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

Center for Testing and European Certification

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ИА "БСА" Рег.№ 101 ЛИ
ЛАБОРАТОРИЯ ЗА ИЗПИТВАНЕ
Accredited certificate № 101 ЛИ / 10.05.2010
Valid until: 31.05.2014
of EA BAS, according EN ISO/IEC 17025

TEST REPORT

№ 2ea-13-793 / 18.12.2013

OBJECT TO BE TESTED: Group luminaries – Road fixture with LED lamp ; Model: **AVENUE50** cat. №**98AVENUE50**
Representative sample from Road lighting fixtures group with cat. №:**98AVENUE50, 98AVENUE100**
(name of obejct 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 № 793 / 21.10.2013
(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: 21.10.2013

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

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

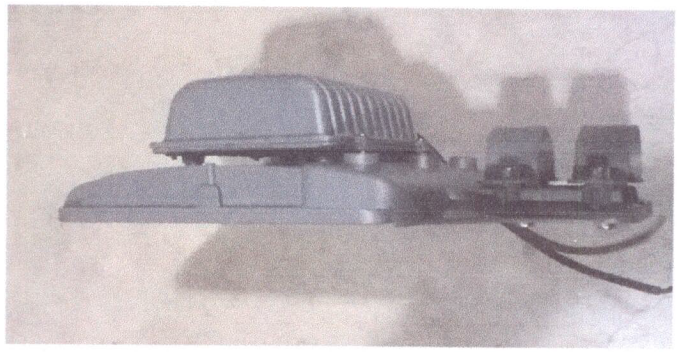
DECLARED TECHNICAL DATA: Rated voltage – 230 V
Rated frequency – 50 Hz
Rated power – 50 W
Class I
Degree of protection – IP 65
ELECTRONIC CONTROLGEAR : ELMARK – LEDLine, type: ECXe 1050.021

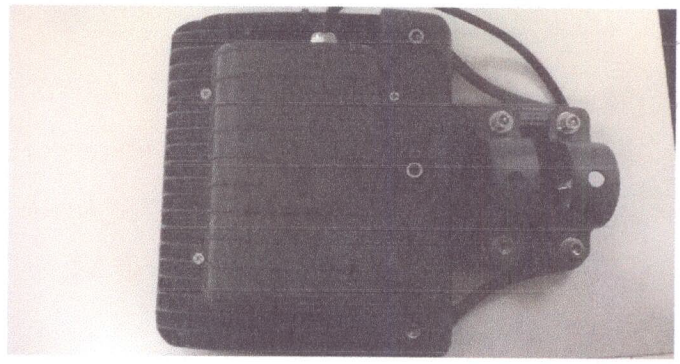
DATE OF TEST PERFORMANCE : 11.11.2013 – 18.12.2013

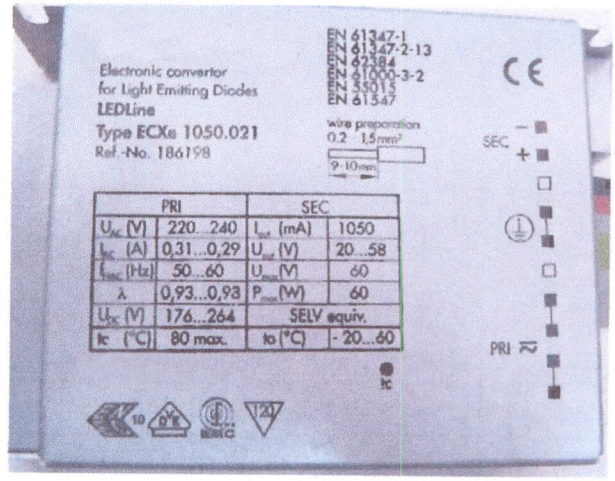
LABORATORY CHIFF :.....
/ T. Hristov /

CENTER FOR TESTING AND EUROPEAN CERTIFICATION LTD. LABORATORY "MACHINES, EQUIPMENT AND DEVICES TESTING" STARA ZAGORA

Copy of identification table and/or photo of tested object







RESULTS OF TESTING:

№	Factor name	Units	Standard method	№ of sample	Test results (indetermination)	Factor volume and tolerance	Test conditions
1.	**Mechanical strength:**	-	cl. 4.13	793	-	cl. 4.13	
1.1	Mechanical load: - four times the weight - torque 2,5 Nm	min N N.m	cl. 4.14.1	793 793 793	60 156 2,5	cl. 4.14.1 60 156 2,5	-
1.2	Impact tests: - fragile parts - other parts	N.m N.m	cl. 4.13.1	793 793	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	793	30	cl. 4.13.3 30	-
1.4	Lampholder- torque	N.m	cl. 4.4.4 и cl.4.12.4	-	-	т. 4.4.4 ;т.4.12.4	1 min
2.	**CREEPAGE DISTANCES AND CLEARANCES:**	-	cl. 11.2.1	793	-	cl. 11.2	-
2.1	Creepage distances for a.c. (50 Hz) sinusoidal voltages ≤ 250 V	mm	cl. 11.2.1	793	4	Table11.1 Basic insulation ≥ 2,5	-
2.2	Clearances for a.c. (50 Hz) sinusoidal voltages ≤ 250 V	mm	cl. 11.2.1	793	3	Table11.1 Basic insulation ≥ 1,5	-
3.	**PROVISION FOR EARTHING:**	-	cl. 7.2	793	-	cl. 7.2	-
3.1	Metal parts in contact with supporting surface	Ω	cl. 7.2.3	793	0,03	cl. 7.2.1 ≤ 0,5	10A 1 min
4.	**SUPPLY CONNECTION AND EXTERNAL WIRING:**	-	cl. 5.2	793	-	cl. 5.2	-
4.1	Cord anchorage - pull - torque - displacement	N N.m mm	cl. 5.2.10.3	793 793 793	60 0,25 0,5	cl. 5.2.10.1 Table 5.2 60 0,25 ≤ 2,0	-
5.	**INTERNAL WIRING:**	-	cl. 5.3	793	-	cl. 5.3	-
5.1	Cross-sectional area	mm^2	cl. 5.3.1	793	0,75	cl. 5.3.1 ≥ 0,5	

№	Factor name	Units	Standard method	№ of sample	Test results (indetermination)	Factor volume and tolerance	Test conditions
6.	**PROTECTION AGAINST ELECTRIC SHOCK**	-	cl. 8	793	-	cl. 8	-
6.1	Live parts not accessible	N	cl. 8.2.5	793	10	cl. 8.2.1÷ cl. 8.2.4 10	-
6.2	Discharging of capacitors	V	cl. 8.2.7	793	0	cl. 8.2.7 < 50	-
7.	**Thermal test**	-	cl. 12	793	-	cl. 12	-
7.1	Normal operation		cl. 12.4.1	793	Maximum temperature with LED P_n = 50 W	cl. 12.4.2 Table 12.1 ; 12.2	t=25°C U=1.06U_n
	Case of controlgear	°C		793	43	≤ 80	
	Insulation of internal wiring	°C		793	36	≤ 90	
	Terminal blocks	°C		793	31	≤ 120	
	Rubber gasket	°C		793	35	≤ 70	
7.2	Abnormal operation		cl. 12.5.1	793	-	cl. 12.5.2 Table 12.3	t=25°C U=1.1 U_n
8.	**ENDURANCE TEST**	h	cl. 12.3.1	793	240	cl. 12.3.2 240	t=35°C U=1.1 U_n
9.	**DEGREES OF PROTECTION PROVIDED BY ENCLOSURES (IP CODE)**	-	cl. 9	793	IP 65	≥IP 23	-
9.1	Protection against penetration of solid objects and dust	-	cl. 9.2.2	793	IP 6X	IP 6X	3 h
9.2	Protection against penetration of harmful water	-	cl. 9.2.6	793	IP X5	IP X5	3 min. 12,5 l/min

№	Factor name	Units	Standard method	№ of sample	Test results (indetermination)	Factor volume and tolerance	Test conditions
10.	**HUMIDITY TEST**	h	cl. 9.3.1	793	48	cl. 9.3 48	Rh=95% t=25°C
11.	**INSULATION RESISTANCE:**	-	cl. 10.2.1	793	-	cl. 10.2.1 Table 10.1	-
11.1	Between current-carrying parts of different polarity	MΩ	cl. 10.2.1	793	R > 999	R > 2	1 min , 500 V
11.2	Between life parts and mounting surface	MΩ	cl. 10.2.1	793	R > 999	R > 2	1 min , 500 V
11.3	Between life parts and metal parts of luminaire	MΩ	cl. 10.2.1	793	R > 999	R > 2	1 min , 500 V
11.4	Basic insulation	MΩ	cl. 10.2.1	793	R > 999	R > 2	1 min , 500 V
11.5	Additional insulation	MΩ	cl. 10.2.1	793	-	R > 3	1 min , 500 V
11.6	Double or reinforced insulation	MΩ	cl. 10.2.1	793	-	R > 4	1 min , 500 V
12.	**DIELECTRIC STRENGHT OF INSULATION :**	-	cl. 10.2.2	793	-	cl. 10.2.2 Table 10.2	-
12.1	Between current-carrying parts of different polarity	V	cl. 10.2.2	793	U = 1460	U(perf.) = 1460	1 min , 50 HZ
12.2	Between life parts and mounting surface	V	cl. 10.2.2	793	U = 1460	U(perf.) = 1460	1 min , 50 HZ
12.3	Between life parts and metal parts of luminaire	V	cl. 10.2.2	793	U = 1460	U(perf.) = 1460	1 min , 50 HZ
12.4	Basic insulation	V	cl. 10.2.2	793	U = 1460	U(perf.) = 1460	1 min , 50 HZ
12.5	Additional insulation	V	cl. 10.2.2	793	not apply	U(perf.) = 1460	1 min , 50 HZ
12.6	Double or reinforced insulation	V	cl. 10.2.2	793	not apply	U(perf.) = 2920	1 min , 50 HZ

№	Factor name	Units	Standard method	№ of sample	Test results (indetermination)	Factor volume and tolerance	Test conditions
13.	**TOUCH CURRENT,** **PROTECTIVE CONDUCTOR CURRENT**	mA mA	cl. 10.3	793 793	0,01 0,24	cl. 10.3 ≤ 0,7 ≤ 3,5	-
14.	**RESISTANCE TO HEAT** **Ball-pressure test**	mm	cl. 13.2.1	793	1,0	cl. 13.2 ≤ 2	t=125 °C 60 min
15.	**RESISTANCE TO FIRE**	-	cl. 13.3	793	-	cl. 13.3	-
15.1	Needle flame test	s	cl. 13.3.1	793	0	cl. 13.3.1 ≤ 30	-
15.2	Glow-wire test	°C	cl. 13.3.2	793	650	cl. 13.3.2 650	30s 200mm
16.	**TRACKING TEST**	V	cl. 13.4	793	175	cl. 13.4 175	50 drops
17.	**PEAK PULSE VOLTAGE**	V	cl. 4.4.5	793	-	cl. 4.4.5 ≤ 5000 V	-
	EN 60598-2-3:2004+A1:2011						
18.	**Mechanical load:** - four times the weight - torque 2,5 Nm	min N N.m	cl. 3.6.3	793	60 156 2,5	cl. 3.6.3 60 156 2,5	-
19.	**Static load test**	N min	cl. 3.6.3.1	793	149 10	cl.3.6.3.1 149 10	-
20.	**Cord anchorage:** - pull - torque - displacement	 N N.m	cl. 3.10.1	 793 793	 60 0,25	cl. 3.10.1 60 0,25	-

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 /

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