

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
rue de Mons, 3 B-4000 LIEGE - Tel : 04/224.71.40 - Fax : 04/224.25.90
Measurement for Schröder group.

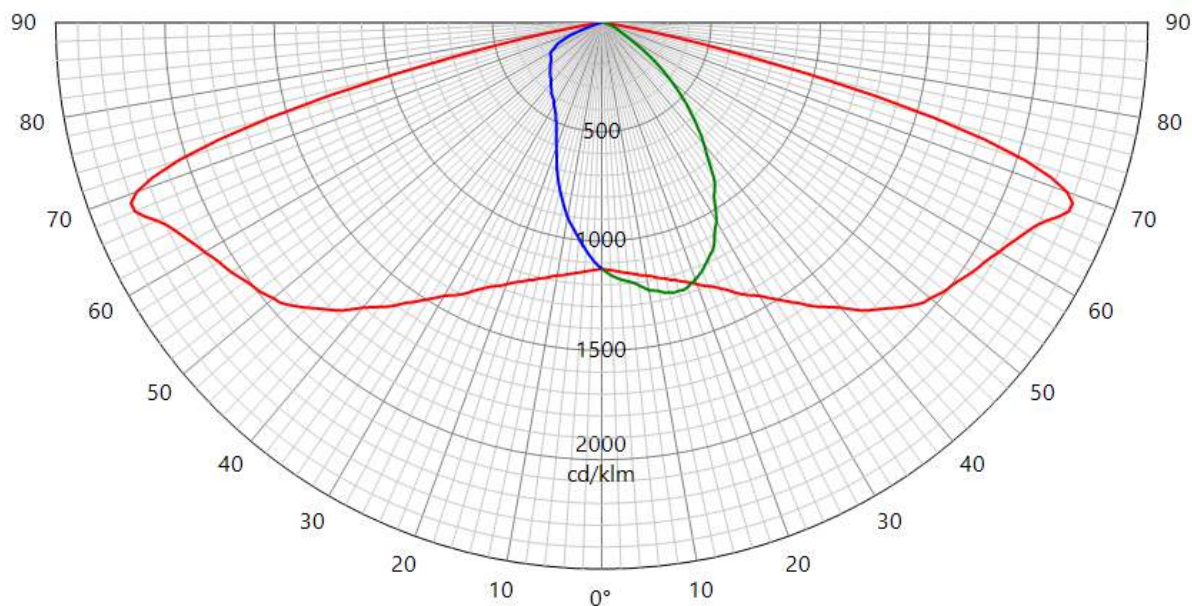
LED

Origin Schröder TOV	Production Schröder TOV	Luminaire IZYLUM 1	Inclination 0°	Request # FD40042
Source				
Type LED	BIN RB	Trademark Samsung	Reference LH351C	# LEDs 20
Reflector No				Reflector 5301
Master Schreder Led assembly Narrow Assembled 0,0°				
Protector Refractor Lens				
Light Exhauster	Plastic Lum. shape-related White			
Protector	Glass Extra Clear Flat Smooth			
Lens	Gaggione 5301 PMMA			
Laboratory observation				
IZYLUM 1 with 20 Samsung LH351C (NW740) bin RB Used flux for efficiency matrix calculation = 3776 lm - CCT = 3897 K - CRI = 73,37 (see sphere test report 2020/115)				
Purpose DOC	Sample date 13/11/2019		Sample # 39P058	
Observation				
DOC IZYLUM 1 with lenses 5301 + Light Exhauster				
Flux coefficient multiplicator (only for efficiency matrix): From 350 to 200 mA : 0,600 From 350 to 500 mA : 1,360 From 350 to 700 mA : 1,785				
Fixture powered with driver Philips XiFP 40W 0,2-0,7A SNLDAE 230V C123 SxT for matrix @200/350/500mA Fixture powered with driver Philips XiFP 75W 0,2-0,7A SNLDAE 230V C133 SxT for matrix @700mA				
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 RCA	Measured by KDE	Approved by RLABO	Appendix 1	  226-TEST NBN EN ISO/IEC 17025 :2017	45044
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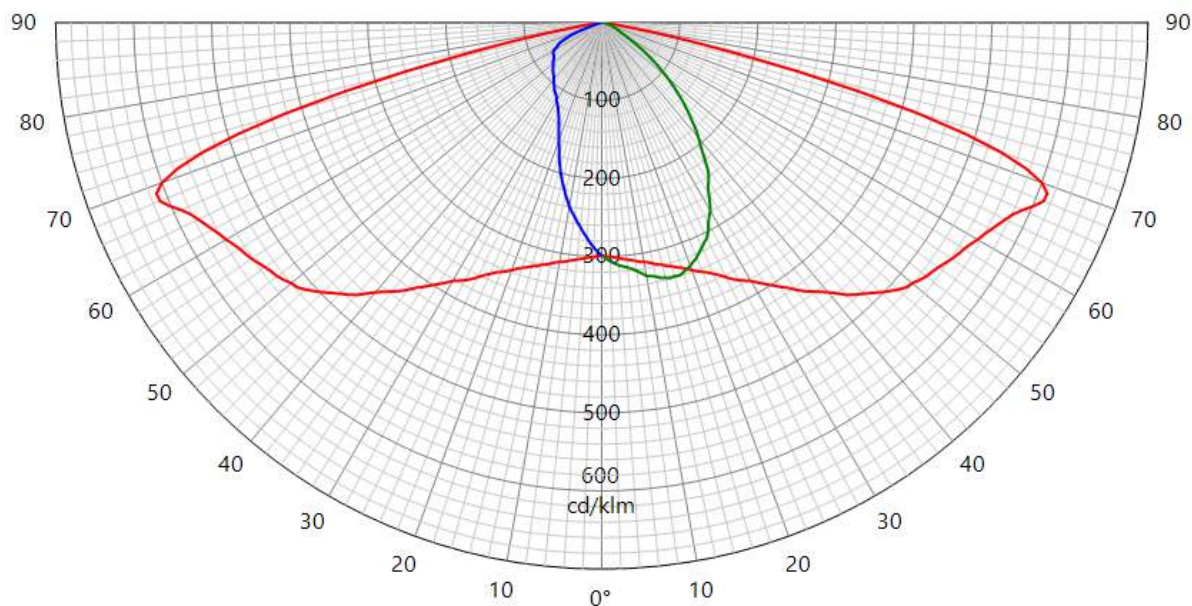
LUMINOUS INTENSITY DIAGRAM

Origin Schröder TOV		Production Schröder TOV		Luminaire IZYLUM 1		Inclination 0°		Request # FD40042		
Source	Type LED	BIN RB		Trademark Samsung		Reference LH351C		# LEDs 20	Reflector 5301	
Reflector	Schröder Led assembly Narrow Assembled 0,0°								No	5301
Matrices	450441	Φ 0-90° = 3327lm - 90-180° = 0lm							Absolute measurement	
Protector Refractor Lens	Light Exhauster Plastic Lum. shape-related White - IZYLUM 1 Protector Glass Extra Clear Flat Smooth - IZYLUM 1 Lens 20 x Gaggione 5301 PMMA									
Observation	Matrix in total flux @350 mA Light losses due to thermal stabilization: 2,2 % Electrical measurement on LED (#1) : Voltage = 55,57 V Current = 0,350 A Power = 19,47 W Electrical measurement on driver (#1) : Voltage = 230,00 V Current = 0,102 A Power = 22,74 W PF = 0,968 Total luminaire power = 22,74 W : Lm/Watt = 146,32 lm/W Driver #1 : See observations for driver details - , PCBA 00-84-624B									
Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°		Measurement date			
10 - 170	2309	69	S	1127	25,2°		17/02/2020			
90	1280	17	D							
270	1127	0	G							

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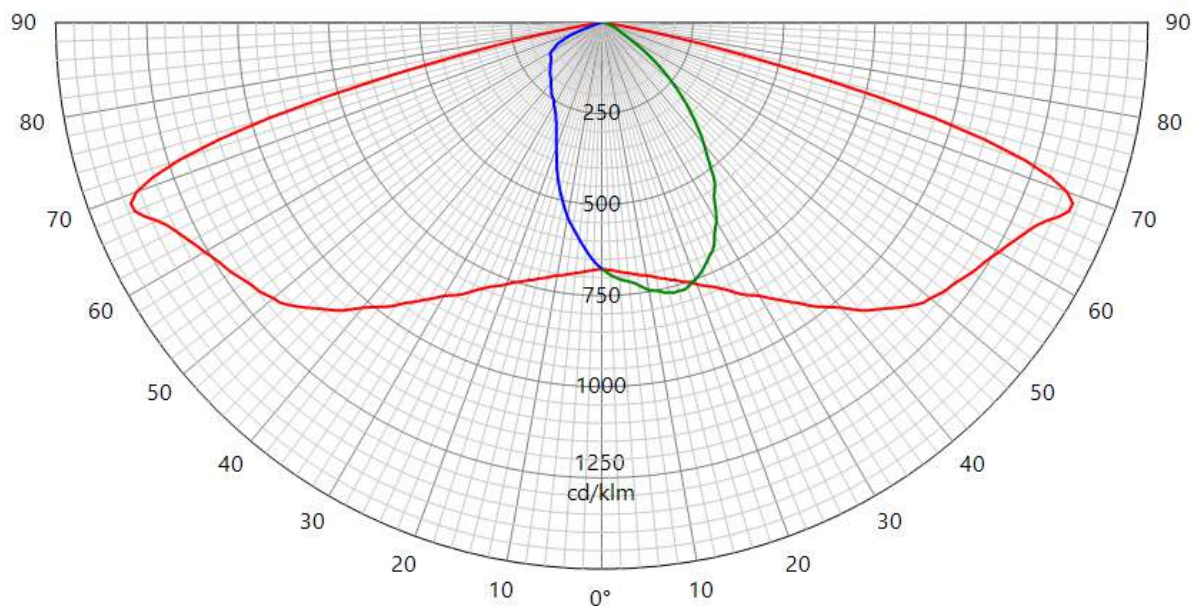
LUMINOUS INTENSITY DIAGRAM

Origin Schröder TOV		Production Schröder TOV		Luminaire IZYLUM 1		Inclination 0°		Request # FD40042	
Source	Type LED	BIN RB	Trademark Samsung	Reference LH351C	# LEDs 20	Reflector 5301			
Reflector	Schröder Led assembly Narrow Assembled 0,0°						No	5301	
Matrices	450442	η 0-90° = 88,1% - 90-180° = 0,0%					Relative measurement		
Protector Refractor Lens	Light Exhauster Plastic Lum. shape-related White - IZYLUM 1 Protector Glass Extra Clear Flat Smooth - IZYLUM 1 Lens 20 x Gaggione 5301 PMMA								
Observation	Matrix in efficiency @350 mA Light losses due to thermal stabilization: 2,2 % Electrical measurement on LED (#1) : Voltage = 55,57 V Current = 0,350 A Power = 19,47 W Electrical measurement on driver (#1) : Voltage = 230,00 V Current = 0,102 A Power = 22,74 W PF = 0,968 Total luminaire power = 22,74 W Driver #1 : See observations for driver details - , PCBA 00-84-624B								
Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date			
10 - 170	612	69	S						
90	339	17	D	298	25,2°	17/02/2020			
270	298	0	G						

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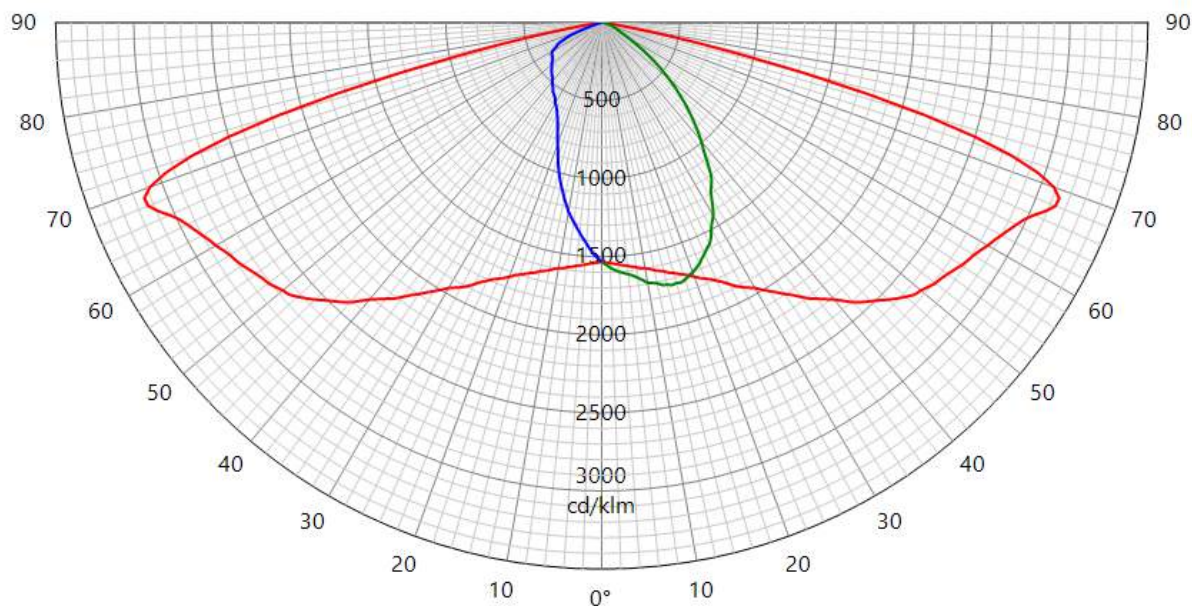
LUMINOUS INTENSITY DIAGRAM

Origin Schröder TOV		Production Schröder TOV		Luminaire IZYLUM 1		Inclination 0°		Request # FD40042	
Source	Type LED	BIN RB	Trademark Samsung	Reference LH351C	# LEDs 20	Reflector 5301			
Reflector	Schröder Led assembly Narrow Assembled 0,0°						No	5301	
Matrices	450443	Φ 0-90° = 1996lm - 90-180° = 0lm					Absolute measurement		
Protector Refractor Lens	Light Exhauster Plastic Lum. shape-related White - IZYLUM 1 Protector Glass Extra Clear Flat Smooth - IZYLUM 1 Lens 20 x Gaggione 5301 PMMA								
Observation	Matrix in total flux @200 mA Light losses due to thermal stabilization: 0,9 % Electrical measurement on LED (#1) : Voltage = 54,26 V Current = 0,200 A Power = 10,85 W Electrical measurement on driver (#1) : Voltage = 230,00 V Current = 0,064 A Power = 13,72 W PF = 0,928 Total luminaire power = 13,72 W : Lm/Watt = 145,50 lm/W Driver #1 : See observations for driver details - , PCBA 00-84-624B								
Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date			
10 - 170	1386	69	S						
90	768	17	D						
270	676	0	G	676	25,2°	17/02/2020			

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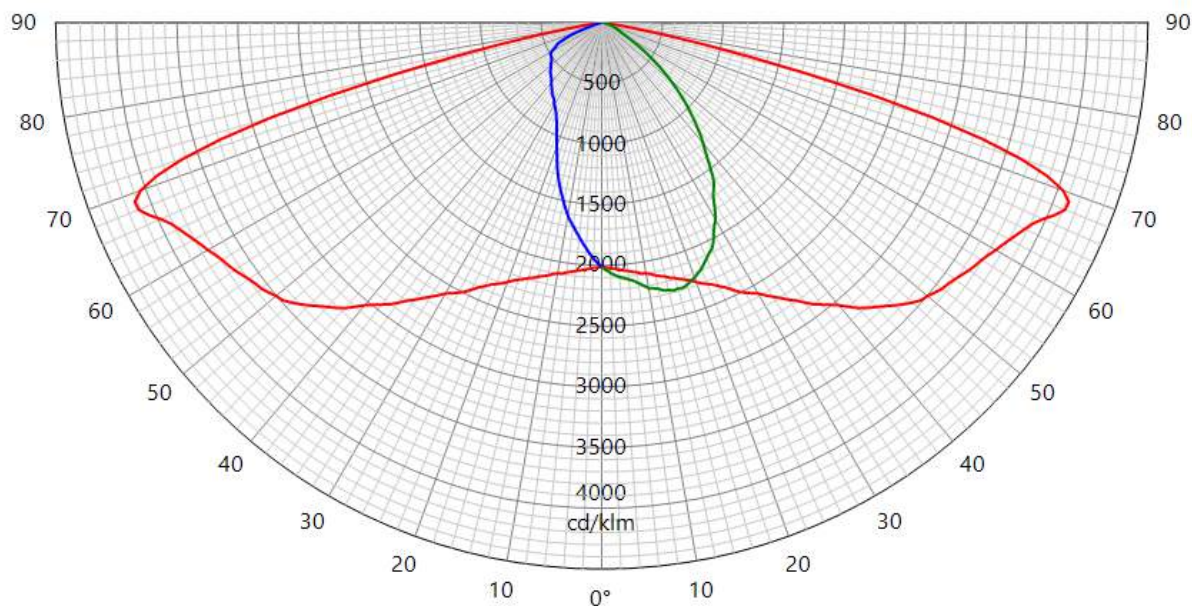
LUMINOUS INTENSITY DIAGRAM

Origin Schröder TOV		Production Schröder TOV		Luminaire IZYLUM 1		Inclination 0°		Request # FD40042		
Source	Type LED	BIN RB		Trademark Samsung		Reference LH351C		# LEDs 20	Reflector 5301	
Reflector	Schröder Led assembly Narrow Assembled 0,0°								No	5301
Matrices	450444	Φ 0-90° = 4525lm - 90-180° = 0lm							Absolute measurement	
Protector Refractor Lens	Light Exhauster Plastic Lum. shape-related White - IZYLUM 1 Protector Glass Extra Clear Flat Smooth - IZYLUM 1 Lens 20 x Gaggione 5301 PMMA									
Observation	Matrix in total flux @500 mA Light losses due to thermal stabilization: 3,9 % Electrical measurement on LED (#1) : Voltage = 56,48 V Current = 0,500 A Power = 28,26 W Electrical measurement on driver (#1) : Voltage = 230,00 V Current = 0,142 A Power = 32,00 W PF = 0,981 Total luminaire power = 32,00 W : Lm/Watt = 141,41 lm/W Driver #1 : See observations for driver details - , PCBA 00-84-624B									
Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°		Measurement date			
10 - 170	3141	69	S							
90	1740	17	D							
270	1532	0	G							

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LUMINOUS INTENSITY DIAGRAM

Origin Schröder TOV		Production Schröder TOV		Luminaire IZYLUM 1		Inclination 0°		Request # FD40042		
Source	Type LED	BIN RB		Trademark Samsung		Reference LH351C		# LEDs 20	Reflector 5301	
Reflector	Schröder Led assembly Narrow Assembled 0,0°								No	5301
Matrices	450445	Φ 0-90° = 5939lm - 90-180° = 0lm							Absolute measurement	
Protector Refractor Lens	Light Exhauster Plastic Lum. shape-related White - IZYLUM 1 Protector Glass Extra Clear Flat Smooth - IZYLUM 1 Lens 20 x Gaggione 5301 PMMA									
Observation	Matrix in total flux @700 mA Light losses due to thermal stabilization: 5,7 % Electrical measurement on LED (#1) : Voltage = 57,37 V Current = 0,700 A Power = 40,18 W Electrical measurement on driver (#1) : Voltage = 230,00 V Current = 0,199 A Power = 44,85 W PF = 0,975 Total luminaire power = 44,85 W : Lm/Watt = 132,42 lm/W Driver #1 : See observations for driver details - , PCBA 00-84-624B									
Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°		Measurement date			
10 - 170	4122	69	S							
90	2284	17	D							
270	2011	0	G							

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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%

lm/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