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TEST REPORT EN 60598-2-20 Luminaires Part 2: Particular requirements: Section Twenty – Lighting Chains	
Report Reference No	125335
Date of issue	2009-08-17
Total number of pages	35
CB/CCA Testing Laboratory	Nemko GmbH & Co. KG
Address	Reetzstraße 58, D - 76327 Pfinztal
Applicant's name	Yueqing Mingyang Decorative Lamp Co., Ltd.
Address	No.268 Tianpu Road Caitou Tiancheng Yueqing, Zhejiang, China.
Test specification:	
Standard	EN 60598-2-20:1997+A1:1998+A2:2004 used in conjunction with EN 60598-1:2004+A1:2006
Test procedure	GS / CE
Non-standard test method	N/A
Test Report Form No	IECEN60598_2_20B
Test Report Form(s) Originator	Intertek Semko AB
Master TRF	Dated 2007-06
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Test item description	Lighting chain for indoor use
Trade Mark	Yueqing Mingyang Decorative Lamp Co., Ltd.
Manufacturer	As applicant
Model/Type reference	L-318-.L series (see page 6 for detailed explanation)
Ratings	Max. 28.3W, 230V~ 50Hz, 10-200 bulbs per 2.4-24V / 35-120mA, push-in, Class II, IP20, F-symbol, non-bridged bulbs, non-rewireable, optional with decorations.



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Name and address of production site (factory):

As applicant / manufacturer



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Testing procedure and testing location:	
<input checked="" type="checkbox"/> CB/CCA Testing Laboratory:	Nemko GmbH & Co. KG
Testing location/ address	Reetzstraße 58, D - 76327 Pfinztal
<input type="checkbox"/> Associated CB Laboratory:	
Testing location/ address	
Tested by (name + signature)	Vanessa Wang
Approved by (+ signature).....	Ben Pei
<input type="checkbox"/> Testing procedure: TMP	
Tested by (name + signature)	
Approved by (+ signature).....	
Testing location/ address	
<input type="checkbox"/> Testing procedure: WMT	
Tested by (name + signature)	
Witnessed by (+ signature)	
Approved by (+ signature).....	
Testing location/ address	
<input type="checkbox"/> Testing procedure: SMT	
Tested by (name + signature)	
Approved by (+ signature).....	
Supervised by (+ signature)	
Testing location/ address	
<input type="checkbox"/> Testing procedure: RMT	
Tested by (name + signature)	
Approved by (+ signature).....	
Supervised by (+ signature)	
Testing location/ address	



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Summary of testing:	
Tests performed (name of test and test clause): The sample(s) tested complies with the requirements of EN 60598-2-20 and EN 60598-1.	Testing location: Nemko GmbH & Co. KG Reetzstraße 58, D - 76327 Pfinztal
Marking label, user manual, packing text: Instructions and marking shall be in a language acceptable for the country where the equipment is to be used.	
Mains plug: If the equipment shall be used with a special mains plug which is not listed in the component list (e.g. United Kingdom), samples of the modified product must be subject to a test according to the relevant clauses of the product standard.	
Other product properties: Depending on the country where the equipment is to be used, national deviations may be considered. Samples of the modified product may be tested again according to relevant clauses of the product standard, modified by national deviations.	
Summary of compliance with National Differences:	
Compliance with European Special National Conditions, Annex ZB and Annex ZC, is recorded at the end of this report.	
List of attachments:	
ANNEX 1: Components	
ANNEX 2: Temperature measurements	
ANNEX 5: Instruction manual and packing information	
ANNEX 6: Pictures	
ANNEX 7: National Differences or Group Differences	



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Copy of marking plate

Yueqing Mingyang Decorative Lamp Co., Ltd.	
Modell: L-318-10L 230V~, 50Hz, 7.7W 10 Lampen: 24V / 35mA IP 20	    
1. Vor dem Lampenwechsel Netzstecker ziehen ! 2. Nur zur Verwendung in Innenräumen ! 3. Defekte Lampen müssen umgehend durch Lampen mit gleicher Spannungs- und Leistungsangabe ersetzen, um unzulässige Erwärmung zu vermeiden ! 4. Diese Lichterkette darf nicht elektrisch mit anderen Lichterketten verbunden werden ! 5. Es sind nur Ersatzlampen der gleichen Sorte zu verwenden, die mit dieser Lichterkette zur Verfügung gestellt werden!	

Test item particulars	
Classification of installation and use	Lighting chain for indoor use. No installation intended, not for rough use
Supply Connection	Supply cord with non-rewireable 2-pole plug
Possible test case verdicts:	
- test case does not apply to the test object.....	N (Not applicable)
- test object does meet the requirement.....	P (Pass)
- test object does not meet the requirement.....	F (Fail)
Testing	
Date of receipt of test item	2009-08-03
Date (s) of performance of tests.....	2009-08-04 to 2009-08-18



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General remarks:

The test results presented in this report relate only to the object tested.
 This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

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

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

Note: EN Group Differences together with National Differences and Special National Conditions, if any, are in the Appendix to the main body of this TRF.

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

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

General product information:

L-318-.L series:

The dot in the model name can be any number from 10 to 200, indicating the number of bulbs.

Model overview:

Model name	Number of strings x Number of bulbs per string	Bulb voltage (V)	Bulb current (mA)	Total wattage (W)
L-318-10L	1 x 10	24	35	7.7
L-318-11L	1 x 11	21	35	8.0
L-318-15L	1 x 15	15	70	16.4
L-318-20L	1 x 20	12	70	15.4
L-318-21L	1 x 21	11	70	16.0
L-318-35L	1 x 35	6.5	70	16.2
L-318-50L	1 x 50	4.8	70	15.4
L-318-100L	1x 100	2.4	60	13.2
L-318-140L	1 x 140	1.6	120	28.3
L-318-200L	1x 200	1.2	120	26.4



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EN 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict

20.2 (0)	GENERAL TEST REQUIREMENTS		P
20.2 (0.1)	Information for luminaire design considered	Standard Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
20.2 (0.3)	More sections applicable	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—

20.4 (2)	CLASSIFICATION		P
20.4 (2.2)	Type of protection.....	Class II	—
20.4 (2.3)	Degree of protection (Requirement: Ordinary).....	IP 20	—
20.4 (2.4)	Luminaire only suitable for non-combustible surfaces	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	Luminaire suitable for normally flammable surfaces	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	Luminaire suitable to be covered by insulating material	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
20.4 (2.5)	Luminaire for normal use	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	Luminaire for rough service	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—

20.5 (3)	MARKING		P
20.5 (3.2)	Mandatory markings		P
	Position of the marking		P
	Format of symbols/text		P
20.5 (3.3)	Additional information	Instruction manual	P
	Language of instructions	German	P
20.5 (3.3.1)	Combination luminaires		N
20.5 (3.3.2)	Nominal frequency in Hz	50Hz	P
20.5 (3.3.3)	Operating temperature		N
20.5 (3.3.4)	Symbol or warning notice		N
20.5 (3.3.5)	Wiring diagram		N
20.5 (3.3.6)	Special conditions		N
20.5 (3.3.7)	Metal halide lamp luminaire – warning		N
20.5 (3.3.8)	Limitation for semi-luminaires		N
20.5 (3.3.9)	Power factor and supply current		N
20.5 (3.3.10)	Suitability for use indoors		N

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EN 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict
20.5 (3.3.11)	Luminaires with remote control		N
20.5 (3.3.12)	Clip-mounted luminaire – warning		N
20.5 (3.3.13)	Specifications of protective shields		N
20.5 (3.3.14)	Symbol for nature of supply	~	P
20.5 (3.3.15)	Rated current of socket outlet		N
20.5 (3.3.16)	Rough service luminaire		N
20.5 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments	Type Z attachment	P
20.5 (3.3.18)	Non-ordinary luminaires with PVC cable		N
20.5 (3.4)	Test with water		P
	Test with hexane		P
	Legible after test		P
	Label attached		P
20.5.1 (-)	Adequate marking (see also page 5)		P
20.5.2 (-)	Marking on the chain		P
20.5.3 (-)	Marking of fused lamps		N
	Position of the marking		N
	Format of symbols/text		N

20.6 (4)	CONSTRUCTION		P
20.6 (4.2)	Components replaceable without difficulty		N
20.6 (4.3)	Wireways smooth and free from sharp edges		P
20.6 (4.4)	Lampholders		N
20.6 (4.4.1)	Integral lampholder		N
20.6 (4.4.2)	Wiring connection		N
20.6 (4.4.3)	Lampholder for end-to-end mounting		N
20.6 (4.4.4)	Positioning		N
	- pressure test (N)		N
	- bending test (N)		N
20.6 (4.4.5)	Peak pulse voltage		N
20.6 (4.4.6)	Centre contact		N
20.6 (4.4.7)	Parts in rough service luminaires resistant to tracking		N
20.6 (4.4.8)	Lamp connectors		N

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Clause	Requirement + Test	Result - Remark	Verdict
20.6 (4.4.9)	Caps and bases correctly used		N
20.6 (4.5)	Starter holders		N
	Starter holder in luminaires other than class II		N
	Starter holder class II construction		N
20.6 (4.7)	Terminals and supply connections		P
20.6 (4.7.1)	Contact to metal parts		N
20.6 (4.7.2)	Test 8 mm live conductor		N
	Test 8 mm earth conductor		N
20.6 (4.7.3)	Terminals for supply conductors	Crimped connection	P
20.6 (4.7.3.1)	Welded connections:		N
	- stranded or solid conductor		N
	- spot welding		N
	- welding between wires		N
	- Type Z attachment		N
	- mechanical test according to 15.8.2		N
	- electrical test according to 15.9		N
	- heat test according to 15.9.2.3 and 15.9.2.4		N
20.6 (4.7.4)	Terminals other than supply connection		N
20.6 (4.7.5)	Heat-resistant wiring/sleeves		N
20.6 (4.7.6)	Multi-pole plug		P
	- test at 30 N		P
20.6 (4.8)	Switches:		N
	- adequate rating		N
	- adequate fixing		N
	- polarized supply		N
	- compliance with 61058-1 for electronic switches		N
20.6 (4.9)	Insulating lining and sleeves		N
20.6 (4.9.1)	Retainment		N
	Method of fixing		N
20.6 (4.9.2)	Insulated linings and sleeves		N
	a) & c) Insulation resistance and electric strength		N
	b) Ageing test: Temperature (°C)		N
20.6 (4.10)	Insulation of Class II luminaires		N

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Clause	Requirement + Test	Result - Remark	Verdict
20.6 (4.10.1)	No contact, mounting surface – accessible metal parts – wiring of basic insulation		N
	Safe installation fixed luminaires		N
	Capacitors and switches		N
	Interference suppression capacitors according to IEC 60384-14		N
20.6 (4.10.2)	Assembly gaps:		N
	- not coincidental		N
	- no straight access with test probe		N
20.6 (4.10.3)	Retention of insulation:		P
	- fixed		N
	- unable to be replaced; luminaire inoperative		P
	- sleeves retained in position		N
	- lining in lampholder		N
20.6 (4.11)	Electrical connections		P
20.6 (4.11.4)	Material of current-carrying parts		P
20.6 (4.11.5)	No contact to wood		N
20.6 (4.12)	Mechanical connections and glands		N
20.6 (4.12.1)	Screws not made of soft metal		N
	Screws of insulating material		N
	Torque test: torque (Nm); part :		N
	Torque test: torque (Nm); part :		N
	Torque test: torque (Nm); part :		N
20.6 (4.12.2)	Screws with diameter < 3 mm screwed into metal		N
20.6 (4.12.4)	Locked connections:		N
	- fixed arms; torque (Nm)..... :		N
	- lampholder; torque (Nm) :		N
	- push-button switches; torque 0,8 Nm..... :		N
20.6 (4.12.5)	Screwed glands; force (N) :		N
20.6 (4.13)	Mechanical strength		P
20.6 (4.13.1)	Impact tests:		P
	- fragile parts; energy (Nm)..... :		N
	- other parts; energy (Nm) :	0.5Nm on the lampholder enclosure	P

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Clause	Requirement + Test	Result - Remark	Verdict
	1) live parts		P
	2) linings		N
	3) protection		P
	4) covers		N
20.6 (4.13.3)	Straight test finger		P
20.6 (4.13.4)	Rough service luminaires		N
	- IP54 or higher		N
	a) fixed		N
	b) hand-held		N
	c) delivered with a stand		N
	d) for temporary installations and suitable for mounting on a stand		N
20.6 (4.13.6)	Tumbling barrel	50 falls (50cm)	P
20.6 (4.14)	Suspensions and adjusting devices		N
20.6 (4.14.1)	Mechanical load:		N
	A) four times the weight		N
	B) torque 2,5 Nm		N
	C) bracket arm; bending moment (Nm)		N
	D) load track-mounted luminaires		N
	E) clip-mounted luminaires, glass-shelve. Thickness (mm)		N
	metal rod. diameter (mm)		N
	Fixed luminaire or independent control gear without fixing devices		N
20.6 (4.14.2)	Load to flexible cables		N
	Mass (kg)		N
	Stress in conductors (N/mm ²)		N
	Mass (kg) of semi-luminaire		N
	Bending moment (Nm) of semi-luminaire		N
20.6 (4.14.3)	Adjusting devices:		N
	- flexing test; number of cycles		N
	- strands broken		N
	- electric strength test afterwards		N



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Clause	Requirement + Test	Result - Remark	Verdict
20.6 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors		N
20.6 (4.14.5)	Guide pulleys		N
20.6 (4.14.6)	Strain on socket-outlets		N
20.6 (4.15)	Flammable materials:		P
	- glow-wire test 650 °C	Decorations	P
	- spacing \geq 30 mm		N
	- screen withstanding test of 13.3.1		N
	- screen dimensions		N
	- no fiercely burning material		N
	- thermal protection		N
	- electronic circuits exempted		N
20.6 (4.15.2)	Luminaires made of thermoplastic material with lamp control gear		N
	a) construction		N
	b) temperature sensing control		N
	c) surface temperature		N
20.6 (4.16)	Luminaires marked with F-symbol		P
	No lamp control gear	(compliance with Section 12)	P
20.6 (4.16.1)	Lamp control gear spacing:		N
	- spacing 35 mm		N
	- spacing 10 mm		N
20.6 (4.16.2)	Thermal protection:		N
	- in lamp control gear		N
	- external		N
	- fixed position		N
	- temperature marked lamp control gear		N
20.6 (4.16.3)	"F" curve measured	(see 12.6)	N
20.6 (4.17)	Drain holes		N
	Clearance at least 5 mm		N
20.6 (4.18)	Resistance to corrosion:		N
20.6 (4.18.1)	- rust-resistance		N
20.6 (4.18.2)	- season cracking in copper		N
20.6 (4.18.3)	- corrosion of aluminium		N



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Clause	Requirement + Test	Result - Remark	Verdict
20.6 (4.19)	Igniters compatible with ballast		N
20.6 (4.20)	Rough service vibration		N
20.6 (4.21)	Protective shield:		N
20.6 (4.21.1)	Shield fitted		N
20.6 (4.21.2)	Particles from a shattering lamp not impair safety		N
20.6 (4.21.3)	No direct path		N
20.6 (4.21.4)	Impact test on shield		N
	Glow-wire test on lamp compartment		N
20.6 (4.22)	Attachments to lamps		N
20.6 (4.23)	Semi-luminaires comply Class II		N
20.6 (4.24)	UV radiation, metal halide lamps		N
20.6 (4.25)	No sharp point or edges		P
20.6 (4.26)	Short-circuit protection:		N
20.6 (4.26.1)	Uninsulated accessible SELV parts		N
20.6 (4.26.2)	Short-circuit test		N
20.6 (4.26.3)	Test chain according to Figure 29		N
20.6.1 (-)	Lampholders comply with IEC 60238 or IEC 61184 or this part 2.		P
20.6.3 (-)	Reliable electrical contact over the service life		P
20.6.5 (-)	Gasket weather resistant		N
20.6.6 (-)	Mechanical strength requirements		N
20.6.7 (-)	Rated voltage and wattage not exceed the requirements	Compliance to IEC 60598-2-20	P
20.6.8 (-)	Series-connected lamps with bridging-resistors comply with the requirements		N
20.6.9 (-)	Flasher units comply with the requirements		N
20.6.11 (-)	Lampholders for replaceable push-in lamps of insulating material		P
20.6.12 (-)	Torque test of push-in lamps: torque 0,025 Nm		P
20.6.13 (-)	Pull test 3 N on push-in lamps		P
	Push in force for push-in lamps (N) : 6		P
	Pull out force for push-in lamps (N) : 7		P
	Pull test 10 N for non-replaceable lamps		N
	Tests repeated after ageing 2h in 120°C		P



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Clause	Requirement + Test	Result - Remark	Verdict
	Pull test 3 N on push-in lamps		P
	Push in force for push-in lamps (N) : 7		P
	Pull out force for push-in lamps (N) : 8		P
	Pull test 10 N for non-replaceable lamps		N
20.6.14 (-)	Sealed chains:		N
	- pull test: force 60 N		N
	- torque test: torque 0,15 Nm		N
	- cylinder 250 mm		N
20.6.15 (-)	Impact test 0,2 Nm on non-standardised or non-removable lamps		P
20.6.16 (-)	Control device comply with this standard and IEC 61347-2-11		N

20.7 (11)	CREEPAGE DISTANCES AND CLEARANCES		P
	Working voltage (V) : 230V~		—
	Voltage form	Sinusoidal <input checked="" type="checkbox"/> Non-sinusoidal <input type="checkbox"/>	—
	PTI	< 600 <input checked="" type="checkbox"/> ≥ 600 <input type="checkbox"/>	—
	Rated pulse voltage (kV) :		—
	Measured circuit :	Input Output	P
	(1) Current-carrying parts of different polarity: cr (mm); cl (mm) :	cr. = 3mm (> 2.5mm) cl. = 6mm (> 1.7mm)	P
	(2) Current-carrying parts and accessible parts: cr (mm); cl (mm) :	cr. = 8.9mm (> 6.5mm) cl. = 8.9mm (> 6.5mm)	P
	(3) Parts becoming live due to breakdown of basic insulation and metal parts: cr (mm); cl (mm) :		N
	(4) Outer surface of cable where it is clamped and metal parts: cr (mm); cl (mm) :		N
	(5) Not used		—
	(6) Current-carrying parts and supporting surface: cr (mm); cl (mm) :	cr. = 8.9mm (> 6.5mm) cl. = 8.9mm (> 6.5mm)	P
	Between transformer windings: cr (mm); cl (mm) . :		N
20.7 (-)	Edison and small push-in lampholders comply with clause 17 in IEC 60238		P



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Clause	Requirement + Test	Result - Remark	Verdict
20.9 (14)	SCREW TERMINALS		N
	Separately approved; component list	(see Annex 1)	N
	Part of the luminaire	(see Annex 3)	N
20.9 (15)	SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS		N
	Separately approved; component list	(see Annex 1)	N
	Part of the luminaire	(see Annex 4)	N
20.10 (5)	EXTERNAL AND INTERNAL WIRING		P
20.10 (5.2)	Supply connection and external wiring		P
20.10 (5.2.1)	Means of connection..... :	Supply cord with non-rewireable 2-pole plug	P
20.10 (5.2.3)	Type of attachment, X, Y or Z	Type Z attachment	P
20.10 (5.2.5)	Type Z not connected to screws		P
20.10 (5.2.6)	Cable entries:		P
	- suitable for introduction		P
	- adequate degree of protection		P
20.10 (5.2.7)	Cable entries through rigid material have rounded edges		N
20.10 (5.2.8)	Insulating bushings:		N
	- suitably fixed		N
	- material in bushings		N
	- material not likely to deteriorate		N
	- tubes or guards made of insulating material		N
20.10 (5.2.9)	Locking of screwed bushings		N
20.10 (5.2.10)	Cord anchorage:		P
	- covering protected from abrasion		P
	- clear how to be effective		P
	- no mechanical or thermal stress		P
	- no tying of cables into knots etc.		P
	- insulating material or lining		P
20.10 (5.2.10.1)	Cord anchorage for type X attachment:		N



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Clause	Requirement + Test	Result - Remark	Verdict
	a) at least one part fixed		N
	b) types of cable		N
	c) no damaging of the cable		N
	d) whole cable can be mounted		N
	e) no touching of clamping screws		N
	f) metal screw not directly on cable		N
	g) replacement without special tool		N
	Glands not used as anchorage		N
	Labyrinth type anchorages		N
20.10 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment	Type Z attachment; There is no typical cord anchorage, but the cable is fixed satisfactorily. Test in 5.2.10.3 is performed.	P
20.10 (5.2.10.3)	Tests:		P
	- impossible to push cable; unsafe		P
	- pull test: 50 times; pull (N) : 30N		P
	- torque test: torque (Nm) :		N
	- displacement \leq 2 mm		P
	- no movement of conductors		P
	- no damage of cable or cord		P
20.10 (5.2.11)	External wiring passing into luminaire		N
20.10 (5.2.12)	Looping-in terminals		N
20.10 (5.2.13)	Wire ends not tinned		P
	Wire ends tinned: no cold flow		N
20.10 (5.2.14)	Mains plug same protection		P
	Class III luminaire plug		N
20.10 (5.2.16)	Appliance inlets (IEC 60320)		N
	Appliance couplers of class II type		N
20.10 (5.2.17)	No standardized interconnecting cables properly assembled		N

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Clause	Requirement + Test	Result - Remark	Verdict
20.10 (5.2.18)	Used plug in accordance with		P
	- IEC 60083		N
	- other standard	See Annex 1	P
20.10 (5.3)	Internal wiring		P
20.10 (5.3.1)	Internal wiring of suitable size and type	H03VH7-H 1 x 0.5mm ²	P
	Through wiring		N
	- not delivered/ mounting instruction		N
	- factory assembled		N
	- socket outlet loaded (A)..... :		N
	- temperatures :		N
	Green-yellow for earth only		N
20.10 (5.3.1.1)	Internal wiring connected directly to fixed wiring		N
	Cross-sectional area (mm ²)..... :		N
	Insulation thickness		N
	Extra insulation added where necessary		N
20.10 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		N
	Adequate cross-sectional area and insulation thickness		N
20.10 (5.3.1.3)	Double or reinforced insulation for class II		N
20.10 (5.3.1.4)	Conductors without insulation		N
20.10 (5.3.1.5)	SELV current-carrying parts		N
20.10 (5.3.1.6)	Insulation thickness other than PVC or rubber		N
20.10 (5.3.2)	Sharp edges etc.		N
	No moving parts of switches etc.		N
	Joints, raising/lowering devices		N
	Telescopic tubes etc.		N
	No twisting over 360°		N
20.10 (5.3.3)	Insulating bushings:		N



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Clause	Requirement + Test	Result - Remark	Verdict
	- suitable fixed		N
	- material in bushings		N
	- material not likely to deteriorate		N
	- cables with protective sheath		N
20.10 (5.3.4)	Joints and junctions effectively insulated		N
20.10 (5.3.5)	Strain on internal wiring		N
20.10 (5.3.6)	Wire carriers		N
20.10 (5.3.7)	Wire ends not tinned		P
	Wire ends tinned: no cold flow		N
20.10.1 (-)	Type of cable	H03VH7-H	P
	Nominal cross-sectional area (mm ²).....	0.5 mm ²	P
	Cables not lighter than IEC 60227 or IEC 60245		P
	Conductors without insulation		N
20.10.2 (-)	Pull test on single-core cable		P
20.10.3 (-)	Plug according IEC 83		P
	Splash-proof plug or permanent connection if for outdoor use		N
	Length of the cable between the plug and first lampholder not less than 1,5 m	1.53m	P

20.11 (8)	PROTECTION AGAINST ELECTRIC SHOCK		P
20.11 (8.2.1)	Live parts not accessible		P
	Basic insulated parts not used on the outer surface without appropriate protection		N
	Protection in any position		P
	Double-ended tungsten filament lamp		N
	Insulation lacquer not reliable		N
	Double-ended high pressure discharge lamp		N
	Relevant warning according to 3.2.18 fitted to the luminaire		N
20.11 (8.2.2)	Portable luminaire adjusted in most unfavourable position		P
20.11 (8.2.3)	Class II luminaire:		P
	- basic insulated metal parts not accessible during starter or lamp replacement		N



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Clause	Requirement + Test	Result - Remark	Verdict
	- basic insulation not accessible other than during starter or lamp replacement		P
	- glass protective shields not used as supplementary insulation		N
	Class I luminaire with BC lampholder		N
20.11 (8.2.4)	Portable luminaire:		P
	- protection independent of supporting surface		P
	- terminal block completely covered		N
20.11 (8.2.5)	Compliance with the standard test finger or relevant probe	10N	P
20.11 (8.2.6)	Covers reliably secured		N
20.11 (8.2.7)	Discharging of capacitors $\geq 0,5 \mu\text{F}$		N
	Portable plug connected luminaire with capacitor		N
	Other plug connected luminaire with capacitor		N
	Discharge device on or within capacitor		N
	Discharge device mounted separately		N
20.11.1 (-)	Divisible plug in compliance with Figure 1		N
	Pull force 10 N		N
20.11.2 (-)	Not electrify tinsel or other metallic decorations		P
20.11.3 (-)	Lampholder contacts reliably secured		P

20.12 (12)	ENDURANCE TEST AND THERMAL TEST		P
20.12 (12.3)	Endurance test: L-318-10L		P
	- mounting-position	Random	—
	- test temperature (°C).....	35	—
	- total duration (h)	240	—
	- supply voltage: Un factor; calculated voltage (V):	230V gives 8.2W $1.05 \times 8.2\text{W} = 8.6\text{W}$ supply voltage at 8.6W = 238V	—
	- lamp used	24V/35mA	—
20.12 (12.3.2)	After endurance test:		P
	- no part unserviceable		P
	- luminaire not unsafe		P
	- no damage to track system		N

This Test Report, when bearing the Nemko name and logo is only valid when issued by a Nemko laboratory, or by a laboratory having special agreement with Nemko.



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Clause	Requirement + Test	Result - Remark	Verdict
	- marking legible		P
	- no cracks, deformation etc.		P
20.12 (12.4)	Thermal test (normal operation)	see Annex 2	P
20.12 (12.5)	Thermal test (abnormal operation)		N
20.12 (12.6)	Thermal test (failed lamp control gear condition):		N
20.12 (12.6.1)	Through wiring or looping-in wiring loaded by a current of (A)		—
	- case of abnormal conditions.....		—
	- electronic lamp control gear		N
	- measured winding temperature (°C): at 1,1 Un ..		—
	- measured mounting surface temperature (°C) at 1,1 Un		N
	- calculated mounting surface temperature (°C) ..		N
	- track-mounted luminaires		N
20.12 (12.6.2)	Temperature sensing control		N
	- case of abnormal conditions.....		—
	- thermal link		N
	- manual reset cut-out		N
	- auto reset cut-out		N
	- measured mounting surface temperature (°C)...		N
	- track-mounted luminaires		N
20.12 (12.7)	Thermal test (failed lamp control gear in plastic luminaires):		N
20.12 (12.7.1)	Luminaire without temperature sensing control		N
20.12 (12.7.1.1)	Luminaire with fluorescent lamp ≤ 70W		N
	Test method 12.7.1.1 or Annex V		—
	Test according to 12.7.1.1:		N
	- case of abnormal conditions		—
	- Ballast failure at supply voltage (V)		—
	- Components retained in place after the test		N
	- Test with standard test finger after the test		N
	Test according to Annex V:		N



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Clause	Requirement + Test	Result - Remark	Verdict
	- case of abnormal conditions		—
	- measured winding temperature (°C): at 1,1 Un.. :		—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un..... :		—
	- calculated temperature of fixing point/exposed part (°C)		—
	Ball-pressure test:		N
	- part tested; temperature (°C)..... :		N
	- part tested; temperature (°C)..... :		N
20.12 (12.7.1.2)	Luminaire with discharge lamp, fluorescent lamp > 70W, transformer > 10 VA		N
	- case of abnormal conditions		—
	- measured winding temperature (°C): at 1,1 Un.. :		—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un..... :		—
	- calculated temperature of fixing point/exposed part (°C)		—
	Ball-pressure test:		N
	- part tested; temperature (°C)..... :		N
	- part tested; temperature (°C)..... :		N
20.12 (12.7.1.3)	Luminaire with short circuit proof transformers ≤ 10 VA		N
	- case of abnormal conditions		—
	- Components retained in place after the test		N
	- Test with standard test finger after the test		N
20.12 (12.7.2)	Luminaire with temperature sensing control		N
	- thermal link	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- manual reset cut-out	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- auto reset cut-out	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- case of abnormal conditions		—
	- highest measured temperature of fixing point/exposed part (°C):..... :		—
	Ball-pressure test:		N
	- part tested; temperature (°C)..... :		N



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Clause	Requirement + Test	Result - Remark	Verdict
	- part tested; temperature (°C)..... :		N
20.12.3 (-)	Lamp bridging not cause temperature which impair safety		N

20.13 (9)	RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE		P
20.13 (9.2)	Tests for ingress of dust, solid objects and moisture:		P
	- classification according to IP	IP20	—
	- mounting position during test		—
	- fixing screws tightened; torque (Nm)..... :		—
	- tests according to clauses	9.2.0	—
	- electric strength test afterwards	See 10.2.2	P
	a) no deposit in dust-proof luminaire		N
	b) no talcum in dust-tight luminaire		N
	c) no trace of water on current-carrying parts or where it could become a hazard		N
	d) i) For luminaires without drain holes – no water entry		N
	d) ii) For luminaires with drain holes – no hazardous water entry		N
	e) no water in watertight luminaire		N
	f) no contact with live parts (IP 2X)	IP 20	P
	f) no entry into enclosure (IP 3X and IP 4X)		N
	f) no contact with live parts (IP3X and IP4X)		N
20.13 (9.3)	Humidity test 48 h	93% R.H., 25°C	P

20.14 (10)	INSULATION RESISTANCE AND ELECTRIC STRENGTH		P
20.14 (10.2.1)	Insulation resistance test		P
	Cable or cord covered by metal foil or replaced by a metal rod of mm Ø		—
	Insulation resistance (MΩ)		—
	SELV:		N
	- between current-carrying parts of different polarity		N



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Clause	Requirement + Test	Result - Remark	Verdict
	- between current-carrying parts and mounting surface		N
	- between current-carrying parts and metal parts of the luminaire		N
	Other than SELV:		P
	- between live parts of different polarity.....	>2MΩ	P
	- between live parts and mounting surface.....	>4MΩ	P
	- between live parts and metal parts.....		N
	- between live parts of different polarity through action of a switch		N
20.14 (10.2.2)	Electric strength test		P
	Dummy lamp		N
	Luminaires with ignitors after 24 h test		N
	Luminaires with manual ignitors		N
	Test voltage (V):		P
	SELV:		N
	- between current-carrying parts of different polarity		N
	- between current-carrying parts and mounting surface		N
	- between current-carrying parts and metal parts of the luminaire		N
	Other than SELV:		P
	- between live parts of different polarity.....	1460V	P
	- between live parts and mounting surface.....	3670V	P
	- between live parts and metal parts.....		N
	- between live parts of different polarity through action of a switch		N
20.14 (10.3)	Leakage current (mA).....	0.05	P
20.15 (13)	RESISTANCE TO HEAT, FIRE AND TRACKING		P
20.15 (13.2.1)	Ball-pressure test:		P
	- part tested; temperature (°C).....	Lampholder (inner and outer part), 125°C	P



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Clause	Requirement + Test	Result - Remark	Verdict
	- part tested; temperature (°C)..... :	Bulb holder, 125°C	P
20.15 (13.3.1)	Needle flame test (10 s):		P
	- part tested..... :	Lampholder (inner and outer part)	P
	- part tested..... :	Bulb holder	P
20.15 (13.3.2)	Glow-wire test (650°C):		P
	- part tested..... :	Decorations	P
20.15 (13.4.1)	Tracking test: part tested		N
20.15 (-)	Flexible pipes of sealed chain in compliance with clause 8 of IEC/EN 60811-3-1		N



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EN 60598-2-20			
Clause	Requirement + Test	Result - Remark	Verdict

	ANNEX 1: components list	P
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object/part No.	code	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity
Mains Plug	B	Zhejiang Xingda Package Material Co., Ltd.	XD-01	2.5A, 250V~	EN 50075	VDE 40000558
	D	Taizhou City Hong En Plastic Products Factory	X-001	2.5A, 250V~	EN 50075	TUV RH 50081238
	D	Yueqing Zhongxin Lamp Wire Co., Ltd	Z-001	250V~ 2.5A	EN 50075	TUV RH 2133262
	D	Zhejiang Yueqing Linli Lighting Crafts Factory.	A-001	2.5A, 250V~	EN 50075	TUV RH 50096842
	D	Pilot King Co., Ltd.	PK-001	2.5A, 250V~	EN 50075	VDE 114009
Supply wire	B	Taizhou Xingda Package Material Co., Ltd	H03VH7-H	1 x 0.5mm ²	DIN VDE 0281-8 HD 21.8 S2	VDE 136412
	D	Taizhou City Yuhong Light	H03VH7-H	1 x 0.5mm ²	DIN VDE 0281-8 HD 21.8 S2	VDE 40006905
	D	Taizhou Jiaojiang Chunhui Hengwen Equipment Factory	H03VH7-H	1 x 0.5mm ²	DIN VDE 0281-8 HD 21.8 S2	TUV 9933767
	D	Yueqing Zhongxin Lamp Wire Co., Ltd	H03VH7-H	1 x 0.5mm ²	DIN VDE 0281-8 HD 21.8 S2	TUV RH 2133096
	D	Taizhou Enhe Plastic Cable Co., Ltd.	H03VH7-H	1 x 0.5mm ²	DIN VDE 0281-8 HD 21.8 S2	VDE 40025321
	D	Haiyan Zhonghai Wire & Cable Co., Ltd.	H03VH7-H	1 x 0.5mm ²	DIN VDE 0281-8 HD 21.8 S2	VDE 130246
	D	Taizhou Wantong Cable Co., Ltd.	H03VH7-H	1 x 0.5mm ²	DIN VDE 0281-8 HD 21.8 S2	TUV RH 50085759
Material of lampholder	C	Yueqing Mingyang Decorative Lamp Co., Ltd.	---	PP, T100	EN 60598-1 EN 60598-2-20	Tested in EUT
Bulb holder		Yueqing Mingyang Decorative Lamp Co., Ltd.	---	PP, T100	EN 60598-1 EN 60598-2-20	Tested in EUT



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Clause	Requirement + Test			Result - Remark		Verdict
Bulb	C	Yueqing Mingyang Decorative Lamp Co., Ltd.	---	See model list	EN 60598-1 EN 60598-2-20	Tested in EUT
Decoration	C	Yueqing Mingyang Decorative Lamp Co., Ltd.	---	PVC, T90	EN 60598-1 EN 60598-2-20	Tested in EUT

The codes above have the following meaning:

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



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Clause	Requirement + Test	Result - Remark	Verdict

	ANNEX 2A: temperature measurements, thermal tests of Section 12		P
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	Type reference	L-318-10L	—
	Lamp used.....	24V/35mA	—
	Lamp control gear used	—	—
	Mounting position of luminaire	random	—
	Supply wattage (W).....	8.6	—
	Supply current (A)	0.037	—
	Calculated power factor	0.99	—
	Table: measured temperatures corrected for $t_a = 25\text{ °C}$:		P
	- abnormal operating mode	—	—
	- test 1: rated voltage	—	—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage.....	230V gives 8.2W $1.05 \times 8.2W = 8.6W$ supply voltage at 8.6W = 238V	—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage	—	—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage.....	—	—
	Through wiring or looping-in wiring loaded by a current of A during the test	—	—



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Clause	Requirement + Test	Result - Remark	Verdict

temperature (°C) of part	Clause 12.4 – normal				Clause 12.5 – abnormal	
	test 1	test 2	test 3	limit	test 4	limit
Decoration inside in contact with bulb	—	70	—	90	—	—
Bulb holder	—	55	—	90	—	—
Internal wiring inside lampholder	—	30	—	90	—	—
Supply cord	—	26	—	90	—	—
Mains plug enclosure	—	26	—	90	—	—
Mounting surface	—	40	—	90	—	—
<p>Bridged mode</p> <p>The bulbs of the lighting chain are not equipped with a bridging device. When a bulb breaks the others break immediately.</p>						



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Clause	Requirement + Test	Result - Remark	Verdict
	ANNEX 3: screw terminals (part of the luminaire)		N
	ANNEX 4: screwless terminals (part of the luminaire)		N

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Clause	Requirement + Test	Result - Remark	Verdict

	ANNEX 5: instruction manual and packing information		P
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Modell: L-318-10L
 230V~, 50Hz, 7.7W
 10 Lampen: 24V / 35mA
 IP 20

1. Stellen Sie vor jeder Verwendung sicher, dass alle Fassungen korrekt mit einer Lampe bestückt sind und kein Teil der Lichterkette beschädigt ist!
2. Nicht anschliessen solange sich die Lichterkette in der Verpackung befindet !
3. Nur zur Verwendung in Innenräumen !
4. Diese Lichterkette darf nicht elektrisch mit anderen Lichterketten verbunden werden !
5. Vor dem Lampenwechsel Netzstecker ziehen!
6. Die Lampen sind nicht mit einem Schraub-, sondern mit einem Stecksockel ausgestattet. Falls eine Lampe ausgewechselt werden muss, muss sie zusammen mit dem Stecksockel aus der Lampenfassung herausgezogen werden. Danach kann die Ersatzlampe durch eine geradlinige Drückbewegung in die Fassung eingesetzt werden. Die Lampen dürfen nicht in der Fassung gedreht werden! Jede defekte Lampe ist sofort durch eine Lampe mit gleichen Kenndaten zu ersetzen, um eine Ueberhitzung der anderen Lampen zu vermeiden.
7. Die äussere flexible Leitung dieser Lichterkette kann nicht ausgetauscht werden. Wenn die Anschlussleitung, der Netzstecker oder ein anderer Teil der Lichterkette beschädigt ist, darf die Lichterkette nicht mehr benutzt werden und muss entsorgt werden.
8. Verwenden Sie zur Montage keine scharfen oder spitzen Gegenstände.
9. Achten Sie darauf, dass das Anschlusskabel und die innere Leitung nicht mechanisch belastet wird. Hängen Sie keine Gegenstände an die Lichterkette. Befestigen Sie keine Gegenstände an der Lichterkette.
10. Diese Lichterkette ist kein Spielzeug. Montieren Sie die Lichterkette nicht in Kinderzimmern, Schulen, Kindertagesstätten oder ähnlichen Orten. Achten Sie darauf, dass Kinder in der Nähe der Lichterkette nicht unbeaufsichtigt sind.
11. Lagern Sie die Lichterkette immer ausser Reichweite von Kindern.
12. Bei Lichterketten mit mehr als 50 Lampen müssen Sie darauf achten, dass das Anschlusskabel nicht mit dem Gewicht der ganzen Lichterkette belastet wird. Es dürfen niemals mehr als 50 Lampen frei am Anschlusskabel hängen.
13. Entsorgen Sie die Lichterkette nicht über den Hausmüll. In diesem Gerät sind wiederverwendbare Wertstoffe enthalten. Ihre örtliche Gemeindeverwaltung nennt Ihnen gerne die öffentlichen Sammelstellen für Elektro-Altgeräte.



Yueqing Mingyang Decorative Lamp Co., Ltd.

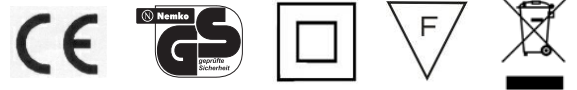


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Clause	Requirement + Test	Result - Remark	Verdict

Packing:

Modell: L-318-10L
230V~, 50Hz, 7.7W
10 Lampen: 24V / 35mA
IP 20



1. Nicht anschliessen solange sich die Lichterkette in der Verpackung befindet
2. Nur zur Verwendung in Innenräumen !
3. Defekte Lampen müssen umgehend durch Lampen mit gleicher Spannungs- und Leistungsangabe ersetzen, um unzulässige Erwärmung zu vermeiden !
4. Diese Lichterkette darf nicht elektrisch mit anderen Lichterketten verbunden werden !
5. Es sind nur Ersatzlampen der gleichen Sorte zu verwenden, die mit dieser Lichterkette zur Verfügung gestellt werden!

Yueqing Mingyang Decorative Lamp Co., Ltd.



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Clause	Requirement + Test	Result - Remark	Verdict

	ANNEX 6: pictures		P
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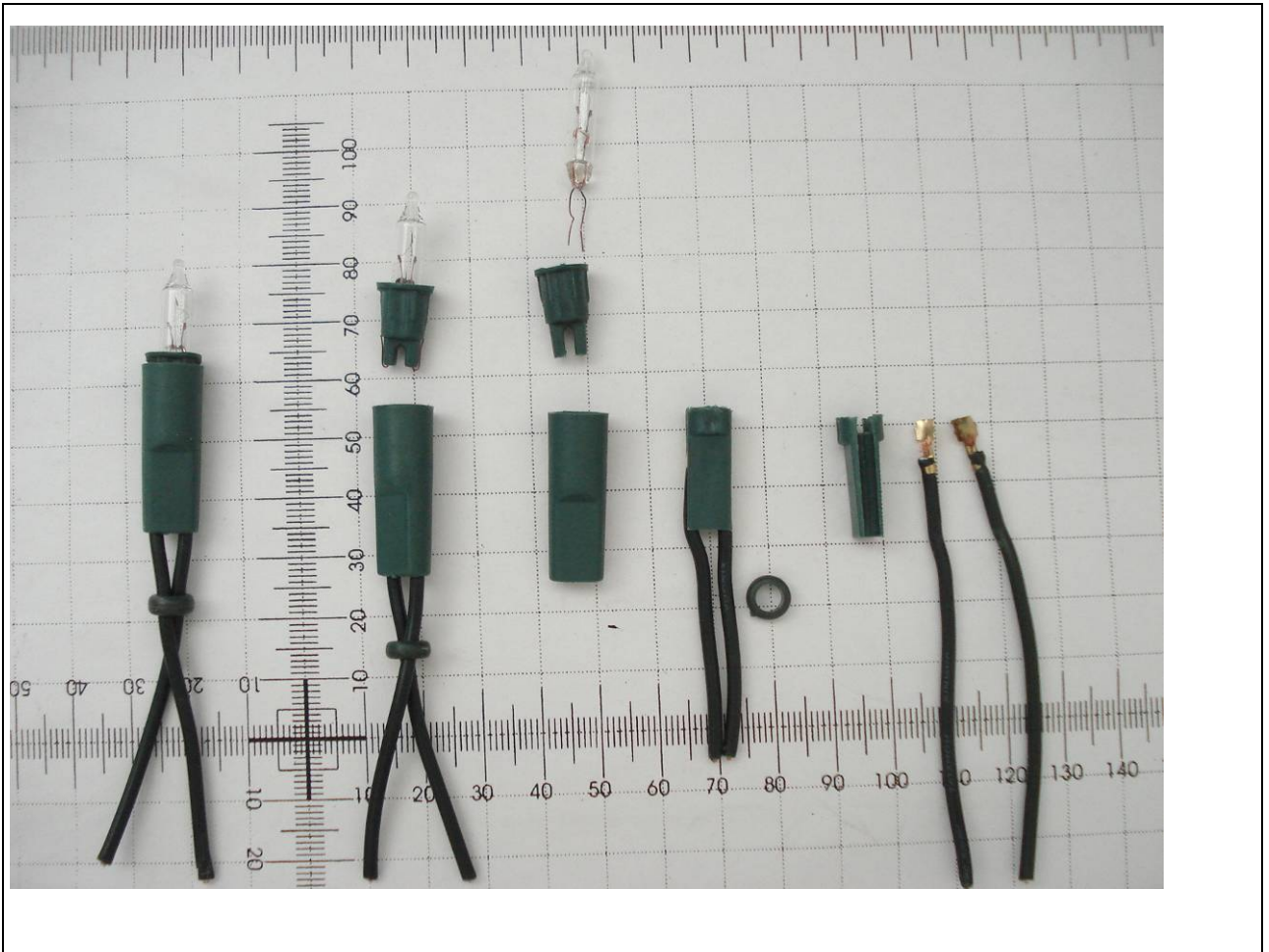




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Clause	Requirement + Test	Result - Remark	Verdict
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Clause	Requirement + Test	Result - Remark	Verdict

	ANNEX 7: National Differences for German or Group Differences		P
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	GENELEC COMMON MODIFICATIONS (EN)		P
20.5 (3)	MARKING		N
20.5 (3.3.101)	Adequate warning on the package		N
20.6 (4)	CONSTRUCTION		P
20.6.1	Lampholders comply with EN 60238 or EN 61184 or this part 2.		P
20.6.6	E5, E10 and similar push-in lampholders comply with EN 60238 clause 15 modified by Annex ZB		P
20.7 (11)	CREEPAGE DISTANCES AND CLEARANCES		P
	Lampholders comply with EN 60238 clause 17 or clause 17 modified by Annex ZB		P
20.10 (5)	EXTERNAL AND INTERNAL WIRING		P
20.10 (5.2.1)	Connecting leads		N
	- without a means for connection to the supply		N
	- terminal block specified		N
	- relevant information provided		N
	- compliance with 4.6, 4.7.1, 4.7.2, 4.10.1, 11.2, 12 and 13.2 of Part 1		N
20.10.1	Cables not lighter than the types in this clause		P
20.15 (13)	RESISTANCE TO HEAT, FIRE AND TRACKING		P
	Lampholders comply with EN 60238 clause 20 or clause 20 modified by Annex ZB		P



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Clause	Requirement + Test	Result - Remark	Verdict

ZB	ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)		N
(3.3)	DK: power supply cord with label		N
	IT: warning label on Class 0 luminaire		N
(4.5.1)	DK: socket-outlets		N
(5.2.1)	CY, DK, FI, SE, GB: type of plug	Only tested for Germany	N

ZC	ANNEX ZC, NATIONAL DEVIATIONS (EN)		N
(4 & 5)	FR: Shuttered socket-outlets 10/16A		N
(13.3)	DK: Needle flame test during 30 s		N
(13.3)	GB: Requirements according to United Kingdom Building Regulation		N
(13.3.2)	FR: Glow-wire test 850°C alt. 750°C for luminaires in premises open to public or 960°C for luminaires in emergency exits		N