

RTECH-PHOTOMETRY LABORATORY

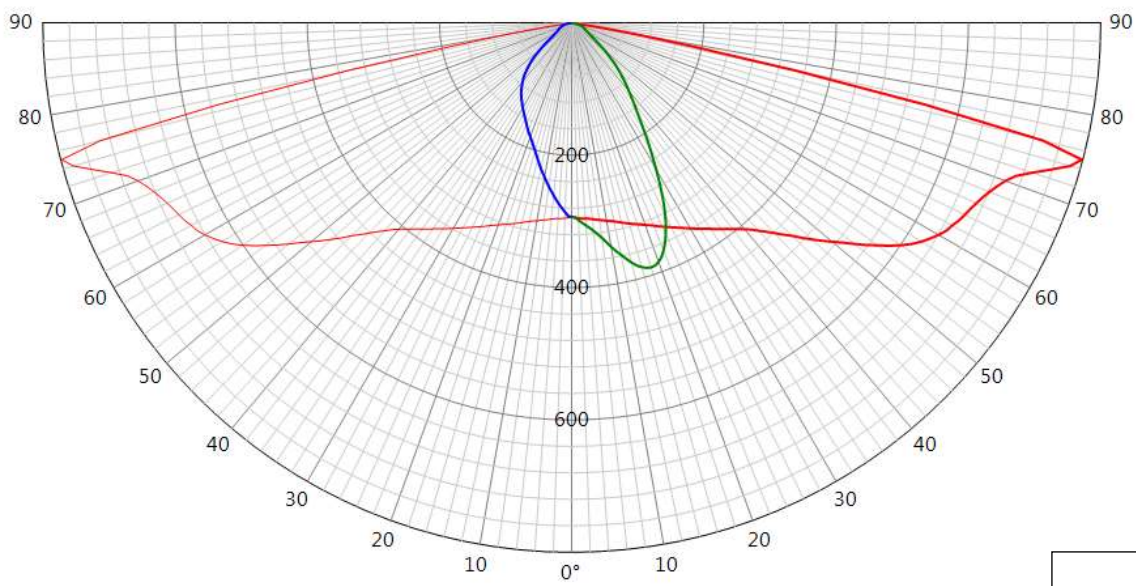
Testreport : Measurement of luminous intensity distribution related to the standard
NBN-EN 13032-1; CIE 121-1996; IES LM-79-08 and procedures PT-P-01 and PT-P-02
rue de Mons, 3 B-4000 LIEGE - Tel : 04/224.71.40 - Fax : 04/224.25.90
Measurement for Schröder group.

LED

Origin Tungsram-Schröder Plc. Hungary		Production Tungsram-Schröder Plc. Hungary		Luminaire VOLTANA 0		Request # FD36150	
Source							
Type LED	BIN Unknown NW	Trademark LG Innotek	Reference 3535 Gen4	# LEDs 6	Reflector 5205		
Master Reflector							
Tungsram-Schreder Plc. Hungary Led assembly Road lighting Assembled 0.0°				No		5205	
Protector Refractor Lens							
Protector integrated lenses Lens DKI 5205 PC							
Laboratory observation							
VOLTANA 0 with 6 LG 3535 GEN4 and the integrated lenses PC protector 5205. Used flux for efficiency matrix calculation = 990lm - CCT = 4121K - CRI = 73,1 (see sphere test report 2016/314 on appendix).							
Purpose DOC				Sample date 19/10/2016		Sample # 36R255	
Observation							
DOC Flux coefficient multiplicator (only for efficiency matrix): From 350 to 500 mA : 1,359 From 350 to 700 mA : 1,792 From 350 to 1000mA: 2,351							
Asked by RCA		Measured by AUL		Approved by LME		Appendix 1	
				 226-TEST NBN EN ISO/IEC 17025 : 2005		39488	

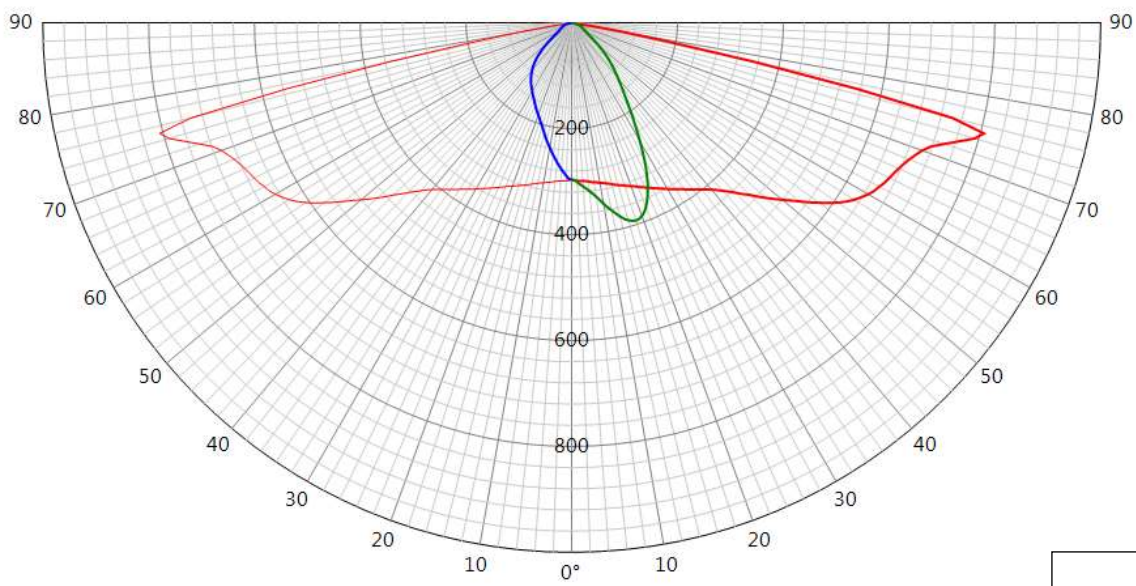
LUMINOUS INTENSITY DIAGRAM

Origin Tungsram-Schröder Plc. Hungary		Production Tungsram-Schröder Plc. Hungary		Luminaire VOLTANA 0		Request # FD36150	
Source	Type LED	BIN Unknown NW	Trademark LG Innotek	Reference 3535 Gen4	# LEDs 6	Reflector 5205	
Reflector	Tungsram-Schreder Plc. Hungary Led assembly Road lighting Assembled 0.0°					No 5205	
Matrices	394881 Φ 0-90° = 852lm - 90-99° = 0lm					Absolute measurement	
Protector Refractor Lens	Protector integrated lenses Lens 6 x DK1 5205 PC						
Observation	Matrix in total flux @350 mA Light losses due to thermal stabilisation : 1% Electrical measurement on LED (#1) : Voltage = 17.15 V Current = 0.350 A Power = 6.00 W Electrical measurement on driver (#1) : Voltage = 230.00 V Current = 0.038 A Power = 8.21 W PF = 0.936 Total luminaire power = 8.21 W : Lm/Watt = 103.81 lm/W Driver #1 : Philips Xitanium FP 22W 0.3-1.0 SNLDAE 230V S175 sxt						
Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	
5 - 175	799	75	S	293	25.0°	07/12/2016	
90	388	18	D				
270	293	0	G				



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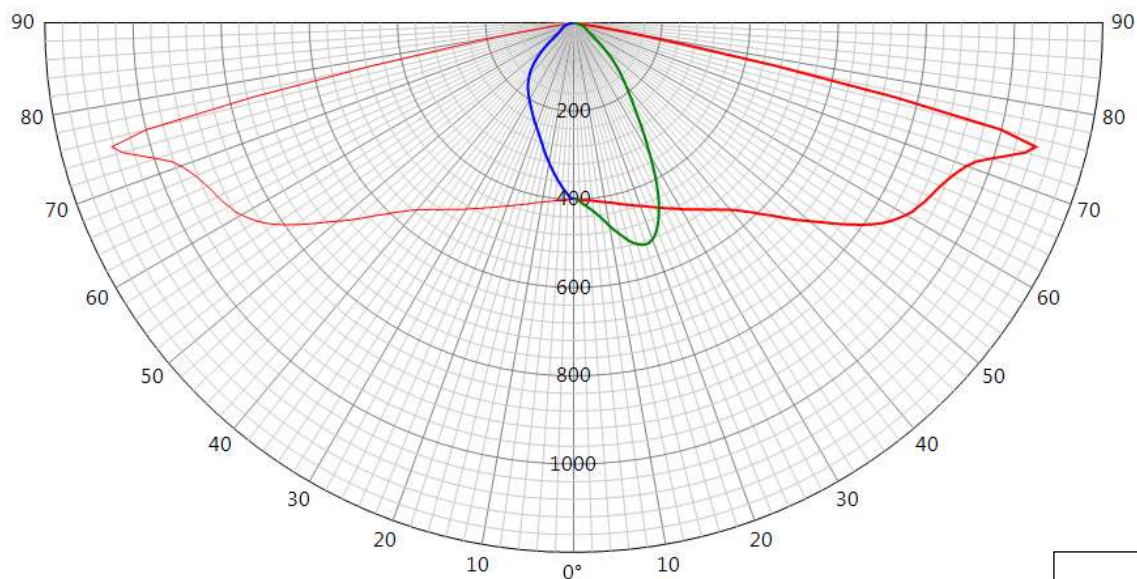
LUMINOUS INTENSITY DIAGRAM

Origin Tungsram-Schröder Plc. Hungary		Production Tungsram-Schröder Plc. Hungary		Luminaire VOLTANA 0		Request # FD36150	
Source	Type LED	BIN Unknown NW	Trademark LG Innotek	Reference 3535 Gen4	# LEDs 6	Reflector 5205	
Reflector	Tungsram-Schreder Plc. Hungary Led assembly Road lighting Assembled 0.0°					No	5205
Matrices	394882 η 0-90° = 86.1% - 90-99° = 0.0%					Relative measurement	
Protector Refractor Lens	Protector integrated lenses Lens 6 x DK1 5205 PC						
Observation	Matrix in efficiency @350 mA Light losses due to thermal stabilisation : 1% Electrical measurement on LED (#1) : Voltage = 17.15 V Current = 0.350 A Power = 6.00 W Electrical measurement on driver (#1) : Voltage = 230.00 V Current = 0.038 A Power = 8.21 W PF = 0.936 Total luminaire power = 8.21 W Driver #1 : Philips Xitanium FP 22W 0.3-1.0 SNLDAE 230V S175 sxt						
Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	
5 - 175	807	75	S	296	25.0°	07/12/2016	
90	392	18	D				
270	296	0	G				
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LUMINOUS INTENSITY DIAGRAM

Origin Tungsram-Schröder Plc. Hungary		Production Tungsram-Schröder Plc. Hungary		Luminaire VOLTANA 0		Request # FD36150	
Source	Type LED	BIN Unknown NW	Trademark LG Innotek	Reference 3535 Gen4	# LEDs 6	Reflector 5205	
Reflector	Tungsram-Schreder Plc. Hungary Led assembly Road lighting Assembled 0.0°					No	5205
Matrices	394883 Φ 0-90° = 1158lm - 90-99° = 0lm					Absolute measurement	
Protector Refractor Lens	Protector integrated lenses Lens 6 x DK1 5205 PC						
Observation	Matrix in total flux @500 mA Light losses due to thermal stabilisation : 1.5% Electrical measurement on LED (#1) : Voltage = 17.48 V Current = 0.500 A Power = 8.72 W Electrical measurement on driver (#1) : Voltage = 230.00 V Current = 0.050 A Power = 11.12 W PF = 0.961 Total luminaire power = 11.12 W : Lm/Watt = 104.16 lm/W Driver #1 : Philips Xitanium FP 22W 0.3-1.0 SNLDAE 230V S175 sxt						

Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	
5 - 175	1085	75	S				
90	528	18	D				
270	398	0	G	398	25.0°	07/12/2016	

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LUMINOUS INTENSITY DIAGRAM

Origin Tungsram-Schröder Plc. Hungary		Production Tungsram-Schröder Plc. Hungary		Luminaire VOLTANA 0		Request # FD36150	
Source	Type LED	BIN Unknown NW	Trademark LG Innotek	Reference 3535 Gen4	# LEDs 6	Reflector 5205	
Reflector	Tungsram-Schreder Plc. Hungary Led assembly Road lighting Assembled 0.0°					No	5205
Matrices	394884 Φ 0-90° = 1527lm - 90-99° = 0lm					Absolute measurement	
Protector Refractor Lens	Protector integrated lenses Lens 6 x DK1 5205 PC						
Observation	Matrix in total flux @700 mA Light losses due to thermal stabilisation : 3% Electrical measurement on LED (#1) : Voltage = 17.88 V Current = 0.700 A Power = 12.49 W Electrical measurement on driver (#1) : Voltage = 230.00 V Current = 0.068 A Power = 15.33 W PF = 0.977 Total luminaire power = 15.33 W : Lm/Watt = 99.63 lm/W Driver #1 : Philips Xitanium FP 22W 0.3-1.0 SNLDAE 230V S175 sxt						
Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	
5 - 175	1431	75	S	525	25.0°	07/12/2016	
90	696	18	D				
270	525	0	G				
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LUMINOUS INTENSITY DIAGRAM

Origin Tungsram-Schröder Plc. Hungary		Production Tungsram-Schröder Plc. Hungary		Luminaire VOLTANA 0		Request # FD36150	
Source	Type LED	BIN Unknown NW	Trademark LG Innotek	Reference 3535 Gen4	# LEDs 6	Reflector 5205	
Reflector	Tungsram-Schreder Plc. Hungary Led assembly Road lighting Assembled 0.0°					No 5205	
Matrices	394885 Φ 0-90° = 2004lm - 90-99° = 0lm					Absolute measurement	
Protector Refractor Lens	Protector integrated lenses Lens 6 x DK1 5205 PC						
Observation	Matrix in total flux @1000 mA Light losses due to thermal stabilisation : 5.5% Electrical measurement on LED (#1) : Voltage = 18.31 V Current = 1.000 A Power = 18.31 W Electrical measurement on driver (#1) : Voltage = 230.00 V Current = 0.097 A Power = 22.10 W PF = 0.987 Total luminaire power = 22.10 W : Lm/Watt = 90.67 lm/W Driver #1 : Philips Xitanium FP 22W 0.3-1.0 SNLDAE 230V S175 sxt						

Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	
5 - 175	1877	75	S				
90	913	18	D				
270	688	0	G	688	25.0°	07/12/2016	

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Measurement fulfil Standards:

- NBN-EN 13032-1
- NBN-EN 17025:2005
- CIE 121-1996
- LM79-08

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 measurment, If not specified:

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

CCT, CRI and chromaticity coordinates: are Measured on sphere.
if specified Main test report refer to sphere extra test report.

Light distribution : are measured on gonio.

Number of hours operated prior to measurement: If no other specified, 0 hours (no aging)

Stabilization time: If no other specified, a minimal stabilization time of 1 hour is applied.

Total operating time of the product including stabilization:

45 minutes have to be added by measurement.

Minimal operating time is 105 minutes

Luminous intensity distribution: available on electronic file with

.mat format (internal schreder format)

.ldt format (European standard)

.IES format (American standard)

Statement of uncertainties (K=2 95% of confidence level):

Intensity measurement: +/- 3%

Angle: +/- 0.5°

Flux: +/- 2.5%

Electrical DC

Power: +/- 0.25%

Voltage: +/- 0.1%

Current: +/- 0.2%

Electrical AC

Power: +/- 0.1%

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Voltage: +/- 0.1%
Current: +/- 0.4%
Temperature: +/- 1.5%
CCT: +/- 5%
CRI: +/- 2%
x/y: +/- 2%

Measuring instruments in use:

Gonio

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)

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

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

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

Thermometers

Voltcraft K101 (Sphere IS2000)

LMT U1000 (Sphere LMT)

Gossen digem f96x48 CK/EK (gonio)

Calibration: traceable to PTB (Physikalisch-Technische Bundesanstalt)

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