RTECH-PHOTOMETRY LABORATORY

LED

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 Schréder group.

Origin	Production	Luminaire	Inclination	Request #
R-Tech	Schréder TOV	SKIDO	0°	FD39062

Source

Type	BIN	Trademark	Reference	# LEDs	Reflector
LED	40-70M-4-TB-RB	Samsung	LH351C	6	5122

Master	Reflector	No
	Schreder TOV-Ukraine Led assembly Road lighting Assembled 0,0°	5122

Protector Refractor Lens

Protector integrated lenses

Lens Schreder 5122 PC

Laboratory observation

SKIDO fitted with 6 Samsung LH351C
Used flux for efficient matrix calculation, measured in sphere @350mA / 25°C: 1161 lm - CCT= 3872K - CRI= 72,29 (see sphere test report 2019/53 on appendix)

Purpose	Sample date	Sample #
DOC	08-01-2019	39R004

Observation

Digitally signed by Galciuc Igor
Date: 2021.09.06 16:33:52 EEST
Reason: MoldSign Signature
Location: Moldova

DOC Skido with optic 5122

Flux coefficient multiplicator (only for efficiency matrix):
From 350 to 700 mA : 1,842
From 350 to 1050 mA : 2,562

Fixture powered with DC power supply from the lab for matrix @350mA
Fixture powered wit driver MeanWell PLD-16-700B for matrix @700mA
Fixture powered wit driver MeanWell PLD-25-1050 for matrix @1050mA

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.

Asked by	Measured by	Approved by	Appendix		
GGS	CLD	RLABO	1	226-TEST NBN EN ISO/IEC 17025 : 2005	42935

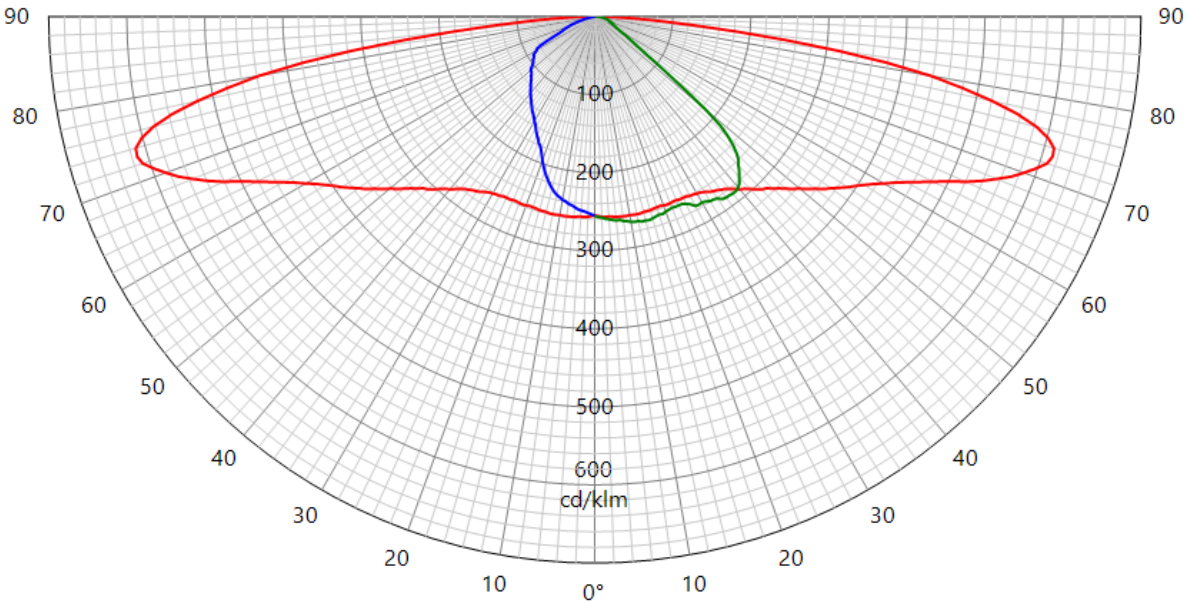
LUMINOUS INTENSITY DIAGRAM

Origin	Production	Luminaire	Inclination	Request #
R-Tech	Schréder TOV	SKIDO	0°	FD39062

Source	Type	BIN	Trademark	Reference	# LEDs	Reflector
	LED	40-70M-4-TB-RB	Samsung	LH351C	6	5122

Reflector	Schreder TOV-Ukraine Led assembly Road lighting Assembled 0,0°	No	5122
Matrices	**429351** Φ 0-90° = 1033lm - 90-180° = 1lm		Absolute measurement
Protector Refractor Lens	Protector integrated lenses Lens 6 x Schreder 5122 PC		
Observation	in total flux @350mA Electrical measurement on LED (#1) : Voltage = 17,24 V Current = 0,350 A Power = 6,03 W Driver #1 : See observations for driver details - PCB 00-71-626 A		

Plane	I Peak	Peak position	Index	I zero	Laboratory ambiant t°	Measurement date
10 - 170	613	73	S	255	24,9°	25-03-2019
90	288	38	D			
270	255	0	G			



42935

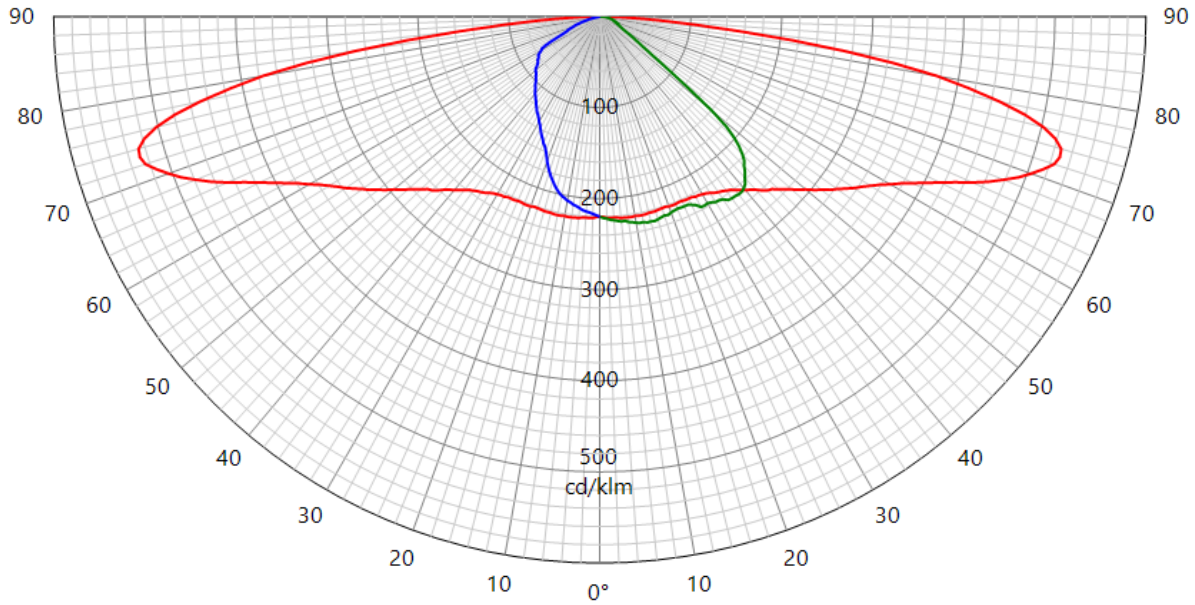
LUMINOUS INTENSITY DIAGRAM

Origin	Production	Luminaire	Inclination	Request #
R-Tech	Schréder TOV	SKIDO	0°	FD39062

Source	Type	BIN	Trademark	Reference	# LEDs	Reflector
	LED	40-70M-4-TB-RB	Samsung	LH351C	6	5122

Reflector	Schreder TOV-Ukraine Led assembly Road lighting Assembled 0,0°	No	5122
Matrices	**429352** η 0-90° = 89,0% - 90-180° = 0,1%		Relative measurement
Protector Refractor Lens	Protector integrated lenses Lens 6 x Schreder 5122 PC		
Observation	in efficiency @350mA . Electrical measurement on LED (#1) : Voltage = 17,24 V Current = 0,350 A Power = 6,03 W Driver #1 : See observations for driver details - PCB 00-71-626 A		

Plane	I Peak	Peak position	Index	I zero	Laboratory ambiant t°	Measurement date
10 - 170	528	73	S	220	24,9°	25-03-2019
90	248	38	D			
270	220	0	G			



42935

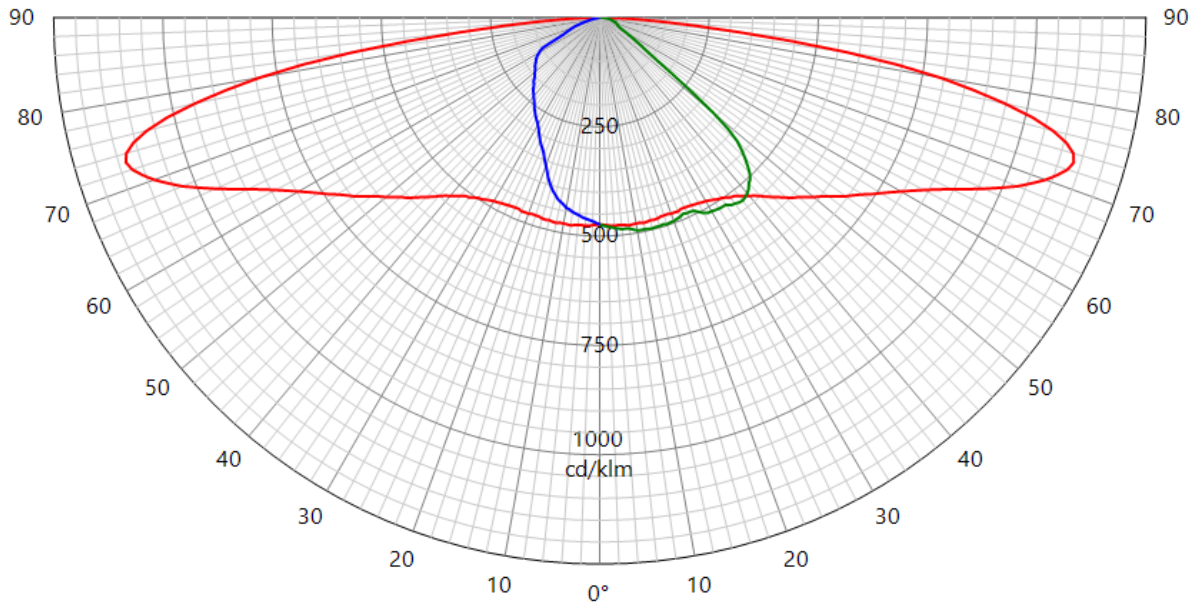
LUMINOUS INTENSITY DIAGRAM

Origin	Production	Luminaire	Inclination	Request #
R-Tech	Schréder TOV	SKIDO	0°	FD39062

Source	Type	BIN	Trademark	Reference	# LEDs	Reflector
	LED	40-70M-4-TB-RB	Samsung	LH351C	6	5122

Reflector	Schreder TOV-Ukraine Led assembly Road lighting Assembled 0,0°	No	5122
Matrices	**429353** Φ 0-90° = 1904lm - 90-180° = 2lm		Absolute measurement
Protector Refractor Lens	Protector integrated lenses Lens 6 x Schreder 5122 PC		
Observation	in total flux @700mA. Electrical measurement on LED (#1) : Voltage = 18,20 V Current = 0,701 A Power = 12,76 W Electrical measurement on driver (#1) : Voltage = 230,00 V Current = 0,068 A Power = 15,21 W PF = 0,971 **Total luminaire power = 15,21 W : Lm/Watt = 125,35 lm/W** Driver #1 : See observations for driver details - PCB 00-71-626 A		

Plane	I Peak	Peak position	Index	I zero	Laboratory ambiant t°	Measurement date
10 - 170	1134	73	S	473	24,9°	25-03-2019
90	531	38	D			
270	473	0	G			



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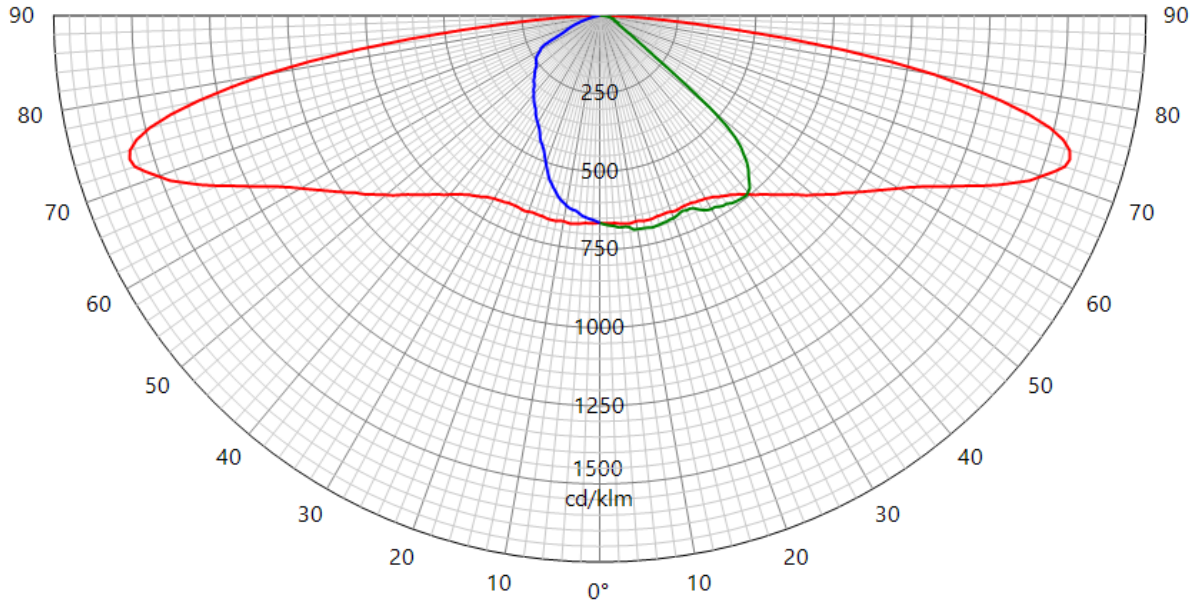
LUMINOUS INTENSITY DIAGRAM

Origin	Production	Luminaire	Inclination	Request #
R-Tech	Schréder TOV	SKIDO	0°	FD39062

Source	Type	BIN	Trademark	Reference	# LEDs	Reflector
	LED	40-70M-4-TB-RB	Samsung	LH351C	6	5122

Reflector	Schreder TOV-Ukraine Led assembly Road lighting Assembled 0,0°	No	5122
Matrices	**429354** Φ 0-90° = 2648lm - 90-180° = 3lm		Absolute measurement
Protector Refractor Lens	Protector integrated lenses Lens 6 x Schreder 5122 PC		
Observation	in total flux @1050mA. Electrical measurement on LED (#1) : Voltage = 18,97 V Current = 1,061 A Power = 20,22 W Electrical measurement on driver (#1) : Voltage = 230,00 V Current = 0,108 A Power = 24,14 W PF = 0,975 **Total luminaire power = 24,14 W : Lm/Watt = 109,81 lm/W** Driver #1 : See observations for driver details - PCB 00-71-626 A		

Plane	I Peak	Peak position	Index	I zero	Laboratory ambiant t°	Measurement date
10 - 170	1575	73	S	664	24,9°	25-03-2019
90	743	39	D			
270	664	0	G			



42935

CONFORMITY STATEMENT

Measurement fulfil Standards:

NBN-EN 13032-1
NBN-EN 13032-4
NBN-EN 17025:2005
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 50Htz 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 Schréder format)
.ldt format (European standard)
.IES format (American standard)

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

Intensity measurement: +/- 3%
Angle: +/- 0.5°
Flux: +/- 2.5%
Electrical DC
Power: +/- 0.25%
Voltage: +/- 0.15%
Current: +/- 0.15%
Electrical AC
Power: +/- 0.15%
Voltage: +/- 0.3%
Current: +/- 0.3%
Temperature: +/- 0.65%

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

lm/Watt: +/-3.5%

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)