

# LVD TEST REPORT

Report No.: NTEK-2016NT07217723S

**Product:** LED sensor & Emergency ceiling light

Model No.: Safeway-LL-04-12W4K-ES, Safeway-LL-04-8W65K-E,

Safeway-LL-04-12W4K-E

Applicant: LOKOLED

Address: Kitmanstraat 14, 1812 PM Alkmaar, The Netherlands

**Issued by:** NTEK Testing Technology Co., Ltd.

Lab 1/F, Building E, Fenda Science Park, Sanwei Community,

Location: Xixiang Street, Bao'an District, Shenzhen P.R. China

**Tel:** (86)-0755-61156588 Fax (86)-0755-61156599



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#### **TEST REPORT** EN 60598-2-22

Luminaires

Part 2: Particular requirements: Section Twenty-two – Luminaires for emergency lighting

Compiled by (+ signature).....: Grace Gong

Approved by (+ signature).....: CS Chan Date of issue...... July 25, 2016

Testing Laboratory Name..... NTEK Testing Technology Co., Ltd

1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang

Street, Bao'an District, Shenzhen P.R. China

Applicant's name..... LOKOLED

Address ..... Kitmanstraat 14, 1812 PM Alkmaar. The Netherlands

Test specification:

EN 60598-2-22:2014 used in conjunction with Standard.....

EN 60598-1:2015 EN 62493:2010

Test procedure ...... CE-LVD

Non-standard test method.....

Test Report Form No. EN 60598 2 22C

Test Report Form(s) Originator ......: NTEK Master TRF....: 2016-02

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Test item description ...... LED sensor & Emergency ceiling light

Trade Mark .....: LOKOLED Manufacturer ..... LOKOLED

1304 Block 26A, Ya Ju Le Garden, DaLiang District, FoShan City,

GuangDong Province China

Model/Type reference .....: Safeway-LL-04-12W4K-ES, Safeway-LL-04-8W65K-E,

Safeway-LL-04-12W4K-E

AC 100-240V, 50/60Hz, 20W



Test item particulars:	7 7 7 7 7
Classification of installation and use	ceiling mounting
Supply Connection:	Terminal connection
Possible test case verdicts:	d d d d d d
- test case does not apply to the test object:	N (No apply)
- test object does meet the requirement:	P (Pass)
- test object does not meet the requirement:	F (Fail)
Testing:	
Date of receipt of test item:	July 20, 2016
Date (s) of performance of tests:	Sept. 30, 2014 to Oct. 28, 2014 and July 20, 2016 to July 25, 2016

#### General remarks:

The test results presented in this report relate only to the object tested.

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"(See Enclosure #)" refers to additional information appended to the report.

"(See appended table)" refers to a table appended to the report.

Throughout this report a comma (point) is used as the decimal separator.

Clause numbers between brackets refer to clauses in IEC 60598-1

#### General product information:

All the test data in this report (NTEK-2016NT07217723S) is refer to the test data in initial report (NTEK-2014NT1010589S-R1).

This report only changed the applicant, manufactor and models name information.

- 1, All the models were same construction except appearance and models number, so all the test was perform on representative maximum power model SAFEWAY-LL-04-12W4K-ES
- 2, LED driver test with appliance according EN 61347-2-13:2006 conjunction with EN 61347-1:2008+A1:2011+A2:2013
- 3, LED emergency converter test with appliance according EN 61347-2-7:2012 conjunction with EN 613471:2015
- 4, EN 60598-2-22:2014 clause 22.17.1 to 22.17.3 did not evaluate.



#### Copy of marking plate

The height of graphical symbols shall not be less than 5 mm, the height of letters and numerals either shown separately or with or as part of symbols shall not be less than 2 mm, representative maximum power model for reference.

#### **LOKOLED**

Product: LED sensor & Emergency ceiling light

Rated: 100-240V~ 50/60Hz 20W Model: Safeway-LL-04-12W4K-ES

Battery-Ni-MH DC9.6V 3.2Ah, 3 hours emergency lighting power

supply

Normal ligting ouput:1856lm emergency lighting output:641lm







#### Manufacturer:

**LOKOLED** 

Address: 1304 Block 26A, Ya Ju Le Garden, DaLiang District,

FoShan City, GuangDong Province China

Importer: xxx Co., Ltd. Address: yyyy



4	EN 60598-2-22		11/10
Clause	Requirement + Test	Result - Remark	Verdict
10 1			- 40
22.4 (0)	GENERAL TEST REQUIREMENTS	7 7 7 7	P
22.2 (0.1)	Information for luminaire design considered	Standard Yes ⊠ No □	_
22.2 (0.3)	More sections applicable	Yes □ No ⊠	_
A A			1
22.5 (2)	CLASSIFICATION	. 4 4 4	P
22.5 (2.2)	Type of protection (Class 0 excluded):	Class I	_
22.5 (2.3)	Degree of protection (Requirement: Ordinary):	IP20	_
22.5 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces:	Yes ⊠ No □	_
At A	Luminaire not suitable for direct mounting on normally flammable surfaces:	Yes □ No ⊠	_
22.5 (2.5)	Luminaire for normal use:	Yes 🛛 No 🗌	
0	Luminaire for rough service:	Yes □ No ⊠	
Annex B (-)	Classification code	X 1 A 180	_
*	* * * * * * *	* * * *	- 4
22.6 (3)	MARKING	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Р
22.6 (3.2)	Mandatory markings	1 1 1 1 1 1	Р
19 19	Position of the marking	0 10 10 10	P
	Format of symbols/text	4 4 4	Р
22.6 (3.3)	Additional information	A A A A	P
5 4	Language of instructions	English	P
22.6 (3.3.1)	Combination luminaires	D D D D	P.O
22.6 (3.3.2)	Nominal frequency in Hz	50/60Hz	Р
22.6 (3.3.3)	Operating temperature	* * * *	- N
22.6 (3.3.4)	Symbol or warning notice	1 21 21 21 21	Р
22.6 (3.3.5)	Wiring diagram	* * * *	Р
22.6 (3.3.6)	Special conditions	10 10 10 10	N
22.6 (3.3.7)	Metal halide lamp luminaire – warning		N
22.6 (3.3.8)	Limitation for semi-luminaires	A A A A	N
22.6 (3.3.9)	Power factor and supply current	4 4 4	N



1100	EN 60598-2-22		400
Clause	Requirement + Test	Result - Remark	Verdict
20 0 (0 0 (0)		10 10 10	A TA
22.6 (3.3.10)	Suitability for use indoors	4 4	P
22.6 (3.3.11)	Luminaires with remote control	0 0 0	O N
22.6 (3.3.12)	Clip-mounted luminaire – warning	2, 5, 6	N
22.6 (3.3.13)	Specifications of protective shields	at at at	A N
22.6 (3.3.14)	Symbol for nature of supply	$\sim$ $\sim$	P
22.6 (3.3.15)	Rated current of socket outlet	الم الم الم	N
22.6 (3.3.16)	Rough service luminaire	A PA PA	N V
22.6 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments	A A A	N
22.6 (3.3.18)	Non-ordinary luminaires with PVC cable		N
22.6 (3.3.19)	Protective conductor current in instruction if applicable	4 4 4	N N
22.6 (3.3.20)	Provided with information if not intended to be mounted within arms reach	4 4 4	N N
22.6 (3.3.21)	Luminaires with non replaceable and non-user replaceable light source, the instruction sheet shall contain the substance of the following information:		P
A A A	- For non replacable lightsources:  "The light source of this luminaire is not replaceable; when the light source reaches its end of life the whole luminaire shall be replaced"		N STATE
ALL ALL	For non-user replaceable light sources:  "The light source contained in this luminaire shall only be replaced by the manufacturer or his service agent or a similar qualified person."		P
22.6 (3.3.22)	For controllable luminaires the classification of insulation that has been maintained.	1 41 41 .	N
22.6 (3.4)	Test with water	AT AT AT	P.C
4. 4.	Test with hexane	4 4 4	P
0 0	Legible after test	d d d	OF PO
31 31	Label attached	ST 3" 3".	P
22.6.1 (-)	Supply voltage	x x x	A- PA
22.6.2 (-)	Classification according to annex B	A TO TO	P



14, 14	EN 60598-2-22	41 41 41 41 A	Mr. Mr.
Clause	Requirement + Test	Result - Remark	Verdict
22.6.3 (-)	Correct replacement lamp	W W W	
22.6.4 (-)	Range of ambient temperatures	* * *	A NA
22.6.5 (-)	Fuse ratings and/or indicator lamps	4 4 4	N
22.6.6 (-)	Facilities to simulate normal supply failure		P
22.6.7 (-)	Marked with correct battery replacement incl. battery type and rated voltage	THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY	Zil <sup>O</sup> Pi <sup>O</sup>
All A	If non-replaceable batteries a label according to 3.2.b) of IEC 60598-1	at at at	No.
22.6.8 (-)	Battery marked with date of manufacture		Р
21 <sup>(1)</sup> 21	Space provided on battery label for installers marking		310 P.0
22.6.9 (-)	Correct lamp replacement for combined emergency luminaires	at at at	No.
4 4	Green dot with min 5 mm diameter	. 5 5	N
15	Instruction leaflet 22.5.10 – 12 and 22.5.14 – 22.5.	16	P.O
22.6.10 (-)	Replacement of battery or luminaire	4. 4.	4 4
22.6.11 (-)	Details of test facilities	0 0 0	O PO
22.6.12 (-)	Details of connection leads		2" B
22.6.14 (-)	Details of device which changes the mode of operation	at at at	A Pat
22.6.15 (-)	Photometric data available	, 4, 4	7 7
22.6.16 (-)	Any normal preparation procedure	4 4 4	P.O
22.6.17 (-)	Position of the marking in 22.5.1 and 22.5.2	1 7 7	Z P
22.6.18 (-)	Provided with warning if intended for external plug and socket connections	at at at	Not Not
22.6.19 (-)	Instruction leaflet specify if lamp and/or battery is/are non-replaceable	* * * *	N

22.7 (4)	CONSTRUCTION	×	*	大	\ \d	- P
22.7 (4.2)	Components replaceable without difficulty	100	110	110	1100	N
22.7 (4.3)	Wireways smooth and free from sharp edges	٠ ــــــــــــــــــــــــــــــــــــ	1	1	-	Р
22.7 (4.4)	Lampholders	10	M	10	10	N
22.7 (4.4.1)	Integral lampholder	-	4	4	7	N



14, 14,	EN 60598-2-22		400
Clause	Requirement + Test	Result - Remark	Verdict
10 10		10 10 10	N N
22.7 (4.4.2)	Wiring connection	, 4, 4,	P
22.7 (4.4.3)	Lampholder for end-to-end mounting	d d d	A NA
22.7 (4.4.4)	Positioning		N
*	- pressure test (N):	* * *	N A
Zill Zill	After test the lampholder comply with relevant standard sheets and show no damage		N
THE THE	After test on single-capped lampholder the lampholder have not moved from its position and show no permanent deformation		NO
4	- bending test (N)	D D D	NO.
4 4	After test the lampholder have not moved from its position and show no permanent deformation	4 4 4	Ň
22.7 (4.4.5)	Peak pulse voltage	9 19 19	NO.
22.7 (4.4.6)	Centre contact	. 6 6 4	N
22.7 (4.4.7)	Parts in rough service luminaires resistant to tracking	A SA SA	NO NO
22.7 (4.4.8)	Lamp connectors	* * *	N A
22.7 (4.4.9)	Caps and bases correctly used	10 10 10	N
22.7 (4.5)	Starter holders		N
, Q	Starter holder in luminaires other than class II	10 10 10	NO NO
4 4	Starter holder class II construction	. 4 4 .	N
22.7 (4.6)	Terminal blocks	D D D	P
7, 7,	Tails	2 2 4	P
d 0	Unsecured blocks	* * *	N N
22.7 (4.7)	Terminals and supply connections	T 2" 2" .	P
22.7 (4.7.1)	Contact to metal parts	* * *	P
22.7 (4.7.2)	Test 8 mm live conductor	W 10 10	P
	Test 8 mm earth conductor	1	Р
22.7 (4.7.3)	Terminals for supply conductors	A A A	PQ
22.7 (4.7.3.1)	Welded connections:	4 4 6	P
0 0	- stranded or solid conductor	A A A	. P.O
7, 7,	- spot welding	. 7, 7, "	N



111	EN 60598-2-22		74, 74,
Clause	Requirement + Test	Result - Remark	Verdict
19 1		10 10 10 10 10 10 10 10 10 10 10 10 10 1	40 40
4 4	- welding between wires	4 4 4	4 P
4	- Type Z attachment	5 5 5	O N
<u> </u>	- mechanical test according to 15.8.2	2, 7, 7,	S N
At	- electrical test according to 15.9	* * *	A N
11 1	- heat test according to 15.9.2.3 and 15.9.2.4	5" 5" 5"	N
22.7 (4.7.4)	Terminals other than supply connection	1 1 1 1	N
22.7 (4.7.5)	Heat-resistant wiring/sleeves	A PA PA	N.C
22.7 (4.7.6)	Multi-pole plug	4 4 4	N
1	- test at 30 N	4 4 4	O NO
22.7 (4.8)	Switches:	7, 7, 7,	P
4	- adequate rating	of of of	OF PO
31 31	- adequate fixing	71, 71, 71,	P
+	- polarized supply	* * *	A PA
10 1	- compliance with 61058-1 for electronic switches	10 10 10	P
22.7 (4.9)	Insulating lining and sleeves		P
22.7 (4.9.1)	Retainement	10 10 10	PQ PQ
4 4	Method of fixing	4 4 4	P
22.7 (4.9.2)	Insulated linings and sleeves	A A A	NO.
4 4	Resistant to a temperature > 20 °C to the wire temperature or	4 4 4 A	N N
10 1	a) & c) Insulation resistance and electric strength	10 10 10	N
1	b) Ageing test. Temperature (°C)	4 4 4	N
22.7 (4.10)	Insulation of Class II luminaires	AT AT AT	NO NO
22.7 (4.10.1)	No contact, mounting surface – accessible metal parts – wiring of basic insulation	* * *	N
11 1	Safe installation fixed luminaires	317 317 317	N
4	Capacitors and switches	A- A- A-	N
41 <sup>(1)</sup> 41	Interference suppression capacitors according to IEC 60384-14	10 210 210 20 210 210	N.C
22.7 (4.10.2)	Assembly gaps:	d d d	O NO
31 3	- not coincidental	1 2 2 2 C	N



11/1	EN 60598-2-22		11/4
Clause	Requirement + Test	Result - Remark	Verdict
, Q , Q		0 0 0 0	10
5 7	- no straight access with test probe	, 4, 4, 4,	N
22.7 (4.10.3)	Retainment of insulation:	at at at a	P
2" 2"	- fixed		Р
*	- unable to be replaced; luminaire inoperative	* * * *	P
A A	- sleeves retained in position		Р
1	- lining in lampholder	+ + + +	N
22.7 (4.11)	Electrical connections	19 19 19 19	P
22.7 (4.11.1)	Contact pressure	. 5 5 5	N
22.7 (4.11.2)	Screws:	1 1 1 1	P.
4, 4,	- self-tapping screws	. 4. 4. 4.	P
0 0	- thread-cutting screws	ot ot ot o	N
22.7 (4.11.3)	Screw locking:	21 21 21 21	N
*	- spring washer	* * * *	- N
100	- rivets	10 10 10 10	N
22.7 (4.11.4)	Material of current-carrying parts		Р
22.7 (4.11.5)	No contact to wood or mounting surface	0, 0, 0, 0	P
22.7 (4.11.6)	Electro-mechanical contact systems	. 4 4 4	N
22.7 (4.12)	Mechanical connections and glands	1 1 1 1	N.
22.7 (4.12.1)	Screws not made of soft metal	4 4 4	P
0	Screws of insulating material	0 0 0 0	N A
30 30	Torque test: torque (Nm); part:	0.5	Р
* /	Torque test: torque (Nm); part:	1.2	- P
110 110	Torque test: torque (Nm); part:	10 10 10 10	N
22.7 (4.12.2)	Screws with diameter < 3 mm screwed into metal	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	N
22.7 (4.12.4)	Locked connections:	A A A A	P
6 6	- fixed arms; torque (Nm):	. 5 5 5	N
4 4	- lampholder; torque (Nm):	0 0 0 0	N.
4 4	- push-button switches; torque 0,8 Nm:	4 4 4	N
22.7 (4.12.5)	Screwed glands; force (Nm):	0 0 0 0	N.
22.7 (4.13)	Mechanical strength	27 27 27	Р



40	EN 60598-2-22		41
Clause	Requirement + Test	Result - Remark	Verdict
, (V , (		D D D D	10
22.7 (4.13.1)	Impact tests:	7, 4, 4, 4,	P
0 0	- fragile parts; energy (Nm):	of of of of	- N
71, 71,	- other parts; energy (Nm):	0.35 Nm, metal enclosure 0.35 Nm, Transparent cover	P
100	1) live parts	Not become accessible	P
4. 4.	2) linings	4. 4. 4.	P
4	3) protection	Not become accessible	P
7, 7,	4) covers	Not become accessible	Р
22.7 (4.13.3)	Straight test finger	Can't touch with live part with 30N	P
22.7 (4.13.4)	Rough service luminaires	7. 4. 4. 4.	N
4	- IP54 or higher	A A A A	N
7, 7,	a) fixed	1 7 7 7	N
1	b) hand-held	* * * * *	- N
71, 71,	c) delivered with a stand	51 21 21 21	N
at a	d) for temporary installations and suitable for mounting on a stand	4 4 4 4	N
22.7 (4.13.6)	Tumbling barrel	4. 4. 4.	N
22.7 (4.14)	Suspensions and adjusting devices	0 0 0 0	N
22.7 (4.14.1)	Mechanical load:	21 21 21 21	Р
*	A) four times the weight	* * * *	- P
4, 4,	B) torque 2,5 Nm	10 10 10 10	N
AL .	C) bracket arm; bending moment (Nm)::	at at at at	N
100	D) load track-mounted luminaires	10 10 10 10	N
CA C	E) clip-mounted luminaires, glass-shelve. Thickness (mm):	of of of a	N
31 31	Metal rod. diameter (mm):	21 21 21	N
at A	Fixed luminaire or independent control gear without fixing devices	A A A A	P
22.7 (4.14.2)	Load to flexible cables	7 7 7 7	N
A 1	Mass (kg):	A A A A	N
3, 3,	Stress in conductors (N/mm²):	2 2 2 2	N



4, 4,	EN 60598-2-22	4, 4, 4,
Clause	Requirement + Test Result - Remark	Verdict
40 44	Many (low) of anni Louringing	10 10 10
7 7	Mass (kg) of semi-luminaire:	N
- A	Bending moment (Nm) of semi-luminaire:	A N
22.7 (4.14.3)	Adjusting devices:	S N
- ot - o	- flexing test; number of cycles:	A A NA
<u> </u>	- strands broken	N.
1	- electric strength test afterwards	N
22.7 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors	NO AND AND
22.7 (4.14.5)	Guide pulleys	A NA
22.7 (4.14.6)	Strain on socket-outlets	N
22.7 (4.15)	Flammable materials:	AL NA
14 14	- glow-wire test 650 °C	NO NO
	- spacing ≥ 30 mm	N
A K	- screen withstanding test of 13.3.1	A A NO
4 4	- screen dimensions	N
1 1	- no fiercely burning material	A A NA
4, 4,	- thermal protection	- N
0 0	- electronic circuits exempted	A NA
22.7 (4.15.2)	Luminaires made of thermoplastic material with lamp control gear	Ň
*	a) construction	- N - N - N
100	b) temperature sensing control	N N
	c) surface temperature	N
22.7 (4.16)	Luminaires for mounting on normally flammable surfaces	PQ PQ
4 4	No lamp control gear (compliance with	Section 12) N
22.7 (4.16.1)	Lamp control gear spacing:	A A NO
4. 4.	- spacing 35 mm	N N
0 0	- spacing 10 mm	OF NO
22.7 (4.16.2)	Thermal protection:	N
*	- in lamp control gear	A A NA
11	- external	N N



41, 41,	EN 60598-2-22	4, 4, 4,	4, 4,
Clause	Requirement + Test	Result - Remark	Verdict
, (C) , (C)		10 10 10 10 10 10 10 10 10 10 10 10 10 1	A W
4 4	- fixed position	5 5	- N
0 0	- temperature marked lamp control gear	et et et	O NO
22.7 (4.16.3)	Design to satisfy the test of 12.6	(see 12.6)	N
22.7 (4.17)	Drain holes	* * *	N N
4" 4"	Clearance at least 5 mm		N.
22.7 (4.18)	Resistance to corrosion:		N
22.7 (4.18.1)	- rust-resistance		N/V
22.7 (4.18.2)	- season cracking in copper	5 5	N
22.7 (4.18.3)	- corrosion of aluminium	A A A	O NO
22.7 (4.19)	Ignitors compatible with ballast	2 4 4	- N
22.7 (4.20)	Rough service vibration	d d d	O NO
22.7 (4.21)	Protective shield:	21, 21, 21,	N
22.7 (4.21.1)	Shield fitted	* * *	N N
100 100	Shield of glass if tungsten halogen lamps	10 10 10 10 10 10 10 10 10 10 10 10 10 1	N.
22.7 (4.21.2)	Particles from a shattering lamp not impair safety		N
22.7 (4.21.3)	No direct path	10 10 10	NO NO
22.7 (4.21.4)	Impact test on shield	5 5 5	N
4 4	Glow-wire test on lamp compartment	A A A	.O N.O
22.7 (4.22)	Attachments to lamps	2 4 4	- N
22.7 (4.23)	Semi-luminaires comply Class II	0 0 0	O NO
22.7 (4.24)	UV radiation for tungsten halogen lamps and metal halide lamps (Annex P)	2 7 7	N N
22.7 (4.25)	No sharp point or edges	0 0 0	N/O
22.7 (4.26)	Short-circuit protection:	4 4	<b>N</b>
22.7 (4.26.1)	Uninsulated accessible SELV parts	A A A	NO NO
22.7 (4.26.2)	Short-circuit test	2, 7, 7,	N
22.7 (4.26.3)	Test chain according to Figure 29	* * *	o N
22.7.1 (-)	No glow starters in circuit in start of or during the emergency mode	1 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	N
22.7.2 (-)	Lamp control gears	0 0 0	P.O
22.7.3 (-)	Failure of one luminaire not affect other	2 2	N



71, 71	EN 60598-2-22		41,0
Clause	Requirement + Test	Result - Remark	Verdic
60 7 F ()		W W W W	
22.7.5 (-)	Circuit separation (self-contained lum.)	4 4 4	P
22.7.6 (-)	Circuit separation (centrally supplied lum.)	0 0 0 0	N
22.7.7 (-)	Charging device		P
A .	Indicator lamp and colour	x x x x	- P
22.7.8 (-)	Battery requirements	1 11 11 11	Р
22.7.9 (-)	Safety device	1 1 1 1 1	Р
22.7.10 (-)	No switch	19 19 19 19 19	P
22.7.11 (-)	Failure of lamp(s)	, 4 4 4	P
22.7.12 (-)	Current limiting device	A A A A	P.Q
22.7.13 (-)	Influence in emergency mode	1 1 1 1	P
22.7.14 (-)	Changing device	4 4 4 6	P /
22.7.15 (-)	Influence on luminaire with remote inhibiting facility	2 2 2	N
22.7.16 (-)	Operation of remote control	0 0 0 0	N
22.7.17 (-)	Influence on luminaire with rest mode facility	, 5 5 5	N
22.7.18 (-)	Current drain	0 0 0 0	N.
22.7.19 (-)	Lamp voltage		N
d .	* * * * * * *	4 4 4 4	- 4
22.8 (11)	CREEPAGE DISTANCES AND CLEARANCES		2
*	Working voltage (V):	* * * *	_
	Voltage form	Sinusoidal 🔲	_
4	PTI Ø Ø Ø	< 600 ⊠ ≥ 600 □	_
4 4	Impulse withstand category (Normal category II) (Category III Annex U)	Category II ⊠ Category III □	_
AN A	Rated pulse voltage (kV):		_
at .	(1) Current-carrying parts of different polarity: cr (mm); cl (mm):	Cr:1.5mm cl:2.5mm	Р
2 4	(2) Current-carrying parts and accessible parts: cr (mm); cl (mm)	Cr:1.5mm cl:2.5mm	P



100	EN 60598-2-22		110
Clause	Requirement + Test	Result - Remark	Verdict
* * *	(3) Parts becoming live due to breakdown of basic insulation and metal parts:  cr (mm); cl (mm)		N
4 4	(4) Outer surface of cable where it is clamped and metal parts: cr (mm); cl (mm):		N
11° 3	(5) Not used	10	_
	(6) Current-carrying parts and supporting surface: cr (mm); cl (mm)	Cr:1.5mm cl:2.5mm	P

22.9 (7)	PROVISION FOR EARTHING	0 0 0 0	P
22.9 (7.2.1 + 7.2.3)	Accessible metal parts	4 4 4 4	P
10 1	Metal parts in contact with supporting surface	P P P P	P
4 4	Resistance < 0,5 Ω	0.011Ω	P
1	Self-tapping screws used	A A A A	P
4 4	Thread-forming screws	4 4 4	N
. CT .	Thread-forming screw used in a grove	0 0 0 0	N
7, 7,	Earth makes contact first	2 7 7 7	N
22.9 (7.2.2 + 7.2.3)	Earth continuity in joints etc.	# # # #	+ N
22.9 (7.2.4)	Locking of clamping means	4 4 4 4	P
1	Compliance with 4.7.3	AT AT AT A	P.
4 4	Terminal blocks with integrated screwless earthing contacts tested according Annex V	4 4 4 4	N
22.9 (7.2.5)	Earth terminal integral part of connector socket	10 10 10 10	N
22.9 (7.2.6)	Earth terminal adjacent to mains terminals		Р
22.9 (7.2.7)	Electrolytic corrosion of the earth terminal	0 0 0 0	P
22.9 (7.2.8)	Material of earth terminal	4 4 4	P
.0	Contact surface bare metal	A A A A	P
22.9 (7.2.10)	Class II luminaire for looping-in	2, 4, 4, 4,	N
de la	Double or reinforced insulation to functional earth	of of of o	F N
22.9 (7.2.11)	Earthing core coloured green-yellow	1 21 21 21 21	P



41	EN 60598-2-2	2 47 47	71, 71,
Clause	Requirement + Test	Result - Remark	Verdict
Q 1			A 10
7, 4,	Length of earth conductor	4, 4, 4,	- N
d.	* * * * * * * *	* * * * *	0 0
22.10(14)	SCREW TERMINALS	21 21 21	N
*	Separately approved; component list	(see Annex 1)	N N
1 1	Part of the luminaire	(see Annex 3)	N
22.10(15)	SCREWLESS TERMINALS AND ELECTRIC	CAL CONNECTIONS	NO.
5 5	Separately approved; component list	(see Annex 1)	N
0	Part of the luminaire	(see Annex 4)	Ø NØ

22.11 (5)	EXTERNAL AND INTERNAL WIRING	4 4 4 0	P
22.11 (5.2)	Supply connection and external wiring	21 21 21	N
22.11 (5.2.1)	Means of connection	Terminal block connector	- P
22.11 (5.2.2)	Type of cable:	H03VV-F	P
1	Nominal cross-sectional area (mm²):	3 x 0.75	Р
10 10	Cables equal to IEC 60227 or IEC 60245	19 19 19 19 19 19 19 19 19 19 19 19 19 1	P
22.11 (5.2.3)	Type of attachment, X, Y or Z	. 4 4 4	N
22.11 (5.2.5)	Type Z not connected to screws	A A A A	N
22.11 (5.2.6)	Cable entries:	7. 4. 4. 4.	P
0 0	- suitable for introduction	0 0 0 0	P
7, 7,	- adequate degree of protection	1 2 2 2	Р
22.11 (5.2.7)	Cable entries through rigid material have rounded edges	d d d e	- N
22.11 (5.2.8)	Insulating bushings:	, 4 4 4	N
Q .Q	- suitably fixed	A A A A	N
4. 4.	- material in bushings	5 4 4 4	N
0 0	- material not likely to deteriorate	d d d d	N
21 21	- tubes or guards made of insulating material	1 21 21 21	N
22.11 (5.2.9)	Locking of screwed bushings	* * * *	N
22.11 (5.2.10)	Cord anchorage:		N



1111	EN 60598-2-22		W 100
Clause	Requirement + Test	Result - Remark	Verdict
19 1			4 4
4 4	- covering protected from abrasion	4 4 4	N
4	- clear how to be effective	4 4 4	O N
<u> </u>	- no mechanical or thermal stress		N
1	- no tying of cables into knots etc.	* * *	N N
15° 1	- insulating material or lining		N
22.11 (5.2.10.1)	Cord anchorage for type X attachment:	4 4 4	N
<u> </u>	a) at least one part fixed		N
4	b) types of cable	d d d	A N
3° 3	c) no damaging of the cable		N
4	d) whole cable can be mounted	* * *	N N
14 1	e) no touching of clamping screws	10 10 10 1	N
4	f) metal screw not directly on cable		N
A .	g) replacement without special tool		Ø NØ
4 4	Glands not used as anchorage	5 5 5 5	N
4	Labyrinth type anchorages	0 0 0	O NO
22.11 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment	1 4 4 4 4	N
22.11 (5.2.10.3)	Tests:	5 <sup>10</sup> 5 <sup>10</sup> 5 <sup>10</sup> 5	N.
0	- impossible to push cable; unsafe	d d d	of N
3" 3	- pull test: 25 times; pull (N):	5 2 2 3	N
+	- torque test: torque (Nm):	* * *	N A
100	- displacement ≤ 2 mm	10 10 10 1	N
	- no movement of conductors		N
A A	- no damage of cable or cord	0 0 0	Q NQ
22.11 (5.2.11)	External wiring passing into luminaire	* * * * *	N
22.11 (5.2.12)	Looping-in terminals	1 4 4 4 4	N
22.11 (5.2.13)	Wire ends not tinned	TO ST. ST.	N.O



11, 11,	EN 60598-2-22		1, 1,
Clause	Requirement + Test	Result - Remark	Verdict
		10 10 10	10 10
5 5	Wire ends tinned: no cold flow	. 4 4 4	N
22.11 (5.2.14)	Mains plug same protection		N N
4 4	Class III luminaire plug	. 4 4 4	N
22.11 (5.2.16)	Appliance inlets (IEC 60320)		N.O
*	Appliance couplers of class II type	* * *	A- N A
22.11 (5.2.17)	No standardized interconnecting cables properly assembled	iv ziv ziv z	N
1.10 (5.2.18)	Used plug in accordance with	0 0 0	NO
31 31	- IEC 60083	1 2 2 2	Ň
* /	- other standard	* * *	N N
22.11 (5.3)	Internal wiring	N 30 30 3	Р
22.11 (5.3.1)	Internal wiring of suitable size and type	Suitable size and type	P
10 10	Through wiring	10 10 10 1	N.
4 4	- not delivered/ mounting instruction	4 4	Р
4	- factory assembled		P.O
4 4	- socket outlet loaded (A):	. 4 4 4	N
D 1	- temperatures:	(see Annex 2)	P.O
7. 7.	Green-yellow for earth only	2 2 2	P
22.11 (5.3.1.1)	Internal wiring connected directly to fixed wiring	at at at	P.O
4 4	Cross-sectional area (mm²):	0.61mm²	Р
10 1	Insulation thickness	0 0 0	P.O
4. 4.	Extra insulation added where necessary	, 4, 4, 4	N
22.11 (5.3.1.2)	Internal wiring connected to fixed wiring via interna	I current-limiting device	P.O
at d	Adequate cross-sectional area and insulation thickness	d d d	P
22.11 (5.3.1.3)	Double or reinforced insulation for class II		N
22.11 (5.3.1.4)	Conductors without insulation		NO



11, 11,	N 60598-2-22		10 110
Clause	Requirement + Test	Result - Remark	Verdict
40 14		10 10 10	W W
22.11 (5.3.1.5)	SELV current-carrying parts	4 4 4 4	P
22.11 (5.3.1.6)	Insulation thickness other than PVC or rubber	*** *** *** *	N. W
22.11 (5.3.2)	Sharp edges etc.	of of of	OF PO
20 20	No moving parts of switches etc.	2 2 2 2	N
*	Joints, raising/lowering devices	* * *	N N
140 14	Telescopic tubes etc.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	N
4	No twisting over 360°	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Р
22.11 (5.3.3)	Insulating bushings:	19 19 19 1	P
6 6	- suitable fixed	4 4 4 4	P
15	- material in bushings		P
4. 4.	- material not likely to deteriorate	4. 4. 4. 4	P
A .	- cables with protective sheath	d d d	O PO
22.11 (5.3.4)	Joints and junctions effectively insulated	2 2 2 3	N
22.11 (5.3.5)	Strain on internal wiring	* * *	- N
22.11 (5.3.6)	Wire carriers	317 317 317 3	Р
22.11 (5.3.7)	Wire ends not tinned	***	N
19 19	Wire ends tinned: no cold flow	W 10 10 1	P
22.11.1 (-)	Permanently connected	4 4 4 4	Р

22.12 (8)	PROTECTION AGAINST ELECTRIC SHOCK		4	4	4	P
22.12 (8.2.1)	Live parts not accessible with standard test finger	0	.0	.0	.0	P
4 4	Basic insulated parts not used on the outer surface without appropriate protection	4	4	4	4	P
21 <sup>(1)</sup> 21 <sup>(1)</sup>	Basic insulated parts not accessible with standard test finger on and adjustable luminaires		7:0	7:0	7,0	P
Silt Sil	Basic insulated parts not accessible with Ø 50 mm probe from outside, within arms reach, on wall-mounted luminaires	, et	A.C.	N. C.	N.C.	P
Sill Sill	Lamp and starterholders in and adjustable luminaires comply with double or reinforced insulation requirements	10	A.C.	N.C.	21.0	N



EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
4 4	Basic insulation only accessible under lamp or starter replacement	2 2	P
A K	Protection in any position	A A A	P.O
4 4	Double-ended tungsten filament lamp	4 4	N
4 4	Insulation lacquer not reliable	A A A	NO NO
7 4	Double-ended high pressure discharge lamp	4 4	→ N
AT A	Relevant warning according to 3.2.18 fitted to the luminaire	A 10 10	N.O
22.12 (8.2.2)	luminaire adjusted in most unfavourable position		Р
22.12 (8.2.3.a)	Class II luminaire:	10 210 210	N.O.
AT A	- basic insulated metal parts not accessible during starter or lamp replacement	A 10 10	NO NO
at a	- basic insulation not accessible other than during starter or lamp replacement	et et et	N
7 7	- glass protective shields not used as supplementary insulation	, 4°, 4°, 1	-N
22.12 (8.2.3.b)	BC lampholder of metal in class I luminaires shall be earthed	10 310 310	A NO
22.12 (8.2.3.c)	Class III luminaires with exposed SELV parts:	in in in	NO.
1- 1- 1	Ordinary luminaire:	الم الم الم	N
10 10	- touch current:	19 19 19 19 19 19 19 19 19 19 19 19 19 1	N <sup>Q</sup>
	- no-load voltage	4 4	N
10 10	Other than ordinary luminaire:	A A A	N/Q
4 4	- nominal voltage:	, 4 4	<b>A W</b>
22.12 (8.2.4)	luminaire:	4 4 4	NO NO
7, 7,	- protection independent of supporting surface	1 7 7	- P
0 1	- terminal block completely covered	* * *	of Po
22.12 (8.2.5)	Compliance with the standard test finger or relevant probe	41 41	P
22.12 (8.2.6)	Covers reliably secured	A A A	P.Q
22.12 (8.2.7)	Discharging of capacitors ≥ 0,5 μF	4. 4.	P



100	EN 60598-2-22	10 10 10 10	110
Clause	Requirement + Test	Result - Remark	Verdict
.47		10 10 10 10	
4 4	plug connected luminaire with capacitor	4 4 4 4	P
4	Other plug connected luminaire with capacitor	ot of ot o	- N
3 3	Discharge device on or within capacitor	21 21 21 21	Р
*	Discharge device mounted separately	* * * *	N

22.13 (12)	ENDURANCE TEST AND THERMAL TEST	4 4 4	Р
22.13 (12.3)	Endurance test:		P
4 4	- mounting-position:	Ceiling mounting	_
4 4	- test temperature (°C):	33-37	_
7, 7,	- total duration (h):	390	_
A 4	- supply voltage: Un factor; calculated voltage (V):	240V	_
7, 7,	- lamp used:	LED Z Z Z	
22.13 (12.3.2)	After endurance test:	at at at a	P
	- no part unserviceable	4 4 4	P
10 10	- luminaire not unsafe	A A A A	P.
4	- no damage to track system	, 4 4 4	N
. C	- marking legible	d d d d	P
7, 7,	- no cracks, deformation etc.	1 1 1 1	Р
22.13 (12.4)	Thermal test (normal operation)	(see Annex 2)	- P
22.13 (12.5)	Thermal test (abnormal operation)	(see Annex 2)	P
22.13 (12.6)	Thermal test (failed lamp control gear condition):	* * * *	N
22.13 (12.6.1)	Through wiring or looping-in wiring loaded by a current of (A):		_
0 4	- case of abnormal conditions:	0 0 0 0	_
7, 7,	- electronic lamp control gear	7 7 7 7	N
*	- measured winding temperature (°C): at 1,1 Un .:	* * * *	_
711 711	- measured mounting surface temperature (°C) at 1,1 Un	L THE THE THE	N
4	- calculated mounting surface temperature (°C):	A A A A	N
4. 4.	- track-mounted luminaires	. 5 5 5	N



EN 60598-2-22			
Clause	Requirement + Test	Result - Remark	Verdict
22.13 (12.6.2)	Temperature sensing control		N
19 1	- case of abnormal conditions	D D D	A -
4 4	- thermal link	4 6 6	N
10 1	- manual reset cut-out	0 0 0	NO NO
4 4	- auto reset cut-out	5 5 6	N
A 1	- measured mounting surface temperature (°C):	0 0 0	O NO
7. 7.	- track-mounted luminaires	7 7 ,	N
22.13 (12.7)	Thermal test (failed lamp control gear in plastic lur	minaires):	A N
22.13 (12.7.1)	Luminaire without temperature sensing control	£ 4 4 .	N
22.13 (12.7.1.1)	Luminaire with fluorescent lamp ≤ 70W	Star Star Star	NO NO
*	Test method 12.7.1.1 or Annex V	* * *	
1100	Test according to 12.7.1.1:		N
4	- case of abnormal conditions	1 1	_
10 1	- Ballast failure at supply voltage (V)	A 10 10	- L
4 4	- Components retained in place after the test		N
10	- Test with standard test finger after the test	0 0 0	NO.
4 4	Test according to Annex V:	5 5 5 .	N
A 1	- case of abnormal conditions	A A A	.Ø -
7, 7,	- measured winding temperature (°C): at 1,1 Un	7 7 ,	<u> </u>
ALT A	- measured temperature of fixing point/exposed part (°C): at 1,1 Un	A A A	A -
at a	- calculated temperature of fixing point/exposed part (°C)	d d d	_
7, 7,	Ball-pressure test:	3 2 2 ,	N
*	- part tested; temperature (°C)	* * *	N N
<u> </u>	- part tested; temperature (°C)	N 31 31 .	N
22.13 (12.7.1.2)	Luminaire with discharge lamp, fluorescent lamp >	> 70W, transformer > 10 VA	N A
4. 4.	- case of abnormal conditions	5 5 4	5



4, 4,	EN 60598-2-22		1100
Clause	Requirement + Test	Result - Remark	Verdict
, (V , (V		0 0 0 0	W
4, 4,	- measured winding temperature (°C): at 1,1 Un:	. 4. 4. 4.	_
At A	- measured temperature of fixing point/exposed part (°C): at 1,1 Un:	et et et et	
	- calculated temperature of fixing point/exposed part (°C):	at at at a	_
7, 7,	Ball-pressure test:	2, 4, 4, 4,	N
A 1	- part tested; temperature (°C):	* * * *	- N
7. 7.	- part tested; temperature (°C):	1 2 2 2 2 2 1 2 1 2 1 2 1 1 1 1 1 1 1 1	N
22.13 (12.7.1.3)	Luminaire with short circuit proof transformers ≤ 10 VA	at at at a	N
4 4	- case of abnormal conditions	, 4, 4, 4	
A .	- Components retained in place after the test	A A A A	N
4, 4,	- Test with standard test finger after the test	1 1 1 1	N
22.13 (12.7.2)	Luminaire with temperature sensing control	at at at a	N
6 6	- thermal link	Yes □ No □	_
100	- manual reset cut-out	Yes No 🖂	_
4 4	- auto reset cut-out	Yes No 🖂	_
A .	- case of abnormal conditions	A A A A	_
7 7	- highest measured temperature of fixing point/exposed part (°C)::	4 4 4 A	_
100 100	Ball-pressure test:	10 10 10 10	N
	- part tested; temperature (°C):	L L L L	N
10 10	- part tested; temperature (°C):	0 0 0 0	N
22.13.2 (-)	Emergency mode 22.12.3 to 22.12.5	(see Annex 2)	P
22.13.6 (-)	Additional thermal test	(see Annex 2)	P
22.13.7 (-)	Rated lumen output	. 7. 7. 7.	P
0 0	* * * * * * *	d d d d	- 4
22.14 (9)	RESISTANCE TO DUST, SOLID OBJECTS AND	MOISTURE	P
22.14 (9.2)	Tests for ingress of dust, solid objects and moisture:		N
7.10 7.10	- classification according to IP:	IP20	_



41	EN 60598-2-22		1114
Clause	Requirement + Test	Result - Remark	Verdict
A S		D D D D	7 20
4, 4,	- mounting position during test:	Ceiling mounting	—
4	- fixing screws tightened; torque (Nm):	0.8	<del>,</del>
71. 71	- tests according to clauses:	9.2.0	_
大	- electric strength test afterwards	* * * /	+ N
310 31	a) no deposit in dust-proof luminaire	10 20 20 20 20	N
4	b) no talcum in dust-tight luminaire	* * *	N
41 <sup>(1)</sup> 41	c) no trace of water on current-carrying parts or SELV parts or where it could become a hazard		N
ACT A	d) i) For luminaires without drain holes – no water entry	at at at a	N
CA C	d) ii) For luminaires with drain holes – no hazardous water entry	of of of	N
21 21	e) no water in watertight luminaire	1, 2, 2, 2,	N
*	f) no contact with live parts (IP 2X)	No contact with live parts	- P
1100 11	f) no entry into enclosure (IP 3X and IP 4X)	10 10 10 10	N
1	f) no contact with live parts (IP3X and IP4X)	4 4 4	N
21 <sup>(1)</sup> 21 <sup>(1)</sup>	g) no trace of water on part of lamp requiring protection from splashing water		N
Art of	h) no damage of protective shield or glass envelope	# # # #	Not
22.14 (9.3)	Humidity test 48 h	93%RH, 28℃	P

22.15 (10)	INSULATION RESISTANCE AND ELECTRIC STRENGTH P
22.15 (10.2.1)	Insulation resistance test P
at A	Cable or cord covered by metal foil or replaced by a metal rod of mm Ø
4, 4,	Insulation resistance (M $\Omega$ )
4	SELV: P
7 7	- between current-carrying parts of different polarity
310 31	- between current-carrying parts and mounting surface



16, 16,	EN 60598-2-22		A. H.
Clause	Requirement + Test	Result - Remark	Verdict
40 4		D D D	D D
4 4	- between current-carrying parts and metal parts of the luminaire	> 20 MΩ	P
19 14	Other than SELV:		P
4 4	- between live parts of different polarity:	> 200 MΩ	Р
A 10	- between live parts and mounting surface:	0 0 0	N/V
4 4	- between live parts and metal parts:	> 200 MΩ	P
AT JO	- between live parts of different polarity through action of a switch:	A SA SA	NO
22.15(10.2.2)	Electric strength test	at at at	Р
10 10	Dummy lamp	A B B	N
4 6	Luminaires with ignitors after 24 h test	666	N
AT A	Luminaires with manual ignitors	A 10 10	NO NO
4 4	Test voltage (V):	, 4, 4, 4	N
0 0	SELV:	A A A	P.O
7, 7,	- between current-carrying parts of different polarity:	500V/1MIN	Р
21 <sup>(1)</sup> 21 <sup>(1)</sup>	- between current-carrying parts and mounting surface:		N.O
A . Q	- between current-carrying parts and metal parts of the luminaire:	500V/1MIN	P.
4 4	Other than SELV:	, 5 5 6	P
4	- between live parts of different polarity:	1480V/1MIN	P.Q
2. 4.	- between live parts and mounting surface:	4 4 4	N
0 0	- between live parts and metal parts:	1480V/1MIN	O PO
7, 7,	- between live parts of different polarity through action of a switch:		2
22.15 (10.3)	Touch current (mA):	Enclosure: 0.08 mA Limit: 3.5 mA	P

22.16 (13)	RESISTANCE TO HEAT, FIRE AND TRACKING	В
22.16 (13.2.1)	Ball-pressure test:	P
4 4	- part tested; temperature (°C) Terminal block: 125°C, 0.8mm	P



14. 14.	EN 60598-2-22	Te. Te. Te. Te.	11/1
Clause	Requirement + Test	Result - Remark	Verdict
<u> </u>			7 4
7 7	- part tested; temperature (°C)	: Enclosure of sensor switch: 75℃, 0.7mm	P
Zi <sup>(()</sup> Zi <sup>(()</sup>	- part tested; temperature (°C)	: Terminal connector 125℃, 1.1mm	P
22.16 (13.3.1)	Needle flame test (10 s):	A LOT AT A	P
	- part tested	: Terminal block	Р
A V	- part tested		N
5 5	- part tested	3 5 5 5	N
22.16 (13.3.2)	Glow-wire test (850°C):	ST ST ST ST	PO
A- A	- part tested	: Transparent cover	Р
10 10	- part tested		N
22.16 (-)	Glow-wire test (650°C):	4 4 4 4	N
4	- part tested	: Enclosure of switch	P
4 4	- part tested	: Terminal connector	P
A 4	- part tested	: Insulate sheet	P
22.16(13.4.1)	Tracking test: part tested	4 4 4 4	N
22.17 (-)	FUNCTIONAL SAFETY		P
22.17.1 (-)	Rated lumen output		N
22.17.2 (-)	Photometric data		N
22.17.3 (-)	Photometric measurements	4 4 4 4	N
22.17.4 (-)	Colour-rendering index	Ra=84.8	P.O
22.17.5 (-)	Iluminance and luminance requirements	4 4 4 4	P
A 1	7 <i>15 15 15 15 15</i>		7 0
22.18 (-)	CHANGEOVER OPERATION	4 4 4 4	P
22.18.1 (-)	Changeover test	0 0 0 0	P
22.18.2 (-)	Rated lumen output	641lm	P
22.18.3 (-)	Changeover test	* * *	N
14	Rated lumen output	My My My My	N



110	EN 60598-2-22	10 10 10 10	110
Clause	Requirement + Test	Result - Remark	Verdict
A 3			
22.19 (-)	HIGH TEMPERATURE OPERATION	7, 7, 7, 7,	P
0	Operation at 70°C	of of of	P
11 1	Rated lumen output	623lm	Р

22.20 (-)	BATTERY CHARGERS FOR SELF-CONTAINED EMERGENCY LUMINAIRES	
22.20.1 (-)	Charge performance	Р
22.20.2 (-)	Compliance with IEC 60742	P

22.21 (-)	TEST DEVICES FOR EMERGENCY OPERATION	0 0	.0	P
22.20.1 (-)	Device for simulation failure	4	5.	P
22.20.2 (-)	Influence of remote testing device	d .d	.0	N
22.20.3 (-)	Indication colour	- 21	3	P

ANNEX A: Batteries for emergency luminaires		P
Type of batteries		P.O
Battery conform to relevant standard	4 4 4 4	P
Luminaire operate within specific tolerances	D D D D	P.O
Battery capacity	2 5 5 5	Р
Sealed nickel cadmium batteries	* * * * *	- N
Battery conform to IEC 60285	21 21 21 21	N
Ambient air temperature ≤ 50 °C	* * * * ^	N
Overcharge rate ≤ 0,08 C <sub>5</sub> A	10 10 10 10	N
Ambient temperature of the cells ≥ 5 °C		N
Discharge rates $\leq 0.6 \text{ C}_5\text{A}$ for 1h and $\leq 0.25 \text{ C}_5\text{A}$ for 3h	A 20 20 20	N
Valve regulated lead acid batteries	* * * * *	- N
Battery conform to relevant part of IEC 60869-2 or IEC 61056-1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	N
Ambient air temperature ≤ 30 °C or ≤ 25 °C	A A A A	N
Recharge current ≤ 0,4 C <sub>20</sub>	2 2 2 4	N
	Type of batteries  Battery conform to relevant standard  Luminaire operate within specific tolerances  Battery capacity  Sealed nickel cadmium batteries  Battery conform to IEC 60285  Ambient air temperature $\leq 50 ^{\circ}$ C  Overcharge rate $\leq 0.08 ^{\circ}$ C  Discharge rates $\leq 0.6 ^{\circ}$ C for 1h and $\leq 0.25 ^{\circ}$ C  Discharge rates $\leq 0.6 ^{\circ}$ C for 1h and $\leq 0.25 ^{\circ}$ C  Battery conform to relevant part of IEC 60869-2 or IEC 61056-1  Ambient air temperature $\leq 30 ^{\circ}$ C or $\leq 25 ^{\circ}$ C	Type of batteries  Battery conform to relevant standard  Luminaire operate within specific tolerances  Battery capacity  Sealed nickel cadmium batteries  Battery conform to IEC 60285  Ambient air temperature $\leq 50 ^{\circ}\text{C}$ Overcharge rate $\leq 0.08  \text{C}_5\text{A}$ Ambient temperature of the cells $\geq 5 ^{\circ}\text{C}$ Discharge rates $\leq 0.6  \text{C}_5\text{A}$ for 1h and $\leq 0.25  \text{C}_5\text{A}$ for 3h  Valve regulated lead acid batteries  Battery conform to relevant part of IEC 60869-2 or IEC 61056-1  Ambient air temperature $\leq 30 ^{\circ}\text{C}$ or $\leq 25 ^{\circ}\text{C}$



	EN 60598-2-22	11 11 11	41, 41,
Clause	Requirement + Test	Result - Remark	Verdict
4			20 20
A.5.2.c	Discharge rates $\leq$ 0,4 $C_{20}$ for 1h and $\leq$ 0,17 $C_{20}$ for 3h	* 1 1 1	N N
A.5.2.d	Ripple current ≤ 0,1 C <sub>20</sub>		N.
A.5.2.e	Ambient temperature of the cells ≥ 5 °C	. 4 4	N
A.6	Ambient temperature of the cells measured after 48 h		P.0
A.7	Alternative operating parameters and evidence if operating outside limits in A.4 and A.5	at at at	A PA
A.8	Battery only replaced by a competent person	, 4 4	5 B
.0		D D D	0 0
4	ANNEX B: Luminaire classification	2 4 4	7 P
d	Classified and marked according Annex B	* * *	O PO
317 3			21 21
*	ANNEX C: Luminance measurements	* * *	P
C.1	Contrast measurements	10 10 10	P
C.2	On site photometric tests		Р
10		D D D	10 10
4	ATTACHMENT TO TEST REPORT EUROPEAN GROUP DIFFERENCES AND NA		ICES

3, 3,		
22.7 (3)	MARKING	N/A
22.7 (3.3.101)	For luminaires not supplied with terminal block: Adequate warning on the package	N/A

22.7 (4)	CONSTRUCTION	3 3	7	7, 4	7, 7,	N/A
22.7 (4.11.6)	Electro-mechanical contact systems	- 4	*	*	4	N/A

22.11 (5)	EXTERNAL AND INTERNAL WIRING	N/A
22.11 (5.2.1)	Connecting leads	N/A
4 4	- without a means for connection to the supply	N/A



Clause	Requirement + Test	Result - Remark	Verdict
40 40		Q Q Q Q	· A
7, 7,	- terminal block specified	7, 7, 7, 7,	N/A
0 0	- relevant information provided	of of of of	N/A
71 71	- compliance with 4.6, 4.7.1, 4.7.2, 4.10.1, 11.2, 12 and 13.2 of Part 1	2 4 4 4 4 A	N/A
22.11 (5.2.2)	Cables equal to EN 50525	A A A A	N/A
2. 5.	Replace table 5.1 – Supply cord	4 4 4	N/A

22.13 (12)	ENDURANCE TEST AND THERMAL TEST	7,	7	7	N/A
22.13 (12.4.2c)	Thermal test (normal operation) see footnote c to table 12.2 relating to unsleeved fixed wiring	A STATE OF	N. C.	Mil	N/A

ZB	ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)	N/A
(3.3)	DK: power supply cords of class I luminaires with label	N/A
(4.5.1)	DK: socket-outlets	N/A
(5.2.1)	CY, DK, FI, GB: type of plug	N/A
22.7.18 (-) 22.11.1 (-)	FR: Permanent fittings	N/A
22.7.15 (-) 22.17.1 (-)	FR: Photometric characteristics of products are only based on the "rated lumen output"	N/A

ZC	ANNEX ZC, NATIONAL DEVIATIONS (EN)	N/A
(4 & 5)	FR: Shuttered socket-outlets 10/16A	N/A
100	FR: Safety requirements for high buildings	N/A
Zillt &	(Arrêté du 30 décembre 2011 portant règlement de sécurité pour la construction des immeubles de grande hauteur et leur protection contre les risques d'incendie et de panique; Section VIII; Article GH 48, Eclairage)	- Silit
ot	Glow-wire test for outer parts of luminaires:	- 4
3 3	- 850°C for luminaires in stairways and horizontal travel paths	N/A
A. C.	- 650°C for indoor luminaires	N/A



# 721-

Sille	S. C.	S. C.	S. C.	S. C.	3.0	210	S. Cot	S. C.	S. Cot	S.Ot	Zillit	S. C.	Sill 3
NOT.	and the	1	No.	and the	and the	NOT.	and the	No.	Not.	- Pa	ge 30 of <sup>-</sup>	78 -	At .
T.	大	N	EK		7	7	7	Z X	T.	7	Z X	7	T T
Zill.	Zi.	Zi.	Zi.W	Zit.	Ziel.	Zi.	Zit.	Zill.	Report N	lo. NTE	K-2016N	T072177	238
at	d	-dt	- ot	· At	ot	· dt	- ot	- A	, ot	· dt	· dt	.ot	- et
4	4	Clause	-	Requireme	nt + Test	-	EN 605	98-2-22	Resul	t - Remar	·k	-	Verdict
100	10	10	.0	.0	10	.07	10	A.	4	A.	10	10	1
7	7	7		GB: Require Building Re		ccording	to United	l Kingdom	4	7	7	7	N/A
2500	Z.C.	2	25,417	2:40	2,00	25.00	Zilli.	25.40	2,00	25.60	Z. C.	2:40	2 S
et	d	et	d	· ot	. ot	et	. ot	et	· ot	at	.et	.et	.et
7	7	4	7	4	7	7	7	7	7	7	4	7	4 4
A CONTRACTOR OF THE PARTY OF TH	10	10	10	10	10	1	1	ALT.	ALT.	A. T.	10	A.C.	ATT I
4	4 T	7 x	4	7	4	大	4	4	4	Z Y	4	4	4 4
Zill.	2100	2100	Zit.	Zith.	Zit.	2100	2114	2500	Zitt.	214	Zill.	Zith.	21th 2
at	at	at	d	· dt	d	d	d	. Ot	d	d	d	d	d
7	7	7	7	4	7	4	7	7	7	7	7	7	4 4
1	ALT.	ALT.	10	THE STATE OF THE S	A CONTRACTOR OF THE PARTY OF TH	1	10	ALT.	10	AT.	10	A.C.	Alt .
4	4	4	Z X	· A	4	大	Z Y	Z X	4	4	4	Z X	A L
Zill.	Zi.	Zi.	Zire.	2110	Zi.C.	Ziill	Zi.	Zill.	Zi.	Zi.W	Zitter.	Ziv	Zill Z
at	d	d	at	at	d	d	d	at	at	d	d	at	Sill s
5	5	4	5	4	3	5	3	3	3	4	5	4	4 4
A. C.	NO.	A COL	1	A STATE OF THE STA	A. C.	A. C.	A. C.	1	ALT.	A. C.	ALC:	1	Sill &
- At	大	T At	T.	- 1	T.	- At	T.A.	T.A.	- A	7	一个	- At	4
71.00	Zirk.	Zirik.	Ziiv.	Zi.W	Zi.V	Till.	Zi.W	211	Zi.V	71.00	Zi,iv	Zi.V	21° 2
at	at	at	d	· dt	at	at	A.	d	at	at	et	at	at .
5	5	7	5	5	3	7.	5	4	3	4	5	3	4 4
A. C.	1	THE PARTY OF	1	in the tank to the tent to the	A CONTRACTOR OF THE PARTY OF TH	1.0	1		A CONTRACTOR OF THE PARTY OF TH	100	1.0	1	ALT A
*	T	T	T.A.	- X	T.	t	T	T.	T.	- At	T	T.	THE T
Zi.V	File	Zii'V	7 Till	Zi.V	Zil.	- Live	- Line	Ziv.	Ziv.	Zi.V	- Line	71.1V	Ziv Z
A STATE	et	- Colonia	-	they ben	*	at the	4	*	NTE	K Testing	Technolo	gy Co., L	THE THE PARTY OF T
4	5	5	5	5	4	5	5	4	4	4	5	5	7 4
A. C.	ALC:	THE PARTY OF THE P	10	A. C.	ALT.	1:07	ALL THE	A. C. C.	ALE TO SERVICE OF THE PERSON O	A. C.	A. C. C.	A. C. C.	ALT &
P. Cot	T	Z X	Y	- Total	Z X	T	Z X	T	T.	Z X	T	Z X	4 4
104	100	154	J.V.	AN	154	1	1.4	A. C.	154	100	100	100	14



110	1110	10 10	110	EN 60598-2-22	1167	110	110	1100	110
Clause	4	Requirement + Test	1	4 4	Resul	t - Remark	4	1	Verdict

At A	ANNEX1: Components	ot of	st st	ot ot	of P of	
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity	
Terminal block	King Zing	KZ8	450V,110°C, 10A	60998-2-1	VDE	
Zille Zil	DEGSON	DG801	400V,110°C, 15A	60998-2-1	VDE	
Sensor switch	Sun-Near	t jet	0.5A,36V, 85°C	EN 61058-1	VDE	
THE R	Bodo Ehmann GmbH	EF700DC	AC 230 V, 50 Hz, 20W-30W	EN 61058-1	VDE 127068	
Fiberglass - sleeves	SHENZHEN UNITED POWER ELECTRONIC CO LTD	FSG-2	220°C, 2000V	UL1441	UL E238355	
at A	NAN TAI HARDWARE & CHEMICAL CO LTD	GS30-2E	220°C, 2000V	UL1441	UL E173547	
Insulation paper	MIANYANG LONGHUA FILM CO LTD	PC-870, PC-770	PC, 80°C, V-0, min. thickness 0.4mm	UL 94	UL E254551	
LED Aluminum substrate	INTERNATIONAL LAMINATE MATERIAL LTD	YXD1	V-0, 130°C	UL94	UL E352507	
ALT A	DONGGUAN SUNTOP CIRCUIT TECHNOLOGY CO LTD	SZ-01	V-0, 130°C	UL94	UL E355939	
LED LE	SHENZHEN JUFEI OPTOELECTRONICS CO LTD	2835 WIHTE LED	IF=10-20mA; VF=2.9V-3.2V; CCT=2700K- 6500K	EN 60598-2-22	Test with appliance	
Sight Sigh	Everlight Electronics Co., Ltd.	2835 WIHTE LED	IF=10-240mA; VF=2.9V-3.2V; CCT=2700K- 6500K	EN 60598-2-22	Test with appliance	



40	30 30 30	EN 60598-	-2-22	Y 4	·	71,0
Clause	Requirement + Test	L L		Result - R	emark	Verdict
÷ ;	Philips Lumileds Lighting	2 4	IF=10-100 VF=3.0V-		\$ \$	Test with
Self Sel	Company.	3535L LEDs	CCT=2700K- 6500K		EN 60598-2-22	appliance
Transparent cover	AVERY (CHINA) CO LTD	ADFR	V-0, 130°		UL 746C	UL E352533
	BAIFU PLASTICS TECHNOLOGY (DONGGUAN) CO LTD	PPS BF-1130	V-0, 130°		UL 746C	UL E355914
Internal wire	HANSTAR FOLUO- PLASTIC INSULATED ELECTRIC WIERS	1015	600V; 18/ 105°C	AWG;	UL 758	UL E159007
4 4	3E	(N)6YAF	300/500 V, 180℃ VDE Reg-No.7612			
41" 41"	Feng Tai	FT-PFA-102	300/500 V, 180°C VDE Reg-No.7998		IEC 60227	VDE 40013284
output wire	SHENZHEN LONGSHENGDA WURE&CABLE CO LTD	3239	DC 3000V; 20AWG; 200°C		UL 758	UL E364555
	NIZING ELECTRIC CO	3239	DC 3000V; 20AWG; 200°C		UL 758	UL E215834
Earthing wire	HANSTAR FLUORO- PLASTIC INSULATED ELECTRIC WIRES	1015	18AWG,1 600V	05°C,	UL 758	UL E159007
Sill Sile	3E	1015	18AWG,1 600V	05°C,	UL 758	UL E176010
Test switch	sing fai electric co	SS158-B41S	2A, 250VAC 50/60Hz,6K, 80°C		UL 61058-1	UL E111395
LED driver	LOKOLED	GDY- DRV2001D	Input:AC100- 240V,50/60Hz, 23W,Output:DC42 V, 500Ma, 20W		61347-2-13	Test with appliance report 2014NT10 15591S
Ni-MH Battery pack	pack BPI BA2-1303(H) 3.2Ah,DC9.6V, 8PCS		9.6V,	IEC 62133:2012	SGS SZES1406 00138301	



44		EN 60598	-2-22	41 41 3	4 44	
Clause	Requirement + Test	+ +	Res	ult - Remark	Verdict	
<del>2</del> <del>2</del> <del>2</del>	SHENZHEN LTT ELECTRONIC CO LTD	Variety	3.2Ah,DC9.6\ 8PCS	V, IEC 62133:2012	MH46375	
41. 41. A.	SHENZHEN BETTERPOWER BATTERY CO LTD	Variety	3.2Ah,DC9.6\ 8PCS	V, IEC 62133:2012	MH10329	
LED emergency converter	LOKOLED	GDY-CV2001	Input:AC100- 240V,50/60H: mA, Output: DC12V,260m	z,65	Test with appliance	
Plastic enclosure	Bayer Materialscience AG	FR3020 + (z)	V-0; 80°C; thickness: 1.6	min. UL 746C Smm	UL E41613	
21 21 A	Sabic Innovative Plastics US L L C	C2950(GG)	V-0; 60°C; thickness: 1.6		UL E121562	
AND AND	Sabic Innovative Plastics B V	EXCY0100 (GG)(f2); CX7240 (GG)(f2)	V-0; 90°C; thickness: 1.6	min. UL 746C	UL E45329	
Fuse(F1)	Cooper Bussmann LLC	SS-5	T3.15A, 250V	/ac IEC/EN 60127-1 IEC/EN 60127-3		
710 F	Conquer Electronics Co., Ltd.	PTU	T3.15A, 250V	/ac IEC/EN 60127-1 IEC/EN 60127-3	10001100	
Fuse(F2)	XC ELECTRONICS (SHENZHEN) CROP.LTD.	T3 Series	5A, 250V	IEC/EN 60127-1		
Filte (L1)	DONGGUAN XINLEINENG Electronic Co., Ltd.	UU9.8	120mH	EN 61347-2-7	Test with appliance	
Bobbin (L1)	WUXI JUFENG Co., Ltd.	2UEW	THERMAL RATING:130°	C UL 94	UL E206882	
winding (L1)	HENGYI Co., Ltd.	TEX-E	THERMAL RATING:130°	C UL 1446	UL E344055	
X2 capacitance	Shantou High-New Technology Developmnt Zone Songtian Enterprise Co., Ltd.	MPX	0.1uF; 275 40/100/21	UL 60384-14	VDE 40034679	



	1 1 1	EN 6059	08-2-22		
Clause	Requirement + Test	4 4	Result - F	Remark	Verdict
C12 Electrolytic capacitor	Variety	Variety	400V,10uF,105°C	EN 61347-2-7	Test with appliance
C3 Electrolytic capacitor	Variety	Variety	25V,470uF,105°C	EN 61347-2-7	Test with appliance
Y1 capacitor	Shantou High-New Technology Dev. Zone Songtian Enterprise Co., Ltd.	CD	1000pf, 2KV, Y1, 125°C	IEC 60384-14	VDE 40025754
ATIENT ATIE	Shantou High-New Technology Developmnt Zone Songtian Enterprise Co., Ltd.	Y5P, Y5U, Y5V	2200PF; 400VAC; 125°C	IEC 60384-14	VDE 40025754
PCB	Viafine Pcb Technology Ltd.	VF-M	V-0; 130°C; min thickness: 1.6mm	UL 94	UL E466925
At A	Huizhou BOYU Technology Co., Ltd.	IM _	V-0; 130°C; min thickness: 1.6mm	UL 94	UL E33613
4 4	Shenzhen Kerui Electric Industry Co., Ltd.	KRP	V-0; 130°C; min thickness: 1,6mm	· UL 94	UL E320953
31 31		3.7	5" 5" 3	317	7 7 7
Transformer	DONGGUAN XINLEINENG Electronic Co., Ltd.	EE19	2.0mH	EN 61347-2-7	Test with appliance
T1 Bobbin	CHANG CHUN PLASTICS CO LTD	T375J	Phenolic, 94V-0 150°C	, UL 94	UL E59481
T1 Secondary winding	Totoku Electric Co. Ltd.	TIW-2	Reinforced insulation, Class B	4 4	VDE 40005152
T1 Primary winding	SHENZHEN CHENGWEI INDUSTRY CO LTD	MW 75-C	130°C	UL 1446	UL E227475
AND AND	HENGYI Co., Ltd.	TEX-E	THERMAL RATING:130°C	20 3	UL E344055
T1 Tube	SHENZHEN WOER HEAT-SHRINKABLE MATERIAL CO LTD	WF	600V, 200°C, VW	- UL 224	UL E203950
T1 insulation Tape	Jingjiang Yahua Pressure	PZ, CT	130°C	UL 510	UL E165111



EN 60598-2-22									
Clause	Requirement + Test			Result - Re	Verdic				
547 S			20	A .		4 A			
۸-	JINGJIANG JINGYI Co., Ltd.	J- J	130°C	7	UL 510	UL E246950			
insulating oil (T1)	Shenzhen xingshida Co., Ltd.	MW28	130°C		- 2,00	UL E327170			

*	ANNEX 2: temper	ature measure	ments, theri	mal tes	ts of	Section 12	+	Р		
24	Type reference	Type reference:					GL2001ESA			
7	Lamp used	Lamp used:  Lamp control gear used:					LED emergency converter and LED driver			
10	Lamp control gear									
1	Mounting position of luminaire: Ceiling mounting, unfavourable pos							_		
Table: measured temperatures corrected for ta = 25 °C:							3 3	P		
1	- abnormal operating mode:									
11/4	- test 1: rated voltage							<u> </u>		
4								_		
, ·								_		
Side .								_		
14	Through wiring or current of (A) during				147	10	100	<u> </u>		
temperature (°C) of part		clause 12.4	clause 12.4 - normal			clause 12.5 - abnormal				
		test 1	test 2	lim	its	test 3	test 4	limit		
1 fuse		25.9	37.5	90		5.	5 - 5	-		
-2 fuse		39.9	40.3	90		- 2	0	A		
L1 winding		26.7	40.8	120		38.1	27.2	175		
Γ2 coil		41.7	63.5	120		60.2	32.1	175		
T2 core		40.1	60.6	120		58.3	30.1	175		
PCB near T2		28.3	40.7	130		6-	6 - 6	2		
PCB near Q8		34.3	42.1	130		· ·	/	A - 1		
CB near	r Q8	31.0	*(/ ·		2	44/		6 6/		



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NTEK	Zill.	Zilli Zill		- Pag	ge 36 of 78 -	
210 210 210 Z	3.0	Sill Sil	Report	No. NTE	<-2016NT072	177238
THE REPORT OF THE	110	EN 60598-2-2	22	N. C.	100	<b>*</b> **
Clause Requirement + Test	t L	1	Resu	ult - Remark		Verdic
19 19 19 19	.47	. Q	0 10	.47	. Q . A	0 1
Tc of LED driver	26.1	50.1	60	45.5	25.6	70
C12	26.4	52.9	105	36.8	28.5	115
enclosure inside near Q1	29.9	50.5	60	1	4.	-11
PCB near U3	38.2	58.5	130	1	-	1
Lead wire near LED	26.3	41.9	200	4	20- 1	V - 1
Mounting surface	25.2	31.6	90	28.2	25.3	130
C3 /- /- /-	37.9	40.5	105	36.6	27.5	115
C1	25.9	37.6	110	1.4	N - N	Y -1
Battery	27.9	35.4	50	33.2	27.1	60
Transparent cover	24.6	35.8	130	40	Ø- 1	T
LED PCB	27.0	43.8	130	2	2 2	2
Sensor switch	25.6	38.1	55	1	4	*
PCB near sensor IC	26.8	40.6	130	147	14	4
				5.	5 5	- 2
Terminal block	A COL		at Ariet	A THE		or Art
The set set set	ALIE!		at met	A. Cit	ALOT A	et si
The sect sect sect	N. C.	7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	at Anat	N. C.	THE THE	at Air
- ~- ~- ~- ~-	NOT THE	STOT STO	OF SHOT	S. C.	STOT ST	OF SI
	-ot	.d-	NTF	K Testing	Technology Co	o., Ltd



110	TIES .	740 740 74	EN 60598-2-22	10 10 10	1100	7100
Clause	1	Requirement + Test	L 1 1	Result - Remark	-	Verdict

Т		-
	ANNEX 3: screw terminals (part of the luminaire)	N
	Airite of the idilliane)	

(14)	SCREW TERMINALS	·	N
(14.2)	Type of terminal:	10	_
4 4	Rated current (A)	7	_
(14.3.2.1)	One or more conductors	10	N
(14.3.2.2)	Special preparation	-	N
(14.3.2.3)	Terminal size	.0	N
4	Cross-sectional area (mm²):	-	N
(14.3.3)	Conductor space (mm):	d	N A
(14.4)	Mechanical tests	7,1	N
(14.4.1)	Minimum distance	1	N
(14.4.2)	Cannot slip out	11/4	N
(14.4.3)	Special preparation	-	N
(14.4.4)	Nominal diameter of thread (metric ISO thread) . :	10	N
4 4	External wiring	7	N
.0	No soft metal	.0	N
(14.4.5)	Corrosion	-	N
(14.4.6)	Nominal diameter of thread (mm):	0	N A
	Torque (Nm):	357	N
(14.4.7)	Between metal surfaces	1	N
110	Lug terminal	1	N
4	Mantle terminal		N
A A	Pull test; pull (N):	10	N
(14.4.8)	Without undue damage	7	N



110	TIES .	740 740 74	EN 60598-2-22	10 10 10	1100	7100
Clause	1	Requirement + Test	L 1 1	Result - Remark	-	Verdict

 ANNEX 4: screwless terminals (part of the luminaire)	 	N
The state of the s		

(15)	SCREWLESS TERMINALS	L	,L ,L	N
(15.2)	Type of terminal	NO X		_
4 4	Rated current (A):	3 6	1	_
(15.3.1)	Material A A A	4	0 0	N
(15.3.2)	Clamping	2 4	4	N
(15.3.3)	Stop	.0 .	0.0	N
(15.3.4)	Unprepared conductors	3, 3,		N
(15.3.5)	Pressure on insulating material	4	4 4	- N
(15.3.6)	Clear connection method	51 51	7.	N
(15.3.7)	Clamping independently	*	4 4	N
(15.3.8)	Fixed in position	3 3	10	N
(15.3.10)	Conductor size			N
A A	Type of conductor	A A		N
(15.5.1)	Terminals internal wiring	5 5	4	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):	at )	of ot	N
4. 4.	Insertion force not exceeding 50 N	7, 4,	4	N
(15.5.2)	Permanent connections: pull-off test (20 N)	0	4 4	N
(15.6)	Electrical tests	3	7	N
*	Voltage drop (mV) after 1 h (4 samples)	*	* *	N
11 11	Voltage drop of two inseparable joints	110	, 14v	N
1	Number of cycles:	1	7	_
211 21	Voltage drop (mV) after 10th alt. 25th cycle (4 samples)	510 Z	250	N
ACT A	Voltage drop (mV) after 50th alt. 100th cycle (4 samples)	A TOP	ot od	N



717	Y 3	· .		E	N 60598	3-2-22	44	111	Til.	417	71
Clause	Requ	uirement +	- Test	4	J_ `	1	Resul	t - Remai	rk	1	Verdict
10	4	Ø J	W.	4	A)	A.	10	10	10	10	- 4
4 4	After 25th	ageing, v cycle (4 s	oltage d amples)	rop (mV)	after 10	h alt.	7	7	7	7	N
41 <sup>10</sup> 4	After 100th	ageing, v n cycle (4	oltage d samples	rop (mV) s)	after 50	h alt.	3	2.00	2500	2500	N
(15.7)	Term	ninals exte	ernal wiri	ng	1	1	4	1	1	4	'N
3" 3	Term	ninal size	and ratin	ig			3	70	Zil.	7,1	N
(15.8.1)		test spring ections (4						A.	d	4	N
4 4		est pin or N)					* *	4	4	4	N
(15.9)	Cont	act resista	ance tes	, V	14	100	110	110	110	110	N
	Volta	ige drop (	mV) afte	r1h	L		, L	7	7	1	N
terminal		1	2	3	4	5	6	7	8	9	10
voltage drop (mV)			3	<	7	7	7	4			
4	V	oltage dr	op of two	insepara	able joint	s	4	1	.45	4	N.Q
4 4	V	oltage dro	op after	10th alt. 2	25th cycle	Э	7	4	4	4	N
0	N N	lax. allow	ed volta	ge drop (r	mV)		22.5	0	0	0	_
terminal		1	2	3	4	5	6	7	8	9	10
voltage drop	o (mV)	*	×	*	*	大	*	*	*	*	
110	V	oltage dr	p after	50th alt. 1	00th cyc	ele	110	110	110	11	N
4	I	lax. allow	ed volta	ge drop (r	mV)		1	4	1		_
terminal		1	2	3	4	5	6	7	8	9	10
voltage drop	o (mV)	1								-	
A .	C	ontinued	ageing:	voltage d	rop after	10th alt.	25th cyc	cle		10	N-
4 4	N	1ax. allow	ed volta	ge drop (r	mV)	<b></b> : :	22.5	4	4	4	_
terminal		1	2	3	4	5	6	7	8	9	10
voltage drop	o (mV)		-	. 4		5	5	5	4	5	7
d	A 0	ontinued	ageing:	voltage d	rop after	50th alt.	100th cy	/cle	4	0	N A
11	N	lax. allow	ed volta	ne drop (r	mV)	11	11/1	11	11	11	



1	TIES .	1	110		EN 62493	1100	10 10	1100	150
Clause	R	equireme	nt + Test	4	at at	Result -	Remark	1	Verdict

*	EN 6249	13 t t t	st d
Clause	Requirement + Test	Result - Remark	Verdict
4.2	APPLICATION OF LIMITS(TEST SUMMA	ARY)	- d
10 1	Specific absorption rate (SAR)		Q =Q
a)	CISPR 15 clause 4.3.1 Disturbance voltage mains terminals 20 kHz-30 MHz	* * * * * * * * * * * * * * * * * * * *	THE OF
b)	CISPR 15 clause 4.4 Radiated electromagnetic disturbances 100 kHz-30 MHz	***************************************	P
c)	CISPR 15 clause 4.4.2 Radiated electromagnetic disturbances 30 MHz -300 MHz		PO
*).**	See separate Test Report for measure ☐Only measurement of d) below. See m In this case this test report does not sh	easurement results below.	
3 <sup>1</sup> 3 <sup>1</sup>	Induced current density		Р
d)	Induced current density 20 kHz-10 MHz	See measurement results below	P

4.2.d	INDUCED CURRENT DENSITY	A A A A -A
4 4		7 7 7 7 7
0	Power supply system utilized:	d d d d -d
4 4	Volt- age:	100-240V
300 3	Fre- quency	
*	Environmental conditions:	* * * * *
100	Temperature	: <b>25</b> °C
d	Humid- ity:	53%
4 4	EuT operation mode:	

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SOUTH AND THE SERVICE

# Ariest Ariest Ariest Report No. NTEK-2016NT07217723S

NTE	of and and and	Ailt Ailt	- Page 41 of 7	8-10-1
4 ×	TO STOP STOP STOP	Will Will	Report No. NTEK-2016N7	Γ07 <mark>2</mark> 17723S
110		EN 62493	10 10 10	1100 110
Clause	Requirement + Test	EN 62493	Result - Remark	Verdict
Clause	Requirement + Test	EN 62493	Result - Remark	Verdict
Clause	Requirement + Test  Normal operation	EN 62493	Result - Remark	Verdict
Clause		EN 62493	Result - Remark	Verdic

- 4 - 4	4.2.d EQUIPMENT USE	D DURING TEST	* * * * *	- 4 - 4
19 19	Equipment	Manufacture	Type	ld. No.
4 4	"Van der Hoofden" test head	AFJ	VDH30	NTEK
AT 10	Measurement receiver	Agilent	E7405A	NTEK
4 4	Coaxial cable	DRAKA COMTEQ	M17/75-RG213	NTEK
A .			A A A	4 4
7, 7,	7 7 7 7	EN 62493	1 1 1	4 4
* *	Clause Requirement + Te	st A A	Result - Remark	Verdict

Clause         Requirement + Test         Result - Remark         Verdict           4.3.d         MEASUREMENT RESULTS            Measuring with "Van der Hoofden" test head            Location of EuT         Measuring distance         Result (F)         Limit (F)         Verdict           Front of EuT         30cm         0.28         0.85         P           Rear of EuT         30cm         0.19         0.85         P           Side of EuT         30cm         0.25         0.85         P	5 4	EN 62493					
Measuring with "Van der Hoofden" test head  Location of EuT  Front of EuT  Measuring distance  Result (F)  Limit (F)  Verdice  Verdice  P  Rear of EuT  30cm  0.28  0.85  P  Rear of EuT  30cm  0.19  0.85	Clause	Requirement + Test	* * *	Result - Remark		Verdic	
Location of EuTMeasuring distanceResult (F)Limit (F)VerdicFront of EuT30cm0.280.85PRear of EuT30cm0.190.85P	4.3.d	MEASUREMENT RESU	LTS	2 2 2	35	4	
EuT         0.28         0.85         P           Front of EuT         30cm         0.19         0.85         P           Rear of EuT         30cm         0.19         0.85         P	x 1	Measuring with "Van der	Hoofden" test head	***	1		
Rear of EuT         30cm         0.19         0.85         P		Measuring distance	Result (F)	Limit (F)	77.00	Verdic	
	Front of EuT	30cm	0.28	0.85		P	
Side of EuT         30cm         0.25         0.85         P	Rear of EuT	30cm	0.19	0.85	2	Р	
	Side of EuT	30cm	0.25	0.85	1	- P	
		4 4 4			7		



11	EN 61347-2-7		11
Clause	Requirement – Test	Result - Remark	Verdict
19 1			1 14
4 (4)	GENERAL REQUIREMENTS	466	P
- (4)	Insulation materials for double or reinforced insulation according requirements in Annex N of IEC 61347-1	(see Annex N)	P
- (4)	Compliance of independent controlgear enclosure with IEC 60 598-1		N
- (4)	Built-in magnetic ballast with double or reinforced insulation comply with Annex I of IEC 61347-1	# # # #	- N
- (4)	Built-in electronic controlgear with double or reinforced insulation comply with Annex O of IEC 61347-1	(see Annex O)	P
- (4)	SELV controlgear comply with Annex L of IEC 61347-1	(see Annex L)	P
4 (-)	Each lamp type tested according clause 15 – 20, 22 and 34 and lamp with highest rated power in other tests	of the the	_
4 (-)	Controlgear with automatic test function tested according Annex K	(see Annex K)	N
4		# # # #	- 4
6 (6)	CLASSIFICATION	2. 4. 4. 4.	-3'
4	Built-in controlgear:	Yes ⊠ No □	<u> </u>
21 2	Independent controlgear:	Yes No 🖂	_
*	Integral controlgear:	Yes No 🖂	<u> </u>
317	With automatic test function:	Yes No 🖂	_
4	At At At At At	at at at a	L .
7 (7)	MARKING		P
7.1 (7.1)	Mandatory markings	666	Р
A A	a) mark of origin	A A A A	P
4 4	b) model number or type reference	4 4 4	P
3.07 3	c) symbol for independent controlgear, if applicable	A SA SA SA	N
at .	d) correlation between interchangeable parts and controlgear marked	at at at a	N
7, 7	e) rated supply voltage (V)	100-240V~	P



74, 4	EN 61347-2-7	20, 70, 70,	74, 74,
Clause	Requirement – Test	Result - Remark	Verdict
14 1		19 19 19	10 10
4 4	supply frequency (Hz)	50/60Hz	P
A .	supply current (A)	65mA	P.O
4. 4	f) earthing symbol	5 5	4
0	k) wiring diagram	0 0 0	Q P.O
7, 7,	l) value of t <sub>c</sub>	2 7 7	Ž N
7.1 (-)	- open circuit voltage (V)	DC13V	A- PA
4	- controlgear without enclosure marked with a) and b) above	21 71 71	P
4	- type and current rating of fuse, if applicable	1 1 1	(P.()
4 4	- symbol if the controlgear comply with this part 2	4. 4.	4 P
All A	- symbol if the controlgear is provided with automatic test function	at at at	NO NO
T. C.	- maximum working voltage between output terminals (V)	DC12V	P
4 4	- maximum working voltage between any output terminal and earth, if applicable (V)		N
7.1 (7.2)	Marking durable and legible		P
4 4	Rubbing 15 s water, 15 s petroleum; marking legible	* * * *	P
7.2 (7.1)	Information to be provided, if applicable:	71 71 71 Y	P
at .	h) declaration on protection against accidental contact	d d d	P
4 4	i) cross-section of conductors (mm²)	0.5-1.0	4 P
0	j) number, type and wattage of lamp(s)	LED 20W	OF PO
21 21	n) additional heat sink	2 2 2	S N
7.2 (-)	- suitable for use only on battery supply not having a trickle or intermittent re-charging circuits	4 4 4	O Po
4 4	- rated duration of operation (hr)	3hours	A 4
ALL S	- for use in luminaries for high-risk task area lighting	A SA SA	NO NO
4	- proof against supply voltage polarity reversal	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Р
W A	- emergency ballast lumen factor (EBLF)	0.85	P.Q



111	EN 61347-2-7	The The The	11, 11,
Clause	Requirement – Test	Result - Remark	Verdict
19		A TO TO	10 10
545	- limits of ambient temperature range within which the ballast will start and operate	25℃	P
3 3	- type of insulation between the supply and the battery circuit (non, basic or double/reinforced)	Double insulation	P
300 3	- recharge the battery normally after the test of 22.3	The same of	P
*	- supply current for each lamp	460mA	- P
1 1	Information for correct battery selection:	in the time	P
4	- technology of the battery	·	Р
10	- type designation	Ni-MH Battery pack	P
4 4	- capacity	3.2Ah	3 4
4	- voltage	DC9.6V,	Q PQ
4. 4	- maximum charge current	260mA	P
0	- minimum charge current	230mA	O PA
3, 3	- charge voltage limits	DC12V	P
*	- maximum discharge current	460 mA	- P
31" 3	- minimum discharge current	420 mA	Р
4	- discharge voltage limits	DC10.6V	P
19 1	- temperature rating	-10°C-50°C	P
	- type and manufacturer	4 6 6	P
Sill &	- information regarding the installation, commissioning and use if with automatic test function		N.O

8 (10)	PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS		P
- (10.1)	Controlgear protected against accidental contact with live parts	A PA PA PA	P
- (A2)	Voltage measured with 50 k $\Omega$	(see Annex A)	Р
- (A3)	Voltage > 35 V peak or > 60 V d.c. or protective impendence device	(see Annex A)	N
- (10.1)	Lacquer or enamel not used for protection or insulation	4 4 4 4	Pot



147	EN 61347-2-7		74, 74,
Clause	Requirement – Test	Result - Remark	Verdict
19		THE THE THE	19 19
P. C.	Adequate mechanical strength on parts providing protection	d d d	P
- (10.2)	Capacitors > 0,5 μF: voltage after 1 min (V): < 50 V	1 4 4 A	P
- (10.3)	Controlgear providing SELV	A TO TO	P.V
THE PARTY OF	Accessible conductive parts are insulated from live parts by double or reinforced insulation in SELV controlgear	A A A	P
Cot	No connection between output circuit and the body or protective earthing circuit	ot of ot	N
4 4 4	No possibility of connection between output circuit and the body or protective earthing circuit through other conductive parts		S N
3 3	SELV outputs separated by at least basic insulation	2 2 2	_P
10	ELV conductive parts insulated as live parts	0 0 0	NO.
4 4	Tests according Annex L of IEC 61347-1	5 5 5	A A
- (10.4)	Accessible conductive parts in SELV circuits	1 1 1	NO NO
4 4	Output voltage under load $\leq$ 25 V r.m.s. or $\leq$ 60 V d.c.	4 4 4	P
AND A	If output voltage > 25 V r.m.s. or > 60 V d.c.;  No load output ≤ 35 V peak or ≤ 60 V d.c and touch current does not exceed 0,7 mA (peak) or 2 mA d.c.		N.
P. C.	One conductive part is insulated if output voltage or current exceeding the values above and withstand test voltage 500 V	4 4 4	N
Part ?	Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor	4 4 4	P P
4 4	Y1 or Y2 capacitors comply with IEC 60384-14	5 5	P
3107 3	Resistors comply with test (a) in 14.1 of IEC 60065		N.O



11	710	1100	1100	1100	EN 61347-2-7	4 4	110	1,00	TI'W
Clause	4	Requirem	ent – Test	1	1 1 A	Result - Re	emark	4	Verdict

9 (8)	TERMINALS		P
- (8)	Screw terminals according section 14 of IEC 60598	-1:0 0	NO NO
5. 5	Separately approved; component list	(see Annex 1)	N
.0	Part of the controlgear	(see Annex 2)	NO
5 3	Screwless terminals according section 15 of IEC 60	598-1:	P
大	Separately approved; component list	(see Annex 1)	A- PA
317	Part of the controlgear	(see Annex 3)	N
10 (9)	PROVISION FOR PROTECTIVE EARTHING	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	P
- (9.1)	Provisions for protective earthing	20 20 20 .	N
	Terminal complying with clause 9	4 4 4	N
3107 3	Locked against loosening and not possible to loosen by hand	A 310 310 3	NO.
at .	Not possible to loosen clamping means unintentionally on screwless terminals	at at at	N N
4	Earthing via means of fixing	4 4 4	N
ANT .	Earthing terminal only used for the earthing of the control gear	THE REPORT	NO NO
.dt	All parts of material minimizing the danger of electrolytic corrosion	4 4 4	N
4	Made of brass or equivalent material	1, 1, 1, 4	N
d	Contact surface bare metal	d d d	OF NO
- (9.2)	Provision for functional earthing	31 31 31 3	P
*	Comply with clause 8 and 9.1	* * *	A P
- (9.3)	Earth contact via the track on the printed board		P
Sight &	Test with a current of 25 A between earthing terminal and each of the accessible metal parts; measured resistance ( $\Omega$ ) at $\geq$ 10 A according 7.2.3 of IEC 60598-1: < 0,5 $\Omega$	0.011Ω	P
- (9.4)	Earthing of built-in lamp controlgear	A A A	O P.O
4	Earth by means of fixing to earthed metal of luminaire in compliance of 7.2 of IEC 60598-1	4 4 4	P
31 <sup>(V)</sup> - 2	Earthing terminal only for earthing the built-in controlgear		P



1	EN 61347-2-7		111
Clause	Requirement – Test	Result - Remark	Verdict
10 1		19 19 19 19	7 34
- (9.5)	Earthing via independent controlgear	4 4 4 4	N
- (9.5.1)	Earth connection to other equipment	A A A A	N.O
7 5	Looping or through connection, conductor min. 1,5 mm <sup>2</sup> and of copper or equivalent	* * * * *	N
4 ×	Protective earthing wires in line with 5.3.1.1 and clause 7		N
- (9.5.2)	Earthing of the lamp compartments powered via t controlgear	he independent lamp	N
sigt s	Test with a current of 25 A between input and output earth terminals; measured resistance $(\Omega)$ between earthing terminal and each of the accessible metal parts at $\geq$ 10 A according 7.2.3 of IEC 60598-1: < 0,5 $\Omega$	at and and and	N
4	Output earthing terminal marked as in 7.1 t) of IEC 61347-1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	N

11 (11)	MOISTURE RESISTANCE AND INSULATION	7. 4. 4. 4.	P
ALL SA	After storage 48 h at 91-95% relative humidity and insulation resistance with d.c. 500 V (M $\Omega$ ):	20-30 °C measuring of	P
4	For basic insulation $\geq 2 \ M\Omega$ :	>100 MΩ	N
19 19	For double or reinforced insulation $\geq$ 4 M $\Omega$ :	>200 MΩ	P
All M	Between primary and secondary circuits in controlgear providing SELV, values in Annex L in IEC 61347-1	>200 MΩ	P

12 (12)	ELECTRIC STRENGTH	A A A A	P.
- (12)	Immediately after clause 11 electric strength test for 1 min	* * * * *	P
710 71	Basic insulation for SELV, test voltage 500 V	10 740 740 740	N
4	Working voltage ≤ 50 V, test voltage 500 V	x x x x	N
100	Working voltage > 50 V ≤ 1000 V, test voltage (V):	10 10 10 10	P
	Basic insulation, 2U + 1000 V	1480V/1MIN	Р
A A	Supplementary insulation, 2U + 1000 V		N
4 4	Double or reinforced insulation, 4U + 2000 V	3000V/1MIN	P



11	EN 61347-2-7		V 110
Clause	Requirement – Test	Result - Remark	Verdict
4		A A A	0 0
4	No flashover or breakdown	7 7 7	P
	Solid or thin sheet insulation for double or reinforced insulation fulfil the requirements in Annex N in IEC 61347-1	5625V/1MIN	P.Q
D.			Q Q
15 (-)	STARTING CONDITIONS	7 7 7 7	P
A STATE OF	- after the switching test the ballast operate the lamps at rated operating voltage	A SA SA	O PO
.ct	- the lamps start and operate from the appropriate mains operation reference ballast/circuit	4 4 4	P
2 2		2 2 2 2	3
16 (-)	LAMP CURRENT (only for fluorescent lamps)	* * *	N N
- X 2	Lamp current not exceeding 125 % of that delivered to the same lamp when operated with a reference controlgear	of of of	N
3			4
17 (-)	SUPPLY CURRENT	* * *	P
10t 2	At the rated operating voltage, the supply current from the battery differ not more than $\pm$ 15 % from the marked value when operated with reference lamp		P
4 4	, 4 4 4 4 4	7 4 4 4	4
18 (-)	MAXIMUM CURRENT IN ANY LEAD (WITH CATI	HODE PREHEATING)	N.O
	If fluorescent lamp, the current flowing in any cathode termination not exceed the value given in lamp data sheet of IEC 60081 and IEC 60901	(see appended table)	Z Z
4	A	AL AL AL	AL A
19 (-)	LAMP OPERATING CURRENT WAVEFORMS (or	nly for fluorescent lamps)	N.
Total S	The peak current does not exceed 1,7 times the rated lamp current specified on lamp data sheets of IEC 60081 and IEC 60901:	4 4 4	N
4	The peak current does not exceed 3 times the measured r.m.s. lamp current	* * * *	N



3	T. W.	3" 3" 3	~	EN 61347-2-7	710	7.10	7100	7.0	710
Clause	7	Requirement – Test	1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Resu	ılt - Remar	·k	4	Verdict

20 (-)	FUNCTIONAL SAFETY (EBLF) (only for fluorescent lamps)	N
310 31	The controlgear provide the necessary light output after change over to the emergency mode	N
Self Self	- lowest value measured at 60 s and V <sub>1</sub> or in steady conditions at V <sub>min</sub> be retained and at least the declared EBLF:	N
At A	- value measured at 5 s and V <sub>1</sub> reach at least 50 % of declared EBLF:	N

21 (-)	CHANGE-OVER OPERATION	P
4 4	Change over from normal to emergency mode at not less than 0,6 times and not greater than 0,85 times rated supply voltage	Р
10	Change over voltage (V) 150V	P
SY S	Supply reduced within 0,5 s to 0,6 times rated voltage, emergency lamps operated	P
	Switching of supply at 0,85 times rated voltage for 500 cycles 2 s "off" and 2 s "on". After these cycles, supply reduced to 0,6 times rated voltage. Emergency lamps operated during emergency mode and after the test.	P
Sill S	Controlgear with rest mode: automatic change- over from rest mode to normal mode at not greater than 0.9 times rated supply voltage	Par

22 (-)	RECHARGING DEVICE	7, 7,	3	P
ALET ALE	Recharging device provide the rated charge performance specified by the battery manufacturer to charge the battery within 24 h	set se	- 3.0	P
Stat State	Transformers in the recharging device comply with relevant parts of IEC 61558-2-1, IEC 61558-2-6 and IEC 61558-2-16	silt sile	- 350	P
22.1 (-)	Low temperature operation	1 1	F 74	- P
2° 2°	Charged battery for 48 h and then discharged until voltage indicated in table 2 is achieved at 20 °C ± 5 °C	7 - 2°	+ <del>*</del>	P
417	Charged battery at 0,9 times rated supply voltage at minimum ambient temperature for 24 h	311 711	- Lin	P



74, 74	EN 61347-2-7		4, 4,
Clause	Requirement – Test	Result - Remark	Verdict
10 1		M M M	10 10
	Simulating supply failure, lamp operated for rated duration of operation and at the end the battery voltage is at least V <sub>min</sub> according clause 20	A A A	
22.2 (-)	High temperature operation	5 6 6	P
Sill Si	Charged battery for 48 h and then discharged until voltage indicated in table 2 is achieved at 20 °C ± 5 °C	A SILVE SILVE	P.O
21 <sup>(1)</sup> 21	Charged at 0,9 times rated supply voltage at maximum ambient temperature for 24 h		P.0
Sill Si	Simulating supply failure, lamp operated for rated duration of operation and at the end the battery voltage is at least V <sub>min</sub> according clause 20	at sidt sidt.	SID PO
22.3 (-)	Abnormal operating condition	* * *	P.
	Recharging device operated at 1,1 times rated supply voltage and maximum marked ambient temperature with battery disconnected and output short-circuited		P
4 4	- no flames, molten material or flammable gases	5 5	P
4	After the test period and short-circuit removed	15 15 15	D.O
4, 4,	- the recharging device is safe	4 4 4	₹ P
and a	- normal recharge if self-resetting or user- replaceable protective devices	d ,d ,d	A Pot
22.4 (-)	Maximum output voltage		P
	Output voltage of recharging device ≤ DC50V at 1,1 times rated supply voltage with or without batteries connected (V)		P.O
22.5 (-)	Battery charge and discharge characteristics	A A A	PQ
4 4	Charged battery for 48 h and then discharged until voltage indicated in table 2 is achieved at 20 °C ± 5 °C	4 4 4	P P
4 4	Charged at 0,9 and 1,1 times rated supply voltage at 25 °C ± 2 °C for 24 h	* * * *	P
4" 4"	Current and voltage characteristics within those declared by controlgear manufacturer	1 7 1 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	P
22.7 (-)	Lamp failure	A A A	P



1.1 x 10<sup>-4</sup> C5A

	EN 61347-2-7		1111		
Clause	Requirement – Test	Result - Remark	Verdict		
10 1		19 19 19 19	14		
24	Lamp failure do not interrupt charging current to battery and not impair the operation of the battery	4 4 4 8	P		
31 3			21		
23 (-)	PROTECTION AGAINST EXCESSIVE DISCHARGE				
41° 4	Protection against polarity reversal of individual cell when the battery voltage has fallen to V <sub>low</sub> accordin		P		
.0	- Discharge current (A)	0.27	P		
- Ct - 2	Protection system prevents any further discharge been restored. Battery voltage not below V <sub>low</sub> and a) to c)		P		
3 3	- Battery voltage (V)	3.5	Р		

24 (-)	INDICATOR	*	*	*	P
14	Compliance with 22.7.7 of IEC 60598-2-22	100	1	14 1	P

- Discharge current (A) .....

25 (-)	REMOTE CONTROL, REST MODE, INHIBITION MODE	P
25.1 (-)	No other changeover device than the switch between the battery and emergency lighting lamps	4
4 4	Not contain manual or non-self-resetting switch isolating the emergency circuit from main supply	Р
25.2 (-)	If rest mode facility, operation automatically revert to normal mode if restoration of normal supply	P
Act and	If remote inhibiting facilities, provided with a means of connection to the remote inhibiting circuit	N. Z
25.3 (-)	If for remote inhibiting facilities, in the emergency mode, not influenced by short circuit or contact to earth in the wiring to the remote control	N
7 7	- Simulation of above faults in conjunction with tests of 28.2	N
25.4 (-)	Operation of remote control independent of the battery and mains supply	N
25.5 (-)	If rest mode facility in the emergency mode, not influenced by short circuit, contact to earth or interruption in the wiring to the remote control changeover device	P



	EN 61347-2-7		1100
Clause	Requirement – Test	Result - Remark	Verdict
19 1		10 10 10 10	100
7	- Simulation of above faults in conjunction with tests of 28.2	d d d	P
25.6 (-)	If rest mode or inhibiting facilities, in rest mode, current drain from batteries not exceed the values in 25.6		P
5 3	- Discharge current (A):	1.2 x 10 <sup>-4</sup> x C5A	P
*	* * * * * * *	* * * *	- 4
26 (-)	TEMPERATURE CYCLING TEST AND ENDURA	NCE TEST	P
26.a (-)	Temperature cycling test: 5 cycles;		Р
19	- 1 h at minimum ambient temperature (°C):	-10°C	P
4 4	- 1 h at maximum ambient temperature (°C):	50℃	P
26.b (-)	Endurance test 50 h at an ambient that produces tc; ambient temperature (°C):	<b>50</b> ℃	P
at	After test, controlgear restart and operate lamps at rated operating voltage	d d d d	P

27 (-)	POLARITY REVERSAL	d d d d	P
<u> </u>	If declared to be proof against polarity reversal, operating with reverse supply voltage for 1 h at maximum rated voltage		P
4 4	After test, supply connected correctly, start and operate lamps normally		Р

28 (14)	FAULT CONDITIONS	, 4	4	7	P
28.1 (14)	When operated under fault conditions the controlg	ear:	0 0	- 4	P
4. 4.	- does not emit flames or molten material	. 4	4	-	P
0	- does not produce flammable gases	4	4 4	- 0	P
4 4	- protection against accidental contact not impaired	1 3	1	4	P
300 300	Thermally protected controlgear does not exceed the marked temperature value			7	P



ALL A	EN 61347-2-7	21, 31, 34, 3	1, 74,
Clause	Requirement – Test	Result - Remark	Verdict
10 1		10 10 10 1	W 10
A C	Fault conditions: capacitors, resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected	(see appended table)	P
- (14.1)	Short-circuit of creepage distances and clearances if less than specified in clause 16 in Part 1 (except between live parts and accessible metal parts)	(see appended table)	P
4. 4. 4. A.	Creepage distances on printed boards less than specified in clause 16 in Part 1 provided with coating according to IEC 60664-3	* 3 * 3 * 4 * 4	P
- (14.2)	Short-circuit or interruption of semiconductor devices	(see appended table)	P
- (14.3)	Short-circuit across insulation consisting of lacquer, enamel or textile	(see appended table)	P
- (14.4)	Short-circuit across electrolytic capacitors	(see appended table)	Р
- (14.5)	After the tests has been carried out on three samp	oles:	P.O
5 5	The insulation resistance $\geq$ 1 M $\Omega$	: >200 MΩ	P
.0	No flammable gases	4 4 4	Q PQ
4	No accessible parts have become live	4. 4. 4. 4	P
10	During the tests, a five-layer tissue paper, where the test specimen is wrapped, does not ignite	at at at	P.O
- (14.6)	Relevant fault condition tests with high-power supply	4 4 4	_
28.2 (-)	Short circuit, contact to earth or interruption in the wiring of the normal supply not influenced the emergency mode	A A A	P
2 2	2 2 2 2 2 2	2 2 2 2	7
22 (15)	d a complete control of		4

29 (15)	CONSTRUCTION	- P
- (15.1)	Wood, cotton, silk, paper and similar fibrous material	Р
at	Wood, cotton, silk, paper and similar fibrous material not used as insulation	Р
- (15.2)	Printed circuits	P
ALT A	Printed circuits used as internal connections complies with clause 14	P
- (15.3)	Plugs and socket-outlets used in SELV or ELV circuits	N



400	EN 61347-2-7	1, 71, 71,	400
Clause	Requirement – Test	Result - Remark	Verdict
19 1		M M M	A TA
A P	No dangerous compatibility between output socket-outlet and a plug for socket-outlets for input circuit in relation to installation rules, voltages and frequencies	et set set	N N
ANT S	Plugs and socket-outlets for SELV comply with IEC 60906-3 and IEC 60884-2-4	at at at	N.
	Plugs and socket-outlets for SELV $\leq$ 3 A, $\leq$ 25 V r.m.s. or $\leq$ 60 V d.c. and $\leq$ 72 W comply with IEC 60906-3 and IEC 60884-2-4 or:	at late late	N A
ot.	- plugs not able to enter socket-outlets of other standardised system	d d d	N
£	- socket-outlets not admit plugs of other standardised system	4 4 ,	N
A X	- socket-outlets without protective earth	A A A	NO.
29.1.1 (-)	Compliance with 22.7.1, 22.7.7, 22.7.9, 22.7.11, 22.7.19 and 22.20 of IEC 60598-2-22 if applicable	* * * * *	P
29.1.2 (-)	Battery comply with Annex I	" Z" Z" .	P
4	Battery designed for at least 4 years of operation	* * *	P
10 1	Battery only use for emergency functions	0 10 10	P

30 (16)	CREEPAGE DISTANCES AND CLEARANCES		P
- (16)	Creepage distances and clearances according to Table 3 and 4, as appropriate	(see appended table)	4
71° 71	Controlgears providing SELV comply with L.1 in Annex L		Р
10 1	Insulating lining of metallic enclosures	1 1 1 1	N.
4 4	Basic insulation on printed boards tested according to clause 14		Ф.
21° 21	Distances subjected to both sinusoidal voltage as non-sinusoidal pulses not less than value in either Table 3 or 4		P
710 71	Creepage distances not less than minimum clearance	10 710 710 710	P

51 (17) SCREWS, CORRENT-CARRING FARTS AND CONNECTIONS	31 (17)	SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS	P
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3, 3,	EN 61347-2-7		11
Clause	Requirement – Test	Result - Remark	Verdic
14 1			1
4 4	Screws, current-carrying parts and connections in (clause numbers between parentheses refer to IEC		P
(4.11)	Electrical connections	21, 21, 21, 21,	P
(4.11.1)	Contact pressure	* * * *	N
(4.11.2)	Screws:	the the the the	N
1	- self-tapping screws	+ + .	N
ACT A	- thread-cutting screws		N
(4.11.3)	Screw locking:	, 4 4 4	N
, CT .	- spring washer	A A A A	N.
4 4	- rivets	4. 4. 4.	N
(4.11.4)	Material of current-carrying parts	0 0 0 0	P O
(4.11.5)	No contact to wood or mounting surface	2, 2, 2, 2,	Р
(4.11.6)	Electro-mechanical contact systems	* * * * *	- N
(4.12)	Mechanical connections and glands	40 40 40 40	N
(4.12.1)	Screws not made of soft metal	at at at a	N
14 1	Screws of insulating material		N
4 4	Torque test: torque (Nm); part:	4 4 4	N
-CT	Torque test: torque (Nm); part:	# # # A	N.
4 4	Torque test: torque (Nm); part	4. 4. 4.	N
(4.12.2)	Screws with diameter < 3 mm screwed into metal	of of of o	N
(4.12.4)	Locked connections:	7. 7. 7. 7.	N
*	- fixed arms; torque (Nm):	* * * * *	- N
11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	- lampholder; torque (Nm)	1	N
4	- push-button switches; torque 0,8 Nm	x x x x	N
(4.12.5)	Screwed glands; force (Nm):	W W W W	N

32 (18)	RESISTANCE TO HEAT, FIRE AND TRACKING		P.
- (18.1)	Ball-pressure test:	4 4 4	Р
ANT AND		Enclosure: 75°C, measured: 0.9mm<2mm	P



317	EN 61347-2-7		
Clause	Requirement – Test	Result - Remark	Verdict
14 1			1
P C	- part tested; temperature (°C):	Bobbin : 125°C, measured: 1.1mm<2mm	P
7 3	- part tested; temperature (°C):	Terminal block: 125°C, measured: 0.8mm<2mm	P
- (18.2)	Test of printed boards:		N
5 5	- part tested:	4 4 4	N
4	- part tested:		N
- (18.3)	Glow-wire test (650°C):	2 2 2 2	P
4	- part tested:	Enclosure, no flame	P
31 3	- part tested:	Connector cover, no flame	Р
- (18.4)	Needle flame test (10 s):	* * * *	P
4 4	- part tested:		Р
at	- part tested	Terminal block	Р
- ( <mark>1</mark> 8.5)	Tracking test:		N
5 4	- part tested:	. 4 4 4	N
4	- part tested:		Z
33 (19)	RESISTANCE TO CORROSION	2. 4. 4. 4.	2
.0	- test according 4.18.1 of IEC 60598-1	d d d d	N
<u> </u>	- adequate varnish on the outer surface	. 5. 5. 5.	N
x	* * * * * * *	* * * *	+ >
34	Abnormal lamp conditions		Р
34.1	Controlgear not impair safety operated under abnormal conditions	d d d a	P
34.2	Abnormal conditions for controlgear for fluorescent	lamps	N
0	a) lamp not inserted	d d d d	- N
3 3	b) lamp does not start because cathode is broken	1 2 2 2	N
*	c) de-active lamp	* * * *	N
110	d) lamp operates with rectifying effect		N
34.3	Abnormal conditions for d.c. supplied electronic stellamps	ep-down convertors for filament	N



100	EN 61347-2-7		76
Clause	Requirement – Test	Result - Remark	Verdict
10		A TO TO TO	0 10
545	Output voltage of the convertor not exceed 115% of rated output voltage under abnormal conditions	4 4 4	N
3	a) lamp not inserted		N
*	b) twice the number of lamps	* * *	N
150	c) output terminals short-circuited	the time time time	N
34.4	Abnormal conditions for controlgear for d.c. supplied LED modules	ed electronic controlgear for	Р
34.4.1	Length of output cable 20 cm and 200 cm in 34.4.2 or 34.4.3		Р
34.4.2	Controlgear of constant voltage type	P P P P	N
4 4	a) no LED module inserted	, 4 4 4	N
4	b) double LED modules in parallel	A A A A	N.
4 4	c) output terminals short-circuited	. 4. 4. 4.	N
34.4.3	Controlgear of constant current type	d d d d	P
7, 3	a) no LED module inserted (and all at same time)	1 21 21 21	Р
*	b) double LED modules in series	* * *	- P
314	c) output terminals short-circuited		Р
34.5	Abnormal conditions for ballast for d.c. supplied eledischarge lamps	ectronic controlgear for	N
4 4	a) lamp not inserted or does not ignite	1. 1. 1. 1.	N
0	b) burner leaks	d d d	N N
3 3	c) lamp operates, but rectifies	1 21 21 21	N
34.6	Compliance	* * *	P
100	- does not emit flames or molten material	The state of	P
4	- does not produce flammable gases	4 4 4	Р
21 <sup>(1)</sup> 2	- protection against accidental contact according 10.1 of IEC 61347-1 not impaired		P
*	- insulation resistance $\geq$ 1 M $\Omega$ :	> 200 MΩ	P

35	Protection of associated components	N
35.1	Peak voltage limits	N



1	EN 61347-	2-7	74, 74,
Clause	Requirement – Test	Result - Remark	Verdict
10		A TA TA TA	10 10
54	Voltage at output terminals not exceed max permitted peak value in Table 2 (V)		N
35.2	Working voltage limits	7 21 21 21	N
STOP 3	Voltage at output terminals not exceed dec maximum working voltage under normal op and from 5 s after start (V)	perating,	A SA
35.3	Compliance	* * * *	N A
4 ×	Voltage in 35.1 and 35.2 in compliance with limits, measured between output terminal a earth		N.
11 ×	Voltage in 35.1 and 35.2 in compliance with limits, measured between output terminals voltage present across insulation barriers wassociated components	if the	N. N.

18	TABLE: ma	aximum curre	ent in any lea	d d	0 0	4	.0	N.
4. 4.	Test voltage	e (V):		4 4	7.	4 4		N
I 1 (mA)	I 2 (mA)	I 3 (mA)	I 4 (mA)	I 5 (mA)	I 6 (mA)	I 7 (mA)	1.8	3 (mA)
31 31	31	2" 2"	21	3 3	3.	3 3		7

14	TABLE: tests of fault conditions	P
Part	Simulated fault	Hazard
C6	s-c, unit shut down, no hazard occur	NO
C12	s-c, unit shut down, no hazard occur	NO
D1 🗸	s-c, unit shut down, no hazard occur	NO
BD1	s-c, fuse broken, no hazard occur	NO
Q1	s-c, fuse broken, no hazard occur	NO
L1	s-c, fuse broken, no hazard occur	NO
C7	s-c, fuse broken, no hazard occur	NO
Output	s-c, unit shut down, no hazard occur	NO



1	1100	110	1100	110	EN 61347-2-7	1100	110	1100	1100	1100
Clause	J.F	Requireme	nt – Test	-لد	at at	Resul	t - Remar	k	4	Verdict

30 (16) TABLES: Creepage distances a	nd clearan	ces	- 0	- 4	.0	P
Table 3 Minimum distances (mm) for a.	c. (50/60 H	z) sinusoi	idal volta	ges	2	P
RMS working voltage (V) not exceeding	50	150	250	500	750	1000
Creepage distances	70	35	Till	7,1	21	7
Required basic insulation, PTI ≥ 600	0,6	0,8	1,5	3	4	5,5
Measured	1	110	710	1110	110	1100
Required basic insulation, PTI < 600	1,2	1,6	2,5	5	8	10
Measured	4	7 10	>4.7	10	10	10
Required supplementary insulation PTI ≥ 600	-	0,8	1,5	3	4	5,5
Measured	4 4	F 10	4	.45	.0	- 4
Required supplementary insulation PTI < 600	-	1,6	2,5	5	8	10
Measured	0 0	- 0	- 0	- 0		4
Required reinforced insulation	-	3,2	5	6	8	11
Measured	* 0	+ 0	- >7	- 4	*	- 1
Clearances	7.0	717	3,0	7,1	3,00	711
Required basic insulation	0,2	0,8	1,5	3	4	5,5
Measured	4 14	1	>4.7	14	14	164
Required supplementary insulation	-	0,8	1,5	3	4	5,5
Measured	V 19	5 0	-,0		10	R
Required reinforced insulation	-	1,6	3	6	8	11
Measured	d .0	- 0	>7	- 4	.0	
Table 4 Minimum distances (mm) for no	on-sinusoid	dal pulse	voltages	3	3	N



RE RE RE RE	E	N 61347-2	-7		7	100	100
Clause Requirement – Test		_		esult - Re	mark	-	Verdict
NO NO NO NO NO	O X	Ø 1	T 1	F	7 10	10	10
Rated pulse voltage (peak kV)	2,0	2,5	3,0	4,0	5,0	6,0	8,0
Required clearances	1,0	1,5	2	3	4	5,5	8
Measured	-	5	4.	5.	4	5	7
Rated pulse voltage (peak kV)	10	12	15	20	25	30	40
Required clearances	11	14	18	25	33	40	60
Measured	大	*	*	+ 1	F 1	- 4	- 人
Rated pulse voltage (peak kV)	50	60	80	100	-	-	-
Required clearances	75	90	130	170	-	-	-
Measured	4 1	4	1	1	14	150	1

A.C.	ANNEX A IN PART 1: TEST TO ESTABLISH WHETHER A CONDUCTIVE PART IS A LIVE PART WHICH MAY CAUSE AN ELECTRIC SHOCK			
A.1	Comply with A.2 or A.3	- P		
A.2	Voltage ≤ 35 V peak or ≤ 60 V d.c:	P		
A.3	If voltage > 35 V peak or > 60 V d.c. or protective impendence device; touch current does not exceed 0,7 mA (peak) or 2 mA d.c.	N		
10	Comply with Annex G of IEC 60598-1	P		

C.II.	ANNEX C IN PART 1: PARTICULAR REQUIREMENTS FOR ELECTRONIC LAMP CONTROLGEAR WITH MEANS OF PROTECTION AGAINST OVERHEATING	N
C3	GENERAL REQUIREMENTS	N
C3.1	Thermal protection means integral with the controlgear, protected against mechanical damage	N
4 4	Renewable only by means of a tool	N
Sill Si	If function depending on polarity, for cord- connected equipment protection means in both leads	NUT
0	Thermal links comply with IEC 60691	N
31 31	Electrical controls comply with IEC 60730-2-3	N



100	EN 61347-2	-7	The The
Clause	Requirement – Test	Result - Remark	Verdict
10 1			10 10
C3.2	No risk of fire by breaking (clause C7)	4 6 6	N
C5	CLASSIFICATION		NO NO
4. 4	a) automatic resetting type	4. 4. 4.	4 -
4	b) manual resetting type	t & & &	.Ø -
7 - 5	c) non-renewable, non-resetting type	4 4 4	<u> </u>
4	d) renewable, non-resetting type	t d d d	A -
<u> </u>	e) other type of thermal protection; descript	ion:	<u> </u>
C6	MARKING	* * * *	N.
C6.1	Symbol for temperature declared thermally protected controlgear	4" 4" 4"	N. N.
C6.2	Declaration of the type of protection provide	ed of of	NO NO
C7 -	LIMITATION OF HEATING	4, 4, 4,	N
C7.1	Preselection test:	* * * * *	A NA
4	Test sample placed for at least 12 h in an o having temperature (t <sub>c</sub> - 5) K	oven	S N
10	No operation of the protection device		NO NO
C7.2	Functioning of protection means:	4 4 4	→ N
Sill S	Normal operation of the sample in a test enclosure according to Annex D at an ambitemperature such that (t <sub>c</sub> +0; -5) °C is obtain		ALC: NO
4	No operation of the protection device		NO NO
4 4	Introducing of the most onerous test condition determined during test of clause 14	ion & & &	S N
4 ×	Output of windings connected to the mains short-circuited, and other part of the control operated under normal conditions		N.C.
31 <sup>10</sup> 3	Increasing of the current through the windir continuously until operation of the protectio means		Zico No
4 4	Continuous measuring of the highest surfact temperature	ce disconnection of the control of t	N.
A. T.	Controlgear according to C5 a) or C5 e) opuntil stable conditions are achieved	erated	No.



(A.4)

Sealed nickel cadmium batteries

1	EN 61347-2-7		11
Clause	Requirement – Test	Result - Remark	Verdict
10 1			7 34
ST.	Automatic-resetting thermal protectors working 3 times	of of of	N
31 3	Controlgear according to C5 b) working 6 times	1 21 21 21	N
, at	Controlgear according to C5 c) and C5) d) working once	d d d d	+ N
4 4	Highest temperature does not exceed the marked value	* * * *	N
4. 4.	Any overshoot of 10% over the marked value within 15 min	41 41 41	N
.0		D D D A	· .0
D. Z	ANNEX D IN PART 1: REQUIREMENTS FOR CAR TESTS OF THERMALLY PROTECTED LAMP COI		N
31 <sup>(1)</sup> 3	Tests in C7 performed in accordance with Annex D, if applicable		N
0	* * * * * * *	ot of ot o	+ 0
E S	ANNEX F IN PART 1: DRAUGHT-PROOF ENCLO	SURE S	Р
At .	Draught-proof enclosure in accordance with the description	# # # #	P
4 4	Dimensions of the enclosure	4 4 4	P
0	Other design; description	0 0 0 0	P
<u> </u>			31
H	ANNEX H IN PART 1: TESTS	* * * *	P
	All tests performed in accordance with the advice given in Annex H, if applicable	" 4" 4" 4"	P
AT .			× .0
t(-)	ANNEX I IN THIS PART 2: BATTERIES FOR EME (Annex numbers between parentheses refer to IEC		+ P
(A.1)	Type of batteries	4 4 5 5	P
(A.2)	Conform to relevant standard		Р
10	Operate within specific tolerance	0 0 0 0	P
(A.3)	Battery capacity for rated duration up to time of replacement	4 4 4	P



4 4	EN 61347-2-7		4, 4,
Clause	Requirement – Test	Result - Remark	Verdict
19 1		M M M	4 14
(A.4.1)	Conform to IEC 60285	4 4 4	N
(A.4.2.a)	Maximum ambient air temperature 50 °C		NO.
(A.4.2.b)	Maximum overcharge rate 0,08 C <sub>5</sub> A	, 4, 4, 4	N
(A.4.2.c)	Minimum ambient temperature 5 °C	D D D	O NO
(A.4.2.d)	Maximum discharge rates for 1 h: 0,6 $C_5A$ and 3 h: 0,25 $C_5A$	4 4 4 4 A	N
(A.5)	Valve regulated lead acid batteries	19 19 19 1	N
(A.5.1)	Conform to IEC 60869-2 or IEC 61056-1	4 4 4	N
(A.5.2.a)	Maximum ambient air temperature 30 °C with temperature compensation or 25 °C without temperature compensation	\$10 \$10 \$	NO
(A.5.2.b)	Minimum recharge current 0,4 C <sub>20</sub>		N/V
(A.5.2.c)	Maximum discharge rates for 1 h: 0,4 C <sub>20</sub> and 3 h: 0,17 C <sub>20</sub>	* * * *	N
(A.5.2.d)	Maximum r.m.s. ripple current 0,1 C <sub>20</sub>	5" 5" 5" 3	N
(A.5.2.e)	Minimum ambient temperature 5 °C	* * *	N
(A.6)	Ambient temperature of cells measured after 48 h	W W W	P
(A.7)	Evidence of alternative operating parameters		Р

ANNEX J: REST MODE AND INHIBITION MODE FACILITIES (ANNEX D IN IEC 60598-2-22)	P
Rest mode:	P
a) only operate when normal supply has failed	- P
b) remote control wiring is fail-safe	P
c) normal mode at restoration of normal supply	Р
Inhibition mode:	N
a) supply failure or disconnection not cause an unwanted discharge	N
b) protection against interruption of remote control wiring	N
safety circuits independent of other circuits	P
safety circuits not pass through locations exposed to fire risk or explosion risk	P
	(ANNEX D IN IEC 60598-2-22)  Rest mode:  a) only operate when normal supply has failed  b) remote control wiring is fail-safe  c) normal mode at restoration of normal supply  Inhibition mode:  a) supply failure or disconnection not cause an unwanted discharge  b) protection against interruption of remote control wiring  1) safety circuits independent of other circuits  2) safety circuits not pass through locations



Clause	Requirement – Test	Result - Remark	Verdict
10	20	10 10 10 10 10	140
	3) protection against overload may be omitted	5 5 5 5	_
3107 3	4) overcurrent in one circuit not impair circuits of safety services	50 50 50 50	P
Sill S	<li>5) switchgear and controlgear clearly identified and in locations accessible only to competent persons</li>	set set set se	Pol
*	6) Alarm devices clearly identified	* * * *	- P
<u> </u>			
K	ANNEX K IN PART 1: BALLASTS INCORPORATESTING FUNCTION FOR EMERGENCY LIGHT		N
4 4	Fulfil relevant requirements of Table K.1	1. 1. 1. 1.	N
0	* * * * * * * *	d d d 0	- 0
F. 5	ANNEX L IN PART 1: PARTICULAR ADDITIONAL CONTROLGEAR PROVIDING SELV	AL REQUIREMENTS FOR	P
L.3	Classification	AT AT AT A	F 20
4 4	Class I	Yes ⊠ No □	
.0	Class II	Yes ☐ No ⊠	_
4	Class III	Yes ☐ No ⊠	_
of	non-inherently short circuit proof controlgear	Yes ☐ No ☒	_
31 3	inherently short circuit proof controlgear	Yes ⊠ No □	_
*	fail safe controlgear	Yes ⊠ No □	_
3 <sup>(V</sup> 3	non-short-circuit proof controlgear	Yes No No	_
L.4	Marking	* * * * *	P
100	Adequate symbols are used	10 10 10 10	P
L.5	Protection against electric shock		Р
A .	Comply with 9.2 of IEC 61558-1	10 10 10 10	P
L.6	Heating	5 5 5 5	P
1	No excessive temperatures in normal use		P
4.	Value if capacitor t <sub>c</sub> marked	4. 4. 4.	_
1	Winding insulation classified as Class	Class B	



11	EN 61347-2-7	1, 1, 1,	40, 40,
Clause	Requirement – Test	Result - Remark	Verdict
14 1		19 19 19	10 10
4	Comply with tests of clause 14 of IEC 61558-1 with adjustments	d d d	P
L.7	Short-circuit and overload protection	21 21	a P
at .	Comply with tests of clause 15 of IEC 61558-1 with adjustments	at at at	A PA
L.8	Insulation resistance and electric strength	, 4, 4	4
L.8.1	Conditioned 48 h between 91 % and 95 %	0 0 0	A P.O
L.8.2	Insulation resistance	7, 7,	P
At .	Between input- and output circuits not less than 5 _MΩ:	215 ΜΩ	P.O
PA P	Between metal parts of class II convertors which are separated from live parts by basic insulation only and the body not less than 5 M $\Omega$ :	207 ΜΩ	P
ALT .	Between metal foil in contact with the inner and outer surfaces of enclosures of insulating material not less than 2 M $\Omega$	115 ΜΩ	P
L.8.3	Electric strength		Р
31 <sup>(1)</sup> 3	Between live parts of input circuits and live parts of output circuits:	3000V	P.0
*	2) Over basic or supplementary insulation between	14 4 4	A- N
3,00	a) live parts having different polarity	1, 7, 7,	N
d	b) live parts and body if intended to be connected to protective earth:	d d d	N
4 4	c) accessible metal parts and a metal rod of the same diameter as the flexible cable or cord:	4 4 4 A	N N
10 1	d) live parts and an intermediate metal part:	Q 10 10	N
	e) intermediate metal parts and the body:	4 4	N
10	f) each input circuit and all other input circuits:		N/V
4 4	Over reinforced insulation between the body and live parts:	3000V	P
L.9	Construction	10 10 10	P
L.9.1	Transformer comply with 19.12 of IEC 61558-1 and 19 of IEC 61558-2-6	d d d	P
5 5	HF transformer comply with 19 of IEC 61558-2-16	2 2	- N



	EN 61347-2-7		16
Clause	Requirement – Test	Result - Remark	Verdict
19		10 10 10 10	300
L.10	Components	466	P
31 <sup>(1)</sup> 3	Protective devices comply with 20.6 – 20.11 of IEC 61558-1		P
L.11	Creepage distances and clearances	* * * *	- P
1 1	Insulation between input and output circuits, bas	sic insulation:	Р
	a) measured values ≥ specified values (mm):	1 1	N
19	b) measured values ≥ specified values (mm):		N
4 4	c) measured values ≥ specified values (mm):	5 5 5	N
.0	2. Insulation between input and output circuits, dou	uble or reinforced insulation:	P.Q
7. 5	a) measured values > specified values (mm):	cl>4.7mm cr>5.0mm	P
11	b) measured values ≥ specified values (mm):	10 740 740 740	N
4	c) measured values > specified values (mm):	AL AL AL A	N
10 1	3. Insulation between adjacent input circuits	10 10 10 10 10	P
The second	- measured values ≥ specified values (mm):	cl>0.4mm cr>2.6mm	P
3 3	3. Insulation between adjacent output circuits	2 7 7 7	Р
at a	- measured values ≥ specified values (mm):	cl>0.2mm cr>1.2mm	P
	4. Insulation between terminals for external connection	ction:	N
10	- measured values > specified values (mm):		N
5 4	5. Basic or supplementary insulation:	4 4 4	Р
3. CT _3	a) measured values ≥ specified values (mm):	cl>2.5mm cr>2.6mm	P.Q
*	b) measured values > specified values (mm):	* * * *	- N
1	c) measured values > specified values (mm):	10 10 10 10	N
4	d) measured values > specified values (mm):	AL AL AL A	N
10	e) measured values > specified values (mm):		N
	6. Reinforced insulation or insulation:	444	Р
51 <sup>(1)</sup> 5	Between body and output circuit: measured values > specified values (mm)	cl>5.0mm cr>4.7mm	P.Q



10 10	EN 61347-2-7	10 10 10	7.00	710
Clause	Requirement – Test	Result - Remark	7	Verdict
19 19		19 19 19	14	14
A A	Between body and output circuit if provision against transient voltages: measured values > specified values (mm):	of the to	10	Z
4 4	7. Distance through insulation:	4 4	7	Р
A 10	a) measured values ≥ specified values (mm):	>0.9mm	10	P.
4 4	b) measured values ≥ specified values (mm):	4 4	7	N
0 0	c) measured values ≥ specified values (mm):	0 0 0	4	N

ANNEX N IN PART 1: REQUIREMENTS FOR INSULATION MATERIALS USED FOR DOUBLE OR REINFORCED INSULATION					
N.4	General requirements	N			
N.4.1	Material comply with IEC 60085 and IEC 60216 series	N			
N.4.2	Solid insulation	N			
5 5	Electric strength test at least 5 kV or 1,35 x test voltage in Table N.1	N			
4. 4.	If not classified according IEC 60085 and IEC 60216 series: Electric strength test increased 10 % of 5,5 kV or 1,5 x test voltage in Table N.1	N			
N.4.3	Thin sheet insulation	N			
N.4.3.1	Thickness and composition of thin sheet insulation	N			
4. 4. 4.	- Inside the ballast and not subjected to handling or abrasion during the production and during maintenance	N			
41° 4	- Non-separated layers: Min. 3 layers and fulfil mandrel test of 150N	N			
All I	- Separated layers: Min. 2 layers and each layer fulfil mandrel test of 50N	N			
at	- Separated layers (alternative): Min. 3 layers and 2/3 of the layers fulfil mandrel test of 100N	N			
N.4.3.2	Mandrel test (electric strength test during mechanical stress)	N			
1	Electric strength test after mandrel test:	N			
4	- Non-separated layers: min. 5 kV or 1,35 x test voltage in Table N.1	N			



1100	EN 61347-2-7		10
Clause	Requirement – Test	Result - Remark	Verdict
14		19 19 19 19	14
Tot .	- 2/3 of min. 3 separated layers: min. 5 kV or 1,25 x test voltage in Table N.1	at at at a	N
- T	- one of 2 separated layers: min. 5 kV or 1,25 x test voltage in Table N.1	4 4 4	N
	No flashover or breakdown occurred		N

O. C.	ANNEX O: ADDITIONAL REQUIREMENTS FOR BUILT-IN ELECTRONIC CONTROLGEAR WITH DOUBLE OR REINFORCED INSULATION (IEC 61347-1)							
O.6	Marking A A A A A A A A A A A A A A A A A A A							
	Marking according clause 7 (7)	See clause 7	P					
ot	Special symbol	d d d d	- P					
317	Meaning of the special symbol explained in catalogue							
0.7	Protection against accidental contact with live parts							
5 4	Requirements of clause 8 (10) See clause 8							
AND .	Test finger not possible to make contact with basic insulated metal parts							
0.8	Terminals							
10	Clause 9 (8)	See clause 9	N					
0.9	Provision for earthing							
100	Functional earthing terminals comply with clause 9 of part 1							
4	No protective earthing terminal	* * * *	N					
0.10	Moisture resistance and insulation	70 70 70 70	P					
	Clause 11 (11)	See clause 11	Р					
0.11	Electric strength		P					
5 4	Clause 12 (12)	See clause 12	P					
0.13	Fault conditions	0 0 0 0	P.O					
5	Clause 14 (14)	See clause 14	Р					



1	EN 61347-2-7		4 4				
Clause	Requirement – Test	Result - Remark	Verdict				
19		to to to	A TO				
Zifit Z	End of test, between live part and accessible metal parts or external parts of insulating material in contact with the supporting surface comply with dielectric strength test reduced to 35 % of values according Table 1 in part 1						
	Insulation resistance according to O.10 between live part and accessible metal parts or external parts of insulating material in contact with the supporting surface not less than 4 $M\Omega$		P				
0.14	Construction	7. 4. 4.	P				
	Clause 17 (15)	See clause 17	O PO				
4 4	Accessible metal parts insulated from live parts by double or reinforced insulation  Live part insulated from supporting surface in contact with external faces by double or reinforced insulation						
4 ×							
O.15	Creepage distances and clearances						
5 5	Clause 18 (16)	See clause 18	P				
3107 3	Comply with corresponding values for luminaries in IEC 60598-1	A SA SA S	PO				
O.16	Screws, current-carrying parts and connection	is at at at	AL PA				
14	Clause 19 (17)	See clause 19	P				
0.17	Resistance to heat and fire		Р				
A.	Clause 20 (18)	See clause 20	P				
0.18	Resistance to corrosion	4 4 4	P				
4	Clause 21 (19)	See clause 21	O PO				



110	7100	110	710	110	EN 61347-2-7	110	110	110	1,00	110
Clause	7	Requireme	ent – Test	1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Result	- Remar	k	1	Verdict

1	ANNEX 1: screw terminals (part of the controlgear)	AL 1	L .4	N
(14)	SCREW TERMINALS	0 10	14	N
(14.2)	Type of terminal:	4	7	
A A	Rated current (A):	0 0	- 40	_
(14.3.2.1)	One or more conductors	4	4	N
(14.3.2.2)	Special preparation	0.0	- 4	N
(14.3.2.3)	Terminal size	7	7	N
4	Cross-sectional area (mm²):	x d	- 4	N .
(14.3.3)	Conductor space (mm):	21	35	N
(14.4)	Mechanical tests	x \	- 4	N
(14.4.1)	Minimum distance	0 10	14	N
(14.4.2)	Cannot slip out	-		N
(14.4.3)	Special preparation	0 ,0	. 10	N
(14.4.4)	Nominal diameter of thread (metric ISO thread) . : M	5	-	N
4	External wiring	0 0	- 4	N
4. 4.	No soft metal	4	2	N
(14.4.5)	Corrosion	ot 0	- 0	N
(14.4.6)	Nominal diameter of thread (mm):	31	7,1	N
*	Torque (Nm):	x 4	- 4	N L
(14.4.7)	Between metal surfaces	4 14	110	N
1	Lug terminal	- N		N
19 1	Mantle terminal	0 10	. 10	N
4 4	Pull test; pull (N):	4	4	N
(14.4.8)	Without undue damage	0 0		N

0	ANNEX 2: screwless terminals (part of the controlgear)	N
(15)	SCREWLESS TERMINALS (IEC 60598-1)	N
(15.2)	Type of terminal:	_
317 3	Rated current (A):	_



40 40	EN 61347-2-7		100
Clause	Requirement – Test	Result - Remark	Verdict
10 1		10 10 10	10 10
(15.3.1)	Material	4 4 4	N
(15.3.2)	Clamping	0 0 0	NO NO
(15.3.3)	Stop	4 4 4	N
(15.3.4)	Unprepared conductors		N/
(15.3.5)	Pressure on insulating material	2 2 2	S N
(15.3.6)	Clear connection method	* * * *	A- NA
(15.3.7)	Clamping independently	31, 34, 34,	N
(15.3.8)	Fixed in position	- * * *	N
(15.3.10)	Conductor size	10 10 10	N.
	Type of conductor	4 4 4	N
(15.5)	Terminals and connections for internal wiring		N/V
(15.5.1)	Mechanical tests	4 4 4	S N
(15.5.1.1.1)	Pull test spring-type terminals (4 N, 4 samples):		NO NO
(15.5.1.1.2)	Pull test pin or tab terminals (4 N, 4 samples):	- 4 4 4	N
7, 7,	Insertion force not exceeding 50 N	4 4 4	N
(15.5.1.2)	Permanent connections: pull-off test (20 N)	* * * *	N N
(15.6)	Electrical tests	21 21 21 11 11 11 11 11 11 11 11 11 11 1	N
+	Voltage drop (mV) after 1 h (4 samples)	: + + +	N
1100 110	Voltage drop of two inseparable joints	10 10 10	N.
	Number of cycles		_
Z. Z.	Voltage drop (mV) after 10th alt. 25th cycle (4 samples)		NO.
At A	Voltage drop (mV) after 50th alt. 100th cycle (4 samples)		N N
4 4	After ageing, voltage drop (mV) after 10th alt. 25th cycle (4 samples)	*****	N
-1" -1"	After ageing, voltage drop (mV) after 50th alt. 100th cycle (4 samples)	- The Thirty	N
(15.7)	Terminals external wiring		Ø NØ
2. 4.	Terminal size and rating	4 4 4	N



110	Y .	1	W .		EN 6134	7-2-7	114	114	1110	1100	1100	
Clause	Red	quirement -	- Test	1	- AL	1	Resu	Result - Remark				
19 1	Ø .	A S	Q ,	0	NO.	10	10	10	19	10	19	
(15.8.1)		test spring nections (4					Tot.	P of	P At	1	N	
4 4		test pin or (N)						7	7	7	N	
(15.9)	Cor	ontact resistance test								.0	N	
4 4	Volt	tage drop (	mV) afte	r1h	7	7	5	4	4	4	N	
terminal		1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)			1	1.		5	2	3	7	7	7	
d .	Voltage dro	p of two	insepara	able joint	s	4	4	1	1	- N		
31" 31	√oltage dro	p after 1	0th alt. 2	25th cycl	е	31	211	7,1	7,1	N		
*	Max. allowed voltage drop (mV):						*	_				
terminal		1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)			-				1	-				
10 1	Ø y	Voltage drop after 50th alt. 100th cycle								N		
5 5	. 4	Max. allowe	ed voltag	je drop (i	mV)	:	4	4	4	4	_	
terminal		1	2	3	4	5	6	7	8	9	10	
voltage drop	(mV)	2		. <		5	2.	2	5.	2	4.	
0	4	Continued	ageing: v	voltage d	rop after	10th alt.	25th cy	cle 🗡	4	0	N	
3" 3"	. 1	Max. allowe	ed voltag	je drop (i	mV)	:	30	31	25	7,1	_	
terminal		1	2	3	4	5	6	7	8	9	10	
voltage drop	(mV)	3	~ 3	~	· ·	· ·	1	A.V	11	1	11	
1	1	Continued	ageing: v	oltage d	rop after	50th alt.	100th c	ycle	\ AL	1	N	
A A		Max. allowed voltage drop (mV):						1.47	_			
terminal		1	2	3	4	5	6	7	8	9	10	
voltage drop	voltage drop (mV)				0	0	0	.0	4	4	.0	



## Attachment photos

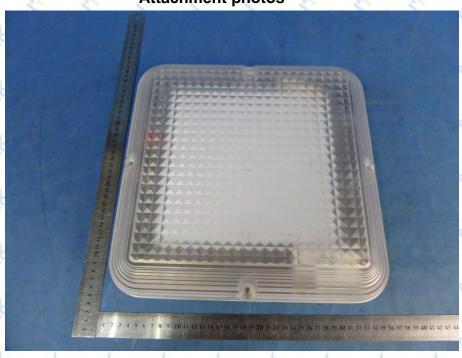


Figure 1

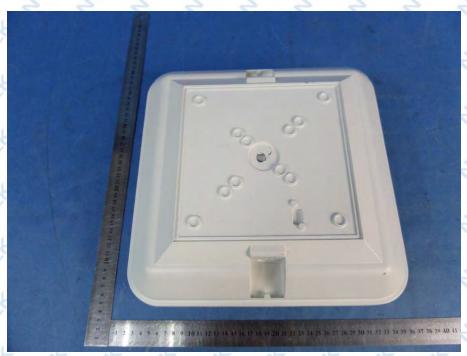


Figure 2



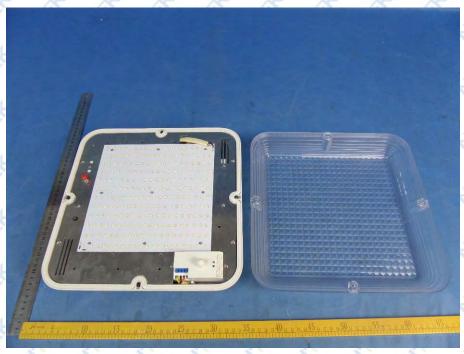


Figure 3



Figure 4





Figure 5



Figure 6 LED emergency convert



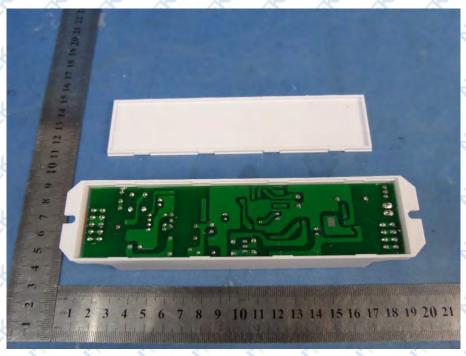


Figure 7 LED emergency convert



Figure 7 LED driver



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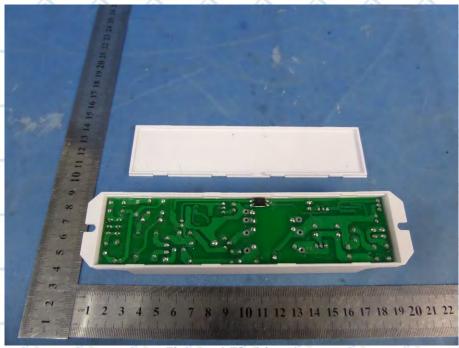


Figure 9 LED driver





Figure 9 series model



Figure 10 series model

\*\*\*\*\*END OF REPORT\*\*\*

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