



中国认可
国际互认
检测
TESTING
CNAS L6478



TEST REPORT

Reference No...... : WTF20F11088501L

Applicant..... : Shenzhen ULA1L Photoelectricity Co.,Ltd.

Address..... : Unit A,5th Floor, Building A, Wanda Industrial District, Zhoushi Road,
Langxin Community, Shiyao Street, Bao'an District, Shenzhen,
Guangdong, China.

Manufacturer..... : Shenzhen ULA1L Photoelectricity Co.,Ltd.

Address..... : Unit A,5th Floor, Building A, Wanda Industrial District, Zhoushi Road,
Langxin Community, Shiyao Street, Bao'an District, Shenzhen,
Guangdong, China.

Product Name..... : LED Tri-Proof light

Model No..... : See model list on page 4-5

Standards..... : Luminaires
Part 2-1: Fixed general purpose luminaires
IEC 60598-2-1:2020
IEC 60598-1:2014+A1:2017
used in conjunction with Australia deviation

Date of Receipt sample..... : 2020-11-16

Date of Test..... : 2020-11-17 to 2020-11-28

Date of Issue..... : 2020-01-05

Test Report Form No...... : WSL-6059821A-02A

Test Result..... : Pass

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

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Test item description.....: Fixed luminaires

Trade Mark.....: 

Model/Type reference.....: See model list on page 4-5

Ratings.....: See model list on page 4-5

Copy of marking plate:

Model No.: U-TRI-60W-A-MS
220-240V~ 50/60Hz ta:25°C
LED 60W

IP65

Unit A,5th Floor, Building A, Wanda Industrial
District, Zhoushi Road, Langxin Community,
Shiyan Street, Bao'an District, Shenzhen,
Guangdong, China.

On the luminaire surface

Note: The marking label for other models are identical as above, except model name and wattage.



On the lamp cover

Summary of testing:

1. All tests were carried out on the model U-TRI-60W-A-MS and U-TRI-50W-B-MS, the tests results complied with the requirements of the standards mentioned on page one.
2. Australian deviation to IEC 60598-1:2014+A1:2017 and AS/NZS 60598.1:2017+A1:2017, IEC 60598-2-1:2020 and AS/NZS 60598.2.1:2014+A1:2016+A2:2019 was considered and found to comply with the requirement.
3. Photobiological safety was assessed according to IEC 62471:2006, classification group: exempt ☒ risk 1 ☐ risk 2 ☐ risk 3.
4. Integral LED module was assessed according to IEC 62031:2008+A1:2012+A2:2014 and found to comply with the requirement.
5. Only the most unfavorable results are recorded in this report.

**Test items particulars:**

Classification of installation and use.....: Fixed
Supply Connection.....: Supply cords

Possible test case verdicts:

- test case does not apply to the test object.....: N (Not applicable)
- test object does meet the requirement.....: P (Pass)
- test object does not meet the requirement.....: F (Fail)

General remarks:

"(see remark #)" refers to a remark appended to the report.
"(see appended table)" refers to a table appended to the report.
Throughout this report a point is used as the decimal separator.

General product information:

1. Class I IP65 fixed general purpose luminaire.
2. All models have same construction, except the size, driver, LED module and rated power.
3. Driver models LF-GIR030YM0600H, LF-GIR030YM0700H, LF-GIR030YM0750H, LF-GIR040YM1000H, LF-GIR050YM1200H, LF-GIR060YM1300H, LF-GIR060YM1500H have same construction, circuit diagram and PCB layout, except the output parameter.
4. Driver models AGT-I731-1100, AGT-I731-1150, AGT-I731-1200, AGT-I752-0400, AGT-I752-0450, AGT-I752-0500, AGT-I756-1000 have same construction, circuit diagram and PCB layout, except the output parameter.



Model list

Item	Model	Rated voltage (VAC)	Rated frequency (Hz)	Rated power (W)	Protection against electric shock	IP degree
1	U-TRI-16W-A-MS	220-240V	50/60Hz	LED 16W	Class I	IP 65
2	U-TRI-16W-B-MS	220-240V	50/60Hz	LED 16W	Class I	IP 65
3	U-TRI-18W-A-MS	220-240V	50/60Hz	LED 18W	Class I	IP 65
4	U-TRI-18W-B-MS	220-240V	50/60Hz	LED 18W	Class I	IP 65
5	U-TRI-20W-A-MS	220-240V	50/60Hz	LED 20W	Class I	IP 65
6	U-TRI-20W-B-MS	220-240V	50/60Hz	LED 20W	Class I	IP 65
7	U-TRI-24W-A-MS	220-240V	50/60Hz	LED 24W	Class I	IP 65
8	U-TRI-24W-B-MS	220-240V	50/60Hz	LED 24W	Class I	IP 65
9	U-TRI-26W-A-MS	220-240V	50/60Hz	LED 26W	Class I	IP 65
10	U-TRI-26W-B-MS	220-240V	50/60Hz	LED 26W	Class I	IP 65
11	U-TRI-28W-A-MS	220-240V	50/60Hz	LED 28W	Class I	IP 65
12	U-TRI-28W-B-MS	220-240V	50/60Hz	LED 28W	Class I	IP 65
13	U-TRI-30W-A-MS	220-240V	50/60Hz	LED 30W	Class I	IP 65
14	U-TRI-30W-B-MS	220-240V	50/60Hz	LED 30W	Class I	IP 65
15	U-TRI-32W-A-MS	220-240V	50/60Hz	LED 32W	Class I	IP 65
16	U-TRI-32W-B-MS	220-240V	50/60Hz	LED 32W	Class I	IP 65
17	U-TRI-34W-A-MS	220-240V	50/60Hz	LED 34W	Class I	IP 65
18	U-TRI-34W-B-MS	220-240V	50/60Hz	LED 34W	Class I	IP 65
19	U-TRI-36W-A-MS	220-240V	50/60Hz	LED 36W	Class I	IP 65
20	U-TRI-36W-B-MS	220-240V	50/60Hz	LED 36W	Class I	IP 65
21	U-TRI-38W-A-MS	220-240V	50/60Hz	LED 38W	Class I	IP 65
22	U-TRI-38W-B-MS	220-240V	50/60Hz	LED 38W	Class I	IP 65
23	U-TRI-40W-A-MS	220-240V	50/60Hz	LED 40W	Class I	IP 65
24	U-TRI-40W-B-MS	220-240V	50/60Hz	LED 40W	Class I	IP 65



25	U-TRI-42W-A-MS	220-240V	50/60Hz	LED 42W	Class I	IP 65
26	U-TRI-42W-B-MS	220-240V	50/60Hz	LED 42W	Class I	IP 65
27	U-TRI-44W-A-MS	220-240V	50/60Hz	LED 44W	Class I	IP 65
28	U-TRI-44W-B-MS	220-240V	50/60Hz	LED 44W	Class I	IP 65
29	U-TRI-46W-A-MS	220-240V	50/60Hz	LED 46W	Class I	IP 65
30	U-TRI-46W-B-MS	220-240V	50/60Hz	LED 46W	Class I	IP 65
31	U-TRI-48W-A-MS	220-240V	50/60Hz	LED 48W	Class I	IP 65
32	U-TRI-48W-B-MS	220-240V	50/60Hz	LED 48W	Class I	IP 65
33	U-TRI-50W-A-MS	220-240V	50/60Hz	LED 50W	Class I	IP 65
34	U-TRI-50W-B-MS	220-240V	50/60Hz	LED 50W	Class I	IP 65
35	U-TRI-52W-A-MS	220-240V	50/60Hz	LED 52W	Class I	IP 65
36	U-TRI-52W-B-MS	220-240V	50/60Hz	LED 52W	Class I	IP 65
37	U-TRI-54W-A-MS	220-240V	50/60Hz	LED 54W	Class I	IP 65
38	U-TRI-54W-B-MS	220-240V	50/60Hz	LED 54W	Class I	IP 65
39	U-TRI-56W-A-MS	220-240V	50/60Hz	LED 56W	Class I	IP 65
40	U-TRI-56W-B-MS	220-240V	50/60Hz	LED 56W	Class I	IP 65
41	U-TRI-58W-A-MS	220-240V	50/60Hz	LED 58W	Class I	IP 65
42	U-TRI-58W-B-MS	220-240V	50/60Hz	LED 58W	Class I	IP 65
43	U-TRI-60W-A-MS	220-240V	50/60Hz	LED 60W	Class I	IP 65
44	U-TRI-60W-B-MS	220-240V	50/60Hz	LED 60W	Class I	IP 65



IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict

1.2 (0)	GENERAL TEST REQUIREMENTS		P
1.2 (0.3)	More sections applicable.....:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Section/s:	—
1.2 (0.5)	Components	(see Annex 1)	—
1.2 (0.7)	Information for luminaire design in light sources standards		—
1.2 (0.7.2)	Light source safety standard	IEC 62471	—
	Luminaire design in the light source safety standard		P

1.4 (2)	CLASSIFICATION OF LUMINAIRES		P
1.4 (2.2)	Type of protection	Class I	
1.4 (2.3)	Degree of protection.....:	IP65	—
1.4 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces.....:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
1.4 (2.5)	Luminaire for normal use	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	Luminaire for rough service	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—

1.5 (3)	MARKING		P
1.5 (3.2)	Mandatory markings	See "Copy of marking plate"	P
	Position of the marking		P
	Format of symbols/text		P
1.5 (3.3)	Additional information		P
	Language of instructions	In English	P
1.5 (3.3.1)	Combination luminaires		N
1.5 (3.3.2)	Nominal frequency in Hz		N
1.5 (3.3.3)	Operating temperature		N
1.5 (3.3.5)	Wiring diagram		N
1.5 (3.3.6)	Special conditions		N
1.5 (3.3.7)	Metal halide lamp luminaire – warning		N
1.5 (3.3.8)	Limitation for semi-luminaires		N
1.5 (3.3.9)	Power factor and supply current		N
1.5 (3.3.10)	Suitability for use indoors		N
1.5 (3.3.11)	Luminaires with remote control		N
1.5 (3.3.12)	Clip-mounted luminaire – warning		N
1.5 (3.3.13)	Specifications of protective shields		N



IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.5 (3.3.14)	Symbol for nature of supply	~	P
1.5 (3.3.15)	Rated current of socket outlet		N
1.5 (3.3.16)	Rough service luminaire		N
1.5 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments	Type Y	P
1.5 (3.3.18)	Non-ordinary luminaires with PVC cable		N
1.5 (3.3.19)	Protective conductor current in instruction if applicable		N
1.5 (3.3.20)	Provided with information if not intended to be mounted within arm's reach		N
1.5 (3.3.21)	Non replaceable and non-user replaceable light sources information provided	Non-user replaceable	P
1.5 (3.3.22)	Controllable luminaires, classification of insulation provided		N
1.5 (3.3.23)	Luminaire without controlgear provided with necessary information for selection of appropriate component		N
1.5 (3.3.24)	If not supplied with terminal block, information on the packaging		N
1.5 (3.4)	Test with water		P
	Test with hexane		P
	Legible after test		P
	Label attached		P

1.6 (4)	CONSTRUCTION		P
1.6 (4.2)	Components replaceable without difficulty		N
1.6 (4.3)	Wireways smooth and free from sharp edges		P
1.6 (4.4)	Lampholders		N
1.6 (4.4.1)	Integral lampholder		N
1.6 (4.4.2)	Wiring connection		N
1.6 (4.4.3)	Lampholder for end- to- end mounting		N
1.6 (4.4.4)	Positioning		N
	- pressure test (N)	--	—
	After test the lampholder comply with relevant standard sheets and show no damage		N
	After test on single-capped lampholder the lampholder have not moved from its position and show no permanent deformation		N



IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- bending test (N)	--	—
	After test the lampholder have not moved from its position and show no permanent deformation		N
1.6 (4.4.5)	Peak pulse voltage		N
1.6 (4.4.6)	Centre contact		N
1.6 (4.4.7)	Parts in rough service luminaires resistant to tracking		N
1.6 (4.4.8)	Lamp connectors		N
1.6 (4.4.9)	Caps and bases correctly used		N
1.6 (4.4.10)	Light source for lampholder or connection according IEC 60061 not connected another way		N
1.6 (4.5)	Starter holders		N
	Starter holder in luminaires other than class II	No starter holder used	N
	Starter holder class II construction		N
1.6 (4.6)	Terminal blocks		N
	Tails		N
	Unsecured blocks		N
1.6 (4.7)	Terminals and supply connections		P
1.6 (4.7.1)	Contact to metal parts		N
1.6 (4.7.2)	Test 8 mm live conductor		P
	Test 8 mm earth conductor		P
1.6 (4.7.3)	Terminals for supply conductors		P
1.6 (4.7.3.1)	Welded method and material		N
	- stranded or solid conductor		N
	- spot welding		N
	- welding between wires		N
	- Type Z attachment		N
	- mechanical test according to 15.6.2		N
	- electrical test according to 15.6.3		N
	- heat test according to 15.6.3.2.3 and 15.6.3.2.4		N
1.6 (4.7.4)	Terminals other than supply connection		N
1.6 (4.7.5)	Heat-resistant wiring/sleeves		N
1.6 (4.7.6)	Multi-pole plug		N
	- test at 30 N		N
1.6 (4.8)	Switches		N



IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- adequate rating		N
	- adequate fixing		N
	- polarized supply		N
	- compliance with IEC 61058-1 for electronic switches		N
1.6 (4.9)	Insulating lining and sleeves		N
1.6 (4.9.1)	Retainment		N
	Method of fixing.....	--	N
1.6 (4.9.2)	Insulated linings and sleeves:		N
	Resistant to a temperature > 20 °C to the wire temperature or		N
	a) & c) Insulation resistance and electric strength		N
	b) Ageing test. Temperature (°C).....	--	N
1.6 (4.10)	Double or reinforced insulation		P
1.6 (4.10.1)	No contact, mounting surface – accessible metal parts – wiring of basic insulation	For Class II construction	P
	Safe installation fixed luminaires		P
	Capacitors and switches		N
	Interference suppression capacitors according to IEC 60384-14		N
1.6 (4.10.2)	Assembly gaps:		N
	- not coincidental		N
	- no straight access with test probe		N
1.6 (4.10.3)	Retainment of insulation:		P
	- fixed		P
	- unable to be replaced; luminaire inoperative		P
	- sleeves retained in position		N
	- lining in lampholder		N
1.6 (4.10.4)	Protective impedance device		N
	Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor		N
	Y1 or Y2 capacitors comply with IEC 60384-14		N
	Resistors comply with test (a) in 14.1 of IEC 60065		N
1.6 (4.11)	Electrical connections and current-carrying parts		P
1.6 (4.11.1)	Contact pressure		P



IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.6 (4.11.2)	Screws:		N
	- self-tapping screws		N
	- thread-cutting screws		N
1.6 (4.11.3)	Screw locking:		P
	- spring washer		P
	- rivets		N
1.6 (4.11.4)	Material of current-carrying parts		P
1.6 (4.11.5)	No contact to wood or mounting surface		P
1.6 (4.11.6)	Electro-mechanical contact systems		N
1.6 (4.12)	Screws and connections (mechanical) and glands		P
1.6 (4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		N
	Torque test: torque (Nm); part.....	Fix earth terminal: 0.5Nm	P
	Torque test: torque (Nm); part.....	Fix terminal block: 1.2Nm	P
	Torque test: torque (Nm); part.....	Fix LED board: 0.5Nm	P
	Torque test: torque (Nm); part.....	Fix LED driver: 0.5Nm	P
	Torque test: torque (Nm); part.....	Fix enclosure: 1.2Nm	P
1.6 (4.12.2)	Screws with diameter < 3 mm screwed into metal		N
1.6 (4.12.4)	Locked connections:		N
	- fixed arms; torque (Nm).....	--	N
	- lampholder; torque (Nm).....	--	N
	- push-button switches; torque 0,8 Nm.....	--	N
1.6 (4.12.5)	Screwed glands; force (Nm).....	3.25Nm	P
1.6 (4.13)	Mechanical strength		P
1.6 (4.13.1)	Impact tests:		P
	- fragile parts; energy (Nm).....	--	N
	- other parts; energy (Nm).....	Lamp cover, plastic enclosure: 0.35 Nm	P
	1) live parts		P
	2) linings		N
	3) protection		P
	4) covers		P
1.6 (4.13.2)	Metal parts have adequate mechanical strength		P
1.6 (4.13.3)	Straight test finger		P
1.6 (4.13.4)	Rough service luminaires		N



IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- IP54 or higher		N
	a) fixed		N
	b) hand-held		N
	c) delivered with a stand		N
	d) for temporary installations and suitable for mounting on a stand		N
1.6 (4.13.6)	Tumbling barrel		N
1.6 (4.14)	Suspensions, fixings and means of adjusting		P
1.6 (4.14.1)	Mechanical load:		P
	A) four times the weight	Max. 4 x 2.471 kg for UL-TRI-60WB-MS	P
	B) torque 2,5 Nm		N
	C) bracket arm; bending moment (Nm).....	--	N
	D) load track-mounted luminaires		N
	E) clip-mounted luminaires, glass-shelve. Thickness (mm)		N
	Metal rod. diameter (mm)	--	N
	Fixed luminaire or independent control gear without fixing devices		
1.6 (4.14.2)	Load to flexible cables		N
	Mass (kg)	--	—
	Stress in conductors (N/mm ²)	--	N
	Mass (kg) of semi-luminaire	--	N
	Bending moment (Nm) of semi-luminaire	--	N
1.6 (4.14.3)	Adjusting devices:		
	- flexing test; number of cycles.....	--	N
	- strands broken.....	--	N
	- electric strength test afterwards		N
1.6 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors		N
1.6 (4.14.5)	Guide pulleys		N
1.6 (4.14.6)	Strain on socket-outlets		N
1.6 (4.15)	Flammable materials		N
	- glow-wire test 650°C.....	See Test Table 1.15 (13.3.2)	N
	- spacing ≥30 mm		N
	- screen withstanding test of 13.3.1		N



IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- screen dimensions		N
	- no fiercely burning material		N
	- thermal protection		N
	- electronic circuits exempted		N
1.6 (4.15.2)	Luminaires made of thermoplastic material with lamp control gear		N
	a) construction		N
	b) temperature sensing control		N
	c) surface temperature		N
1.6 (4.16)	Luminaires for mounting on normally flammable surfaces		N
	No lamp control gear..... (compliance with Section 12)		N
	Provided with adaptor for a track meet the requirements for direct mounting on normally flammable surfaces		N
1.6 (4.16.1)	Lamp control gear spacing:		N
	- spacing 35 mm		N
	- spacing 10 mm		N
1.6 (4.16.2)	Thermal protection:		N
	- in lamp control gear		N
	- external		N
	- fixed position		N
	- temperature marked lamp control gear		N
1.6 (4.16.3)	Design to satisfy the test of 12.6	(see clause 12.6)	N
1.6 (4.17)	Drain holes		N
	Clearance at least 5 mm		N
1.6 (4.18)	Resistance to corrosion		P
1.6 (4.18.1)	- rust-resistance		P
1.6 (4.18.2)	- season cracking in copper		P
1.6 (4.18.3)	- corrosion of aluminium		P
1.6 (4.19)	Igniters compatible with ballast		N
1.6 (4.20)	Rough service vibration		N
1.6 (4.21)	Protective shield		N
1.6 (4.21.1)	Shield fitted if tungsten halogen lamps or metal halide lamps		N
	Shield of glass if tungsten halogen lamps		N
1.6 (4.21.2)	Particles from a shattering lamp not impair safety		N



IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.6 (4.21.3)	No direct path		N
1.6 (4.21.4)	Impact test on shield		N
	Glow-wire test on lamp compartment.....	See Test Table 1.15 (13.3.2)	N
1.6 (4.22)	Attachments to lamps not cause overheating or damage		N
1.6 (4.23)	Semi-luminaires comply Class II		N
1.6 (4.24)	Photobiological hazards		P
1.6 (4.24.1)	No excessive UV radiation if tungsten halogen lamps and metal halide lamps (Annex P)		N
1.6 (4.24.2)	Retinal blue light hazard		P
	Class of risk group assessed according to IEC/TR 62778	RG0 unlimited	—
	Luminaires with E_{thr} :		N
	a) Fixed luminaires		N
	- distance x m, borderline between RG1 and RG2.	--	N
	- marking and instruction according 3.2.23		N
	b) Portable and handheld luminaires		N
	- marking according 3.2.23 if RG1 exceeded at 200 mm according to IEC/TR 62778		N
	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
1.6 (4.25)	Mechanical hazard		P
	No sharp point or edges		P
1.6 (4.26)	Short-circuit protection		N
1.6 (4.26.1)	Adequate means of uninsulated accessible SELV parts		N
1.6 (4.26.2)	Short-circuit test with test chain according 4.26.3		N
	Test chain not melt through		N
	Test sample not exceed values of Table 12.1 and 12.2		N
1.6 (4.27)	Terminal blocks with integrated screwless earthing contacts		N
	Test according Annex V		N
	Pull test of terminal fixing (20 N)		N
	After test, resistance < 0,05 Ω		N
	Pull test of mechanical connection (50 N)		N
	After test, resistance < 0,05 Ω		N



IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Voltage drop test, resistance < 0,05 Ω		N
1.6 (4.28)	Fixing of thermal sensing control		N
	Not plug-in or easily replaceable type		N
	Reliably kept in position		N
	No adhesive fixing if UV radiations from a lamp can degrade the fixing		N
	Not outside the luminaire enclosure		N
	Test of adhesive fixing:		N
	Max. temperature on adhesive material (°C)		—
	100 cycles between t min and t max		N
	Temperature sensing control still in position		N
1.6 (4.29)	Luminaires with non-replaceable light source		N
	Not possible to replace light source		N
	Live part not accessible after parts have been opened by hand or tools		N
1.6 (4.30)	Luminaires with non-user replaceable light source		P
	If protective cover provide protection against electric shock and marked with "caution, electric shock risk" symbol:		P
	Minimum two fixing means		P
1.6 (4.31)	Insulation between circuits		P
	Circuits insulated from LV supply fulfil requirements according 4.31.1 – 4.31.3		P
	Controllable luminaires requiring same level of insulation for all components, the insulation between control terminals and LV supply fulfil requirements according 4.31.1 – 4.31.3		N
1.6 (4.31.1)	SELV circuits		P
	Used SELV source		P
	Voltage ≤ ELV		P
	Insulating of SELV circuits from LV supply		P
	Insulating of SELV circuits from other non SELV circuits		P
	Insulating of SELV circuits from FELV		N
	Insulating of SELV circuits from other SELV circuits		N
	SELV circuits insulated from accessible parts according Table X.1		P



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Clause	Requirement + Test	Result - Remark	Verdict
	Plugs not able to enter socket-outlets of other voltage systems		N
	Socket outlets does not admit plugs of other voltage systems		N
	Plugs and socket-outlets does not have protective conductor contact		N
1.6 (4.31.2)	FELV circuits		N
	Used FELV source		N
	Voltage \leq ELV		N
	Insulating of FELV circuits from LV supply		N
	FELV circuits insulated from accessible parts according Table X.1		N
	Plugs not able to enter socket-outlets of other voltage systems		N
	Socket outlets does not admit plugs of other voltage systems		N
	Socket-outlets does not have protective conductor contact		N
1.6 (4.31.3)	Other circuits		P
	Other circuits insulated from accessible parts according Table X.1		P
	Class II construction with equipotential bonding for protection against indirect contacts with live parts:		N
	- conductive parts are connected together		N
	- test according 7.2.3		N
	- conductive part not cause an electric shock in case of an insulation fault		N
	- equipotential bonding in master/slave applications		N
	- master luminaire provided with terminal for accessible conductive parts of slave luminaires		N
	- slave luminaire constructed as class I		N
1.6 (4.32)	Overvoltage protective devices		N
	Comply with IEC 61643-11		N
	External to controlgear and connected to earth:		N
	- only in fixed luminaires		N
	- only connected to protective earth		N



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Clause	Requirement + Test	Result - Remark	Verdict
1.7 (11)	CREEPAGE DISTANCES AND CLEARANCES		P
1.7 (11.2.1)	Impulse withstand category (Normal category II)	Category II <input checked="" type="checkbox"/> Category III <input type="checkbox"/>	—
	Category III according Annex U		N
	Protected against pollution, reduced creepage and clearance according Annex P of IEC 61347-1		N
1.7 (11.2.2)	Creepage distances for frequency up to 30 kHz	See Test Table 1.7 (11.2) I	P
	Creepage distances for frequency over 30 kHz:		N
	- Controlgear marked with \hat{U}_{OUT} and f_{OUT} according IEC 61347-1, clause 7.1, item w	See Test Table 1.7 (11.2) II	N
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 1.7 (11.2) II	N
1.7 (11.2.3)	Clearances for frequency up to 30 kHz	See Test Table 1.7 (11.2) I	P
	Clearances distances for frequency over 30 kHz:		N
	- Controlgear marked with U_P	See Test Table 1.7 (11.2) II	N
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 1.7 (11.2) II	N
1.8 (7)	PROVISION FOR EARTHING		P
1.8 (7.2.1 + 7.2.3)	Accessible metal parts		P
	Metal parts in contact with supporting surface		P
	Resistance < 0,5 Ω	0.014 Ω	P
	Self-tapping screws used		N
	Thread-forming screws		N
	Thread-forming screw used in a grove		N
	Earth makes contact first		N
	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N
	Protective earthing of the luminaire not via built-in control gear		P
1.8 (7.2.2 + 7.2.3)	Earth continuity in joints, etc.		N
1.8 (7.2.4)	Locking of clamping means		P
	Compliance with 4.7.3		P
	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N
1.8 (7.2.5)	Earth terminal integral part of connector socket		N
1.8 (7.2.6)	Earth terminal adjacent to mains terminals		P



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Clause	Requirement + Test	Result - Remark	Verdict
1.8 (7.2.7)	Electrolytic corrosion of the earth terminal		P
1.8 (7.2.8)	Material of earth terminal		P
	Contact surface bare metal		P
1.8 (7.2.10)	Class II luminaire for looping-in		N
	Double or reinforced insulation to functional earth		N
1.8 (7.2.11)	Earthing core coloured green-yellow		P
	Length of earth conductor		P
1.9 (14)	SCREW TERMINALS		P
	Separately approved; component list	(see Annex 1)	P
	Part of the luminaire	(see Annex 3)	N
1.9 (15)	SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS		N
	Separately approved; component list.....	(see Annex 1)	N
	Part of the luminaire.....	(see Annex 4)	N
1.10 (5)	EXTERNAL AND INTERNAL WIRING		P
1.10 (5.2)	Supply connection and external wiring		P
1.10 (5.2.1)	Means of connection.....	Supply cords	P
	Outdoor luminaire has not PVC insulated external wiring if not class III or SELV ≤ 25 V a.c./60 V d.c. or protected from outdoor environment		N
1.10 (5.2.2)	Type of cable.....	(see Annex 1)	P
	Nominal cross-sectional area (mm ²).....	(see Annex 1)	P
	Cables equal to IEC 60227 or IEC 60245		P
1.10 (5.2.3)	Type of attachment, X, Y or Z	Type Y	P
1.10 (5.2.5)	Type Z not connected to screws		N
1.10 (5.2.6)	Cable entries:		P
	- suitable for introduction		P
	- adequate degree of protection		P
1.10 (5.2.7)	Cable entries through rigid material have rounded edges		P
1.10 (5.2.8)	Insulating bushings:		P
	- suitably fixed		P
	- material in bushings		P
	- material not likely to deteriorate		P



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Clause	Requirement + Test	Result - Remark	Verdict
	- tubes or guards made of insulating material		P
1.10 (5.2.9)	Locking of screwed bushings		N
1.10 (5.2.10)	Cord anchorage:		P
	- covering protected from abrasion		P
	- clear how to be effective		P
	- no mechanical or thermal stress		P
	- no tying of cables into knots etc.		P
	- insulating material or lining		P
1.10 (5.2.10.1)	Cord anchorage for type X attachment:		N
	a) at least one part fixed		N
	b) types of cable		N
	c) no damaging of the cable		N
	d) whole cable can be mounted		N
	e) no touching of clamping screws		N
	f) metal screw not directly on cable		N
	g) replacement without special tool		N
	Glands not used as anchorage		N
	Labyrinth type anchorages		N
1.10 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment	Type Y	P
1.10 (5.2.10.3)	Tests:		P
	- impossible to push cable; unsafe		P
	- pull test: 25 times; pull (N).....	60	P
	- torque test: torque (Nm).....	0.25	P
	- displacement ≤ 2 mm		P
	- no movement of conductors		P
	- no damage of cable or cord		P
	- function independent of electrical connection		P
1.10 (5.2.11)	External wiring passing into luminaire		P
1.10 (5.2.12)	Looping-in terminals		P
1.10 (5.2.13)	Wire ends not tinned		P
	Wire ends tinned: no cold flow		N
1.10 (5.2.14)	Mains plug same protection		N
	Class III luminaire plug		N



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Clause	Requirement + Test	Result - Remark	Verdict
	No unsafe compatibility		N
1.10 (5.2.16)	Appliance inlets (IEC 60320)		N
	Installation couplers (IEC 61535)		N
	Other appliance inlet or connector according relevant IEC standard		N
1.10 (5.2.17)	No standardized interconnecting cables properly assembled		N
1.10 (5.2.18)	Used plug in accordance with		N
	- IEC 60083		N
	- other standard		N
1.10 (5.3)	Internal wiring		P
1.10 (5.3.1)	Internal wiring of suitable size and type	(see Annex 1)	P
	Through wiring		N
	- not delivered/ mounting instruction		N
	- factory assembled		N
	- socket outlet loaded (A).....	--	N
	- temperatures.....	--	N
	Green- yellow for earth only		P
1.10 (5.3.1.1)	Internal wiring connected directly to fixed wiring		P
	Cross-sectional area (mm ²).....	(see Annex 1)	P
	Insulation thickness (mm)	(see Annex 1)	P
	Extra insulation added where necessary		N
1.10 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		P
	Cross-sectional area (mm ²).....	(see Annex 1)	P
1.10 (5.3.1.3)	Double or reinforced insulation for class II		P
1.10 (5.3.1.4)	Conductors without insulation		N
1.10 (5.3.1.5)	SELV current-carrying parts		P
1.10 (5.3.1.6)	Insulation thickness other than PVC or rubber	PVC	N
1.10 (5.3.2)	Sharp edges etc.		P
	No moving parts of switches etc.		N
	Joints, raising/lowering devices		N
	Telescopic tubes etc.		N
	No twisting over 360°		P
1.10 (5.3.3)	Insulating bushings:		N
	- suitable fixed		N



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Clause	Requirement + Test	Result - Remark	Verdict
	- material in bushings		N
	- material not likely to deteriorate		N
	- cables with protective sheath		N
1.10 (5.3.4)	Joints and junctions effectively insulated		N
1.10 (5.3.5)	Strain on internal wiring		N
1.10 (5.3.6)	Wire carriers		N
1.10 (5.3.7)	Wire ends not tinned		P
	Wire ends tinned: no cold flow		N
1.10 (5.4)	Test to determine suitability of conductors having a reduced cross-sectional area		N
	Under test the temperature of the luminaire wiring insulation not exceed the limits stated in Table 12.2	(see Annex 2)	N
	No damage to luminaire wiring after test		N

1.11 (8)	PROTECTION AGAINST ELECTRIC SHOCK		P
1.11 (8.2.1)	Live parts not accessible		P
	Basic insulated parts not used on the outer surface without appropriate protection		P
	Basic insulated parts not accessible with standard test finger on portable, settable and adjustable luminaires		N
	Basic insulated parts not accessible with Ø 50 mm probe from outside, other types of luminaires		P
	Lamp and starterholders in portable and adjustable luminaires comply with double or reinforced insulation requirements		N
	Basic insulation only accessible under lamp or starter replacement		N
	Protection in any position		P
	Double-ended tungsten filament lamp		N
	Insulation lacquer not reliable		N
	Double-ended high-pressure discharge lamp		N
	Relevant warning according to 3.2.18 fitted to the luminaire		N
1.11 (8.2.2)	Portable luminaire adjusted in most unfavourable position		N
1.11 (8.2.3.a)	Class II luminaire:		P



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Clause	Requirement + Test	Result - Remark	Verdict
	- basic insulated metal parts not accessible during starter or lamp replacement		N
	- basic insulation not accessible other than during starter or lamp replacement	For Class II construction	P
	- glass protective shields not used as supplementary insulation		N
1.11 (8.2.3.b)	BC lampholder of metal in class I luminaires shall be earthed		N
1.11 (8.2.3.c)	SELV circuits with exposed current carrying parts:		N
	Ordinary luminaire:		N
	- voltage under load (V).....	--	N
	- no-load voltage (V).....	--	N
	- touch current if applicable (mA)	--	N
	One conductive part insulated if required		N
	Other than ordinary luminaire:		N
	- nominal voltage (V)	--	N
	Class III luminaire only for connection to SELV		N
	Class III luminaire not provided with means for protective earthing		N
1.11 (8.2.4)	Portable luminaire has protection independent of supporting surface		N
1.11 (8.2.5)	Compliance with the standard test finger or relevant probe		P
1.11 (8.2.6)	Covers reliably secured		P
1.11 (8.2.7)	Luminaire other than below with capacitor > 0,5 μ F not exceed 50 V 1 min after disconnection	12V	P
	Portable luminaire with capacitor > 0,1 μ F (0.25) not exceed 34 V 1 s after disconnection		N
	Other luminaires with capacitor > 0,1 μ F (0.25) with plug and track adaptors not exceed 60 V 5 s after disconnection		N

1.12 (12)	ENDURANCE TEST AND THERMAL TEST		P
1.12 (-)	If IP > IP 20 relevant test of (12.4), (12.5) and (12.6) after (9.2) before (9.3) specified in 1.13		—
1.12 (12.2)	Selection of lamps and ballasts		—
	Lamp used according Annex B	(Lamp used see Annex 2)	—



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Clause	Requirement + Test	Result - Remark	Verdict
	Controlgear if separate and not supplied	(Controlgear used see Annex 2)	—
1.12 (12.3)	Endurance test		P
	a) mounting- position	Acc. to user manual	—
	b) test temperature (°C).....	35°C	—
	c) total duration (h)	240h	—
	d) supply voltage (V).....	1.1 times rated voltage	—
	d) if not equipped with controlgear, constant voltage/current (V) or (A)	LED driver see Annex 1	—
	e) luminaire ceases to operate	LED	—
1.12 (12.3.2)	After endurance test:		P
	- no part unserviceable		P
	- luminaire not unsafe		P
	- no damage to track system		P
	- marking legible		P
	- no cracks, deformation etc.		P
1.12 (12.4)	Thermal test (normal operation)	(see Annex 2)	P
1.12 (12.5)	Thermal test (abnormal operation)	(see Annex 2)	N
1.12 (12.6)	Thermal test (failed lamp control gear condition):		N
1.12 (12.6.1)	Through wiring or looping-in wiring loaded by a current of (A)		—
	- case of abnormal conditions.....		—
	- electronic lamp control gear		N
	- measured winding temperature (°C): at 1,1 Un ...		—
	- measured mounting surface temperature (°C) at 1,1 Un		N
	- calculated mounting surface temperature (°C)		N
	- track- mounted luminaires		N
1.12 (12.6.2)	Temperature sensing control		N
	- case of abnormal conditions.....		—
	- thermal link		N
	- manual reset cut-out		N
	- auto reset cut-out		N
	- measured mounting surface temperature (°C)		N
	- track- mounted luminaires		N



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Clause	Requirement + Test	Result - Remark	Verdict
1.12 (12.7)	Thermal test (failed lamp control gear in plastic luminaires):		N
1.12 (12.7.1)	Luminaire without temperature sensing control		N
1.12 (12.7.1.1)	Luminaire with fluorescent lamp $\leq 70W$		N
	Test method 12.7.1.1 or Annex W		—
	Test according to 12.7.1.1:		N
	- case of abnormal conditions.....		—
	- Ballast failure at supply voltage (V)		—
	- Components retained in place after the test		N
	- Test with standard test finger after the test		N
	Test according to Annex W:		N
	- case of abnormal conditions.....		—
	- measured winding temperature ($^{\circ}C$): at 1,1 Un.....		—
	- measured temperature of fixing point/exposed part ($^{\circ}C$): at 1,1 Un.....		—
	- calculated temperature of fixing point/exposed part ($^{\circ}C$).....		—
	Ball-pressure test.....	See Test Table 1.15 (13.2.1)	N
1.12 (12.7.1.2)	Luminaire with discharge lamp, fluorescent lamp $> 70W$, transformer $> 10 VA$		N
	- case of abnormal conditions.....		—
	- measured winding temperature ($^{\circ}C$): at 1,1 Un.....		—
	- measured temperature of fixing point/exposed part ($^{\circ}C$): at 1,1 Un.....		—
	- calculated temperature of fixing point/exposed part ($^{\circ}C$).....		—
	Ball-pressure test.....	See Test Table 1.15 (13.2.1)	N
1.12 (12.7.1.3)	Luminaire with short circuit proof transformers $\leq 10 VA$		N
	- case of abnormal conditions.....		—
	- Components retained in place after the test		N
	- Test with standard test finger after the test		N
1.12 (12.7.2)	Luminaire with temperature sensing control		N
	- thermal link.....	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- manual reset cut-out.....	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- auto reset cut-out.....	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- case of abnormal conditions.....		—



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Clause	Requirement + Test	Result - Remark	Verdict
	- highest measured temperature of fixing point/ exposed part (°C):.....		—
	Ball-pressure test:.....	See Test Table 1.15 (13.2.1)	N

1.13 (9)	RESISTANCE TO DUST AND MOISTURE		P
1.13 (-)	If IP > IP 20 the order of tests as specified in clause 1.12		—
1.13 (9.2)	Tests for ingress of dust, solid objects and moisture:		P
	- classification according to IP.....	IP65	—
	- mounting position during test.....	Acc. to user manual	—
	- fixing screws tightened; torque (Nm).....	2/3 of torque value in 1.6 (4.12.1)	—
	- tests according to clauses.....	9.2.2 & 9.2.6	—
	- electric strength test afterwards		P
	a) no deposit in dust-proof luminaire		N
	b) no talcum in dust-tight luminaire		P
	c) no trace of water on current-carrying parts or on insulation where it could become a hazard		P
	c.1) For luminaires without drain holes – no water entry		P
	c.2) For luminaires with drain holes – no hazardous water entry		N
	d) no water in watertight or pressure watertight luminaire		N
	e) no contact with live parts (IP 2X)		N
	e) no entry into enclosure (IP 3X and IP 4X)		N
	e) no contact with live parts through drain holes and ventilation slots (IP3X and IP4X)		N
	f) no trace of water on part of lamp requiring protection from splashing water		N
	g) no damage of protective shield or glass envelope		N
1.13 (9.3)	Humidity test 48 h	25°C, 93%RH	P

1.14 (10)	INSULATION RESISTANCE AND ELECTRIC STRENGTH		P
1.14 (10.2.1)	Insulation resistance test		P
	Cable or cord covered by metal foil or replaced by a metal rod of mm Ø	--	—
	Insulation resistance (MΩ).....	--	—



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Clause	Requirement + Test	Result - Remark	Verdict
	SELV		P
	- between current-carrying parts of different polarity.....	--	N
	- between current-carrying parts and mounting surface.....	100MΩ	P
	- between current-carrying parts and metal parts of the luminaire.....	100MΩ	P
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts.....	--	N
	- Insulation bushings as described in Section 5	--	N
	Other than SELV		P
	- between live parts of different polarity.....	Approved LED driver	P
	- between live parts and mounting surface.....	100MΩ	P
	- between live parts and metal parts.....	100MΩ	P
	- between live parts of different polarity through action of a switch.....	--	N
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts.....	100MΩ	P
	- Insulation bushings as described in Section 5	100MΩ	P
1.14 (10.2.2)	Electric strength test		P
	Dummy lamp		N
	Luminaires with ignitors after 24 h test		N
	Luminaires with manual ignitors		N
	Test voltage (V).....	--	N
	SELV		P
	- between current-carrying parts of different polarity.....	--	N
	- between current-carrying parts and mounting surface.....	500V	P
	- between current-carrying parts and metal parts of the luminaire.....	500V	P
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts.....	--	N
	- Insulation bushings as described in Section 5	--	N
	Other than SELV		P
	- between live parts of different polarity.....	1480V	P



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Clause	Requirement + Test	Result - Remark	Verdict
	- between live parts and mounting surface.....	2960V (Class II construction)	P
	- between live parts and metal parts.....	2960V (Class II construction)	N
	- between live parts of different polarity through action of a switch.....	--	P
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts.....	1480V	P
	- Insulation bushings as described in Section 5	1480V	P
1.14 (10.3)	Touch current or protective conductor current (mA):	Touch current : Max. 0.012mA for Class II construction; Protective conductor current: Max. 0.026mA	P

1.15 (13)	RESISTANCE TO HEAT, FIRE AND TRACKING		P
1.15 (13.2.1)	Ball-pressure test.....	: See Test Table 1.15 (13.2.1)	P
1.15 (13.3.1)	Needle-flame test (10 s).....	: See Test Table 1.15 (13.3.1)	N
1.15 (13.3.2)	Glow- wire test (650°C).....	: See Test Table 1.15 (13.3.2)	P
1.15 (13.4)	Proof tracking test (IEC 60112).....	: See Test Table 1.15 (13.4)	P



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Clause	Requirement + Test				Result - Remark		Verdict
1.7 (11.2)	TABLE I: Creepage distances and clearances						P
	Minimum distances (mm) for a.c. up to 30 kHz sinusoidal voltages						P
	Applicable part of IEC 60598-1 Table 11.1.A*, 11.1.B* and 11.2*						P
	Insulation type **	Measured clearance	Required		Measured creepage	Required	
			clearance	*Table		creepage	*Table
Distance 1:	B	2.6	1.5	11.1B	2.6	2.5	11.1A
Working voltage (V)..... :					Max. 240Vac		—
PTI..... :					< 600 <input type="checkbox"/> ≥ 600 <input type="checkbox"/>		—
Pulse voltage or U_P if applicable (kV)					--		—
Supplementary information: live parts of different polarity							
Distance 2:	R	5.6	3.0	11.1B	5.6	5.0	11.1A
Working voltage (V)..... :					Max. 240Vac		—
PTI..... :					< 600 <input type="checkbox"/> ≥ 600 <input type="checkbox"/>		—
Pulse voltage or U_P if applicable (kV)					--		—
Supplementary information: live parts and mounting surface							
Distance 3:	R	5.6	3.0	11.1B	5.6	5.0	11.1A
Working voltage (V)..... :					Max. 240Vac		—
PTI..... :					< 600 <input type="checkbox"/> ≥ 600 <input type="checkbox"/>		—
Pulse voltage or U_P if applicable (kV)					--		—
Supplementary information: live parts and metal parts							
Distance 4:	B	2.6	1.5	11.1B	2.6	2.5	11.1A
Working voltage (V)..... :					Max. 240Vac		—
PTI..... :					< 600 <input type="checkbox"/> ≥ 600 <input type="checkbox"/>		—
Pulse voltage or U_P if applicable (kV)					--		—
Supplementary information: between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts							
Distance 5:	S	2.6	1.5	11.1B	2.6	2.5	11.1A
Working voltage (V)..... :					Max. 240Vac		—
PTI..... :					< 600 <input type="checkbox"/> ≥ 600 <input type="checkbox"/>		—
Pulse voltage or U_P if applicable (kV)					--		—
Supplementary information: Insulation bushings as described in Section 5							

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



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Clause	Requirement + Test	Result - Remark	Verdict

1.15 (13.2.1)	TABLE: Ball Pressure Test of Thermoplastics			P
Allowed impression diameter (mm): ≤2.0				—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)	
Lamp cover	See Annex 1	75	1.0	
Plastic enclosure	See Annex 1	85	1.4	
Supplementary information:				

1.15 (13.3.1)	TABLE: Needle-flame test (IEC 60695-11-5)				N
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
--	--	--	--	--	N
Supplementary information:					

1.15 (13.3.2)	TABLE: Glow-wire test (IEC 60695-2-11)				P
Glow wire temperature:		650°C			—
Object/ Part No./ Material	Manufacturer/ trademark		Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
Lamp cover	See Annex 1		No	0	P
Plastic enclosure	See Annex 1		No	0	P
Supplementary information:					

1.15 (13.4)	TABLE: Proof tracking test (IEC 60112)				P
Test voltage PTI		175 V			—
Object/ Part No./ Material	Manufacturer/ trademark	Withstand 50 drops without failure on three places or on three specimens			Verdict
Terminal block	See Annex 1	50	50	50	P
Supplementary information:					



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Clause	Requirement + Test			Result - Remark		Verdict
	Annex 1 components					P
object/part No.	Code	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity
Power supply cord	B	Guangdong Kai Hua Electric Appliance Co Ltd	H05VV-F	3 x 0.75 mm ²	AS/NZS 3191	NSW 18304
Terminal block	B	Heavy Power Co., Ltd.	PA10	450VAC; T110; 1-2.5mm ²	EN 60998-1 EN 60998-2-1	VDE 40019247
Earth wire	B	YANG TAI WIRE & CABLE CO LTD	1015	18AWG	--	UL E214859
Input & output wire of LED driver	B	Ningbo Haoguang Electric Appliance Co.,Ltd.	H05V-U	1x1.0mm ²	EN 50525-2-31	VDE 126062
For U-TRI-16W-A-MS, U-TRI-18W-A-MS, U-TRI-20W-A-MS						
LED driver	B	ShenZhen Angui Technology Co., Ltd	AGT-I752- 0450	Input:200-240VAC, 50/60Hz, 12-37W, 0.5A Max; Output:20-42Vdc, 0.45A, 12-37W Ta:40°C, tc:80°C	AS/NZS IEC 61347.2.13 AS/NZS 61347.1	TUV R AZ 69021522
Alternative (for UL-TRI- 24W,)	D	AJLY Australia trade as E&E PTY LTD	LF- GIR030YN06 00H	Input: 220-240VAC, 50/60Hz, 0.25A Output: 25-42Vdc, 500-750mA, Max. output voltage: 55Vdc ta: 50°C, tc: 85°C	AS/NZS IEC 61347.2.13	GMA- 500688-EA
For U-TRI-26W-A-MS, U-TRI-28W-A-MS						
LED driver	B	AJLY Australia trade as E&E PTY LTD	LF- GIR030YN07 00H	Input: 220-240VAC, 50/60Hz, 0.25A Output: 25-42Vdc, 500-750mA, Max. output voltage: 55Vdc ta: 50°C, tc: 85°C	AS/NZS IEC 61347.2.13	GMA- 500688-EA
For UL-TRI-30W-A-MS, UL-TRI-32W-A-MS						
LED driver	B	AJLY Australia trade as E&E PTY LTD	LF- GIR030YN07 50H	Input: 220-240VAC, 50/60Hz, 0.25A Output: 25-42Vdc, 500-750mA, Max. output voltage: 55Vdc ta: 50°C, tc: 85°C	AS/NZS IEC 61347.2.13	GMA- 500688-EA
For UL-TRI-40W-A-MS, UL-TRI-42W-A-MS, UL-TRI-36W-A-MS, UL-TRI-38W-A-MS, UL-TRI-44W-A-MS						



IEC 60598-2-1						
Clause	Requirement + Test			Result - Remark		Verdict
LED driver	B	ShenZhen Angui Technology Co., Ltd	AGT-I756-1000	Input:200-240VAC, 50/60Hz, 29-50W, 0.8A Max; Output:20-42Vdc, 1.0A, 27-48W Ta:40°C, tc:80°C	AS/NZS IEC 61347.2.13 AS/NZS 61347.1	TUV R AZ 69021522
Alternative	D	AJLY Australia trade as E&E PTY LTD	LF-GIR040YM1000H	Input: 220-240VAC, 50/60Hz, 0.3A Output: 25-42Vdc, 800-1000mA, Max. output voltage: 55Vdc ta: 50°C, tc: 85°C	AS/NZS IEC 61347.2.13	GMA-500831-EA
for U-TRI-46W-A-MS, U-TRI-48W-A-MS						
LED driver	B	ShenZhen Angui Technology Co., Ltd	AGT-I731-1100	Input:200-240VAC, 50/60Hz, 18-55W, 0.8A Max; Output:20-42Vdc, 1.1A, 12.6-50.4W Ta:40°C, tc:85°C	AS/NZS IEC 61347.2.13 AS/NZS 61347.1	TUV R AZ 69020602
Alternative	D	AJLY Australia trade as E&E PTY LTD	LF-GIR050YM1200H	Input: 220-240VAC, 50/60Hz, 0.4A Output: 25-42Vdc, 1000-130mA, Max. output voltage: 55Vdcta: 50°C, tc: 90°C	AS/NZS IEC 61347.2.13	GMA-500831-EA
Alternative	D	ShenZhen Angui Technology Co., Ltd	AGT-I731-1150	Input:200-240VAC, 50/60Hz, 18-55W, 0.8A Max; Output:20-42Vdc, 1.15A, 12.6-50.4W Ta:40°C, tc:85°C	AS/NZS IEC 61347.2.13 AS/NZS 61347.1	TUV R AZ 69020602
For U-TRI-50W-A-MS						
LED driver	B	ShenZhen Angui Technology Co., Ltd	AGT-I731-1200	Input:200-240VAC, 50/60Hz, 18-55W, 0.8A Max; Output:20-42Vdc, 1.2A, 12.6-50.4W Ta:40°C, tc:80°C	AS/NZS IEC 61347.2.13 AS/NZS 61347.1	TUV R AZ 69020602
Alternative	D	AJLY Australia trade as E&E PTY LTD	LF-GIR050YM1200H	Input: 220-240VAC, 50/60Hz, 0.4A Output: 25-42Vdc, 1000-1300mA, Max. output voltage: 55Vdc, ta: 50°C, tc: 90°C	AS/NZS IEC 61347.2.13	GMA-500831-EA



IEC 60598-2-1						
Clause	Requirement + Test			Result - Remark		Verdict
LED driver for UL-TRI-52WA-MS	B	AJLY Australia trade as E&E PTY LTD	LF-GIR060YM13 00H	Input: 220-240VAC, 50/60Hz, 0.5A Output: 25-42Vdc, 1200-1500mA, Max. output voltage: 55Vdcta: 50°C, tc: 90°C	AS/NZS 61347.2.13	GMA-500831-EA
LED driver for UL-TRI-55WA-MS, UL-TRI-58WA-MS, UL-TRI-60WA-MS	B	AJLY Australia trade as E&E PTY LTD	LF-GIR060YM15 00H	Input: 220-240VAC, 50/60Hz, 0.5A Output: 25-42Vdc, 1200-1500mA, Max. output voltage: 55Vdc, ta: 50°C, tc: 90°C	AS/NZS 61347.2.13	GMA-500831-EA
Lamp cover	B	COVESTRO DEUTSCHLAND AG [PC RESINS]	--	PC	--	Tested with appliance
Plastic enclosure	B	BAIFU PLASTICS TECHNOLOGY (DONGGUAN) CO LTD	--	ABS	--	Tested with appliance
LED board	B	POLYTRONICS TECHNOLOGY CORP	TCB-2AL	Al	--	Tested with appliance
LED	B	LG Innotek	LEMWS59R8 0JZ3B00	VF=2.7-3V; IF=200mA; 4000K	IEC 62471	Tested with appliance

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 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 2	TABLE: Thermal tests of Section 12		P
	Type reference.....	U-TRI-60W-A-MS	—
	Lamp used.....	LED	—
	Lamp control gear used.....	LF-GIR060YM1500H	—
	Mounting position of luminaire.....	In the most unfavourable position of normal use (Mounting acc. to user manual)	—
	Supply wattage (W).....	--	—
	Supply current (A).....	--	—
	Temperatures in test 1 - 4 below are corrected for t_a (°C)	25 °C:	—
	- abnormal operating mode.....	--	—
1.12 (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	1.06 times rated voltage	—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage.....	--	—
	Through wiring or looping-in wiring loaded by a current of A during the test	--	—
1.12 (12.5)	- test 4: 1,1 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current.....	--	—

Temperature measurements (°C)

Part	Ambient	Cl. 12.4 – normal				Cl. 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
Power cord (pressed)	25.0	--	29.6	--	75	--	--
Terminal block	25.0	--	42.4	--	110	--	--
T_c of LED driver	25.0	--	88.2	--	90	--	--
Input wire of LED driver	25.0	--	63.0	--	90	--	--
Output wire of LED driver	25.0	--	70.4	--	90	--	--
LED board	25.0	--	58.2	--	Ref.	--	--



IEC 60598-2-1							
Clause	Requirement + Test				Result - Remark		Verdict
Lead wire to LED	25.0	--	53.0	--	90	--	--
Lamp cover	25.0	--	42.0	--	Cl.13	--	--
Plastic enclosure	25.0	--	59.7	--	Cl.13	--	--
Mounting surface	25.0	--	49.4	--	90	--	--
Illuminated surface (0.1m)	25.0	--	29.8	--	90	--	--
Supplementary information:							

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IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
ANNEX 3	Screw terminals (part of the luminaire)		N
(14)	SCREW TERMINALS		N
(14.2)	Type of terminal.....		—
	Rated current (A).....		—
(14.3.2.1)	One or more conductors		N
(14.3.2.2)	Special preparation		N
(14.3.2.3)	Terminal size		N
	Cross-sectional area (mm ²).....		—
(14.3.3)	Conductor space (mm).....		N
(14.4)	Mechanical tests		N
(14.4.1)	Minimum distance		N
(14.4.2)	Cannot slip out		N
(14.4.3)	Special preparation		N
(14.4.4)	Nominal diameter of thread (metric ISO thread).....	M	N
	External wiring		N
	No soft metal		N
(14.4.5)	Corrosion		N
(14.4.6)	Nominal diameter of thread (mm).....		N
	Torque (Nm).....		N
(14.4.7)	Between metal surfaces		N
	Lug terminal		N
	Mantle terminal		N
	Pull test; pull (N).....		N
(14.4.8)	Without undue damage		N



IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
ANNEX 4	Screwless terminals (part of the luminaire)		N
(15)	SCREWLESS TERMINALS		N
(15.2)	Type of terminal.....		—
	Rated current (A).....		—
(15.3.1)	Material		N
(15.3.2)	Clamping		N
(15.3.3)	Stop		N
(15.3.4)	Unprepared conductors		N
(15.3.5)	Pressure on insulating material		N
(15.3.6)	Clear connection method		N
(15.3.7)	Clamping independently		N
(15.3.8)	Fixed in position		N
(15.3.10)	Conductor size		N
	Type of conductor		N
(15.5)	Terminals and connections for internal wiring		N
(15.5.1)	Mechanical tests		N
(15.5.1.1.1)	Pull test spring-type terminals (4 N, 4 samples).....		N
(15.5.1.1.2)	Pull test pin or tab terminals (4 N, 4 samples).....		N
	Insertion force not exceeding 50 N		N
(15.5.1.2)	Permanent connections: pull-off test (20 N)		N
(15.5.2)	Electrical tests		N
	Voltage drop (mV) after 1 h (4 samples).....		N
	Voltage drop of two inseparable joints		N
	Number of cycles:		—
	Voltage drop (mV) after 10th alt. 25th cycle (4 samples).....		N
	Voltage drop (mV) after 50th alt. 100th cycle (4 samples).....		N
	After ageing, voltage drop (mV) after 10th alt. 25th cycle (4 samples).....		N
	After ageing, voltage drop (mV) after 50th alt. 100th cycle (4 samples).....		N
(15.6)	Terminals and connections for external wiring		N
(15.6.1)	Conductors		N
	Terminal size and rating		N
15.6.2	Mechanical tests		N



IEC 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
(15.6.2.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N)		N
(15.6.2.2)	Pull test pin or tab terminals (4 samples); pull (N)		N
(15.6.3)	Electrical tests		N
	Tests according 15.6.3.1 + 15.6.3.2 in IEC 60598-1		N


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



Australia deviation			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 5	Australia deviation (AS/NZS 60598.2.1 and AS/NZS 60598.1)	P
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	APPENDIX ZZ		P
0.1	Add: Where the term “lamp” is used in this Standard, it is taken to include electric light sources. LED light sources are subject to the same test parameters as “other discharge lamps”.		P
0.4.2	Add: In Australia, for equipment, other than class III equipment, that is intended for connection to the supply mains and not marked with: — a rated voltage of at least 240 V for single-phase equipment or a rated voltage of at least 415 V for three-phase equipment; or — a rated voltage range that includes 240 V for single-phase equipment and 415 V for three-phase equipment, the rated voltage is equal to 240 V for single-phase equipment and 415 V for three-phase equipment, and the upper limit of the voltage range is equal to 240 V for single-phase equipment and 415 V for three-phase equipment.	220-240 VAC	P
0.5	Add: Relevant Australian/New Zealand Standard replaces the IEC Standard unless otherwise specified.		P
0.5.2A	Add: Capacitors shall comply with Clause 4.2A.		N

3	Marking		P
Table 3.1	Move Item 3.2.21 from the centre column to the right hand column.		P
3.2.12	Add: In Australia, luminaires for household use and similar with supply cords which are not fitted with a plug shall be marked with a cord tag with the symbol for “must be installed by a licensed electrician”.	 <small>FIGURE ZZ1 MUST BE INSTALLED BY A LICENSED ELECTRICIAN</small>	P
3.3	Add: In Australia and New Zealand, instructions and other texts required by this Standard shall be written in English.		P



Australia deviation			
Clause	Requirement + Test	Result - Remark	Verdict
3.3.7	Replace by: Luminares for use with metal halide lamps shall be provided with instructions that state the substance of the following: To avoid potential unsafe lamp failure, the luminaire shall be switched off for at least 30 minutes at least once a week. In addition, the luminaire shall be operated: — complete with its protective shield; or — with a double jacketed lamp.		N
3.3.10	Deleted		--
3.3.21	Add: The instructions shall contain details related to components in the luminaire that require replacement as part of a maintenance program.		N

4	CONSTRUCTION		N
4.8	Add: Switches that indicate an off position shall have contacts with an air break and comply with AS/NZS 3133 or AS/NZS 61058.1.		N
4.2A	Add: Capacitors shall be of a type to ensure that any capacitor failure results in a failsafe outcome. Capacitors shall be not less than Type B capacitors with metal body and break action protection in accordance with IEC 61048 and IEC 61049. A capacitor complying with ANCI/EIA-456-A shall comply with IEC 61049 and IEC 61048:2006 excluding the endurance test of 18.1.1. Note: Capacitors likely to be permanently subjected to the supply voltage, and used for radio interference suppression or for voltage dividing, shall comply with IEC 60384-14.		N



Australia deviation									
Clause	Requirement + Test	Result - Remark	Verdict						
5	EXTERNAL AND INTERNAL WIRING		P						
5.2.1	<p>First paragraph replaced by:</p> <p>Luminaires shall be provided with only one of the following means of connection and isolation to the supply.</p> <p>Fixed luminaires:</p> <ul style="list-style-type: none">— device for the connection of luminaires;— terminals; plug for engagement with socket-outlets;— connecting lead (tails);— supply cord and plug;— adapter for engagement with supply tracks;— appliance inlet;— installation coupler;— luminaire coupler; <p>Portable luminaires:</p> <ul style="list-style-type: none">— supply cord with plug;— appliance inlet. <p>Track-mounted luminaires:</p> <ul style="list-style-type: none">— adaptor;— connector. <p>Delete the second and third paragraph.</p> <p>In Australia, non-portable luminaires with a supply cord shall be fitted with a plug complying with AS/NZS 3112 or a coupler complying with its standard, except where the luminaire has markings and instructions that comply with Clause 3.2.12, in which case, a plug or coupler is not required. However, for other than portable luminaires a plug is not required if the luminaire has markings and instructions in accordance with Clause 3.2.12.</p> <p>The plug portion of a luminaire with integral pins shall comply with the relevant requirements of AS/NZS 3112.</p>		P						
5.2.2	<p>First paragraph replaced by:</p> <p>Supply cords used as a means of connection to the supply, when supplied by the luminaire manufacturer, shall be at least equal in their mechanical and electrical properties to those specified in IEC 60227 and IEC 60245, as indicated in Table 5.1, or AS/NZS 3191, and shall be capable of withstanding, without deterioration, the highest temperature to which they may be exposed under normal conditions of use.</p> <p>Table 5.1, delete rows 4 and 5 and replaced by:</p> <table><tr><td>Luminaires which are other than ordinary Portable rough service luminaires</td><td>60245 IEC 57</td><td>60227 IEC 53</td></tr><tr><td>Portable rough service luminaires</td><td>60245 IEC 66</td><td>PVC insulated and sheathed heavy duty flexible cord</td></tr></table>	Luminaires which are other than ordinary Portable rough service luminaires	60245 IEC 57	60227 IEC 53	Portable rough service luminaires	60245 IEC 66	PVC insulated and sheathed heavy duty flexible cord		P
Luminaires which are other than ordinary Portable rough service luminaires	60245 IEC 57	60227 IEC 53							
Portable rough service luminaires	60245 IEC 66	PVC insulated and sheathed heavy duty flexible cord							



Australia deviation			
Clause	Requirement + Test	Result - Remark	Verdict
	Delete the third paragraph and replaced by: To provide adequate mechanical strength, the nominal cross-sectional area of the conductors shall be not less than: — 0,75 mm ² ; — 1,0 mm ² for portable rough service luminaires.		
5.2.16	Add: Class II luminaires for fixed wiring incorporating an appliance coupler shall not have means to allow further luminaires to be connected, including looping in by cascading. Luminaire couplers incorporated with the luminaire shall comply with IEC 61995-1.		N
5.2.18	Replaced by: All portable luminaires with a flexible supply cord shall be fitted with a plug complying with AS/NZS 3112. Other luminaires with flexible cords shall be fitted with a plug complying with AS/NZS 3112, unless they have the warning allowed by Clause 3.2.12.		N
5.2.19	Add: Installation couplers incorporated within luminaires shall comply with the requirements of AS/NZS 61535. Luminaires incorporating installation couplers may have means to allow further luminaires to be connected by cascading provided the through wiring is rated for the current rating of the installation coupler.		N
5.3.1	Delete the third paragraph and replace with the following: Internal wires coloured green, yellow or green/yellow combination shall be used for making protective earth connections only. Functional earth connections shall not be made by wires coloured green, yellow or green/yellow combination. Add: NOTE 3 Internal wires of other colours are not precluded from making protective earthing connections		P

7	PROVISION FOR EARTHING		P
7.2.11	Delete the third paragraph and replace with the following: All conductors, whether internal or external, coloured green, yellow or green/yellow combination, shall only be connected to an earthing terminal.		P



Australia deviation			
Clause	Requirement + Test	Result - Remark	Verdict

8	PROTECTION AGAINST ELECTRIC SHOCK		P
8.2.1	<p>Luminaires shall be so constructed that their live parts and basic insulation are not accessible when the luminaire has been installed and wired as in normal use. Live parts shall not be accessible when the luminaire is opened as necessary for replacing lamps, replaceable light sources or (replaceable) starters, even if the operation cannot be achieved by hand.</p> <p>NOTE Examples of parts with basic insulation are cables intended for internal wiring, controlgear for building-in etc.</p> <p>This does not apply to the non-current -carrying parts of caps which comply with the relevant IEC safety standard.</p> <p>Where a protective cover is used over a non-user-replaceable light source to provide protection against electric shock, and the cover is marked with the "caution, electric shock risk" symbol in accordance with IEC 60417-6042, the cover shall be left in place during the tests and inspections detailed by Section 8 of this Standard. The cover shall be held securely in position by fixings requiring the use of a tool for their removal, and at least two independent fixings shall be used.</p>		P

12	ENDURANCE TEST AND THERMAL TEST		N
12.4.1	Note: Luminaire manufacturers are advised to consider maximum ambient air temperature of a component such as starting device, electronic ballast or converter etc.		N

13	RESISTANCE TO HEAT, FIRE AND TRACKING		P
13.3.1	Parts of non-metallic material supporting connections shall withstand the test glow-wire at 750 °C:		P
	- part tested.....:	Terminal block	P
13.3.2	All other parts of non-metallic material shall withstand the glow-wire test at 650 °C:		P
	- part tested.....:	Lamp cover, Plastic enclosure	P
13.3.3	During the application of the glow-wire tests of sub clauses 13.3.1, if a flame is produced that persists for longer than 2 s, the luminaire is further applied to needle-flame test of AS/NZS 60695.11.5.	No flame produced	N



Australia deviation			
Clause	Requirement + Test	Result - Remark	Verdict
13.3.4	PCBs in luminaires shall be subject to the needle-flame test of AS/NZS 60695.11.5. The needle flame shall be applied for 30 seconds to an edge of the PCB at least 10 mm from a corner. The needle-flame test is not carried out on PCBs made of material that is V-0 rated according to AS/NZS 60695.11.10.		N

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Australian deviation			
Clause	Requirement + Test	Result - Remark	Verdict
ANNEX 6	Variations to AS/NZS 60598.2.1:1998 for application in Australia and/or New Zealand (AS/NZS 60598.2.1:2014+A1:2016)		P
1	SCOPE		P
	This Standard specifies requirements for fixed general purpose luminaires incorporating electric light sources for operation on supply voltages not exceeding 1000 V. It is to be read in conjunction with those sections of AS/NZS 60598.1 to which reference is made. This Standard also specifies requirements for double-capped LED lamps (Appendix A). Appendix A is to be read in conjunction with those sections of AS/NZS 60598.1 to which reference is made.	Fixed lamp	P
6	MARKING		N
	LED luminaires with G5 or G13 lampholders shall be marked with the following warning: WARNING: NOT FOR USE WITH ANY FLUORESCENT LAMP—FOR USE ONLY WITH TYPE X LED LAMPS		N
	The warning label shall be durable and the font size shall be a minimum of 5 mm for letters and numbers and 5 mm for symbols and shall be visible during lamp replacement		N
	NOTE: Manufacturers should specify minimum requirements for the operations of their lamps, including spacing, enclosure design and temperature limitations.		N
7	CONSTRUCTION		N
	LED luminaires with G5 and G13 lampholders shall include a fuse to protect a fluorescent lamp that is inadvertently installed:		N
	Each fuse shall—		N
	a) be of the 250 V HRC type		N
	b) have a 2 A max. quick-acting type rating; and		N
	c) be used to protect a maximum of two lamps.		N
13	ENDURANCE TESTS AND THERMAL TESTS		P
	Luminaires with an IP classification greater than IP20 shall be subjected to the relevant tests of Clauses 12.4, 12.5 and 12.6 of Section 12 of AS/NZS 60598.1 after the test(s) of Clause 9.2 but before the test(s) of Clause 9.3 of Section 9 of AS/NZS 60598.1 specified in Clause 14 of this Standard.		P
14	RESISTANCE TO DUST AND MOISTURE		P



Australian deviation			
Clause	Requirement + Test	Result - Remark	Verdict
	For luminaires with an IP classification greater than IP20 the order of the tests specified in Section 9 of AS/NZS 60598.1 shall be as specified in Clause 13 of this Standard.		P
APPENDIX A	SAFETY REQUIREMENTS FOR DOUBLE-CAPPED LED LAMPS		N
	The requirement is not applicable due to the nature of the product.		—
APPENDIX B	SAFETY REQUIREMENTS FOR T8 TO T5 LAMP CONVERTERS		N
	The requirement is not applicable due to the nature of the product.		—

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IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict
ANNEX 7	LED modules for general lighting – Safety specifications IEC 62031:2008+A1:2012+A2:2014		P
4	GENERAL REQUIREMENTS		P
4.4	Integral modules treated as part of luminaires defined in clause 0.5 of IEC 60598-1		P
4.5	Independent modules complies with requirements in IEC 60598-1		N
5	GENERAL TEST REQUIREMENTS		—
5.5	SELV-operated LED modules comply with Annex I of IEC 61347-2-13	(see Annex 1)	N
	General conditions for tests in Annex A	(see Annex A)	N
6	CLASSIFICATION		—
	Built-in module	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	Independent module.....	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	Integral module	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	For Integral module; Note to 1.2.1 in IEC 60598-1 applies.		—
7	MARKING		N
	Requirements not applicable to the evaluated product.		—
8	TERMINALS		N
	Screw terminals according section 14 of IEC 60598-1:		N
	Separately approved; component list	(see Annex 2)	N
	Part of the luminaire	(see Annex 3)	N
	Screwless terminals according section 15 of IEC 60598-1:		N
	Separately approved; component list	(see Annex 2)	N
	Part of the luminaire	(see Annex 4)	N
	Connectors according IEC 60838-2-2:		N
	Separately approved; component list	(see Annex 2)	N
9 (9)	PROVISION FOR PROTECTIVE EARTHING		N
	Requirements not applicable to the evaluated product.		—



IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict

10 (10)	PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS		N
	Requirements not applicable to the evaluated product.		—

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 (MΩ):		P
	For basic insulation $\geq 2 \text{ M}\Omega$	100MΩ	P
	For double or reinforced insulation $\geq 4 \text{ M}\Omega$		N
	Between primary and secondary circuits in controlgear providing SELV, values in Annex L in IEC 61347-1		N

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
	Working voltage $\leq 50 \text{ V}$, test voltage 500 V		N
	Working voltage $> 50 \text{ V} \leq 1000 \text{ V}$, test voltage (V):		N
	Basic insulation, $2U + 1000 \text{ V}$		N
	Supplementary insulation, $2U + 1000 \text{ V}$		N
	Double or reinforced insulation, $4U + 2000 \text{ V}$		N
	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

13 (14)	FAULT CONDITIONS		P
- (14)	When operated under fault conditions the controlgear:		N
	- does not emit flames or molten material		N
	- does not produce flammable gases		N
	- protection against accidental contact not impaired		N
	Thermally protected controlgear does not exceed the marked temperature value		N
	Fault conditions: capacitors, resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected	(see appended table)	N



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Clause	Requirement + Test	Result - Remark	Verdict
- (14.1)	Short-circuit of creepage distances and clearances if less than specified in clause 16 in Part 1 (except between live parts and accessible metal parts)	(see appended table)	N
	Creepage distances on printed boards less than specified in clause 16 in Part 1 provided with coating according to IEC 60664-3		N
- (14.2)	Short-circuit or interruption of semiconductor devices	LED	P
- (14.3)	Short-circuit across insulation consisting of lacquer, enamel or textile	(see appended table)	N
- (14.4)	Short-circuit across electrolytic capacitors	(see appended table)	N
- (14.5)	After the tests has been carried out on three samples:		N
	The insulation resistance $\geq 1 \text{ M}\Omega$	--	N
	No flammable gases		N
	No accessible parts have become live		N
	During the tests, a five-layer tissue paper, where the test specimen is wrapped, does not ignite		N
- (14.6)	Relevant fault condition tests with high-power supply		—
13.2	Module withstands overpower condition >15 min.		P
	Module with automatic protective device or power limiter, test performed 15 min. at limit.		N
	During the tests, tissue paper, spread below module, does not ignite		P

15	CONSTRUCTION	P
	Wood, cotton, silk, paper and similar fibrous material not used as insulation	P

16	CREEPAGE DISTANCES AND CLEARANCES	P
	Creepage and distances and clearances in compliance with IEC 60598-1	P

17 (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

18 (18)	RESISTANCE TO HEAT, FIRE AND TRACKING	N
	Resistance to Heat, Fire and Tracking in compliance with IEC 61347-1 (clause numbers between parentheses refer to IEC 61347-1)	N
(18.1)	Ball-pressure test:	N



IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict
	- part tested; temperature (°C)..... :	--	N
(18.2)	Test of printed boards		N
	- part tested..... :	--	N
(18.3)	Glow-wire test (650°C):		N
	- part tested..... :	--	N
(18.4)	Needle flame test (10 s):		N
	- part tested..... :	--	N
(18.5)	Tracking test:		N
	- part tested..... :	--	N

19 (19)	RESISTANCE TO CORROSION		N
	Rust protection:		N
	- test according 4.18.1 of IEC 60598-1		N
	- adequate varnish on the outer surface		N

20	INFORMATION FOR LUMINAIRE DESIGN		N
	Information in Annex D		—

21	HEAT MANAGEMENT		N
21.1	General		N
	Exchangeability is safeguarded by cap or base		N
21.2	Heat-conducting foil and paste		N
	Heat-conducting foil delivered with the module if necessary		N
21.4	Construction		N
	Electrical connection and mechanical holding are separate		N

22	Photobiological safety		P
22.1	UV radiation		N
22.2	Blue light hazard		P
	RG at 200 mm according to IEC/TR 62778	RG0 unlimited	P
22.3	Infrared radiation		N



IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict
A	ANNEX A - TESTS		P
	All tests performed in accordance with the advice given in Annex H of IEC 61347-1, if applicable		P
	ANNEX 1 - SELV-operated LED modules		N
	SELV-operated LED modules in compliance with Annex I of IEC 61347-2-13		N

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IEC 62471			
Clause	Requirement + Test	Result - Remark	Verdict

Annex 8	Photobiological safety	P
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Emission limits for risk groups of continuous wave lamps $\alpha=0.1\text{rad}$	P
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Risk	Action spectrum	Symbol	Units	Emission Measurement					
				Exempt		Low risk		Mod risk	
				Limit	Result	Limit	Result	Limit	Result
Actinic UV	$S_{UV}(\lambda)$	E_s	$\text{W}\cdot\text{m}^{-2}$	0.001	2.4e-04	0.003	--	0.03	--
Near UV		E_{UVA}	$\text{W}\cdot\text{m}^{-2}$	10	0.0e+00	33	--	100	--
Blue light	$B(\lambda)$	L_B	$\text{W}\cdot\text{m}^{-2}\cdot\text{sr}^{-1}$	100	2.3e+01	10000	--	4000000	--
Blue light, small source	$B(\lambda)$	E_B	$\text{W}\cdot\text{m}^{-2}$	1.0*	--	1,0	--	400	--
Retinal thermal	$R(\lambda)$	L_R	$\text{W}\cdot\text{m}^{-2}\cdot\text{sr}^{-1}$	$28000/\alpha$	6.5e+00	$28000/\alpha$	--	$71000/\alpha$	--
Retinal thermal, weak visual stimulus**	$R(\lambda)$	L_{IR}	$\text{W}\cdot\text{m}^{-2}\cdot\text{sr}^{-1}$	$6000/\alpha$	--	$6000/\alpha$	--	$6000/\alpha$	--
IR radiation, eye		E_{IR}	$\text{W}\cdot\text{m}^{-2}$	100	0.0e+00	570	--	3200	--

* 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

Assessment:

Lamp classification group..... exempt ☒ risk 1 ☐ risk 2 ☐ risk 3 ☐

===== End of Report =====



Photo Documentation

Model: U-TRI-60W-A-MS



Photo 1



Photo 2



Photo Documentation

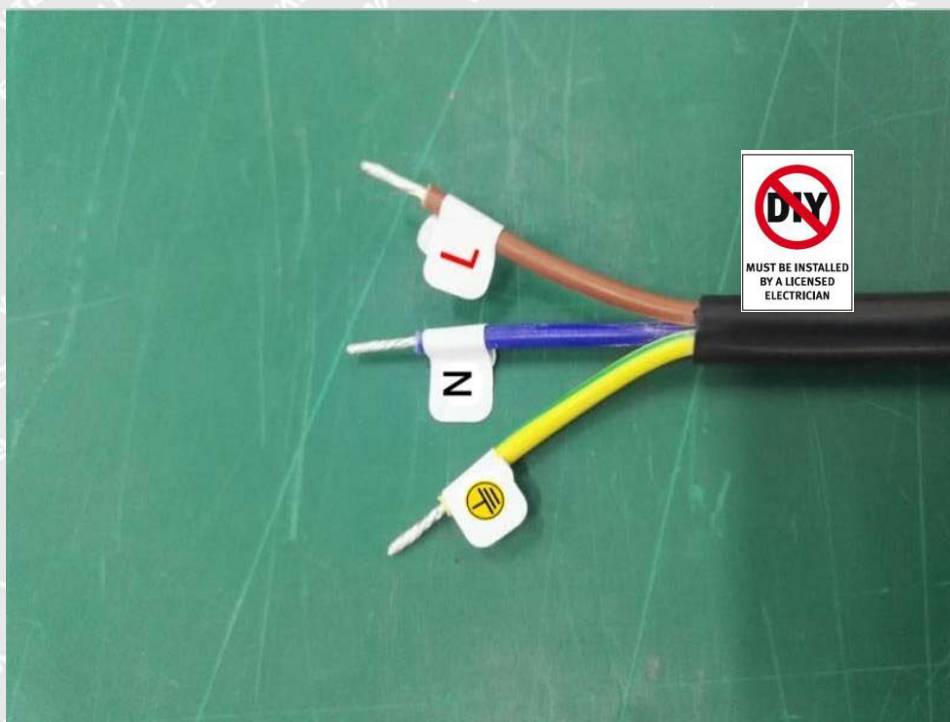


Photo 3



Photo 4



Photo Documentation



Photo 5

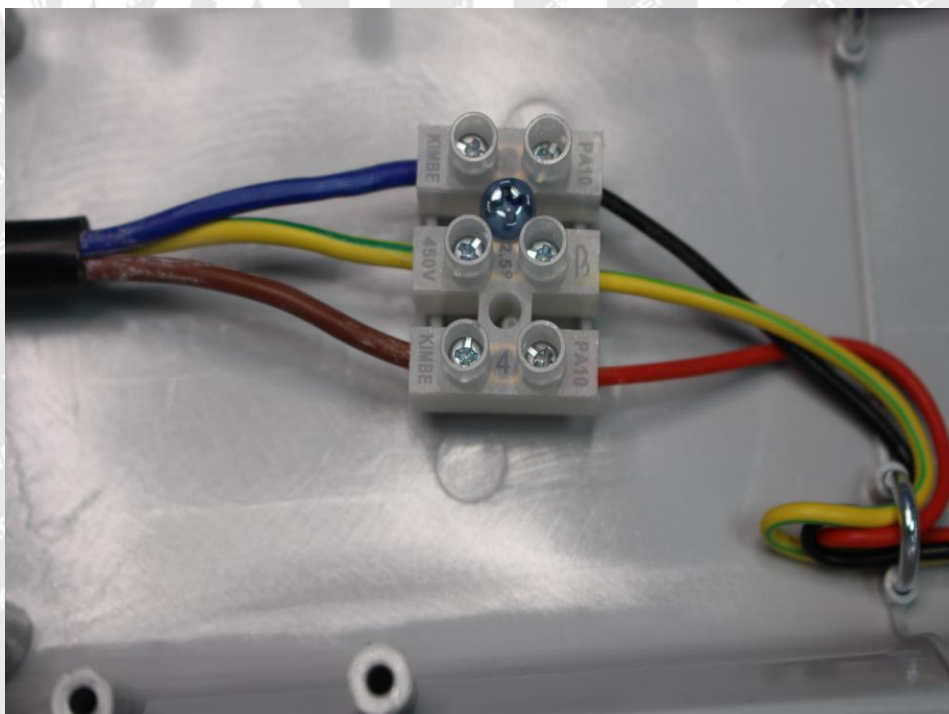


Photo 6



Photo Documentation

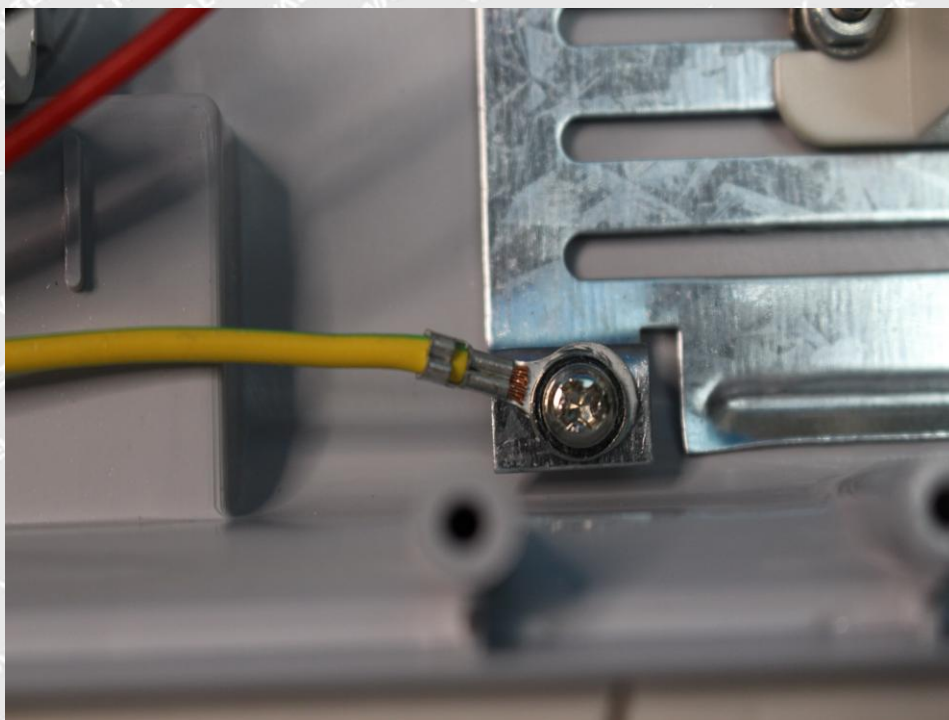


Photo 7 (have tooth washer and spring washer)



Photo 8



Photo Documentation

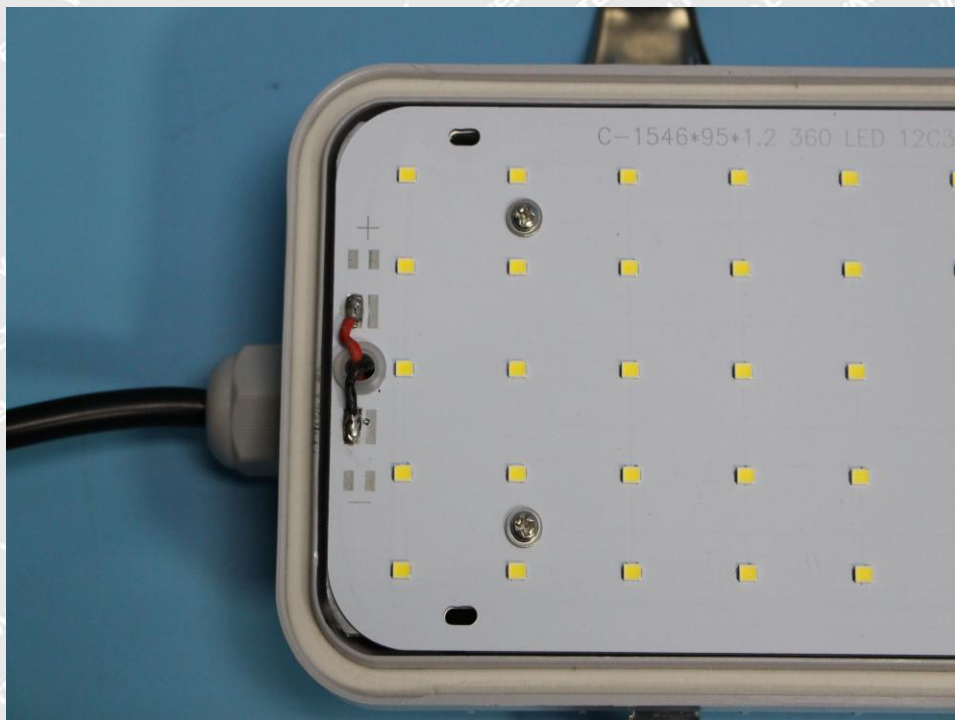


Photo 9(the welding spot was fixed by glue)

Model: U-TRI-50W-B-MS

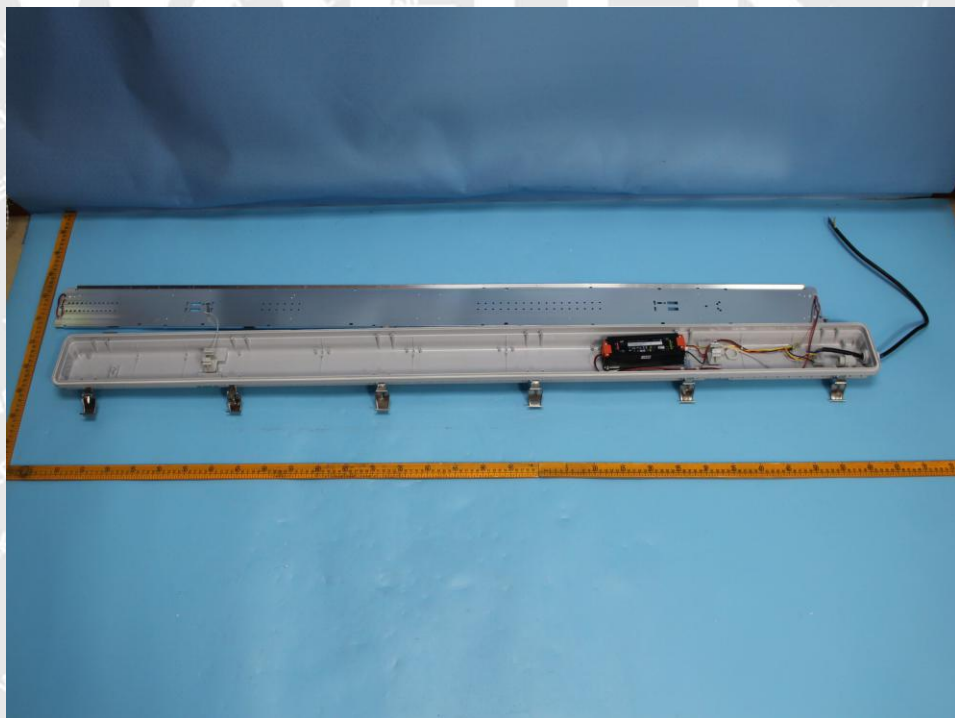


Photo 10



Photo Documentation



Photo 11

===== End of Photo =====

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