

TEST REPORT

TEST REPORT (SANS) IEC 60598-2-3 Luminaires Part 2: Particular requirements: Section Three – Luminaires for road and street lighting	
Report Reference No.	2330/GE450
Tested by	NP Mokoena Test Officer
Checked by	TE Pheelwane Test Officer
Approved by	T Fourie Technical Signatory
Date of issue	2013-10-03
This report is based on a blank test report that was prepared by SGS Fimko Ltd using information obtained from the TRF originator (see below).	
CB Testing Laboratory	Lighting Technology
Address	Private Bag X 191, PRETORIA, 0001
Applicant's name	ELEXPART (PTY) LTD
Address	P O BOX 4069 RANDBURG, 2125
Summary of test results	The luminaire complied with the requirements of SANS 60598-2-3:2003 and SANS 60599-1:2009 for which it was tested.
Test specification:	
Standard	SANS 60598-2-3:2003 used in conjunction with SANS 60598-1:2009
Non-standard test method	N/A
Test Report Form No.	IEC60598_2_3F
Test Report Form(s) Originator	Intertek Semko AB
Master TRF	2008-05

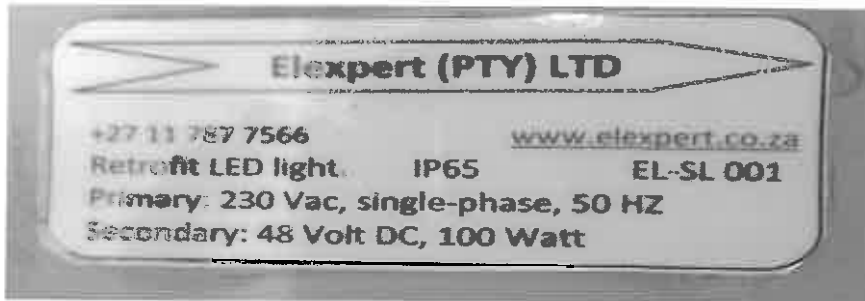
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SABS Commercial SOC Ltd conducted a conformity assessment pertaining to a sample of the product, commodity or system identified and the outcome recorded in this test report only relates to that specified sample. The conformity assessment outcomes recorded in the test report do not imply SABS Approval of the quality and/or performance of the sample(s) in question and the test results do not apply to any similar sample that has not been tested. (Refer also to the conditions of test printed on the back of this page.) This report may not be reproduced except in full. The authenticity of this report and its contents can be confirmed by contacting the person who signed it.



IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

Test item description..... :	LED Streetlight
Trade Mark..... :	Elexpert (Pty) Ltd
Manufacturer..... :	Elexpert (Pty) Ltd
Model/Type reference..... :	EL-SL001
Ratings..... :	230 VAC, 50 Hz, 100 W, IP 65
Possible test case verdicts:	
- test case does not apply to the test object..... :	N/A or N
- test object does meet the requirement..... :	P (Pass)
- test object does not meet the requirement..... :	F (Fail)
Test item/clause not tested..... :	NT (Not tested)
Accreditation..... :	SANAS Accredited Testing Laboratory No. T0085

Testing:
Date of receipt of test item..... : 2013-07-25
Date (s) of performance of tests..... : 2013-07-25 to 2013-08-18
General remarks:
<p>The test results presented in this report relate only to the object tested.</p> <p>This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.</p> <p>"(See Enclosure #)" refers to additional information appended to the report.</p> <p>"(See appended table)" refers to a table appended to the report.</p> <p>Throughout this report a comma is used as the decimal separator.</p> <p>Clause numbers between brackets refer to clauses in SANS (IEC) 60598-1</p> <p>The sample was received in a condition suitable for testing.</p>
Copy of marking plate:

REMARKS:
Measured power factor; 0,990

TP40014069

TRF No. IEC60598_2_3F

TRF originator: SEMKO

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IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

3.2 (0)	GENERAL TEST REQUIREMENTS		
3.2 (0.1)	Information for luminaire design considered	Standard Yes	—
3.2 (0.3)	More sections applicable	No	—

3.4 (2)	CLASSIFICATION		
3.4 (2.2)	Type of protection	Class I	—
3.4 (2.3)	Degree of protection (Requirement: Ordinary)	IP 65	—
3.4 (2.4)	Luminaire only suitable for non-combustible surfaces	No	—
	Luminaire suitable for normally flammable surfaces	Yes	—
	Luminaire suitable to be covered by insulating material	No	—
3.4 (2.5)	Luminaire for normal use	Yes	—
	Luminaire for rough service	No	—
3.4 (-)	Modes of installation of road or street lighting		—
	- on a pipe	No	—
	- on a mast arm	Yes	—
	- on a post top	No	—
	- on span or suspension wires	No	—
	- on a wall	No	—

3.5 (3)	MARKING		
3.5 (3.2)	Mandatory markings		P
	Position of the marking		P
	Format of symbols/text		P
3.5 (3.3)	Additional information		
	Language of instructions	English	P
3.5 (3.3.1)	Combination luminaires		N
3.5 (3.3.2)	Nominal frequency in Hz	50 Hz	P

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IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
3.5 (3.3.3)	Operating temperature		N
3.5 (3.3.4)	Symbol or warning notice		N
3.5 (3.3.5)	Wiring diagram		N
3.5 (3.3.6)	Special conditions		N
3.5 (3.3.7)	Metal halide lamp luminaire – warning		N
3.5 (3.3.8)	Limitation for semi-luminaires		N
3.5 (3.3.9)	Power factor and supply current		N
3.5 (3.3.10)	Suitability for use indoors		N
3.5 (3.3.11)	Luminaires with remote control		N
3.5 (3.3.12)	Clip-mounted luminaire – warning		N
3.5 (3.3.13)	Specifications of protective shields		N
3.5 (3.3.14)	Symbol for nature of supply	AC	P
3.5 (3.3.15)	Rated current of socket outlet		N
3.5 (3.3.16)	Rough service luminaire		N
3.5 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments		N
3.5 (3.3.18)	Non-ordinary luminaires with PVC cable		N
3.5 (3.4)	Test with water		P
	Test with hexane		P
	Legible after test		P
	Label attached		P
3.5 (-)	Additional information in instruction leaflet		
	Design attitude		N
	Weight		P
	Overall dimensions		P
	Maximum projected area if applicable		N
	Cross-sectional area of wires if applicable		N
	Suitability for indoors use		N
	Dimensions of the compartment		N
	Torque setting to be applied to bolts or screws		P

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IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
3.6 (4)	CONSTRUCTION		
3.6 (4.2)	Components replaceable without difficulty		P
3.6 (4.3)	Wireways smooth and free from sharp edges		P
3.6 (4.4)	Lampholders		
3.6 (4.4.1)	Integral lampholder		N
3.6 (4.4.2)	Wiring connection		N
3.6 (4.4.3)	Lampholder for end-to-end mounting		N
3.6 (4.4.4)	Positioning		N
	- pressure test (N)		N
	- bending test (N)		N
3.6 (4.4.5)	Peak pulse voltage		N
3.6 (4.4.6)	Centre contact		N
3.6 (4.4.7)	Parts in rough service luminaires resistant to tracking		N
3.6 (4.4.8)	Lamp connectors		N
3.6 (4.4.9)	Caps and bases correctly used		N
3.6 (4.5)	Starter holders		
	Starter holder in luminaires other than class II		N
	Starter holder class II construction		N
3.6 (4.7)	Terminals and supply connections		
3.6 (4.7.1)	Contact to metal parts		N
3.6 (4.7.2)	Test 8 mm live conductor		P
	Test 8 mm earth conductor		P
3.6 (4.7.3)	Terminals for supply conductors		P
3.6 (4.7.3.1)	Welded connections:		
	- stranded or solid conductor		N
	- spot welding		N
	- welding between wires		N
	- Type Z attachment		N
	- mechanical test according to 15.8.2		N
	- electrical test according to 15.9		N

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	- heat test according to 15.9.2.3 and 15.9.2.4		N
3.6 (4.7.4)	Terminals other than supply connection		N
3.6 (4.7.5)	Heat-resistant wiring/sleeves		P
3.6 (4.7.6)	Multi-pole plug		N
	- test at 30 N		N
3.6 (4.8)	Switches:		
	- adequate rating		N
	- adequate fixing		N
	- polarized supply		N
	- compliance with 61058-1 for electronic switches		N
3.6 (4.9)	Insulating lining and sleeves		
3.6 (4.9.1)	Retainment		N
	Method of fixing.....:		N
3.6 (4.9.2)	Insulated linings and sleeves		
	a) & c) Insulation resistance and electric strength		N
	b) Ageing test. Temperature (°C).....:		N
3.6 (4.10)	Insulation of Class II luminaires		
3.6 (4.10.1)	No contact, mounting surface – accessible metal parts – wiring of basic insulation		N
	Safe installation fixed luminaires		N
	Capacitors and switches		N
	Interference suppression capacitors according to IEC 60384-14		N
3.6 (4.10.2)	Assembly gaps:		
	- not coincidental		N
	- no straight access with test probe		N
3.6 (4.10.3)	Retainment of insulation:		
	- fixed		N
	- unable to be replaced; luminaire inoperative		N
	- sleeves retained in position		N
	- lining in lampholder		N
3.6 (4.11)	Electrical connections		

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Clause	Requirement + Test	Result - Remark	Verdict
3.6 (4.11.1)	Contact pressure		N
3.6 (4.11.2)	Screws:		
	- self-tapping screws		N
	- thread-cutting screws		N
	- at least two self-tapping screws		N
3.6 (4.11.3)	Screw locking:		
	- spring washer		N
	- rivets		N
3.6 (4.11.4)	Material of current-carrying parts		P
3.6 (4.11.5)	No contact to wood		N
3.6 (4.11.6)	Electro-mechanical contact systems		N
3.6 (4.12)	Mechanical connections and glands		
3.6 (4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		N
	Torque test: torque (Nm); part		N
	Torque test: torque (Nm); part		N
	Torque test: torque (Nm); part		N
3.6 (4.12.2)	Screws with diameter < 3 mm screwed into metal		N
3.6 (4.12.4)	Locked connections:		
	- fixed arms; torque (Nm)		N
	- lampholder; torque (Nm)		N
	- push-button switches; torque 0,8 Nm		N
3.6 (4.12.5)	Screwed glands; force (N)		N
3.6 (4.13)	Mechanical strength		
3.6 (4.13.1)	Impact tests:		
	- fragile parts; energy (Nm)	Diffuser; 0,5 Nm	P
	- other parts; energy (Nm)	Housing; 0,7 Nm	P
	1) live parts		P
	2) linings		N
	3) protection		P
	4) covers		P

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Clause	Requirement + Test	Result - Remark	Verdict
3.6 (4.13.3)	Straight test finger		P
3.6 (4.13.4)	Rough service luminaires		
	- 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
3.6 (4.13.6)	Tumbling barrel		N
3.6 (4.14)	Suspensions and adjusting devices		
3.6 (4.14.1)	Mechanical load:		
	A) four times the weight		N
	B) torque 2,5 Nm		N
	C) bracket arm; bending moment (Nm)		N
	D) load track-mounted luminaires		N
	E) clip-mounted luminaires, glass-shelve. Thickness (mm)		N
	Metal rod. diameter (mm)		N
	Fixed luminaire or independent control gear without fixing devices		N
3.6 (4.14.2)	Load to flexible cables		
	Mass (kg)		N
	Stress in conductors (N/mm ²)		N
	Mass (kg) of semi-luminaire		N
	Bending moment (Nm) of semi-luminaire		N
3.6 (4.14.3)	Adjusting devices:		
	- flexing test; number of cycles		N
	- strands broken		N
	- electric strength test afterwards		N
3.6 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors		N
3.6 (4.14.5)	Guide pulleys		N

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Clause	Requirement + Test	Result - Remark	Verdict
3.6 (4.14.6)	Strain on socket-outlets		N
3.6 (4.15)	Flammable materials:		
	- glow-wire test 650 °C		N
	- spacing \geq 30 mm		N
	- screen withstanding test of 13.3.1		N
	- screen dimensions		N
	- no fiercely burning material		N
	- thermal protection		N
	- electronic circuits exempted		N
3.6 (4.15.2)	Luminaires made of thermoplastic material with lamp control gear		
	a) construction		N
	b) temperature sensing control		N
	c) surface temperature		N
3.6 (4.16)	Luminaires marked with F-symbol		
	No lamp control gear	(compliance with Section 12)	N
3.6 (4.16.1)	Lamp control gear spacing:		
	- spacing 35 mm		N
	- spacing 10 mm		N
3.6 (4.16.2)	Thermal protection:		
	- in lamp control gear		P
	- external		N
	- fixed position		P
	- temperature marked lamp control gear		P
3.6 (4.16.3)	"F" curve measured	(see 12.6)	N
3.6 (4.17)	Drain holes		N
	Clearance at least 5 mm		N
3.6 (4.18)	Resistance to corrosion:		
3.6 (4.18.1)	- rust-resistance		P
3.6 (4.18.2)	- season cracking in copper		N
3.6 (4.18.3)	- corrosion of aluminium		N
3.6 (4.19)	Igniters compatible with ballast		N

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Clause	Requirement + Test	Result - Remark	Verdict
3.6 (4.20)	Rough service vibration		N
3.6 (4.21)	Protective shield:		
3.6 (4.21.1)	Shield fitted		N
3.6 (4.21.2)	Particles from a shattering lamp not impair safety		N
3.6 (4.21.3)	No direct path		N
3.6 (4.21.4)	Impact test on shield		N
	Glow-wire test on lamp compartment		N
3.6 (4.22)	Attachments to lamps		N
3.6 (4.23)	Semi-luminaires comply Class II		N
3.6 (4.24)	UV radiation, metal halide lamps		N
3.6 (4.25)	No sharp point or edges		P
3.6 (4.26)	Short-circuit protection:		
3.6 (4.26.1)	Uninsulated accessible SELV parts		N
3.6 (4.26.2)	Short-circuit test		N
3.6 (4.26.3)	Test chain according to Figure 29		N
3.6.1 (-)	At least IP X3 or X5 respectively	IP 65	P
	Column-integrated luminaires:		
	- parts below 2,5 m	IP	N
	- parts above 2,5 m	IP	N
3.6.2 (-)	Suspension on span wires		N
3.6.3 (-)			N
3.6.3.1 (-)	Static load test		
	- drag coefficient.....	1,2	P
	- loaded area (m ²)	0,172 m ²	P
	- used load (N)	341,98 N	P
	- measured deformation (cm/m)		N
	- no rotation		N
3.6.4 (-)	Adjustable lampholders		N
3.6.5 (-)	Glass cover:		
	- means of protection	Flat glass	P
	- number of particles	> 60	P

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Clause	Requirement + Test	Result - Remark	Verdict
3.6.6 (-)	Connection compartment of column-integrated luminaire		
	- provides adequate space		N
	- means for attachment		N
3.6.7 (-)	Compliance with		N
3.6.8 (-)	Doors of column-integrated luminaires:		
	- corrosion resistance		N
	- opening only possible for an authorized person		N
	- impact test		N
3.6.9 (-)	Column-integrated luminaire:		
	- dimension of the entry slot (mm)		N
	- cable path from the slot to the connection compartment (mm)		N
	- cable path free from obstruction that might cause abrasion of the cable		N

3.7 (11)	CREEPAGE DISTANCES AND CLEARANCES		
	Working voltage (V).....	250 V	—
	Voltage form	Sinusoidal	—
	PTI	< 600	—
	Rated pulse voltage (Kv).....	-	—
	(1) Current-carrying parts of different polarity: cr (mm); cl (mm).....	Cr = 25 Cl = 11	P
	(2) Current-carrying parts and accessible parts: cr (mm); cl (mm).....	Cr > 10 Cl > 10	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) Not used		—
	(6) Current-carrying parts and supporting surface: cr (mm); cl (mm).....	Cr > 10 Cl > 10	P

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3.8 (7)	PROVISION FOR EARTHING		
3.8 (7.2.1 + 7.2.3)	Accessible metal parts		P
	Metal parts in contact with supporting surface		P
	Resistance < 0,5 Ω	0,02 Ω	P
	Two self-tapping screws used		N
	Thread-forming screws		N
	Thread-forming screw used in a groove		N
	Earth makes contact first		N
3.8 (7.2.2 + 7.2.3)	Earth continuity in joints etc.		N
3.8 (7.2.4)	Locking of clamping means		N
	Compliance with 4.7.3		N
3.8 (7.2.5)	Earth terminal integral part of connector socket		N
3.8 (7.2.6)	Earth terminal adjacent to mains terminals		P
3.8 (7.2.7)	Electrolytic corrosion of the earth terminal		N
3.8 (7.2.8)	Material of earth terminal		P
	Contact surface bare metal		P
3.8 (7.2.10)	Class II luminaire for looping-in		N
	Double or reinforced insulation to functional earth		N
3.8 (7.2.11)	Earthing core coloured green-yellow		N
	Length of earth conductor		N
3.8.1 (-)	Attachment prevented from rotation		P

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

3.9 (15)	SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS		
	Separately approved; component list	(see Annex 1)	N
	Part of the luminaire	(see Annex 4)	N

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3.10 (5)	EXTERNAL AND INTERNAL WIRING		
3.10 (5.2)	Supply connection and external wiring		
3.10 (5.2.1)	Means of connection	Terminal block	P
3.10 (5.2.2)	Type of cable.....		N
	Nominal cross-sectional area (mm ²).....		N
	Cables equal to IEC 60227 or IEC 60245		N
3.10 (5.2.3)	Type of attachment, X, Y or Z		N
3.10 (5.2.5)	Type Z not connected to screws		N
3.10 (5.2.6)	Cable entries:		
	- suitable for introduction		P
	- adequate degree of protection		P
3.10 (5.2.7)	Cable entries through rigid material have rounded edges		P
3.10 (5.2.8)	Insulating bushings:		
	- suitably fixed		P
	- material in bushings		P
	- material not likely to deteriorate		P
	- tubes or guards made of insulating material		N
3.10 (5.2.9)	Locking of screwed bushings		N
3.10 (5.2.10)	Cord anchorage:		
	- covering protected from abrasion		P
	- clear how to be effective		P
	- no mechanical or thermal stress		P
	- no tying of cables into knots etc.		P
	- insulating material or lining		P
3.10 (5.2.10.1)	Cord anchorage for type X attachment:		
	a) at least one part fixed		P
	b) types of cable		P
	c) no damaging of the cable		P
	d) whole cable can be mounted		P
	e) no touching of clamping screws		P

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Clause	Requirement + Test	Result - Remark	Verdict
	f) metal screw not directly on cable		P
	g) replacement without special tool		P
	Glands not used as anchorage		P
	Labyrinth type anchorages		N
3.10 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment	Type X	N
3.10 (5.2.10.3)	Tests:		
	- impossible to push cable; unsafe		P
	- pull test: 25 times; pull (N): 60		P
	- torque test: torque (Nm).....: 0,15		P
	- displacement ≤ 2 mm		P
	- no movement of conductors		P
	- no damage of cable or cord		P
3.10 (5.2.11)	External wiring passing into luminaire		N
3.10 (5.2.12)	Looping-in terminals		N
3.10 (5.2.13)	Wire ends not tinned		N
	Wire ends tinned: no cold flow		N
3.10 (5.2.14)	Mains plug same protection		N
	Class III luminaire plug		N
3.10 (5.2.16)	Appliance inlets (IEC 60320)		N
	Appliance couplers of class II type		N
3.10 (5.2.17)	No standardized interconnecting cables properly assembled		N
3.10 (5.2.18)	Used plug in accordance with		
	- IEC 60083		N
	- other standard		N
3.10 (5.3)	Internal wiring		
3.10 (5.3.1)	Internal wiring of suitable size and type		P
	Through wiring		
	- not delivered/ mounting instruction		N
	- factory assembled		N

TP40014069

TRF No. IEC60598_2_3F

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IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- socket outlet loaded (A)		N
	- temperatures	(see Annex 2)	N
	Green-yellow for earth only		N
3.10 (5.3.1.1)	Internal wiring connected directly to fixed wiring		
	Cross-sectional area (mm ²)	0,84 mm ²	P
	Insulation thickness	0,9 mm	P
	Extra insulation added where necessary		N
3.10 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		
	Adequate cross-sectional area and insulation thickness		N
3.10 (5.3.1.3)	Double or reinforced insulation for class II		N
3.10 (5.3.1.4)	Conductors without insulation		N
3.10 (5.3.1.5)	SELV current-carrying parts		N
3.10 (5.3.1.6)	Insulation thickness other than PVC or rubber		N
3.10 (5.3.2)	Sharp edges etc.		P
	No moving parts of switches etc.		N
	Joints, raising/lowering devices		N
	Telescopic tubes etc.		N
	No twisting over 360°		N
3.10 (5.3.3)	Insulating bushings:		
	- suitable fixed		N
	- material in bushings		N
	- material not likely to deteriorate		N
	- cables with protective sheath		N
3.10 (5.3.4)	Joints and junctions effectively insulated		N
3.10 (5.3.5)	Strain on internal wiring		N
3.10 (5.3.6)	Wire carriers		N
3.10 (5.3.7)	Wire ends not tinned		N
	Wire ends tinned: no cold flow		N
3.10.1 (-)	Cord anchorage if applicable		N
	- pull test: 25 times; pull (N)	60	P

TP40014069

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IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- torque test: torque (Nm).....:	0,25	P

3.11 (8)	PROTECTION AGAINST ELECTRIC SHOCK		
3.11 (8.2.1)	Live parts not accessible		P
	Basic insulated parts not used on the outer surface without appropriate protection		P
	Protection in any position		P
	Double-ended tungsten filament lamp		N
	Insulation lacquer not reliable		N
	Double-ended high pressure discharge lamp		N
	Relevant warning according to 3.2.18 fitted to the luminaire		N
3.11 (8.2.2)	Portable luminaire adjusted in most unfavourable position		N
3.11 (8.2.3)	Class II luminaire:		
	- basic insulated metal parts not accessible during starter or lamp replacement		N
	- basic insulation not accessible other than during starter or lamp replacement		N
	- glass protective shields not used as supplementary insulation		N
	Class I luminaire with BC lampholder		N
3.11 (8.2.4)	Portable luminaire:		
	- protection independent of supporting surface		N
	- terminal block completely covered		N
3.11 (8.2.5)	Compliance with the standard test finger or relevant probe		P
3.11 (8.2.6)	Covers reliably secured		P
3.11 (8.2.7)	Discharging of capacitors $\geq 0,5 \mu\text{F}$		N
	Portable plug connected luminaire with capacitor		N
	Other plug connected luminaire with capacitor		N
	Discharge device on or within capacitor		N
	Discharge device mounted separately		N

TP40014069

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IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
3.12 (12)	ENDURANCE TEST AND THERMAL TEST		
3.12 (12.3)	Endurance test:		
	- mounting-position.....:	Normal use	—
	- test temperature (°C)	35 ± 2 °C	—
	- total duration (h).....:	240 h	—
	- supply voltage: Un factor; calculated voltage (V):	253 V	—
	- lamp used	LED 100 W	—
3.12 (12.3.2)	After endurance test: Ç		
	- no part unserviceable		P
	- luminaire not unsafe		P
	- no damage to track system		N
	- marking legible		P
	- no cracks, deformation etc.		P
3.12 (12.4)	Thermal test (normal operation)	(see Annex 2)	P
3.12 (12.5)	Thermal test (abnormal operation)	(see Annex 2)	N
3.12 (12.6)	Thermal test (failed lamp control gear condition):		
3.12 (12.6.1)	Through wiring or looping-in wiring loaded by a current of (A)		—
	- case of abnormal conditions		—
	- electronic lamp control gear		N
	- measured winding temperature (°C): at 1,1 Un ..		—
	- measured mounting surface temperature (°C) at 1,1 Un.....:		N
	- calculated mounting surface temperature (°C) ...:		N
	- track-mounted luminaires		N
3.12 (12.6.2)	Temperature sensing control		
	- case of abnormal conditions		—
	- thermal link		N
	- manual reset cut-out		N
	- auto reset cut-out		N
	- measured mounting surface temperature (°C):		N

TP40014069

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IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- track-mounted luminaires		N
3.12 (12.7)	Thermal test (failed lamp control gear in plastic luminaires):		
3.12 (12.7.1)	Luminaire without temperature sensing control		
3.12 (12.7.1.1)	Luminaire with fluorescent lamp $\leq 70W$		
	Test method 12.7.1.1 or Annex V		—
	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 V:		
	- case of abnormal conditions		—
	- measured winding temperature ($^{\circ}C$): at 1,1 Un ...:		—
	- measured temperature of fixing point/exposed part ($^{\circ}C$): at 1,1 Un		—
	- calculated temperature of fixing point/exposed part ($^{\circ}C$).....		—
	Ball-pressure test:		
	- part tested; temperature ($^{\circ}C$)		N
	- part tested; temperature ($^{\circ}C$)		N
3.12 (12.7.1.2)	Luminaire with discharge lamp, fluorescent lamp $> 70W$, transformer $> 10 VA$		
	- case of abnormal conditions		—
	- measured winding temperature ($^{\circ}C$): at 1,1 Un ...:		—
	- measured temperature of fixing point/exposed part ($^{\circ}C$): at 1,1 Un		—
	- calculated temperature of fixing point/exposed part ($^{\circ}C$).....		—
	Ball-pressure test:		
	- part tested; temperature ($^{\circ}C$)		N
	- part tested; temperature ($^{\circ}C$)		N

TP40014069

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IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
3.12 (12.7.1.3)	Luminaire with short circuit proof transformers ≤ 10 VA		N
	- case of abnormal conditions		—
	- Components retained in place after the test		N
	- Test with standard test finger after the test		N
3.12 (12.7.2)	Luminaire with temperature sensing control		N
	- thermal link	No	—
	- manual reset cut-out	No	—
	- auto reset cut-out	No	—
	- case of abnormal conditions		—
	- highest measured temperature of fixing point/exposed part (°C):		—
	Ball-pressure test:		
	- part tested; temperature (°C)		N
	- part tested; temperature (°C)		N
3.12.1 (-)	Temperature reduction if for outdoor use only		N
3.12.2 (-)	Tests order for luminaires with > IP 20		P

3.13 (9)	RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE		
3.13 (9.2)	Tests for ingress of dust, solid objects and moisture:		
	- classification according to IP	IP 65	—
	- mounting position during test		—
	- fixing screws tightened; torque (Nm)		—
	- tests according to clauses		—
	- electric strength test afterwards		P
	a) no deposit in dust-proof luminaire		N
	b) no talcum in dust-tight luminaire		P
	c) no trace of water on current-carrying parts or where it could become a hazard		P
	d) i) For luminaires without drain holes – no water entry		P

TP40014069

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IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	d) ii) For luminaires with drain holes – no hazardous water entry		N
	e) no water in watertight luminaire		N
	f) no contact with live parts (IP 2X)		N
	f) no entry into enclosure (IP 3X and IP 4X)		N
	f) no contact with live parts (IP3X and IP4X)		N
3.13 (9.3)	Humidity test 48 h		P
3.13.1 (-)	Tests order for luminaires with > IP 20	IP 65	P

3.14 (10)	INSULATION RESISTANCE AND ELECTRIC STRENGTH		
3.14 (10.2.1)	Insulation resistance test		
	Cable or cord covered by metal foil or replaced by a metal rod of mm Ø	-	---
	Insulation resistance (MΩ)		
	SELV:		
	- between current-carrying parts of different polarity.....		N
	- between current-carrying parts and mounting surface		N
	- between current-carrying parts and metal parts of the luminaire.....		N
	Other than SELV:		
	- between live parts of different polarity	> 1 GΩ	P
	- between live parts and mounting surface	> 1 GΩ	P
	- between live parts and metal parts	> 1 GΩ	P
	- between live parts of different polarity through action of a switch.....		N
3.14 (10.2.2)	Electric strength test		
	Dummy lamp		N
	Luminaires with ignitors after 24 h test		N
	Luminaires with manual ignitors		N
	Test voltage (V):		N
	SELV:		

TP40014069

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IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- between current-carrying parts of different polarity.....:		N
	- between current-carrying parts and mounting surface		N
	- between current-carrying parts and metal parts of the luminaire.....:		N
	Other than SELV:		
	- between live parts of different polarity	1460 V	P
	- between live parts and mounting surface	1460 V	P
	- between live parts and metal parts	1460 V	P
	- between live parts of different polarity through action of a switch.....:		N
3.14 (10.3)	Leakage current (Ma).....:	0,04	P

3.15 (13)	RESISTANCE TO HEAT, FIRE AND TRACKING		
3.15 (13.2.1)	Ball-pressure test:		
	- part tested; temperature (°C).....:	Terminal block, 125 °C	P
	- part tested; temperature (°C).....:		N
3.15 (13.3.1)	Needle flame test (10 s):		
	- part tested		N
	- part tested		N
3.15 (13.3.2)	Glow-wire test (650°C):		N
	- part tested		N
	- part tested		N
3.15 (13.4.1)	Tracking test: part tested		N

	ANNEX 1: components	
--	----------------------------	--

object/part No	code	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity
LED Driver	C	See ANNEX A	See ANNEX A	See ANNEX A	See ANNEX A	See ANNEX A

TP40014069

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IEC 60598-2-3						
Clause	Requirement + Test			Result - Remark		Verdict
Cable	-	SJTW CSA	18AWG E243711	300 V 105 °C 3 X 0,824 mm ² 60 °C WATER RESISTANT	-	UL LF
Terminal block	C	-	PA10	450 V 2,5°	-	CE FI

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

	ANNEX 2: temperature measurements, thermal tests of Section 12	
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Type reference	EL-SL 001	—
Lamp used	LED 100 W	—
Lamp control gear used	LED Driver	—
Mounting position of luminaire	Normal use	—
Supply wattage (W)	94,5	—
Supply current (A)	0,4	—
Calculated power factor	0,990 (Measured)	—
Table: measured temperatures corrected for $t_a = 25\text{ °C}$:		
- abnormal operating mode	-	—
- test 1: rated voltage	230 V	—
- test 2: 1,06 times rated voltage or 1,05 times rated wattage	244 V	—
- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage	-	—
- test 4: 1,1 times rated voltage or 1,05 times rated wattage	-	—
Through wiring or looping-in wiring loaded by a current of A during the test	-	—

temperature (°C) of part	Clause 12 4 – normal	Clause 12 5 – abnormal
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TP40014069

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IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

	test 1	test 2	test 3	limit	test 4	limit
LED Module	-	61,3	-	-	-	-
Cable	-	47,9	-	105	-	-
Mounting surface	-	43,5	-	90	-	-
Terminal block	-	40,5	-	85	-	-
LED driver	59,0	-	-	89	-	-
Lampholder	-	50,8	-	165	-	-

	ANNEX 3: screw terminals (part of the luminaire)	
--	---	--

(14)	SCREW TERMINALS		
(14.2)	Type of terminal	Pillar	—
	Rated current (A)	-	—
(14.3.2.1)	One or more conductors		P
(14.3.2.2)	Special preparation		N
(14.3.2.3)	Terminal size		P
	Cross-sectional area (mm ²)	8,04	P
(14.3.3)	Conductor space (mm)	3,2	P
(14.4)	Mechanical tests		
(14.4.1)	Minimum distance		P
(14.4.2)	Cannot slip out		P
(14.4.3)	Special preparation		N
(14.4.4)	Nominal diameter of thread (metric ISO thread) .:	M 3	P
	External wiring		N
	No soft metal		P
(14.4.5)	Corrosion		P
(14.4.6)	Nominal diameter of thread (mm)	2,9	P
	Torque (Nm)	0,5	P
(14.4.7)	Between metal surfaces		P
	Lug terminal		P
	Mantle terminal		N

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IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Pull test; pull (N)	60	P
(14.4.8)	Without undue damage		P

	ANNEX 4: screwless terminals (part of the luminaire)	
--	---	--

(15)	SCREWLESS TERMINALS	
(15.2)	Type of terminal	—
	Rated current (A)	—
(15.3.1)	Material	N
(15.3.2)	Clamping	N
(15.3.3)	Stop	N
(15.3.4)	Unprepared conductors	N
(15.3.5)	Pressure on insulating material	N
(15.3.6)	Clear connection method	N
(15.3.7)	Clamping independently	N
(15.3.8)	Fixed in position	N
(15.3.10)	Conductor size	N
	Type of conductor	N
(15.5.1)	Terminals internal wiring	N
(15.5.1.1)	Pull test spring-type terminals (4 N, 4 samples).....	N
(15.5.1.2)	Pull test pin or tab terminals (4 N, 4 samples).....	N
	Insertion force not exceeding 50 N	N
(15.5.2)	Permanent connections: pull-off test (20 N)	N
(15.6)	Electrical tests	
	Voltage drop (mV) after 1 h (4 samples)	N
	Voltage drop of two inseparable joints	N
	Number of cycles	—
	Voltage drop (mV) after 10th alt. 25th cycle (4 samples)	N

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

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IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX A
PHOTOGRAPHS OF THE SAMPLE



TRF No. IEC60598_2_3F

TP40014069

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IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict



TP40014069

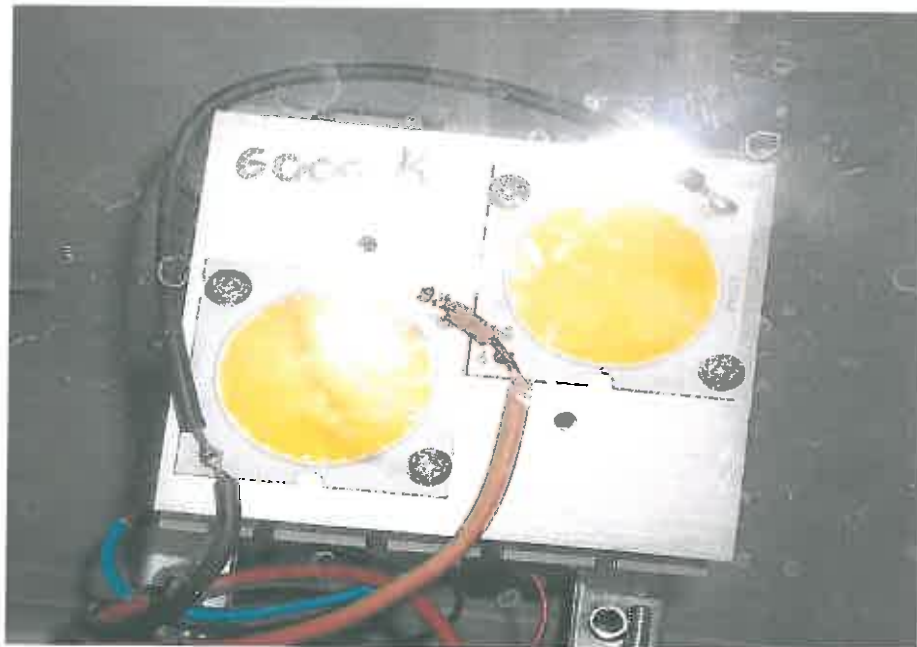
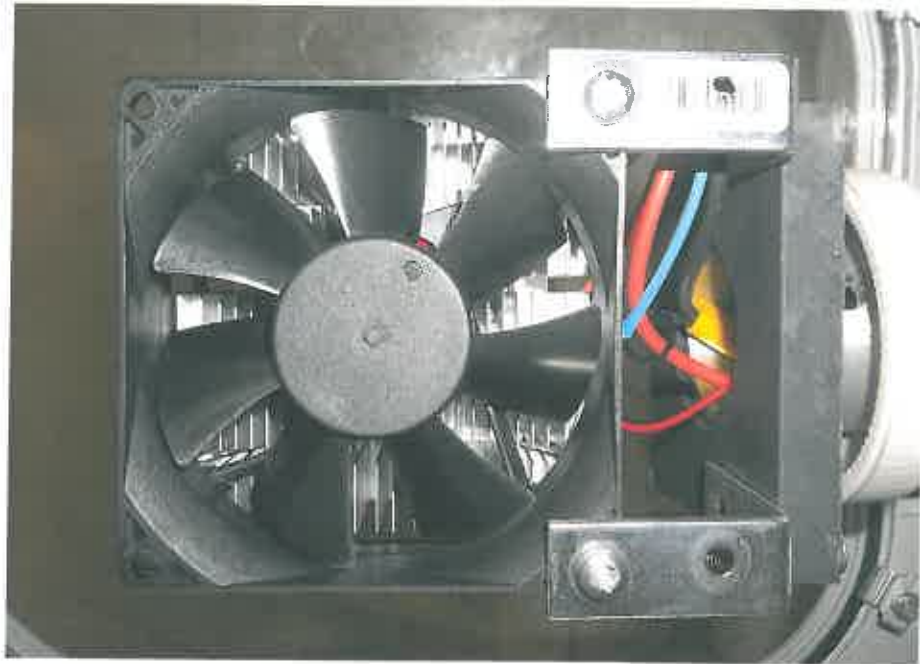
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Clause	Requirement + Test	Result - Remark	Verdict



TP40014069

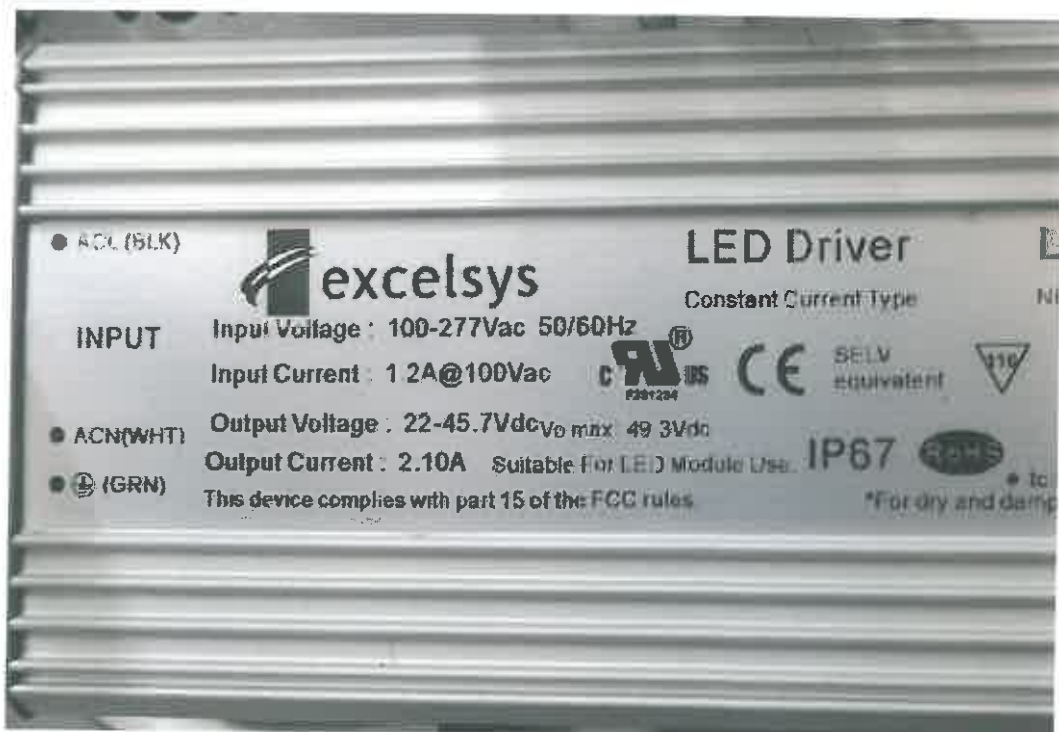
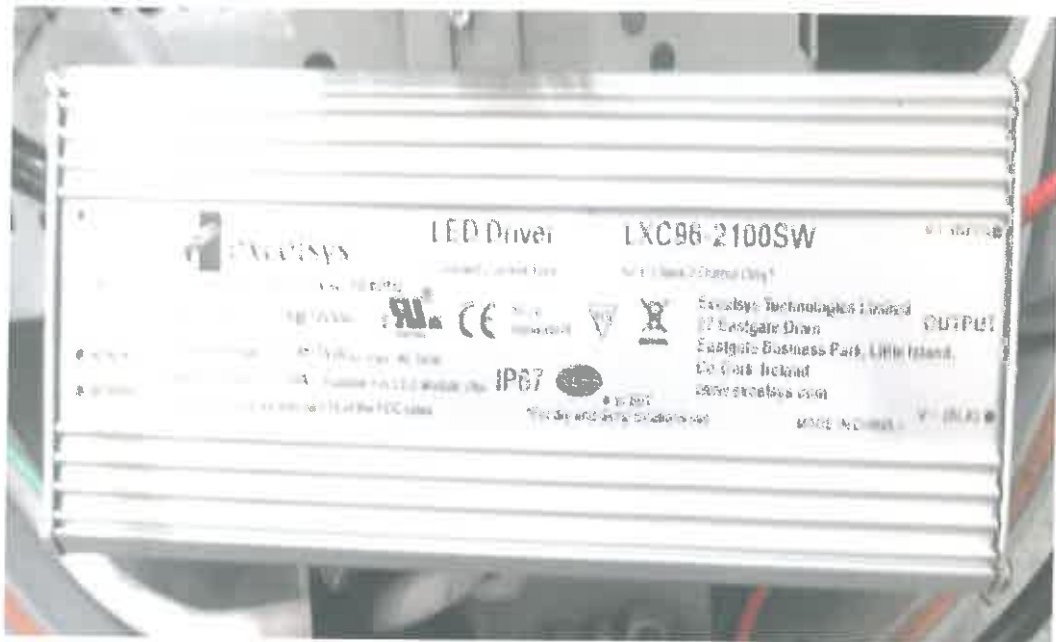
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IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict



TP40014069

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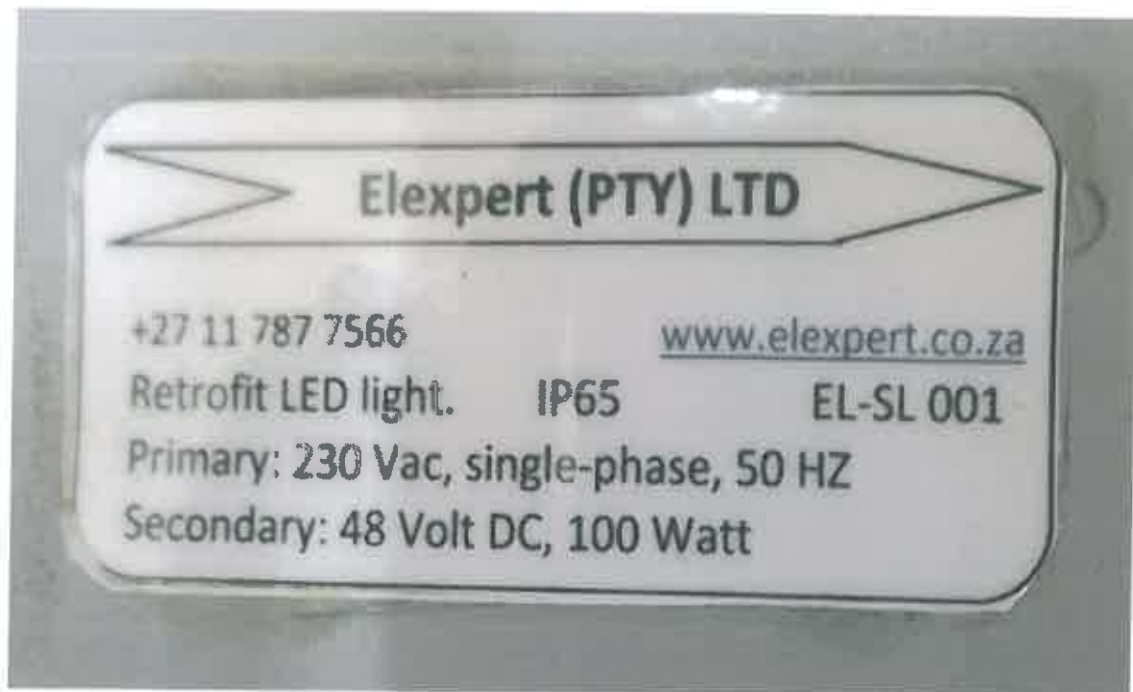
TRF originator: SEMKO

This test was performed by SABS Commercial (SQC) Ltd.

This report relates only to the specific sample(s) tested as identified herein. It does not imply SABS approval of the quality and/or performance of the item(s) in question and the test results do not apply to any similar item that has not been tested.

(Refer also to the complete conditions printed on the back of official test reports.)

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict



TP40014069

TRF No. IEC60598_2_3F

TRF originator: SEMKO

This test was performed by SABS Commercial (SOC) Ltd.

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(Refer also to the complete conditions printed on the back of official test reports.)