

RTECH-PHOTOMETRY LABORATORY

Testreport : Measurement of luminous intensity distribution related to the standard
NBN-EN 13032-1; NBN-EN 13032-4; CIE 121-1996; CIE S 025/E; IES LM-79-08 and procedures PT-P-01
and PT-P-02

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Measurement for Schröder group.

LED

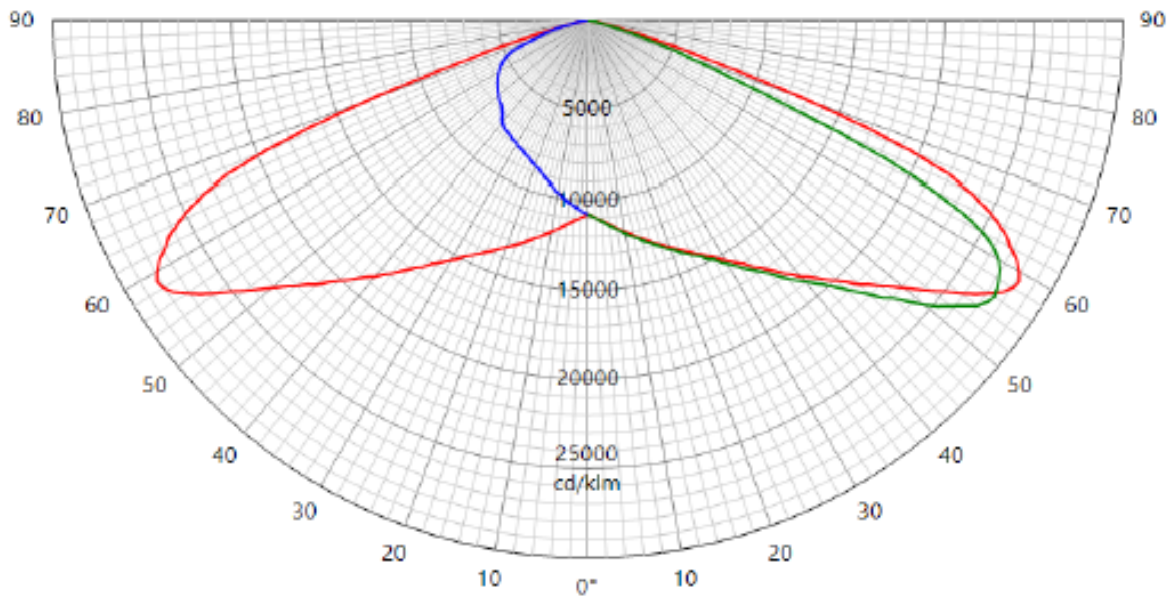
Origin TUNGSRAM-Schröder Zrt. Hungary	Production OEM Tospo	Luminaire INDU FLOOD GEN2 3	Inclination 0°	Request # FD40030
Source				
Type	BIN	Trademark	Reference	# LEDs
LED	Unknown	Lumileds	LUXEON 5050	144
LED	Unknown	Lumileds	LUXEON 5050	144
Master	Reflector			No
	OEM Tospo Led assembly Asymmetrical 60° Assembled 0,0°			6549
Protector Refractor Lens				
Protector	Glass Extra Clear Flat Smooth			
Lens	OEM Tospo 5121			
Laboratory observation				
INDU FLOOD GEN2 3 with 288 Luxeon 5050 Neutral White (740) Used flux for efficiency matrix calculation = 70012 lm - CCT = 3844 K - CRI = 72,29 (see sphere test report 2020/160 on appendix).				
Purpose	DOC	Sample date	03/02/2020	Sample # 40R025
Observation				
DOC INDU FLOOD GEN2 3 with optic 6549				
Notes				
The publication of this report in another form than the original one is not allowed without agreement of the laboratory. This report concerns type tests on one or a series of specimens. All information but the measurements results are provided by the customer.				

Asked by VLG	Measured by CLD	Approved by RLABO	Appendix 1	  226-TEST NBN EN ISO/IEC 17025 :2017	44999
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LUMINOUS INTENSITY DIAGRAM

Origin TUNGSRAM-Schröder Zrt. Hungary		Production OEM Tospo		Luminaire INDU FLOOD GEN2 3		Inclination 0°	Request # FD40030
Source	Type	BIN	Trademark	Reference	# LEDs	Reflector	
	LED	Unknown	Lumileds	LUXEON 5050	144	6549	
	LED	Unknown	Lumileds	LUXEON 5050	144	6549	
Reflector	OEM Tospo Led assembly Asymmetrical 60° Assembled 0,0°				No	6549	
Matrices	449991	Φ 0-90° = 55977lm - 90-180° = 0lm				Absolute measurement	
Protector Refractor Lens	Protector Glass Extra Clear Flat Smooth - INDU FLOOD GEN2 3 Lens 288 x OEM Tospo 5121						
Observation	<p>Matrix in total flux</p> <p>Electrical measurement on LED (#1): Voltage = 44,34 V Current = 4,003 A Power = 177,44 W</p> <p>Electrical measurement on LED (#2): Voltage = 44,61 V Current = 4,009 A Power = 178,81 W</p> <p>Electrical measurement on driver (#1): Voltage = 230,00 V Current = 1,704 A Power = 389,78 W PF = 0,994</p> <p>Total luminaire power = 389,78 W : lm/Watt = 143,61 lm/W</p> <p>Driver #1 : Sosen Sosen Led driver Model : SS-200GA-56B . .</p> <p>Driver #2 : Sosen Sosen Led driver Model : SS-200GA-56B . .</p>						

Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	↕
65 - 115	28203	59	S	10775	25,5°	11/02/2020	
90	27476	56	D				
270	10775	0	G				

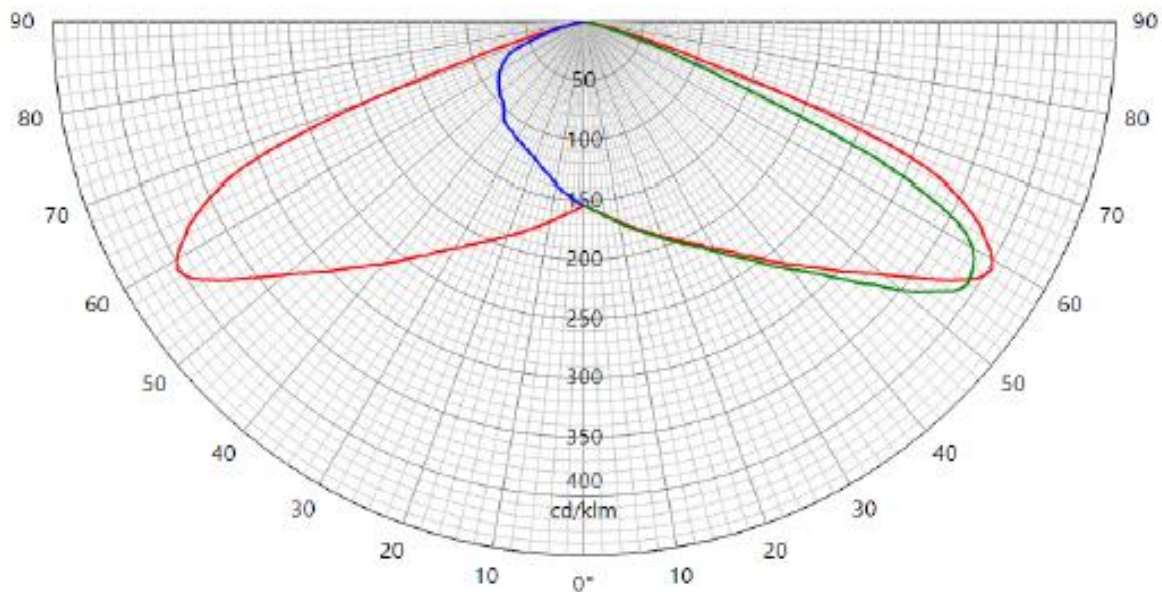


44999

LUMINOUS INTENSITY DIAGRAM

Origin TUNGSRAM-Schröder Zrt. Hungary		Production OEM Tospo		Luminaire INDU FLOOD GEN2 3		Inclination 0°	Request # FD40030
Source	Type	BIN	Trademark	Reference	# LEDs	Reflector	
	LED	Unknown	Lumileds	LUXEON 5050	144	6549	
	LED	Unknown	Lumileds	LUXEON 5050	144	6549	
Reflector	OEM Tospo Led assembly Asymmetrical 60° Assembled 0,0°					No	6549
Matrices	449992	η 0-90° = 79,9% - 90-180° = 0,0%				Relative measurement	
Protector Refractor Lens	Protector Glass Extra Clear Flat Smooth - INDU FLOOD GEN2 3 Lens 288 x OEM Tospo 5121						
Observation	<p>Matrix in efficiency</p> <p>Electrical measurement on LED (#1): Voltage = 44,34 V Current = 4,003 A Power = 177,44 W</p> <p>Electrical measurement on LED (#2): Voltage = 44,61 V Current = 4,009 A Power = 178,81 W</p> <p>Electrical measurement on driver (#1): Voltage = 230,00 V Current = 1,704 A Power = 389,78 W PF = 0,994</p> <p>Total luminaire power = 389,78 W</p> <p>Driver #1 : Sosen Sosen Led driver Model : SS-200GA-56B . . .</p> <p>Driver #2 : Sosen Sosen Led driver Model : SS-200GA-56B . . .</p>						

Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t*	Measurement date
65 - 115	403	59	S	154	25,5°	11/02/2020
90	392	56	D			
270	154	0	G			



44999

INFORMATION

Measurement fulfil Standards:

NBN-EN 13032-1
NBN-EN 13032-4
NBN-EN 17025:2017
CIE 121-1996
LM79-08
CIE S 025

Measurement quantities measured:

Light distribution in relative or absolute photometry
Led alone cold lumen package
Led CCT and CRI
Power consumption of the fitting
Lm/watt

Electrical measurement, if not specified:

Primary values are AC with 50Hz frequency
Secondary values on SSL are DC

CCT, CRI and chromaticity coordinates: are measured in Ulbricht sphere.
If specified Main test report refer to sphere extra test report.

Light distribution are measured on gonio. If not otherwise specified, measurement is done at 50 Hz

Number of hours operated prior to measurement: if not otherwise specified, 0 hours (no aging).

Stabilization time: If not otherwise specified, a minimal stabilization time of 0.5 hour is applied; and measurement will start when it exists no more variation above 0.5% in 15 minutes

Total operating time of the product including stabilization:
45 minutes have to be added by measurement.
Minimal operating time is 75 minutes

Luminous intensity distribution: available on electronic file with
.mat format (internal Schröder format)
.ldt format (European standard)
.IES format (American standard)

Statement of uncertainties (K=2, 95% of confidence level):
Uncertainties calculated based on a typical Schröder fitting and PCBA

Intensity measurement: +/- 3%
Angle: +/- 0.5°
Flux: +/- 2.5%
Electrical DC
Power: +/- 0.10%
Voltage: +/- 0.10%
Current: +/- 0.11%
Electrical AC
Power: +/- 0.12%
Voltage: +/- 0.10%
Current: +/- 0.15%
Temperature: +/- 0.65%

ISP2000	JETI
CCT: +/- 5%	+/-7.5%
CRI: +/- 2%	+/-2.75%
x/y: +/- 2%	+/-4.6%

Im/Watt: +/-3.4%

Measuring instruments in use:

Gonio 1

Type C with Moving mirror

Manufacturer: LMT Lichtmesstechnik GmbH Berlin, Helmholtzstrasse 9 10587 Berlin, Germany

Type: GO-DS 2000

Calibration: traceable to PTB (Physikalisch-Technische Bundesanstalt D-Braunschweig) and METAS (Federal Institute of Metrology, CH-Bern)

Photometric test distance: By default 10 meter, on request 30 meter.

Gonio 2

Type C

Manufacturer: Technoteam Bildverarbeitung, Werner-von-Siemens-Strasse 5 98693 Ilmenau, Germany

Calibration: traceable to BIPM (Bureau International des Poids et Mesures F-Sèvres)

Photometric test distance: Near Field

Sphere n*1

4p geometry

Manufacturer: LMT Lichtmesstechnik GmbH, Helmholtzstrasse 9 10587 Berlin, Germany

Type: UL2000 + U1000 V-Lambda photometer

Calibration: traceable to BIPM (Bureau International des Poids et Mesures F-Sèvres)

Sphere n*2

4p geometry

Manufacturer: Instrument Systems GmbH, Neumarkter Str. 83, 81673 Muenchen, Germany

Type ISP2000 + Spectroradiometer CAS120 and CAS140

Calibration: traceable to NIST

Colorimetric portable spectroradiometer

Manufacturer: JETI Technische Instrumente GmbH, Tatzendpromenade 2 07745 Jena

Type: SPECBOS 1201

Calibration: traceable to NIST

Multimeters

Manufacturer: Agilent

Type: 34401A

Calibration: traceable to BIPM (Bureau International des Poids et Mesures F-Sèvres)

Wattmeters

Manufacturer: Yokogawa

Type: WT210 and WT310

Calibration: traceable to BIPM (Bureau International des Poids et Mesures F-Sèvres)

Thermometers

Amarell Precision

Type: Liquid in glass N63833

Calibration: traceable to LBT (Laboratoire Belge de Thermométrie)

End of test report