



LUX-TSI Ltd., Pencoed Technology Park,  
Pencoed, Bridgend, CF35 5AQ, UK  
Website: [www.lux-tsi.com](http://www.lux-tsi.com)  
E-mail: [info@lux-tsi.com](mailto:info@lux-tsi.com)

**Test Report Number:** 30435  
**Product Name** SD-BLD010

<b>Report Number</b>	30435
<b>Customer</b>	Sedna Lighting Ltd
<b>Contact</b>	Nathan Edwards
<b>Product Type</b>	Bollard Luminaire
<b>Test Purpose</b>	LED Temperature Assessment & Lifetime Extrapolation
<b>Quote Reference</b>	301698
<b>Works Order Number</b>	30435
<b>Test Standards</b>	In-Situ Thermal Measurement Test (ISTMT) with reference to Annex A of IEC 62717: 2017
<b>Extrapolation into TM21 has been made using the ISTMT data in conjunction with the corresponding LM80 data set</b>	
<b>Tested by</b>	Matt Hill
<b>Date of Test</b>	10 February 2022
<b>Analysed by</b>	Martin Langdown
<b>Number of products tested</b>	1

Address: LUX-TSI Ltd.,  
Pencoed Technology Park,  
Pencoed, Bridgend,  
CF35 5AQ, UK

Telephone: +44 (0) 1656 864618

Authorised by: Martin Langdown

Email: [martin.langdown@lux-tsi.com](mailto:martin.langdown@lux-tsi.com)

Signed:

Date: 11/02/2022



#### Disclaimers

This report is for the exclusive use of LUX-TSI's Customer and is provided pursuant to the agreement between LUX-TSI and its Customer. LUX-TSI's responsibility and reliability are limited to the Terms and Conditions of the agreement. LUX-TSI assumes no liability to any other party, other than the Customer in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Customer is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the LUX-TSI name or one of its marks for the sale or advertisement of the tested material, product or service must be approved in writing by LUX-TSI.

The observations and test results in this report are relevant only to the sample tested. Opinions expressed and data supplied in this report, are given in good faith, and are based on the information provided by the Customer. This report does not remove the requirement for the Customer to obtain further independent advice and in particular to instruct a notified or competent body or person to carry out further evaluation work and/or testing. Accordingly, no warranty is given, nor is any term or condition to be implied, that the product, which is the subject of this report, complies with the requirements of any EU directives.



LUX-TSI is UKAS  
Accredited to  
ISO/IEC 17025



LUX-TSI Ltd., Pencoed Technology Park,  
Pencoed, Bridgend, CF35 5AQ, UK  
Website: www.lux-tsi.com  
E-mail: info@lux-tsi.com

**Test Report Number:** 30435  
**Product Name** SD-BLD010

### Test Conditions

Measurements were made with an ambient temperature of 50°C +/- 2°C. Measurements were taken only after sufficient time for thermal stabilisation has been allowed. Thermal stabilisation according to LM-79-08 was achieved before measurements are measured and reported.

### Test Methodology

- 1 Identify Current & Voltage for each LED
- 2 Identify hottest LED
- 3 Attach Thermocouple to hottest LED
- 4 Take Electrical and Thermal Readings every 15 minutes until stabilised
- 5 Analyse Data for hottest LED
- 6 Check Report and Print to PDF

### Product Details

<b>Product Name</b>	SD-BLD010
<b>Product Manufacturer</b>	Sedna Lighting Ltd

<b>Part/Serial Number</b>	SD-BLD010
<b>Date of Manufacture</b>	N/A
<b>Type of Product</b>	Bollard Luminaire
<b>Thermal Management</b>	Passive
<b>Dimmable</b>	No
<b>Base Type</b>	N/A - Luminaire
<b>Driver Type</b>	Internal

<b>Pre-burning Time</b>	00:00:00
<b>Stabilisation Time</b>	00:00:00
<b>Test Time</b>	02:30:00
<b>Normal Orientation</b>	Base Up
<b>Test Orientation</b>	Base Up
<b>Ambient Temp (°C)</b>	51.0
<b>Humidity (RH)</b>	< 65% RH

<b>No of LED Modules</b>	1
<b>No of LEDs per Module</b>	12
<b>Voltage per Module (V)</b>	17.7
<b>Current per Module (A)</b>	0.495
<b>Power per Module (W)</b>	8.8
<b>Luminaire Power (W)</b>	10.9

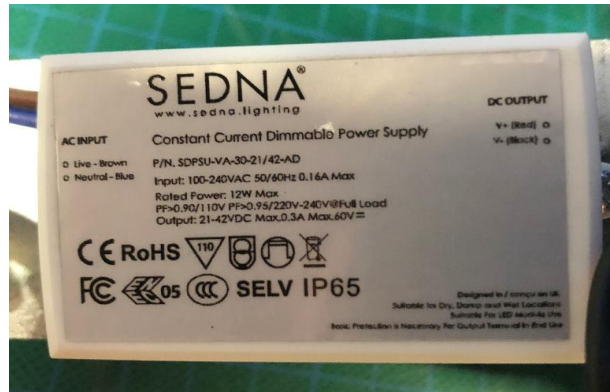
<b>LED strings in Parallel</b>	4
<b>LEDs in Series</b>	3
<b>Voltage per LED (V)</b>	5.91
<b>Current per LED (mA)</b>	123.8
<b>Power per LED (W)</b>	0.731
<b>Drivers per Luminaire</b>	1

**AC Power Details**

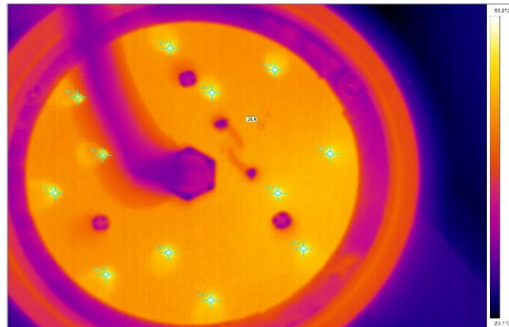
Supply Voltage (Vrms)	230.03
Supply Current (Arms)	0.0519
Supply Power (W)	10.88
Apparent Power (VA)	11.93
Power Factor	0.912

Phase Angle (°)	24.25
Supply Frequency (Hz)	50.00
Voltage THD (%)	0.06
Current THD (%)	11.40
Power THD (%)	0.00

**Driver**



**Thermocouple Location**





LUX-TSI Ltd., Pencoed Technology Park,  
Pencoed, Bridgend, CF35 5AQ, UK  
Website: www.lux-tsi.com  
E-mail: info@lux-tsi.com

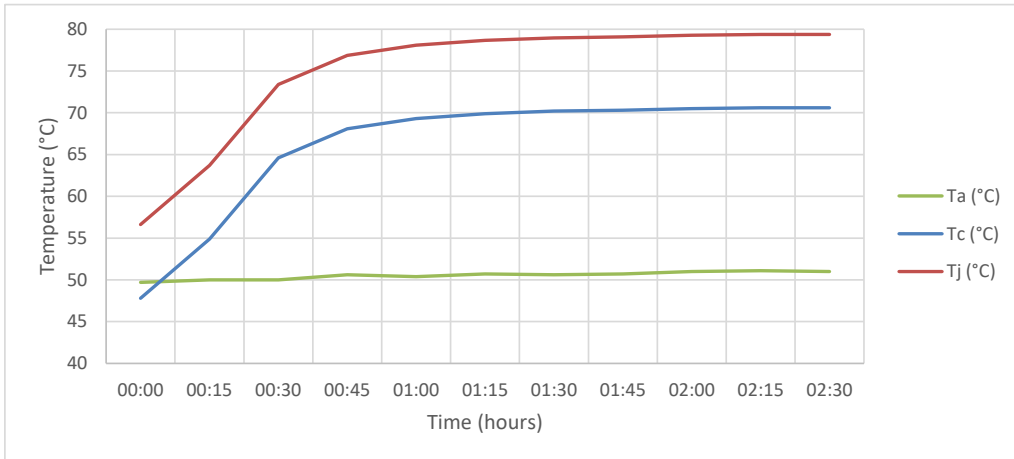
**Test Report Number:**  
**Product Name**

30435  
SD-BLD010

### Thermal Testing Measurements

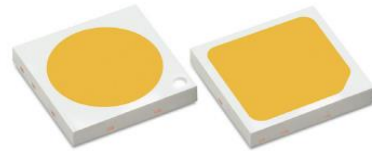
Time (h:m)	LED Module			Ta (°C)	Tc (°C)	Tj (°C)	ΔTc
	Voltage (V)	Current (A)	Power (W)				
00:00	17.8	0.495	8.8	49.7	47.8	56.6	-
00:15	17.8	0.495	8.8	50.0	54.9	63.7	-
00:30	17.7	0.495	8.8	50.0	64.6	73.4	35.1%
00:45	17.7	0.495	8.8	50.6	68.1	76.9	24.0%
01:00	17.7	0.495	8.8	50.4	69.3	78.1	7.3%
01:15	17.7	0.495	8.8	50.7	69.9	78.7	2.6%
01:30	17.7	0.495	8.8	50.6	70.2	79.0	1.3%
01:45	17.7	0.495	8.8	50.7	70.3	79.1	0.6%
02:00	17.7	0.495	8.8	51.0	70.5	79.3	0.4%
02:15	17.7	0.495	8.8	51.1	70.6	79.4	0.4%
02:30	17.7	0.495	8.8	51.0	70.6	79.4	0.1%

Ta (Ambient Temperature)    Tc (LED Case Temperature)    Tj (LED Junction Temperature)



**LED Package Details & LM-80 Data**

<b>LED Manufacturer</b>	Lumileds
<b>LED Model</b>	Luxeon 3030 2D
<b>LED Bin Reference</b>	NA
<b>LM-80 Document Ref</b>	LUXEON 3030 2D and HR30 - LM80 Report for Sedna Lighting.pdf
<b>LM-80 Report Date</b>	26/12/2017
<b>Nearest Reported Tc Point</b>	105
<b>LED Thermal Resistance (°C/W)</b>	12
<b>LM-80 LED Test Current (mA)</b>	150
<b>Measured Junction Temperature</b>	79.4 <b>PASS</b>
<b>Maximum Junction Temperature</b>	125

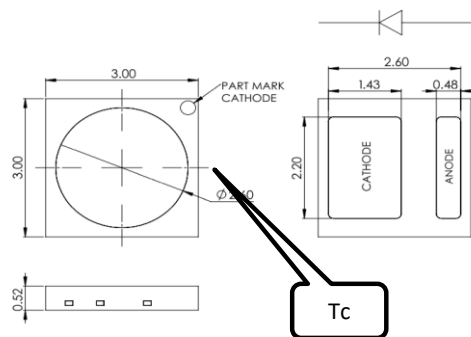


**Absolute Maximum Ratings**

Table 4. Absolute maximum ratings for LUXEON 3030 2D Line.

PARAMETER	MAXIMUM PERFORMANCE
DC Forward Current <sup>(1)</sup>	240mA
Peak Pulsed Forward Current <sup>(2)</sup>	300mA
ESD Sensitivity (ANSI/ESDA/JEDEC JS-001-2012)	Class 2
LED Junction Temperature (DC & Pulse)	125°C
Operating Case Temperature	-40°C to 105°C
LED Storage Temperature	-40°C to 105°C
Soldering Temperature	JEDEC 020D 260°C
Allowable Reflow Cycles	3
Reverse Voltage (V <sub>reverse</sub> ) <sup>(3)</sup>	-5V

Notes for Table 4:  
1. Residual periodic variations due to power conversion from alternating current (AC) to direct current (DC), also called "ripple", are acceptable if the following conditions are met:  
- The frequency of the ripple current is 100Hz or higher  
- The average current for each cycle does not exceed the maximum allowable DC forward current  
- The maximum amplitude of the ripple does not exceed 25% of the maximum allowable DC forward current  
2. Pulse operation with the maximum peak pulse forward current is acceptable if the pulse on time is <5ms per cycle and the duty cycle is <50%  
3. At a maximum reverse current of 10µA, LUXEON 3030 2D LEDs are not designed to be driven in reverse bias.



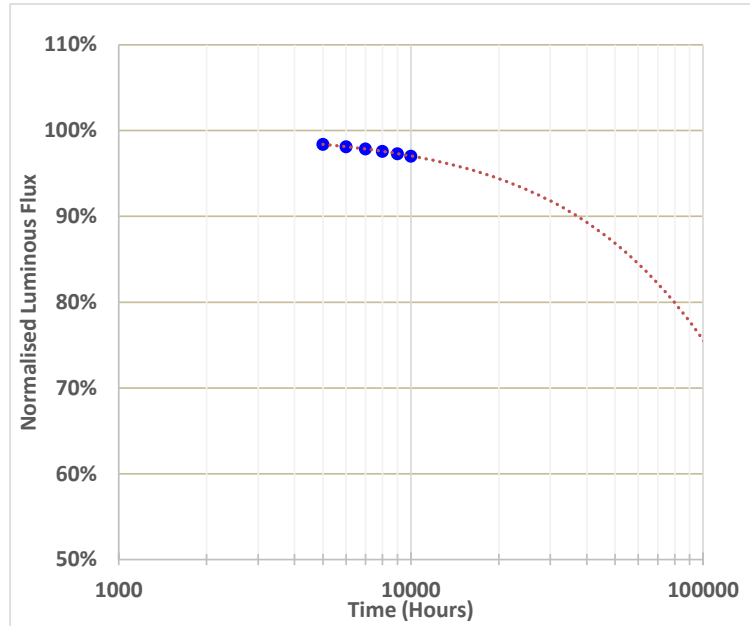
**Manufacturers LED LM-80 Reported Data Summary**

<b>Nearest Tc</b>	<b>LED Current (mA)</b>	<b>ANSI CCT Target</b>	<b>Test Duration</b>	<b>Reported TM-21 Lifetime</b>
105	150	3000	10,000	L70 ( 10.0 K ) = >60000 Hours



**TM-21 Extrapolation of LM-80 Data based on Tc and LED Current**

Time (hrs)	Measured Normalised Flux	TM-21 Fit to Data Extrapolated
0	1.0000	0.9978
1000	0.9965	0.9950
2000	0.9934	0.9923
3000	0.9904	0.9895
4000	0.9870	0.9868
5000	0.9840	0.9841
<b>6000</b>	<b>0.9812</b>	<b>0.9813</b>
7000	0.9787	0.9786
8000	0.9761	0.9759
9000	0.9733	0.9732
10000	0.9703	0.9705



$\Phi(T) = \beta \exp(-\alpha T)$       $\beta = 9.978E-01$       $\alpha = 2.772E-06$

Reported Lumen Maintenance (as allowed by TM-21) Hours	L70(10k)	>60000
	L80(10k)	>60000
	L90(10k)	37,211
Calculated Lumen Maintenance (from Fit to Data) Hours	L70	127,877
	L80	79,703
	L90	37,211

**IEC 62717 / Ecodesign Lumen Maintenance Category Code**

Lumen Maintenance Time	Lumen Maintenance	Reported Tc Point	62717 Category Code
6000	98.1%	105 °C	9

EcoDesign Lumen Maintenance at 6000 hours
PASS

Lumen maintenance %	Code
≥ 90	9
≥ 80	8
≥ 70	7

**END OF REPORT**