

# Thermal Test LED

## General information

Subject : VOLTANA EVO 1 - 16 Oslon Square Giant - Mean Well PLD 60W - 1050mA - CL I

Asked by : SZÜGYI János Péter

Created on : 11/01/2021

Started on : 19/01/2021

Test number : D210036

Reference norm : IEC/EN 60598-1; 60598-2-3; 60598-2-5 Standards

Sample(s) : E210027

Folder : P-F21002

## Test conditions

Luminaire : VOLTANA EVO 1

Number of LED : 16

LED : Osram OSOLON SQUARE GIANT

Driver : DRIVER\_MEANWELL\_PLD\_60W\_1050mA\_220-277V\_NONE\_... /  
00-69-365

Number of driver(s) : 1

Driver current (mA) : 1050

SPD : VS SP3/230/10K/i

Operator : Philippe Léonard



IMG\_7625

## Conclusion



Informative

Conclusion :

$\Delta T_s < 80^\circ\text{C}$  no risk of solder crack

Ta:  $45^\circ\text{C}$  limited by driver; according IEC 60598-2-3 and IEC 60598-2-5 (outdoor use only)

Ta:  $35^\circ\text{C}$  limited by driver; indoor use and UL standard

Tq:  $10^\circ\text{C}$  limited by driver; according IEC 62722-2-1 for 50 khrs of lifetime

Tq:  $20^\circ\text{C}$  limited by driver; according IEC 62722-2-1 for 30 khrs of lifetime

Validated by :

GHYSENS Gilles

Duplicate to : SZÜGYI János Péter, HORVÁTH Csaba, CSIKÓS

Balázs, BEDŐ Péter

LAB : 15/02/2021

**D210036**

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# Test(s) details

## Test(s)

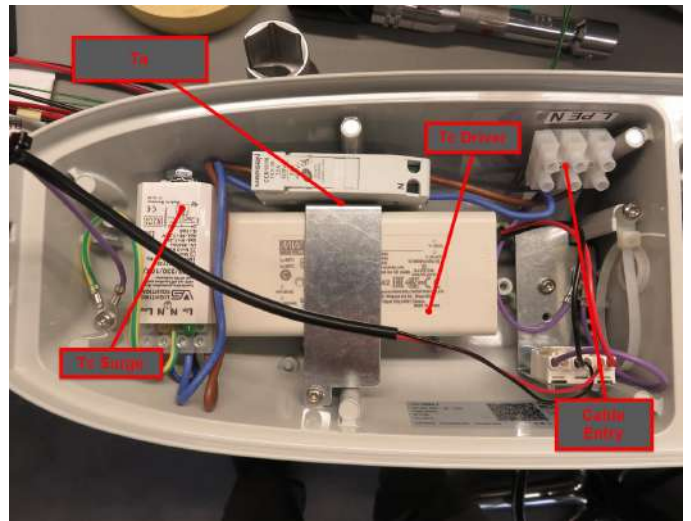
Name	Description	Result
Sensors positions	Disposition of the thermocouples on the DUT.	Informative
Test @ 1050mA	Test according section 12.4 of IEC 60598-1. The DUT is driven until all thermocouples reach thermal stabilization (i.e. variation = 1K/h).	Informative

## Sensors positions

### Annex(es)



IMG\_7605(a)



IMG\_7626(a)

## Test @ 1050mA

### Result(s)

	Ts1	Ts2 + Tp	Ts3	Tc Driver1	Tc SPD1	Ta Cable entry1	Ta Fuse1
Limit Ta	110.0 °C	110.0 °C	110.0 °C	90.0 °C	80.0 °C	90.0 °C	90.0 °C
Limit Tq	90.0 °C	90.0 °C	90.0 °C	65.0 °C	80.0 °C	90.0 °C	90.0 °C
Thermocouple T°	70.9 °C	74.1 °C	75.0 °C	78.4 °C	45.9 °C	46.6 °C	57.7 °C
Room	25.6 °C	25.6 °C	25.6 °C	25.6 °C	25.6 °C	25.6 °C	25.6 °C
E Led	2.9 V	2.9 V	2.9 V				
I Led	1.056 A	1.056 A	1.056 A				
P Led	3.1 W	3.1 W	3.1 W				
Heating	45.3 °C	48.5 °C	49.4 °C	52.8 °C	20.3 °C	21.0 °C	32.1 °C
Ta Indoor	64.7 °C	61.5 °C	60.6 °C	37.2 °C	59.7 °C	69.0 °C	57.9 °C
Tq	44.7 °C	41.5 °C	40.6 °C	12.2 °C	59.7 °C	69.0 °C	57.9 °C
Solder point temperature used as the image of the lens temperature							
Primary EM	Secondary Em Dr1						
U	230.0 V	U	46.3 V				
I	0.249 A	I	1.056 A				
P	55.8 W	P	48.9 W				
PF	0.973						
Efficiency	87.8%						

**Test room temperature (°C) :**

25.6

**Measurement equipment :**

Keithley with thermocouples type K (E097)

Norma 4000 (E110)

APT (E102)

**Quantities measured :**

Qualification of the thermal limits and measurement of the electrical behavior of a luminaire according to PT-S-07

**Uncertainties :**

Statement of uncertainties (K=2, 95% of confidence level):

Temperature: 0,6 K

Voltage (AC): 0,33%

Current (AC): 0,33 %

Power (AC): 0,27%

Voltage (DC): 0,3 %

Current (DC): 0,3%

Power (DC): 0,23%

Anemometer: ± 0,27 m/s

**Decision rules :**

No pass/fail criteria applied on electrical measurements

No pass/fail criteria applied on thermal measurements when performed at 25°C (+/- 5°C), the Ta/Tq values are calculated according GDE-POL-001.

Pass/fail criteria on thermal qualification (test performed at announced Ta or Tq)

At the announced Ta, no component is above its maximum limit of operation reduced by the uncertainty on the temperature measurement: pass

At the announced Ta, at least 1 component is above its maximum limit of operation augmented by the uncertainty on the temperature measurement: fail

At the announced Ta, at least 1 component is at its maximum limit of operation ± the uncertainty on the temperature measurement and no other component is above its maximum limit of operation augmented by the uncertainty on the temperature measurement: pass with remark

According to IEC 60598-2-3 and IEC 60598-2-5 Standards, the maximum limit of every component can be augmented by 10 K provided that the luminaire is intended for outdoor use only.

At the announced Tq, no component is above its selected performance limit of operation reduced by the uncertainty on the temperature measurement: pass

At the announced Tq, at least 1 component is above its selected performance limit of operation augmented by the uncertainty on the temperature measurement: fail

At the announced Tq, at least 1 component is at its selected performance limit of operation ± the uncertainty on the temperature measurement and no other component is above its selected performance limit of operation augmented by the uncertainty on the temperature measurement: pass with remark

According to IEC 62722-2-1, the selected performance limit cannot be augmented by 10 K even if the luminaire is intended for outdoor use.

Any Ta/Tq defined value will be rounded down to the nearest multiple of 5.

In any case, test at 25°C or test at Ta or Tq, if delta Ts is above the recommended value of the GDE-POL-001, the test is failed.

**End of accredited report :**

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