



Ref. Certif. No.

DE 2-026971

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

CB TEST CERTIFICATE

Product

LED DOWN LIGHT

Name and address of the applicant

Zhongshan Venus Import and Export Co., Ltd.  
No. 325, Building 1, Ruifeng Lighting  
Accessories Market, Guyi Village, Junction of Zhongxing Avenue and  
Caoxing, West Road, Guzhen, Zhongshan, P.R. China

Name and address of the manufacturer

Zhongshan Venus Import and Export Co., Ltd.  
No. 325, Building 1, Ruifeng Lighting  
Accessories Market, Guyi Village, Junction of Zhongxing Avenue and  
Caoxing, West Road, Guzhen, Zhongshan, P.R. China

Name and address of the factory

Zhongshan Venus Import and Export Co., Ltd.  
No. 325, Building 1, Ruifeng Lighting  
Accessories Market, Guyi Village, Junction of Zhongxing Avenue and  
Caoxing, West Road, Guzhen, Zhongshan, P.R. China

Ratings and principal characteristics

AC 100-240V; 50/60Hz; ta:45°C; IP20;  
For other ratings, see the test report.

Trademark (if any)

Customer's Testing Facility (CTF) Stage used

N/A

Model / Type Ref.

VNS-DL7W; VNS-DL9W; VNS-DL10W; VNS-DL12W; VNS-DL15W;  
VNS-DL20W; VNS-DL24W; VNS-DL30W; VNS-DL36W; VNS-DL40W;  
VNS-DL50W

Additional information (if necessary may also be reported on page 2)

-see also test report ref no. 50345660 001.

A sample of the product was tested and found to be in conformity with

IEC 60598-2-2:2011  
IEC 60598-1:2014+A1

As shown in the Test Report Ref. No. which forms part of this Certificate

50345660 001

This CB Test Certificate is issued by the National Certification Body



TÜV Rheinland LGA Products GmbH  
Tillystraße 2 · 90431 Nürnberg, Germany  
Phone + 49 221 806-1371  
Fax + 49 221 806-3935  
Mail: cert-validity@de.tuv.com  
Web: www.tuv.com



Date: 03.03.2020

Signature:

Dipl.-Ing. Univ. S. O. Steinke

Zhongshan Venus Import and Export Co.,  
Ltd.  
No.325, Building 1, Ruifeng Lighting  
Accessories Market, Guyi Village,  
Junction of Zhongxing Avenue and  
Caoxing West Road, Guzhen, Zhongshan,  
P. R. China

Date : 2020-03-03  
Our ref. : awa ZD  
Your ref. : 0168153703

**Ref : CB Certificate Germany**

Type of Equipment: LED DOWN LIGHT  
Model Designation: See Certificate  
Certificate No. : DE 2-026971  
Report No. : 50345660 001

Dear Ladies and Gentlemen,

Thank you very much for your interest in our services.

Please find enclosed your certification documents.

We appreciate your support and would like to offer our assistance in the approval of your future products through our extensive range of technical services. Please feel free to contact us whatever your requirements may be.

With kind regards,

Certification Body

Dipl.-Ing. Univ. S. O. Steinke

Enclosure

证书的详细资料请登陆[www.tuvdotcom.com](http://www.tuvdotcom.com)查阅,或拨打我司客服热线800 999 3668 / 400 883 1300咨询



Test Report issued under the responsibility of:



**TEST REPORT**  
**IEC 60598-2-2**  
**Luminaires**  
**Part 2: Particular requirements**  
**Section 2: Recessed luminaires**

Report Number .....: 50345660 001

Date of issue .....: 28-02-2020

Total number of pages .....: 35 pages

Name of Testing Laboratory  
preparing the Report.....: TÜV Rheinland (Shenzhen) Co., Ltd.

Applicant's name.....: Zhongshan Venus Import and Export Co., Ltd.

Address .....: No.325, Building 1, Ruifeng Lighting Accessories Market, Guyi  
Village, Junction of Zhongxing Avenue and Caoxing West Road,  
Guzhen, Zhongshan, P. R. China

**Test specification:**

Standard .....: IEC 60598-2-2:2011 used in conjunction with IEC 60598-1:2014,  
AMD1:2017

Test procedure .....: CB Scheme

Non-standard test method.....: N/A

Test Report Form No.....: IEC60598\_2\_2F

Test Report Form(s) Originator ....: Intertek Semko AB

Master TRF.....: Dated 2017-12-21

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If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.

**This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory  
and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.**

**General disclaimer:**

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 CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

<b>Test item description</b> ..... :	LED DOWN LIGHT	
<b>Trade Mark</b> ..... :	N/A	
<b>Manufacturer</b> ..... :	Same as applicant's name & address	
<b>Model/Type reference</b> .....	VNS-DL7W, VNS-DL9W, VNS-DL10W, VNS-DL12W, VNS-DL15W, VNS-DL20W, VNS-DL24W, VNS-DL30W, VNS-DL36W, VNS-D40W, VNS-DL50W	
<b>Ratings</b> ..... :	100-240Vac, 50/60Hz, IP20, ta 45°C, details information see model list on page 6	
<b>Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):</b>		
<input checked="" type="checkbox"/>	<b>CB Testing Laboratory:</b>	TÜV Rheinland (Shenzhen) Co., Ltd.
	<b>Testing location/ address</b> .....	1F East & 2-4F, Cybio Technology Building No. 1 No. 16 Kejibei 2nd Road, High-Tech Industrial Park North, Nanshan District 518057, Shenzhen CHINA
	<b>Tested by (name, function, signature)</b> .....	Phill Liu
	<b>Approved by (name, function, signature)</b> ..:	Jack Li
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 1:</b>	N/A
	<b>Testing location/ address</b> .....	N/A
	<b>Tested by (name, function, signature)</b> .....	N/A
	<b>Approved by (name, function, signature)</b> ..:	N/A
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 2:</b>	N/A
	<b>Testing location/ address</b> .....	N/A
	<b>Tested by (name + signature)</b> .....	N/A
	<b>Witnessed by (name, function, signature)</b> ..:	N/A
	<b>Approved by (name, function, signature)</b> ..:	N/A
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 3:</b>	N/A
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 4:</b>	N/A
	<b>Testing location/ address</b> .....	N/A
	<b>Tested by (name, function, signature)</b> .....	N/A
	<b>Witnessed by (name, function, signature)</b> ..:	N/A
	<b>Approved by (name, function, signature)</b> ..:	N/A
	<b>Supervised by (name, function, signature):</b>	N/A

**List of Attachments (including a total number of pages in each attachment):**

Attachment 1: Tests according to IEC 62031:2018. (1 page)

Attachment 2: Photobiological safety of lamps and lamp systems were according to standard IEC TR 62778:2014. (1 page)

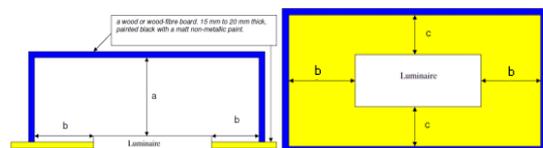
Attachment 3: photo document. (4 pages)

**Summary of testing:****Tests performed (name of test and test clause):**

Clause(s)	Test(s)
IEC 60598-1:2014+A1:2017	
3.4	Rubbing test
4.12.1	Screw torque test
4.13.1	Impact test
4.13.3	Straight unjointed test finger
4.14.1	Test for mechanical suspensions
5.2.10.3	Pull and torque test on cord anchorage
8.2.5	Protection against electric shock test
8.2.6	Test for covers and other parts providing protection against electric shock
9.2	Tests for ingress of dust, solid objects and moisture
9.3.1	Humidity test
10.2.1	Insulation resistance test
10.2.2	Electric strength test
12.3.1	Endurance test
12.4	Thermal test (normal operation)
13.2	Ball pressure test
13.3.1	Needle flame test
13.3.2	Glow-wire test

**Testing location:****TÜV Rheinland (Shenzhen) Co., Ltd.**1F East & 2-4F, Cybio Technology Building No. 1  
No. 16 Kejibei 2nd Road, High-Tech Industrial Park  
North, Nanshan District 518057, Shenzhen CHINAFull test were performed on model VNS-DL50W,  
Partial tests were performed on other models.During heating test, fix the luminaire to a ceiling, a  
box as following cover the luminaire,

a=b=c=50mm

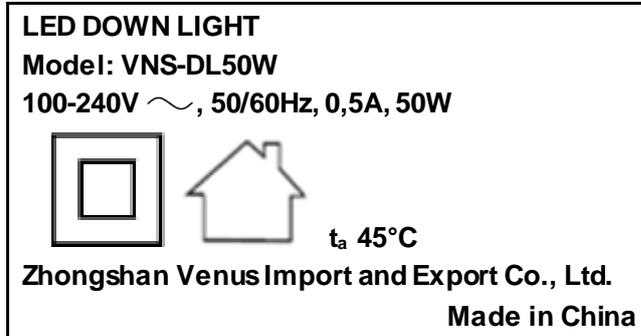
**Summary of compliance with National Differences****List of countries addressed:**

N/A

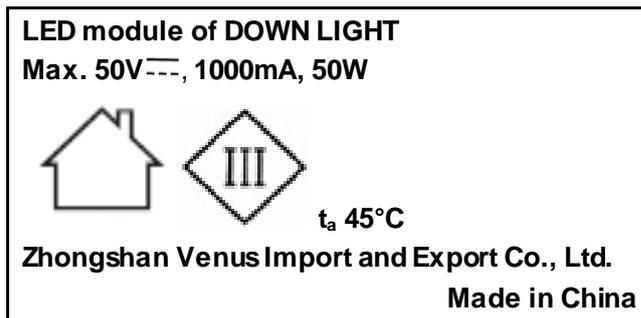
**Copy of marking plate:**

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

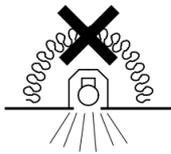
Label located on the packaging or attached on the input cord of LED driver:



Label one enclosure of down light or on the output wire of LED driver.



Below "Do not cover" symbol was located on the front of down light enclosure:



Note 1: The height of letters and numerals shall not be less than 2mm;

Note 2: The height of graphical symbols shall not be less than 5 mm;

Note 3: The height of "Do not cover" symbol shall not be less than 25 mm;

Note 4: The others' rating labels are only different from the model name and electrical parameter.

<b>Test item particulars</b> ..... :	
<b>Classification of installation and use</b> ..... : Recessed luminaires, for indoor use only	
<b>Supply Connection</b> ..... : Supply cords	
..... :	
<b>Possible test case verdicts:</b>	
- test case does not apply to the test object..... : N/A	
- test object does meet the requirement ..... : P (Pass)	
- test object does not meet the requirement..... : F (Fail)	
<b>Testing</b> ..... :	
<b>Date of receipt of test item</b> ..... : 12-01-2020	
<b>Date (s) of performance of tests</b> ..... : 12-01-2020 to 20-02-2020	
<b>General remarks:</b>	
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.	
<b>Throughout this report a <input checked="" type="checkbox"/> comma / <input type="checkbox"/> point is used as the decimal separator.</b>	
Clause numbers between brackets refer to clauses in IEC 60598-1	
<b>Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60598-1:</b>	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided..... :	<input type="checkbox"/> <b>Yes</b> <input checked="" type="checkbox"/> <b>Not applicable</b>
<b>When differences exist; they shall be identified in the General product information section.</b>	
<b>Name and address of factory (ies)</b> ..... : Same as applicant's name & address.	
<b>General product information:</b>	
Product: LED DOWN LIGHT	
Ratings: AC100-240V, 50/60Hz, IP20, ta 45°C, details see below model list.	
<ol style="list-style-type: none"> <li>1. This CB report is for IEC 60598 registration only.</li> <li>2. All of the products are Class II recessed luminaire with approved SELV LED drivers.</li> <li>3. The LED down light with non-replaceable light source.</li> <li>4. The LED down light is a class II general normal use luminaires, intend for indoor use only.</li> <li>5. The LED down light suitable for direct mounting on normally flammable surfaces, but not suitable for covering the thermally insulating materials.</li> <li>6. All models of LED down light have the same construction and appearance except the enclosure dimension and power.</li> <li>7. Details see the model list on next page.</li> </ol>	

Model list						
Model name	Voltage & Frequency	Current (A)	Wattage (W)	Size (mm)	Weight (Kg)	Used SELV LED control gear
VNS-DL7W	100-240Vac, 50/60Hz	0,07	7	Dia.100×H50	0,6	LF- GIR015YK0175U
VNS-DL9W	100-240Vac, 50/60Hz	0,09	9	Dia.100×H50	0,6	LF- GIR015YK0225U
VNS-DL10W	100-240Vac, 50/60Hz	0,1	10	Dia.100×H50	0,6	LF- GIR015YK0250U
VNS-DL12W	100-240Vac, 50/60Hz	0,12	12	Dia.200×H50	0,8	LF- GIR015YK0300U
VNS-DL15W	100-240Vac, 50/60Hz	0,15	15	Dia.200×H50	0,8	LF- GIR015YK0350U
VNS-DL20W	100-240Vac, 50/60Hz	0,2	20	Dia.200×H50	0,8	LF- GIR022YK0500U
VNS-DL24W	100-240Vac, 50/60Hz	0,24	24	Dia.300×H50	1,2	LF- GIR030YK0600U
VNS-DL30W	100-240Vac, 50/60Hz	0,3	30	Dia.300×H50	1,2	LF- GIR030YK0750U
VNS-DL36W	100-240Vac, 50/60Hz	0,36	36	Dia.300×H50	1,2	LF- GIR040YK0900U
VNS-DL40W	100-240Vac, 50/60Hz	0,4	40	Dia.300×H50	1,2	LF- GIR040K0950U
VNS-DL50W	100-240Vac, 50/60Hz	0,5	50	Dia.300×H50	1,2	LF- GIR040YK1000U

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

2.3 (0)	GENERAL TEST REQUIREMENTS		P
2.3 (0.3)	More sections applicable..... :	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Section/s:	—
2.3 (0.5)	Components	(see Annex 1)	—
2.3 (0.7)	Information for luminaire design in light sources standards		—
2.3 (0.7.2)	Light source safety standard .....	IEC 62031	—
	Luminaire design in the light source safety standard		P

2.5 (2)	CLASSIFICATION OF LUMINAIRES		P
2.5 (2.2)	Type of protection .....	Class II	P
2.5 (2.3)	Degree of protection..... :	IP20	—
2.5 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces .....	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
2.5 (2.5)	Luminaire for normal use .....	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	Luminaire for rough service .....	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—

2.6 (3)	MARKING		P
2.6 (3.2)	Mandatory markings	See "Copy of marking plate"	P
	Position of the marking	On enclosure of product	P
	Format of symbols/text		P
2.6 (3.3)	Additional information	See "Copy of marking plate"	P
	Language of instructions	Office language	P
2.6 (3.3.1)	Combination luminaires	Not combination luminaire	N/A
2.6 (3.3.2)	Nominal frequency in Hz	50/60Hz	P
2.6 (3.3.3)	Operating temperature		N/A
2.6 (3.3.5)	Wiring diagram		N/A
2.6 (3.3.6)	Special conditions		N/A
2.6 (3.3.7)	Metal halide lamp luminaire – warning	Not metal halide lamp luminaire	N/A
2.6 (3.3.8)	Limitation for semi-luminaires	Not semi-luminaires	N/A
2.6 (3.3.9)	Power factor and supply current		P
2.6 (3.3.10)	Suitability for use indoors		P
2.6 (3.3.11)	Luminaires with remote control	No remote control	N/A
2.6 (3.3.12)	Clip-mounted luminaire – warning	No relevant device	N/A
2.6 (3.3.13)	Specifications of protective shields		N/A

IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
2.6 (3.3.14)	Symbol for nature of supply	For DC:  For AC: 	P
2.6 (3.3.15)	Rated current of socket outlet	No socket outlet	N/A
2.6 (3.3.16)	Rough service luminaire	Not rough service luminaire	N/A
2.6 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments	Type Y (Input cord of LED driver)	P
2.6 (3.3.18)	Non-ordinary luminaires with PVC cable		N/A
2.6 (3.3.19)	Protective conductor current in instruction if applicable		N/A
2.6 (3.3.20)	Provided with information if not intended to be mounted within arm's reach		N/A
2.6 (3.3.21)	Non-replaceable and non-user replaceable light sources information provided	Non-replaceable light sources	P
2.6 (3.3.22)	Controllable luminaires, classification of insulation provided		N/A
2.6 (3.3.23)	Luminaire without controlgear provided with necessary information for selection of appropriate component		N/A
2.6 (3.3.24)	If not supplied with terminal block, information on the packaging		P
2.6 (3.4)	Test with water	15s with water, and then	P
	Test with hexane	15s with petroleum hexane	P
	Legible after test	No legible and curling	P
	Label attached	No easily removable	P

<b>2.7 (4)</b>	<b>CONSTRUCTION</b>		P
2.7 (4.2)	Components replaceable without difficulty		N/A
2.7 (4.3)	Wireways smooth and free from sharp edges		P
<b>/A2.7 (4.4)</b>	<b>Lampholders</b>		<b>N/A</b>
2.7 (4.4.1)	Integral lampholder	No lampholder	N/A
2.7 (4.4.2)	Wiring connection		N/A
2.7 (4.4.3)	Lampholder for end-to-end mounting		N/A
2.7 (4.4.4)	Positioning		N/A
	- pressure test (N) .....		—
	After test the lampholder comply with relevant standard sheets and show no damage		N/A

IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
	After test on single-capped lampholder the lampholder have not moved from its position and show no permanent deformation		N/A
	- bending test (N) .....		—
	After test the lampholder have not moved from its position and show no permanent deformation		N/A
2.7 (4.4.5)	Peak pulse voltage	No ignitors	N/A
2.7 (4.4.6)	Centre contact	No ignitors	N/A
2.7 (4.4.7)	Parts in rough service luminaires resistant to tracking	Not rough service luminaire	N/A
2.7 (4.4.8)	Lamp connectors	No lamp connector	N/A
2.7 (4.4.9)	Caps and bases correctly used	No single-capped ELV lamp is used on product	N/A
2.7 (4.4.10)	Light source for lampholder or connection according IEC 60061 not connected another way		N/A
<b>2.7 (4.5)</b>	<b>Starter holders</b>		N/A
	Starter holder in luminaires other than class II	No starter holders	N/A
	Starter holder class II construction		N/A
<b>2.7 (4.6)</b>	<b>Terminal blocks</b>		<b>N/A</b>
	Tails		N/A
	Unsecured blocks		N/A
<b>2.7 (4.7)</b>	<b>Terminals and supply connections</b>		<b>P</b>
2.7 (4.7.1)	Contact to metal parts		N/A
2.7 (4.7.2)	Test 8 mm live conductor		N/A
	Test 8 mm earth conductor		N/A
2.7 (4.7.3)	Terminals for supply conductors		P
2.7 (4.7.3.1)	Welded method and material		N/A
	- stranded or solid conductor		N/A
	- spot welding		N/A
	- welding between wires		N/A
	- Type Z attachment		N/A
	- mechanical test according to 15.6.2		N/A
	- electrical test according to 15.6.3		N/A
	- heat test according to 15.6.3.2.3 and 15.6.3.2.4		N/A
2.7 (4.7.4)	Terminals other than supply connection		N/A
2.7 (4.7.5)	Heat-resistant wiring/sleeves		N/A
2.7 (4.7.6)	Multi-pole plug	No multi-pole plug	N/A

IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
	- test at 30 N		N/A
<b>2.7 (4.8)</b>	<b>Switches</b>		N/A
	- adequate rating	No switch	N/A
	- adequate fixing		N/A
	- polarized supply		N/A
	- compliance with IEC 61058-1 for electronic switches		N/A
<b>2.7 (4.9)</b>	<b>Insulating lining and sleeves</b>		<b>N/A</b>
2.7 (4.9.1)	Retainment		N/A
	Method of fixing .....	No insulation lining and sleeves	N/A
2.7 (4.9.2)	Insulated linings and sleeves:		N/A
	Resistant to a temperature > 20 °C to the wire temperature or		N/A
	a) & c) Insulation resistance and electric strength		N/A
	b) Ageing test. Temperature (°C)..... :		N/A
<b>2.7 (4.10)</b>	<b>Double or reinforced insulation</b>		<b>P</b>
2.7 (4.10.1)	No contact, mounting surface – accessible metal parts – wiring of basic insulation	Considered with an approved LED driver	P
	Safe installation fixed luminaires		N/A
	Capacitors and switches		N/A
	Interference suppression capacitors according to IEC 60384-14		N/A
2.7 (4.10.2)	Assembly gaps:		N/A
	- not coincidental		N/A
	- no straight access with test probe		N/A
2.7 (4.10.3)	Retainment of insulation:		N/A
	- fixed		N/A
	- unable to be replaced; luminaire inoperative		N/A
	- sleeves retained in position		N/A
	- lining in lampholder		N/A
2.7 (4.10.4)	Protective impedance device		N/A
	Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor		N/A
	Y1 or Y2 capacitors comply with IEC 60384-14		N/A
	Resistors comply with test (a) in 14.1 of IEC 60065		N/A

IEC 60598-2-2			
Clause	Requirement + Test	Result - Remark	Verdict
<b>2.7 (4.11)</b>	<b>Electrical connections and current-carrying parts</b>		<b>P</b>
2.7 (4.11.1)	Contact pressure		N/A
2.7 (4.11.2)	Screws:		N/A
	- self-tapping screws	No screws used for the connection of current-carrying parts	N/A
	- thread-cutting screws		N/A
2.7 (4.11.3)	Screw locking:		N/A
	- spring washer		N/A
	- rivets	No rivets	N/A
2.7 (4.11.4)	Material of current-carrying parts		P
2.7 (4.11.5)	No contact to wood or mounting surface		P
2.7 (4.11.6)	Electro-mechanical contact systems		P
<b>2.7 (4.12)</b>	<b>Screws and connections (mechanical) and glands</b>		<b>P</b>
2.7 (4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		N/A
	Torque test: torque (Nm); part..... :	Fixed enclosure: 0,5Nm	P
	Torque test: torque (Nm); part..... :	Fixed cord anchorage: 0,6Nm	P
	Torque test: torque (Nm); part..... :	Fixed enclosure for LED driver: 0,6Nm	P
2.7 (4.12.2)	Screws with diameter < 3 mm screwed into metal		P
2.7 (4.12.4)	Locked connections:		N/A
	- fixed arms; torque (Nm)..... :		N/A
	- lampholder; torque (Nm)..... :		N/A
	- push-button switches; torque 0,8 Nm..... :		N/A
2.7 (4.12.5)	Screwed glands; force (Nm)..... :	No screwed glands	N/A
<b>2.7 (4.13)</b>	<b>Mechanical strength</b>		<b>P</b>
2.7 (4.13.1)	Impact tests:		P
	- fragile parts; energy (Nm)..... :		N/A
	- other parts; energy (Nm)..... :	Glass cover: 0,2Nm	P
	- other parts; energy (Nm)..... :	Metal enclosure: 0,35Nm	P
	1) live parts	Live parts not have become accessible	P
	2) linings		N/A
	3) protection	IP20	P
	4) covers		P

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Clause	Requirement + Test	Result - Remark	Verdict
2.7 (4.13.2)	Metal parts have adequate mechanical strength		P
2.7 (4.13.3)	Straight test finger	10N	P
2.7 (4.13.4)	Rough service luminaires		N/A
	- IP54 or higher		N/A
	a) fixed		N/A
	b) hand-held		N/A
	c) delivered with a stand		N/A
	d) for temporary installations and suitable for mounting on a stand		N/A
2.7 (4.13.6)	Tumbling barrel		N/A
<b>2.7 (4.14)</b>	<b>Suspensions, fixings and means of adjusting</b>		<b>P</b>
2.7 (4.14.1)	Mechanical load:		P
	A) four times the weight	For model VNS-DL50W which is the heaviest one: 0,8Kgx4=3,2Kg	P
	B) torque 2,5 Nm		N/A
	C) bracket arm; bending moment (Nm)..... :		N/A
	D) load track-mounted luminaires		N/A
	E) clip-mounted luminaires, glass-shelve. Thickness (mm) .....		N/A
	Metal rod. diameter (mm) .....		N/A
	Fixed luminaire or independent control gear without fixing devices		N/A
2.7 (4.14.2)	Load to flexible cables		N/A
	Mass (kg) .....		—
	Stress in conductors (N/mm <sup>2</sup> ) .....		N/A
	Mass (kg) of semi-luminaire .....		N/A
	Bending moment (Nm) of semi-luminaire .....		N/A
2.7 (4.14.3)	Adjusting devices:		N/A
	- flexing test; number of cycles .....		N/A
	- strands broken..... :		N/A
	- electric strength test afterwards		N/A
2.7 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors		N/A
2.7 (4.14.5)	Guide pulleys		N/A
2.7 (4.14.6)	Strain on socket-outlets		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
<b>2.7 (4.15)</b>	<b>Flammable materials</b>		<b>P</b>
	- glow-wire test 650°C..... :	See Test Table 2.16 (13.3.2)	P
	- spacing $\geq 30$ mm		N/A
	- screen withstanding test of 13.3.1		N/A
	- screen dimensions		N/A
	- no fiercely burning material		P
	- thermal protection		N/A
	- electronic circuits exempted		N/A
2.7 (4.15.2)	Luminaires made of thermoplastic material with lamp control gear		N/A
	a) construction		N/A
	b) temperature sensing control	No temperature sensing control	N/A
	c) surface temperature	No thermoplastic material	N/A
<b>2.7 (4.16)</b>	<b>Luminaires for mounting on normally flammable surfaces</b>		<b>P</b>
	No lamp control gear ..... :	Electronic control gear applied	N/A
	Provided with adaptor for a track meet the requirements for direct mounting on normally flammable surfaces		N/A
2.7 (4.16.1)	Lamp control gear spacing:		N/A
	- spacing 35 mm		N/A
	- spacing 10 mm		N/A
2.7 (4.16.2)	Thermal protection:		N/A
	- in lamp control gear		N/A
	- external		N/A
	- fixed position		N/A
	- temperature marked lamp control gear		N/A
2.7 (4.16.3)	Design to satisfy the test of 12.6	(see clause 12.6)	N/A
<b>2.7 (4.17)</b>	<b>Drain holes</b>		<b>N/A</b>
	Clearance at least 5 mm		N/A
<b>2.7 (4.18)</b>	<b>Resistance to corrosion</b>		<b>N/A</b>
2.7 (4.18.1)	- rust-resistance	IP20	N/A
2.7 (4.18.2)	- season cracking in copper		N/A
2.7 (4.18.3)	- corrosion of aluminium		N/A
2.7 (4.19)	Ignitors compatible with ballast		N/A
2.7 (4.20)	Rough service vibration	Not rough luminaires	N/A
<b>2.7 (4.21)</b>	<b>Protective shield</b>		<b>N/A</b>

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Clause	Requirement + Test	Result - Remark	Verdict
2.7 (4.21.1)	Shield fitted if tungsten halogen lamps or metal halide lamps	Not the tungsten halogen lamps or metal halide lamp	N/A
	Shield of glass if tungsten halogen lamps		N/A
2.7 (4.21.2)	Particles from a shattering lamp not impair safety		N/A
2.7 (4.21.3)	No direct path		N/A
2.7 (4.21.4)	Impact test on shield		N/A
	Glow-wire test on lamp compartment .....	See Test Table 2.16 (13.3.2)	N/A
2.7 (4.22)	Attachments to lamps not cause overheating or damage		N/A
2.7 (4.23)	Semi-luminaires comply Class II		N/A
<b>2.7 (4.24)</b>	<b>Photobiological hazards</b>		<b>P</b>
2.7 (4.24.1)	No excessive UV radiation if tungsten halogen lamps and metal halide lamps (Annex P)		N/A
2.7 (4.24.2)	Retinal blue light hazard		P
	Class of risk group assessed according to IEC/TR 62778 .....	RG0	—
	Luminaires with $E_{thr}$ :		N/A
	a) Fixed luminaires		N/A
	- distance x m, borderline between RG1 and RG2.. :		N/A
	- marking and instruction according 3.2.23		N/A
	b) Portable and handheld luminaires		N/A
	- marking according 3.2.23 if RG1 exceeded at 200 mm according to IEC/TR 62778		N/A
	Portable luminaires for children IEC 60598-2-10 and Mains socket outlet nightlights IEC 60598-2-12 not exceed RG1 at 200 mm according to IEC/62778		N/A
<b>2.7 (4.25)</b>	<b>Mechanical hazard</b>		<b>P</b>
	No sharp point or edges		P
<b>2.7 (4.26)</b>	<b>Short-circuit protection</b>		N/A
2.7 (4.26.1)	Adequate means of uninsulated accessible SELV parts	No uninsulated accessible SELV parts	N/A
2.7 (4.26.2)	Short-circuit test with test chain according 4.26.3		N/A
	Test chain not melt through		N/A
	Test sample not exceed values of Table 12.1 and 12.2		N/A
<b>2.7 (4.27)</b>	<b>Terminal blocks with integrated screwless earthing contacts</b>		N/A
	Test according Annex V		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Pull test of terminal fixing (20 N)		N/A
	After test, resistance < 0,05 Ω		N/A
	Pull test of mechanical connection (50 N)		N/A
	After test, resistance < 0,05 Ω		N/A
	Voltage drop test, resistance < 0,05 Ω		N/A
<b>2.7 (4.28)</b>	<b>Fixing of thermal sensing control</b>		N/A
	Not plug-in or easily replaceable type		N/A
	Reliably kept in position		N/A
	No adhesive fixing if UV radiations from a lamp can degrade the fixing		N/A
	Not outside the luminaire enclosure		N/A
	Test of adhesive fixing:		N/A
	Max. temperature on adhesive material (°C) ..... :		—
	100 cycles between t min and t max		N/A
	Temperature sensing control still in position		N/A
<b>2.7 (4.29)</b>	<b>Luminaires with non-replaceable light source</b>		P
	Not possible to replace light source		P
	Live part not accessible after parts have been opened by hand or tools		P
<b>2.7 (4.30)</b>	<b>Luminaires with non-user replaceable light source</b>		N/A
	If protective cover provide protection against electric shock and marked with “caution, electric shock risk” symbol:		N/A
	Minimum two fixing means		N/A
<b>2.7 (4.31)</b>	<b>Insulation between circuits</b>		P
	Circuits insulated from LV supply fulfil requirements according 4.31.1 – 4.31.3		P
	Controllable luminaires requiring same level of insulation for all components, the insulation between control terminals and LV supply fulfil requirements according 4.31.1 – 4.31.3		N/A
2.7 (4.31.1)	SELV circuits		P
	Used SELV source		P
	Voltage ≤ ELV		N/A
	Insulating of SELV circuits from LV supply		P
	Insulating of SELV circuits from other non SELV circuits		N/A
	Insulating of SELV circuits from FELV		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Insulating of SELV circuits from other SELV circuits		N/A
	SELV circuits insulated from accessible parts according Table X.1		P
	Plugs not able to enter socket-outlets of other voltage systems		N/A
	Socket outlets does not admit plugs of other voltage systems		N/A
	Plugs and socket-outlets does not have protective conductor contact		N/A
2.7 (4.31.2)	FELV circuits		N/A
	Used FELV source	No FELV circuits	N/A
	Voltage $\leq$ ELV		N/A
	Insulating of FELV circuits from LV supply		N/A
	FELV circuits insulated from accessible parts according Table X.1		N/A
	Plugs not able to enter socket-outlets of other voltage systems		N/A
	Socket outlets does not admit plugs of other voltage systems		N/A
	Socket-outlets does not have protective conductor contact		N/A
2.7 (4.31.3)	Other circuits		N/A
	Other circuits insulated from accessible parts according Table X.1		N/A
	Class II construction with equipotential bonding for protection against indirect contacts with live parts:		N/A
	- conductive parts are connected together		N/A
	- test according 7.2.3		N/A
	- conductive part not cause an electric shock in case of an insulation fault		N/A
	- equipotential bonding in master/slave applications		N/A
	- master luminaire provided with terminal for accessible conductive parts of slave luminaires		N/A
	- slave luminaire constructed as class I		N/A
2.7 (4.32)	<b>Overvoltage protective devices</b>		N/A
	Comply with IEC 61643-11	No overvoltage protective devices	N/A
	External to controlgear and connected to earth:		N/A
	- only in fixed luminaires		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	- only connected to protective earth		N/A
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2.8 (11)	CREEPAGE DISTANCES AND CLEARANCES		P
2.8 (11.2.1)	Impulse withstand category (Normal category II)	Category II <input checked="" type="checkbox"/> Category III <input type="checkbox"/>	—
	Category III according Annex U		N/A
	Protected against pollution, reduced creepage and clearance according Annex P of IEC 61347-1		N/A
2.8 (11.2.2)	Creepage distances for frequency up to 30 kHz	See Test Table 2.8 (11.2) I	P
	Creepage distances for frequency over 30 kHz:		N/A
	- Controlgear marked with $\hat{U}_{OUT}$ and $f_{UOUT}$ according IEC 61347-1, clause 7.1, item w	See Test Table 2.8 (11.2) II	N/A
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 2.8 (11.2) II	N/A
2.8 (11.2.3)	Clearances for frequency up to 30 kHz	See Test Table 2.8 (11.2) I	P
	Clearances distances for frequency over 30 kHz:		N/A
	- Controlgear marked with $U_P$	See Test Table 2.8 (11.2) II	N/A
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 2.8 (11.2) II	N/A

2.9 (7)	PROVISION FOR EARTHING		N/A
2.9 (7.2.1 + 7.2.3)	Accessible metal parts		N/A
	Metal parts in contact with supporting surface		N/A
	Resistance < 0,5 $\Omega$ ..... :		N/A
	Self-tapping screws used		N/A
	Thread-forming screws		N/A
	Thread-forming screw used in a groove		N/A
	Earth makes contact first		N/A
	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N/A
	Protective earthing of the luminaire not via built-in control gear		N/A
2.9 (7.2.2 + 7.2.3)	Earth continuity in joints, etc.		N/A
2.9 (7.2.4)	Locking of clamping means		N/A
	Compliance with 4.7.3		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N/A
2.9 (7.2.5)	Earth terminal integral part of connector socket		N/A
2.9 (7.2.6)	Earth terminal adjacent to mains terminals		N/A
2.9 (7.2.7)	Electrolytic corrosion of the earth terminal		N/A
2.9 (7.2.8)	Material of earth terminal		N/A
	Contact surface bare metal		N/A
2.9 (7.2.10)	Class II luminaire for looping-in		N/A
	Double or reinforced insulation to functional earth		N/A
2.9 (7.2.11)	Earthing core coloured green-yellow		N/A
	Length of earth conductor		N/A
<b>2.10 (14)</b>	<b>SCREW TERMINALS</b>		N/A
	Separately approved; component list	(see Annex 1)	N/A
	Part of the luminaire	(see Annex 3)	N/A
<b>2.10 (15)</b>	<b>SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS</b>		N/A
	Separately approved; component list..... :	(see Annex 1)	N/A
	Part of the luminaire ..... :	(see Annex 4)	N/A
<b>2.11 (5)</b>	<b>EXTERNAL AND INTERNAL WIRING</b>		P
<b>2.11 (5.2)</b>	<b>Supply connection and external wiring</b>		<b>P</b>
2.11 (5.2.1)	Means of connection..... :	Supply cords	P
	Outdoor luminaire has not PVC insulated external wiring if not class III or SELV $\leq 25$ V a.c./60 V d.c. or protected from outdoor environment		N/A
2.11 (5.2.2)	Type of cable..... :	H03VVH2-F(input cord of LED driver)	P
	Nominal cross-sectional area (mm <sup>2</sup> )..... :	2 x 0,75	P
	Cables equal to IEC 60227 or IEC 60245		P
2.11 (5.2.3)	Type of attachment, X, Y or Z	Type Y (input cord of LED driver)	P
2.11 (5.2.5)	Type Z not connected to screws		N/A
2.11 (5.2.6)	Cable entries:		P
	- suitable for introduction		P
	- adequate degree of protection		P

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Clause	Requirement + Test	Result - Remark	Verdict
2.11 (5.2.7)	Cable entries through rigid material have rounded edges		P
2.11 (5.2.8)	Insulating bushings:		N/A
	- suitably fixed		N/A
	- material in bushings		N/A
	- material not likely to deteriorate		N/A
	- tubes or guards made of insulating material		N/A
2.11 (5.2.9)	Locking of screwed bushings		N/A
2.11 (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
2.11 (5.2.10.1)	Cord anchorage for type X attachment:		N/A
	a) at least one part fixed		N/A
	b) types of cable		N/A
	c) no damaging of the cable		N/A
	d) whole cable can be mounted		N/A
	e) no touching of clamping screws		N/A
	f) metal screw not directly on cable		N/A
	g) replacement without special tool		N/A
	Glands not used as anchorage		N/A
	Labyrinth type anchorages		N/A
2.11 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment	Type Y	P
2.11 (5.2.10.3)	Tests:		P
	- impossible to push cable; unsafe		P
	- pull test: 25 times; pull (N) ..... : 60		P
	- torque test: torque (Nm) ..... : 0,15		P
	- displacement $\leq$ 2 mm	Max. 0,3	P
	- no movement of conductors		P
	- no damage of cable or cord		P

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Clause	Requirement + Test	Result - Remark	Verdict
	- function independent of electrical connection		N/A
2.11 (5.2.11)	External wiring passing into luminaire		P
2.11 (5.2.12)	Looping-in terminals		N/A
2.11 (5.2.13)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		P
2.11 (5.2.14)	Mains plug same protection		P
	Class III luminaire plug	DC connector	P
	No unsafe compatibility		N/A
2.11 (5.2.16)	Appliance inlets (IEC 60320)	No appliance inlets	N/A
	Installation couplers (IEC 61535)		N/A
	Other appliance inlet or connector according relevant IEC standard		N/A
2.11 (5.2.17)	No standardized interconnecting cables properly assembled		N/A
2.11 (5.2.18)	Used plug in accordance with		N/A
	- IEC 60083		N/A
	- other standard		N/A
<b>2.11 (5.3)</b>	<b>Internal wiring</b>		<b>P</b>
2.11 (5.3.1)	Internal wiring of suitable size and type	See Annex 1	P
	Through wiring		N/A
	- not delivered/ mounting instruction		N/A
	- factory assembled		N/A
	- socket outlet loaded (A)..... :		N/A
	- temperatures ..... :	(see Annex 2)	N/A
	Green-yellow for earth only		N/A
2.11 (5.3.1.1)	Internal wiring connected directly to fixed wiring		N/A
	Cross-sectional area (mm <sup>2</sup> )..... :	See Annex 1	N/A
	Insulation thickness (mm) ..... :		N/A
	Extra insulation added where necessary		N/A
2.11 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Cross-sectional area (mm <sup>2</sup> )..... :		N/A
2.11 (5.3.1.3)	Double or reinforced insulation for class II		N/A
2.11 (5.3.1.4)	Conductors without insulation		N/A
2.11 (5.3.1.5)	SELV current-carrying parts		P
2.11 (5.3.1.6)	Insulation thickness other than PVC or rubber		N/A
2.11 (5.3.2)	Sharp edges etc.		P
	No moving parts of switches etc.		N/A
	Joints, raising/lowering devices		N/A
	Telescopic tubes etc.		N/A
	No twisting over 360°		P
2.11 (5.3.3)	Insulating bushings:		N/A
	- suitable fixed	No insulation bushings	N/A
	- material in bushings		N/A
	- material not likely to deteriorate		N/A
	- cables with protective sheath		N/A
2.11 (5.3.4)	Joints and junctions effectively insulated		N/A
2.11 (5.3.5)	Strain on internal wiring		N/A
2.11 (5.3.6)	Wire carriers		N/A
2.11 (5.3.7)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		P
<b>2.11 (5.4)</b>	<b>Test to determine suitability of conductors having a reduced cross-sectional area</b>		N/A
	Under test the temperature of the luminaire wiring insulation not exceed the limits stated in Table 12.2	(see Annex 2)	N/A
	No damage to luminaire wiring after test		N/A

<b>2.12 (8)</b>	<b>PROTECTION AGAINST ELECTRIC SHOCK</b>		P
2.12 (8.2.1)	Live parts not accessible		P
	Basic insulated parts not used on the outer surface without appropriate protection		P
	Basic insulated parts not accessible with standard test finger on portable, settable and adjustable luminaires		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Basic insulated parts not accessible with Ø 50 mm probe from outside, other types of luminaires		P
	Lamp and starterholders in portable and adjustable luminaires comply with double or reinforced insulation requirements		N/A
	Basic insulation only accessible under lamp or starter replacement		N/A
	Protection in any position		P
	Double-ended tungsten filament lamp		N/A
	Insulation lacquer not reliable		N/A
	Double-ended high-pressure discharge lamp		N/A
	Relevant warning according to 3.2.18 fitted to the luminaire		N/A
2.12 (8.2.2)	Portable luminaire adjusted in most unfavourable position		N/A
2.12 (8.2.3.a)	Class II luminaire:		N/A
	- basic insulated metal parts not accessible during starter or lamp replacement		N/A
	- basic insulation not accessible other than during starter or lamp replacement		N/A
	- glass protective shields not used as supplementary insulation		N/A
2.12 (8.2.3.b)	BC lampholder of metal in class I luminaires shall be earthed		N/A
2.12 (8.2.3.c)	SELV circuits with exposed current carrying parts:		N/A
	Ordinary luminaire:		N/A
	- voltage under load (V)..... :		N/A
	- no-load voltage (V)..... :		N/A
	- touch current if applicable (mA) ..... :		N/A
	One conductive part insulated if required		N/A
	Other than ordinary luminaire:		N/A
	- nominal voltage (V) ..... :		N/A
	Class III luminaire only for connection to SELV		N/A
	Class III luminaire not provided with means for protective earthing		N/A
2.12 (8.2.4)	Portable luminaire has protection independent of supporting surface		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
2.12 (8.2.5)	Compliance with the standard test finger or relevant probe		P
2.12 (8.2.6)	Covers reliably secured		P
2.12 (8.2.7)	Luminaire other than below with capacitor > 0,5 $\mu$ F not exceed 50 V 1 min after disconnection	Approved LED driver	N/A
	Portable luminaire with capacitor > 0,1 $\mu$ F (0.25) not exceed 34 V 1 s after disconnection		N/A
	Other luminaires with capacitor > 0,1 $\mu$ F (0.25) with plug and track adaptors not exceed 60 V 5 s after disconnection		N/A
2.12 (-)	Parts within the ceiling space provide same degree of protection against electric shock as parts below the ceiling space		N/A

<b>2.13 (12)</b>	<b>ENDURANCE TEST AND THERMAL TEST</b>		P
2.13.1 (-)	If IP > IP 20 relevant test of (12.4), (12.5) and (12.6) after (9.2) before (9.3) specified in 2.14		—
<b>2.13 (12.2)</b>	<b>Selection of lamps and ballasts</b>		—
	Lamp used according Annex B	(Lamp used see Annex 2)	—
	Controlgear if separate and not supplied	(Controlgear used see Annex 2)	—
<b>2.13 (12.3)</b>	<b>Endurance test</b>		<b>P</b>
	a) mounting-position .....	According to manual instruction	—
	b) test temperature ( $^{\circ}$ C).....	55	—
	c) total duration (h) .....	240	—
	d) supply voltage (V).....	1,1 x 240 = 264	—
	d) if not equipped with controlgear, constant voltage/current (V) or (A) .....		—
	e) luminaire ceases to operate		—
2.13 (12.3.2)	After endurance test:		P
	- no part unserviceable		P
	- luminaire not unsafe		P
	- no damage to track system	No track system	N/A
	- marking legible		P
	- no cracks, deformation etc.		P
<b>2.13 (12.4)</b>	<b>Thermal test (normal operation)</b>	(see Annex 2)	P
<b>2.13 (12.5)</b>	<b>Thermal test (abnormal operation)</b>	(see Annex 2)	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
<b>2.13 (12.6)</b>	<b>Thermal test (failed lamp control gear condition):</b>		N/A
2.13 (12.6.1)	Through wiring or looping-in wiring loaded by a current of (A) .....		—
	- case of abnormal conditions.....		—
	- electronic lamp control gear		N/A
	- measured winding temperature (°C): at 1,1 Un .....		—
	- measured mounting surface temperature (°C) at 1,1 Un .....		N/A
	- calculated mounting surface temperature (°C) .....		N/A
	- track-mounted luminaires		N/A
2.13 (12.6.2)	Temperature sensing control		N/A
	- case of abnormal conditions.....		—
	- thermal link		N/A
	- manual reset cut-out		N/A
	- auto reset cut-out		N/A
	- measured mounting surface temperature (°C) .....		N/A
	- track-mounted luminaires		N/A
<b>2.13 (12.7)</b>	<b>Thermal test (failed lamp control gear in plastic luminaires):</b>		N/A
2.13 (12.7.1)	Luminaire without temperature sensing control		N/A
2.13 (12.7.1.1)	Luminaire with fluorescent lamp ≤ 70W		N/A
	Test method 12.7.1.1 or Annex W .....		—
	Test according to 12.7.1.1:		N/A
	- case of abnormal conditions.....		—
	- Ballast failure at supply voltage (V) .....		—
	- Components retained in place after the test		N/A
	- Test with standard test finger after the test		N/A
	Test according to Annex W:		N/A
	- 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).....		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Ball-pressure test .....	See Test Table 2.16 (13.2.1)	N/A
2.13 (12.7.1.2)	Luminaire with discharge lamp, fluorescent lamp > 70W, transformer > 10 VA		N/A
	- 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 .....	See Test Table 2.16 (13.2.1)	N/A
2.13 (12.7.1.3)	Luminaire with short circuit proof transformers ≤ 10 VA		N/A
	- case of abnormal conditions.....		—
	- Components retained in place after the test		N/A
	- Test with standard test finger after the test		N/A
2.13 (12.7.2)	Luminaire with temperature sensing control		N/A
	- 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:.....	See Test Table 2.16 (13.2.1)	N/A
2.13.1 (-)	Wiring, for connection to the supply, not reach unsafe temperature		P
	- measured temperature of the cable (°C) .....		P

<b>2.14 (9)</b>	<b>RESISTANCE TO DUST AND MOISTURE</b>		P
2.14 (-)	If IP > IP 20 the order of tests as specified in clause 2.13		N/A
2.14 (9.2)	Tests for ingress of dust, solid objects and moisture:		P
	- classification according to IP .....	IP20	—
	- mounting position during test.....	According to instruction	—
	- fixing screws tightened; torque (Nm) .....	Fixed enclosure, 0,34	—
	- tests according to clauses.....	Clause 9.2.0	—
	- electric strength test afterwards	Details see clause 10.2.2	P
	a) no deposit in dust-proof luminaire		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	b) no talcum in dust-tight luminaire		N/A
	c) no trace of water on current-carrying parts or on insulation where it could become a hazard		N/A
	c.1) For luminaires without drain holes – no water entry		N/A
	c.2) For luminaires with drain holes – no hazardous water entry		N/A
	d) no water in watertight or pressure watertight luminaire		N/A
	e) no contact with live parts (IP 2X)		P
	e) no entry into enclosure (IP 3X and IP 4X)		N/A
	e) no contact with live parts through drain holes and ventilation slots (IP3X and IP4X)		N/A
	f) no trace of water on part of lamp requiring protection from splashing water		N/A
	g) no damage of protective shield or glass envelope		N/A
2.14 (9.3)	Humidity test 48 h	25°C, 93% R.H	P

<b>2.15 (10)</b>	<b>INSULATION RESISTANCE AND ELECTRIC STRENGTH</b>		<b>P</b>
2.15 (10.2.1)	Insulation resistance test		P
	Cable or cord covered by metal foil or replaced by a metal rod of mm Ø .....		—
	Insulation resistance (MΩ).....	Details see below	—
	SELV		P
	- between current-carrying parts of different polarity :	>10MΩ	P
	- between current-carrying parts and mounting surface.....	>10MΩ	P
	- between current-carrying parts and metal parts of the luminaire .....	>10MΩ	P
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts .....		N/A
	- Insulation bushings as described in Section 5 .....		N/A
	Other than SELV		P
	- between live parts of different polarity.....	>100MΩ	P
	- between live parts and mounting surface .....	>100MΩ	P
	- between live parts and metal parts.....	>100MΩ	P

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Clause	Requirement + Test	Result - Remark	Verdict
	- between live parts of different polarity through action of a switch .....		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts .....		N/A
	- Insulation bushings as described in Section 5 .....		N/A
2.15 (10.2.2)	Electric strength test		P
	Dummy lamp	No ignitor	N/A
	Luminaires with ignitors after 24 h test		N/A
	Luminaires with manual ignitors		N/A
	Test voltage (V) .....	Details see below	P
	SELV		P
	- between current-carrying parts of different polarity :	500V	P
	- between current-carrying parts and mounting surface .....	500V	P
	- between current-carrying parts and metal parts of the luminaire .....	500V	P
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts .....		N/A
	- Insulation bushings as described in Section 5 .....		N/A
	Other than SELV		P
	- between live parts of different polarity..... :	1480V	P
	- between live parts and mounting surface .....	2960V	P
	- between live parts and metal parts..... :	2960V	P
	- between live parts of different polarity through action of a switch .....		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts .....		N/A
	- Insulation bushings as described in Section 5 .....		N/A
2.15 (10.3)	Touch current or protective conductor current (mA):.	Touch current: 0,13<0,7	P
<b>2.16 (13)</b>	<b>RESISTANCE TO HEAT, FIRE AND TRACKING</b>		P
2.16 (13.2.1)	Ball-pressure test .....	See Test Table 2.16 (13.2.1)	P
2.16 (13.3.1)	Needle-flame test (10 s)..... :	See Test Table 2.16 (13.3.1)	P

IEC 60598-2-2							
Clause	Requirement + Test				Result - Remark		Verdict
2.16 (13.3.2)	Glow-wire test (650°C).....:				See Test Table 2.16 (13.3.2)		P
2.16 (13.4)	Proof tracking test (IEC 60112) .....				See Test Table 2.16 (13.4)		N/A
<b>1.7 (11.2)</b>	<b>TABLE I: Creepage distances and clearances</b>						<b>P</b>
	<b>Minimum distances (mm) for a.c. up to 30 kHz sinusoidal voltages</b>						<b>P</b>
	<b>Applicable part of IEC 60598-1 Table 11.1.A*, 11.1.B* and 11.2*</b>						<b>P</b>
	Insulation type **	Measured clearance	Required		Measured creepage	Required	
			clearance	*Table		creepage	*Table
Distance 1:	--	<60V d.c. Test according to Table 10.2	--	--	<60V d.c. Test according to Table 10.2	--	--
Working voltage (V).....:					Max. DC 55V		—
PTI.....:					< 600 <input checked="" type="checkbox"/> ≥ 600 <input type="checkbox"/>		—
Pulse voltage or $U_P$ if applicable (kV) .....					--		—
Supplementary information: - For all models							
Distance 2:	--	--	--	--	--	--	--
Working voltage (V).....:					--		—
PTI.....:					< 600 <input type="checkbox"/> ≥ 600 <input type="checkbox"/>		—
Pulse voltage or $U_P$ if applicable (kV) .....					--		—
Supplementary information:							
Distance 3:	--	--	--	--	--	--	--
Working voltage (V).....:					--		—
PTI.....:					< 600 <input type="checkbox"/> ≥ 600 <input type="checkbox"/>		—
Pulse voltage or $U_P$ if applicable (kV) .....					--		—
Supplementary information:							

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

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

1.7 (11.2)	TABLE II: Creepage distances and clearances						N/A
Minimum distances (mm) for a.c. higher than 30 kHz sinusoidal voltages							
Applicable part of IEC 61347-1 Table 7 and 8* or IEC 60664-4 Table 1 and 2							
Distances	Insulation type **	Measured clearance	Required		Measured creepage	Required	
			clearance	*Table		creepage	*Table
Distance 1:	--	--	--	--	--	--	--
Working voltage (V).....:					--	---	
Frequency if applicable (kHz).....:					--	---	
PTI.....:					< 600 <input type="checkbox"/>	≥ 600 <input type="checkbox"/>	
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) .....					--	---	
Supplementary information:							
Distance 2:	--	--	--	--	--	--	--
Working voltage (V).....:					--	---	
Frequency if applicable (kHz).....:					--	---	
PTI.....:					< 600 <input type="checkbox"/>	≥ 600 <input type="checkbox"/>	
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) .....					--	---	
Supplementary information:							
Distance 3:	--	--	--	--	--	--	--
Working voltage (V).....:					--	---	
Frequency if applicable (kHz).....:					--	---	
PTI.....:					< 600 <input type="checkbox"/>	≥ 600 <input type="checkbox"/>	
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) .....					--	---	
Supplementary information:							

\*\* Insulation type: B – Basic; S – Supplementary; R – Reinforced.

2.16 (13.2.1)	TABLE: Ball Pressure Test of Thermoplastics				P
Allowed impression diameter (mm) .....					2
Object/ Part No./ Material		Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)	
COB cover		See Annex 1	97	1.0	
Supplementary information:					

IEC 60598-2-2					
Clause	Requirement + Test	Result - Remark			Verdict
<b>2.16 (13.3.1)</b>	<b>TABLE: Needle-flame test (IEC 60695-11-5)</b>				<b>P</b>
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (ta); (s)	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
DC connector	See Annex 1	10	No	3,0	P
Supplementary information:					

<b>2.16 (13.3.2)</b>	<b>TABLE: Glow-wire test (IEC 60695-2-11)</b>				<b>P</b>
<b>Glow wire temperature .....</b>		650°C			—
Object/ Part No./ Material	Manufacturer/ trademark	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict	
COB cover	See Annex 1	No	0	P	
Any flame or glowing of the sample extinguished within 30 s of withdrawing the glow-wire, and any burning or molten drop did not ignite the underlying parts (Yes/No) .....				Yes	
Supplementary information:					

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

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

ANNEX 1	TABLE: Critical components information						P
Object / part No.	Code	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity <sup>1)</sup>	
Supply cords	B	Dongguan Ziqiang Cable Co. Ltd.	H03VVH2-F	300/300V, 2x0,75mm <sup>2</sup>	DIN EN 50525-2-21	VDE 40042876	
COB cover	C	Teijin Limited Resin And Plastic	LN-2250	V-0, 120°C	IEC 60598-2-2 IEC 60598-1	UL E50075 Tested with appliance	
DC wire	C	DONGGUAN CHENG XING ELECTRONIC CO LTD	1015	22AWG, 105°C, 600V	IEC 60598-2-2 IEC 60598-1	UL E249743 Tested with appliance	
DC connector	C	Shenzhen Homen Technology Co., Ltd.	ET-02	DC60V, 1A	IEC 60598-2-2 IEC 60598-1	Tested with appliance	
COB	C	HONGLI TRONIC	HL - LM004H384W -xxxxx	If: 150-1000mA Vf: 32-45V	IEC 62031 IEC TR 62778	Tested with appliance	
LED driver	B	Shenzhen Ledfriend Optoelectronics Co., Ltd	LF-GIR040/030/022/015YKxxxx U series	PRI: 100-240VAC, 50/60Hz, SEC: 25-42VDC, xxxx represent output current 150mA~1000mA, U <sub>out</sub> : 55VDC ta:50°C; tc:85°C, Constant Current, Class II, SELV, Independent	IEC 61347-1 IEC 61347-2-13	SG PSB-LE-01106	
Supplementary information:							
<sup>1)</sup> Provided evidence ensures the agreed level of compliance. See OD-CB2039. 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							

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

ANNEX 2	TABLE: Thermal tests of Section 12			P			
	Type reference.....	VNS-DL50W		—			
	Lamp used.....	LED module		—			
	Lamp control gear used.....	LF-GIR040YK1000U		—			
	Mounting position of luminaire.....	Normal use		—			
	Supply wattage (W).....	50,7		—			
	Supply current (A).....	0,21		—			
	Temperatures in test 1 - 4 below are corrected for ta (°C).....	45		—			
	- abnormal operating mode.....	LED driver output short-circuited, protection		—			
1.12 (12.4)	- test 1: rated voltage.....	240V		—			
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current.....	240Vx1,06=254,4V		—			
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage.....	--		—			
	Through wiring or looping-in wiring loaded by a current of A during the test.....	--		—			
1.12 (12.5)	- test 4: 1,1 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current.....	--		—			
Temperature measurements (°C)							
Part	Ambient	Cl. 12.4 – normal				Cl. 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
tc of LED Driver	45	67,5	--	--	85	--	--
Supply cord	45	--	54,6	--	90	--	--
Internal wire near COB	45	--	73,2	--	105	--	--
Output wire of LED driver	45	--	66,8	--	90	--	--
COB cover	45	--	72,3	--	Ref.	--	--
COB	45	--	87,4	--	Ref.	--	--
Internal surface of recessed box	45	--	65,8	--	90	--	--
Mounting surface	45	--	55,1	--	90	--	--
Supplementary information:--							

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

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

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

<b>ANNEX 4</b>	<b>Screwless terminals (part of the luminaire)</b>		N/A
<b>(15)</b>	<b>SCREWLESS TERMINALS</b>		N/A
(15.2)	Type of terminal.....:		—
	Rated current (A) .....		—
(15.3.1)	Material		N/A
(15.3.2)	Clamping		N/A
(15.3.3)	Stop		N/A
(15.3.4)	Unprepared conductors		N/A
(15.3.5)	Pressure on insulating material		N/A
(15.3.6)	Clear connection method		N/A
(15.3.7)	Clamping independently		N/A
(15.3.8)	Fixed in position		N/A
(15.3.10)	Conductor size		N/A
	Type of conductor		N/A
(15.5)	Terminals and connections for internal wiring		N/A
(15.5.1)	Mechanical tests		N/A
(15.5.1.1.1)	Pull test spring-type terminals (4 N, 4 samples).....:		N/A
(15.5.1.1.2)	Pull test pin or tab terminals (4 N, 4 samples).....:		N/A
	Insertion force not exceeding 50 N		N/A
(15.5.1.2)	Permanent connections: pull-off test (20 N)		N/A
(15.5.2)	Electrical tests		N/A
	Voltage drop (mV) after 1 h (4 samples) .....		N/A
	Voltage drop of two inseparable joints		N/A
	Number of cycles:		—
	Voltage drop (mV) after 10th alt. 25th cycle (4 samples).....:		N/A
	Voltage drop (mV) after 50th alt. 100th cycle (4 samples).....:		N/A
	After ageing, voltage drop (mV) after 10th alt. 25th cycle (4 samples).....:		N/A
	After ageing, voltage drop (mV) after 50th alt. 100th cycle (4 samples) .....		N/A
(15.6)	Terminals and connections for external wiring		N/A
(15.6.1)	Conductors		N/A

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Clause	Requirement + Test									Result - Remark	Verdict
	Terminal size and rating										N/A
15.6.2	Mechanical tests										N/A
(15.6.2.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N) .....										N/A
(15.6.2.2)	Pull test pin or tab terminals (4 samples); pull (N) .....										N/A
(15.6.3)	Electrical tests										N/A
	Tests according 15.6.3.1 + 15.6.3.2 in IEC 60598-1										N/A
<b>(15.6.3.1)</b> <b>(15.6.3.2)</b>	<b>TABLE: Contact resistance test / Heating tests</b>										N/A
	Voltage drop (mV) after 1 h										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)	--	--	--	--	--	--	--	--	--	--	
	Voltage drop of two inseparable joints										N/A
	Voltage drop after 10th alt. 25th cycle										N/A
	Max. allowed voltage drop (mV)..... :										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)	--	--	--	--	--	--	--	--	--	--	
	Voltage drop after 50th alt. 100th cycle										N/A
	Max. allowed voltage drop (mV)..... :										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)	--	--	--	--	--	--	--	--	--	--	
	Continued ageing: voltage drop after 10th alt. 25th cycle										N/A
	Max. allowed voltage drop (mV)..... :										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)	--	--	--	--	--	--	--	--	--	--	
	Continued ageing: voltage drop after 50th alt. 100th cycle										N/A
	Max. allowed voltage drop (mV)..... :										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)	--	--	--	--	--	--	--	--	--	--	
Supplementary information:--											

<b>Attachment 1</b>	<b>Tests according to IEC 62031:2018</b>
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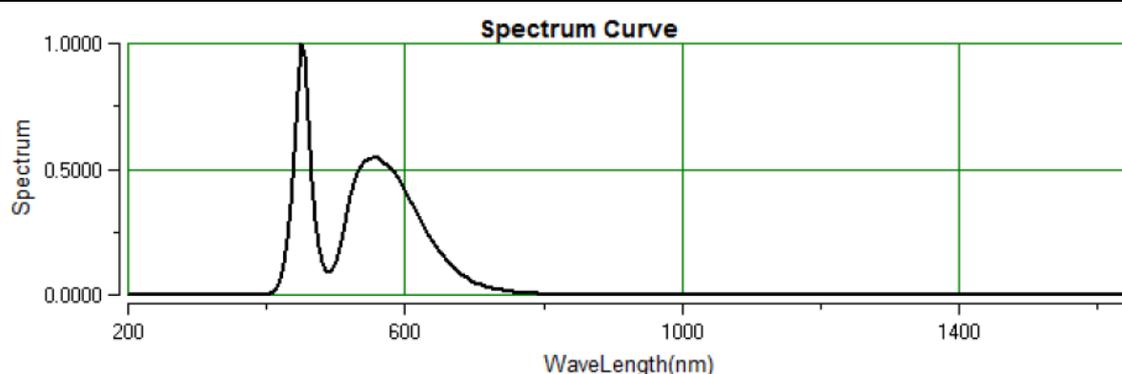
<b>12</b>	<b>FAULT CONDITIONS</b>	<b>P</b>
<b>12.2</b>	<b>Overpower condition</b>	<b>P</b>
	Module withstands overpower condition >15 min.	P
	Module with automatic protective device or power limiter, test performed 15 min. at limit.	N/A
	No fire, smoke or flammable gas is produced	P
	Molten material does not ignite tissue paper, spread below the module	P

<b>22</b>	<b>PHOTOBIOLOGICAL SAFETY</b>	<b>P</b>
<b>22.1</b>	<b>UV radiation</b>	<b>N/A</b>
	Luminous radiation not exceed 2mW/klm	N/A
<b>22.2</b>	<b>Blue light hazard</b>	<b>P</b>
	Assessed according to IEC TR 62778	RG0
<b>22.3</b>	<b>Infrared radiation</b>	<b>N/A</b>
	Requirements for infrared radiation when required	N/A

<b>Attachment 2</b>	<b>Photobiological safety of lamps and lamp systems were according to standard IEC TR 62778:2014</b>
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	Measurement performed on:	<input type="checkbox"/> LED package <input type="checkbox"/> LED module <input type="checkbox"/> Lamp <input checked="" type="checkbox"/> Luminaire	
	Model number .....	VNS-DL50W	
	Test voltage (V) .....	240	—
	Test current (mA).....	--	—
	Test frequency (Hz).....	50	—
	Ambient, t (°C).....	25,0	—
	Measurement distance .....	<input checked="" type="checkbox"/> 20 cm <input type="checkbox"/> ... cm	—
	Source size .....	<input checked="" type="checkbox"/> Non-small <input type="checkbox"/> Small : .... mm	—
	Field of view .....	<input type="checkbox"/> 100 mrad <input checked="" type="checkbox"/> 11 mrad <input type="checkbox"/> 1,7 mrad (for small sources)	—

Item	Symb ol	Units	Result	Remark
Correlated colour temperature	CCT	K	6159	--
x/y colour coordinates	--	--	0,3192 / 0,3286	--
Blue light hazard radiance	L <sub>B</sub>	W/(m <sup>2</sup> •sr <sup>1</sup> )	69	RG0
Blue light hazard irradiance	E <sub>B</sub>	W/m <sup>2</sup>	7,348	--
Luminance	L	cd/m <sup>2</sup>	8,09 x 10 <sup>4</sup>	--
Illuminance	E	lx	8654	--



SN	Size (mm)	field of view(mrad)	distance d (mm)	Illuminance E(lx)	Diameter D(mm)	Luminance Lv(cd/m2)	Blue light Lb (W/m2/sr)	exp. limit Tmax (s)	CCT (K)	Eb (W/m2)
[1]	24	11	200	8654	2.2	8.090e+004	69	14487	6159	7.384e+000

SN	CIE-x	CIE-y
[1]	0.3192	0.3286



Figure 1. Front view of VNS-DL50W  
(All models have the same appearance except size, details see model list on page 6)

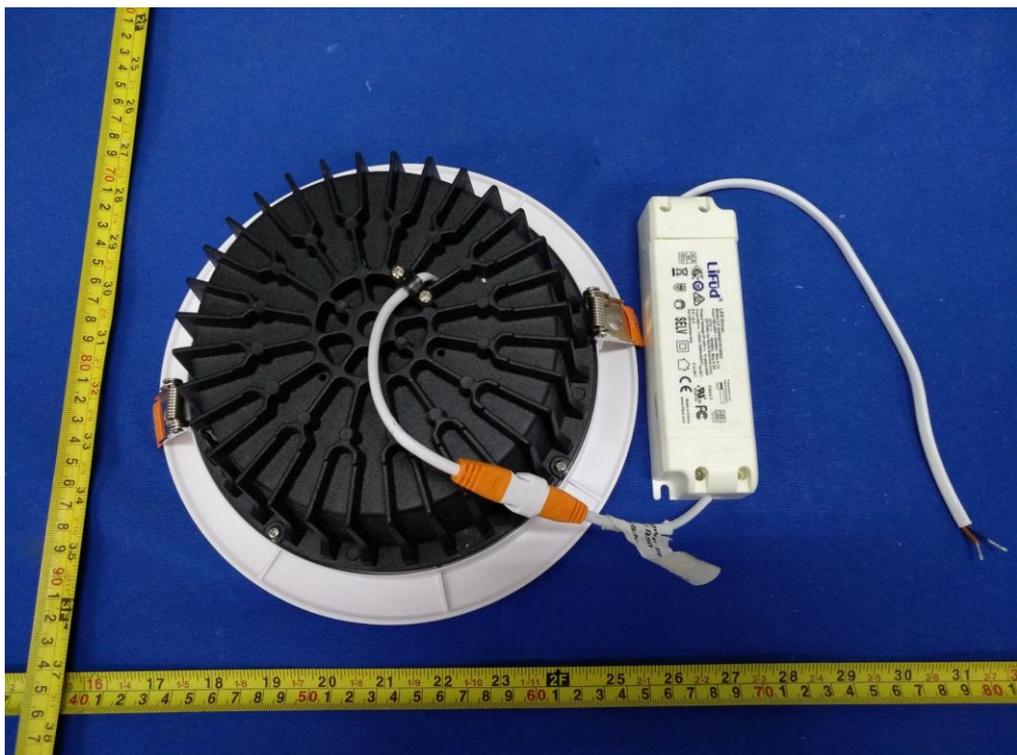


Figure 2. Base view of VNS-DL50W



Figure 3. Over view of cord anchorage



Figure 4. Over view of DC connector

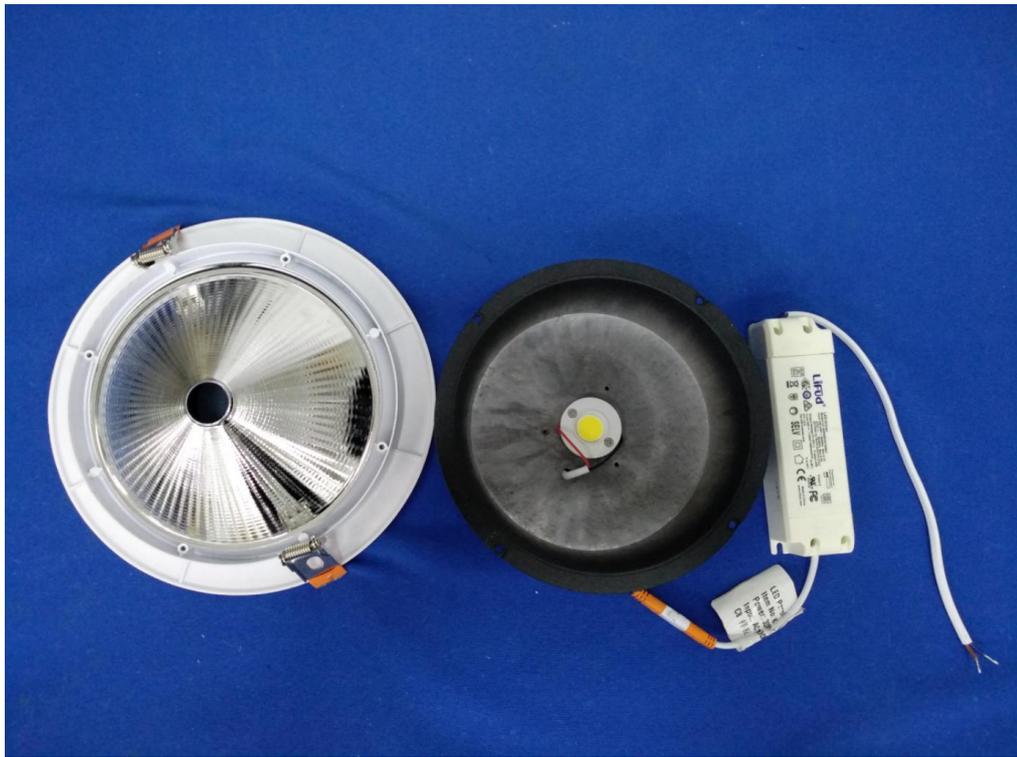


Figure 5. Internal view

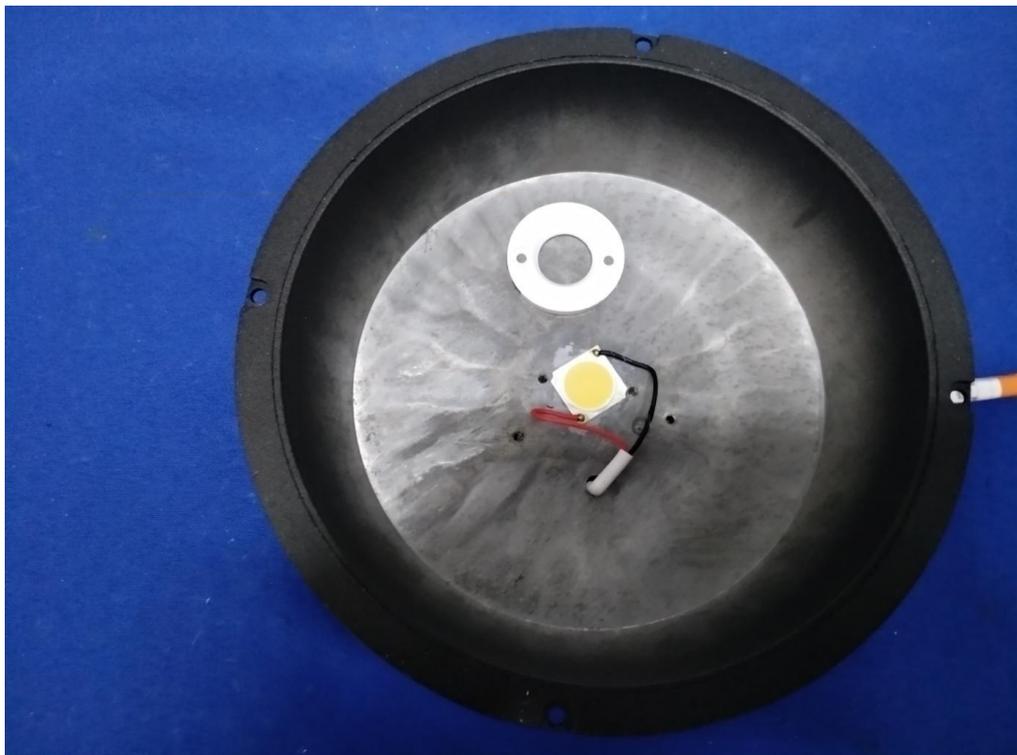


Figure 6. Internal view of LED Module



Figure 7. Over view of LED driver

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