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**Photometric measurements on
Techcomlight Solatubes.**

Arnhem, 16 January 2014
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DEKRA Certification B.V. - Photometry

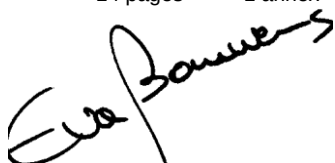
By order of Techcomlight in Ede, The Netherlands

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16-01-2014

A handwritten signature in black ink, reading 'Eva Bauwens', written in a cursive style.A handwritten signature in blue ink, reading '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	1794	2752	8156	9525	7667	8704	lm
Total consumed power	29.8	37.7	103.0	103.8	102.9	102.8	Watt
Luminous Efficacy	60.1	73.0	79.2	91.8	74.5	84.7	lm/Watt
Stabilisation time	70	50	30	30	47	40	minutes

Electric parameters

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

Energy Class

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

Pictures of tested sample



Figure 1: Testobject 160DS-2000 LM



Figure 2: Driver of testobject 160DS-2000 LM

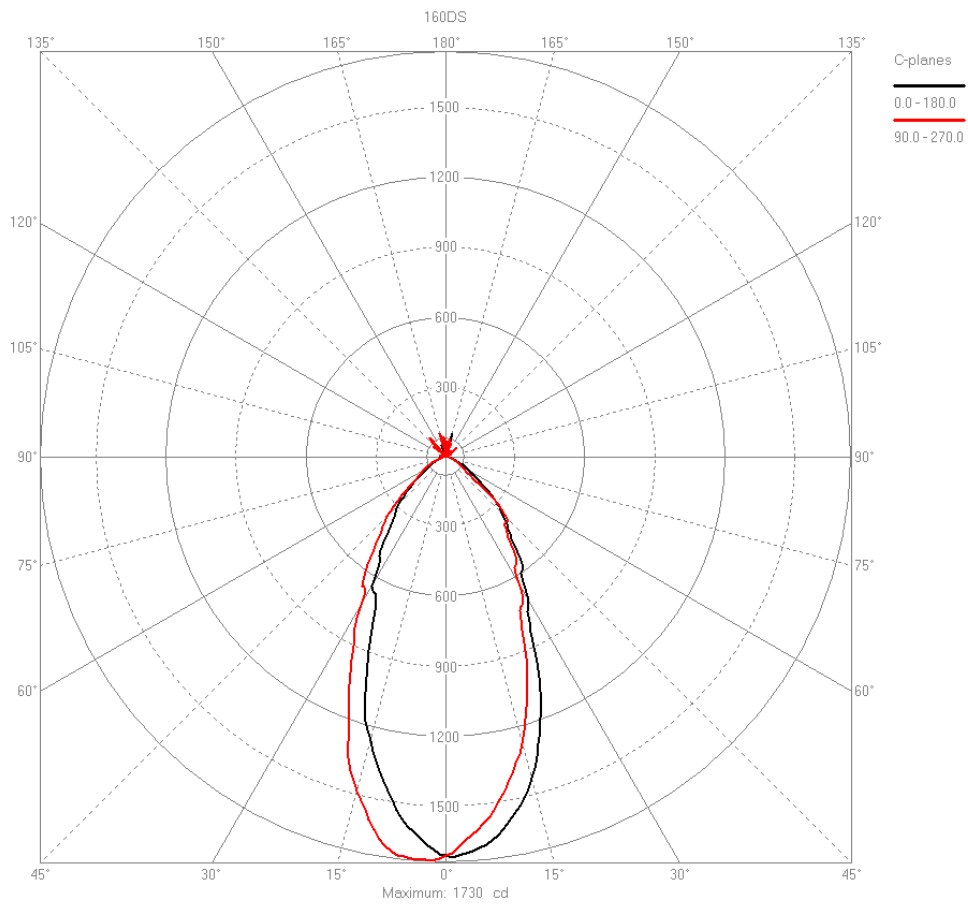


Figure 3: LID of testobject 160DS-2000 LM

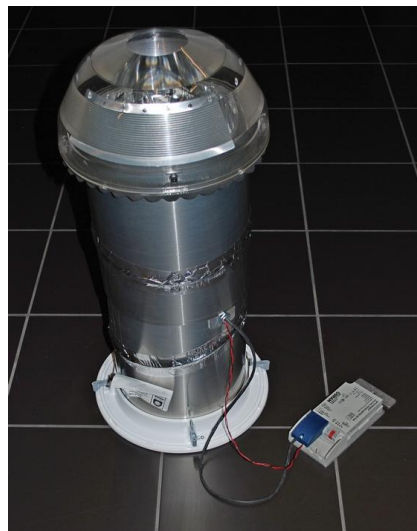


Figure 3 : Testobject 290DS-3000 LM



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

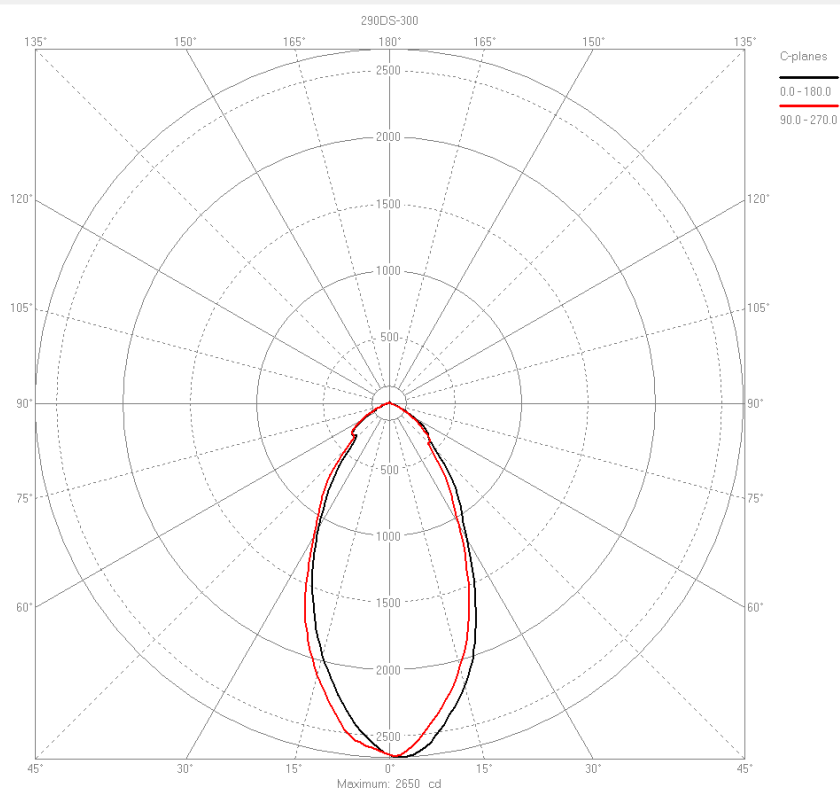


Figure 5 : LID of testobject 290DS-3000 LM

Figure 7 : Driver of testobject 330/750DS-10000 LM DS-O SA / 330/750DS-10000 LM DS-O WA

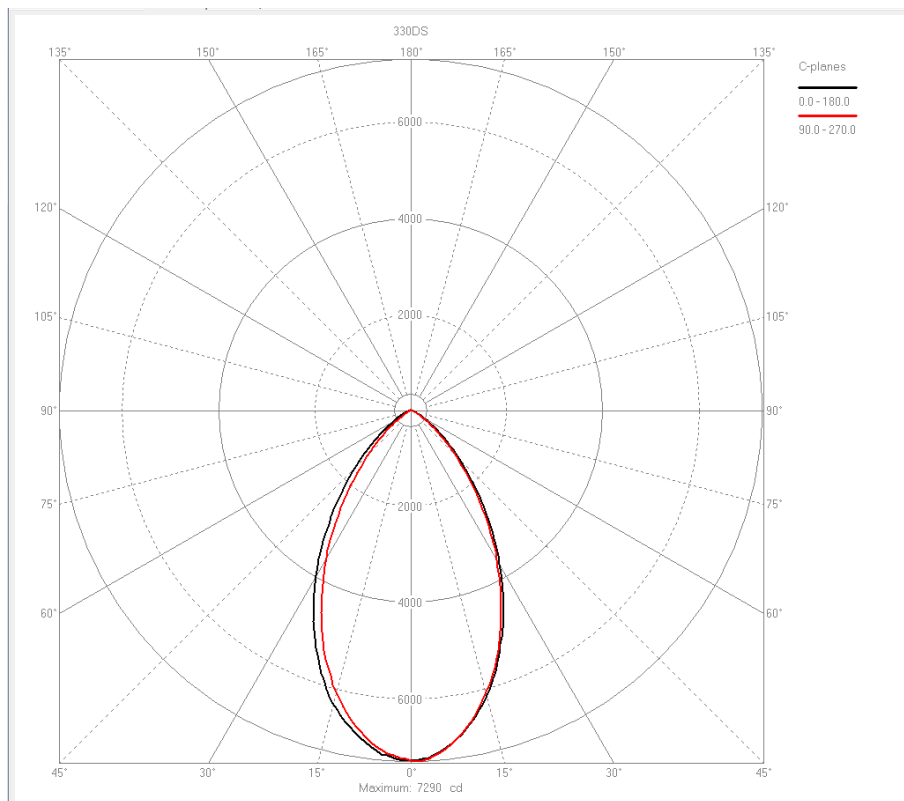


Figure 8 : LID of testobject 330/750DS-10000 LM DS-O SA



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

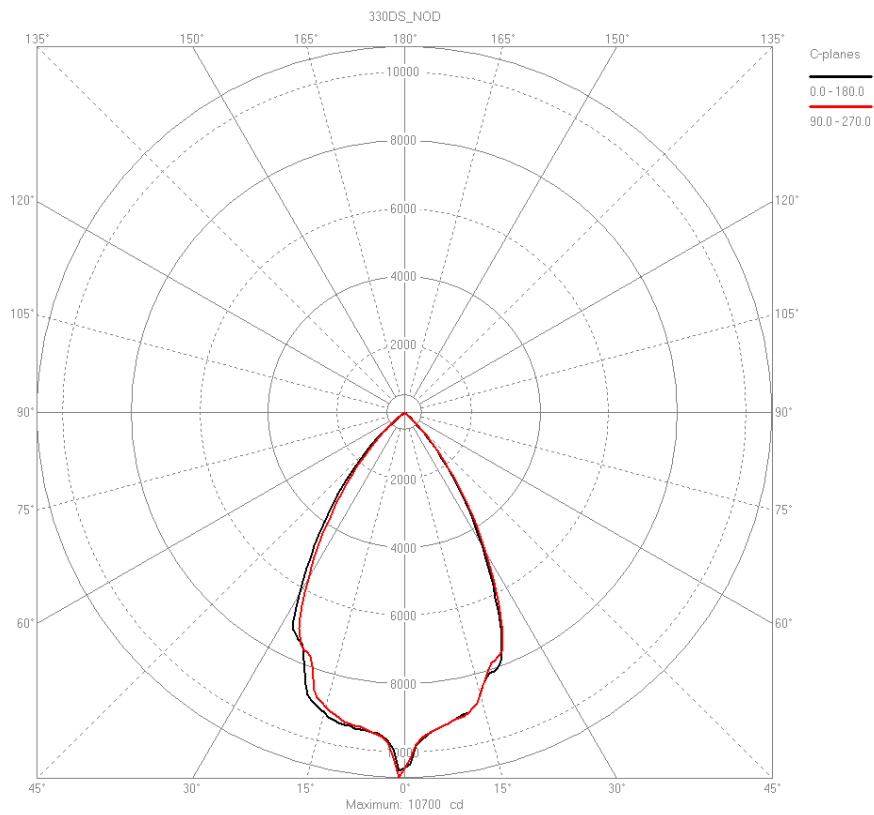


Figure 10 : LID of testobject 330/750DS-10000 LM DS-O WA



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

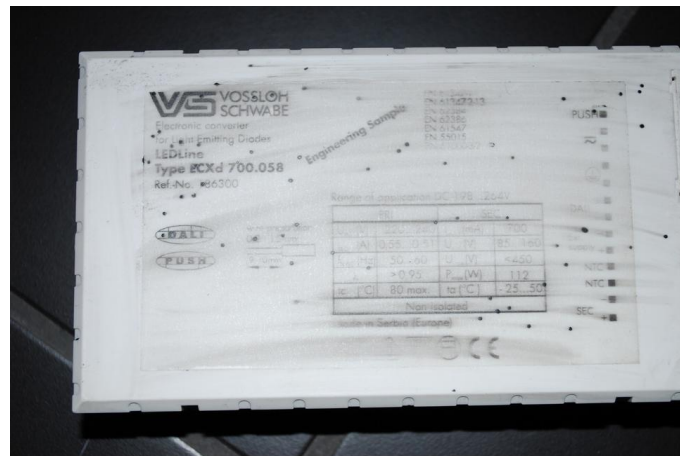


Figure 12 : Driver of testobject 330/750DS-10000 LM DS-C SA / 330/750DS-10000 LM DS-C WA

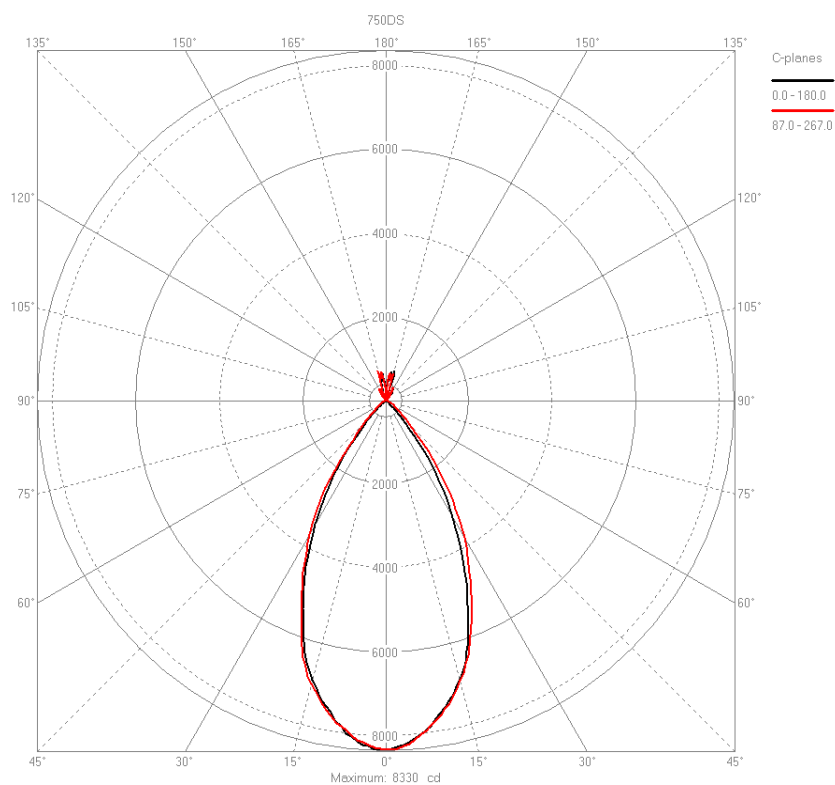


Figure 13 : LID of testobject 330/750DS-10000 LM DS-C SA



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

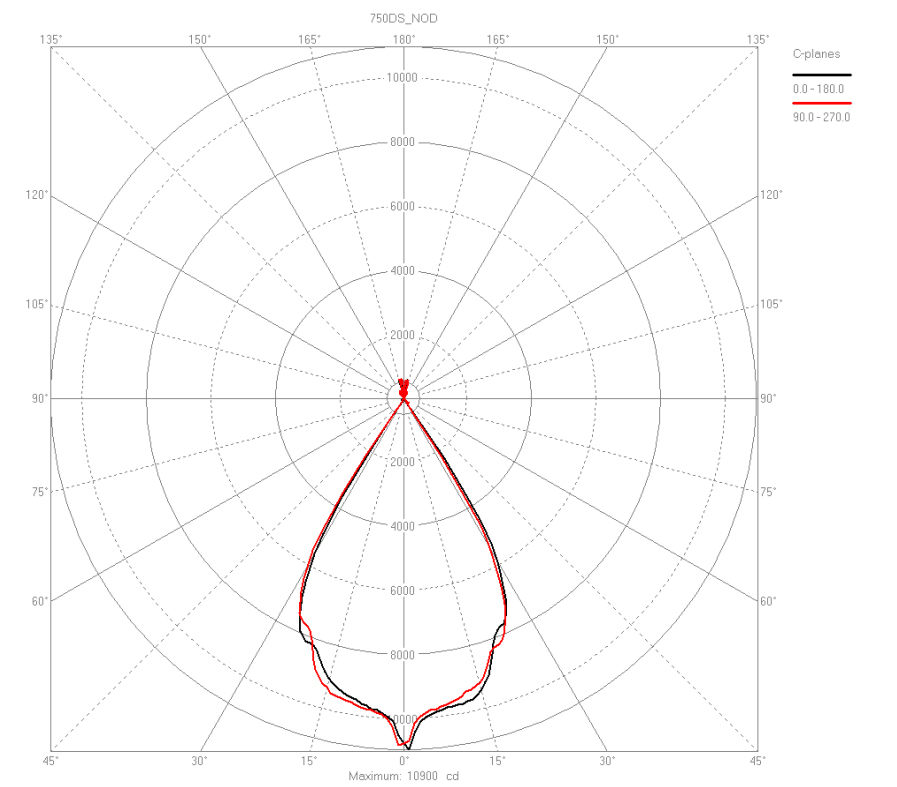


Figure 15 : LID of testobject 330/750DS-10000 LM DS-C WA