

# Thermal Test LED

## General information

Subject : IZYLUM 4 - 120 LH351C - 2x Philips FP 110W - Nema - CL I (N°107)

Asked by : SZÜGYI János Péter

Created on : 09/11/2021

Started on : 09/11/2021

Test number : D211282

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

Sample(s) : E200252

Folder : P-F20015

## Test conditions

Luminaire : IZYLUM 4

Number of LED : 120

LED : Samsung LH351C

Driver : DRIVER\_SIGNIFY\_FP\_110W\_200-700mA\_220-240V\_DALI\_C133\_ / 00-59-726

Number of driver(s) : 2

Driver info : Tc ( max 85°C )

SPD : Izyhub Full Control Fuse CLI

This report cancels and replaces test report D200564  
Modification from original: measurement chart @ 600 mA

Testing facility : BER - R-Tech

Operator : MESPOUILLE Loic



IMG\_6266

## Conclusion

 Informative

Conclusion :

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

Ta: 50°C limited by driver (@500mA)/ 40°C limited by lenses and driver (@600mA) according IEC 60598-2-3 and IEC 60598-2-5 (outdoor use only)

Ta: 40°C limited by driver (@500mA)/ 30°C limited by lenses and driver (@600mA) indoor use and UL standard

Tq: 30°C limited by driver and lenses (@500mA)/ 20°C limited by lenses and driver (@600mA) according IEC 62722-2-1

Tq given for 100 khrs of lifetime

Validated by :

GHYSENS Gilles

Duplicate to : RACANELLI Frank, SZÜGYI János Péter,

LÁMFALUSI Ferenc, CHEUVART Geoffrey, BEDŐ Péter

LAB : 09/11/2021

**D211282**

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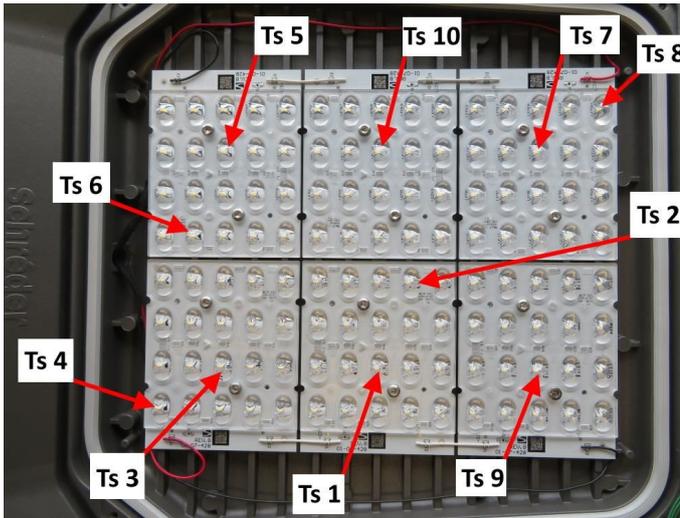
# Test(s) details

## Test(s)

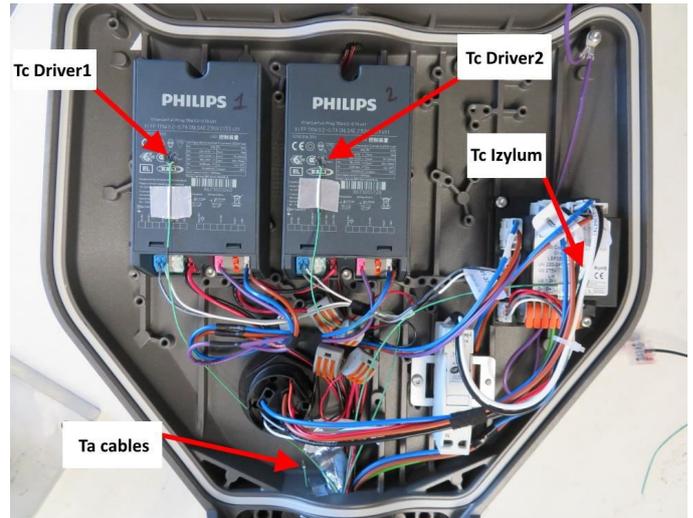
Name	Description	Verdict
Thermal sensors disposition		Informative
Test @ 500mA		Informative
Test @ 600mA		Informative

## Thermal sensors disposition

### Annex(es)



IMG\_LEDs



IMG\_Body

## Test @ 500mA

### Verdict(s)

	Ts1	Ts2	Ts3	Ts4	Ts5	Ts6	Ts7	Ts8	Ts9	Ts10	Tc driver1	Tc driver2	Ta lzyhub	Ta cable
Limit Ta	99 °C	99 °C	99 °C	99 °C	99 °C	99 °C	99 °C	99 °C	99 °C	99 °C	85 °C	85 °C	80 °C	90 °C
Limit Tq	85 °C	85 °C	85 °C	85 °C	85 °C	85 °C	85 °C	85 °C	85 °C	85 °C	75 °C	75 °C	80 °C	90 °C
Thermocouple T°	75,5 °C	79,4 °C	71,9 °C	72,8 °C	73,1 °C	75,8 °C	76,3 °C	75,8 °C	76,8 °C	77,4	67,6 °C	69,8 °C	36,7 °C	37,3 °C
Room	25,5 °C	25,5 °C	25,5 °C	25,5 °C	25,5 °C	25,5 °C	25,5 °C	25,5 °C	25,5 °C	25,5 °C	25,5 °C	25,5 °C	25,5 °C	25,5 °C
E led	2,81V	2,81V	2,81V	2,81V	2,80V	2,80V	2,80V	2,80V	2,81V	2,80V				
I led	0,498A	0,498A	0,498A	0,498A	0,497A	0,497A	0,497A	0,497A	0,498A	0,497A				
P led	1,40W	1,40W	1,40W	1,40W	1,39W	1,39W	1,39W	1,39W	1,40W	1,39W				
Heating	50,0 K	53,9 K	46,4 K	47,3 K	47,6 K	50,3 K	50,8 K	50,3 K	51,3 K	51,9 K	42,1 K	44,3 K	11,2 K	11,8 K
Ta indoor	49,0 °C	45,1 °C	52,6 °C	51,7 °C	51,4 °C	48,7 °C	48,2 °C	48,7 °C	47,7 °C	47,1 °C	42,9 °C	40,7 °C	68,8 °C	78,2 °C
Tq	35,0 °C	31,1 °C	38,6 °C	37,7 °C	37,4 °C	34,7 °C	34,2 °C	34,7 °C	33,7 °C	33,1 °C	32,9 °C	30,7 °C	68,8 °C	78,2 °C
Solder point temperature used as the image of the lens temperature														
Primary EM		Secondary EM dr1			Secondary EM dr2									
U	229,8V	U	168,7V	U	168,3V									
I	0,794A	I	0,498A	I	0,497A									
P	181,1 W	P	83,9 W	P	83,6 W									
PF	0,992													
Efficiency	93%													

## Test @ 600mA

### Verdict(s)

	Ts1	Ts2	Ts3	Ts4	Ts5	Ts6	Ts7	Ts8	Ts9	Ts10	Tc driver1	Tc driver2	Ta lzyhub	Ta cable
Limit Ta	99 °C	99 °C	99 °C	99 °C	99 °C	99 °C	99 °C	99 °C	99 °C	99 °C	85 °C	85 °C	80 °C	90 °C
Limit Tq	85 °C	85 °C	85 °C	85 °C	85 °C	85 °C	85 °C	85 °C	85 °C	85 °C	75 °C	75 °C	70 °C	90 °C
Thermocouple T°	86,8 °C	91,5 °C	82,4 °C	83,5 °C	83,5 °C	86,9 °C	87,4 °C	86,6 °C	88,4 °C	88,8	73,9 °C	76,6 °C	39,5 °C	40,1 °C
Room	26,5 °C	26,5 °C	26,5 °C	26,5 °C	26,5 °C	26,5 °C	26,5 °C	26,5 °C	26,5 °C	26,5 °C	26,5 °C	26,5 °C	26,5 °C	26,5 °C
E led	2,83V	2,83V	2,83V	2,83V	2,83V	2,83V	2,83V	2,83V	2,83V	2,83V				
I led	0,597A	0,597A	0,597A	0,597A	0,596A	0,596A	0,596A	0,596A	0,597A	0,596A				
P led	1,69W	1,69W	1,69W	1,69W	1,69W	1,69W	1,69W	1,69W	1,69W	1,69W				
Heating	60,3 K	65,0 K	55,9 K	57,0 K	57,0 K	60,4 K	60,9 K	60,1 K	61,9 K	62,3 K	47,4 K	50,1 K	13,0 K	13,6 K
Ta indoor	38,7 °C	34,0 °C	43,1 °C	42,0 °C	42,0 °C	38,6 °C	38,1 °C	38,9 °C	37,1 °C	36,7 °C	37,6 °C	34,9 °C	67,0 °C	76,4 °C
Tq	24,7 °C	20,0 °C	29,1 °C	28,0 °C	28,0 °C	24,6 °C	24,1 °C	24,9 °C	23,1 °C	22,7 °C	27,6 °C	24,9 °C	57,0 °C	76,4 °C
Solder point temperature used as the image of the lens temperature														
Primary EM		Secondary EM dr1			Secondary EM dr2									
U	229,7V	U	170,0V	U	169,6V									
I	0,956A	I	0,597A	I	0,596A									
P	218,2 W	P	101,4 W	P	101,1 W									
PF	0,994													
Efficiency	93%													

**Test room temperature (°C) :**

25.5 (500mA)

26.5 (600mA)

**Measurement equipment :**

Keithley with thermocouples type K (E124)

Norma 4000 (E074)

APT (E113)

**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: 1,26 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 :**

Pass/fail criteria for individual test statement of conformity (Verdict):

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 : success

At the announced Ta, at least 1 component is above its maximum limit of operation : fail

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: success

At the announced Tq, at least 1 component is above its selected performance limit of operation : fail

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.

Pass/fail criteria for the test report statement of conformity (Conclusion):

At least one of the individual test statements of conformity (Verdict) is successful: success, the highest achieved Ta/Tq is reported

Otherwise: fail

**End of accredited report :**

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