中国认可
国际互认
检测
TESTING
CNAS L6478

TEST REPORT

Reference No......	:	WTZ20F08056713L
Applicant.....	:	EMPIRE OF LIGHT PTY.LTD
Address.....	:	8 ROWANY CLOSE, BONNYRIGG, NSW, 2177, AUSTRALIA
Manufacturer	:	The same as above
Address.....	:	The same as above
Product Name.....	:	Panel light
Model No.....	:	See model list on page 3
Standards.....	:	Luminaires Part 2-2: Recessed luminaires IEC 60598-2-2:2011 IEC 60598-1:2014+A1:2017 used in conjunction with Australian deviation
Date of Receipt sample.....	:	2020-08-21
Date of Test.....	:	2020-08-22 to 2020-10-09
Date of Issue.....	:	2020-11-12
Test Report Form No......	:	WSL-6059822A-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.

Prepared By:

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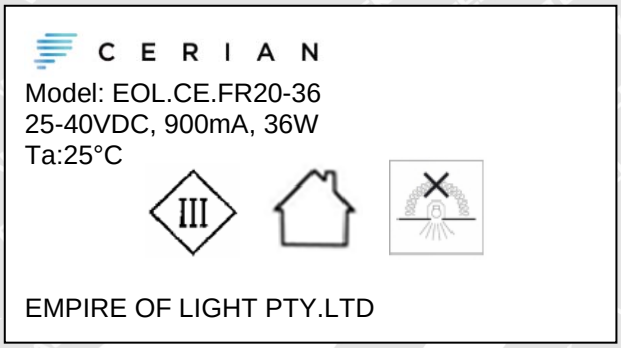
WALTEK TESTING GROUP CO.,LTD (02) TEST REPORT

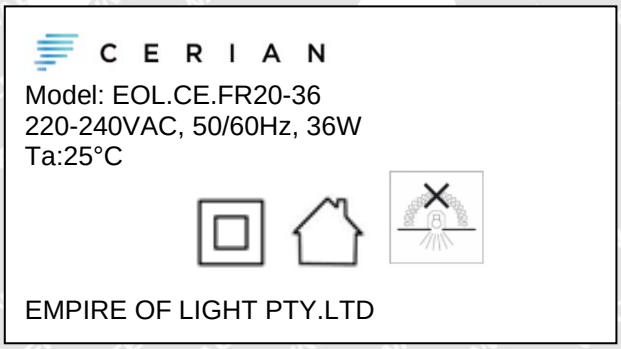
Oren Yang / Manager

Test item description.....:	Panel light
Trade Mark.....:	CERIAN
Model/Type reference.....:	See model list on page 3
Ratings.....:	See model list on page 3

Copy of marking plate:



On the luminaries surface



On the luminaire packing(with LED driver)

Remark:
The marking labels for other models are identical as above, except the model name and some parameters.

Summary of testing:

1. Unless otherwise specified, the model EOL.CE.FR20-36 was chosen as representative model to perform all tests; 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 60598-2-2:2011 and AS/NZS 60598.2.2:2016+A1:2017 were considered and found to comply with the requirement.
3. Switch was tested with appliance for 10000 cycles operating test according to AS/NZS 61058.1:2008 and found to comply with the requirement.
4. Integral LED module was assessed according to IEC 62031:2018 and found to comply with the requirement.
5. Photobiological safety was assessed according to IEC 62471:2006, classification group: exempt☒ risk 1☐ risk 2☐ risk 3☐.
6. Only the most unfavorable results are recorded in this report.

Test items particulars:

Classification of installation and use……: Recessed mounting

Supply Connection……: Power cord

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. These products are Class III recessed LED luminaires.
2. All models are with the similar construction except rated power and colour.
3. 25-40VDC ,Class III,IP20; for other detail see model list on below:

Model list

Item	Model	Rated current (mA)	Rated power (W)	LED driver
1	EOL.CE.FR20-9	210	9W	LF-GIF015YA0210H
2	EOL.CE.FR20-12	300	12W	LF-GIF015YA0300H
3	EOL.CE.FR20-18	450	18W	LF-GIF022YA0450H
4	EOL.CE.FR20-24	600	24W	LF-GIF030YA(H)0600H
5	EOL.CE.FR20-36	900	36W	LF-GIF040YA(H)0900H
6	EOL.CE.FS20-9	210	9W	LF-GIF015YA0210H
7	EOL.CE.FS20-12	300	12W	LF-GIF015YA0300H
8	EOL.CE.FS20-18	450	18W	LF-GIF022YA0450H
9	EOL.CE.FS20-24	600	24W	LF-GIF030YA(H)0600H
10	EOL.CE.FS20-36	900	36W	LF-GIF040YA(H)0900H

IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
2.3 (0)	**GENERAL TEST REQUIREMENTS**		**P**
2.3 (0.1)	Information for luminaire design considered	Yes ☒ No ☐	—
2.3 (0.3)	More sections applicable.....:	Yes ☐ No ☒	—
2.5 (2)	**CLASSIFICATION**		**P**
2.5 (2.2)	Type of protection.....:	Class III	—
2.5 (2.3)	Degree of protection (Requirement: Ordinary)..... :	IP20	—
2.5 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces.....:	Yes ☒ No ☐	—
	Luminaire not suitable for direct mounting on normally flammable surfaces.....:	Yes ☐ No ☒	—
2.5 (2.5)	Luminaire for normal use ..... :	Yes ☒ No ☐	—
	Luminaire for rough service ..... :	Yes ☐ No ☒	—
2.6 (3)	**MARKING**		P
2.6(3.2)	Mandatory markings	See “copy of marking plate”	P
	Position of the marking		P
	Format of symbols/text		P
2.6 (3.3)	Additional information		P
	Language of instructions	In English	P
2.6(3.3.1)	Combination luminaires		N
2.6 (3.3.2)	Nominal frequency in Hz		N
2.6 (3.3.3)	Operating temperature		N
2.6(3.3.4)	Symbol or warning notice		N
2.6 (3.3.5)	Wiring diagram		N
2.6 (3.3.6)	Special conditions		N
2.6 (3.3.7)	Metal halide lamp luminaire – warning		N
2.6 (3.3.8)	Limitation for semi-luminaires		N
2.6 (3.3.9)	Power factor and supply current		N
2.6 (3.3.10)	Suitability for use indoors		N
2.6 (3.3.11)	Luminaires with remote control		N
2.6 (3.3.12)	Clip-mounted luminaire – warning		N
2.6 (3.3.13)	Specifications of protective shields		N
2.6 (3.3.14)	Symbol for nature of supply		P
2.6 (3.3.15)	Rated current of socket outlet		N
2.6 (3.3.16)	Rough service luminaire		N

IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
2.6 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments		N
2.6 (3.3.18)	Non-ordinary luminaires with PVC cable		N
2.6 (3.3.19)	Protective conductor current in instruction if applicable		N
2.6 (3.3.20)	Provided with information if not intended to be mounted within arms reach		P
2.6 (5.2.1)	Non replaceable and non-user replaceable light sources information provided	Non-user replaceable	P
	Cautionary symbol		N
2.6 (3.3.22)	Controllable luminaires, classification of insulation provided		N
2.6 (3.4)	Test with water		P
	Test with hexane		P
	Legible after test		P
	Label attached		P
2.7 (4)	**CONSTRUCTION**		**P**
2.7 (4.2)	Components replaceable without difficulty		N
2.7 (4.3)	Wireways smooth and free from sharp edges		P
2.7 (4.4)	**Lampholders**		**N**
2.7 (4.4.1)	Integral lampholder		N
2.7 (4.4.2)	Wiring connection		N
2.7 (4.4.3)	Lampholder for end- to- end mounting		N
2.7 (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
	- bending test (N)		—
	After test the lampholder have not moved from its position and show no permanent deformation		N
2.7 (4.4.5)	Peak pulse voltage		N
2.7 (4.4.6)	Centre contact		N
2.7 (4.4.7)	Parts in rough service luminaires resistant to tracking		N
2.7 (4.4.8)	Lamp connectors		N

IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
2.7 (4.4.9)	Caps and bases correctly used		N
2.7 (4.4.10)	Light source for lampholder or connection according IEC 60061 not connected another way		N
2.7 (4.5)	**Starter holders**		**N**
	Starter holder in luminaires other than class II	No starter holder used	N
	Starter holder class II construction		N
2.7 (4.6)	**Terminal blocks**		**P**
	Tails		N
	Unsecured blocks		P
2.7 (4.7)	**Terminals and supply connections**		**P**
2.7 (4.7.1)	Contact to metal parts		N
2.7 (4.7.2)	Test 8 mm live conductor		P
	Test 8 mm earth conductor		N
2.7 (4.7.3)	Terminals for supply conductors		P
2.7 (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 15.8.2		N
	- electrical test according to 15.9		N
	- heat test according to 15.9.2.3 and 15.9.2.4		N
2.7 (4.7.4)	Terminals other than supply connection		N
2.7 (4.7.5)	Heat-resistant wiring/sleeves		N
2.7 (4.7.6)	Multi-pole plug		N
	- test at 30 N		N
2.7 (4.8)	**Switches**		**N**
	- adequate rating		N
	- adequate fixing		N
	- polarized supply		N
	- compliance with IEC 61058-1 for electronic switches		N
2.7 (4.9)	**Insulating lining and sleeves**		**P**
2.7 (4.9.1)	Retainment		P
	Method of fixing.....	Heat-shrink	P
2.7 (4.9.2)	Insulated linings and sleeves:		P

IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Resistant to a temperature > 20 °C to the wire temperature or		P
	a) & c) Insulation resistance and electric strength		N
	b) Ageing test. Temperature (°C).....	--	N
2.7 (4.10)	**Double or reinforced insulation**		**P**
2.7 (4.10.1)	No contact, mounting surface – accessible metal parts – wiring of basic insulation		P
	Safe installation fixed luminaires		P
	Capacitors and switches		N
	Interference suppression capacitors according to IEC 60384-14		N
2.7 (4.10.2)	Assembly gaps:		N
	- not coincidental		N
	- no straight access with test probe		N
2.7 (4.10.3)	Retainment of insulation:		P
	- fixed		P
	- unable to be replaced; luminaire inoperative		P
	- sleeves retained in position		P
	- lining in lampholder		N
2.7 (4.11)	**Electrical connections and current-carrying parts**		**P**
2.7 (4.11.1)	Contact pressure		P
2.7 (4.11.2)	Screws:		N
	- self-tapping screws		N
	- thread- cutting screws		N
2.7 (4.11.3)	Screw locking:		N
	- spring washer		N
	- rivets		N
2.7 (4.11.4)	Material of current-carrying parts		P
2.7 (4.11.5)	No contact to wood or mounting surface		P
2.7 (4.11.6)	Electro-mechanical contact systems		N
2.7 (4.12)	**Screws and connections (mechanical) and glands**		**P**
2.7 (4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		N
	Torque test: torque (Nm); part.....	Screws used for fixing enclosure: 0.5Nm	P
	Torque test: torque (Nm); part.....	Screws used for fixing LED board: 0.5Nm	P

IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
2.7 (4.12.2)	Screws with diameter < 3 mm screwed into metal		N
2.7 (4.12.4)	Locked connections:		N
	- fixed arms; torque (Nm).....	--	N
	- lampholder; torque (Nm).....	--	N
	- push-button switches; torque 0,8 Nm.....	--	N
2.7 (4.12.5)	Screwed glands; force (Nm).....	--	N
2.7 (4.13)	**Mechanical strength**		**P**
2.7 (4.13.1)	Impact tests:		P
	- fragile parts; energy (Nm).....	--	N
	- other parts; energy (Nm).....	Enclosure, lamp cover:0.35Nm	P
	1) live parts		P
	2) linings		N
	3) protection		P
	4) covers		P
2.7 (4.13.3)	Straight test finger	30N	P
2.7 (4.13.4)	Rough service luminaires		N
	- 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
2.7 (4.13.6)	Tumbling barrel		N
2.7 (4.14)	**Suspensions, fixings and means of adjusting**		**P**
2.7 (4.14.1)	Mechanical load:		P
	A) four times the weight	4x0.625kg=2.5kg	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		N
2.7 (4.14.2)	Load to flexible cables		N
	Mass (kg)	--	—

IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Stress in conductors (N/mm²)	--	N
	Mass (kg) of semi-luminaire	--	—
	Bending moment (Nm) of semi-luminaire	--	N
2.7 (4.14.3)	Adjusting devices:		N
	- flexing test; number of cycles.....	--	N
	- strands broken.....	--	N
	- electric strength test afterwards		N
2.7 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors		N
2.7 (4.14.5)	Guide pulleys		N
2.7 (4.14.6)	Strain on socket-outlets		N
2.7 (4.15)	**Flammable materials**		**P**
	- glow- wire test 650°C.....	See table(13.3.2)	P
	- spacing ≥30 mm		**N**
	- screen withstanding test of 13.3.1		N
	- screen dimensions		N
	- no fiercely burning material		P
	- thermal protection		N
	- electronic circuits exempted		N
2.7 (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
2.7 (4.16)	**Luminaires for mounting on normally flammable surfaces**		**P**
	No lamp control gear.....	Electronic lamp control gear	N
2.7 (4.16.1)	Lamp control gear spacing:		N
	- spacing 35 mm		N
	- spacing 10 mm		N
2.7 (4.16.2)	Thermal protection:		N
	- in lamp control gear		N
	- external		N
	- fixed position		N
	- temperature marked lamp control gear		N
2.7 (4.16.3)	Design to satisfy the test of 12.6	(see clause 12.6)	N
2.7 (4.17)	**Drain holes**		**N**
	Clearance at least 5 mm		N

IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
2.7 (4.18)	**Resistance to corrosion**		**P**
2.7 (4.18.1)	- rust- resistance		P
2.7 (4.18.2)	- season cracking in copper		P
2.7 (4.18.3)	- corrosion of aluminium		P
2.7 (4.19)	Igniters compatible with ballast	No ignitors used	N
2.7 (4.20)	Rough service vibration		N
2.7 (4.21)	**Protective shield**		**N**
2.7 (4.21.1)	Shield fitted if tungsten halogen lamps or metal halide lamps		N
	Shield of glass if tungsten halogen lamps		N
2.7 (4.21.2)	Particles from a shattering lamp not impair safety		N
2.7 (4.21.3)	No direct path		N
2.7 (4.21.4)	Impact test on shield		N
	Glow-wire test on lamp compartment.....		N
2.7 (4.22)	Attachments to lamps not cause overheating or damage		N
2.7 (4.23)	Semi-luminaires comply Class II		N
2.7 (4.24)	**Photobiological hazards**		**P**
2.7 (4.24.1)	No excessive UV radiation if tungsten halogen lamps and metal halide lamps (Annex P)		N
2.7 (4.24.2)	Retinal blue light hazard	Classified as Risk Group 0 unlimited	P
	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
2.7 (4.25)	**Mechanical hazard**		**P**
	No sharp point or edges		P
2.7 **(4.26)**	**Short-circuit protection**		**N**
2.7 (4.26.1)	Adequate means of uninsulated accessible SELV parts		N

IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
2.7 (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
2.7 (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
	Voltage drop test, resistance < 0,05 Ω		N
2.7 (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
2.7 (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
2.7 (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:		N
	Minimum two fixing means		N
2.7 (4.31)	**Insulation between circuits**		**P**
	Circuits insulated from LV supply fulfil requirements according 4.31.1 – 4.31.3		P
	Controllable luminaires requiring same level of insulation for all components, the insulation between control terminals and LV supply fulfil requirements according 4.31.1 – 4.31.3		N
2.7 (4.31.1)	SELV circuits		N
	Used SELV source		N

IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Voltage ≤ ELV		N
	Insulating of SELV circuits from LV supply		N
	Insulating of SELV circuits from other non SELV circuits		N
	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		N
	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
2.7 (4.31.2)	FELV circuits		N
	Used FELV source		N
	Voltage ≤ 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
2.7 (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 of above		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

IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
2.7 (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
2.8 (11)	**CREEPAGE DISTANCES AND CLEARANCES**		**P**
2.8 (11.2)	Creepage distances and clearances.....	See Table 2.8 (11.2)	P
	Impulse withstand category (Normal category II) (Category III Annex U, Table U.1)	Category II ☒ Category III ☐	—
2.9 (7)	**PROVISION FOR EARTHING**		**N**
2.9 (7.2.1 + 7.2.3)	Accessible metal parts		N
	Metal parts in contact with supporting surface		N
	Resistance < 0,5 Ω		N
	Two self-tapping screws used		N
	Thread-forming screws		N
	Thread-forming screw used in a grove		N
	Earth makes contact first		N
2.9 (7.2.2 + 7.2.3)	Earth continuity in joints etc.		N
2.9 (7.2.4)	Locking of clamping means		N
	Compliance with 4.7.3		N
	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N
2.9 (7.2.5)	Earth terminal integral part of connector socket		N
2.9 (7.2.6)	Earth terminal adjacent to mains terminals		N
2.9 (7.2.7)	Electrolytic corrosion of the earth terminal		N
2.9 (7.2.8)	Material of earth terminal		N
	Contact surface bare metal		N
2.9 (7.2.10)	Class II luminaire for looping-in		N
	Double or reinforced insulation to functional earth		N
2.9 (7.2.11)	Earthing core coloured green-yellow		N
	Length of earth conductor		N

IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
2.10 (14)	**SCREW TERMINALS**		N
	Separately approved; component list	(see Annex 1)	N
	Part of the luminaire	(see Annex 4)	N
2.10 (15)	**SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS**		**P**
	Separately approved; component list		**P**
	Part of the luminaire		N
2.11 (5)	**EXTERNAL AND INTERNAL WIRING**		**P**
2.11 (5.2)	**Supply connection and external wiring**		P
2.11 (5.2.1)	Means of connection.....	Power cord	P
	Outdoor luminaire has not PVC insulated external wiring if not class III or SELV ≤ 25 V a.c./60 V d.c. or protected from outdoor environment		N
2.11 (5.2.2)	Type of cable.....	(see Annex 1)	N
	Nominal cross-sectional area (mm²).....	(see Annex 1)	N
	Cables equal to IEC 60227 or IEC 60245		N
2.11 (5.2.3)	Type of attachment, X, Y or Z		N
2.11 (5.2.5)	Type Z not connected to screws		N
2.11 (5.2.6)	Cable entries:		P
	- suitable for introduction		P
	- adequate degree of protection		P
2.11 (5.2.7)	Cable entries through rigid material have rounded edges		N
2.11 (5.2.8)	Insulating bushings:		P
	- suitably fixed		P
	- material in bushings		P
	- material not likely to deteriorate		P
	- tubes or guards made of insulating material		P
2.11 (5.2.9)	Locking of screwed bushings		N
2.11 (5.2.10)	Cord anchorage:		N
	- covering protected from abrasion		N
	- clear how to be effective		N
	- no mechanical or thermal stress		N
	- no tying of cables into knots etc.		N
	- insulating material or lining		N

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Clause	Requirement + Test	Result - Remark	Verdict
2.11 (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
2.11 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment		N
2.11 (5.2.10.3)	Tests:		N
	- impossible to push cable; unsafe		N
	- pull test: 25 times; pull (N).....	--	N
	- torque test: torque (Nm).....	--	N
	- displacement ≤ 2 mm		N
	- no movement of conductors		N
	- no damage of cable or cord		N
	- function independent of electrical connection		N
2.11 (5.2.11)	External wiring passing into luminaire		N
2.11 (5.2.12)	Looping-in terminals		N
2.11 (5.2.13)	Wire ends not tinned		P
	Wire ends tinned: no cold flow		N
2.11 (5.2.14)	Mains plug same protection		N
	Class III luminaire plug		N
	No unsafe compatibility		N
2.11 (5.2.16)	Appliance inlets (IEC 60320)		N
	Installation couplers (IEC 61535)		N
	Other appliance inlet or connector according relevant IEC standard		N
2.11 (5.2.17)	No standardized interconnecting cables properly assembled		N
2.11 (5.2.18)	Used plug in accordance with		N
	- IEC 60083		N

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Clause	Requirement + Test	Result - Remark	Verdict
	- other standard		P
2.11 (5.3)	**Internal wiring**		**P**
2.11 (5.3.1)	Internal wiring of suitable size and type		P
	Through wiring		N
	- not delivered/ mounting instruction		N
	- factory assembled		N
	- socket outlet loaded (A).....	--	N
	- temperatures.....	--	N
	Green- yellow for earth only		N
2.11 (5.3.1.1)	Internal wiring connected directly to fixed wiring		P
	Cross-sectional area (mm²).....	(see Annex 1)	P
	Insulation thickness		P
	Extra insulation added where necessary		N
2.11 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		P
	Adequate cross-sectional area and insulation thickness		P
2.11 (5.3.1.3)	Double or reinforced insulation for class II		P
2.11 (5.3.1.4)	Conductors without insulation		N
2.11 (5.3.1.5)	SELV current-carrying parts		N
2.11 (5.3.1.6)	Insulation thickness other than PVC or rubber		N
2.11 (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
2.11 (5.3.3)	Insulating bushings:		P
	- suitable fixed		P
	- material in bushings		P
	- material not likely to deteriorate		P
	- cables with protective sheath		P
2.11 (5.3.4)	Joints and junctions effectively insulated		N
2.11 (5.3.5)	Strain on internal wiring		N

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Clause	Requirement + Test	Result - Remark	Verdict
2.11 (5.3.6)	Wire carriers		N
2.11 (5.3.7)	Wire ends not tinned		P
	Wire ends tinned: no cold flow		N
2.11 (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
2.12 (8)	**PROTECTION AGAINST ELECTRIC SHOCK**		**P**
2.12 (8.2.1)	Live parts not accessible		P
	Basic insulated parts not used on the outer surface without appropriate protection		P
	Basic insulated parts not accessible with standard test finger on portable, settable and adjustable luminaires		N
	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
2.12 (8.2.2)	Portable luminaire adjusted in most unfavourable position		N
2.12 (8.2.3.a)	Class II luminaire:		P
	- basic insulated metal parts not accessible during starter or lamp replacement		N
	- basic insulation not accessible other than during starter or lamp replacement		P
	- glass protective shields not used as supplementary insulation		N
2.12 (8.2.3.b)	BC lampholder of metal in class I luminaires shall be earthed		N

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Clause	Requirement + Test	Result - Remark	Verdict
2.12 (8.2.3.c)	SELV circuits with exposed current carrying parts:		N
	Ordinary luminaire:		N
	- touch current	--	N
	- no-load voltage.....	--	N
	Other than ordinary luminaire:		N
	- nominal voltage	--	N
2.12 (8.2.4)	Portable luminaire have protection independent of supporting surface		N
2.12 (8.2.5)	Compliance with the standard test finger or relevant probe		P
2.12 (8.2.6)	Covers reliably secured		P
2.12 (8.2.7)	Discharging of capacitors ≥ 0,5 μF		P
	Portable plug connected luminaire with capacitor		N
	Other plug connected luminaire with capacitor		P
	Discharge device on or within capacitor		N
	Discharge device mounted separately		P
2.13 (12)	**ENDURANCE TEST AND THERMAL TEST**		**P**
2.13.1 (-)	If IP > IP 20 relevant test of (12.4), (12.5) and (12.6) after (9.2) before (9.3) specified in 4.13		—
2.13 (12.3)	Endurance test:		P
	- mounting- position.....	As in normal use	—
	- test temperature (°C).....	35 °C	—
	- total duration (h).....	240 h	—
	- supply voltage: Un factor; calculated voltage (V)...	264V	—
	- lamp used.....	LED	—
2.13 (12.3.2)	After endurance test:		P
	- no part unserviceable		P
	- luminaire not unsafe		P
	- no damage to track system		N
	- marking legible		P
	- no cracks, deformation etc.		P
2.13 (12.4)	Thermal test (normal operation)	(see Annex 2)	P
2.13 (12.5)	Thermal test (abnormal operation)	(see Annex 2)	N
2.13 (12.6)	Thermal test (failed lamp control gear condition):		N

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Clause	Requirement + Test	Result - Remark	Verdict
2.13 (12.6.1)	Through wiring or looping-in wiring loaded by a current of (A)		—
	- case of abnormal conditions.....		—
	- electronic lamp control gear		N
	- 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
2.13 (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
2.13 (12.7)	Thermal test (failed lamp control gear in plastic luminaires):		N
2.13 (12.7.1)	Luminaire without temperature sensing control		N
2.13 (12.7.1.1)	Luminaire with fluorescent lamp ≤ 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 (°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.....:		N
2.13 (12.7.1.2)	Luminaire with discharge lamp, fluorescent lamp > 70W, transformer > 10 VA		N
	- case of abnormal conditions.....		—

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Clause	Requirement + Test	Result - Remark	Verdict
	- 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.....	--	N
2.13 (12.7.1.3)	Luminaire with short circuit proof transformers ≤ 10 VA		N
	- case of abnormal conditions.....		—
	- Components retained in place after the test		N
	- Test with standard test finger after the test		N
2.13 (12.7.2)	Luminaire with temperature sensing control		N
	- thermal link.....	Yes ☐ No ☐	—
	- manual reset cut-out.....	Yes ☐ No ☐	—
	- auto reset cut-out.....	Yes ☐ No ☐	—
	- case of abnormal conditions.....		—
	- highest measured temperature of fixing point/ exposed part (°C):.....		—
	Ball-pressure test:.....	--	N
2.13.1 (-)	Wiring, for connection to the supply, not reach unsafe temperature		P
	- measured temperature of the cable (°C)	(See ANNEX 2)	P

2.14 (9)	**RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE**		--
2.14 (9.2)	Tests for ingress of dust, solid objects and moisture:		P
	- classification according to IP..... :	IP20	—
	- mounting position during test.....:	Acc. to user manual	—
	- fixing screws tightened; torque (Nm).....:	--	—
	- tests according to clauses.....:	Cl.9.2.0	—
	- electric strength test afterwards		P
	a) no deposit in dust-proof luminaire		N
	b) no talcum in dust- tight luminaire		N
	c) no trace of water on current-carrying parts or where it could become a hazard		N
	d) i) For luminaires without drain holes – no water entry		N
	d) ii) For luminaires with drain holes – no hazardous water entry		N

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Clause	Requirement + Test	Result - Remark	Verdict
	e) no water in watertight luminaire		N
	f) no contact with live parts (IP 2X)		P
	f) no entry into enclosure (IP 3X and IP 4X)		N
	f) no contact with live parts (IP3X and IP4X)		N
	g) no trace of water on part of lamp requiring protection from splashing water		N
	h) no damage of protective shield or glass envelope		N
2.14 (9.3)	Humidity test 48 h	25°C, 93%RH	P

2.15 (10)	**INSULATION RESISTANCE AND ELECTRIC STRENGTH**		**P**
2.15 (10.2.1)	Insulation resistance test		P
	Cable or cord covered by metal foil or replaced by a metal rod of mm Ø .....:	--	—
	Insulation resistance (MΩ)..... :		—
	SELV		P
	- between current-carrying parts of different polarity:	--	N
	- between current-carrying parts and mounting surface.....:	100 MΩ	P
	- between current-carrying parts and metal parts of the luminaire.....:	100 MΩ	P
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts..... :	100 MΩ	P
	- Insulation bushings as described in Section 5 ..... :	--	N
	Other than SELV		P
	- between live parts of different polarity..... :	100 MΩ	P
	- between live parts and mounting surface.....:	100 MΩ	P
	- between live parts and metal parts.....:	100 MΩ	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..... :	--	N
	- Insulation bushings as described in Section 5 ..... :	--	N
2.15 (10.2.2)	Electric strength test		P
	Dummy lamp		N
	Luminaires with ignitors after 24 h test		N

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Clause	Requirement + Test	Result - Remark	Verdict
	Luminaires with manual ignitors		N
	Test voltage (V)..... :		P
	SELV		P
	- between current-carrying parts of different polarity:	--	N
	- between current-carrying parts and mounting surface..... :	500 V	P
	- between current-carrying parts and metal parts of the luminaire..... :	500 V	P
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts..... :	500 V	P
	- Insulation bushings as described in Section 5 ..... :	--	N
	Other than SELV		P
	- between live parts of different polarity..... :	1480 V	P
	- between live parts and mounting surface..... :	2960V	P
	- between live parts and metal parts..... :	2960V	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..... :	--	N
	- Insulation bushings as described in Section 5 ..... :	--	N
2.15 (10.3)	Touch current or protective conductor current (mA).:	Touch current: Max. 0.03mA	P

2.16 (13)	**RESISTANCE TO HEAT, FIRE AND TRACKING**		**P**
2.16 (13.2.1)	Ball-pressure test..... :	See Test Table 2.16 (13.2.1)	P
2.16 (13.3.1)	Needle-flame test (10 s)..... :	See Test Table 2.16 (13.3.1)	P
2.16 (13.3.2)	Glow- wire test (650°C)..... :	See Test Table 2.16 (13.3.2)	P
2.16 (13.4)	Proof tracking test (IEC 60112)..... :	See Test Table 2.16 (13.4)	N

2.8 (11.2)	**TABLE: Creepage distances and clearances**							**P**
	Minimum distances (mm) for a.c. (50/60 Hz) sinusoidal voltages							**P**
	Applicable part of IEC 60598-1 Table 11.1* and 11.2*							**P**
	Insulation type **	**Measured clearance**	**Required**		**Measured creepage**	**Required**		
			clearance	***Table**		**creepage**	***Table**	
Distance 1:	B	2.9	1.5	11.1	2.9	2.5	11.1	
Working voltage (V)..... :					Max. 240Vac			—

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Clause	Requirement + Test	Result - Remark	Verdict

PTI..... :					< 600 ☒	≥ 600 ☐	—
Pulse voltage if applicable (kV) .....:					--		—
Supplementary information: Live parts of different polarity							
Distance 2:	R	6.0	3.0	11.1	6.0	5.0	11.1
Working voltage (V)..... :					Max. 240Vac		—
PTI..... :					< 600 ☒	≥ 600 ☐	—
Pulse voltage if applicable (kV) .....:					--		—
Supplementary information: Live parts and accessible part							
Distance 3:	R	6.0	3.0	11.1A	6.0	5.0	11.1B
Working voltage (V)..... :					240		—
PTI..... :					< 600 ☒	≥ 600 ☐	—
Pulse voltage if applicable (kV) .....:					--		—
Supplementary information: Current-carrying parts and supporting surface							
Distance 4:	S	2.6	1.5	11.1A	2.6	2.5	11.1B
Working voltage (V)..... :					240		—
PTI..... :					< 600 ☒	≥ 600 ☐	—
Pulse voltage if applicable (kV) .....:					--		—
Supplementary information: The outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible parts							

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

2.16 (13.2.1)	**TABLE: Ball Pressure Test of Thermoplastics**		**P**
Allowed impression diameter (mm) .....:		≤2.0	—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)
DC connector1	See Annex 1	125	0.7
DC connector2	See Annex 1	125	0.9
LED cover	See Annex 1	125	0.8
Supplementary information:			

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Clause	Requirement + Test	Result - Remark	Verdict

2.16 (13.3.1)	**TABLE: Needle-flame test (IEC 60695-11-5)**				P
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (ta); (s)	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
DC connector1	See Annex 1	10	No	0	P
DC connector2	See Annex 1	10	No	0	P
Supplementary information:					

2.16 (13.3.2)	**TABLE: Glow-wire test (IEC 60695-2-11)**				**P**
Glow wire temperature .....:	650°C				—
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
DC connector1	See Annex 1	30	No	0	P
DC connector2	See Annex 1	30	No	0	P
LED cover	See Annex 1	30	No	0	P
Any flame or glowing of the sample extinguished within 30 s of withdrawing the glow-wire, and any burning or molten drop did not ignite the underlying parts (Yes/No).....					Yes
Supplementary information:					

2.16 (13.4)	**TABLE: Proof tracking test (IEC 60112)**			**N**
Test voltage PTI ..... :	175 V			—
Object/ Part No./ Material	Manufacturer/ trademark	Withstand 50 drops without failure on three places or on three specimens		Verdict
Supplementary information:				

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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
Input wire of LED driver	B	Arditi CN Electric (Huizhou) Co., Ltd.	H03VVH2-F	2x0.75mm²	AS/NZS 6022 7.5	SAA110188EA
LED driver 01	B	Shenzhen Ledfriend Optoelectronics Co., Ltd	LF-GIF040YA (H)0900H	Input:220-240VAC, 50/60Hz, 0.35A Output:33-40VDC, 900mA, Max 55VDC, Max 36W, ta:50°C, tc:90°C, Independent, SELV, Constant current	AS/NZS 61347.1 AS/NZS 61347.2.13	GMA-502033EA
LED driver 02	B	Shenzhen Ledfriend Optoelectronics Co., Ltd	LF-GIF030YA (H)0600H	Input:220-240VAC, 50/60Hz, 0.25A Output:33-40VDC, 600mA, Max 55VDC, Max 24W, ta:50°C, tc:80°C, Independent, SELV, Constant current	AS/NZS 61347.1 AS/NZS 61347.2.13	GMA-502033EA
LED driver 03	B	Shenzhen Ledfriend Optoelectronics Co., Ltd	LF-GIF022YA 0450H	Input:220-240VAC, 50/60Hz, 0.2A Output:25-40VDC, 450mA, Max 55VDC, Max 24W, ta:50°C, tc:85°C, Independent, SELV, Constant current	AS/NZS 61347.1 AS/NZS 61347.2.13	GMA-502033EA
LED driver 04	B	Shenzhen Ledfriend Optoelectronics Co., Ltd	LF-GIF015YA 0300H	Input:220-240VAC, 50/60Hz, 0.1A Output:25-40VDC, 300mA, Max 55VDC, Max 24W, ta:50°C, tc:80°C, Independent, SELV, Constant current	AS/NZS 61347.1 AS/NZS 61347.2.13	GMA-502033EA

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Clause	Requirement + Test	Result - Remark	Verdict

LED driver 05	B	Shenzhen Ledfriend Optoelectronics Co., Ltd	LF-GIF015YA 0210H	Input:220-240VAC, 50/60Hz, 0.1A Output:25-40VDC, 210mA, Max 55VDC, Max 24W, ta:50°C, tc:80°C, Independent, SELV, Constant current	AS/NZS 61347.1 AS/NZS 61347.2.13	GMA-502033EA
LED driver 06	B	Shenzhen Ledfriend Optoelectronics Co., Ltd	LF-GIF015YA 0150H	Input:220-240VAC, 50/60Hz, 0.1A Output:25-40VDC, 150mA, Max 55VDC, Max 24W, ta:50°C, tc:80°C, Independent, SELV, Constant current	AS/NZS 61347.1 AS/NZS 61347.2.13	GMA-502033EA
Output wire of LED driver & lead wire of LED	B	ZHONGSHAN YUXUAN ELECTRONICS CO LTD	2468	80°C, 300V, 24AWG	--	UL E316286
DC connector1	B	TORAY INDUSTRIES INC	CM3004-V0(rr)	PA66; V-0	--	UL E41797
DC connector2	B	ZHEJIANG HONGXING ELECTRICAL CO LTD	--	PA66	--	Tested with appliance
CCT switch	B	LAXXSCOM	SS-23D03-G5	50VDC, 1A, 1E4, T20-60	EN 61058-1 EN 61058-2-1	Tested with appliance
-PCB	B	JIANGMEN JUNYEDA ELECTRONICS CO LTD	JYD-D1	V-0, 130°C	--	UL E345177
-Switch enclosure	B	COVESTRO DEUTSCHLAND AG [PC RESINS]	6555 + (z)(f1)	PC; V-2	--	UL E41613
LED	B	MLS	SMD2835	6500K,60mA	EN 62778	Tested with appliance
LED board	B	WING SHING ELECTRONIC & PCB LTD	YS-4	V-0; Al	--	UL E190407
LED cover	B	HENGDIAN GROUP TOSPO ENGINEERING PLASTICS CO LTD	C301-XX	PC	--	UL E187910

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

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Clause	Requirement + Test	Result - Remark	Verdict

D - Alternative component

ANNEX 2	**Temperature measurements, thermal tests of Section 12**	**P**

	Type reference.....:	EOL.CE.FR20-36	—
	Lamp used.....:	Integral LED	—
	Lamp control gear used.....:	Integral LED driver	—
	Mounting position of luminaire.....:	Acc. to user manual	—
	Supply wattage (W).....:	35.7	—
	Supply current (A)..... :	0.155	—
	Calculated power factor.....:	0.957	—
	Table: measured temperatures corrected for t_a = 25 °C:		P
	- abnormal operating mode.....:	Full thermal insulation	—
	- test 1: rated voltage..... :	-----	—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage..... :	1.06 times rated voltage (tested as per Clause ZA3 (Figure ZA4))	—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage.....:	-----	—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage..... :	1,1 times rated voltage (test was tested as per Clause ZA5 (Figure ZA6))	—
	Through wiring or looping-in wiring loaded by a current of A during the test ..... :	-----	—

temperature (°C) of part	Clause 12.4 – normal				Clause 12.5 – abnormal	
	test 1	test 2	test 3	limit	test 4	limit
Power cord	--	32.1	--	75	--	--
Output wire of LED driver	--	35.3	--	80	--	--
Lead wire to LED (near LED)	--	54.6	--	80	--	--
LED board	--	63.5	--	Ref.	--	--
Plastic cover for COB	--	63.5	--	Ref.	--	--
PCB of switch	--	30.4	--	Ref.	--	--
Switch enclosure	--	27.5	--	Ref.	--	--
Enclosure outside (tc)	--	55.8	--	90	--	--
Mounting surface	--	30.8	--	90	--	--

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Clause	Requirement + Test	Result - Remark	Verdict

Illuminated surface (0.1m)	--	33.4	--	90	--	--
On the side of test box	--	30.9	--	90	--	--
On the top of test box	--	29.2	--	90	--	--
Mounting surface of test box	--	35.2	--	90	40.1	90
Outer surface of lamp (hottest)	--	44.5	--	90	--	--
Simulated building element	--	38.6	--	90	--	--
Thermal insulation	--	37.9	--	90	45.7	130
Supports	--	40.2	--	90	--	--

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Clause	Requirement + Test	Result - Remark	Verdict
ANNEX 3	**Screwless terminals (part of the luminaire)**		**N**
(15)	**SCREWLESS TERMINALS**		—
(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
(15.5.1)	Terminals internal wiring		N
(15.5.1.1)	Pull test spring-type terminals (4 N, 4 samples)….:	--	N
(15.5.1.2)	Pull test pin or tab terminals (4 N, 4 samples)……:	--	N
	Insertion force not exceeding 50 N		N
(15.5.2)	Permanent connections: pull-off test (20 N)		N
(15.6)	Electrical tests		
	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
(15.7)	Terminals external wiring		N
	Terminal size and rating		N

IEC 60598-2-2											
Clause	Requirement + Test						Result - Remark				Verdict
(15.8.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N) .....:						--				N
	Pull test pin or tab terminals (4 samples); pull (N) .....:						--				N
(15.9)	Contact resistance test										N
	Voltage drop (mV) after 1 h										N
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)	---	---	---	---	---	---	---	---	---	---	
	Voltage drop of two inseparable joints						--				N
	Voltage drop after 10th alt. 25th cycle										N
	Max. allowed voltage drop (mV).....:						--				—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)	---	---	---	---	---	---	---	---	---	---	
	Voltage drop after 50th alt. 100th cycle										N
	Max. allowed voltage drop (mV).....:						--				—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)	---	---	---	---	---	---	---	---	---	---	
	Continued ageing: voltage drop after 10th alt. 25th cycle										N
	Max. allowed voltage drop (mV).....:						--				—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)	---	---	---	---	---	---	---	---	---	---	
	Continued ageing: voltage drop after 50th alt. 100th cycle										N
	Max. allowed voltage drop (mV).....:						--				—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)	---	---	---	---	---	---	---	---	---	---	

Australian deviation			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 4	**Australian deviation (AU variations of AS/NZS 60598.1:2017+A1:2017 to IEC 60598-1:2014)**	**P**

	APPENDIX ZZ		—
	VARIATIONS TO IEC 60598-1, Ed. 8.0 (2014) FOR AUSTRALIA AND NEW ZEALAND		
0	**GENERAL INTRODUCTION**		**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
	NOTE **Portable rechargeable battery operated luminaires** should comply with Annex B, ‘Appliances powered by rechargeable batteries’ of AS/NZS 60335.1, Household and similar electrical appliances—Safety, Part 1: General requirements (IEC 60335-1 ED. 5, MOD). In addition, portable, rechargeable, battery-operated luminaires with lithium ion batteries should have overvoltage protection.		—
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.		P
0.5	**Add:** Relevant Australian/New Zealand Standard replaces the IEC Standard unless otherwise specified.		P
0.5.101	**Add:** Capacitors		N
	Capacitors shall be of a type to ensure that any capacitor failure results in a failsafe outcome.		N

Australian deviation			
Clause	Requirement + Test	Result - Remark	Verdict
	Capacitors (**other than those incorporated in control gear** that comply with the relevant standard) shall comply with one of the following: - Capacitors likely to be permanently subjected to the supply voltage, used for radio interference suppression or for voltage dividing shall comply with IEC 60384-14. - Other 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 EIA-456-A, Metallized Film Dielectric Capacitors for Alternating Current Applications, shall comply with IEC 61049 and IEC 61048:2006 excluding the endurance test of 18.1.1.		N
	In addition, capacitors shall have a minimum voltage rating of 250 V at a temperature rating of 100 °C or 280 V at a temperature rating of 85 °C.		N
0.5.102	**Add:** Control gear		P
	Power supplies shall comply with the relevant part 2 of the AS/NZS 61558 series.		N
	Control gear shall comply with the relevant part 2 of the AS/NZS 61347 series.		P
	Battery chargers used for lighting other than emergency lighting shall comply with AS/NZS 60335.2.29.		N
	Sensor switches and similar control circuits, including those incorporated in other equipment, are considered electronic switches (see Clause 4.8).		N
2	**CLASSIFICATION OF LUMINAIRES**		P
2.2	**Class 0 luminaires** are not permitted in Australia or New Zealand.		—
3	**MARKING**		**P**
3.1	In Australia and New Zealand, instructions and other texts required by this Standard shall at least be written in English.		P
3.2	**Delete** the second paragraph beginning with 'Marking may be on ballast provided…'.		P
Table 3.1	**Move** Item 3.2.21 from the second column to the third column. 3.2.21 The relevant symbol for luminaires not suitable for covering with thermally insulating material		P

Australian deviation			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.3	**The rated maximum ambient temperature t_a.** (see Figure 1).		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”.		P
3.2.23	**Add:** The additional information shall include the symbol "Do not stare at the operating light source" (see Figure 1) along with an explanation of the symbol.		N
3.3.7	**Delete Clause and replace with**: Luminaires 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 10 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
3.3.18	**Delete** the text ‘, i.e. for indoor use only’.		N
3.3.21	**Delete** the text ‘Caution, risk of electric shock’ and the symbol.		N
3.3.101	The instructions shall contain details of the components in the luminaire that require replacement as part of a maintenance program.		N
3.3.102	The instructions for luminaires, including for remotes or other accessories **containing coin/button cell batteries and batteries designated R1**, shall include the safety warnings below.		N
	The safety warnings are not required where these batteries are not intended to be replaced or are only accessible after damaging the equipment.		—

Australian deviation			
Clause	Requirement + Test	Result - Remark	Verdict
	The safety warnings: – CAUTION: Do not ingest battery—Chemical burn hazard [or equivalent wording]. – [The remote control supplied with] this product contains a coin/button cell battery. If the coin/button cell battery is swallowed, it can cause severe internal burns in just 2 hours and can lead to death. – Keep new and used batteries away from children. – If the battery compartment does not close securely, stop using the product and keep it away from children. – If you think batteries might have been swallowed or placed inside any part of the body, seek immediate medical attention.		N
4	**CONSTRUCTION**		P
4.7.2	**Delete** the first paragraph and **replace with** the following: Terminals shall be located or shielded in such a way that, if a wire of a stranded conductor escapes from a terminal when the conductors are fitted, there is no risk of contact between live parts and metal parts that can be touched with the standard test finger, **nor shall it be possible to touch a live free wire with the standard test finger** when the luminaire is fully assembled for use or open for the replacement of replaceable light sources or starters.		P
4.8	**Add:** Switches shall comply with AS/NZS 3133, the AS/NZS 60669 series or AS/NZS 61058.1. Switches that indicate an off position shall have contacts with an air break and comply with AS/NZS 3133, AS/NZS 60669.1 or AS/NZS 61058.1.		N
	Electronic switches, when incorporated in or supplied with the luminaire, shall comply with the requirements of AS/NZS 60669.2.1 or IEC 61058-1 classified for 10,000 operating cycles		N
4.10.4	**Delete the last sentence and replace with the following::** If the working voltage does not exceed the rated voltage of the capacitor, accessible conductive parts separated from live parts by double or reinforced insulation, as above, may be bridged by a single Y1 capacitor with qualification approval as specified in IEC 60384-14.		N
4.14.6	**Add:** A fixed socket-outlet complying with AS/NZS 3112 or AS/NZS 60884.1 is used for the test.		N

Australian deviation			
Clause	Requirement + Test	Result - Remark	Verdict
4.32	Add: Metal oxide varistors shall comply with the requirements of AS/NZS 3100 for metal oxide varistors incorporated in accessories.	50Ω	P
4.101.1	**Small batteries**		N
	Batteries that fit wholly within the small parts cylinder as specified in Clause 5.2 of ISO 8124-1 shall not be removable without the aid of a tool.		N
	Luminaires intended for children under the age of three, or parts of such luminaries that contain batteries, shall not fit wholly within the small parts cylinder as specified in Clause 5.2 of ISO 8124-1.		N
	For luminaires or parts of luminaires containing batteries that fit wholly within the small parts cylinder as specified in Clause 5.2 of ISO 8124-1, the batteries shall not be accessible without the aid of a tool.		N
	Compliance is checked by inspection and by the following test:		—
	A force is applied without jerks for 10 s in the most unfavourable direction to parts likely to be weak. The force is as follows: – push force, 50 N; – pull force; 30 N; – if the shape of the part is such that the fingertips cannot easily slip off, 50 N; – if the projection of the part that is gripped is less than 10 mm in the direction of removal, 30 N. While the force is being applied, the test fingernail of Figure 7 of AS/NZS 60335.1 is inserted in any aperture or joint with a force of 10 N. The fingernail is then slid sideways with a force of 10 N but is not twisted or used as a lever.		N
	If the shape of the part is such that an axial pull is unlikely, the pull force is not applied but the test fingernail is inserted in any aperture or joint with a force of 10 N and is then pulled for 10 s by means of the loop with a force of 30 N in the direction of removal.		N
	If the part is likely to be twisted, the following torque is applied at the same time as the pull or push force: – 2 Nm, for major dimensions up to 50 mm. – 4 Nm, for major dimensions over 50 mm. This torque is also applied when the test fingernail is pulled by means of the loop. If the projection of the part that is gripped is less than 10 mm, the torque is reduced by 50 %.....:	4 Nm	N
4.101.1	**Battery compartment fasteners**		N

Australian deviation			
Clause	Requirement + Test	Result - Remark	Verdict
	If screws or similar fasteners are used to secure a door or cover providing access to the battery compartment, the screw or similar fastener shall be captive to ensure that it remains with the door, cover or equipment.		N
	Compliance is checked by inspection and by the following test:		—
	A force of 20 N is applied to the screw or similar fastener without jerks for a duration of 10 s in any direction.		N

5	**EXTERNAL AND INTERNAL WIRING**		**P**
5.2.1	First paragraph **replaced by**: Luminaires shall be provided with only one of the following means of connection and isolation to the supply. Fixed luminaires: – device for the connection of luminaires; – terminals; – plug for engagement with socket-outlets; – connecting leads (tails) in accordance with Clause 4.6 requirements; – supply cord; – supply cord and plug; – adapter for engagement with supply tracks; – appliance inlet; – installation coupler; – luminaire coupler. Portable luminaires: – supply cord with plug; – appliance inlet; – inlet plug complying with AS/NZS 3120. Track-mounted luminaires: — adaptor; — connector.		P
	Delete the second and third paragraph.		—
	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 the relevant 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. 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
	The plug portion of a luminaire with integral pins shall comply with the relevant requirements of AS/NZS 3112.		N
	NOTE 4 PVC-insulated connection cords should not be used with outdoor luminaires in cold alpine locations.		—

Australian deviation			
Clause	Requirement + Test	Result - Remark	Verdict
5.2.2	First paragraph **replaced by**: 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

Table 5.1 — Supply cord

Luminaire	Rubber	PVC	No insulation
Ordinary class I luminaires	60245 IEC 51S [c]	60227 IEC 52 [c]	
Ordinary class II luminaires	60245 IEC 53 [c]	60227 IEC 52 [c]	
Luminaires which are other than ordinary class I and II	60245 IEC 57 [c]	60227 IEC 53 [ac]	
Portable rough service luminaires	60245 IEC 66 [c]	PVC insulated and sheathed heavy duty flexible cord	
Class III or with SELV circuits luminaires (up to 25 V a.c./60 V d.c.)			Un-insulated conductor [b]
Class III or with SELV circuits luminaires (above 25 V a.c./60 V d.c.), including 50 V a.c./120 V d.c.	Unsheathed basic insulated conductor		

[a] For indoor use only.

[b] AS/NZS 3000 may restrict the use of un-insulated conductors in certain special installations.

[c] For supply voltages greater than 250 V, higher voltage grade cables and cords than those given in the above table may be necessary.

Third paragraph **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. 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

Australian deviation			
Clause	Requirement + Test	Result - Remark	Verdict
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
5.3.1	Third paragraph **replaced 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.		N
	NOTE 3 Internal wires of other colours are not precluded from making protective earthing connections		—
5.3.1.3	**Replaced by**: In class II luminaires, where the internal wiring has a live conductor and the wiring insulation may touch accessible metal parts under normal operating conditions, the insulation, at least at the places of contact, shall comply with the requirements for double or reinforced insulation, e.g. by applying sheathed cables or sleeves.		P
7	**PROVISION FOR EARTHING**		**N**
7.2.11	Third paragraph **replaced with** the following: All conductors, whether internal or external, coloured green, yellow or green/yellow combination, shall only be connected to an earthing terminal.		N
8	**PROTECTION AGAINST ELECTRIC SHOCK**		**P**
8.2.1	First two paragraphs including Note 1 **replace by** following: 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 user cleaning or maintenance, or for replacement of lamps, replaceable light sources or (replaceable) starters, even if the operation cannot be achieved by hand. Luminaires with non-replaceable light sources are subjected to the tests of Clause 4.29 prior to applying the tests and inspections of Section 8 of this Standard. This does not apply to the non-current-carrying parts of caps which comply with the relevant IEC safety standard.		P

Australian deviation			
Clause	Requirement + Test	Result - Remark	Verdict
	Delete “Covers in fixed luminaires that cannot be removed by a single action with one hand are not removed. However, covers which have to be removed for changing lamps or starters are removed for this test.”		—

9	**RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE**		**N**
9.2	**Add** after NOTE 1**:** *NOTE 101 A designation of IPX7 or IPX8 is considered unsuitable for exposure to water jets (designated by IPX5 or IPX6) and may not comply with requirements for second numeral 5 or 6 unless it is dual coded.*		—

10	**INSULATION RESISTANCE AND ELECTRIC STRENGTH, TOUCH CURRENT AND PROTECTIVE CONDUCTOR CURRENT**		**P**
10.3	**Delete** the second row beginning with ‘Class I luminaires rated up to and including 16 A…’. First column, third row, deletes the word ‘Metal’.		—

12	**ENDURANCE TEST AND THERMAL TEST**		**P**
Table 12.1	First column, first row, the text **replaced by**: ‘Case (of **control gear**, capacitor, starting device, electronic ballast or convertor, etc.)’		—
	Add: *NOTE 101 Luminaire manufacturers should consider the maximum ambient air temperature in the vicinity of components such as starting devices and electronic ballasts or converters. Component performance specifications advise manufacturers to mark or supply life data as maximum ambient air temperature based on 50,000 h. This t-life is often marked as ta and is the temperature of the air in the vicinity of the component and is not related to the luminaire ta. As such, luminaire manufacturers should measure air temperature in the vicinity of such components, within the luminaire, as even those complying with their tc point measurements can still fail prematurely if t-life is exceeded.*		—

13	**RESISTANCE TO HEAT, FIRE AND TRACKING**		**P**
13.3	Parts of non-metallic material (other than ceramic) shall be resistant to flame and ignition. This Clause applies to all parts, including components, even if they have been tested to their own IEC or equivalent standard.		—
13.3.1	Parts of non-metallic material supporting connections that could become an ignition source, and **parts of non-metallic material within a distance of 3 mm of such connections** shall withstand the test glow-wire at 750 ºC and applied to one test sample for 30 s:		P

Australian deviation			
Clause	Requirement + Test	Result - Remark	Verdict

	Welded connections, soldered connections on printed circuit boards and other connections carrying less than 0.2 A during normal operation are not considered to be an ignition source.				—
	Object/ Part No./ Material	Manufacturer/ trademark	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
	DC connector1	See Annex 1	No	0	P
	DC connector2	See Annex 1	No	0	P
	PCB of switch	See Annex 1	No	0	P
	Plastic enclosure of switch	See Annex 1	No	0	P
	LED cover	See Annex 1	No	0	P
13.3.2	All other parts of non-metallic material which do not support connections that could become an ignition source, but provide protection against electric shock or maintain creepage and clearances shall withstand the glow-wire test at 650 ºC and applied to one test sample for 30 s:				P
	Object/ Part No./ Material	Manufacturer/ trademark	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
	See table(13.3.2)	See Annex 1	No	0	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 non-metallic parts that encroach within the envelope of a vertical cylinder having a diameter of 20 mm and a height of 50 mm above the point of application of the glow wire' are further applied to needle-flame test of AS/NZS 60695.11.5.		No flame produced		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
	--	--	--	--	--	--
	NOTE This requires the needle flame to be applied to all parts likely to be impinged upon by the glow-wire flame within the hypothetical envelope of a vertical cylinder positioned above the point of application of the glow-wire. This applies to all parts unless there is a barrier that passes the needle-flame test and is within the cylinder and would protect the part from the glow-wire flame.					—

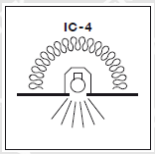
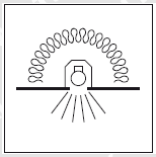
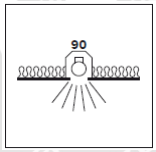
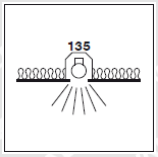
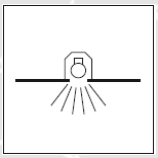
Australian deviation			
Clause	Requirement + Test	Result - Remark	Verdict

Annex 5	**APPENDIX ZZ VARIATIONS TO IEC 60598-2-2, ED. 3.0 (2011) FOR AUSTRALIA AND NEW ZEALAND**	**P**
2.1	**SCOPE**	—
	This part also specifies the safety requirements for recessed luminaires to provide adequate protection in respect of the fire risk associated with the combination of recessed luminaires with flammable building elements, flammable debris and building insulation.	—

2.3	**TEST REQUIREMENT**		—
	If IP > IP 20 and classified as CA90, CA135, IC and IC-4. The order of tests as specified in Table ZZ1.		P
	Table ZZ1		—
	Order	Test	
	1	Endurance test of Section 12.3 of AS/NZS 60598.1.	
	2	Test for ingress of dust, solid objects and moisture of Section 9.2 of AS/NZS 60598.1.	
	3	Ingress test (for the appropriate classification) of Section 2.14 of this Standard.	
	4	Thermal test (normal operation) of Section 12.4 of AS/NZS 60598.1 and normal operation test (for the appropriate classification) of Section 2.13 of this Standard.	
	5	Thermal test (abnormal operation) of Section 12.5 of AS/NZS 60598.1.	
	6	Abnormal operation test (for the appropriate classification) of Section 2.13 of this Standard.	
	7	Thermal test (failed windings in lamp controlgear) of Section 12.6 of AS/NZS 60598.1.	
	8	Thermal test in regard to fault conditions in lamp controlgear or electronic devices incorporated in thermoplastic luminaires of Section 12.7 of AS/NZS 60598.1.	
	9	Humidity test of Section 9.3 of AS/NZS 60598.1.	
	10	Insulation resistance and electric strength, touch current and protective conductor current tests of Section 10 of AS/NZS 60598.1.	

2.4	**DEFINITION**		—
2.4.101	Non-IC luminaire A recessed luminaire that cannot be abutted against or covered by normally flammable materials or used in installations where building insulation or debris is, or may be, present in normal use.		—

Australian deviation			
Clause	Requirement + Test	Result - Remark	Verdict
2.4.102	Do-not-cover luminaire A recessed luminaire that can be used where normally flammable materials, including building insulation, are or may be present, but cannot be abutted against any material and cannot be covered in normal use.		—
2.4.103.1	CA90 luminaire A recessed luminaire that can be abutted against normally flammable materials, including building insulation, but cannot be covered in normal use. Building elements, building insulation or debris have limited access to the heated parts of the luminaire.		—
2.4.103.2	CA135 luminaire (New Zealand only) A recessed luminaire that can be abutted against normally flammable materials, including building insulation, but cannot be covered in normal use. Building elements, building insulation or debris have some access to the heated parts of the luminaire.		—
2.4.104.1	IC luminaire A recessed luminaire that can be abutted against normally flammable materials, including building insulation, and can be covered in normal use. Building elements, building insulation or debris have limited access to the heated parts of the luminaire.		—
2.4.104.2	IC-4 luminaire A recessed luminaire that can be abutted against normally flammable materials, including building insulation, and can be covered in normal use. Building elements, building insulation or debris have restricted access to the heated parts of the luminaire. This classification of recessed luminaire is effectively a sealed unit that has a restricted flow of air between the habitable room the luminaire emits light into and the void/space where the main body of the luminaire is located.		—
2.5	**CLASSIFICATION OF LUMINAIRE**		—
2.5.101	Luminaires shall be classified in accordance with the provisions of Section 2 of AS/NZS 60598.1, along with the 2.5.102 and 2.5.103.		P
2.5.102	Australian classifications	☐ Non-IC ☒ Do-not-cover ☐ CA90 ☐ IC ☐ IC-4	P

Australian deviation			
Clause	Requirement + Test	Result - Remark	Verdict
2.5.103	New Zealand classifications	☐ Non-IC ☒ Do-not-cover ☐ CA90 ☐ CA135 ☐ IC ☐ IC-4	P
2.6	**MARKING**		—
2.6.101	The provisions of Clause 3 of AS/NZS 60598.1 apply, along with the following: – Clause 3.2.21 of AS/NZS 60598.1 is replaced by Clause 2.6.102. – The additional requirements of Clause 2.6.103 and Clause 2.6.104 apply, as applicable.		P
2.6.102	Insulating ceiling IC-4 mark, symbol 		N
	Insulating ceiling IC mark, symbol 		N
	Insulating ceiling CA 90 mark, symbol 		N
	Insulating ceiling CA 135 mark, symbol 		N
	Insulating ceiling Non-IC mark, symbol 		N

Australian deviation			
Clause	Requirement + Test	Result - Remark	Verdict
	Insulating ceiling Do-not-cover mark, symbol 		P
2.6.103	Location and durability of marking		—
	a) legible, durable and visible when the luminaire is installed and viewed from behind;		P
	b) a minimum size of 25 mm × 25 mm; and		P
	c) permanently marked on the luminaire or on a durable swing tag permanently connected to the luminaire.		P
2.6.104	Additional information to be supplied with the luminaire		P
2.6.104.1	Information and warning		—
	a) The minimum clearance distance from the top of the luminaire to any normally flammable building element (mm)……..:	25 mm	P
	b) The minimum clearance distance from the top of the luminaire to any building insulation (mm)……..:	25 mm	P
	c) The minimum clearance distance from the side of the luminaire to any normally flammable building element (mm)……..:	25 mm	P
	d) The minimum clearance distance from the side of the luminaire to any building insulation (mm) ……..:	25 mm	P
	The luminaire is suitable for installing in a non-combustible enclosed space or non-combustible premade enclosure.		N
	The warning for luminaire where the minimum clearance distances are stated.		P
	Additional warning for classification CA135 luminaire.		N
2.6.104.2	Additional warning		P
2.6.104.2.2	Australia additional warning		P
2.6.104.2.3	New Zealand additional warning		P
2.6.105	Luminaires intended for use with independent controlgear		N
2.6.106	Compliance with Clauses 2.6.101 to 2.6.105 is checked by inspection and the relevant tests of AS/NZS 60598.1.		P
2.7	**CONSTRUCTION**		—

Australian deviation			
Clause	Requirement + Test	Result - Remark	Verdict
2.7.101	The provisions of Section 4 of AS/NZS 60598.1 apply, along with the 2.7.102, 2.7.103 and 2.7.104.		P
2.7.102	Thermal protection devices		N
	Thermal protectors comply with IEC 60730-1 with declared number of cycles of operation declared according 6.10 and 6.11 of IEC 60730-1		N
	- Self-resetting thermal protection device		N
	- Voltage maintained non-self-resetting thermal protection device		N
	- Other non-self-resetting thermal protection device		N
	- Adequate fixing		N
	- Single operation non-self-resetting thermal protection devices that are user replaceable are not permitted.		N
	Electronic controls that regulate the light output during abnormal operation tests to enable the luminaire to comply with the requirements of this Standard shall comply with Clause 2.7.103.		N
2.7.103	Electronic controls		N
	a) Electronic controls that operate during any test of this Standard and fully turn off the light source shall incorporate the operation of a thermal protection device component that complies with IEC 60730-1 with the number of cycles of operation declared in accordance with Clause 2.7.102.		N
	b) Electronic controls that operate during any test of this Standard and do not fully turn off the light source shall be bypassed and the relevant test shall be repeated. The luminaire shall comply with the requirements of the relevant test with the electronic control bypassed and any remaining device that operates shall comply with IEC 60730-1 with the number of cycles of operation declared in accordance with Clause 2.7.102.		N
	c) Electronic controls shall comply with the appropriate part of the AS/NZS 61347 series and incorporate a thermal protective device that has been tested to the number of cycles of operation declared in accordance with Clause 2.7.102.		N
	d) Electronic controls with programmable components (including embedded software) shall comply with IEC 62733, unless the luminaire complies with the requirements of this Standard with the electronic controls bypassed.		N
2.7.104	Controlgear		—

Australian deviation			
Clause	Requirement + Test	Result - Remark	Verdict
	All controlgear (including controlgear that is a component part and all independent controlgear) that is supplied with, or specified in, the instructions supplied with the luminaire for use with the luminaire shall be assessed with the luminaire to this Standard and shall, in addition, comply with the appropriate part of the AS/NZS 61347 series.		P
2.11	**EXTERNAL AND INTERNAL WIRING**		P
2.11 (5.2.1)	The provisions of Section 5 of IEC 60598-1 apply. Flexible cables or 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 or IEC 60245 and shall be capable of withstanding without deterioration the highest temperature to which they may be exposed under normal conditions of use. Materials other than p.v.c. and rubber are suitable if the above requirements are met. *Compliance shall be checked by the tests specified in 2.13.* NOTE The use of flexible cables and cords with recessed luminaires is appropriate for the following reasons: 1) The flexible cable or cord cannot be easily touched as it is normally out of reach within the recess. 2) To facilitate installation of the luminaire into the recess. 3) To permit the adjustment of settable and adjustable recessed luminaires.		P

Australian deviation			
Clause	Requirement + Test	Result - Remark	Verdict
	Variation 1. *Delete* the first paragraph and *replace* with the following: Luminaires shall be provided with only one of the following means of connection and isolation to the supply. Fixed luminaires: — device for the connection of luminaires; — terminals; — plug for engagement with socket-outlets; — connecting lead (tails); in accordance with Clause 4.6 requirements; — supply cord — supply cord and plug; — adapter for engagement with supply tracks; — appliance inlet; — installation coupler; — luminaire coupler; Portable luminaires: — supply cord with plug; — appliance inlet. — inlet plug complying with AS/NZS 3120. Track-mounted luminaires: — adaptor; — connector.		P
	Delete the second and third paragraph.		P

Australian deviation			
Clause	Requirement + Test	Result - Remark	Verdict
	3. *After* Note 3, *insert* the following text: 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. The plug portion of a luminaire with integral pins shall comply with the relevant requirements of AS/NZS 3112. NOTE 4 PVC-insulated connection cords should not be used with outdoor luminaires in cold alpine locations. (AS/NZS 60598.1:2017)		N
2.11 (5.2.2)	Variation *1.Delete* the first paragraph and *replace* with the following: 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
	2.Delete the third paragraph and replace with the following: 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. (AS/NZS 60598.1:2017)		P

Australian deviation			
Clause	Requirement + Test	Result - Remark	Verdict

Table 5.1

Variation

Delete Table 5.1 and replace with the following:

Table 5.1 — Supply cord

Luminaire	**Rubber**	**PVC**	**No Insulation**
Ordinary class 1 luminaires	60245 IEC 51 [c]	60227 IEC 52 [c]	
Ordinary class II luminaires	60245 IEC 53 [c]	60227 IEC 52 [c]	
Luminaires which are other than ordinary class I and II	60245 IEC 57 [c]	60227 IEC 53 [c]	
Portable rough service luminaires	60245 IEC 66 [c]		
Class III or with SELV circuits luminaires (up to 25 V a.c./60 V d.c.)			Un-insulated conductor [b]
Class III or with SELV circuits luminaires (above 25 V a.c./60 V d.c.), including 50 V a.c./120 V d.c.	Unsheathed basic insulated conductor		

a.For indoor use only.
b. AS/NZS 3000 may restrict the use of un-insulated conductors in certain special installations.

c For supply voltages greater than 250 V, higher voltage grade cables and cords than those given in the above table may be necessary

(AS/NZS 60598.1:2017)

P

2.11 (5.2.16)

Addition

At the end of the Clause, insert the following text:
Class II luminaires for fixed wiring incorporating an appliance coupler shall not have means to allow further luminaires to be connected by cascading including connection by looping-in.
Luminaire couplers incorporated with the luminaire shall comply with IEC 61995-1.
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.

(AS/NZS 60598.1:2017)

P

Australian deviation			
Clause	Requirement + Test	Result - Remark	Verdict
2.11 (5.2.18)	Variation *Delete* Clause 5.2.18 and *replace* with the following: **5.2.18** All portable luminaires with a supply cord shall be fitted with a plug complying with AS/NZS 3112. Other luminaires with a supply cord shall be fitted with a plug complying with AS/NZS 3112, unless they have the warning specified by Clause 3.2.12. (AS/NZS 60598.1:2017)		N
2.11 (5.3.1)	Variation 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. NOTE 101 Internal wires of other colours are not precluded from making protective earthing connections.		N
2.11 (5.3.1.3)	Variation *Delete* Clause and *replace* with the following: In class II luminaires, where the internal wiring has a live conductor and the wiring insulation may touch accessible metal parts under normal operating conditions, the insulation, at least at the places of contact, shall comply with the requirements for double or reinforced insulation, e.g. by applying sheathed cables or sleeves. (AS/NZS 60598.1:2017)		P

Australian deviation			
Clause	Requirement + Test	Result - Remark	Verdict

2.12	**PROTECTION AGAINST ELECTRIC SHOCK**		P
2.12 (8.2.1)	The provisions of Section 8 of IEC 60598-1 apply. The parts of the luminaire and components within the ceiling space or cavity shall provide the same degree of protection against electric shock as the luminaire parts below the ceiling space. NOTE The ceiling space or cavity is regarded as accessible for installation and maintenance, and the barriers do not provide adequate protection against electric shock.		P
	Compliance is checked by inspection.		P

2.13	**ENDURANCE TESTS AND THERMAL TESTS**		P
	The provisions of Section 12 of IEC 60598-1 apply together with the requirements of 2.13.1.		P
2.13.1	**2.13.1** Wiring, for connection to the supply, which passes into or can touch the luminaire shall not reach unsafe temperature. *Compliance shall be checked by the following tests:* *The luminaire is connected to the supply using the cable provided with the luminaire or using a cable in accordance with the marking on the luminaire or, if not marked, as specified in the manufacturer's instruction sheet; otherwise PVC cable complying with IEC 60227 is used.* *The hottest point is found (along the internal route or on the outer surface of the luminaire) with which the cable is likely to lie in contact during normal service. The cable is lightly held in contact at this point and the temperature of the insulation at the point of contact is measured as described in Annex K of IEC 60598-1.* *The operating temperature of the cable shall not exceed the limits given in Table 1.* *Luminaires with an IP classification greater than IP20 shall be subjected to the relevant tests of Clauses 12.4, 12.5, 12.6 and 12.7 of Section 12 of IEC 60598-1 after the test(s) of Clause 9.2 but before the test(s) of Clause 9.3 of Section 9 of IEC 60598-1 specified in Clause 2.14 of this section of IEC 60598-2.* **Table 1 – Operating temperature of cable** **Designation of cable** / **Limit of operating temperature** Cable (including sleeves) provided with the luminaire: The maximum temperature specified in Table 12.2 of IEC 60598-1 Cable not provided with the luminaire: a) luminaires with cable temperature marking: The marked temperature b) luminaires without cable temperature marking: The maximum temperature specified in Table 12.2 of IEC 60598-1 for ordinary PVC not subject to mechanical stress		P
2.13.101	General The provisions of Section 12 of AS/NZS 60598.1 apply together with the requirements of this Clause (Clause 2.13).		P

Australian deviation			
Clause	Requirement + Test	Result - Remark	Verdict
	Clause 12.4 and 12.5 of AS/NZS 60598.1 are applied in conjunction with the following: a) For Non-IC and Do-not-cover luminaires, the requirements of Clauses 12.4 and 12.5 of AS/NZS 60598.1 are modified by Clause 2.13.102.		P
	b) For CA90 and CA135 luminaires, the requirements of Clauses 12.4 and 12.5 of AS/NZS 60598.1 are modified by Clause 2.13.103.		N
	c) For IC and IC-4 luminaires, the requirements of Clauses 12.4 and 12.5 of AS/NZS 60598.1 are modified by Clause 2.13.104.		N
2.13.102	**Thermal tests for Non-IC and Do-not-cover luminaires**		P
	Requirements of Appendix ZA apply		—
2.13.102.1	Normal operation test for Non-IC and Do-not-cover luminaires		P
	- mounting surface (°C).....:	(see Annex 2),Limit: 90 °C	P
	- internal surfaces of test box (°C).....:	(see Annex 2),Limit: 90 °C	P
	- surface of any building element (°C).....:	(see Annex 2),Limit: 90 °C	P
	- for other parts (°C).....:	(see Annex 2)	P
	After normal operation:		P
	- no damage to the luminaire such as scorching, deformation or melting		P
	- no thermal protection device operate		P
	- no electronic control that fully turns off the light source operate		P
2.13.102.2	Abnormal operation test for Do-not-cover luminaires		P
	- mounting surface (°C).....:	(see Annex 2),Limit: 90 °C	P
	- surface of insulation (°C).....:	(see Annex 2),Limit: 130 °C	P
	After abnormal operation:		P
	- no damage to the luminaire such as scorching, deformation or melting		P
	- thermal protection device or electronic control operate		P
	- no thermal protection devices of any independent controlgear operate		P
2.13.103	**Thermal tests for CA90 and CA135 luminaires**		N
	Requirements of Appendix ZA apply		—

Australian deviation			
Clause	Requirement + Test	Result - Remark	Verdict
2.13.103.1	Normal operation test for CA90 and CA135 luminaires		N
	- mounting surface (°C).....:	Limit: 90 °C	N
	- internal surfaces of test box (°C).....:	Limit: 90 °C	N
	- surface of any building element (°C)..... :	Limit: 90 °C	N
	- CA90, outside surface of the luminaire accessible with Ø 5.6 mm probe (°C)..... :	Limit: 90 °C	N
	- CA135, outside surface of the luminaire accessible with Ø 50 mm probe (°C).....:	Limit: 135 °C	N
	- for other parts (°C).....:	(see Annex 2)	N
	After normal operation:		N
	- no damage to the luminaire such as scorching, deformation or melting		N
	- no thermal protection device operate		N
	- no electronic control that fully turns off the light source operate		N
2.13.103.2	Abnormal operation test CA90 and CA135 luminaires		N
	- mounting surface (°C).....:	Limit: 90 °C	N
	- CA90, outside surface of the luminaire accessible with Ø 5.6 mm probe (°C)..... :	Limit: 130 °C	N
	- CA135, outside surface of the luminaire accessible with Ø 50 mm probe (°C).....:	Limit: 150 °C	N
	After abnormal operation:		N
	- no damage to the luminaire such as scorching, deformation or melting		N
	- thermal protection device or electronic control operate		N
	- no thermal protection devices of any independent controlgear operate		N
2.13.104	**Thermal tests for IC and IC-4 luminaires**		N
	Requirements of Appendix ZA apply		—
2.13.104.1	Normal operation test for IC and IC-4 luminaires		N
	- mounting surface (°C).....:	(see Annex 2) Limit: 90 °C	N
	- IC, outside surface of the luminaire accessible with Ø 5.6 mm probe (°C)..... :	Limit: 90 °C	N
	- IC-4, outside surface of the luminaire accessible with Ø 1 mm probe (°C).....:	(see Annex 2) Limit: 90 °C	N

Australian deviation			
Clause	Requirement + Test	Result - Remark	Verdict
	- for other parts (°C).....:	(see Annex 2)	N
	After normal operation:		N
	- no damage to the luminaire such as scorching, deformation or melting		N
	- no thermal protection device operate	No thermal protection device	N
	- no electronic control that fully turns off the light source operate	No electronic control that fully turns off the light source	N

2.14	**Resistance to dust and moisture**	**P**
	The provisions of Section 9 of IEC 60598-1 apply. For luminaires with an IP classification greater than IP20, the order of the tests specified in Section 9 of IEC 60598-1 shall be as specified in Clause 2.13 of this section of IEC 60598-2.	**P**

ZA	**APPENDIX ZA: THERMAL TEST PROCEDURES FOR RECESSED LUMINAIRES**		—
ZA1	GENERAL		—
	Recessed luminaires subjected to specified tests and operated as described in clause 12.4.1 of AS/NZS 60598.1, with the following modifications and additions:		P
	- filament light source: 1,05 times rated wattage.....:	--	N
	- other light sources: 0,94 or 1,06 times rated voltage, whichever produces higher temperatures...:	254.4 V	P
	- total duration (h).....:	8 h	—
	- mounting- position..... :	In accordance with the installation instructions. The separate component part placed under insulation in the test box	P
	- test temperature (°C)..... :	25 °C	P
ZA2	TEST BOX		P
	A test box, consisting of a mounting surface on top of which is a rectangular box with vertical sides and a top, shall be constructed as specified.		P
	Test box shall be supported or suspended in a draught-proof enclosure in accordance with AS/NZS 60598.1, Annex D.		P
ZA3	TEST PROCEDURE FOR NON-IC AND DO-NOT-COVER LUMINAIRES		P
	Test sample mounted in wooden test box as specified.		P

Australian deviation			
Clause	Requirement + Test	Result - Remark	Verdict
	Simulated building element placed as specified.		P
	For do-not-cover luminaires, thermal insulation is added to the test box with the clearance specified in the installation instructions.		P
	The type of thermal insulation is formed insulation where 200 mm is equivalent to an RI 4.0 classification in accordance with AS/NZS 4859.1.		—
	Thermocouples mounted and positioned as specified.		P
ZA4	TEST PROCEDURE FOR CA90 AND CA135 LUMINAIRES		N
	Test sample mounted in wooden test box as specified.		N
	Simulated building element placed as specified.		N
	Thermal insulation is added to the test box, so as to fill the remaining space between the side of the test box and the luminaire, and to abut the sides of the luminaire.		N
	The type of thermal insulation is formed insulation where 200 mm is equivalent to an RI 4.0 classification in accordance with AS/NZS 4859.1.		—
	Thermocouples mounted and positioned as specified.		N
ZA5	TEST PROCEDURE FOR ABNORMAL OPERATION—DO-NOT COVER, CA90 AND CA135 LUMINAIRES		P
	Test sample mounted in wooden test box as specified.		P
	Test box completely filled with thermal insulation fully contacting the luminaire.		P
	The type of thermal insulation is formed insulation where 200 mm is equivalent to an RI 4.0 classification in accordance with AS/NZS 4859.1.		—
	Thermocouples mounted and positioned as specified.		P
ZA6	TEST PROCEDURE FOR NORMAL OPERATION—IC AND IC-4 LUMINAIRES		N
	Test sample mounted in wooden test box as specified.		N
	Test box completely filled with thermal insulation fully contacting the luminaire.		N
	The type of thermal insulation is formed insulation where 200 mm is equivalent to an RI 4.0 classification in accordance with AS/NZS 4859.1.		—

Australian deviation			
Clause	Requirement + Test	Result - Remark	Verdict
	Thermocouples mounted and positioned as specified.		N

IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict
ANNEX 6	**LED modules for general lighting – Safety specifications IEC 62031:2018**		**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 ☐ No ☒	—
	Independent module..... :	Yes ☐ No ☒	—
	Integral module ..... :	Yes ☒ No ☐	—
	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 1)	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 1)	N
	Part of the luminaire	(see Annex 4)	N
	Connectors according IEC 60838-2-2:		N
	Separately approved; component list	(see Annex 1)	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 ≥ 2 MΩ .....:	100MΩ	P
	For double or reinforced insulation ≥ 4 MΩ .....:		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 ≤ 50 V, test voltage 500 V		N
	Working voltage > 50 V ≤ 1000 V, test voltage (V):		N
	Basic insulation, 2U + 1000 V		N
	Supplementary insulation, 2U + 1000 V		N
	Double or reinforced insulation, 4U + 2000 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:		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
	Fault conditions: capacitors, resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected	(see appended table)	P

IEC 62031			
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	(see appended table)	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 ≥ 1 MΩ ..... :	>20 MΩ	P
	No flammable gases		P
	No accessible parts have become live		P
	During the tests, a five-layer tissue paper, where the test specimen is wrapped, does not ignite		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
	- part tested; temperature (°C)..... :	--	N

IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict
(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/62778		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 - SELV-operated LED modules	**N**
	SELV-operated LED modules in compliance with Annex I of IEC 61347-2-13	N

IEC 62471			
Clause	Requirement + Test	Result - Remark	Verdict
Annex 7	**Photobiological safety (IEC 62471:2006)**		**P**

Emission limits for risk groups of continuous wave lamps α=0.11rad									P
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	$W \cdot m^{-2}$	0.001	4.0e-05	0.003	--	0.03	--
Near UV		E_{UVA}	$W \cdot m^{-2}$	10	1.0e+00	33	--	100	--
Blue light	B(λ)	L_B	$W \cdot m^{-2} \cdot sr^{-1}$	100	2.1e+01	10000	--	4000000	--
Blue light, small source	B(λ)	E_B	$W \cdot m^{-2}$	1.0*	--	1,0	--	400	--
Retinal thermal	R(λ)	L_R	$W \cdot m^{-2} \cdot sr^{-1}$	28000/α	3.2e+03	28000/α	--	71000/α	--
Retinal thermal, weak visual stimulus**	R(λ)	L_{IR}	$W \cdot m^{-2} \cdot sr^{-1}$	6000/α	--	6000/α	--	6000/α	--
IR radiation, eye		E_{IR}	$W \cdot m^{-2}$	100	0.0e+00	570	--	3200	--
* Small source defined as one with α < 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: EOL.CE.FR20-36

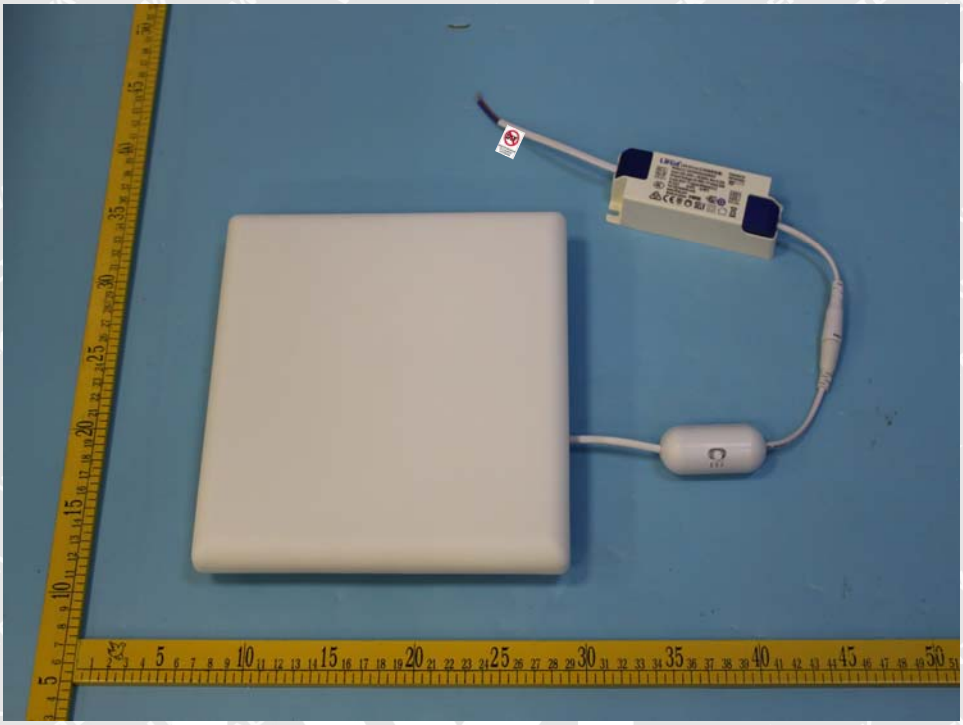


Photo 1

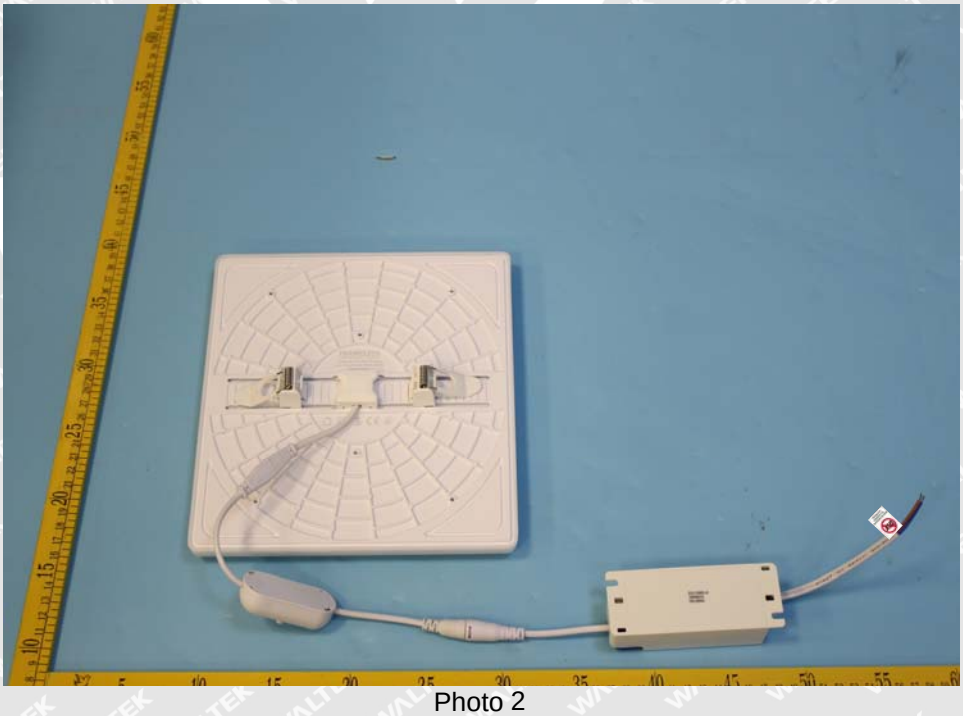
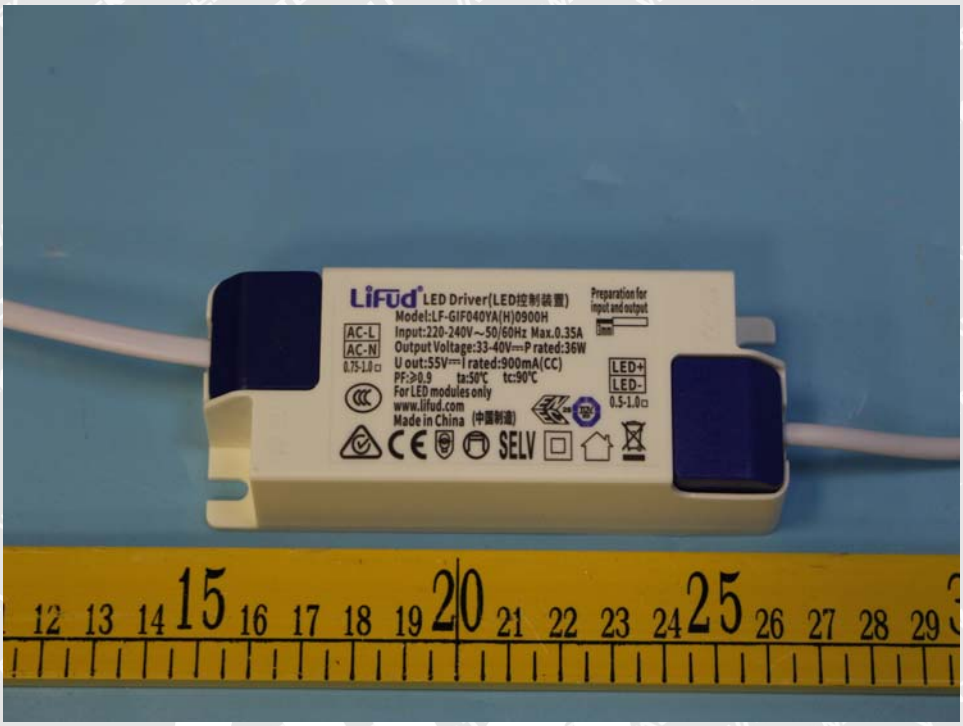


Photo 2

Photo Documentation



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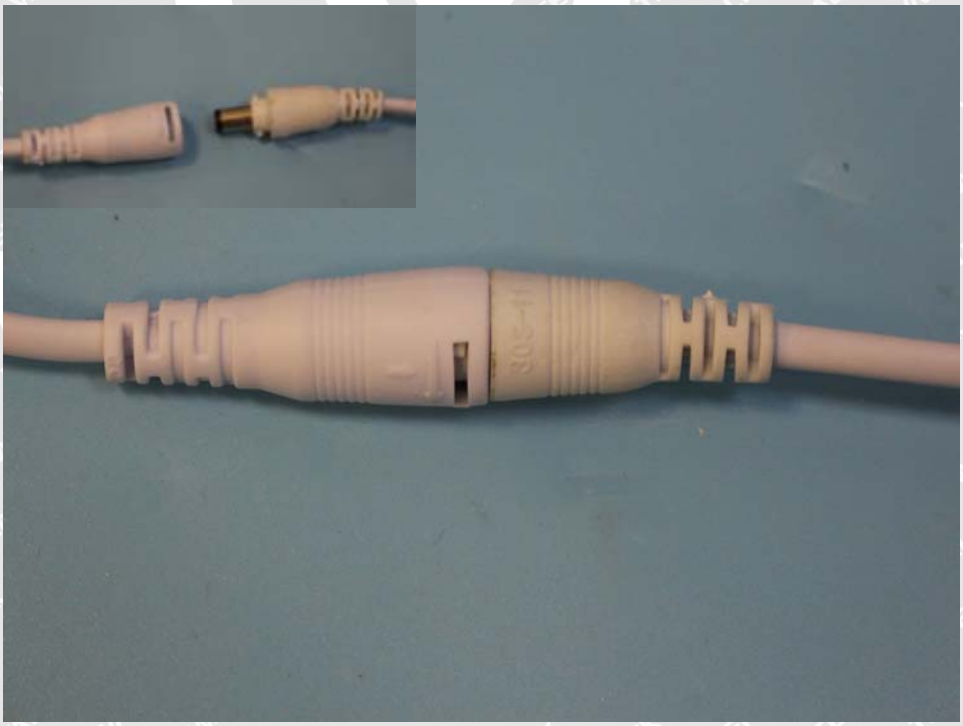


Photo 4

Photo Documentation

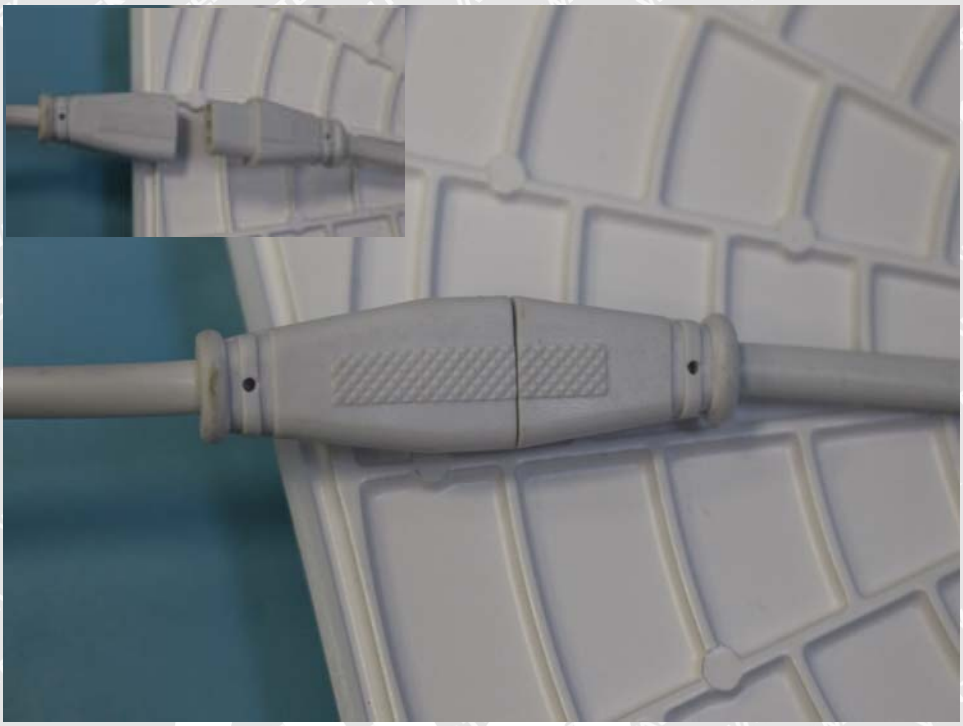


Photo 5

Photo 6

Photo Documentation

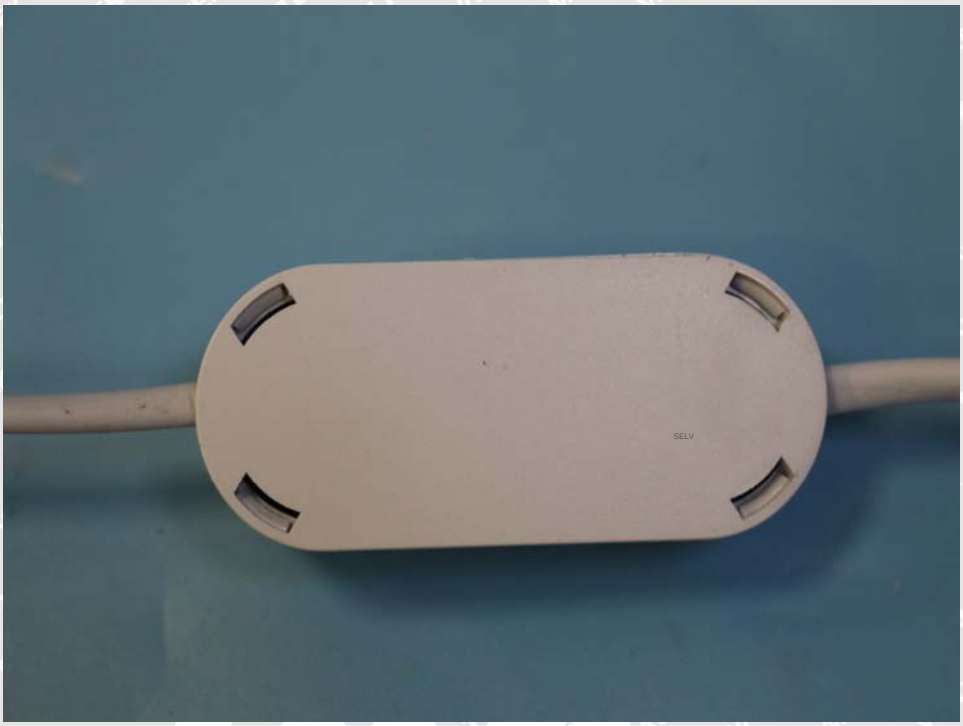


Photo 7

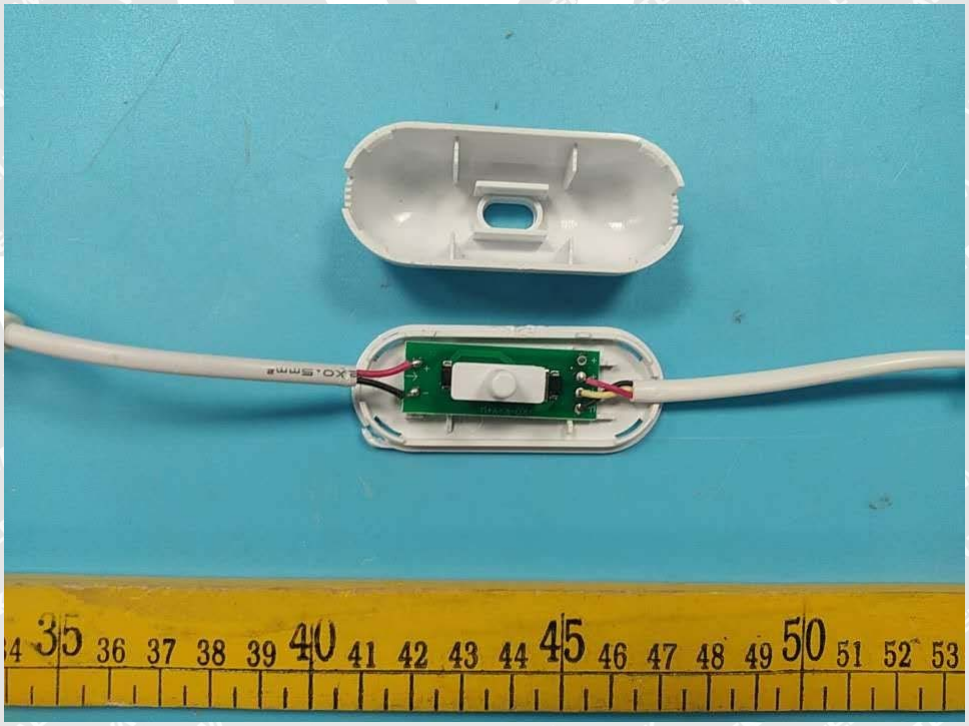
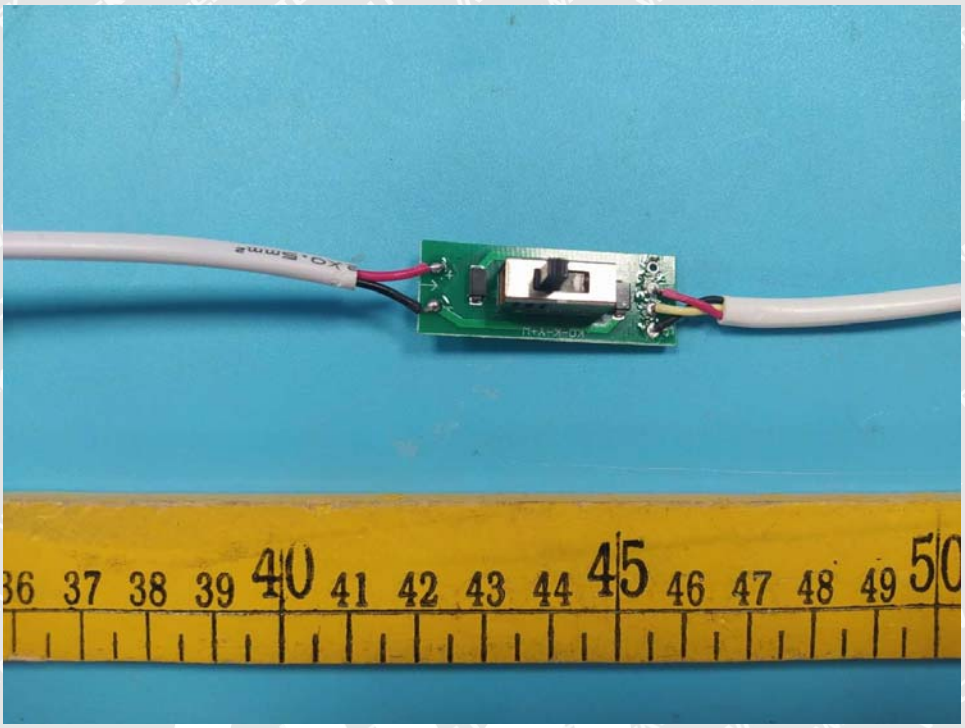


Photo 8

Photo Documentation



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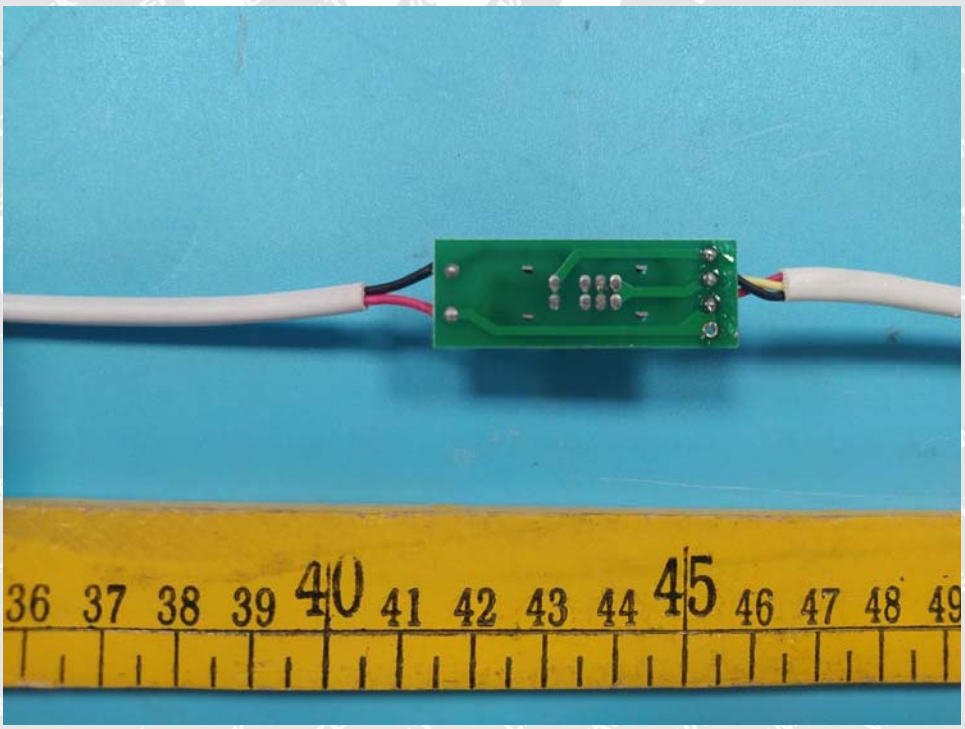

Photo 10

Photo Documentation

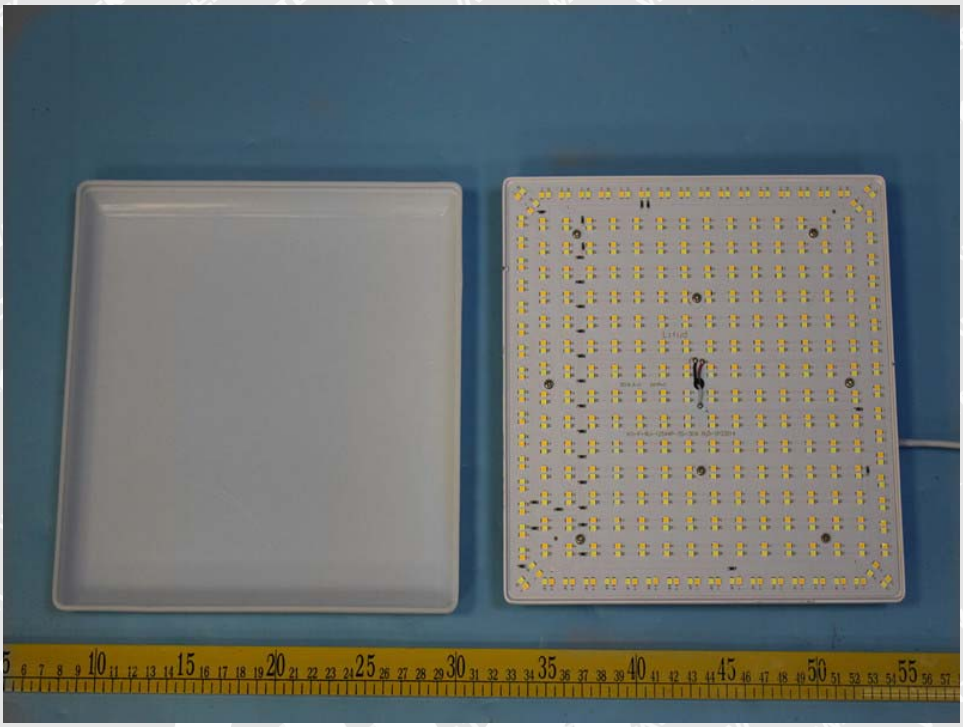

Photo 11

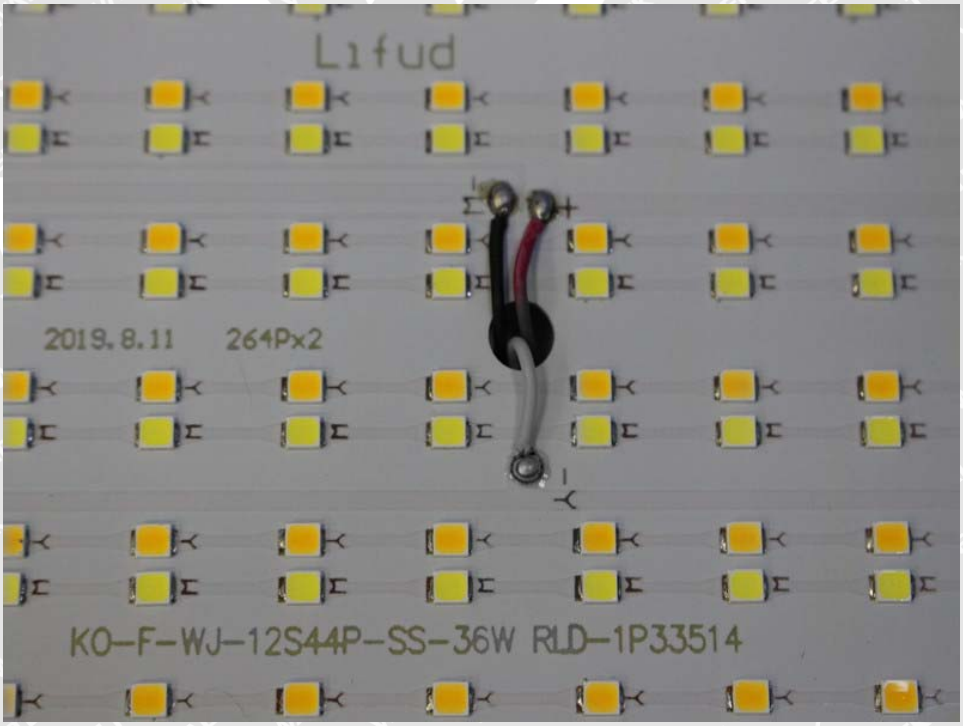

Photo 12

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