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**Endurance Test and Temperature Test
on Micro Martin Series Luminaires**

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On request of:

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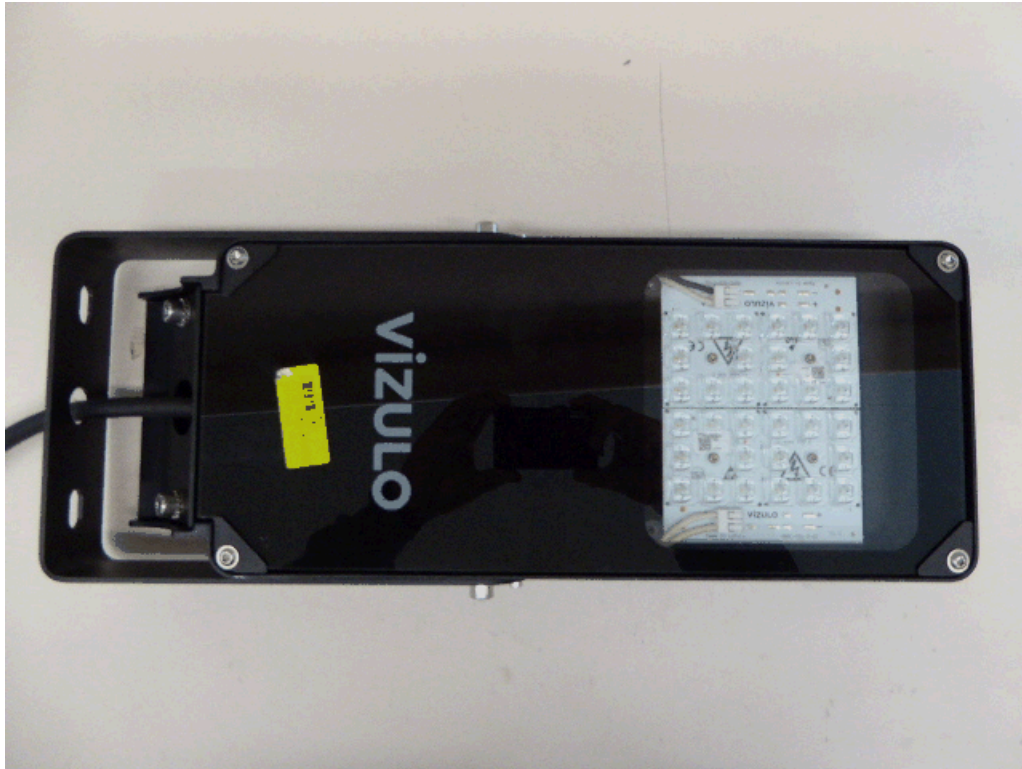
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1 INTRODUCTION

On request of SIA VIZULO, Riga, Latvia, an Endurance Test and Temperature Test was conducted on a representative model of the Micro Martin series street luminaires. The requirements as well as the method of testing and test equipment of the Endurance Test and Temperature Test are described in EN 60598-1:2015, 8th edition, Clause 12, and as detailed on the following pages.

2 TESTED PRODUCT AND TEST DESCRIPTION

Product overview:



Figs. 1 and 2 – Front side and top side of Micro Martin

Preparation of Endurance Test:

Before the endurance test was conducted, all screws that require operation during installation/servicing of the luminaire were tightened with 2/3 of the prescribed torque based by the screw size thread. This is necessary for products used for examination of ingress of water and/or dust (for IP classification higher than IP20).

The IP classification of this luminaire is IP66. For the information about the IP test, refer to examination report no. 2229996.53.

Endurance Test:

The luminaire was mounted as in normal use and placed in a room at 10°C higher as marked on the luminaire (50 °C + 10 °C = 60 °C). The luminaire was connected to a supply of 1,1 x maximum rated input voltage (1,1 x 240 V = 264 V), and operated according the following cycle:

21 hrs on and 3 hrs off.

Total duration of the test: 240 hrs.

Pass criteria Endurance Test:

During the endurance test, a thermal sensing device shall not operate.

After the endurance test, the product was visually checked for damage and deformation and if the label was still readable/attached to the product.

Preparation of Temperature Test:

All critical materials and components that require to be checked for temperatures were provided with thermocouples.

Temperature test:

The product was placed a test room (draught proof enclosure) having a stable temperature of 50 °C (based on the marked ambient temperature on the luminaire). During measurements the room temperature shall not vary more than ± 1 °C.

The following tests were conducted:

- Measurement 1 - 1,0 times the maximum input voltage (= 240 Vac)
- Measurement 2 – 1,06 times the maximum input voltage (= 1,06 x 240V = 254,4 Vac)

NOTE: for street luminaires/flood lights for outdoor use, 10°C shall be deducted from the temperatures measured for the effects of natural air movement which occur in the working environment of the luminaire.

Pass criteria Temperature Test:

No measured part/component shall overshoot its maximum allowed temperature by more than 5°C.

3 RESULTS/CONCLUSION

Endurance Test:

After the endurance test, there was no damage or deformation visible and the label was still readable / attached to the product.

Temperature Test:

The outcome of the temperature test showed that after recalculation of the measured temperatures, no part of the product and no component overshoots its maximum allowed temperature. See below table with measurements results.

Measure point	@ 1,0 x Un (= 240 V)	@ 1,06 x Un (= 254,4 V)	Max. Allowed (°C)	Pass (Yes/No)
	°C	°C		
Mains terminals	65,1 (55,1)	64,9 (54,9)	90	Yes
Mains Cable	63,7 (53,7)	63,7 (53,7)	90	Yes
TC Driver	87,4 (77,4)	87,2 (77,2)	85	Yes
TC LED Module	94,3 (84,3)	94,2 (84,2)	100	Yes
Terminals LED Module	84,1 (74,1)	84,0 (74,0)	90	Yes
LED lens	103,3 (93,3)	103,2 (93,3)	90	Yes
Output wire	77,3 (67,3)	77,2 (67,2)	90	Yes
Glass	113,8 (103,8)	113,8 (103,8)	120	Yes
Metal base	86,7 (76,7)	86,7 (76,7)	Indication only	Indication only
LED module near LED	102,2 (92,2)	102,1 (92,1)	100	Yes
Internal wiring (mains)	67,7 (57,7)	67,6 (57,6)	90	Yes
Ambient	50	50	-	-

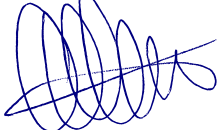
Values between brackets “()” are the corrected temperatures for an ambient temperature of 40°C due to natural airflow.

Test conducted by:



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Reviewed by:



Albert van der Veen

END OF EXAMINATION REPORT