



**LABORATORY FOR TESTING OF MACHINERY,
EQUIPMENT AND DEVICES
CENTER FOR TESTING AND EUROPEAN CERTIFICATION LTD**

ИА "БСА"
Per.№ 101 ЛИ
ЛАБОРАТОРИЯ ЗА
ИЗПИТВАНЕ

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Accredited certificate
№ 101 ЛИ / 10.05.2010
Valid until: 31.05.2014
of EA BAS, according
EN ISO/IEC 17025

TEST REPORT

№ 2ea-13-662 / 18.06.2013

OBJECT TO BE TESTED: Group luminaries – Road lighting fixture NOVA cat. № 98NVMM250
Representative sample from Road lighting fixtures group with cat. № 98NVM100;
98NVM150; 98NVM250; 98NVMM250; 98NVL100; 98NVL150; 98NVL250; 98NVL250; 98NVL250; 98NVL250
(name of object to be tested, type, model, quantity,
type – portable, fixed, for walling in and other)

APPLICANT FOR TEST: "ELMARK INDUSTRIES" SC. 2 Dobrudja Blvd. Dobrich, Bulgaria,
Tel.: 058 500 055, e-mail: denkov@elmark.bg
Application № 662 / 08.05.2013
(name of the firm – applicant, address, telephone, number and date of the test application)

METHOD OF TEST: EN 60598-1:2008+A11:2009 Luminaires - Part 1: General requirements and tests
EN 60598-2-3:2003+A1:2011 - Luminaires Part 2: Particular requirements
Section Three – Luminaires for road and street lighting
(number and name of the standards)

DATE OF ACCEPTANCE IN THE TEST LABORATORY: 08.05.2013

CODE OF THE OBJECT: 1 piece, year of production 2013
(identification number, year of production)

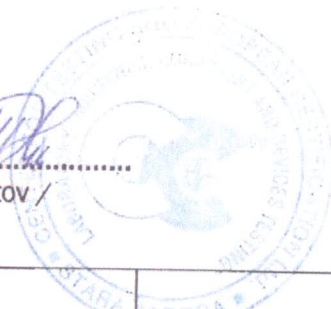
MANUFACTURER: "ELMARK INDUSTRIES" SC. 2 Dobrudja Blvd. Dobrich, Bulgaria,
Tel.: 058 500 055, e-mail: denkov@elmark.bg
(firm, trade mark, address)

DECLARED TECHNICAL DATA: Rated voltage – 230 V
Rated frequency – 50 Hz
Rated power – 250 W
Class I
Degree of protection – IP 65

DATE OF TEST PERFORMANCE: 20.05.2013 – 18.06.2013

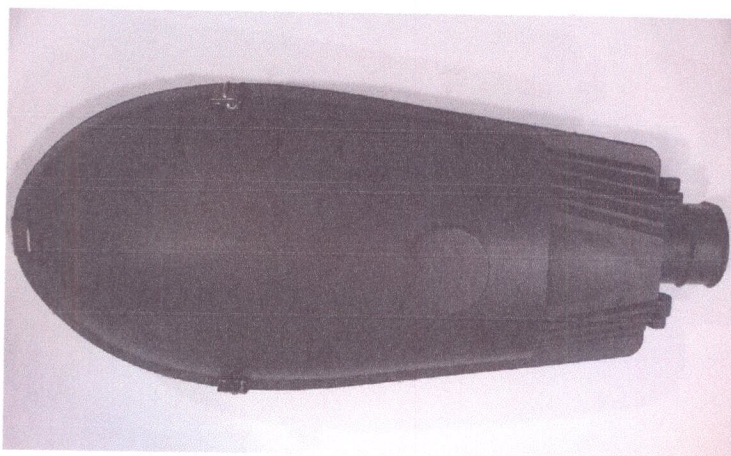
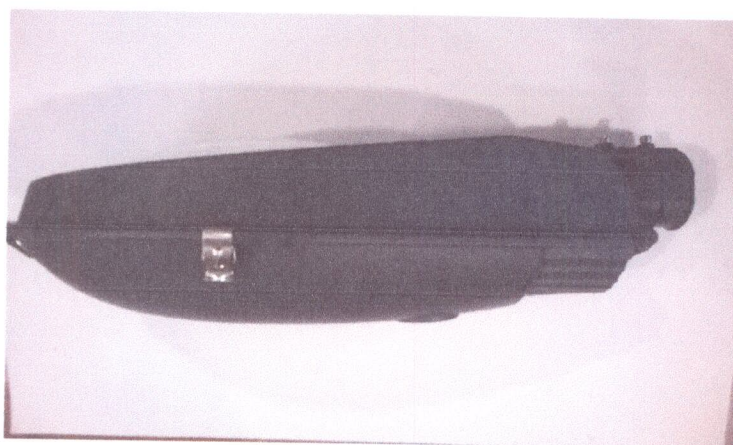
LABORATORY CHIEF:

/ T. Hristov /

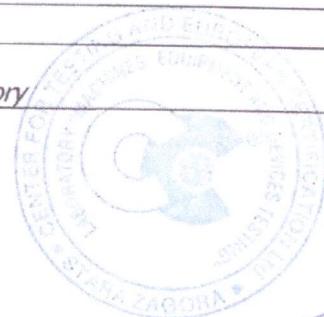


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Copy of identification table and/or photo of tested object



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RESULTS OF TESTING:

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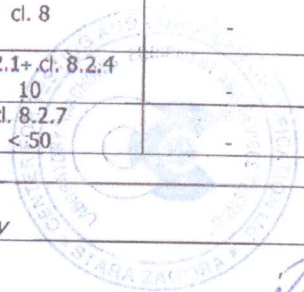
EN 60598-1:2008+A11:2009

Test report : № 2ea-13-662 / 18.06.2013

№	Factor name	Units	Standard method	№ of sample	Test results (indetermination)	Factor volume and tolerance	Test conditions
1.	Mechanical strength:	-	cl. 4.13	662	-	cl. 4.13	
1.1	Mechanical load: - four times the weight - torque 2,5 Nm	min N N.m	cl. 4.14.1	662 662 662	60 317 2,5	cl. 4.14.1 60 317 2,5	-
1.2	Impact tests: - fragile parts - other parts	N.m N.m	cl. 4.13.1	662 662	0,50 0,70	cl. 4.13.1 Table 4.3 0,50 0,70	-
1.3	Straight test finger	N	cl. 4.13.3	662	30	cl. 4.13.3 30	-
1.4	Lampholder- torque	N.m	cl. 4.4.4 и cl.4.12.4	-	4	т. 4.4.4 ;т.4.12.4 4	1 min
2.	CREEPAGE DISTANCES AND CLEARANCES:	-	cl. 11.2.1	662	-	cl. 11.2	-
2.1	Creepage distances for a.c. (50 Hz) sinusoidal voltages ≤ 250 V	mm	cl. 11.2.1	662	6	Table11.1 Basic insulation ≥ 2,5	-
2.2	Clearances for a.c. (50 Hz) sinusoidal voltages ≤ 250 V	mm	cl. 11.2.1	662	4	Table11.1 Basic insulation ≥ 1,7	-
3.	PROVISION FOR EARTHING:	-	cl. 7.2	662	-	cl. 7.2	-
3.1	Metal parts in contact with supporting surface	Ω	cl. 7.2.3	662	0,03	cl. 7.2.1 ≤ 0,5	10A 1 min
4.	SUPPLY CONNECTION AND EXTERNAL WIRING:	-	cl. 5.2	662	-	cl. 5.2	-
4.1	Cord anchorage - pull - torque - displacement	N N.m mm	cl. 5.2.10.3	662 662 662	60 0,25 0,5	cl. 5.2.10.1 Table 5.2 60 0,25 ≤ 2,0	-
5.	INTERNAL WIRING:	-	cl. 5.3	662	-	cl. 5.3	-
5.1	Cross-sectional area	mm ²	cl. 5.3.1	662	0,75	cl. 5.3.1 ≥ 0,5	-
6.	PROTECTION AGAINST ELECTRIC SHOCK	-	cl. 8	662	-	cl. 8	-
6.1	Live parts not accessible	N	cl. 8.2.5	662	10	cl. 8.2.1+ cl. 8.2.4 10	-
6.2	Discharging of capacitors	V	cl. 8.2.7	662	0	cl. 8.2.7 < 50	-

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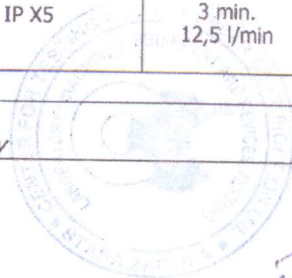
№	Factor name	Units	Standard method	№ of sample	Test results (indetermination)	Factor volume and tolerance	Test conditions
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7.	Thermal test	-	cl. 12	662	-	cl. 12	-
7.1	Normal operation		cl. 12.4.1	662	Maximum temperature with MHL P _n = 250 W	cl. 12.4.2 Table 12.1 ; 12.2	t=25°C U=1.06U _n
	Winding in ballast	°C		662	91	≤ 130	
	Lamp cap	°C		662	117	≤ 210	
	Insulation of internal wiring - silicone	°C		662	107	≤ 200	
	Case of starting device	°C		662	80	≤ 105	
	Case of capacitor	°C		662	74	≤ 85	
	Terminal blocks	°C		662	71	≤ 120	
	Rubber gasket	°C		662	98	≤ 230	
7.2	Abnormal operation		cl. 12.5.1	662	-	cl. 12.5.2 Table 12.3	t=25°C U=1.1 U _n

8.	ENDURANCE TEST	h	cl. 12.3.1	662	240	cl. 12.3.2 240	t=35°C U=1.1 U _n
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9.	DEGREES OF PROTECTION PROVIDED BY ENCLOSURES (IP CODE)	-	cl. 9	662	IP 65 / 23	≥IP 23	-
9.1	PROTECTION OF DUST AND MOISTURE FOR CONTROLGEAR COMPARTMENT (Ballast, Capacitor, Starting device) :	-	cl. 9	662	IP 23	≥IP 23	-
9.1.1	Protection against penetration of solid objects and dust	-	cl. 9.2.0	662	IP 2X	IP 2X	10 N
9.1.2	Protection against penetration of harmful water	-	cl. 9.2.4	662	IP X3	IP X3	10 min.
9.2	PROTECTION OF DUST AND MOISTURE FOR OPTIC COMPARTMENT (Reflector, Diffuser, Lamp, Lamp-holder) :	-	cl. 9	662	IP 65	≥IP 23	-
9.2.1	Protection against penetration of solid objects and dust	-	cl. 9.2.2	662	IP 6X	IP 6X	3 h
9.2.2	Protection against penetration of harmful water	-	cl. 9.2.6	662	IP X5	IP X5	3 min. 12,5 l/min

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EN 60598-1:2008+A11:2009

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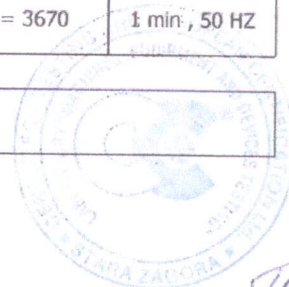
№	Factor name	Units	Standard method	№ of sample	Test results (indetermination)	Factor volume and tolerance	Test conditions
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10.	HUMIDITY TEST	h	cl. 9.3.1	662	48	cl. 9.3 48	Rh=95% t=25°C
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11.	INSULATION RESISTANCE:	-	cl. 10.2.1	662	-	cl. 10.2.1 Table 10.1	-
11.1	Between current-carrying parts of different polarity	MΩ	cl. 10.2.1	662	R > 999	R > 2	1 min , 500 V
11.2	Between life parts and mounting surface	MΩ	cl. 10.2.1	662	R > 999	R > 2	1 min , 500 V
11.3	Between life parts and metal parts of luminaire	MΩ	cl. 10.2.1	662	R > 999	R > 2	1 min , 500 V
11.4	Basic insulation	MΩ	cl. 10.2.1	662	R > 999	R > 2	1 min , 500 V
11.5	Additional insulation	MΩ	cl. 10.2.1	662	-	R > 3	1 min , 500 V
11.6	Double or reinforced insulation	MΩ	cl. 10.2.1	662	-	R > 4	1 min , 500 V

12.	DIELECTRIC STRENGTH OF INSULATION :	-	cl. 10.2.2	662	-	cl. 10.2.2 Table 10.2	-
12.1	Between current-carrying parts of different polarity	V	cl. 10.2.2	662	U = 1460	U(perf.) = 1460	1 min , 50 HZ
12.2	Between life parts and mounting surface	V	cl. 10.2.2	662	U = 1460	U(perf.) = 1460	1 min , 50 HZ
12.3	Between life parts and metal parts of luminaire	V	cl. 10.2.2	662	U = 1460	U(perf.) = 1460	1 min , 50 HZ
12.4	Basic insulation	V	cl. 10.2.2	662	U = 1460	U(perf.) = 1460	1 min , 50 HZ
12.5	Additional insulation	V	cl. 10.2.2	662	not apply	U(perf.) = 2210	1 min , 50 HZ
12.6	Double or reinforced insulation	V	cl. 10.2.2	662	not apply	U(perf.) = 3670	1 min , 50 HZ

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№	Factor name	Units	Standard method	№ of sample	Test results (indetermination)	Factor volume and tolerance	Test conditions
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13.	TOUCH CURRENT,	mA	cl. 10.3	662	0,01	cl. 10.3 ≤ 0,7	-
	PROTECTIVE CONDUCTOR CURRENT	mA					

14.	RESISTANCE TO HEAT		cl. 13.2.1	662	1,2	cl. 13.2 ≤ 2	t=125 °C 60 min
	Ball-pressure test	mm					

15.	RESISTANCE TO FIRE	-	cl. 13.3	662	-	cl. 13.3	-
	15.1 Needle flame test	s	cl. 13.3.1	662	0	cl. 13.3.1 ≤ 30	-
	15.2 Glow-wire test	°C	cl. 13.3.2	662	650	cl. 13.3.2 650	30s 200mm

16.	TRACKING TEST	V	cl. 13.4	662	175	cl. 13.4 175	50 drops

17.	PEAK PULSE VOLTAGE	V	cl. 4.4.5	662	4200	cl. 4.4.5 ≤ 5000 V	-
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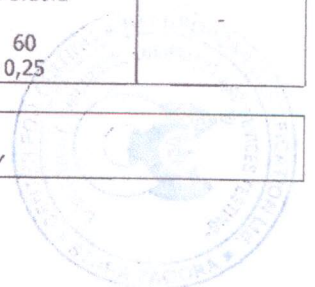
EN 60598-2-3:2004+A1:2011

18.	Mechanical load: - four times the weight - torque 2,5 Nm	min	cl. 3.6.3	662	60	cl. 3.6.3 60 317 2,5	-
		N			317		
		N.m			2,5		

19.	Static load test	N	cl. 3.6.3.1	662	368	cl.3.6.3.1 368 10	-
		min			10		

20.	Cord anchorage: - pull - torque - displacement		cl. 3.10.1	662	60	cl. 3.10.1 60 0,25	-
		N			0,25		
		N.m					

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Used technical equipments:

№	Designation	Type	Manufacturer	Identification №	Date of last calibration
1.	Appliance multitester	CA6160	CHAUVIN ARNOUX France	№ 109096DBH/ 16010173	08.07.2011
2.	Digital multimeter	UNIGOR 390	LEM- Austria	PI 3288	08.07.2011
3.	Climatic chamber	Alpha 990H	Design Environmental England	A3793	-
4.	Multi channel termoneter	MT100TD-16	Bulgaria	0420	06.12.2011
5.	Digital gauge	-	China	090	31.10.2012
6.	Impact spring hammer tester	-	Bulgaria	011	21.07.2011
7.	Termometer-higrometer	177-H1	TESTO Germany	01320300/902	19.04.2012
8.	Testing finger with articulation	-	Bulgaria	№ 006	21.07.2011
9.	Tester for protection against water stream with internal diameter 6,3 mm	-	HI-HMC, Bulgaria	№ 004	21.07.2011
10.	Dusting testing chamber	Heraeus VOTSCH	Germany	№ 23870	21.07.2011

TEST PERFORMER: 1.....
/ T. Hristov /

2.....
/ D. Chavalinov /

HEAD OF LABORATORY:.....
/ T. Hristov /