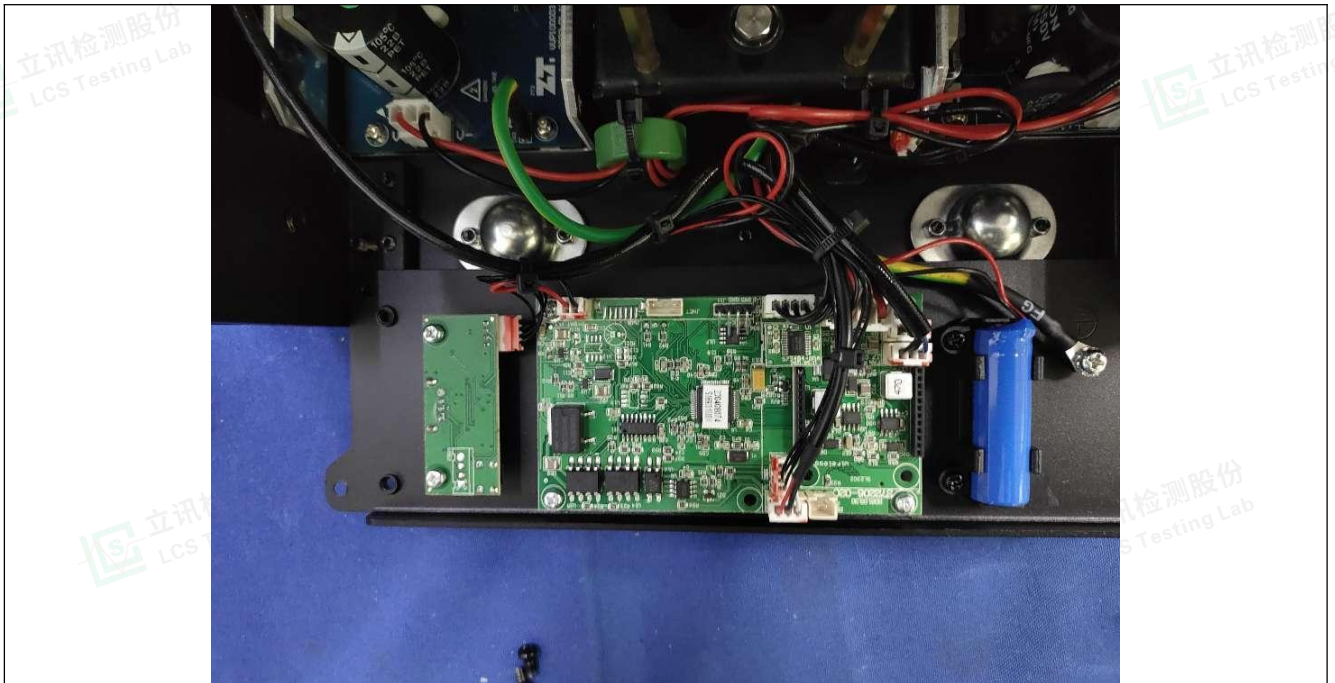


Photo 18





Attachment No.5

Photo Documentation



Photo 19

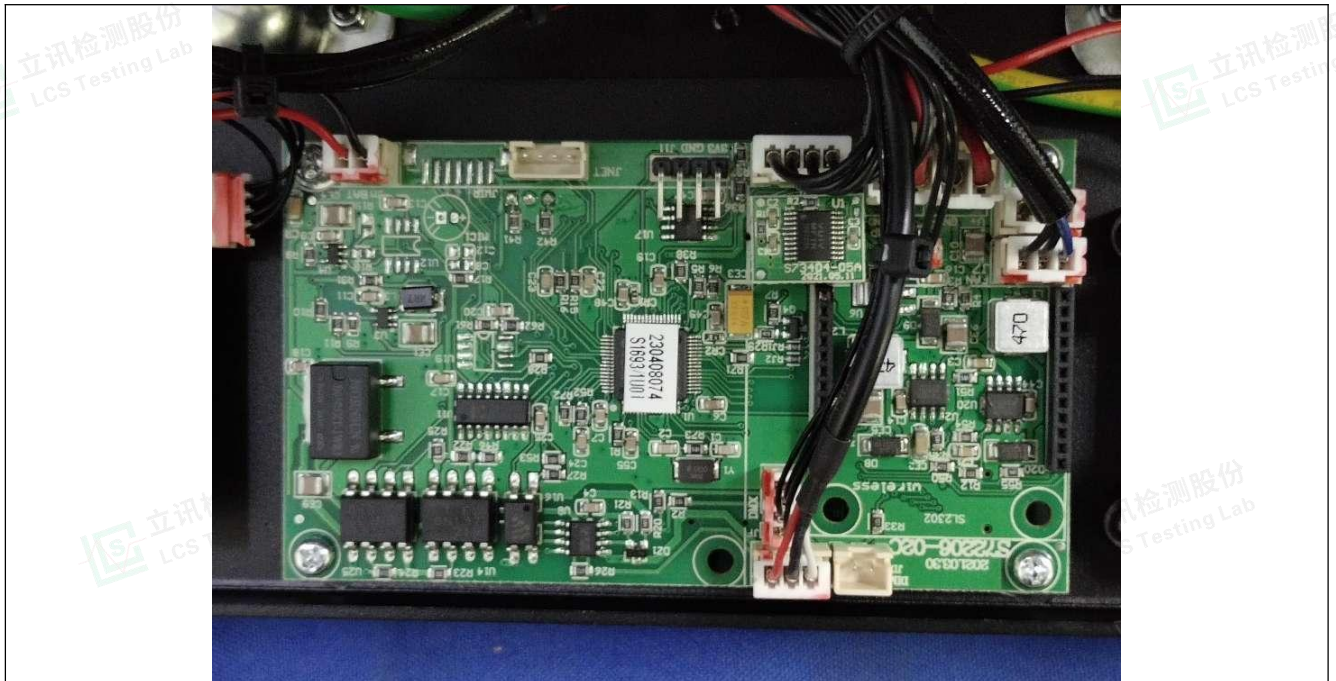


Photo 20





Attachment No.5

Photo Documentation

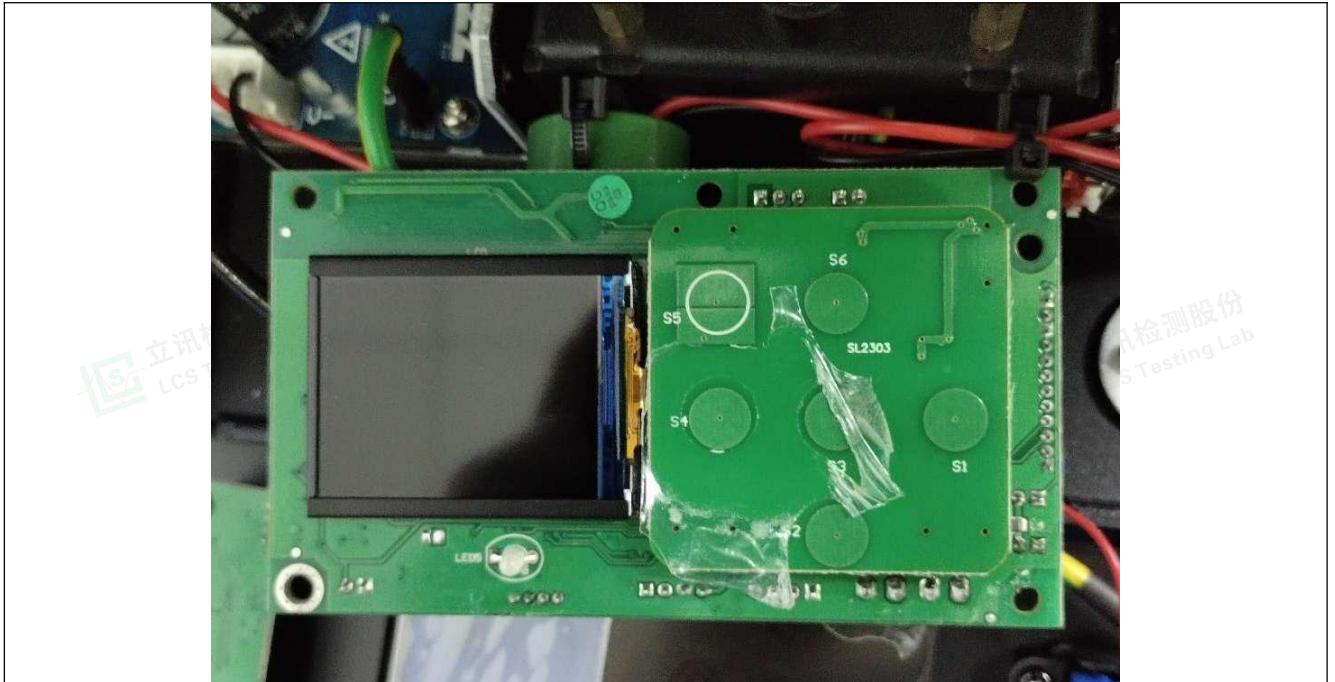


Photo 21



Photo 22





Attachment No.5

Photo Documentation

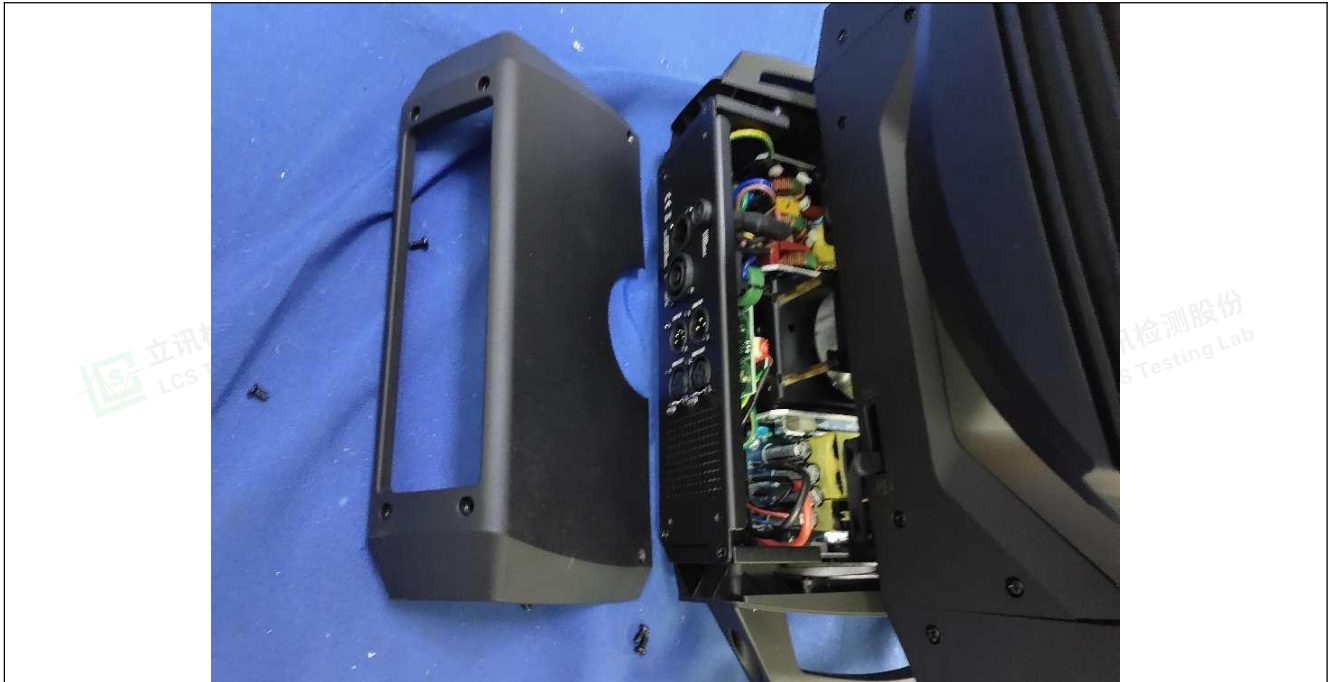


Photo 23



Photo 24





Attachment No.5

Photo Documentation



Photo 25



Photo 26 LED driver for front end





Attachment No.5

Photo Documentation



Photo 27 LED driver for front end

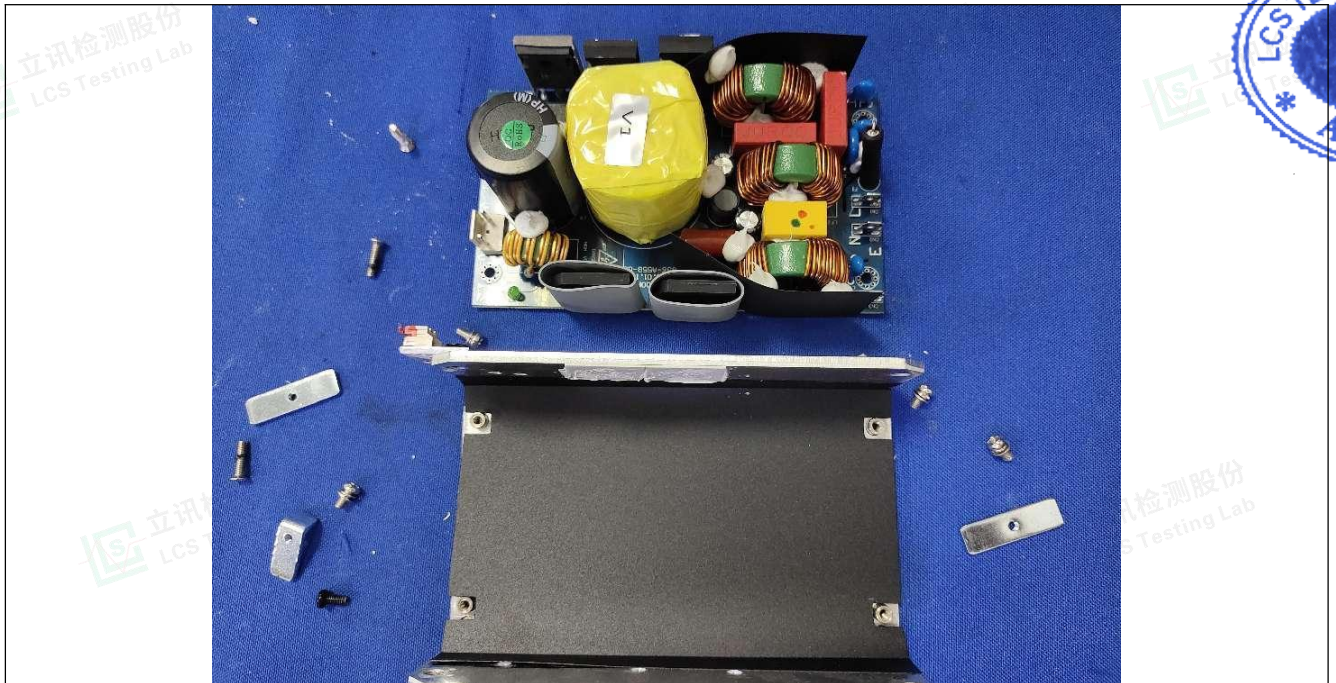


Photo 28





Attachment No.5

Photo Documentation



Photo 29

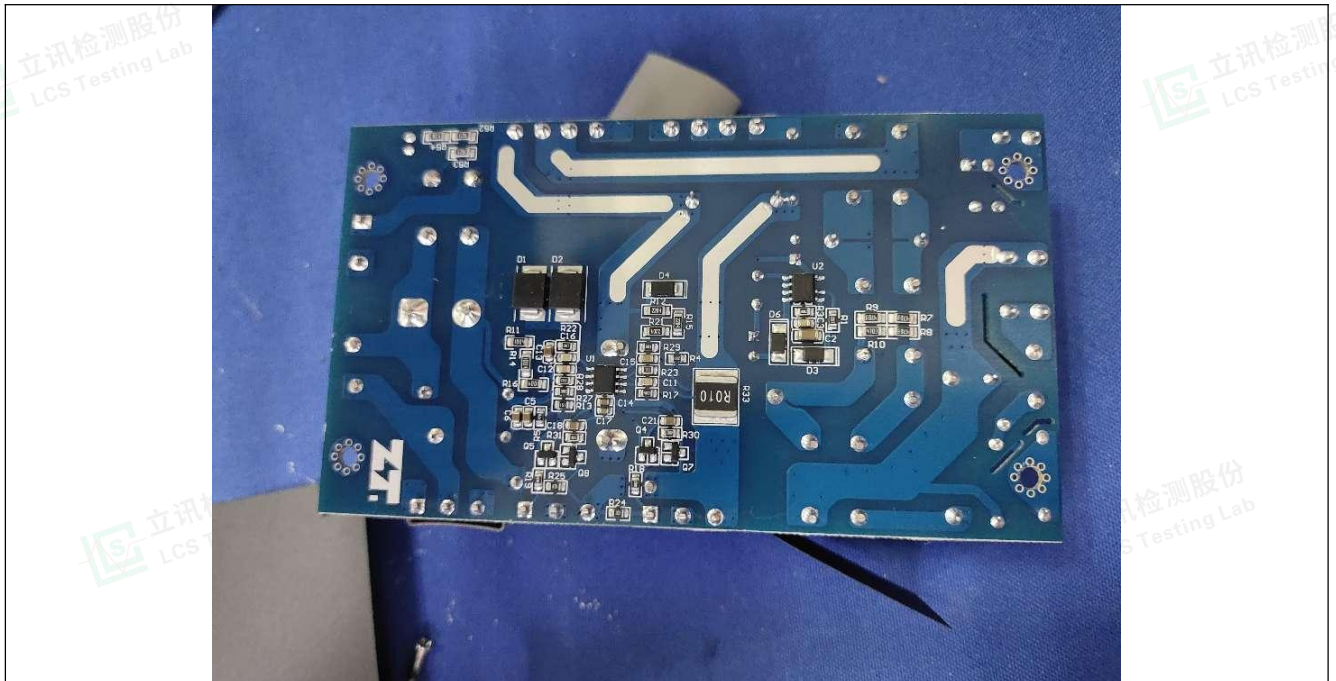


Photo 30





Attachment No.5

Photo Documentation

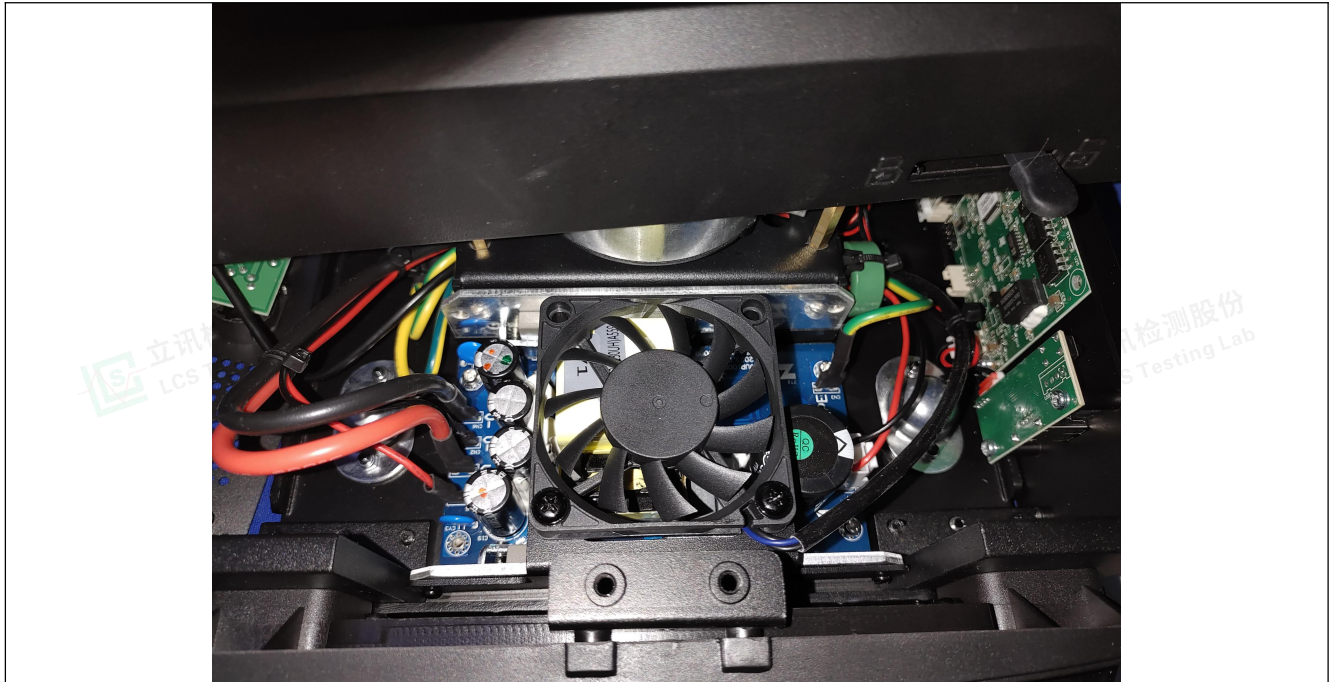


Photo 31 LED driver for back end

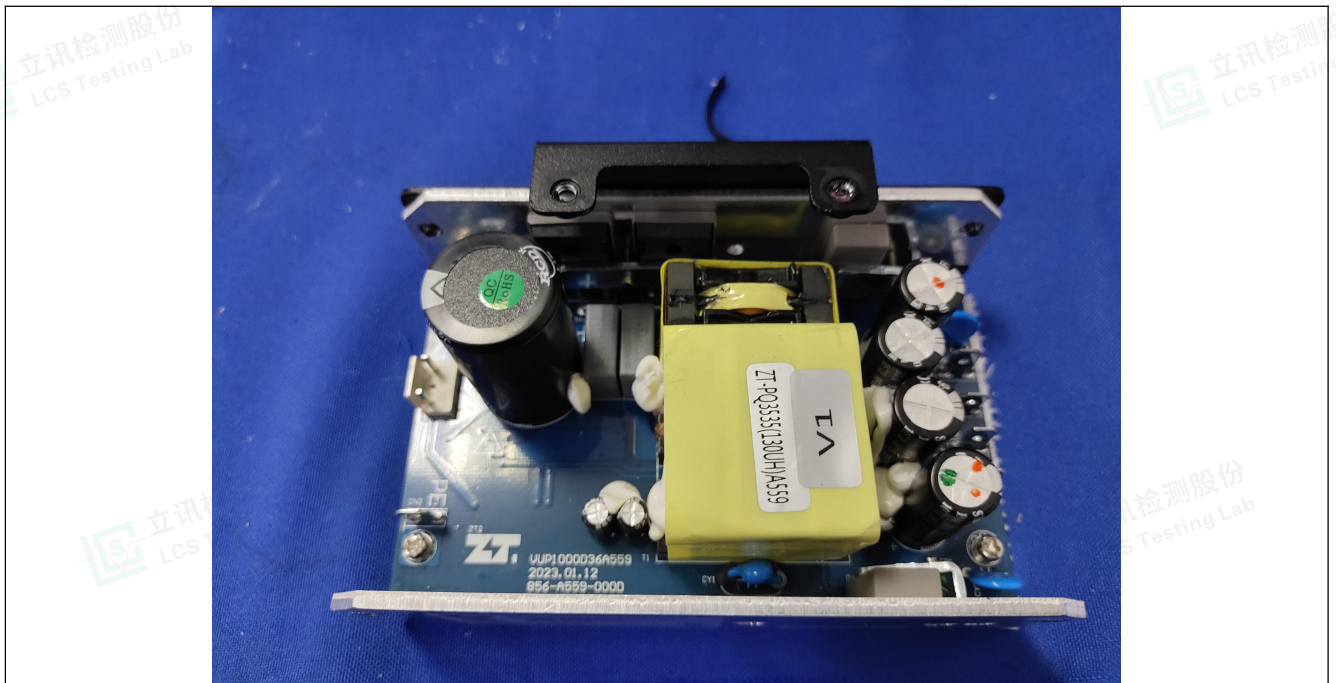


Photo 32 LED driver for back end





Attachment No.5

Photo Documentation



Photo 33



Photo 34





Attachment No.5

Photo Documentation

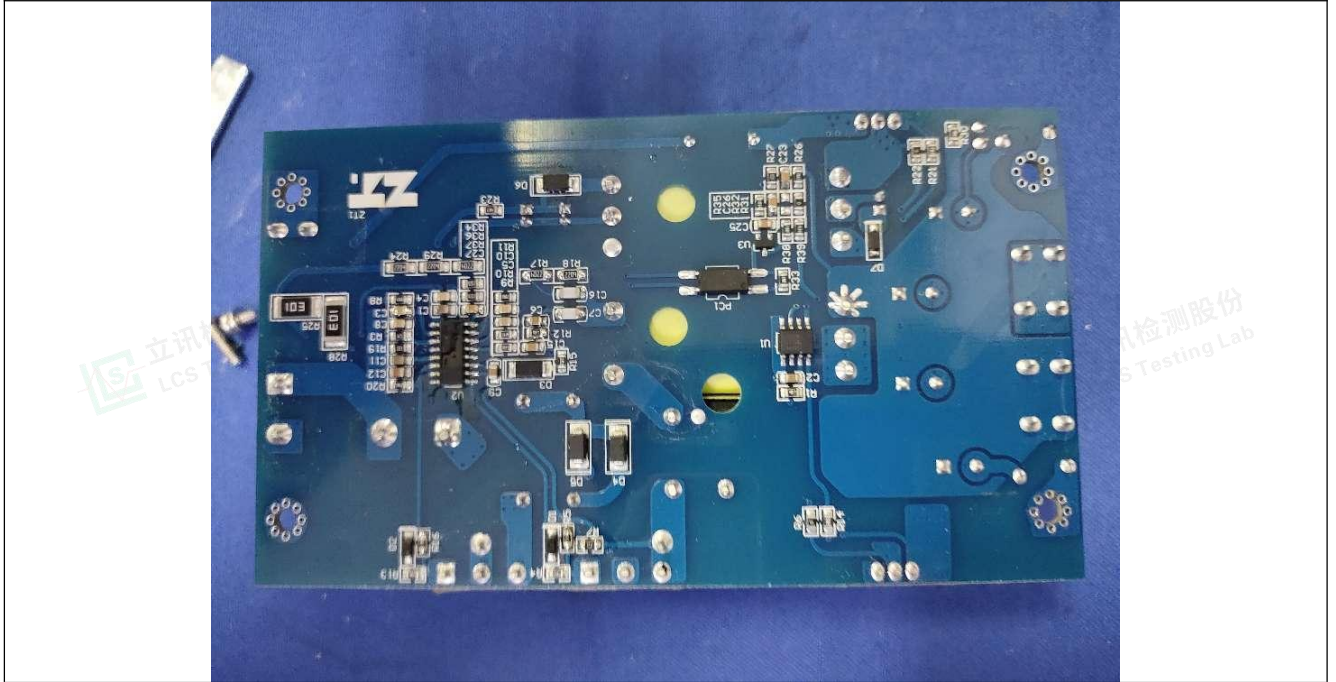


Photo 35

-----End of Test Report-----



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