

APPLICATION FOR LVD TEST REPORT

On Behalf of

Prepared For : **SHENZHEN NOBLE OPTO CO., LTD.**

Building 5F, Mingjinhai Industry Park, Shiyan Town, Bao'an District,
Shenzhen, China, 518108

Product Name : High Power Traffic Light

Model : NBVB313HP, NBAL313HP, NBPS312HP, NBVB312HP, NBAL213HP,
NBPS212HP, NBVB213HP, NBVB212HP, NBAL113HP, NBVB113HP,
NBVB112HP, NBVB200HP-R, NBVB200HP-A, NBVB200HP-G,
NBVB300HP-R, NBVB300HP-A, NBVB300HP-G, NBVB100HP-R,
NBVB100HP-A, NBVB100HP-G

Prepared By : **SHENZHEN POCE TECHNOLOGY CO., LTD**

H Building, Hongfa Science And Technology Park, Tangtou, Shiyan,
Bao'An District, Shenzhen, China

Test Date : Aug. 11, 2018 to Aug. 22, 2018

Date of Report : Aug. 22, 2018

Report No. : POCE18081702JRS

TEST REPORT**EN 60598-2-1****Luminaires Part 2: Particular requirements:
Section One – Fixed general purpose luminaires**

Reference Number..... POCE18081702JRS

Tested by (Engineer)..... Calvin Chen

Approved by (Manager)..... Machael Mo

Date of issue..... Aug. 22, 2018

**Testing laboratory:**

Name..... Shenzhen POCE Technology Co., Ltd

Address..... H Building, Hongfa Science And Technology Park, Tangtou, Shiyan,
Bao'an District, Shenzhen, China

Applicant's name..... SHENZHEN NOBLE OPTO CO., LTD.

Address..... Building 5F, Mingjinhai Industry Park, Shiyan Town, Bao'an District,
Shenzhen, China, 518108**Test specification:**Standard..... EN 60598-1:2015
EN 60598-2-1:1989

Test procedure..... CE-LVD

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

Test item description..... High Power Traffic Light

Trade Mark..... N/A

Manufacturer..... SHENZHEN NOBLE OPTO CO., LTD.

Address..... Building 5F, Mingjinhai Industry Park, Shiyan Town, Bao'an District,
Shenzhen, China, 518108Model/Type reference..... NBVB313HP, NBAL313HP, NBPS312HP, NBVB312HP, NBAL213HP,
NBPS212HP, NBVB213HP, NBVB212HP, NBAL113HP, NBVB113HP,
NBVB112HP, NBVB200HP-R, NBVB200HP-A, NBVB200HP-G,
NBVB300HP-R, NBVB300HP-A, NBVB300HP-G, NBVB100HP-R,
NBVB100HP-A, NBVB100HP-G

Ratings..... Input: 100-240 V~, 50/60Hz, 150W

Test item and test requirement particulars

Operating condition Continuous
 Equipment mobility Fixed luminaire
 Class of equipment..... Class I
 Degree of protection IP66
 Power factor..... 0.96

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(sample)..... Aug. 11, 2018
 Date (s) of performance of tests Aug. 11, 2018 to Aug. 22, 2018

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

General product information:

- (1) All models have the same layout and construction except the appearance.
- (2) All the test are performed on NBVB313HP.

Copy of marking plate:**High Power Traffic Light**

Model : NBVB313HP

Input: 100-240 V~, 50/60Hz, 150W



Manufacturer: SHENZHEN NOBLE OPTO CO., LTD.

Address: Building 5F, Mingjinhai Industry Park, Shiyan Town, Bao'an District, Shenzhen, China, 518108

Importer: XXX

Address: YYY

Note: Due to similarity of the rating labels, only above label is listed.

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.2 (0)	GENERAL TEST REQUIREMENTS		P
1.2 (0.1)	Information for luminaire design considered	Standard Yes ☒ No ☐	—
1.2 (0.3)	More sections applicable	Yes ☐ No ☒	—
1.4 (2)	CLASSIFICATION		
1.4 (2.2)	Type of protection	Class I	—
1.4 (2.3)	Degree of protection.....	IP66	—
1.4 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces	Yes ☒ No ☐	
	Luminaire not suitable for direct mounting on normally flammable surfaces	Yes ☐ No ☒	
1.4 (2.5)	Luminaire for normal use	Yes ☒ No ☐	—
	Luminaire for rough service	Yes ☐ No ☒	—
1.5 (3)	MARKING		P
1.5 (3.2)	Mandatory markings		P
	Position of the marking	Present on label	P
	Format of symbols/text		P
1.5 (3.3)	Additional information		P
	Language of instructions	English	P
1.5 (3.3.1)	Combination luminaires		N
1.5 (3.3.2)	Nominal frequency in Hz	50/60	P
1.5 (3.3.3)	Operating temperature		P
1.5 (3.3.4)	Symbol or warning notice		P
1.5 (3.3.5)	Wiring diagram		N
1.5 (3.3.6)	Special conditions		N
1.5 (3.3.7)	Metal halide lamp luminaire – warning		N
1.5 (3.3.8)	Limitation for semi-luminaires		N
1.5 (3.3.9)	Power factor and supply current		N
1.5 (3.3.10)	Suitability for use indoors		P
1.5 (3.3.11)	Luminaires with remote control		N
1.5 (3.3.12)	Clip-mounted luminaire – warning		N
1.5 (3.3.13)	Specifications of protective shields		N
1.5 (3.3.14)	Symbol for nature of supply	~	P
1.5 (3.3.15)	Rated current of socket outlet		N

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Clause	Requirement + Test	Result - Remark	Verdict
1.5 (3.3.16)	Rough service luminaire	Unit are not for rough service luminaires	N
1.5 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments		N
1.5 (3.3.18)	Non-ordinary luminaires with PVC cable		N
1.5 (3.3.101)	Adequate warning on the package (EN)		N
1.5 (3.4)	Test with water	15s with water	P
	Test with hexane	15s with hexane	P
	Legible after test	Yes	P
	Label attached	Label was not be easily removable and show no curling	P
1.5.1(-)	Warning notice, if not suitable for insulating ceiling		P
1.6 (4)	CONSTRUCTION		P
1.6 (4.2)	Components replaceable without difficulty		P
1.6 (4.3)	Wire ways smooth and free from sharp edges		P
1.6 (4.4)	Lampholders		N
1.6 (4.4.1)	Integral lampholder		N
1.6 (4.4.2)	Wiring connection		N
1.6 (4.4.3)	Lampholder for end-to-end mounting		N
1.6 (4.4.4)	Positioning		N
	- pressure test (N)		N
	- bending test (Nm)		N
1.6 (4.4.5)	Peak pulse voltage		N
1.6 (4.4.6)	Centre contact		N
1.6 (4.4.7)	Parts in rough service luminaires resistance to tracking	Not rough service luminaires	N
1.6 (4.4.8)	Lamp connectors		N
1.6 (4.4.9)	Caps and bases correctly used		N
1.6 (4.5)	Starter holders		N
	Starter holder in luminaires other than Class I	No starter holders.	N
	Starter holder Class I construction		N
1.6 (4.6)	Terminal blocks		P
	Tails		P
	Unsecured blocks		N
1.6 (4.7)	Terminals and supply connections		P
1.6 (4.7.1)	Contact to metal parts		P
1.6 (4.7.2)	Test 8 mm live conductor		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Test 8 mm earth conductor		P
1.6 (4.7.3)	Terminals for supply conductors		P
1.6 (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
	- ageing test according to 15.9.2.3 and 15.9.2.4		N
1.6 (4.7.4)	Terminals other than supply connection		P
1.6 (4.7.5)	Heat-resistant wiring/sleeves		N
1.6 (4.7.6)	Multi-pole plug	No multi-pole plug	N
	- test at 30 N		N
1.6 (4.8)	Switches:		N
	- adequate rating	No switch	N
	- adequate fixing		N
	- polarized supply		N
	- compliance with 61058-1 for electronic switches		N
1.6 (4.9)	Insulating lining and sleeves		N
1.6 (4.9.1)	Retainment		N
	Method of fixing		N
1.6 (4.9.2)	Insulated linings and sleeves		N
	a) & c) Insulation resistance and electric strength		N
	b) Ageing test. Temperature (°C)		N
1.6 (4.10)	Insulation of Class II luminaires		N
1.6 (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
1.6 (4.10.2)	Assembly gaps:		N
	- not coincidental		N
	- no straight access with test probe		N
1.6 (4.10.3)	Retainment of insulation:		N
	- fixed		N
	- unable to be replaced; luminaire inoperative		N

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Clause	Requirement + Test	Result - Remark	Verdict
	- sleeves retained in position		N
	- lining in lampholder		N
1.6 (4.11)	Electrical connections		P
1.6 (4.11.1)	Contact pressure	Contact pressure is not transmitted through insulating material.	P
1.6 (4.11.2)	Screws:		N
	- self-tapping screws	Self-tapping screws not used such means	N
	- thread-cutting screws	Thread-cutting screws not used	N
	- at least two self-tapping screws		N
1.6 (4.11.3)	Screw locking:		N
	- spring washer	No screws and rivets serve as electrical as well as mechanical connections.	N
	- rivets		N
1.6 (4.11.4)	Material of current-carrying parts		P
1.6 (4.11.5)	No contact to wood	>50% copper	P
1.6 (4.11.6)	Electro-mechanical contact systems	No electro-mechanical contact systems	N
1.6 (4.12)	Mechanical connections and glands		—
1.6 (4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		N
	Torque test: torque (Nm); part.....:	Fixed LED board screw, tested and no damage	P
1.6 (4.12.2)	Screws with diameter < 3 mm screwed into metal		N
1.6 (4.12.4)	Locked connections:		—
	- fixed arms; torque (Nm)		N
	- lampholder; torque (Nm)		N
	- push-button switches; torque 0,8 Nm		N
1.6 (4.12.5)	Screwed glands; force (N).....:		N
1.6 (4.13)	Mechanical strength		—
1.6 (4.13.1)	Impact tests:		—
	- fragile parts; energy (Nm)		P

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Clause	Requirement + Test	Result - Remark	Verdict
	- other parts; energy (Nm).....	0.35Nm test carried on enclosure	P
	1) live parts	Not become accessible	P
	2) linings		P
	3) protection	Remain accordance against ingress of dust, sold objects and moisture classification	P
	4) covers		P
1.6 (4.13.3)	Straight test finger	30N	P
1.6 (4.13.4)	Rough service luminaires		—
	- IP54 or higher	Not rough service luminaires	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
1.6 (4.13.6)	Tumbling barrel	Not socket-outlet-mounted luminaires	N
1.6 (4.14)	Suspensions and adjusting devices		—
1.6 (4.14.1)	Mechanical load:		—
	A) four times the weight		P
	B) torque 2,5 Nm		P
	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
1.6 (4.14.2)	Load to flexible cables		—
	Mass (kg).....		N
	Stress in conductors (N/mm ²)		N
	Semi-luminaires – mass (kg)		N
	Semi-luminaires – bending moment (Nm)		N
1.6 (4.14.3)	Adjusting devices:		—
	- flexing test; number of cycles.....	No adjusting devices	N
	- strands broken		N
	- electric strength test afterwards		N

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Clause	Requirement + Test	Result - Remark	Verdict
1.6 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors	Telescopic tubes not used	N
1.6 (4.14.5)	Guide pulleys	No guide pulleys	N
1.6 (4.14.6)	Strain on socket-outlets	Not direct plug-in type	N
1.6 (4.15)	Flammable materials:		—
	- glow-wire test 650 °C		P
	- spacing ≥ 30 mm		N
	- screen withstanding test of 13.3.1		N
	- screen dimensions		N
	- no fiercely burning material		P
	- thermal protection		N
	- electronic circuits exempted		N
1.6 (4.15.2)	Luminaires made of thermoplastic material with lamp control gear		—
	a) construction		N
	b) temperature sensing control		N
	c) surface temperature		N
1.6 (4.16)	Luminaires for mounting on normally flammable surfaces		—
	No lamp control gear		N
1.6 (4.16.1)	Lamp control gear spacing:		—
	- spacing 35 mm		N
	- spacing 10 mm		N
1.6 (4.16.2)	Thermal protection:		—
	- in lamp control gear		N
	- external		N
	- fixed position		N
	- temperature marked lamp control gear		N
1.6 (4.16.3)	Design to satisfy the test of 12.6		N
1.6 (4.17)	Drain holes		N
	Clearance at least 5 mm		N
1.6 (4.18)	Resistance to corrosion:		—
1.6 (4.18.1)	- rust-resistance		N
1.6 (4.18.2)	- season cracking in copper		N
1.6 (4.18.3)	- corrosion of aluminium		N

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Clause	Requirement + Test	Result - Remark	Verdict
1.6 (4.19)	Igniters compatible with ballast	No igniters	N
1.6 (4.20)	Rough service vibration	Not rough service used	N
1.6 (4.21)	Protective shield:		—
1.6 (4.21.1)	Shield fitted		N
1.6 (4.21.2)	Particles from a shattering lamp not impair safety		N
1.6 (4.21.3)	No direct path		N
1.6 (4.21.4)	Impact test on shield		N
	Glow-wire test on lamp compartment		N
1.6 (4.22)	Attachments to lamps		N
1.6 (4.23)	Semi-luminaires comply Class I		N
1.6 (4.24)	UV radiation, metal halide lamps		N
1.6 (4.25)	No sharp point or edges		P
1.6 (4.26)	Short-circuit protection:		—
1.6 (4.26.1)	Uninsulated accessible SELV parts	No such parts	N
1.6 (4.26.2)	Short-circuit test		N
1.6 (4.26.3)	Test chain according to Figure 29		N

1.7 (11)	CREEPAGE DISTANCES AND CLEARANCES		P
	Working voltage (V).....:	100-240V~	—
	Voltage form	Sinusoidal ☒ Non-sinusoidal ☐	—
	PTI	< 600 ☒ ≥ 600 ☐	—
	Rated pulse voltage (kV)		—
	1) Current-carrying parts of different polarity: cr (mm); cl (mm).....:	cl=cr=2.5mm measured on internal LED driver different polarity	P
	2) Current-carrying parts and accessible parts: cr (mm); cl (mm).....:	cl=cr=5.0mm, measured between hazard live part to accessible parts	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).....:		N

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Clause	Requirement + Test	Result - Remark	Verdict
1.8 (7)	PROVISION FOR EARTHING		P
1.8 (7.2.1 + 7.2.3)	Accessible metal parts		P
	Metal parts in contact with supporting surface		P
	Resistance < 0,5 Ω	Measured: 0.06Ω<0.5 Ω	P
	Two self-tapping screws used		N
	Thread-forming screws		N
	Thread-forming screw used in a groove		N
	Earth makes contact first		N
1.8 (7.2.2 + 7.2.3)	Earth continuity in joints etc.		N
1.8 (7.2.4)	Locking of clamping means		P
	Compliance with 4.7.3		P
1.8 (7.2.5)	Earth terminal integral part of connector socket		N
1.8 (7.2.6)	Earth terminal adjacent to mains terminals		P
1.8 (7.2.7)	Electrolytic corrosion of the earth terminal		P
1.8 (7.2.8)	Material of earth terminal		P
	Contact surface bare metal		P
1.8 (7.2.10)	Class II luminaire for looping-in		N
	Double or reinforced insulation to functional earth		N
1.8 (7.2.11)	Earthing core coloured green-yellow		P
	Length of earth conductor		P
1.9 (14)	SCREW TERMINALS		N
	Separately approved; component list	(see Annex 1)	N
	Part of the luminaire	(see Annex 3)	N
1.9 (15)	SCREWLESS TERMINALS		N
	Separately approved; component list	(see Annex 1) no such component	N
	Part of the luminaire	(see Annex 4)	N
1.10 (5)	EXTERNAL AND INTERNAL WIRING		P
1.10 (5.2)	Supply connection and external wiring		P
1.10 (5.2.1)	Means of connection: terminals		P
	Connecting leads (EN)		N

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Clause	Requirement + Test	Result - Remark	Verdict
	- 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
1.10 (5.2.2)	Type of cable.....:		N
	Cables equal to HD21 S2 or HD22 S2 (EN)		N
	Nominal cross-sectional area (mm ²)		N
1.10 (5.2.3)	Type of attachment, X, Y or Z		N
1.10 (5.2.5)	Type Z not connected to screws		N
1.10 (5.2.6)	Cable entries:		N
	- suitable for introduction		N
	- adequate degree of protection		N
1.10 (5.2.7)	Cable entries through rigid material have rounded edges		N
1.10 (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
1.10 (5.2.9)	Locking of screwed bushings		N
1.10 (5.2.10)	Cord anchorage:		N
	- covering protected from abrasion		N
	- clear how to be effective		N
	- no mechanical or thermal stress		N
	- no tying of cables into knots etc.		N
	- insulating material or lining		N
1.10 (5.2.10.1)	Cord anchorage for type X attachment:		N
	a) at least one part fixed		N
	b) types of cable		N
	c) no damaging of the cable		N
	d) whole cable can be mounted		N
	e) no touching of clamping screws		N
	f) metal screw not directly on cable		N

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Clause	Requirement + Test	Result - Remark	Verdict
	g) replacement without special tool		N
	Glands not used as anchorage		N
	Labyrinth type anchorages		N
1.10 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment		N
1.10 (5.2.10.3)	Tests:		N
	- impossible to push cable; unsafe		N
	- pull test: 25 times; pull (N)		N
	- torque test: torque (Nm)		N
	- displacement ≤ 2 mm		N
	- no movement of conductors		N
	- no damage of cable or cord		N
1.10 (5.2.11)	External wiring passing into luminaire		N
1.10 (5.2.12)	Looping-in terminals		N
1.10 (5.2.13)	Wire ends not tinned		N
	Wire ends tinned: no cold flow		N
1.10 (5.2.14)	Mains plug same protection		N
	Class II luminaire plug		N
1.10 (5.2.15)	Colour code low voltage (EN)		N
1.10 (5.2.16)	Appliance inlets (IEC 60320)		N
	Appliance couplers of Class I type		N
1.10 (5.2.17)	No standardized interconnecting cables properly assembled		N
1.10 (5.2.18)	Used plug in accordance with		N
	- IEC 60083		N
	- other standard		N
1.10 (5.3)	Internal wiring		P
1.10 (5.3.1)	Internal wiring of suitable size and type	Suitable size and type	P
	Through wiring		N
	- not delivered/ mounting instruction		N
	- factory assembled		N
	- socket outlet loaded (A)		N
	- temperatures	(see Annex 2)	N

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Clause	Requirement + Test	Result - Remark	Verdict
	Green-yellow for earth only		P
1.10 (5.3.1.1)	Internal wiring connected directly to fixed wiring		P
	Cross-sectional area (mm ²).....:	0.75mm ²	P
	Insulation thickness	Min.0.5mm	P
	Extra insulation added where necessary		N
1.10 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		N
	Adequate cross-sectional area and insulation thickness		N
1.10 (5.3.1.3)	Double or reinforced insulation for Class II		N
1.10 (5.3.1.4)	Conductors without insulation		N
1.10 (5.3.1.5)	SELV current-carrying parts		P
1.10 (5.3.1.6)	Insulation thickness other than PVC or rubber		N
1.10 (5.3.2)	Sharp edges etc.		P
	No moving parts of switches etc.		P
	Joints, raising/lowering devices		N
	Telescopic tubes etc.		N
	No twisting over 360°		P
1.10 (5.3.3)	Insulating bushings:		N
	- suitable fixed		N
	- material in bushings		N
	- material not likely to deteriorate		N
	- cables with protective sheath		N
1.10 (5.3.4)	Joints and junctions effectively insulated		N
1.10 (5.3.5)	Strain on internal wiring		N
1.10 (5.3.6)	Wire carriers		N
1.10 (5.3.7)	Wire ends not tinned		N
	Wire ends tinned: no cold flow	Not cold flow	P
1.11 (8)	PROTECTION AGAINST ELECTRIC SHOCK		P
1.11 (8.2.1)	Live parts not accessible	No electric shock	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Basic insulated parts not used on the outer surface without appropriate protection		P
	Protection in any position		N
	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
1.11 (8.2.2)	Portable luminaire adjusted in most unfavourable position		N
1.11 (8.2.3a)	Class II luminaire:		N
	- basic insulated metal parts not accessible during starter or lamp replacement		N
	- basic insulation not accessible other than during starter or lamp replacement		N
	- glass protective shields not used as supplementary insulation		N
1.11 (8.2.3b)	Class I luminaire with BC lampholder	No BC lampholder provided	N
1.11 (8.2.3c)	Class III luminaires with exposed SELV parts:		N
	Ordinary luminaire:		N
	- touch current		N
	- no-load voltage		N
	Other than ordinary luminaire:		N
	- nominal voltage		N
1.11 (8.2.4)	Portable luminaire:		N
	- protection independent of supporting surface		N
	- terminal block completely covered		N
1.11 (8.2.5)	Compliance with the standard test finger or relevant probe	30N, no hazard	P
1.11 (8.2.6)	Covers reliably secured		P
1.11 (8.2.7)	Discharging of capacitors $\geq 0,5 \mu\text{F}$	Approved in the LED driver	P
	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
1.12 (12)	ENDURANCE TEST AND THERMAL TEST		P
1.12 (12.3)	Endurance test:		P

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Clause	Requirement + Test	Result - Remark	Verdict
	- mounting-position.....:	Normal mounting	—
	- test temperature (°C)	35°C	—
	- total duration (h)	240h	—
	- supply voltage: Un factor; calculated voltage (V) ..:	264V	—
	- lamp used.....:	LED	—
1.12 (12.3.2)	After endurance test:		P
	- no part unserviceable	Compliance is checked by inspection	P
	- luminaire not unsafe	Ditto.	P
	- no damage to track system	No track system provided	N
	- marking legible	Compliance is checked by inspection	P
	- no cracks, deformation etc.	Compliance is checked by inspection	P
1.12 (12.4)	Thermal test (normal operation)	(see Annex 2)	P
1.12 (12.5)	Thermal test (abnormal operation)	No abnormal operation	N
1.12 (12.6)	Thermal test (failed lamp control gear condition):		N
1.12 (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
1.12 (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
1.12 (12.7)	Thermal test (failed lamp control gear in plastic luminaires):		N
1.12 (12.7.1)	Through wiring or lopping-in wiring loaded by a current of (A)		—
	- case of abnormal conditions		—
	- measured winding temperature (°C) at 1,1 Un		—

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Clause	Requirement + Test	Result - Remark	Verdict
	- measured temperature of fixing point/ exposed part (°C) at 1,1 Un		N
	- calculated temperature of fixing point/ exposed part (°C)		N
1.12 (12.7.2)	Temperature sensing control		N
	- thermal link		N
	- manual reset cut-out		N
	- auto reset cut-out		N
	- measured temperature of fixing point/ exposed part (°C)		N

1.13 (9)	RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE		P
1.13 (9.2)	Tests for ingress of dust, solid objects and moisture:		P
	- classification according to IP	IP66	—
	- mounting position during test	Normal position	—
	- fixing screws tightened; torque (Nm)		—
	- tests according to clauses		—
	- electric strength test afterwards		N
	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)	No contact with live parts	P
	f) no entry into enclosure (IP 3X and IP 4X)		N
	f) no contact with live parts (IP3X and IP4X)		N
1.13 (9.3)	Humidity test 48 h	95%RH, 25°C	P

1.14 (10)	INSULATION RESISTANCE AND ELECTRIC STRENGTH		P
1.14 (10.2.1)	Insulation resistance test		P
	Cable or cord covered by metal foil or replaced by a metal rod of mmØ		—
	Insulation resistance (MΩ):		—
	SELV:		P

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Clause	Requirement + Test	Result - Remark	Verdict
	- between current-carrying parts of different polarity	Measured on LED connection board >50 MΩ	P
	- between current-carrying parts and mounting surface.....		N
	- between current-carrying parts and metal parts of the luminaire.....	Measured on LED carrying part to metal enclosure, >50MΩ	P
	Other than SELV:		P
	- between live parts of different polarity	Measured on mains different polarity, >100MΩ	P
	- between live parts and mounting surface	Measured on hazard live parts to mounting surface, >100MΩ	P
	- between live parts and metal parts		N
	- between live parts of different polarity through action of a switch.....		N
1.14 (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:		P
	- between current-carrying parts of different polarity	500V, test on LED connection board, no broken	P
	- between current-carrying parts and mounting surface.....		N
	- between current-carrying parts and metal parts of the luminaire.....	500V, test on LED carrying part to metal enclosure, no broken	P
	Other than SELV:		P
	- between live parts of different polarity	mains different polarity, 2x240+1000=1480V, no broken	P
	- between live parts and mounting surface	hazard live parts to mounting surface: 4x240+2000=2960V, no broken	P
	- between live parts and metal parts		N
	- between live parts of different polarity through action of a switch.....		N
1.14 (10.3.1)	Leakage current (mA)	0.012mA < 0.7mA	P
1.15 (13)	RESISTANCE TO HEAT, FIRE AND TRACKING		P
1.15 (13.2.1)	Ball-pressure test:		N

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Clause	Requirement + Test	Result - Remark	Verdict
	- part tested; temperature (°C).....		N
	- part tested; temperature (°C).....		N
1.15 (13.3.1)	Needle flame test (10 s):		N
	- part tested		N
	- part tested		N
1.15 (13.3.2)	Glow wire test (650 °C):		N
	- part tested		N
	- part tested		N
1.15 (13.4.1)	Tracking test: part tested.....		N

ANNEX1: Components					P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾
PCB	Various	Various	V-0, 130°C	--	UL
LED input wire	SHENZHEN NOBLE OPTO CO.,LTD.	H05VV-F	0.75mm ²	EN 50525-2- 11:2011	VDE
Internal wire	Interchangeable	Interchangeable	600V, 105°C,min 20AWG	--	UL
LED Driver	Interchangeable	Interchangeable	Input: 220-240 V~, 50/60Hz , Output: 32VDC, 2A, 64W	--	UL
Plastic enclosure	Interchangeable	Interchangeable	Min.HB,80°C	UL 746C	UL

	ANNEX 2: temperature measurements, thermal tests of Section 12				P	
	Type reference	NBVB313HP			—	
	Lamp used	LED			—	
	Lamp control gear used	--			—	
	Mounting position of luminaire	Normal use			—	
	Calculated power factor	0.96			—	
	Table: measured temperatures corrected for ta = 25 °C:				P	
	- abnormal operating mode	--			—	
	- test 1: rated voltage				—	
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage	1,06 times rated voltage			—	
	- 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 lopping-in wiring loaded by a current of (A) during the tests	--			—	
temperature (°C) of part		clause 12.4 - normal				clause 12.5 - abnormal
		test 1	test 2	test 3	limits	test 4 limit
Input wire		---	34.2	---	105	---
Enclosure outside of driver(top)		---	42.1	---	85	---
Enclosure outside of driver(bottom)		---	44.2	---	85	---
Plastic Enclosure		---	32.3	---	90	---
Ambient		---	24.4	---	-	---

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

	ANNEX 4: screwless terminals (part of the luminaire)		N
(15)	SCREWLESS TERMINALS		N
(15.2)	Type of terminal		—
	Rated current (A)		—
(15.3.1)	Material		N
(15.3.2)	Clamping		N
(15.3.3)	Stop		N
(15.3.4)	Unprepared conductors		N
(15.3.5)	Pressure on insulating material		N
(15.3.6)	Clear connection method		N
(15.3.7)	Clamping independently		N
(15.3.8)	Fixed in position		N
(15.3.10)	Conductor size		N
	Type of conductor		N
(15.5.1)	Terminals internal wiring		
(15.5.1.1)	Pull test spring-type terminals (4 N, 4 samples)		N
(15.5.1.2)	Pull test pin or tab terminals (4 N, 4 samples)		N

	Insertion force not exceeding 50 N										N
(15.5.2)	Permanent connections: pull-off test (20 N)										N
(15.6)	Electrical tests										
	Voltage drop (mV) after 1 h (4 samples)										N
	Voltage drop of two inseparable joints										N
	Number of cycles										—
	Voltage drop (mV) after 10th alt. 25th cycle (4 samples)										N
	Voltage drop (mV) after 50th alt. 100th cycle (4 samples)										N
	After ageing, voltage drop (mV) after 10th alt. 25th cycle (4 samples)										N
	After ageing, voltage drop (mV) after 50th alt. 100th cycle (4 samples)										N
(15.7)	Terminals external wiring										N
	Terminal size and rating										N
(15.8.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N)										N
	Pull test pin or tab terminals or welded connections (4 samples); pull (N)										N
(15.9)	Contact resistance test										
	Voltage drop (mV) after 1 h										N
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
	Voltage drop of two inseparable joints										
	Voltage drop after 10th alt. 25th cycle										
	Max. allowed voltage drop (mV)										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
	Voltage drop after 50th alt. 100th cycle										
	Max. allowed voltage drop (mV)										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
	Continued ageing: voltage drop after 10th alt. 25th cycle										
	Max. allowed voltage drop (mV)										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
	Continued ageing: voltage drop after 50th alt. 100th cycle										
	Max. allowed voltage drop (mV)										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											

Appendix 1
Photo documentation

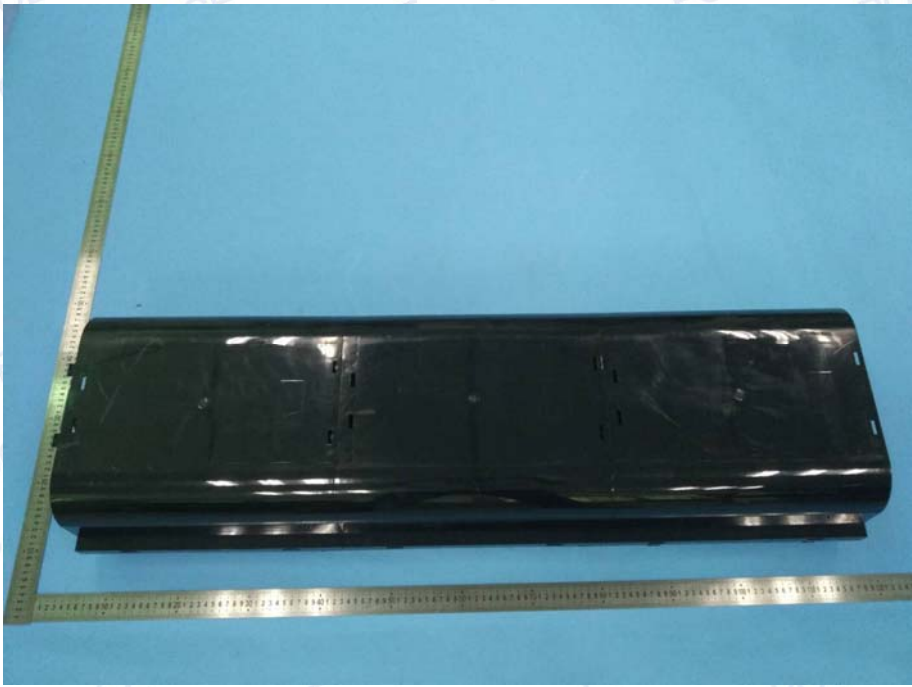
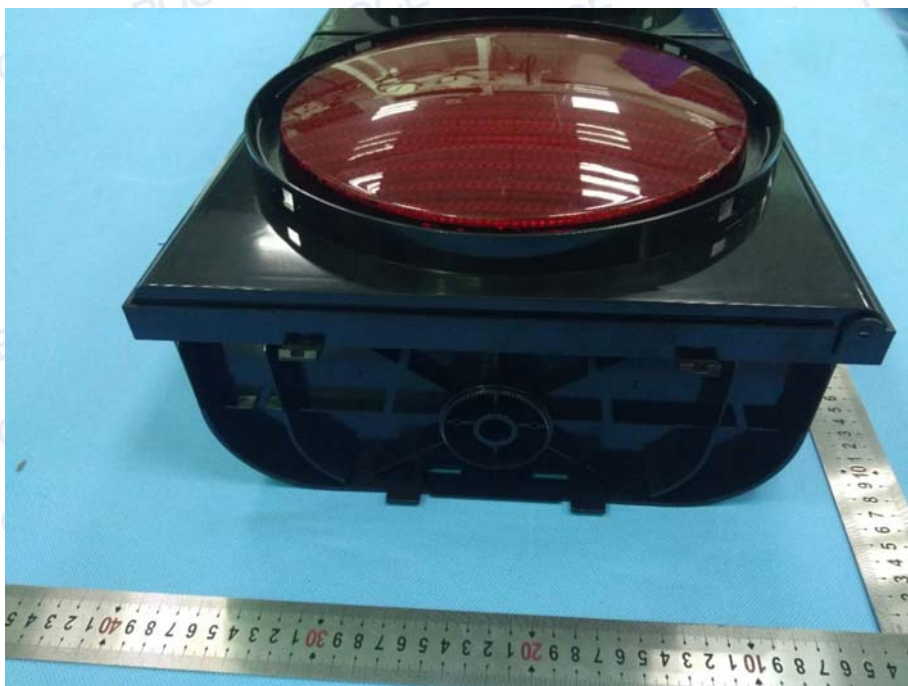
Photo 1 View: ☒ front ☐ rear ☐ right side ☐ left side ☐ top ☐ bottom ☐ internal	
Photo 2 View: ☐ front ☒ rear ☐ right side ☐ left side ☐ top ☐ bottom ☐ internal	

Photo 3

View:

- ☐ front
☐ rear
☐ right side
☒ left side
☐ top
☐ bottom
☐ internal

**Photo 4**

View:

- ☐ front
☐ rear
☐ right side
☐ left side
☐ top
☒ bottom
☐ internal

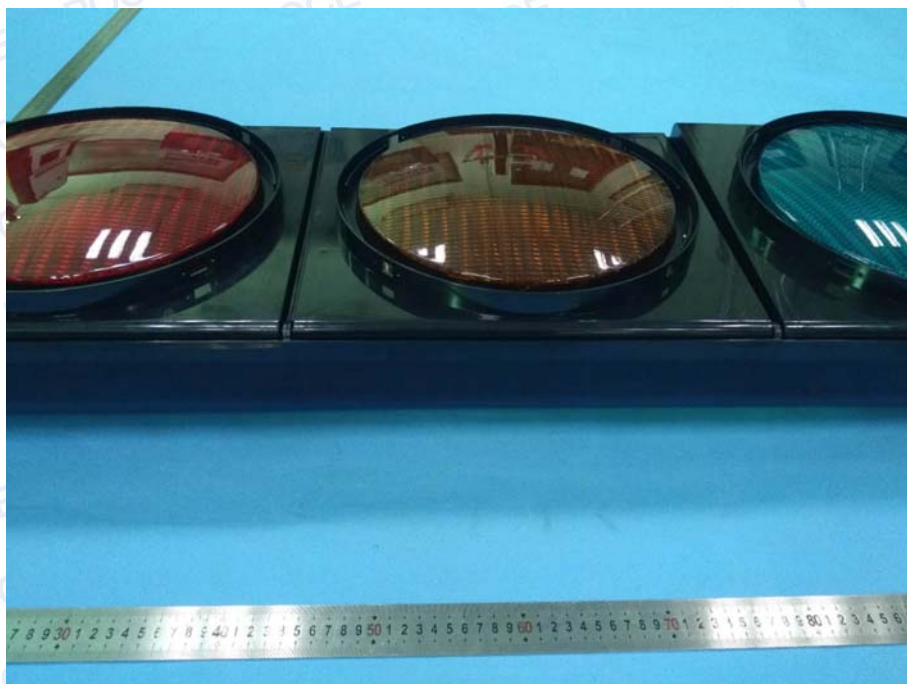


Photo 5

View:

- ☐ front
☐ rear
☐ right side
☐ left side
☐ top
☒ bottom
☐ internal

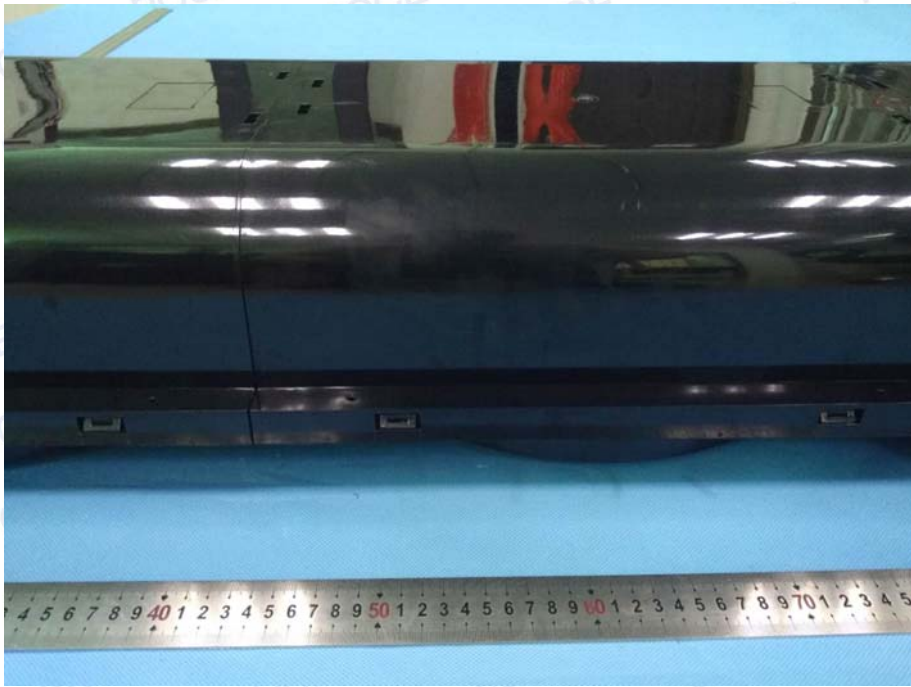


Photo 6

View:

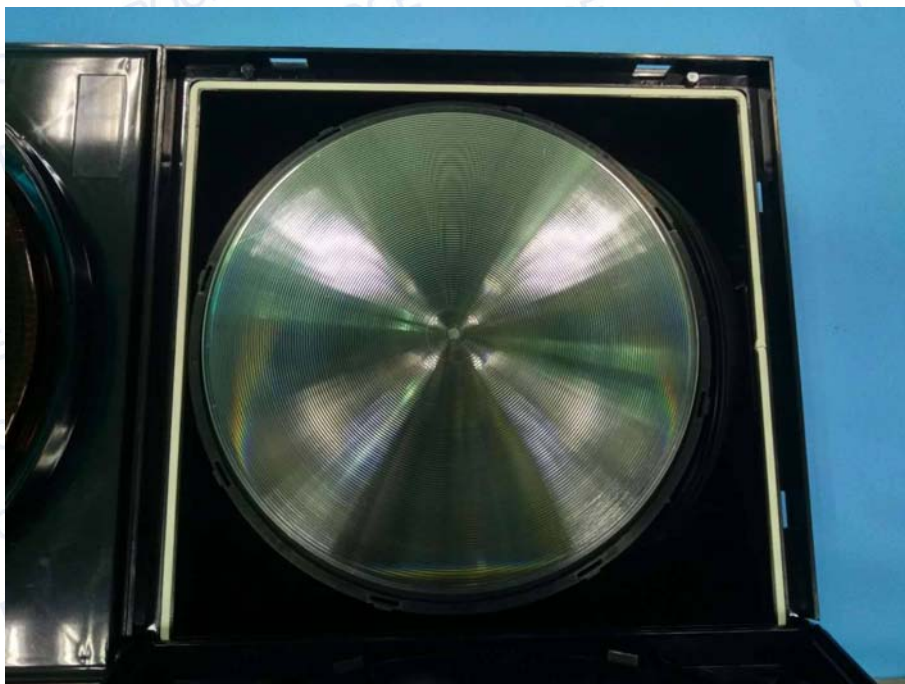
- ☐ front
☐ rear
☐ right side
☐ left side
☐ top
☐ bottom
☒ internal



Photo 7

View:

- ☐ front
☐ rear
☐ right side
☐ left side
☐ top
☐ bottom
☒ internal

**Photo 8**

View:

- ☐ front
☐ rear
☐ right side
☐ left side
☐ top
☐ bottom
☒ internal

*******THE END OF REPORT*******