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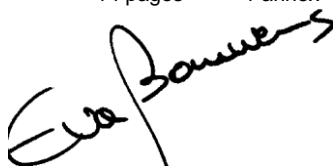
**Photometric measurements on  
Techcomlight Solatubes.**

Arnhem, 16 January 2014  
Author A.A.J. van den Heuvel  
DEKRA Certification B.V. - Photometry

By order of Techcomlight in Ede, The Netherlands

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14 pages      1 annex

A handwritten signature in black ink, appearing to read 'Eva Bauwens', written in a cursive style.A handwritten signature in blue ink, appearing to read 'A.A.J. van den Heuvel', written in a cursive style.

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## CONTENTS

	page
SUMMARY .....	4
1      Application for testing .....	5
2      Examination .....	5
3      Results of examination .....	6
Annex 1   Pictures of tested sample .....	7

## **SUMMARY**

The luminous flux, luminous efficacy, luminous intensity distribution (LID) and power of Solatubes, marked Techcomlight, type SmartLED/TechLED are measured in a photogoniometer according to the LM79-08 standard 'Electrical and photometric measurements of solid-state lighting products'. In addition the power factor is measured.

## 1 APPLICATION FOR TESTING

On 18 November 2013, Techcomlight in Ede, The Netherlands, submitted four samples Solatubes, marked Techcomlight, type SmartLED/TechLED.

1. 160DS-2000 LM
2. 290DS-3000 LM
3. 330/750DS-10000 LM DS-O SA / 330/750DS-10000 LM DS-O WA
4. 330/750DS-10000 LM DS-C SA / 330/750DS-10000 LM DS-C WA

Also see the pictures in Annex 1 of this report.

The applicant desired a determination of the luminous flux, luminous efficacy, luminous intensity distribution (LID) and power at an AC voltage of 230V in accordance to the IES LM79-08 standard. In addition the power factor is measured. The Energy Class is determined according to 874/2012/EC

## 2 EXAMINATION

An AC voltage of 230V with a frequency of 50Hz was applied to the luminaire. During the stabilisation time the deviation of the luminous intensity and electrical power was less than 0.5% measured over a time interval of 30 minutes.

The luminous flux is calculated by means of an integration over the luminous intensity distribution measured by means of a calibrated Photogoniometer Rigo-801-2000, location KU Leuven in Gent, Belgium. The measurements are performed in a theta-angle ranging from 5.5° till 353° and phi-angle from 0° to 180° (both with steps of 1°), in a top down position. The electrical quantities are measured by means of a calibrated (Yokogawa WT3000) power meter.

The ambient temperature during measurements was  $25 \pm 1^\circ\text{C}$ .

### 3 RESULTS OF EXAMINATION

The photometric results of the measured solatubes marked Techcomlight, SmartLED/TechLED solatubes are shown in the tables below. The measurements have been performed at an AC voltage of 230V with a frequency of 50Hz.

160DS-2000 LM	290DS-3000 LM	330/750DS-10000 LM DS-O SA	330/750DS-10000 LM DS-O WA	330/750DS-10000 LM DS-C SA	330/750DS-10000 LM DS-C WA
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#### Luminous Flux and Efficacy

	Value	Value	Value	Value	Value	Value	
Total luminous flux	<b>1794</b>	<b>2752</b>	<b>8156</b>	<b>9525</b>	<b>7667</b>	<b>8704</b>	<b>lm</b>
Total consumed power	<b>29.8</b>	<b>37.7</b>	<b>103.0</b>	<b>103.8</b>	<b>102.9</b>	<b>102.8</b>	<b>Watt</b>
Luminous Efficacy	<b>60.1</b>	<b>73.0</b>	<b>79.2</b>	<b>91.8</b>	<b>74.5</b>	<b>84.7</b>	<b>lm/Watt</b>
Stabilisation time	<b>70</b>	<b>50</b>	<b>30</b>	<b>30</b>	<b>47</b>	<b>40</b>	<b>minutes</b>

#### Electric parameters

	Value	Value	Value	Value	Value	Value	
Applied voltage	<b>230.05</b>	<b>230.07</b>	<b>230.14</b>	<b>230.04</b>	<b>230.1</b>	<b>230.0</b>	<b>V</b>
Consumed Power	<b>29.8</b>	<b>37.7</b>	<b>103.0</b>	<b>103.8</b>	<b>102.9</b>	<b>102.8</b>	<b>Watt</b>
Power Factor	<b>0.92</b>	<b>0.95</b>	<b>0.94</b>	<b>0.94</b>	<b>0.94</b>	<b>0.94</b>	<b>-</b>

#### Energy Class

	Value	Value	Value	Value	Value	Value	
Luminous flux in 120° cone	<b>1649</b>	<b>2577</b>	<b>7868</b>	<b>9525</b>	<b>7238</b>	<b>8420</b>	<b>lm</b>
Consumed Power	<b>29.8</b>	<b>37.7</b>	<b>103.0</b>	<b>103.8</b>	<b>102.9</b>	<b>102.8</b>	<b>Watt</b>
Energy Class according to 874/2012/EC	<b>A</b>	<b>A</b>	<b>A+</b>	<b>A+</b>	<b>A</b>	<b>A+</b>	

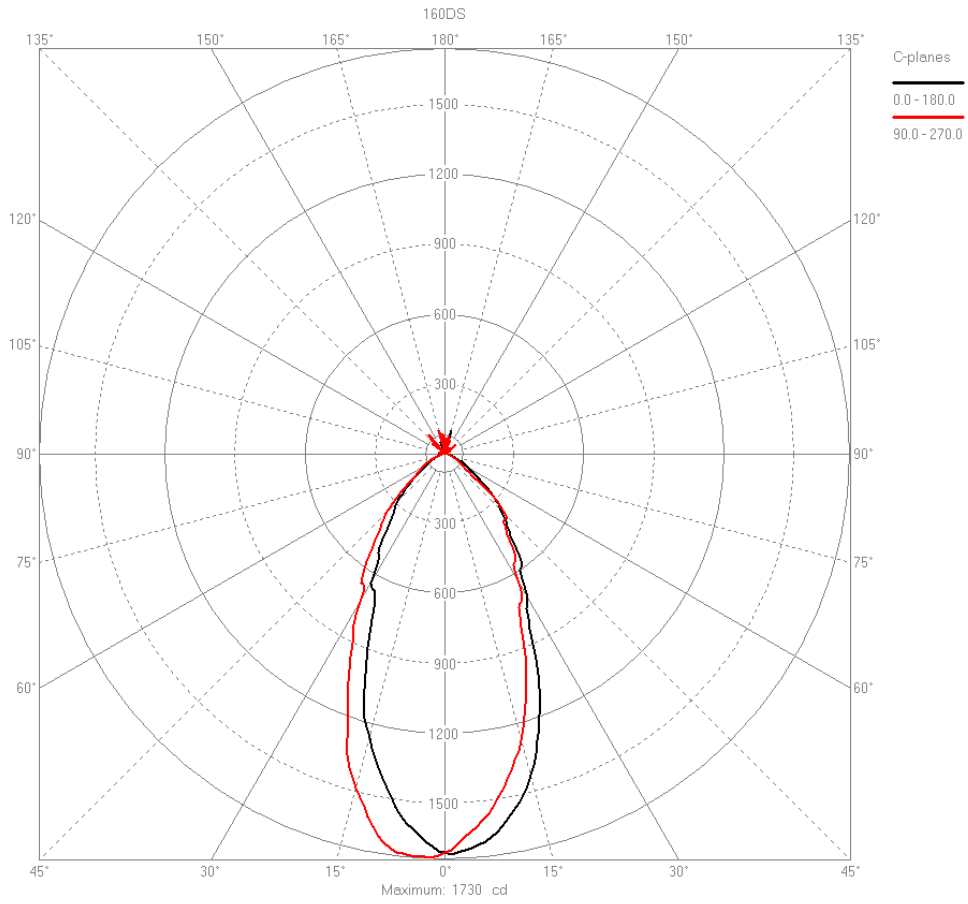
**Pictures of tested sample**



**Figure 1: Testobject 160DS-2000 LM**



**Figure 2: Driver of testobject 160DS-2000 LM**



**Figure 3: LID of testobject 160DS-2000 LM**

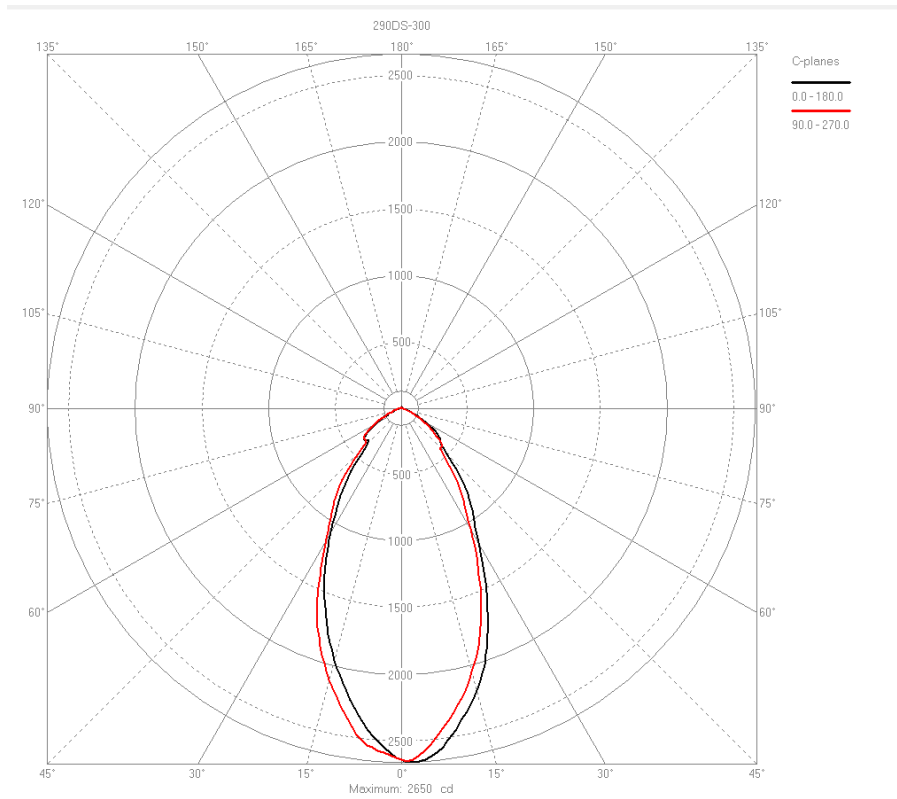


**Figure 3 : Testobject 290DS-3000 LM**



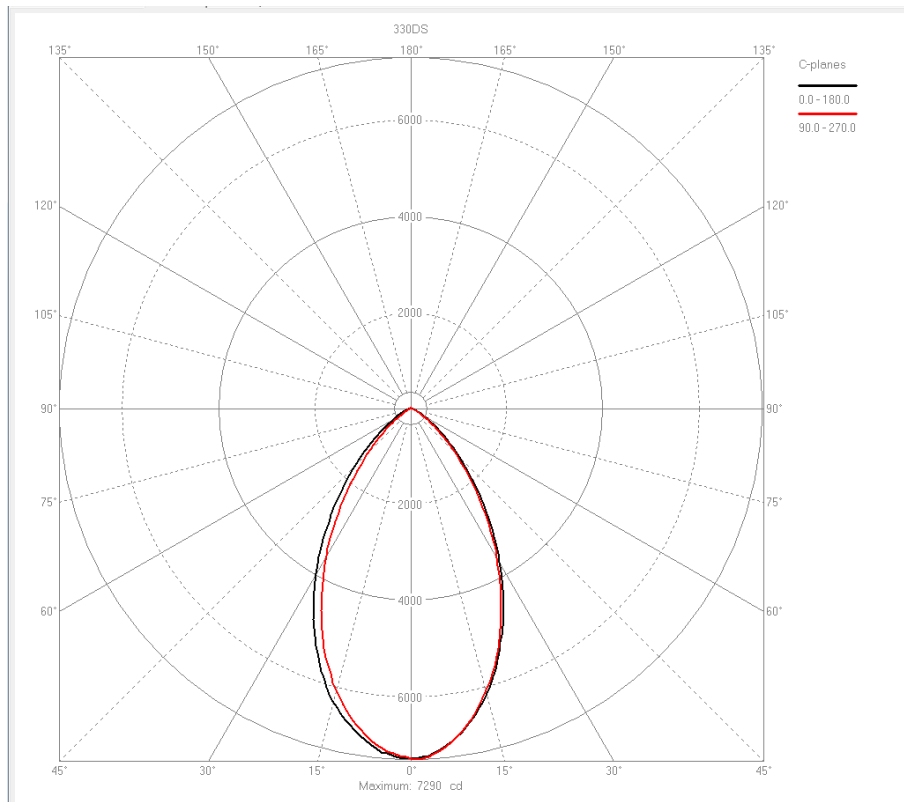


**Figure 4 : Driver of test object 290DS-3000 LM**



**Figure 5 : LID of testobject 290DS-3000 LM**

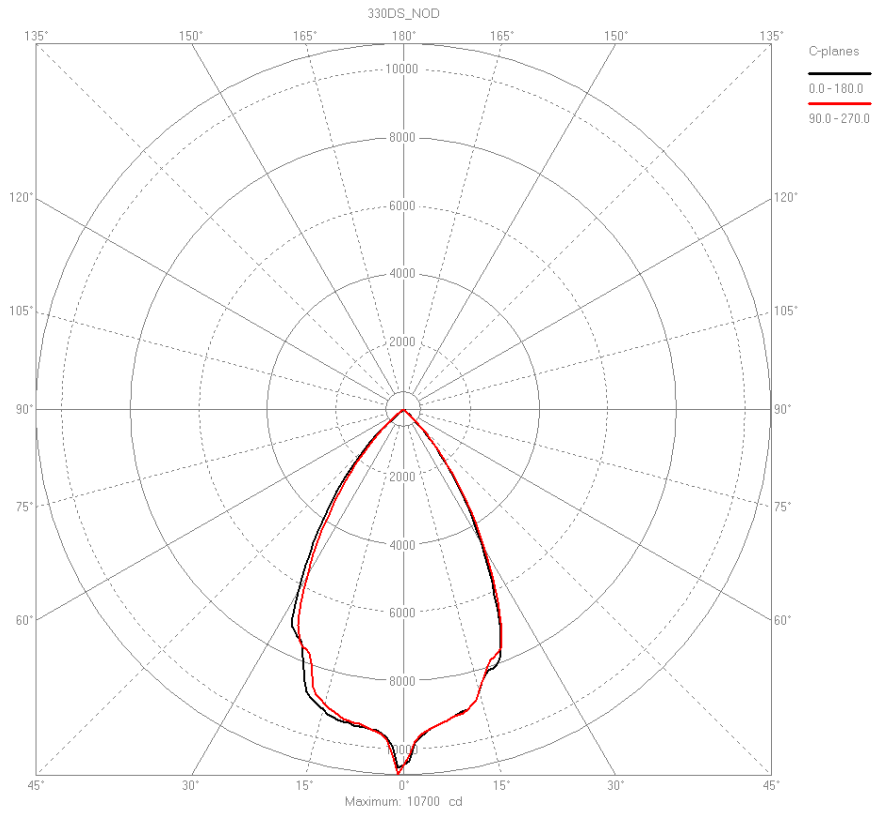




**Figure 8 : LID of testobject 330/750DS-10000 LM DS-O SA**



**Figure 9 : Testobject 330/750DS-10000 LM DS-O WA**



**Figure 10 : LID of testobject 330/750DS-10000 LM DS-O WA**



**Figure 11 : Testobject 330/750DS-10000 LM DS-C SA**

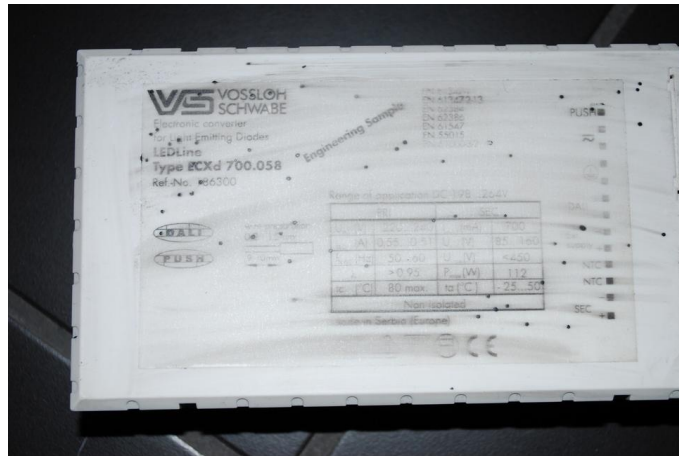


Figure 12 : Driver of testobject 330/750DS-10000 LM DS-C SA / 330/750DS-10000 LM DS-C WA

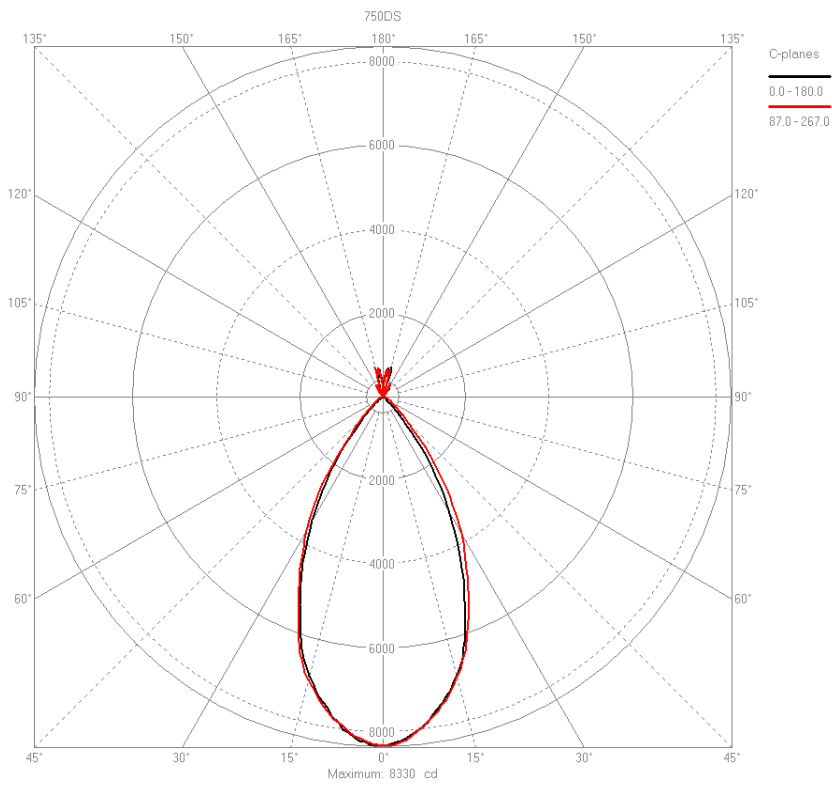
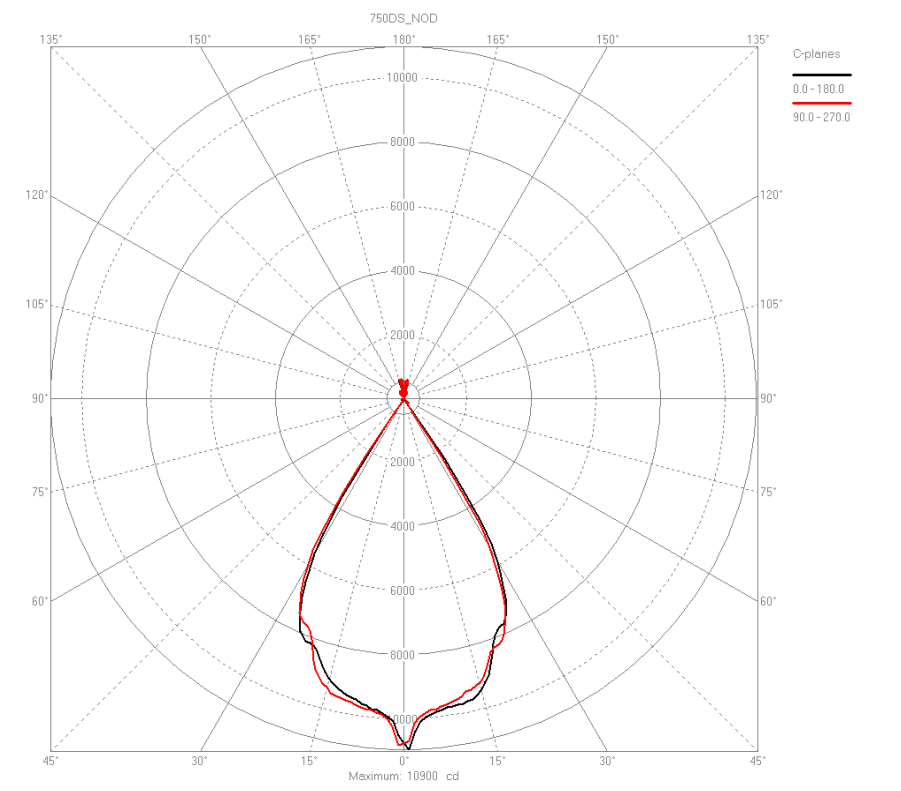


Figure 13 : LID of testobject 330/750DS-10000 LM DS-C SA



**Figure 14 : Testobject 330/750DS-10000 LM DS-C WA**



**Figure 15 : LID of testobject 330/750DS-10000 LM DS-C WA**