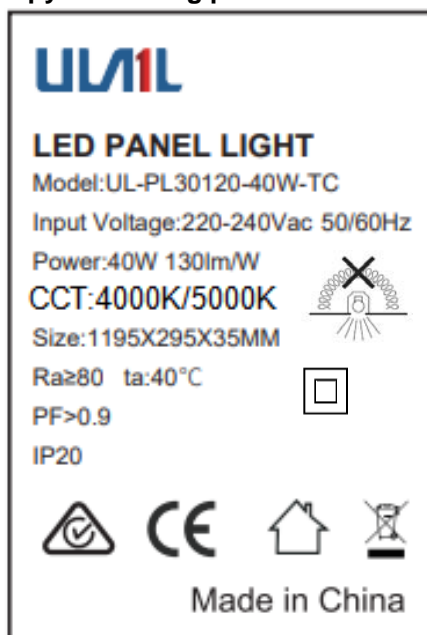


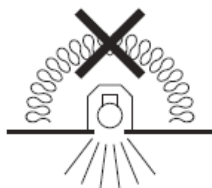
TEST REPORT AS/NZS 60598.2.2 Luminaires Part 2: Particular requirements —Recessed luminaires	
Report Reference No.....	DG5231207-73598E-SF
Compiled by (+ signature)	Test Engineer:Max Li
Approved by (+ signature)	Project Engineer:Andy Fu
Date of issue.....	2023-12-26
Testing Laboratory.....	Bay Area Compliance Laboratories Corp. (Dongguan)
Address	No.12, Pulong East 1 st Road, Tangxia Town, Dongguan, Guangdong, China
Testing location	Same as above
Applicant's name	Shenzhen UI led lighting Photoelectricity CO.,Ltd
Address	1401-1402,Building A,Yonghuayuan,No.6 Baotian 2nd Road,Chentian Community,Xixiang Street,Baoan District,Shenzhen, Guangdong, China
Standard	AS/NZS 60598.2.2:2016+A1:2017+A2:2021 AS/NZS 60598.1:2017+A2:2020 IEC 62031:2018 IEC TR62778:2014
Test sample(s) received.....	2023-12-08
Test in period.....	2023-12-11 to 2023-12-25
Procedure deviation	AS/NZS standard
Non-standard test method.....	N/A
Test item description	LED Panel Light
Trade Mark	ULA1L
Manufacturer	Shenzhen ULA1L Photoelectricity Co.,Ltd.
Address	4th Floor, Building C, East of Hengmingzhu Industrial Park, No. 127-8, Qianjin 2nd Road, Xixiang Street, Baoan District, Shenzhen, Guangdong, China
Model/Type reference	UL-PL30120-40W-TC
Rating	220-240Vac,50/60Hz,40W,class II,ta:40℃

Copy of marking plate :



Note:

The height of graphical symbols shall not be less than 5 mm;
The height of letters and numerals shall not be less than 2 mm.
The symbol below with the minimum size is 25mm × 25mm.



Test item particulars
Classification of installation and use	Class II,for indoor use only
Supply Connection	Supply cord with plug

Possible test case verdicts:

- test case does not apply to the test object..... : N(/A)
- test object does meet the requirement..... : P(ass)
- test object does not meet the requirement..... : F(ail)

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.

Attachment 1: ATTACHMENT TO TEST REPORT IEC 60598-2-2 (AUSTRALIA/NEW ZEALAND) NATIONAL DIFFERENCES (Luminaires) (Part2.2 Particular requirements—Recessed luminaires)

Attachment 2: Additional requirement of AS/NZS 60598.1: 2017+A2:2020

Attachment 3: Test report for IEC 62031:2018

Attachment 4: According to IEC TR62778:2014

Test result: Risk Group 0

Attachment 5: Test report for IEC 61058-1-1:2016 (for CCT switch)

Attachment 6: EUT Photos

General product information:

1. The product is LED Downlight, Class II equipment, with the same rating: 220-240Vac, 50/60Hz, ta: 40°C
 2. The product is DO NOT COVER type recessed luminaire, suitable for direct mounting on normally flammable surfaces.

3. All models have the same construction, only differ in size, power, LED driver and LEDs. There is a CCT switch on output wire of LED driver, which can be adjusted for 4000K or 5000K.

see the model list below for product information:

Model	Power(W)	Size/mm	LED driver	LEDs
UL-PL30120-40W-TC	40W	1195*295*35	LF-GIF040YS1000H	120
UL-PL30120-36W-TC	36W		LF-GIF040YS0900H	120
UL-PL30120-24W-TC	24W		LF-GIF024YS0600H	144
UL-PL30120-22W-TC	22W		LF-GIF024YS0500H	144
UL-PL30120-16W-TC	16W		LF-GIF018YS0400H	144
UL-PL30120-14W-TC	14W		LF-GIF018YS0350H	144
UL-PL6060-36W-TC	36W	595*595*35	LF-GIF040YS0900H	144
UL-PL6060-24W-TC	24W		LF-GIF024YS0600H	144
UL-PL6060-22W-TC	22W		LF-GIF024YS0500H	144
UL-PL6060-16W-TC	16W		LF-GIF018YS0400H	144
UL-PL6060-14W-TC	14W		LF-GIF018YS0350H	144

4. Unless otherwise specified, the model UL-PL30120-40W-TC was chosen as representative model to perform all tests.

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
2.3 (0)	GENERAL TEST REQUIREMENTS		P
2.3 (0.1)	Information for luminaires design considered	Standard Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
2.3 (0.3)	More sections applicable	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
2.5 (2)	CLASSIFICATION		P
2.5 (2.2)	Type of protection	Class II	P
2.5 (2.3)	Degree of protection.....	IP20	—
2.5 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces.....	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
2.5 (2.5)	Luminaire for normal use.....	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	Luminaire for rough service.....	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
2.6 (3)	MARKING		P
2.6 (3.2)	Mandatory markings		P
	Position of the marking		P
	Format of symbols/text		P
2.6 (3.3)	Additional information		P
	Language of instructions	English	P
2.6 (3.3.1)	Combination luminaires	Not combination luminaires	N
2.6 (3.3.2)	Nominal frequency in Hz	50/60Hz	P
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	No such luminaire	N
2.6 (3.3.8)	Limitation for semi-luminaires	Not 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	Luminaires without remote control	N
2.6 (3.3.12)	Clip-mounted luminaire – warning	Not such luminaire	N
2.6 (3.3.13)	Specifications of protective shields	No such shield	N
2.6 (3.3.14)	Symbol for nature of supply	ac	P
2.6 (3.3.15)	Rated current of socket outlet	No such device	N
2.6 (3.3.16)	Rough service luminaire		N
2.6 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments	Type Y	P
2.6 (3.3.18)	Non-ordinary luminaires with PVC cable		N

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
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 arm's reach		P
2.6 (3.3.21)	Non-replaceable and non-user replaceable light sources information provided	Non-replaceable light sources	P
	Cautionary symbol		N
2.6 (3.3.22)	Controllable luminaires, classification of insulation provided	Not controllable luminaires	N
2.6 (3.4)	Test with water	15s	P
	Test with hexane	15s	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)	Wire ways smooth and free from sharp edges		P
2.7 (4.4)	Lampholders	No lampholder	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)		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 (Nm)		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 resistance to tracking		N
2.7 (4.4.8)	Lamp connectors		N
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	No starter holder	N

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	Starter holder in luminaires other than class II		N
	Starter holder class II construction		N
2.7(4.6)	Terminal blocks		N
	Tails		N
	Unsecured blocks		N
2.7(4.7)	Terminals and supply connections		N
2.7 (4.7.1)	Contact to metal parts		N
2.7 (4.7.2)	Test 8 mm live conductor		N
	Test 8 mm earth conductor		N
2.7 (4.7.3)	Terminals for supply conductors		N
2.7 (4.7.3.1)	Welded connections:		N
	- stranded or solid conductor		N
	- spot welding		N
	- welding between wires		N
	- Type Z attachment		N
	- mechanical test according to 15.6.2		N
	- electrical test according to 15.6.3		N
	- heat test according to 15.6.3.2.3 and 15.6.3.2.4		N
2.7 (4.7.4)	Terminals other than supply connection	No such terminals	N
2.7 (4.7.5)	Heat-resistant wiring/sleeves	No such sleeve	N
2.7 (4.7.6)	Multi-pole plug		P
	- test at 30 N		P
2.7 (4.8)	Switches	CCT Switch on output cord	P
	- adequate rating		P
	- adequate fixing		P
	- polarized supply		N
	- compliance with 61058-1 for electronic switches	10000 cycles considered	P
2.7(4.9)	Insulating lining and sleeves		N
2.7(4.9.1)	Retainment		N
	Method of fixing.....:		N
2.7(4.9.2)	Insulated linings and sleeves		N
	Resistant to a temperature > 20 °C to the wire temperature or		N
	a) & c) Insulation resistance and electric strength		N
	b) Ageing test. Temperature (°C)		N
2.7 (4.10)	Double or reinforced insulation		P

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
2.7 (4.10.1)	No contact, mounting surface - accessible metal parts - wiring of basic insulation		P
	Safe installation		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)	Retention of insulation:		N
	- fixed		N
	- unable to be replaced; luminaire inoperative		N
	- sleeves retained in position		N
	- lining in lampholder		N
2.7(4.10.4)	Protective impedance device	Approved LED driver used.	P
	Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor		P
	Y1 or Y2 capacitors comply with IEC 60384-14		P
	Resistors comply with test (a) in 14.1 of IEC 60065		N
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:		P
	- self-tapping screws		P
	- 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	alloy containing at least 50 % copper	P
2.7 (4.11.5)	No contact to wood		P
2.7(4.11.6)	Electro-mechanical contact systems	No such 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

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	Torque test: torque (Nm); part	Screw for fixed back cover: 3.22mm, 0.6Nm.	P
	Torque test: torque (Nm); part	Screw for fixed cord anchorage of lamp: 3.60mm, 0.8Nm.	P
2.7(4.12.2)	Screws with diameter < 3mm screwed into metal		N
2.7 (4.12.4)	Locked connections:		N
	- fixed arms; torque (Nm).....	No arms	N
	- lampholder; torque (Nm).....	No lampholder	N
	- push-button switches; torque 0,8 Nm	No push-button switches	N
2.7 (4.12.5)	Screwed glands; force (N)		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:0.35Nm	P
	- other parts; energy (Nm).....	LED 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		P
2.7(4.13.4)	Rough service luminaries		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	No direct-plug	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	Max.1.55kgx4=6.2kg	P
	B) torque 2,5Nm		N
	C) bracket arm; bending moment (Nm)		N
	D) load track-mounted luminaires	Not track-mounted luminaires	N

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	E) clip-mounted luminaires, glass-shelve. Thickness (mm)	Not clip-mounted luminaires	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	No such cables	N
	Mass (kg)		N
	Stress in conductors (N/mm ²)		N
	Mass (kg) of semi-luminaire		N
	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	No such tube	N
2.7 (4.14.5)	Guide pulleys		N
2.7 (4.14.6)	Strain on socket-outlets	No such device	N
2.7(4.15)	Flammable materials:		P
	- glow-wire test 650°C		P
	- spacing ≥30mm		P
	- screen withstanding test of 13.3.1		N
	- screen dimensions		N
	- no fiercely burning material		P
	- thermal protection	No such device	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 surface		N
	No lamp control gear	Electric controlgear are exempt from this clause	N
2.7 (4.16.1)	Lamp control gear spacing:		N
	- spacing 35mm		N

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	- spacing 10mm		N
2.7 (4.16.2)	Thermal protection:	No such device	N
	- in lamp control gear		N
	- external		N
	- fixed position		N
	- temperature marked lamp control gear		N
2.7 (4.16.3)	It shall be so designed that it satisfied the tests of 12.6		N
2.7 (4.17)	Drain holes		N
	Clearance at least 5 mm		N
2.7 (4.18)	Resistance to corrosion:		N
2.7(4.18.1)	- rust-resistance		N
2.7 (4.18.2)	- season cracking in copper		N
2.7 (4.18.3)	- corrosion of aluminium		N
2.7 (4.19)	Ignitors compatible with ballast	No such ignitors	N
2.7(4.20)	Rough service vibration		N
2.7 (4.21)	Protective shield:	No such 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	No such parts	N
2.7 (4.23)	Semi-luminaires comply class II	Not semi-luminaires	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		P
	Class of risk group assessed according to IEC/TR 62778 : RG0		P
	Luminaires with Ethr :		N

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	a) Fixed luminaires	It is classified as RG0, not necessary to access the retinal blue light hazard	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
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

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	Temperature sensing control still in position		N
1.6 (4.29)	Luminaires with non-replaceable light source		P
	Not possible to replace light source		P
	Live part not accessible after parts have been opened by hand or tools		P
2.7 (4.30)	Luminaires with non-user replaceable light source		N
	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	Approved SELV LED driver used	P
	Used SELV source		P
	Voltage \leq ELV		P
	Insulating of SELV circuits from LV supply		P
	Insulating of SELV circuits from other non SELV circuits		N
	Insulating of SELV circuits from FELV		N
	Insulating of SELV circuits from other SELV circuits		N
	SELV circuits insulated from accessible parts according Table X.1		P
	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 \leq ELV		N
	Insulating of FELV circuits from LV supply		N

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	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		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
2.7 (4.32)	Overvoltage protective devices		N
	Comply with IEC 61643-11		N
	External to control gear and connected to earth:		N
	- only in fixed luminaires		N
	- only connected to protective earth		N
2.8 (11)	CREEPAGE DISTANCES AND CLEARANCES		P
	Working voltage (V)	220-240V~	—
	Voltage form	Sinusoidal <input checked="" type="checkbox"/> Non-sinusoidal <input type="checkbox"/>	—
	PTI	< 600 <input checked="" type="checkbox"/> ≥ 600 <input type="checkbox"/>	—
	Rated pulse voltage (kV)		—
	1) Current-carrying parts of different polarity: cr (mm); cl (mm).....	Approved SELV LED driver used	P

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict

	2) Current-carrying parts and accessible parts: cr (mm); cl (mm).....:	Uout of LED driver:55Vdc. (No values are specified for working voltages below 60 Vdc as the test voltage of Table 10.2 is considered sufficient.)	P
	3) Parts becoming live due to breakdown of basic insulation and metal parts: cr (mm); cl (mm).....:		N
	4) Outer surface of cable where it is clamped and metal parts: cr (mm); cl (mm).....:		N
	(5) Live parts of switches: cr (mm); cl (mm) :	No such device	—
	6) Current-carrying parts and supporting surface: cr (mm); cl (mm).....:		N

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 <0,5Ω		N
	Two self-tapping screws used		N
	Thread-forming screws		N
	Thread-forming screw used in a groove		N
	Earth makes contact first		N
	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N
	Protective earthing of the luminaire not via built-in control gear		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

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
2.9 (7.2.11)	Earthing core coloured green-yellow		N
	Length of earth conductor		N
2.10 (14)	SCREW TERMINALS		N
	Separately approved; component list	(see Annex 1)	N
	Part of the luminaire	(see Annex 3)	N
2.10 (15)	SCREWLESS TERMINALS		N
	Separately approved; component list	(see Annex 1)	N
	Part of the luminaire	(see Annex 4)	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.....:	Supply cord and plug	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	PVC	P
	Nominal cross-sectional area (mm ²) :	2×0.75mm ²	P
	Cables equal to IEC 60227 or IEC 60245		P
2.11 (5.2.3)	Type of attachment X, Y or Z	Type Y	P
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		P
2.11 (5.2.8)	Insulating bushings:		N
	- suitably fixed		N
	- material in bushings		N
	- material likely to deteriorate		N
	- tubes or guards made of insulating material		N
2.11 (5.2.9)	Locking of screwed bushings		N
2.11 (5.2.10)	Cord anchorage:		P

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	- covering protected from abrasion		P
	- clear how to be effective		P
	- no mechanical or thermal stress		P
	- no tying of cables into knots etc.		N
	- insulating material or lining		P
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	type Y	P
2.11 (5.2.10.3)	Tests:		P
	- impossible to push cable; unsafe		P
	- pull test: 25 times; pull (N)	60	P
	- torque test: torque (Nm).....	0.15	P
	- displacement ≤ 2 mm	0.4	P
	- no movement of conductors		P
	- no damage of cable or cord		P
	- 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	No such terminals	N
2.11 (5.2.13)	Wire ends not tinned		N
	Wire ends tinned: no cold flow		P
2.11 (5.2.14)	Mains plug same protection		P
	Class III luminaire plug		N
	No unsafe compatibility		N
2.11 (5.2.16)	Appliance inlets (IEC 60320)	No such inlet	N

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	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		P
	- IEC 60083		N
	- other standard	AS/NZS3112	P
2.11 (5.3)	Internal wiring		P
2.11 (5.3.1)	Internal wiring of suitable size and type	(see Annex 1)	P
	Through wiring		N
	- not delivered/ mounting instruction		N
	- factory assembled		N
	- socket outlet loaded (A).....:		N
	- temperatures.....:		N
	Green-yellow for earth only		N
2.11 (5.3.1.1)	Internal wiring connected directly to fixed wiring		N
	Cross-sectional area (mm ²)		N
	Insulation thickness		N
	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	(see Annex 1)	P
2.11 (5.3.1.3)	Double or reinforced insulation for class II		N
2.11 (5.3.1.4)	Conductors without insulation	No such conductor	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.		N
	No moving parts of switches etc.	No such device	N
	Joints, raising/lowering devices	No such device	N
	Telescopic tubes etc.		N

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	No twisting over 360°		N
2.11 (5.3.3)	Insulating bushings:		N
	- suitable fixed		N
	- material in bushings		N
	- material likely to deteriorate		N
	- cables with protective sheath		N
2.11 (5.3.4)	Joints and junctions effectively insulated		N
2.11 (5.3.5)	Strain on internal wiring		P
2.11 (5.3.6)	Wire carriers	No such luminaire	N
2.11 (5.3.7)	Wire ends not tinned		N
	Wire ends tinned: no cold flow		P
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	No such lamp	N
	Insulation lacquer not reliable		P
	Double-ended high pressure discharge lamp	No such 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	Not portable luminaire	N
2.12 (8.2.3.a)	Class II luminaire:		P

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	- basic insulated metal parts not accessible during starter or lamp replacement		N
	- basic insulation not accessible other than during starter or lamp replacement		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
2.12 (8.2.3.c)	SELV circuits with exposed current carrying parts:		N
	Ordinary luminaire:		N
	- voltage under load (V) :		N
	- no-load voltage (V) :		N
	- touch current if applicable (mA) :		N
	One conductive part insulated if required		N
	Other than ordinary luminaire:		N
	- nominal voltage (V) :		N
	Class III luminaire only for connection to SELV		N
	Class III luminaire not provided with means for protective earthing		N
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)	Luminaire other than below with capacitor > 0,5 μ F not exceed 50 V 1 min after disconnection	0V after 60s	P
	Portable luminaire with capacitor > 0,1 μ F (0.25) not exceed 34 V 1 s after disconnection		N
	Other luminaires with capacitor > 0,1 μ F (0.25) with plug and track adaptors not exceed 60 V 5 s after disconnection		N
2.12 (-)	Parts within the ceiling space provide same degree of protection against electric shock as parts below the ceiling space	IP20	P
2.13 (12)	ENDURANCE TEST AND THERMAL TEST		P
2.13 (-)	If IP > IP 20 relevant test of (12.4), (12.5) and (12.6) after (9.2) before (9.3) specified in 2.14		—
2.13 (12.3)	Endurance test:		P

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	- mounting-position	Normal operation position	—
	- test temperature (°C).....	40+10=50°C	—
	- total duration (h).....	240h	—
	- supply voltage: Un factor; calculated voltage (V)	1.1x240V=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)		N
2.13 (12.6)	Thermal test (failed lamp control gear condition):		N
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

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	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
	- part tested; temperature (°C) :		N
	- part tested; temperature (°C) :		N
2.13 (12.7.1.2)	Luminaire with discharge lamp, fluorescent lamp > 70W, transformer > 10 VA		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
	- part tested; temperature (°C) :		N
	- part tested; temperature (°C) :		N
2.13 (12.7.1.3)	Luminaire with short circuit proof transformers ≤ 10 VAC		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	No such device	N
	- thermal link	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- manual reset cut-out	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- auto reset cut-out	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- case of abnormal conditions		—

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	- highest measured temperature of fixing point/exposed part (°C):		—
	Ball-pressure test:		N
	- part tested; temperature (°C):		N
	- part tested; temperature (°C):		N
2.13.1 (-)	Wiring, for connection to the supply, not reach unsafe temperature		N
	- measured temperature of the cable (°C):		N
2.14 (9)	RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE		P
2.14 (-)	If IP > IP 20 the order of tests as specified in clause 2.13		—
2.14 (9.2)	Tests for ingress of dust, solid objects and moisture:		P
	- classification according to IP	IP20	—
	- mounting position during test.....	As normal use	—
	- fixing screws tightened; torque (Nm)	-	—
	- tests according to clauses	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 on insulation where it could become a hazard		N
	c.1) For luminaires without drain holes – no water entry		N
	c.2) For luminaires with drain holes – no hazardous water entry		N
	d) no water in watertight or pressure watertight luminaire		N
	e) no contact with live parts (IP 2X)		P
	e) no entry into enclosure (IP 3X and IP 4X)		N
	e) no contact with live parts through drain holes and ventilation slots (IP3X and IP4X)		N
	f) no trace of water on part of lamp requiring protection from splashing water		N
	g) no damage of protective shield or glass envelope		N
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

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	Cable or cord covered by metal foil or replaced by a metal rod of mmØ		—
	Insulation resistance (MΩ):		—
	SELV:		P
	- between current-carrying parts of different polarity	>100 MΩ(Limit:>1 MΩ)	P
	- between current-carrying parts and mounting surface	>100 MΩ(Limit:>1 MΩ)	P
	- between current-carrying parts and metal parts of the luminaire	>100 MΩ(Limit:>1 MΩ)	P
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts		N
	- Insulation bushings as described in Section 5		N
	Other than SELV:		P
	- between live parts of different polarity	>100 MΩ(Limit:>2 MΩ)	P
	- between live parts and mounting surface ..	>100 MΩ(Limit:>4 MΩ)	P
	- between live parts and metal parts	>100 MΩ(Limit:>4 MΩ)	P
	- between live parts and plastic parts	>100 MΩ(Limit:>4 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
	Luminaires with manual ignitors		N
	Test voltage (V):		P
	SELV:		P
	- between current-carrying parts of different polarity	500V	P
	- between current-carrying parts and mounting surface	500V	P
	- between current-carrying parts and metal parts of the luminaire	500V	P
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts		N

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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 ..	2960 V	P
	- between live parts and metal parts	2960V	P
	- between live parts and plastic 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):	0.003mA<limit:0.7mA	P
2.16 (13)	RESISTANCE TO HEAT, FIRE AND TRACKING		P
2.16 (13.2.1)	Ball-pressure test:		P
	- part tested; temperature (°C).....	LED cover: 75°C, 0.4mm	P
	- part tested; temperature (°C).....	LED lens: 125°C, 0.9mm	P
	- part tested; temperature (°C).....	Switch enclosure:125°C,1.1mm	P
2.16 (13.3.1)	Glow-wire test (750°C):		P
	- part tested	LED Lens,Switch enclosure	P
2.16 (13.3.2)	Glow-wire test (650°C):		P
	- part tested	LED cover	P
	- part tested		N
2.16 (13.3.3)	Needle flame test (30 s):		P
	- part tested	LED Lens	P
	- part tested	Switch enclosure	P
2.16 (13.3.4)	Needle flame test for PCB(30 s):		P
	- part tested	Switch PCB	P
	- part tested		N
2.16 (13.4.1)	Tracking test:		N
	- part tested		N
	- part tested		N

AS/NZS 60598.2.2			
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
Plug	B	Zhejiang Jinting Nuclear Cable Co., Ltd.	A2-7	250V, 7.5A	AS/NZS 3112	SAA-211726-EA
Supply cord	B	Zhejiang Jinting Nuclear Cable Co., Ltd.	H03VVH2-F	250/250V, 2x0.75mm ²	AS/NZS 3191	SAA-210690-EA
Output wire of driver	B	DONGGUAN WENCHANG ELECTRONIC CO LTD	1015	300V, 22AWG, 80°C	UL748	UL E214500
LED driver for 40W	B	Lifud Technology Co., Ltd.	LF-GIF040YS1000H	Input: 220-240VAC, 50/60Hz, Max. 0.28A. Output: 33-40Vdc, 1000mA(CC.), 40W, Uout: 55Vdc. Independent, class II, SELV, ta: 45°C, tc: 90°C	AS/NZS 61347.1: 2016+A1, AS61347.2. 13:2018	GMA-509633-EA
LED driver for 36W	B	Lifud Technology Co., Ltd.	LF-GIF040YS0900H	Input: 220-240VAC, 50/60Hz, Max. 0.28A. Output: 33-40Vdc, 900mA(CC.), 36W, Uout: 55Vdc. Independent, class II, SELV, ta: 45°C, tc: 90°C		
LED driver for 24W	B	Lifud Technology Co., Ltd.	LF-GIF024YS0600H	Input: 220-240VAC, 50/60Hz, Max. 0.2A. Output: 25-39Vdc, 600mA(CC.), 23.4W, Uout: 55Vdc. Independent, class II, SELV, ta: 50°C, tc: 85°C	AS/NZS 61347.1: 2016+A1, AS61347.2. 13:2018	GMA-516864-EA
LED driver for 22W	B	Lifud Technology Co., Ltd.	LF-GIF024YS0500H	Input: 220-240VAC, 50/60Hz, Max. 0.2A. Output: 25-42Vdc, 500mA(CC.), 21W, Uout: 55Vdc. Independent, class II, SELV, ta: 50°C, tc: 85°C		

AS/NZS 60598.2.2						
Clause	Requirement + Test			Result - Remark		Verdict
LED driver for 16W	B	Lifud Technology Co.,Ltd.	LF-GIF018YS0400H	Input:220-240VAC,50/60Hz, Max.0.13A. Output:25-42Vdc, 400mA(CC.), 16.8W, Uout:55Vdc. Independent, class II,SELV, ta:50°C,tc:85°C		
LED driver for 14W	B	Lifud Technology Co.,Ltd.	LF-GIF018YS0350H	Input:220-240VAC,50/60Hz, Max.0.13A. Output:25-42Vdc, 350mA(CC.), 14.7W, Uout:55Vdc. Independent, class II,SELV, ta:50°C,tc:85°C		
CCT switch	B	HUIZHOU MAISHEN ELECTRONIC CO LTD	MS922	60Vdc,0.6A	IEC 61058-1-1	Tested with appliance
- switch PCB	B	Goldenmax International Technology (Hangzhou) Ltd	GF11/T600	V-0, 130°C	UL746	UL E134893
LED cover	B	TEIJIN POLYCARBONATE CHINA LTD	L-1225(###)(f2)	V-2, 115°C	UL746 UL94	UL E245526
LED Lens	B	EVONIK ROEHM GMBH	8N-(X)(F1)	HB, 90°C	UL746 UL94	UL E65495
LED PCB	B	ZHONGSHAN CAKEE PCB CO LTD	NST-06	V-0,130°C	UL 94	UL E205740
LED chip	C	Shenzhen jingrui photoelectric Co.,Ltd	JR-2835W	V _f :8.7-9.6V, I _f :100mA, 4000K/5000K	IEC TR 62778	Test with appliance

The codes above have the following meaning:

- A - The component is replaceable with another one, also certified, with equivalent characteristics
- B - The component is replaceable if authorised by the test house
- C - Integrated component tested together with the appliance
- D - Alternative component

AS/NZS 60598.2.2				
Clause	Requirement + Test		Result - Remark	Verdict
	ANNEX 2: temperature measurements, thermal tests of Section 12			P
	Type reference	UL-PL30120-40W-TC		—
	Lamp used.....	Integral LED module		—
	Lamp control gear used.....	LF-GIF040YS1000H		—
	Mounting position of luminaire.....	Recessed mounted		—
	Supply wattage (W)	38.6W		—
	Supply current (A).....	0.157A		—
	Calculated power factor.....	-		—
	Table: measured temperatures corrected for $t_a = 40^\circ\text{C}$:			P
	- abnormal operating mode	-		—
	- test 1: rated voltage.....	-		—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage	1.06 times rated voltage :254.4V In accordance with figure ZA3 test set-up for do-not-cover luminaires of AS/NZS 60598.2.2		—
	- 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	240 V \times 1.1=264 V In accordance with the requirements of Paragraph ZA5 for do-not-cover luminaires of AS/NZS 60598.2.2		—
	Through wiring or looping-in wiring loaded by a current of A during the test	-		—
temperature ($^\circ\text{C}$) of part		Clause 12.4 – normal		Clause 12.5 – abnormal
		test ($^\circ\text{C}$)	Limit($^\circ\text{C}$)	test 4
				limit
Plug		40.7	70	--
Supply cord(input)		44.6	90	--
tc of LED driver		60.5	90	117.0
Supply cord (output)		62.3	80	--
Switch surface		44.5	55	--
Switch PCB		46.2	130	--
Internal wire to LED module		53.6	105	--
LED cover(inside)		44.1	115	--
LED cover(outside)		43.2	90	80.2
LED PCB		49.5	130	--

AS/NZS 60598.2.2				
Clause	Requirement + Test	Result - Remark		Verdict
Mounting surface	47.2	90	78.8	90
Ambient	40.0	--	40.0	--

	ANNEX 2: temperature measurements, thermal tests of Section 12			P
Type reference	:	UL-PL6060-24W-TC		—
Lamp used.....	:	Integral LED module		—
Lamp control gear used.....	:	LF-GIF024YS0600H		—
Mounting position of luminaire.....	:	Recessed mounted		—
Supply wattage (W)	:	22.9W		—
Supply current (A).....	:	0.093A		—
Calculated power factor.....	:	-		—
Table: measured temperatures corrected for $t_a = 40^\circ\text{C}$:				P
- abnormal operating mode	:	-		—
- test 1: rated voltage.....	:	-		—
- test 2: 1,06 times rated voltage or 1,05 times rated wattage	:	1.06 times rated voltage :254.4V In accordance with figure ZA3 test set-up for do-not-cover luminaires of AS/NZS 60598.2.2		—
- 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	:	240 V \times 1.1=264 V In accordance with the requirements of Paragraph ZA5 for do-not-cover luminaires of AS/NZS 60598.2.2		—
Through wiring or looping-in wiring loaded by a current of A during the test	:	-		—
temperature ($^\circ\text{C}$) of part	Clause 12.4 – normal		Clause 12.5 – abnormal	
	test ($^\circ\text{C}$)	Limit($^\circ\text{C}$)	test 4	limit
Plug	40.2	70	--	--
Supply cord(input)	41.9	90	--	--
tc of LED driver	55.7	85	105.4	130
Supply cord (output)	56.7	80	--	--
Switch surface	43.2	55	--	--
Switch PCB	44.1	130	--	--
Internal wire to LED module	44.5	105	--	--

AS/NZS 60598.2.2				
Clause	Requirement + Test	Result - Remark		Verdict
LED cover(inside)	42.4	115	--	--
LED cover(outside)	42.0	90	50.5	130
LED PCB	44.7	130	--	--
Mounting surface	42.7	90	55.9	90
Ambient	40.0	--	40.0	--

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

AS/NZS 60598.2.2										
Clause	Requirement + Test					Result - Remark				Verdict
	ANNEX 4: screwless terminals (part of the luminaire)									N
(15)	SCREWLESS TERMINALS									N
(15.2)	Type of terminal									—
	Rated current (A)									—
(15.3.1)	Material									N
(15.3.2)	Clamping									N
(15.3.3)	Stop									N
(15.3.4)	Unprepared conductors									N
(15.3.5)	Pressure on insulating material									N
(15.3.6)	Clear connection method									N
(15.3.7)	Clamping independently									N
(15.3.8)	Fixed in position									N
(15.3.10)	Conductor size									N
	Type of conductor									N
(15.5.1)	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									N
	Voltage drop (mV) after 1 h (4 samples).....									N
	Voltage drop of two inseparable joints									N
	Number of cycles									—
	Voltage drop (mV) after 10th alt. 25th cycle (4 samples).....									N
	Voltage drop (mV) after 50th alt. 100th cycle (4 samples).....									N
	After ageing, voltage drop (mV) after 10th alt. 25th cycle (4 samples)									N
	After ageing, voltage drop (mV) after 50th alt. 100th cycle (4 samples)									N
(15.7)	Terminals external wiring									N
	Terminal size and rating									N
(15.8.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N)									N
	Pull test pin or tab terminals or welded connections (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)										

AS/NZS 60598.2.2											
Clause	Requirement + Test					Result - Remark					Verdict
	Voltage drop of two inseparable joints										
	Voltage drop after 10th alt. 25th cycle										
	Max. allowed voltage drop (mV)										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
	Voltage drop after 50th alt. 100th cycle										
	Max. allowed voltage drop (mV)										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
	Continued ageing: voltage drop after 10th alt. 25th cycle										
	Max. allowed voltage drop (mV)										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
	Continued ageing: voltage drop after 50th alt. 100th cycle										
	Max. allowed voltage drop (mV)										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
<p align="center">Attachment 1: ATTACHMENT TO TEST REPORT IEC 60598-2-2 (AUSTRALIA/NEW ZEALAND) NATIONAL DIFFERENCES (Luminaires) (Part2.2 Particular requirements—Recessed luminaires)</p>			
Differences according to : AS/NZS 60598.2.2:2016 + A2:2021 AS/NZS 60598.1:2017 + A1:2017			
TRF template used: : IECEE OD-2020-F3, Ed. 1.1			
Attachment Form No. : AU_NZ_ND_IEC60598_2_2E			
Attachment Originator : JAS-ANZ			
Master Attachment : 2021-11-19			
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	National Differences		P
Appendix ZZ	Variations to IEC 60598-1 Ed 8.0 (2014) Normative		P
ZZ1	Scope This Appendix sets out variations between this Standard and IEC 60598-1, Ed. 8.0 (2014) and additional requirements to cover issues that have not been addressed by the International Standard (AS/NZS 60598.1:2017)		P
	This Appendix sets out variations to IEC 60598-2-2, Ed. 3.0 (2011) for Australia and New Zealand, including additional requirements to cover issues not addressed by the International Standard. These variations indicate national variations for the purpose of the IECEE CB Scheme and will be published in the IECEE CB Bulletin. (AS/NZS 60598.2.2:2016)		P
ZZ2	Variations The following variations are required in Australia and New Zealand: (AS/NZS 60598.2.2:2016)		P
Section 2.1 (0.1)	Scope and object		P
0.1	Addition At the end of the Clause, insert the following text: 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”. (AS/NZS 60598.1:2017)		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 (AS/NZS 60598.1:2017)		N

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
2.1	<p>Addition</p> <p>At the end of 2.1, add the following text:</p> <p>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.</p> <p>This Standard is to be read in conjunction with AS/NZS 60598.1.</p> <p>Luminaires within the scope of IEC 60598-2-13, Luminaires, Part 2-13: Particular requirements—Ground recessed luminaires, are excluded from this Standard (AS/NZS 60598.2.2:2016)</p>		P
Section 2.2 (0.2)	Normative references		P
2.2	<p>Add the following new normative references:</p> <p>AS 60529, Degrees of protection provided by enclosures (IP Code)</p> <p>AS/NZS 4859.1, Materials for the thermal insulation of buildings — General criteria and technical provisions</p> <p>AS/NZS 61347 (all parts), Lamp controlgear</p> <p>IEC 60730-1, Automatic electrical controls — Part 1: General requirements</p> <p>IEC 60730-2 (all parts), Automatic electrical controls for household and similar use</p> <p>IEC 61032, Protection of persons and equipment by enclosures — Probes for verification</p> <p>IEC 62733, Programmable components in electronic lamp controlgear — General and safety requirements (AS/NZS 60598.2.2:2016)</p>		N
2.2 (0.2)	<p>Addition</p> <p>Add the following normative references:</p> <p>IEC 61048, Auxiliaries for lamps – Capacitors for use in tubular fluorescent and other discharge lamp circuits – General and safety requirements</p> <p>IEC 61049, Auxiliaries for lamps – Capacitors for use in tubular fluorescent and other discharge lamp circuits – Performance requirements</p> <p>IEC 61995-1, Devices for the connection of luminaires for household and similar purposes – Part 1: General</p> <p>ISO 8124-1, Safety of toys – Part 1: Safety aspects related to mechanical and physical properties</p> <p>AS/NZS 3112, Approval and test specification—Plugs and socket-outlets</p> <p>AS/NZS 3120, Approval and test specification—Cord extension sockets</p> <p>AS/NZS 3133, Approval and test specification—Air-break switches</p> <p>AS/NZS 3191, Electric flexible cords</p> <p>AS/NZS 60335.2.29, Household and similar electrical appliances—Safety, Part 2.29: Particular requirements for battery chargers</p> <p>AS/NZS 60669, Switches for household and similar fixed electrical installations (series)</p> <p>AS/NZS 60695.2.11, Fire hazard testing, Part 2.11: Glowing/hot wire based test methods—Glow-wire flammability test method for end-products (IEC 60695-2-11:2000, MOD)</p> <p>AS/NZS 60695.11.5, Fire hazard testing, Part 11.5: Test flames—Needle-flame test method—Apparatus, confirmatory test arrangement and guidance</p> <p>AS/NZS 60884.1, Plugs and socket-outlets for household and similar purposes, Part 1: General requirements</p> <p>AS/NZS 61058.1, Switches for appliances, Part 1: General requirements (IEC</p>		P

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	61058-1, Ed.3.1 (2000), MOD) AS/NZS 61347, Lamp controlgear (series) AS/NZS 61558, Safety of transformers, reactors, power supply units and similar products for voltages up to 1 100 V (series) (AS/NZS 60598.1:2017)		
Section 2.3(0.4)	General test requirements		P
2.3	Variation Delete existing text and replace with the following: The provisions of Section 0 of AS/NZS 60598.1 apply. The tests specified in each appropriate section of AS/NZS 60598.1 shall be carried out in the order listed in this part for all luminaires other than those with an IP rating greater than IP2X and those classified as CA90, CA135, IC and IC-4. For luminaires with an IP classification greater than IP2X, and those classified as CA90, CA135, IC and IC-4, the tests specified in each appropriate section of AS/NZS 60598.1 shall be carried out in the order listed in this part, except for the tests listed in Table ZZ1, which shall be performed in the order listed in Table ZZ1 (AS/NZS 60598.2.2.2016)	Do-not-cover luminaire	N
Table ZZ1	Table ZZ1 — Order of tests of Sections 2.13, 2.14 and 2.15 for luminaires with an IP classification greater than IP2X, or those classified as CA90, CA135, IC or IC-4		N
	Order	Test	Reference
	1	Endurance test of Section 12.3 of AS/NZS 60598.1.	Section 2.13 of this Standard.
	2	Test for ingress of dust, solid objects and moisture of Section 9.2 of AS/NZS 60598.1.	Section 2.14 of this Standard.
	3	Ingress test (for the appropriate classification) of Section 2.14 of this Standard.	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. NOTE Apply these tests together as one test.	Section 2.13 of this Standard.
	5	Thermal test (abnormal operation) of Section 12.5 of AS/NZS 60598.1. NOTE Conditions 12.5.1 a) 1), 2), 3) and 4) are applied as appropriate.	Section 2.13 of this Standard.
	6	Abnormal operation test (for the appropriate classification) of Section 2.13 of this Standard. NOTE Classifications IC and IC-4 do not have this abnormal operation test as their normal test conditions are the same as the abnormal test conditions for other classifications.	Section 2.13 of this Standard.
	7	Thermal test (failed windings in lamp controlgear) of Section 12.6 of AS/NZS 60598.1. NOTE Apply test as appropriate, if applicable.	Section 2.13 of this Standard.
	8	Thermal test in regard to fault conditions in	Section 2.13 of this

AS/NZS 60598.2.2			
Clause	Requirement + Test		Verdict
	lamp controlgear or electronic devices incorporated in thermoplastic luminaires of Section 12.7 of AS/NZS 60598.1. NOTE Apply test as appropriate, if applicable.	Standard.	
9	Humidity test of Section 9.3 of AS/NZS 60598.1.	Section 2.14 of this Standard.	
10	Insulation resistance and electric strength, touch current and protective conductor current tests of Section 10 of AS/NZS 60598.1.	Section 2.15 of this Standard.	
	<p>NOTE 1 For luminaires of classifications other than those specified in Table ZZ1, the order of tests is as set out in Sections 2.13 to 2.15 of this Standard. For devices not covered by this table, the order of tests in Section 2.13 applies.</p> <p>NOTE 2 For the tests of AS/NZS 60598.1, 12.3, 12.4, 12.5 conditions 12.5.1 a) 1), 2), 3) and 4), 12.6 and 12.7:</p> <ul style="list-style-type: none"> — The appropriate test box of this Standard's normal operation test is used. — Other test conditions are applied as specified in the requirements listed in the particular AS/NZS 60598.1 section and, for 12.4 tests, taking into account the modifications to Section 12.4 of this Standard. 		
	Controlgear that complies separately with a relevant standard shall, in addition, be assessed to the requirements of this Standard. A procedure for measuring ambient temperature in an installation is given in Annex A (AS/NZS 60598.2.2:2016)		N
2.3 (0.4.2)	<p>Addition</p> <p>After the first paragraph, insert the following text: In Australia, for equipment, other than class III equipment, that is intended for connection to the supply mains and not marked with:</p> <ul style="list-style-type: none"> — 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, <p>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. (AS/NZS 60598.1:2017)</p>	AC220-240V for LED driver input	P
2.3 (0.5)	Components of luminaires		P
2.3 (0.5)	<p>Addition</p> <p>Insert the following text as the first paragraph: Throughout this document, where there is a relevant Australian/New Zealand Standard, it replaces the IEC Standard unless otherwise specified (AS/NZS 60598.1:2017)</p>		P
2.3 (0.5.2A)	<p>Addition</p> <p>Add the following new Clause after Clause 0.5.2</p> <p>0.5.2A Capacitors Capacitors shall comply with Clause 4.2A.</p>		N

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	(AS/NZS 60598.1:2017)		
Section 2.4 (1.2)	DEFINITIONS		P
2.4 (1.2)	Addition Add the following new definitions after 1.2.91 See Special Variations clause 1.2.101 to 1.2.105		N
2.4	Variation Delete existing text and replace with the following: For the purposes of this document, the definitions of Section 1 of AS/NZS 60598.1 apply, along with the following:		P
	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. NOTE This classification is not suitable for residential installations		N
	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.		P
	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 (see 2.4.106) to the heated parts of the luminaire.		N
	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 (see 2.4.107) to the heated parts of the luminaire.		N
	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 (see 2.4.106) to the heated parts of the luminaire.		N
	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 (see 2.4.108) 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.		N

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	2.4.105 outside surface of the luminaire the surface of the luminaire that can be accessed by the probe specified for the classification of the luminaire.		P
	2.4.106 limited access parts accessible to a 5.6 mm diameter probe are not permitted to have surface temperatures exceeding 90 °C under normal operating conditions, excluding the access face.		N
	2.4.107 some access parts accessible to a 50 mm diameter probe are not permitted to have surface temperatures exceeding 135 °C in normal operation, excluding the access face.		N
	2.4.108 restricted access parts accessible to an AS 60529 IP4X probe are not permitted to have surface temperatures exceeding 90 °C in normal operation, including the access face.		N
	2.4.109 recessed luminaire a luminaire designed to be recessed into a ceiling, wall, floor or similar surface with an access face which, when installed on a mounting surface, emits light into one area, while the body of the luminaire is located in a separate area on the other side of the mounting surface to the access face. Includes a light source and any components of the luminaire required for the luminaire to operate. NOTE 1 Components may include individual components, such as controlgear that is supplied with the luminaire. NOTE 2 Figure ZC1 in Appendix ZC shows the general parts of a recessed luminaire. Appendix ZC also provides examples of recessed luminaire configurations.		P
	2.4.110 access face the surface of the luminaire that emits light into the habitable room, i.e. the surface of the luminaire located in the space representative of the underside of a ceiling or, for wall-mounted luminaires, the visible wall face. (AS/NZS 60598.2.2:2016)		P
Section 2.5	CLASSIFICATION OF LUMINAIRES		P
2.5	Variation Delete existing text and replace with the following: See Special Variations clause 2.5.101 to 2.5.103 (AS/NZS 60598.2.2:2016)	Do-not-cover luminaires	P
2.5 (2.2)	Addition At the end of Clause 2.2, insert the following text: Class 0 luminaires are not permitted in Australia or New Zealand (AS/NZS 60598.1:2017)		P
Section 2.6	MARKING		P
2.6	Variation Delete existing text and replace with the following: See Special Variations clause 2.6.101 to 2.6.106 (AS/NZS 60598.2.2:2016)		P

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
2.6(3.1)	Addition After the first paragraph, insert the following text: In Australia and New Zealand, instructions and other texts required by this Standard shall at least be written in English. Compliance is checked by inspection. (AS/NZS 60598.1:2017)		P
2.6 (3.2)	Variation Delete the second paragraph beginning with 'Marking may be on ballast provided...'. (AS/NZS 60598.1:2017)		N
2.6 (3.3.22)	After Clause 3.3.22, add new Clauses 3.3.101 and 3.3.102 as follows: See Special Variations clause 3.3.101 and 3.3.102 (AS/NZS 60598.1:2017)		N
Table 3.1	Variation Second column, second row, delete Item 3.2.21. Third column, second row, add the following new item: 3.2.21 The relevant symbol for luminaires not suitable for covering with thermally insulating material (AS/NZS 60598.1:2017)		P
2.6 (3.2.3)	Variation Delete the text ' , if other than 25 °C'.		P
2.6 (3.2.12)	Addition At the end of the Clause, insert the following text: In Australia, luminaires for household use and similar with supply cords that are not fitted with a plug shall be marked with a cord tag with the symbol for "must be installed by a licensed electrician". (Refer to Figure ZZ1.) (AS/NZS 60598.1:2017)		N
2.6 (3.2.23)	Addition At the end of the Clause, insert the following text: 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. (AS/NZS 60598.1:2017)		N
2.6 (3.3.7)	Variation Delete Clause 3.3.7 and replace with the following: 3.3.7 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 30 minutes at least once a week. In addition, the luminaire shall be operated: — complete with its protective shield; or — with a double jacketed lamp (AS/NZS 60598.1:2017)		N
2.6 (3.3.18)	Deletion Delete the text ' , i.e. for indoor use only'. (AS/NZS 60598.1:2017)		N

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
2.6 (3.3.21)	Deletion Delete the text 'Caution, risk of electric shock' and the symbol. (AS/NZS 60598.1:2017)		N
Section 2.7	CONSTRUCTION		P
2.7	Variation Delete existing text and replace with the following: See Special Variations 2.7.101 to 2.7.104 (AS/NZS 60598.2.2:2016)		P
2.7 (4.7.2)	Variation Delete the first paragraph and replace with the following: 4.7.2 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. (AS/NZS 60598.1:2017)		N
2.7 (4.8)	Variation After the third paragraph, insert the following text: 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
	Fourth paragraph, delete the text 'IEC 61058-1' and replace with 'AS/NZS 60669.2.1 or IEC 61058-1 classified for 10,000 operating cycles'. (AS/NZS 60598.1:2017)cc		N
2.7 (4.10.4)	Variation First paragraph, 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. (AS/NZS 60598.1:2017)		N
2.7 (4.14.6)	After the first paragraph, insert the following text: A fixed socket-outlet complying with AS/NZS 3112 or AS/NZS 60884.1 is used for the following test. (AS/NZS 60598.1:2017)		N

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
2.7 (4.32)	<p>Addition</p> <p>At the end of the Clause, insert the following text: Metal oxide varistors shall comply with the requirements of AS/NZS 3100 for metal oxide varistors incorporated in accessories.</p> <p>NOTE The test and assessment is conducted on any circuits connected between phases (between actives and between actives and neutral) and circuits connected between phases and earth (actives-to-earth and neutral-to-earth). (AS/NZS 60598.1:2017)</p>		N
Section 2.11	EXTERNAL AND INTERNAL WIRING		P
2.11 (5.2.1)	<p>Variation</p> <p>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.</p> <p>Fixed luminaires:</p> <ul style="list-style-type: none"> — device for the connection of luminaires; — terminals; — plug for engagement with socket-outlets; — connecting lead (tails); in accordance with Clause 4.6 requirements; <p>— supply cord</p> <ul style="list-style-type: none"> — supply cord and plug; — adapter for engagement with supply tracks; — appliance inlet; — installation coupler; — luminaire coupler; <p>Portable luminaires:</p> <ul style="list-style-type: none"> — supply cord with plug; — appliance inlet. — inlet plug complying with AS/NZS 3120. <p>Track-mounted luminaires:</p> <ul style="list-style-type: none"> — adaptor; — connector. 	supply cord and plug	P
	Delete the second and third paragraph.		N
	<p>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.</p> <p>The plug portion of a luminaire with integral pins shall comply with the relevant requirements of AS/NZS 3112.</p> <p>NOTE 4 PVC-insulated connection cords should not be used with outdoor luminaires in cold alpine locations. (AS/NZS 60598.1:2017)</p>		P

AS/NZS 60598.2.2																															
Clause	Requirement + Test	Result - Remark	Verdict																												
2.11 (5.2.2)	Variation 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																												
	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)	2x0.75 mm ²	P																												
Table 5.1	Variation Delete Table 5.1 and replace with the following: Table 5.1 — Supply cord <table border="1"> <thead> <tr> <th>Luminaire</th><th>Rubber</th><th>PVC</th><th>No Insulation</th></tr> </thead> <tbody> <tr> <td>Ordinary class 1 luminaires</td><td>60245 IEC 51 c</td><td>60227 IEC 52 c</td><td></td></tr> <tr> <td>Ordinary class II luminaires</td><td>60245 IEC 53 c</td><td>60227 IEC 52 c</td><td></td></tr> <tr> <td>Luminaires which are other than ordinary class I and II</td><td>60245 IEC 57 c</td><td>60227 IEC 53 c</td><td></td></tr> <tr> <td>Portable rough service luminaires</td><td>60245 IEC 66 c</td><td></td><td></td></tr> <tr> <td>Class III or with SELV circuits luminaires (up to 25 V a.c./60 V d.c.)</td><td colspan="2"></td><td>Un-insulated conductor b</td></tr> <tr> <td>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.</td><td colspan="2">Unsheathed basic insulated conductor</td><td></td></tr> </tbody> </table> <p>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</p> (AS/NZS 60598.1:2017)	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				P
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AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
2.11 (5.2.16)	<p>Addition</p> <p>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>		N
2.11 (5.2.18)	<p>Variation</p> <p>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)</p>		N
2.11 (5.3.1)	<p>Variation</p> <p>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.</p>		N
2.11 (5.3.1.3)	<p>Variation</p> <p>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>		N
Section 2.9	PROVISION OF EARTHING		N
2.9 (7.2.11)	<p>Variation</p> <p>Delete the third paragraph and replace with the following: All conductors, whether internal or external, coloured green, yellow or green/yellow combination, shall only be connected to an earthing terminal (AS/NZS 60598.1:2017)</p>		N
Section 2.12	PROTECTION AGAINST ELECTRIC SHOCK		P

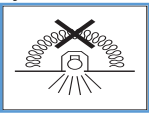
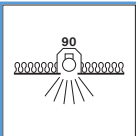

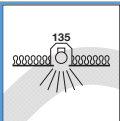

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
2.12 (8.2.1)	<p>Variation</p> <p>Delete the first two paragraphs including Note 1 and replace with the following:</p> <p>Luminaires shall be so constructed that their live parts and basic insulation are not accessible when the luminaire has been installed and wired as in normal use. Live parts shall not be accessible when the luminaire is opened as necessary for 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.</p> <p>NOTE 1 Examples of parts with basic insulation are cables intended for internal wiring, controlgear for building-in, etc.</p> <p>This does not apply to the non-current-carrying parts of lamp caps that comply with the relevant IEC safety standard.</p>		P
	<p>Delete the ninth paragraph beginning with 'Covers in fixed luminaires that cannot be removed...'</p> <p>(AS/NZS60598.1:2017)</p>		N
2.14 (9)	RESISTANCE TO DUST AND MOISTURE		P
2.14	<p>Variation</p> <p>Delete existing text and replace with the following:</p> <p>See Special Variations 2.14.101 to 2.14.104</p> <p>(AS/NZS 60598.2.2:2016)</p>		P
2.14 (9.2)	<p>After Note 1, insert the following new Note:</p> <p>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.</p> <p>(AS/NZS 60598.1:2017)</p>		N
Table 10.3	<p>Deletion</p> <p>Delete the second row beginning with 'Class I luminaires rated up to and including 16 A...'</p>		N
	<p>First column, third row, delete the word 'Metal'.</p> <p>(AS/NZS 60598.1:2017)</p>		N
Section 2.13	ENDURANCE TEST AND THERMAL TEST		P
2.13	<p>Variation</p> <p>Delete existing text and replace with the following:</p> <p>See Special Variations 2.13.101 to 2.13.104</p> <p>(AS/NZS 60598.2.2:2016)</p>		P
Table 12.1	<p>First column, first row, delete the text—</p> <p>'Case (of capacitor, starting device, electronic ballast or convertor, etc.)' and replace with the following:</p> <p>'Case (of control gear, capacitor, starting device, electronic ballast or convertor, etc.)'</p>		P

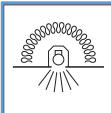

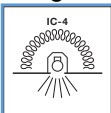

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>Addition</p> <p>Add the following new Note after Table 12.1</p> <p>NOTE 101 Luminaire manufacturers should consider the maximum ambient air temperature in the vicinity of components such as starting devices and electronic ballasts 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 t_a and is the temperature of the air in the vicinity of the component and is not related to the luminaire t_a. As such, luminaire manufacturers should measure air temperature in the vicinity of such components, within the luminaire, as even those complying with their t_c point measurements can still fail prematurely if t-life is exceeded.</p> <p>(AS/NZS 60598.1:2017)</p>		N
RUL 1:2020	<p>Have the requirements of Rule 1:2020 been applied</p> <p>When testing a luminaire consisting of a recessed light source and detachable separate control gear under Appendix ZA of AS/NZS 60598.2.2, the ambient test temperature shall be derived from the t_a rating of the light source only, disregarding the t_a of the control gear</p>		N
Section 16	RESISTANCE TO HEAT, FIRE AND TRACKING		P
2.16 (13.3)	<p>Variation</p> <p>Delete Clause 13.3 and replace with the following:</p> <p>13.3 Resistance to flame and ignition</p> <p>Parts of non-metallic material shall be resistant to flame and ignition.</p> <p>For materials other than ceramic, compliance is checked by the tests of 13.3.1 and 13.3.2, and 13.3.3 as appropriate.</p> <p>This requirement does not apply to decorative trims, knobs, wiring insulation and other parts not likely to be ignited or to propagate flames from inside the luminaire.</p> <p>This Clause applies to all parts, including components, even if they have been tested to their own IEC or equivalent standard..</p>	LED cover	P
	<p>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 glow wire test. 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.</p> <p>The test apparatus, test procedure and criteria shall be those specified in AS/NZS 60695.2.11.</p> <p>The glow wire is heated to 750 °C and applied to one test sample for 30 s.or glowing of the sample shall extinguish within 30 s of withdrawing the glow-wire, and any burning or molten drop shall not ignite a single layer of tissue paper specified in 4.187 of ISO 4046-4:2002, spread out horizontally 200 mm ± 5 mm below the sample.</p>	LED lens,switch enclosure,transformer bobbins of LED driver	P

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	<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.</p> <p>The test apparatus, test procedure and criteria shall be those specified in AS/NZS 60695.2.11.</p> <p>The glow wire is heated to 650 °C and applied to one test sample for 30 s.</p>	LED cover	P
	<p>13.3.3 During the application of the glow wire test of Clause 13.3.1 and 13.3.2, if a flame is produced that persists for longer than 2 s, the luminaire is further tested as follows:</p> <p>The needle-flame test of AS/NZS 60695.11.5 is applied to 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.</p> <p>The needle-flame is applied to one test sample for 30 s. Parts shielded by a barrier that meets the needle-flame test of AS/NZS 60695.11.5 are not tested.</p> <p>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.</p> <p>(AS/NZS 60598.1:2017)</p>	<p>During the application of the glow wire test of Clause 13.3.1 and 13.3.2,</p> <p>No flame produced.</p>	N
Bibliography	<p>Addition</p> <p>Add the following new informative references:</p> <p>IEC 60252, AC motor capacitors (all parts)</p> <p>AS/NZS 60335.1, Household and similar electrical appliances—Safety, Part 1: General requirements (IEC 60335-1 Ed. 5, MOD)</p> <p>(AS/NZS 60598.1:2017)</p>		N
	Special national conditions (if any)		N
0.5.101	<p>After Clause 0.5.4, add new Clause 0.5.101 as follows:</p> <p>0.5.101 Capacitors</p> <p>Capacitors shall be of a type to ensure that any capacitor failure results in a failsafe outcome (i.e. the capacitor type will fail in the open-circuit mode only and is protected against fire or shock hazard).</p> <p>Capacitors (other than those incorporated in control gear that comply with the relevant standard) shall comply with one of the following:</p>		N
	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		N

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	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. NOTE Capacitors of Class S2 (formerly referred to as P2) of IEC 60252 (all parts) do not meet the safety requirements of a Type B capacitor. (AS/NZS 60698.1:2017)		N
0.5.102	After Clause 0.5.101, add new Clause 0.5.102 as follows: 0.5.102 Control gear 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). (AS/NZS 60598.1:2017)		N
1.2.101	After Clause 1.2.91, add the following definitions: 1.2.101 installation coupler connecting device consisting of an installation female connector and an installation male connector provided with retaining means for permanent connection not intended to be engaged or disengaged under load nor to be engaged or disengaged other than during first installation, during maintenance of the wiring system or during re-configuration of the wiring system 1.2.103 installation male connector load side portion of an installation coupler which contains the male contacts 1.2.104 installation female connector supply side portion of an installation coupler which contains the female contacts 1.2.105 installation coupler system family of installation couplers consisting of one or more installation female connectors compatible by mechanical coding features with one or more installation male connectors, with the same ratings produced according to the specification of one manufacturer (AS/NZS 61058.1:2017)		N

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
2.5.101	<p>Variation</p> <p>Delete existing text and replace with the following:</p> <p>2.5.101 General</p> <p>Luminaires shall be classified in accordance with the provisions of Section 2 of AS/NZS 60598.1, along with the following.</p> <p>Luminaires shall be classified according to their suitability for use near, or being covered with, building elements or thermal insulation, or both, in accordance with Clause 2.5.102 for Australia or Clause 2.5.103 for New Zealand.</p> <p>NOTE Appendix ZD provides information and guidance on the classifications, symbols, applications and general restrictions on recessed luminaires.</p>		P
2.5.102	<p>2.5.102 Australian classifications</p> <p>Luminaires shall be classified as one of the following:</p> <ul style="list-style-type: none"> a) Non-IC b) Do-not-cover c) CA90 d) IC e) IC-4 	Do-not-cover	P
2.5.103	<p>2.5.103 New Zealand classifications</p> <p>Luminaires shall be classified as at least one of the following:</p> <ul style="list-style-type: none"> a) Non-IC b) Do-not-cover c) CA90 d) CA135 e) IC f) IC-4 <p>(AS/NZS 60598.2.2:2016)</p>	Do-not-cover	P
2.6.101	<p>Variation</p> <p>Delete existing text and replace with the following:</p> <p>2.6.101 General</p> <p>The provisions of Clause 3 of AS/NZS 60598.1 apply, along with the following:</p> <ul style="list-style-type: none"> – 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>(AS/NZS 60598.2.2:2016)</p>		P
2.6.102	<p>2.6.102 Luminaire symbol marking</p> <p>Recessed luminaires shall be marked with the symbol shown in the appropriate figure of this Clause, corresponding to their classification in accordance with Clause 2.5.</p> <p>Non-IC luminaires shall be marked with the symbol shown in Figure 101.</p> <div data-bbox="349 1868 448 1966" data-label="Image"> </div> <p>FIGURE 101 REQUIRED SYMBOL FOR NON-IC LUMINAIRES</p>		N
	Do-not-cover luminaires shall be marked with the		P

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>symbol shown in Figure 102</p>  <p>FIGURE 102 REQUIRED SYMBOL FOR DO-NOT-COVER LUMINAIRES</p>		
	<p>CA90 luminaires shall be marked with the symbol shown in Figure 103</p>  <p>FIGURE 103 REQUIRED SYMBOL FOR CA90 LUMINAIRES</p> <p>Exception: For 24 months from the date of publication of this Standard, luminaires that comply with the requirements for CA80 luminaires in accordance with AS/NZS 60598.2.2:2001, New Zealand only Amendment A, may be marked with the symbol shown in Figure 202 in lieu of the symbol shown in Figure 103. Such CA80 luminaires are deemed to meet the requirements for CA90 luminaires 24 months from the date of publication of this Standard, this exception will cease to apply.</p>  <p>FIGURE 202 PERMITTED EXCEPTION SYMBOL FOR CA90 LUMINAIRES (FOR LUMINAIRES THAT COMPLY WITH CA80 REQUIREMENTS OF NEW ZEALAND ONLY AMENDMENT A OF AS/NZS 60598.2.2:2001).</p>		N
	<p>In New Zealand, CA135 luminaires shall be marked with the symbol shown in Figure 104</p>  <p>FIGURE 104 REQUIRED SYMBOL FOR CA135 LUMINAIRES—NEW ZEALAND ONLY</p> <p>Exception: For 24 months from the date of publication of this Standard, CA135 luminaires may be marked with the symbol shown in Figure 203 in lieu of the symbol shown Figure 104. 24 months from the date of publication of this Standard, this exception will cease to apply</p>  <p>FIGURE 203 PERMITTED EXCEPTION SYMBOL FOR CA135 LUMINAIRES—NEW ZEALAND ONLY.</p>		N

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>IC luminaires shall be marked with the symbol shown in Figure 105.</p>  <p>FIGURE 105 REQUIRED SYMBOL FOR IC LUMINAIRES.</p> <p>Exception: For 24 months from the date of publication of this Standard, IC luminaires may be marked with the symbol shown in Figure 204 in lieu of the symbol shown in Figure 105</p> <p>24 months from the date of publication of this Standard, this exception will cease to apply.</p>  <p>FIGURE 204 PERMITTED EXCEPTION SYMBOL FOR IC LUMINAIRES</p>		N
	<p>IC-4 luminaires shall be marked with the symbol shown in Figure 106</p>  <p>FIGURE 106 REQUIRED SYMBOL FOR IC-4 LUMINAIRES</p> <p>Exception: For 24 months from the date of publication of this Standard, IC-4 luminaires may be marked with the symbol shown in Figure 205 in lieu of the symbol shown in Figure 106.</p> <p>24 months from the date of publication of this Standard, this exception will cease to apply</p>  <p>FIGURE 205 PERMITTED EXCEPTION SYMBOL FOR IC-4 LUMINAIRES (AS/NZS 60598.2.2:2016)</p>		N
2.6.103	<p>Addition</p> <p>Location and durability of marking</p> <p>The marking required by Clause 2.6.102 shall be—</p> <p>a) legible, durable and visible when the luminaire is installed and viewed from behind;</p>		P
	<p>b) a minimum size of 25 mm × 25 mm; and</p>		P
	<p>c) permanently marked on the luminaire or on a durable swing tag permanently connected to the luminaire.</p> <p>The marking shall comply with the durability test requirements of AS/NZS 60598.1.</p> <p>(AS/NZS 60598.2.2:2016)</p>		P
2.6.104	Additional information to be supplied with the luminaire		P
2.6.104.1	<p>2.6.104.1 General</p> <p>All recessed luminaires shall be supplied with installation instructions containing the following information:</p>		P

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>a) The minimum clearance distance from the top of the luminaire to any normally flammable building element.</p> <p>b) The minimum clearance distance from the top of the luminaire to any building insulation.</p> <p>c) The minimum clearance distance from the side of the luminaire to any normally flammable building element.</p> <p>d) The minimum clearance distance from the side of the luminaire to any building insulation.</p> <p>If the minimum clearance distances from each side of the luminaire are different, or there are different minimum clearance distances for various types of normally flammable building element or building insulation, then each minimum clearance distance shall be stated separately.</p> <p>NOTE 1 See Appendix ZB for examples of methods satisfying the requirements for the supply of information on minimum clearance distances</p>		
	<p>If the luminaire is suitable for installing in a non-combustible enclosed space or non-combustible premade enclosure, and the minimum clearance distances required for installation in that space are different from the distances stated in accordance with the above, the minimum clearance distances for the installation, or premade enclosure details, shall be included in the instructions.</p> <p>NOTE 2 Installation in a non-combustible enclosed space may include installation in a rebate in a concrete slab, ceiling or wall</p>		N
	<p>In the section of the instructions where the minimum clearance distances are stated, the following warning shall be included:</p> <p>WARNING — RISK OF OVERHEATING OR FIRE IF THE CLEARANCE DISTANCES ARE COMPROMISED.</p> <p>NOTE 3 In some classifications of luminaire, the minimum clearance distance from the top or sides of the luminaire to building elements or insulation, or both, may actually be 0 mm (i.e. the material may abut the luminaire on the sides or the top). In these instances, a wording such as 'building insulation may abut the sides of the luminaire' is a suitable alternative to 'the minimum distance from the side of the luminaire to building insulation is 0 mm'.</p>		P

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	Luminaires with classification CA135 shall have the additional following warning included: WARNING — RISK OF FIRE: THIS LUMINAIRE CANNOT BE INSTALLED ABUTTING THERMAL INSULATION OR OTHER BUILDING ELEMENTS THAT ARE NOT SUITABLE FOR EXPOSURE TO CONSTANT TEMPERATURES OF 135 °C. Where a recessed luminaire is required to be mounted on a specific surface or has additional installation requirements to ensure adequate sealing to maintain its IP rating, the relevant information shall be supplied with the luminaire (AS/NZS 60598.2.2:2016)		N
2.6.104.2	Additional warning		P
2.6.104.2.1	2.6.104.2.1 General Luminaires shall have additional warnings in accordance with 2.6.104.2.2 for Australia and 2.6.104.2.3 for New Zealand		P
2.6.104.2.2	Australia additional warning Non-IC luminaires shall be supplied with installation instructions containing the following warning: WARNING — THIS LUMINAIRE IS NOT SUITABLE FOR INSTALLATION IN LOCATIONS WHERE THERMAL INSULATION IS PRESENT, OR MAY REASONABLY BE EXPECTED TO BE INSTALLED IN THE FUTURE, OR WHERE THERE IS A LIKELIHOOD OF OTHER COMBUSTIBLE MATERIAL, E.G. LEAVES OR VERMIN DEBRIS, ETC. COLLECTING ON OR AROUND THE LUMINAIRE. IT IS NOT SUITABLE FOR DOMESTIC INSTALLATIONS OR INSTALLATION IN RESIDENTIAL AREAS OF NON-DOMESTIC INSTALLATIONS (RESIDENTIAL INSTITUTIONS, HOTELS, BOARDING HOUSES, HOSPITALS, ACCOMMODATION HOUSES, MOTELS, HOSTELS AND THE LIKE).		N
2.6.104.2.3	New Zealand additional warning Non-IC luminaires and Do-Not-Cover luminaires shall be supplied with installation instructions containing the following warning: WARNING — THIS LUMINAIRE IS NOT SUITABLE FOR INSTALLATION IN LOCATIONS WHERE THERMAL INSULATION IS PRESENT, OR MAY REASONABLY BE EXPECTED TO BE INSTALLED IN THE FUTURE, OR WHERE THERE IS A LIKELIHOOD OF OTHER COMBUSTIBLE MATERIAL, E.G. LEAVES OR VERMIN DEBRIS, ETC. COLLECTING ON OR AROUND THE LUMINAIRE. IT IS NOT SUITABLE FOR DOMESTIC INSTALLATIONS OR INSTALLATION IN RESIDENTIAL AREAS OF NON-DOMESTIC INSTALLATIONS (RESIDENTIAL INSTITUTIONS, HOTELS, BOARDING HOUSES, HOSPITALS, ACCOMMODATION HOUSES, MOTELS, HOSTELS AND THE LIKE). (AS/NZS 60598.2.2:2016)		P

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
2.6.105	Luminaires intended for use with independent controlgear For luminaires intended for use with independent controlgear, pictorial diagrams showing all dimensions for safe installation of the independent controlgear shall be included in the installation instructions.		P
	For luminaires not supplied with, but intended for use with, independent controlgear, the instructions supplied with the recessed luminaire shall specify the brand(s) and model(s) of independent controlgear that may be used.		N
	For luminaires that may be used with supplied independent controlgear or other independent controlgear, the instructions supplied with the recessed luminaire shall specify the brand(s) and model(s) of any other independent controlgear that may be used.		N
	The information on brand(s) and model(s) shall be in the instructions supplied with the luminaire or on a website referenced in the instructions supplied with the luminaire. (AS/NZS 60598.2.2:2016)		N
2.6.106	Compliance Compliance with Clauses 2.6.101 to 2.6.105 is checked by inspection and the relevant tests of AS/NZS 60598.1. (AS/NZS 60598.2.2:2016)		P
2.7.101	General The provisions of Section 4 of AS/NZS 60598.1 apply, along with the following. (AS/NZS 60598.2.2:2016)		P
2.7.102	2.7.102 Thermal protection devices Thermal protection devices that operate to enable the luminaire to comply with the requirements of this Standard shall be integral to, or permanently attached immediately adjacent to, the luminaire light source enclosure. Thermal protection devices that operate to enable the luminaire to comply with the requirements of this Standard shall not be separate devices or in independent controlgear. NOTE Thermal protection devices are also known as 'thermal cut-outs'		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
	Thermal protection devices, excluding electronic controls complying with Clause 2.7.103, that operate to enable the luminaire to comply with requirements of this Standard shall comply with IEC 60730-1, in conjunction with the relevant part of the IEC 60730-2 series		N

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	The number of cycles of operation declared in accordance with IEC 60730-1:2013 (see Clause 6.10 and 6.11 of that Standard) shall not be less than the following: a) Self-resetting thermal protection device 10 000 b) Voltage maintained non-self-resetting thermal protection device 1 000 c) Other non-self-resetting thermal protection device 30 (AS/NZS 60598.2.2:2016)		N
2.7.103	2.7.103 Electronic controls The operation, or malfunction, of electronic controls that are used to regulate the operation of the light source to enable the luminaire to comply with requirements of this Standard (either during normal or abnormal operation) shall not result in a safety hazard. Such electronic controls are required to comply with a), b), c) or d) below		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. NOTE This does not mean that any device has to operate to enable compliance with the relevant test.		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 (AS/NZS 60598.2.2:2016)		N
2.7.104	2.7.104 Controlgear 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 (AS/NZS 60598.2.2:2016)		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


AS/NZS 60598.2.2			
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
	2.13.102.1 Normal operation test for Non-IC and Do-not-cover luminaires Non-IC and Do-not-cover luminaires shall be tested in accordance with the requirements of Paragraph ZA3 in Appendix ZA. When the luminaire is tested in accordance with Paragraph ZA3, no temperature shall exceed—		P
	a) 90 °C on the luminaire mounting surface, or on any of the internal surfaces of the side and top of the test box, or on the surface of any building element installed in accordance with the manufacturer's instructions;		P
	b) for Do-not-cover luminaires only—90 °C on the surface of any simulated building element or insulation; and		P
	c) for other parts, the appropriate values given in Tables 12.1 and 12.2 of AS/NZS 60598.1		P
	There shall be no damage to the luminaire such as scorching, deformation or melting. During the test, no thermal protection device or electronic control that fully turns off the light source within the luminaire or independent controlgear shall operate (AS/NZS 60598.2.2:2016)		P
2.13.102.2	2.13.102.2 Abnormal operation test for Do-not-cover luminaires Do-not-cover luminaires shall be tested in accordance with the requirements of Paragraph ZA5		P
	When the luminaire is tested in accordance with Paragraph ZA5, no temperature shall exceed—		P
	a) 90 °C on the luminaire mounting surface; and		P
	b) 130 °C on the surface of insulation		P
	There shall be no damage to the luminaire such as scorching, deformation or melting. During the test, thermal protective devices or electronic controls within the luminaire may operate, however, the thermal protection devices of any independent controlgear shall not operate to limit temperatures (AS/NZS 60598.2.2:2016)		P
2.13.103	2.13.103 Thermal tests for CA90 and CA135 luminaires		N

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
2.13.103.1	2.13.103.1 Normal operation test for CA90 and CA135 luminaires CA90 and CA135 luminaires shall be tested in accordance with the requirements of Paragraph ZA4. When the luminaire is tested in accordance with Paragraph ZA4, no temperature shall exceed—		N
	a) 90 °C on the luminaire mounting surface, or on any of the internal surfaces of the side and top of the test box, or on the surface of any building element installed in accordance with the manufacturer's instructions;		N
	b) for CA90 luminaires—90 °C on the outside surface of the luminaire accessible to the relevant test probe of Clause 2.14;		N
	c) for CA135 luminaires—135 °C on the outside surface of the luminaire accessible to the relevant test probe of Clause 2.14; and		N
	d) for other parts, the appropriate values given in Tables 12.1 and 12.2 of AS/NZS 60598.1		N
	There shall be no damage to the luminaire such as scorching, deformation or melting. During the test, no thermal protection device or electronic control that fully turns off the light source within the luminaire or independent controlgear shall operate (AS/NZS 60598.2.2:2016)		N
2.13.103.2	2.13.103.2 Abnormal operation test for CA90 and CA135 luminaires CA90 and CA135 luminaires shall be tested in accordance with the requirements of Paragraph ZA5. When the luminaire is tested in accordance with Paragraph ZA5, no temperature shall exceed—		N
	a) 90 °C on the luminaire mounting surface;		N
	b) for CA90 luminaires—130 °C on the outside surface of the luminaire accessible to the relevant test probe of Clause 2.14; and		N
	c) for CA135 luminaires—150 °C on the outside surface of the luminaire accessible to the relevant test probe of Clause 2.14.		N
	There shall be no damage to the luminaire such as scorching, deformation or melting. During the test, thermal protection devices or electronic controls within the luminaire may operate, however, the thermal protection devices of any independent controlgear shall not operate to limit temperatures (AS/NZS 60598.2.2:2016)		N
	2.13.104 Thermal tests for IC and IC-4 luminaires IC and IC-4 luminaires shall be tested in accordance with the requirements of Paragraph ZA6. When the luminaire is tested in accordance with Paragraph ZA6, no temperature shall exceed—		N
	a) 90 °C on the luminaire mounting surface;		N
	b) 90 °C on the outside surface of the luminaire accessible to the relevant test probe of Clause 2.14; and		N

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	c) for other parts, the appropriate values given in Tables 12.1 and 12.2 of AS/NZS 60598.1		N
	There shall be no damage to the luminaire such as scorching, deformation or melting. During the test, no thermal protection device, or electronic control that fully turns off the light source, within the luminaire or independent controlgear shall operate (AS/NZS 60598.2.2:2016)		N
2.14.101	2.14.101 General The provisions of Section 9 of AS/NZS 60598.1 apply, along with the following. For luminaires with an IP classification greater than IP20, and for CA90, CA135, IC and IC-4 luminaires, the order of the tests specified in Section 9 of AS/NZS 60598.1 shall be as specified in Clause 2.3 of this Standard. (AS/NZS 60598.2.2:2016)		N
2.14.102	2.14.102 Ingress test for CA90 and IC luminaires Solid foreign objects shall have limited access to the hot surfaces of CA90 and IC luminaires		N
	Test probe 19 of IEC 61032 shall be applied without appreciable force to all external surfaces and any opening of the luminaire. Test probe 19 shall not be applied to the access face.		N
	The 5.6 mm diameter of the probe shall not enter into an area where the temperature of any surface (including parts of the luminaire or the lamp) exceeds the temperature limit for 'mounting surface: normally flammable surface' of AS/NZS 60598.1, when the surface is measured while the luminaire is operated in accordance with the thermal test conditions of Paragraph ZA4 for CA90 luminaires and Paragraph ZA6 for IC luminaires. (AS/NZS 60598.2.2:2016)		N
2.14.103	2.14.103 Ingress test for CA135 luminaires—New Zealand only 2.14.103.1 Solid foreign objects shall have some access to the hot surfaces of CA135 luminaires. Compliance is verified in accordance with Clauses 2.14.103.2 and 2.14.103.3. (AS/NZS 60598.2.2:2016)		N
	2.14.103.2 Test probe 1 of IEC 61032 shall be applied without appreciable force to all external surfaces and any opening of the luminaire. Test probe 1 is not applied to the access face.		N
	The 50 mm diameter of the probe shall not enter into an area where the temperature of any surface (including parts of the luminaire or the lamp) exceeds a value of 135 °C, when the surface is measured while the luminaire is operated in accordance with the thermal test conditions of Paragraph ZA4. (AS/NZS 60598.2.2:2016)		N

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	2.14.103.3 The total area of all openings in the luminaire body that allows airflow through the luminaire (i.e. airflow between the ceiling/wall space and the illuminated area), excluding openings in the access face, shall be no more than 5 % of the area of the opening in the mounting surface (opening in mounting surface as required by the manufacturer to insert the luminaire) (AS/NZS 60598.2.2:2016)		N
2.14.104	2.14.104 Ingress test for IC-4 luminaires Solid foreign objects shall have restricted access to the hot surfaces of IC-4 luminaires and restricted access to the open area that allows airflow through the luminaire (i.e. between the area that the body of the luminaire is located in and the area that the light source illuminates).		N
	The IP4X probes of AS 60529 shall be applied to the complete luminaire and any opening of the luminaire including the access face		N
	The IP4X probes of AS 60529 shall be applied without appreciable force and shall not enter any area of the luminaire where the temperature of any surface (including parts of the luminaire or the lamp) exceeds the temperature limit for 'mounting surface: normally flammable surface' of AS/NZS 60598.1, when the surface is measured while the luminaire is operated in accordance with the thermal test conditions of Paragraph ZA6.		N
	With the luminaire installed in accordance with the manufacturer's instructions, the IP4X probes of AS 60529 shall not be able to pass from the illuminated area into the area where the body of the luminaire is situated (AS/NZS 60598.2.2:2016)		N
2.6 (3.3.101)	Addition After Clause 3.3.22, add new Clauses 3.3.101 and 3.3.102 as follows: 3.3.101 The instructions shall contain details of the components in the luminaire that require replacement as part of a maintenance program.		N
2.6 (3.3.102)	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. Equipment containing one or more coin/button cell/R1 batteries shall have the safety warnings in the instructions accompanying the equipment. The safety warnings are not required where these batteries are not intended to be replaced or are only accessible after damaging the equipment. The safety warnings shall be as follows:		N
	– 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		N

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>in just 2 hours and can lead to death.</p> <ul style="list-style-type: none"> – 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. <p>NOTE 1 Coin/button cell batteries are small, single cell devices having a diameter greater than their height.</p> <p>NOTE 2 Battery designations are specified in IEC 60086-2.</p> <p>(AS/NZS 60598.1:2017)</p>		
2.7 (4.101)	<p>Addition</p> <p>After Clause 4.32, add new Clauses as follows:</p> <p>4.101.1 Small batteries</p> <p>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.</p> <p>Luminaires intended for children under the age of three, or parts of such luminaires that contain batteries, shall not fit wholly within the small parts cylinder as specified in Clause 5.2 of ISO 8124-1.</p> <p>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.</p>		N
	<p>Compliance is checked by inspection and by the following test.</p> <p>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:</p> <p>push force, 50 N;</p> <p>pull force; 30 N;</p> <p>if the shape of the part is such that the fingertips cannot easily slip off, 50 N;</p> <p>if the projection of the part that is gripped is less than 10 mm in the direction of removal, 30 N.</p> <p>The push force is applied by test probe 11 of IEC 61032. The pull force is applied by a suitable means, such as a suction cup, so that the test results are not affected. 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.</p>		N
	<p>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.</p> <p>If the part is likely to be twisted, the following torque is applied at the same time as the pull or push force:</p> <ul style="list-style-type: none"> – 2 Nm, for major dimensions up to 50 mm. – 4 Nm, for major dimensions over 50 mm. 		N

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>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 %.</p> <p>NOTE The types and dimensions of batteries are specified in IEC 60086-2. (AS/NZS 60598.1:2017)</p>		
2.7 (4.101.2)	<p>Addition</p> <p>4.101.2 Battery compartment fasteners</p> <p>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. Compliance is checked by inspection and by the following test.</p> <p>A force of 20 N is applied to the screw or similar fastener without jerks for a duration of 10 s in any direction. (AS/NZS 60598.1:2017)</p>		N
Figure ZZ1	 <p>Figure ZZ1 — Must be installed by a licensed electrician</p>		N

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict

Attachment 2: Additional requirement of AS/NZS 60598.1: 2017+A2:2020

	National Differences		-
Appendix ZZ	Variations to IEC 60598-1 Ed 8.0 (2014) (Normative)		P
3.3.19	Note: In Australia and New Zealand, there is no allowance for a protective conductor current greater than 10 mA.		N
3.3.103	3.3.103 Luminaires intended to be fixed to the wall and are supplied with a plug and a cord shall be supplied with a cord tag with the substance of the following wording: WARNING: THE FLEXIBLE WIRING CONNECTED TO THIS LUMINAIRE SHALL BE EFFECTIVELY FIXED TO THE WALL. NOTE The warning is intended to prevent strangulation and shock hazard to children.		N
4.32.1	General		N
	Overvoltage protective devices may be used in luminaires and they can be either Surge protective devices (SPDs) or surge protective components (SPCs). NOTE: Examples of SPCs are varistors (MOVs) and gas discharge tubes (GDTs). SPCs may be integrated with thermal protection devices, such as thermal fuses or PTCs, in the same package. SPDs will utilize SPCs and are a complete assembly.		N
4.32.2	Surge protective devices (SPDs)		N
	SPDs shall comply with IEC 61643-11. SPDs that are external to controlgear and connected to earth shall be used only in fixed luminaires and shall be connected only to a protective earth.		N
4.32.3	Surge protective components (SPCs)		N
	SPCs that are external to controlgear shall comply with the requirements of AS/NZS 3100 for varistors.		N
8.2.1	In the first item, third sentence, delete " 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 ".		P
	Delete the text of the second item, and replace with the following: Delete the ninth paragraph beginning with ' Covers in fixed luminaires that cannot be removed ... ' and replace with ' Covers that can be removed by hand shall be removed. '		P

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
10.2	Delete the fourth paragraph and replace with the following: During these tests, the following components shall be disconnected, so that the test voltages are applied to the insulation of the components, but not to the capacitive, or inductive or other functional elements of these components, as appropriate:		P
	(a) Shunt-connected capacitors.		N
	(b) Capacitors between live parts and the body.		N
	(c) Protective impedance device.		N
	(d) Chokes or transformers connected between live parts.		N
	(e) Overvoltage protective devices in accordance with 4.32 of this Standard.		N
	(f) Controlgear that conforms with the relevant requirements of IEC 61347 series.		P
	Delete the seventh paragraph which reads: For fixed Class 1 luminaires, overvoltage protective devices that comply with IEC 61643-11 shall be disconnected from the circuit.		N
13.3.3	The needle-flame test is not carried out on parts that are made of material classified as V-0 or V-1 according to IEC 60695-1 1 -1 0. The sample of material submitted to the test of IEC 60695-1 1 -1 0 shall be no thicker than the relevant part.	V-0 material used.	P

IEC 62031			
Clause	Requirement + Test	Result - Remark	Verdict

Attachment 3: according to IEC 62031:2018

12 (14)	FAULT CONDITIONS		P
12.2	Overpower condition		P
	Module withstands overpower condition >15 min.		P
	Module with automatic protective device or power limiter, test performed 15 min. at limit.		N
	No fire, smoke or flammable gas is produced		P
	Molten material does not ignite tissue paper, spread below the module		P

21	PHOTOBIOLOGICAL SAFETY		P
21.1	UV radiation		N
	Luminous radiation not exceed 2mW/klm		N
21.2	Blue light hazard		P
	Assessed according to IEC TR 62778	RG0 unlimited	P
21.3	Infrared radiation		N
	Requirements for infrared radiation when required		N

12 (14)	TABLE: tests of fault conditions		P
Part	Simulated fault		Hazard
LED	S-C		No
LED	Adjust to 1.5 times with rated power, stabilisation period 15 minutes after the temperature of Tc does not change by more than 5 K in 1 h. no fire, smoke or flammable gas is produced.		No

IEC TR 62778			
Clause	Requirement + Test	Result - Remark	Verdict

Attachment 4: Test report for IEC TR 62778:2014

7	MEASUREMENT INFORMATION FLOW		P
7.1	Basic flow		P
	'Law of conservation of luminance' applied		P
	Use of only true luminance/radiance values		P
	In case of luminaire: The light source is operated in the luminaire under similar conditions as when tested as a component		P
	In case E_{thr} value for RG2 was established the peak value was derived from angular light distribution		N
7.2	Conditions for the radiance measurement		P
	Standard condition applied (200mm distance, 0,011rad field of view)		P
	Non-standard condition applied		N
7.3	Special cases (I): Replacement by a lamp or LED module of another type		N
	Light source is a white light source		N
	Evaluation done based on highest luminance		N
	Evaluation done based on CCT value		N
7.4	Special cases (II): Arrays and clusters of primary light sources		N
	LED package is evaluated as : <input type="checkbox"/> RG0 unlimited <input type="checkbox"/> RG1 unlimited		N
	E_{thr} of LED package applies to array		N
8	RISK GROUP CLASSIFICATION		P
	Risk group achieved:		P
	-...Risk Group 0 unlimited		P
	-...Risk Group 1 unlimited		N
	- E_{thr} (lx) : Distance to reach RG1..... (m) :		N

IEC TR 62778				
Clause	Requirement + Test			Verdict
	TABLE: Spectroradiometric measurement			P
	Measurement performed on:	<input type="checkbox"/> LED package <input type="checkbox"/> LED module <input type="checkbox"/> Lamp <input checked="" type="checkbox"/> Luminaire		—
	Model number	UL-PL30120-40W-TC		—
	Test voltage (V)	240V~		—
	Test current (mA)	-		—
	Test frequency (Hz)	-		—
	Ambient, t (°C)	25.8		—
	Measurement distance	<input checked="" type="checkbox"/> 20 cm <input type="checkbox"/> ... cm		—
	Source size	<input checked="" type="checkbox"/> Non-small <input type="checkbox"/> Small : mm		—
	Field of view	<input type="checkbox"/> 100 mrad <input checked="" type="checkbox"/> 11 mrad <input type="checkbox"/> 1,7 mrad (for small sources)		—
Item	Symbol	Units	Result	Remark
Correlated colour temperature	CCT	K	5006	
x/y colour coordinates			0.3463/0.3664	
Blue light hazard radiance	L _B	W/(m ² •sr ¹)	2.44	RG0 unlimited
Blue light hazard irradiance	E _B	W/m ²	-	
Luminance	L	cd/m ²	3.963e+003	
Illuminance	E	lx	5689	

IEC 61058-1-1			
Clause	Requirement + Test	Result - Remark	Verdict

Attachment 5: Test report according to IEC 61058-1-1:2016

17	ENDURANCE		P
17.1	General requirements		—
17.1.2	The sequence of tests to be completed on the same 3 specimens is as follows:		—
		Carried out:	—
	• TC3: a test at high speed specified in 17.5.3	<input type="checkbox"/> yes, <input checked="" type="checkbox"/> no	N
	• TC2: a test at slow speed specified in 17.5.2	<input checked="" type="checkbox"/> yes, <input type="checkbox"/> no	P
	• TC1: an increased-voltage test at accelerated speed as specified in 17.5.1	<input checked="" type="checkbox"/> yes, <input type="checkbox"/> no	P
	• TC9: a locked-rotor test as specified in 17.5.5 at accelerated speed	<input type="checkbox"/> yes, <input checked="" type="checkbox"/> no	N
	• TC4: a test at accelerated speed as specified in 17.5.4;	<input checked="" type="checkbox"/> yes, <input type="checkbox"/> no	P
17.1.3	When required by Clause 13, TC10, is conducted on a different set of 3 specimens:		—
	<ul style="list-style-type: none"> • a test at very slow speed as in 17.5.6; only applies to switches according to the requirements of 13.1 • Compliance checked by 17.6.1 (TE1) and 17.6.3 (TE3). 		N
17.2	Electrical endurance tests		—
	The switch loaded as in Table 102 and/or Table 103 and connected in accordance with the circuit as given in Table 2.	<input checked="" type="checkbox"/> Table 102 and/or <input type="checkbox"/> Table 103	P
a)	Where in Table 2 an auxiliary switch (A) is symbolised in the test circuit,		—
	• tests for two ON-positions of the specimen (S) performed on 2 separate sets of test samples		N
b)	Multiway switches loaded according to 61058-1:2016, Table 1.	See table 1.	N
c)	For specific lamp load (7.2.7),		—
	• the connection and test load as specified by the manufacturer using the maximum occurring inrush current at room temperature		N
	• the specimen operated with loads that are used in the field rather than with synthetic loads		N
	• forced cooling of the specific lamp load applied in order to ensure cold resistance for each operating cycle and shorten the test time	<input type="checkbox"/> used <input type="checkbox"/> not used	N
d)	No electrical endurance tests applied for switches rated ≤ 20 mA load as classified to 7.2.6		N
17.3	Thermal conditions (<i>air temperatures</i>)		—
17.3.1	Switches according to 7.3.2 during tests in 17.5.4 (TC4) all parts exposed to:		—
	<input checked="" type="checkbox"/> 1 st half of test at maximum T-rating (+5 / 0)°C	75 °C	P
	<input checked="" type="checkbox"/> 2 nd half of test at 25°C ± 10°C <input type="checkbox"/> or at the minimum T-rating (0 / -5)°C if T < 0°C	25 °C	P

IEC 61058-1-1			
Clause	Requirement + Test	Result - Remark	Verdict
17.3.2	Switches according to 7.3.3, during tests in 17.5.4 (TC4):		—
	<ul style="list-style-type: none"> parts for 0 °C to 55 °C, exposed to a temperature within this range for the complete test period 		N
	<input type="checkbox"/> 1 st half of test, the remainder of the switch maintained at (T +5/0) °C	°C	N
	<input type="checkbox"/> 2 nd half of test, carried out at 25 °C ± 10 °C <input type="checkbox"/> or at the minimum T-rating (T 0/-5) °C	°C	N
17.3.3	Switches according to 7.3.1, during the tests in 17.5.4 (TC4):		—
	<ul style="list-style-type: none"> the switch exposed to 25 °C ± 10 °C 		N
17.4	Actuating conditions		—
17.4.1	The operating speed for the operating cycles shall be as follows:		
	a) For very slow speed approximately: <input type="checkbox"/> 1°/s for rotary actuation; <input type="checkbox"/> 0.5 mm/s for linear actuation.		N
	b) For slow speed approximately: <input type="checkbox"/> 9°/s for rotary actuations at an angle ≤ 45°; <input type="checkbox"/> 18°/s for rotary actuations at an angle >45°; <input checked="" type="checkbox"/> 20 mm/s for linear actuations		P
	c) For high speed: <input type="checkbox"/> actuating member actuated by hand as fast as possible		N
	d) For accelerated speed approximately: <input type="checkbox"/> 45°/s for rotary actuations at an angle ≤ 45°; <input type="checkbox"/> 90°/s for rotary actuations at an angle > 45°; <input checked="" type="checkbox"/> 80 mm / s for linear actuations		P
17.4.2	For biased switches, the actuating member is moved to the limit of travel of the opposite position.		N
17.4.3	During the testing, care is taken that the test apparatus drives the actuating member, without impeding the designed movements of the switch.		P
17.4.4	During the accelerated speed test:		—
	a) Care taken that test apparatus allows actuating member to operate freely.		P
	b) Switches for a rotary actuation where movement is not limited in either direction:		—
	<ul style="list-style-type: none"> 3/4 of operating cycles made in a clockwise and 1/4 in an anti-clockwise direction 		N
	c) Switches for rotary actuation in one direction only, test is performed in the designed direction.		N
	d) Additional lubrication not applied during tests.		P
	e) Forces applied to the end stops of the actuating members do not exceed declared values.		P
17.4.5	Switches are operated with the following conditions. Table 104:		—

IEC 61058-1-1			
Clause	Requirement + Test	Result - Remark	Verdict
	<input checked="" type="checkbox"/> $I_R \leq 10 \text{ A}$; 1 (s) ON and 3 (s) OFF <input type="checkbox"/> $I_R > 10 \text{ A but } < 25 \text{ A}$; 2 (s) ON and 6 (s) OFF <input type="checkbox"/> $I_R \geq 25 \text{ A}$; 4 (s) ON and 12 (s) OFF		P
	Capacitive and simulated lamp load (IEC 61058-1:2016, Figures 8 and 9);		—
	• 2 (s) ON and 15 (s) OFF		N
	Tungsten lamp loads:		—
	• Minimum 1 (s) ON and Minimum 55 (s) OFF		N
	Very slow speed TC10:		—
	• Minimum 2 (s) ON and Minimum 6 (s) OFF		N
	Locked rotor (TC9):		—
	• 1 (s) ON and 30 (s) OFF		N
	Switches with test circuit as in Table 2 for codes 2.3, 2.5, 2.7 or 2.9:		—
	• the ON periods is approximately 50 %		N
	Multi-way switches comply with the table 104	(s) ON (s) OFF	N
	• or be actuated with the speed indicated in 17.4.1 and a minimum ON period of 25 %		N
17.5	Type of test condition (TC) See table TC.		—
17.5.2	Increased-voltage test at accelerated speed (TC1): • Electrical conditions as in Table 102, $1.15 U_n$ and $1.0 I_n$. • Capacitive and simulated lamp load $1.0 U_n$ and $1.15 I_n$. • Thermal conditions $25 \pm 10 \text{ }^\circ\text{C}$. • Method of operation as in 17.4. • 100 operating cycles.		P
17.5.2	Test at slow speed (TC2) • Electrical conditions as in 17.2. • Thermal conditions $25 \pm 10 \text{ }^\circ\text{C}$. • Actuating speed as in 17.4 slow speed. • 100 operating cycles		P
17.5.3	Test at high speed (TC3) (only switches with more than one pole and with reversal polarity). • Electrical conditions as in 17.2. • Thermal conditions $25 \pm 10 \text{ }^\circ\text{C}$. • Actuating speed as in 17.4 high speed. • 100 operating speed.		N
17.5.4	Test at accelerated speed (TC4) • Electrical conditions as in 17.2. • Thermal conditions as in 17.3. • Actuating speed as in 17.4 accelerated. • Operating cycles as number declared in (7.4) reduced with the number already tested in 17.5.1, 17.5.2 and 17.5.3.		P

IEC 61058-1-1			
Clause	Requirement + Test	Result - Remark	Verdict
17.5.5	Locked-rotor test (TC9): • Electrical conditions as in 17.2. • Thermal conditions 25 ± 10 °C. • Actuating speed as in 17.4 accelerated. • 50 operating cycles.		N
17.5.6	Test at very slow speed (TC10): • Electrical conditions as in 17.2. • Thermal conditions 25 ± 10 °C. • Actuating speed, very slow speed in 17.4. • 100 operating cycles.		N
17.6	Evaluation of compliance	See table TE1 – TE3.	P
23	ABNORMAL OPERATION AND FAULT CONDITIONS FOR ELECTRONIC SWITCHES.		P
	Mechanical switches with electronic components checked by clause 23 of IEC 61058-1-2:2016.		P
	Switches with rigid printed boards with creepage distances and clearances that do not comply with the required distances of Table 12 to Table 14 of IEC 61058-1:2016:		—
	• checked by Clause 23 of IEC 61058-1-2:2016		P

IEC 61058-1-1			
Clause	Requirement + Test	Result – Remark	Verdict

	Results of endurance testing in clause 17								P
Type:	MS922	Tested for:	TC1, TC2, TC4				Circuit code:	1.2	
Table 1	Test loads for multi way switches								N
	Cycles of operations	Switch position of		Circuit \Rightarrow Load (A) \downarrow					—
	1st half	Highest load		I_R					N
		Next lower load		$0.8 I_R$					N
		Further next lower load		$0.533 I_R$					N
	2nd half	Highest load		I_R					N
		Next lower load		$0.5 I_R$					N
		Further next lower load		$0.333 I_R$					N
Table TC									—
Sub-clause	TC test	Volt (V)	Test load (A) Make Break		Cos (φ) Make Break		Time constant (ms)	Cycles	—
17.5.1	TC1	69	0.6	06	1	1	-	100	P
17.5.2	TC2	60	0.6	0.6	1	1	-	100	P
17.5.3	TC3	-	-	-	-	-	-	-	N
17.5.4	TC4	60	0.6	0.6	1	1	-	9800	P
17.5.5	TC9	-	-	-	-	-	-	-	-
17.5.6	TC10	-	-	-	-	-	-	-	-
TE1 – TE3									—
17.6.1	Functional compliance (TE1). Switch complies if								—
	<input checked="" type="checkbox"/> all actions function as declared <input checked="" type="checkbox"/> no loosening of electrical / mechanical connections occur; <input type="checkbox"/> sealing compound does not flow to such an extent that live parts are exposed								P
17.6.2	Thermal compliance (TE2) • Δt at the terminals < 55K tested in accordance with Clause 16 at I_R and 25°C \pm 10 °C								—
	Test current						0.6	A	—
	Samples 1, 2, 3:					1) 6.9 2) 6.7 3) 6.4	K K K		P
17.6.3	Insulating compliance (TE3) • test voltage 75 % of the corresponding test voltage specified in sub-clause 15.3:								—
	<input type="checkbox"/> Over contact gap(s) <input type="checkbox"/> Between live parts of different polarity <input type="checkbox"/> Between live parts and earth metal <input checked="" type="checkbox"/> Between live parts and accessible metal parts or actuating members etc. Samples 1, 2, 3: No transient fault occurred								P
	Supplementary information:								—

Attachment 6 EUT Photos

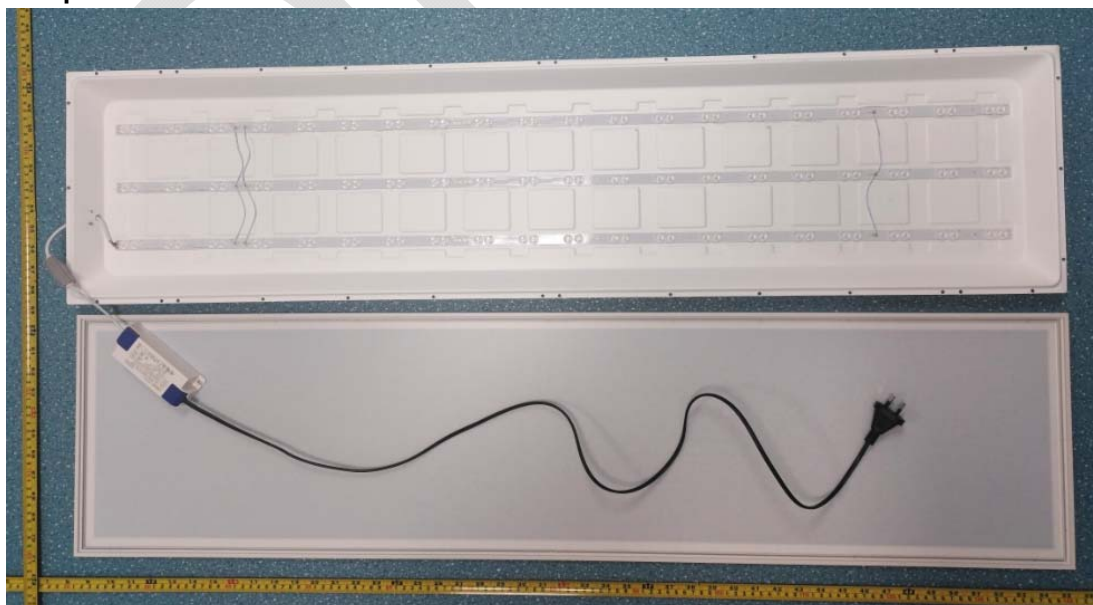
EUT photo- Front view.



EUT photo- Rear view.



EUT photo- uncover view.



EUT photo- LED driver view



EUT photo- cord anchorage (output) view



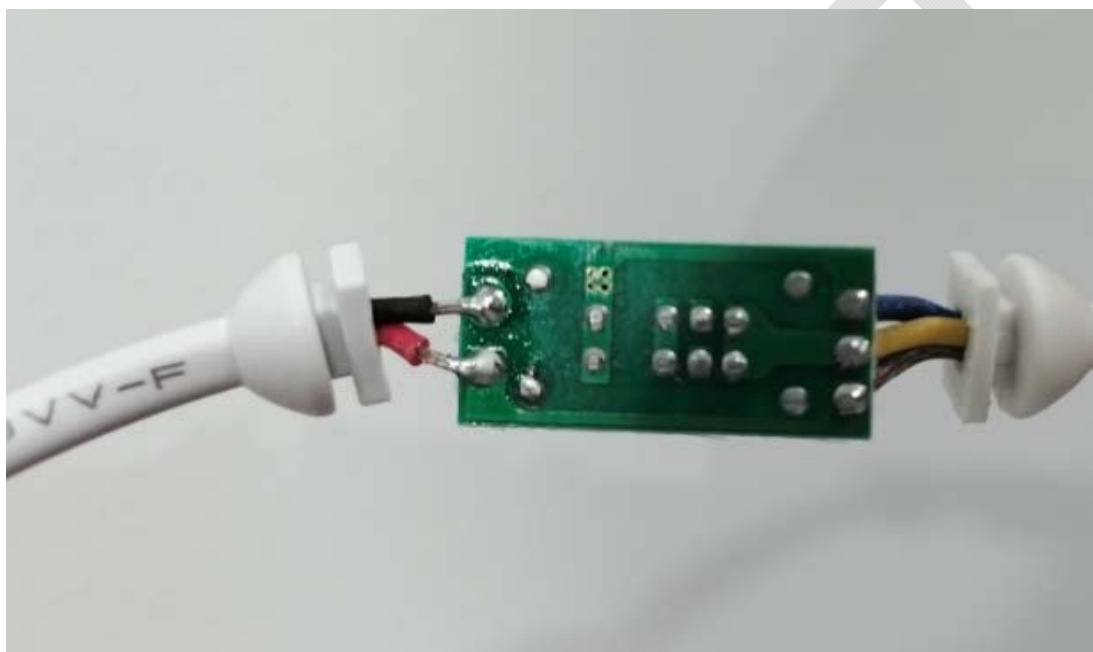
EUT photo- uncover view of lamp body.



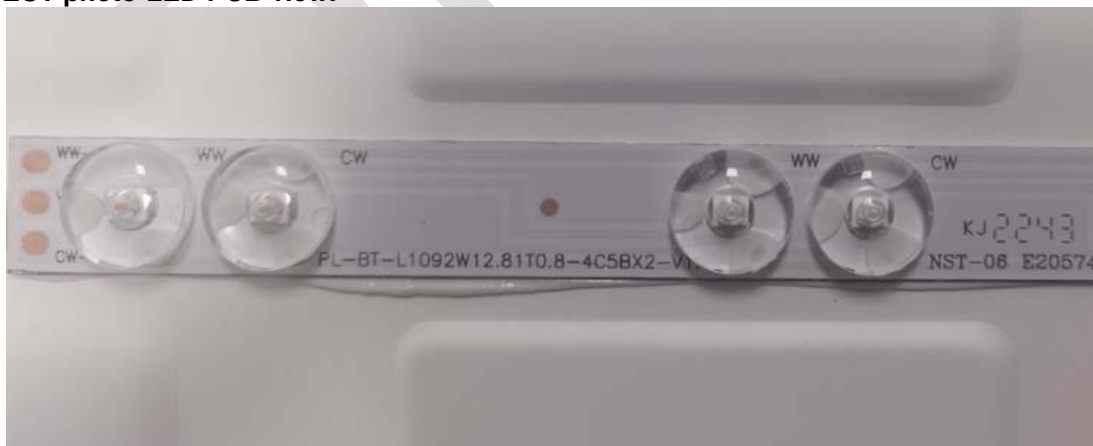
EUT photo-CCT switch view.



EUT photo-switch PCB view.



EUT photo-LED PCB view.



Directions

1. The information marked # is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report.
2. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.
3. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.
4. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.
5. This report cannot be reproduced except in full, without prior written approval of the Company.
6. This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.
7. For the difference between the tested model and the multiple models, the applicant had provided a statement and promised to be responsible for its authenticity. The laboratory has confirmed the difference of relevant samples before testing.

End of Report