

**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**

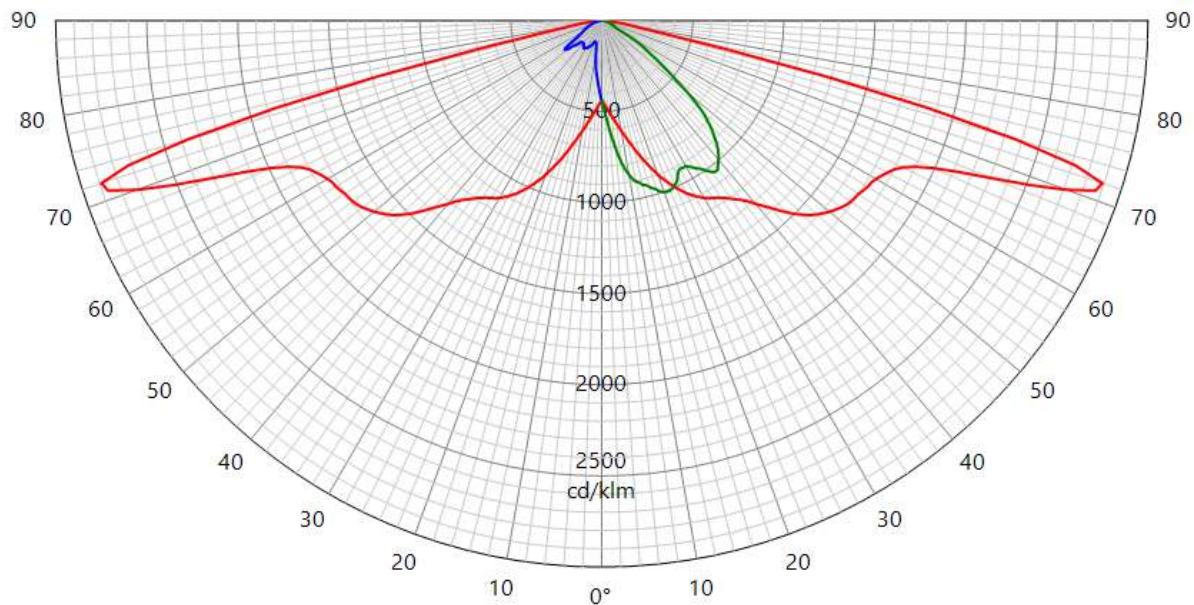
Origin Schröder Magyarország Zrt.	Production Schröder Magyarország Zrt.	Luminaire VOLTANA EVO 1	Inclination 0°	Request # FD41030
Source				
Type LED	BIN N6	Trademark Osram	Reference OSLON SQUARE GIANT	# LEDs 16
Master	Reflector Schröder Led assembly Road lighting Assembled 0,0°			No 5270
Protector Refractor Lens				
Protector	integrated lenses			
Lens	Gaggione 5270 PC			
Laboratory observation				
VOLTANA EVO 1 with 16 Osram oslon square giant bin N6 (NW740) Used flux for efficiency matrix calculation = 2823 lm - CCT = 3857 K - CRI = 70,78 (see sphere test report 2021/94 on appendix).				
Purpose DOC	Sample date 01-02-2021		Sample # 40R024	
Observation				
DOC VOLTANA EVO 1 with lenses 5270				
Flux coefficient multiplier (only for efficiency matrix): From 350 to 200 mA : 0,597 From 350 to 500 mA : 1,371 From 350 to 700 mA : 1,822 From 350 to 1000 mA : 2,401 From 350 to 1200 mA : 2,722				
Fixture powered with driver Philips Xi FP 40W 0,2-0,7A SNLDAE 230V S175 sXt @200/350/500 mA Fixture powered with driver Philips Xi FP 40W 0,3-1,05A SNLDAE 230V S175 sXt @700 mA Fixture powered with driver Philips Xi FP 75W 0,3-1,05A SNLDAE 230V C133 sXt @1000 mA Fixture powered with driver Philips Xi FP 75W 0,5-1,05A SNLDAE 230V C133 sXt @1200 mA				
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	  <b>226-TEST</b> NBN EN ISO/IEC 17025 :2017	<b>48123</b>
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### LUMINOUS INTENSITY DIAGRAM

Origin <b>Schröder Magyarország Zrt.</b>		Production <b>Schröder Magyarország Zrt.</b>		Luminaire <b>VOLTANA EVO 1</b>		Inclination <b>0°</b>	Request # <b>FD41030</b>
Source	Type <b>LED</b>	BIN <b>N6</b>	Trademark <b>Osram</b>	Reference <b>OSLON SQUARE GIANT</b>	# LEDs <b>16</b>	Reflector <b>5270</b>	
Reflector	<b>Schröder Led assembly Road lighting Assembled 0,0°</b>					No <b>No</b>	<b>5270</b>
Matrices	<b>481231</b> $\Phi$ 0-90° = 2561lm - 90-180° = 0lm					<b>Absolute measurement</b>	
Protector Refractor Lens	Protector <b>integrated lenses</b> Lens <b>16 x Gaggione 5270 PC</b>						
Observation	Matrix in total flux @350 mA  Electrical measurement on LED (#1): Voltage = 44,33 V    Current = 0,350 A    Power = 15,51 W Electrical measurement on driver (#1): Voltage = 230,00 V    Current = 0,083 A    Power = 18,33 W    PF = 0,958 <b>Total luminaire power = 18,33 W : Lm/Watt = 139,74 lm/W</b>  Driver #1 : See observations for driver details - . . 00-57-060B						

Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	↕
20 - 160	2891	72	S	441	24,7°	02-02-2021	
90	1039	37	D				
270	441	0	G				

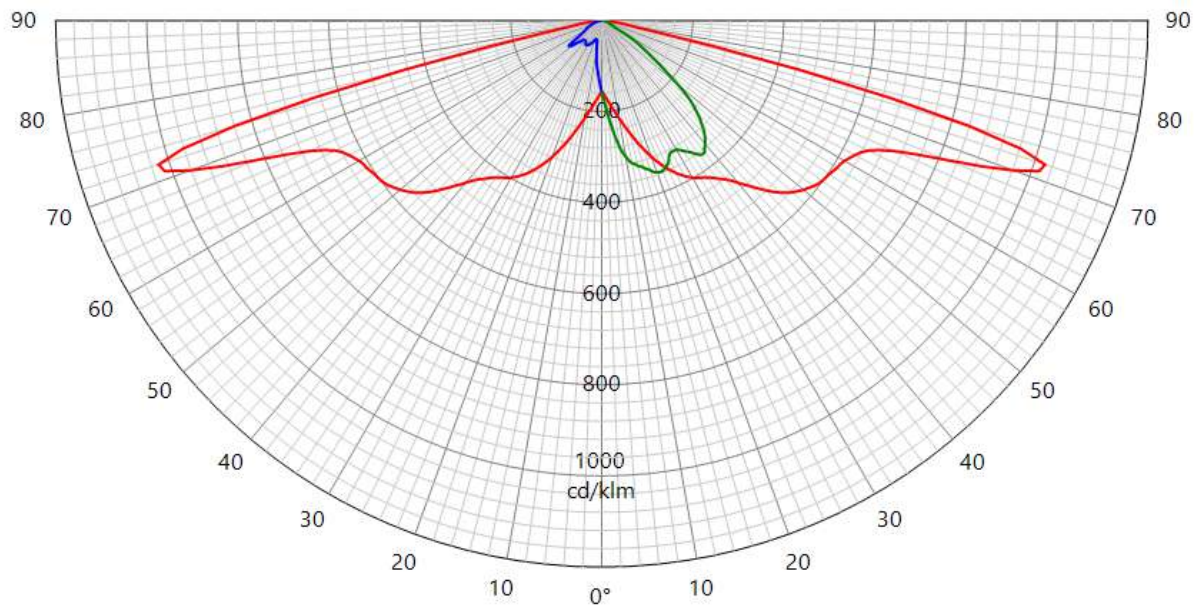


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### LUMINOUS INTENSITY DIAGRAM

Origin <b>Schröder Magyarország Zrt.</b>		Production <b>Schröder Magyarország Zrt.</b>		Luminaire <b>VOLTANA EVO 1</b>		Inclination <b>0°</b>	Request # <b>FD41030</b>
Source	Type <b>LED</b>	BIN <b>N6</b>	Trademark <b>Osram</b>	Reference <b>OSLON SQUARE GIANT</b>	# LEDs <b>16</b>	Reflector <b>5270</b>	
Reflector	<b>Schröder Led assembly Road lighting Assembled 0,0°</b>					No <b>5270</b>	
Matrices	<b>481232</b> $\eta$ 0-90° = 90,7% - 90-180° = 0,0%					Relative measurement	
Protector Refractor Lens	Protector <b>integrated lenses</b> Lens <b>16 x Gaggione 5270 PC</b>						
Observation	<p>Matrix in efficiency @350 mA</p> <p>Electrical measurement on LED (#1): Voltage = 44,33 V    Current = 0,350 A    Power = 15,51 W</p> <p>Electrical measurement on driver (#1): Voltage = 230,00 V    Current = 0,083 A    Power = 18,33 W    PF = 0,958</p> <p><b>Total luminaire power = 18,33 W</b></p> <p>Driver #1 : See observations for driver details - . . 00-57-060B</p>						

Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	↕
20 - 160	1024	72	S	156	24,7°	02-02-2021	
90	368	37	D				
270	156	0	G				

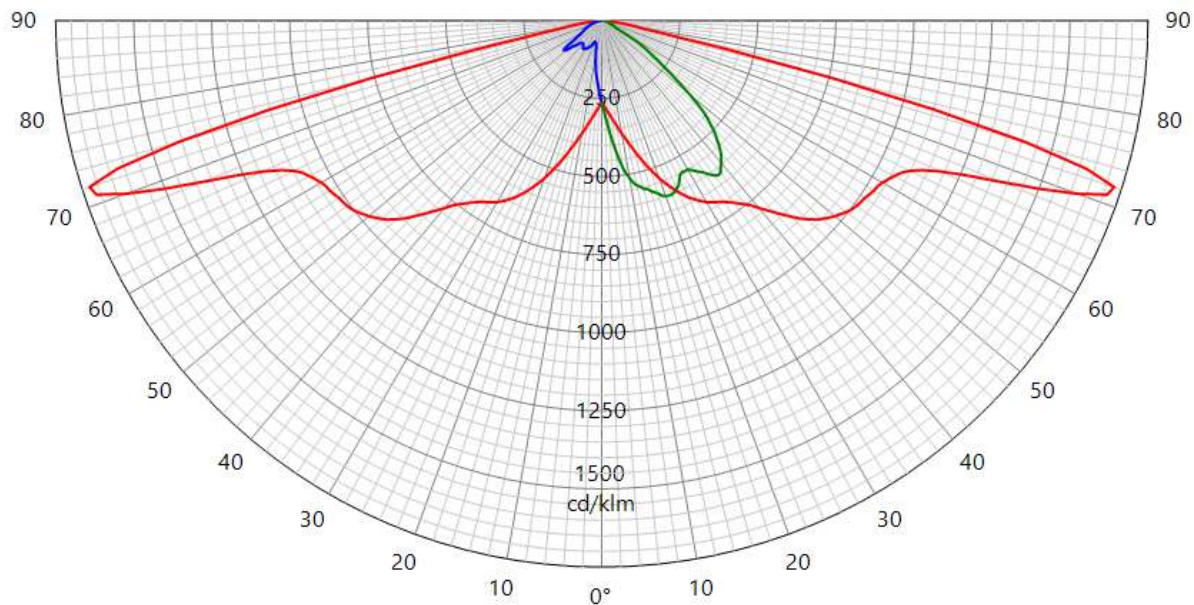


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### LUMINOUS INTENSITY DIAGRAM

Origin <b>Schröder Magyarország Zrt.</b>		Production <b>Schröder Magyarország Zrt.</b>		Luminaire <b>VOLTANA EVO 1</b>		Inclination <b>0°</b>	Request # <b>FD41030</b>
Source	Type <b>LED</b>	BIN <b>N6</b>	Trademark <b>Osram</b>	Reference <b>OSLON SQUARE GIANT</b>	# LEDs <b>16</b>	Reflector <b>5270</b>	
Reflector	<b>Schröder Led assembly Road lighting Assembled 0,0°</b>					No	<b>5270</b>
Matrices	<b>481233</b> $\Phi$ 0-90° = 1529lm - 90-180° = 0lm					<b>Absolute measurement</b>	
Protector Refractor Lens	Protector <b>integrated lenses</b> Lens <b>16 x Gaggione 5270 PC</b>						
Observation	Matrix in total flux @200 mA  Electrical measurement on LED (#1): Voltage = 43,66 V    Current = 0,200 A    Power = 8,71 W Electrical measurement on driver (#1): Voltage = 230,00 V    Current = 0,053 A    Power = 11,24 W    PF = 0,909 <b>Total luminaire power = 11,24 W : Lm/Watt = 136,05 lm/W</b>  Driver #1 : See observations for driver details - . . 00-57-060B						

Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	↕
20 - 160	1726	72	S	263	24,7°	02-02-2021	
90	620	37	D				
270	263	0	G				

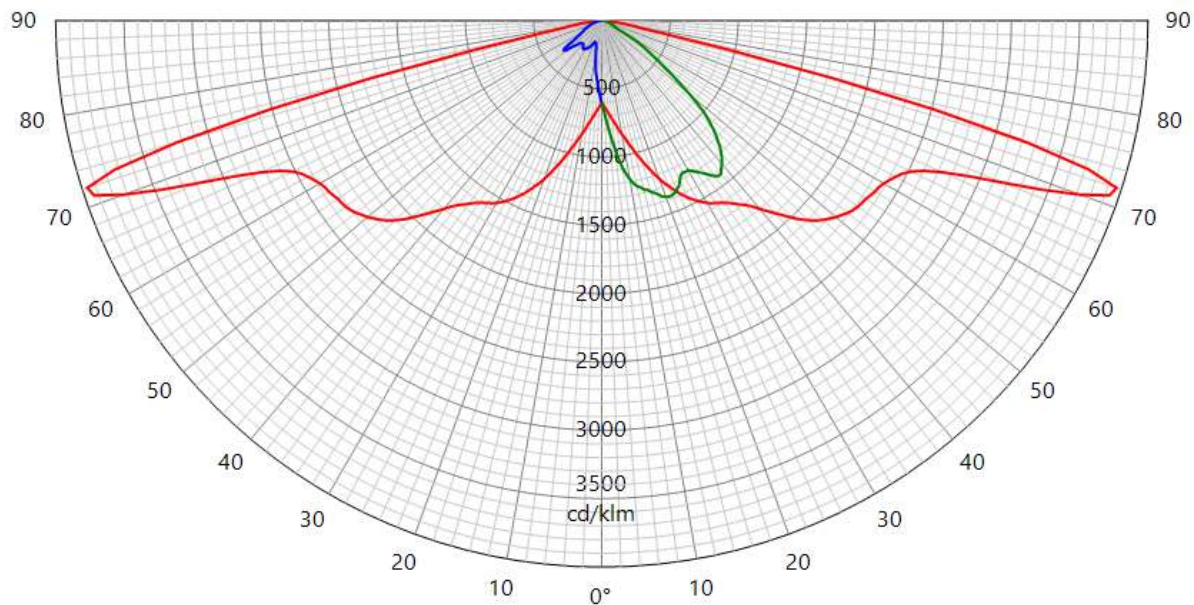


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### LUMINOUS INTENSITY DIAGRAM

Origin <b>Schröder Magyarország Zrt.</b>		Production <b>Schröder Magyarország Zrt.</b>		Luminaire <b>VOLTANA EVO 1</b>		Inclination <b>0°</b>	Request # <b>FD41030</b>
Source	Type <b>LED</b>	BIN <b>N6</b>	Trademark <b>Osram</b>	Reference <b>OSLON SQUARE GIANT</b>	# LEDs <b>16</b>	Reflector <b>5270</b>	
Reflector	<b>Schröder Led assembly Road lighting Assembled 0,0°</b>					No	<b>5270</b>
Matrices	<b>481234</b> $\Phi$ 0-90° = 3512lm - 90-180° = 0lm					Absolute measurement	
Protector Refractor Lens	Protector <b>integrated lenses</b> Lens <b>16 x Gaggione 5270 PC</b>						
Observation	<p>Matrix in total flux @500 mA</p> <p>Electrical measurement on LED (#1): Voltage = 44,82 V    Current = 0,500 A    Power = 22,40 W</p> <p>Electrical measurement on driver (#1): Voltage = 230,00 V    Current = 0,114 A    Power = 25,61 W    PF = 0,976</p> <p><b>Total luminaire power = 25,61 W : Lm/Watt = 137,12 lm/W</b></p> <p>Driver #1 : See observations for driver details - . . 00-57-060B</p>						

Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	↕
20 - 160	3963	72	S	604	24,7°	02-02-2021	
90	1424	37	D				
270	604	0	G				



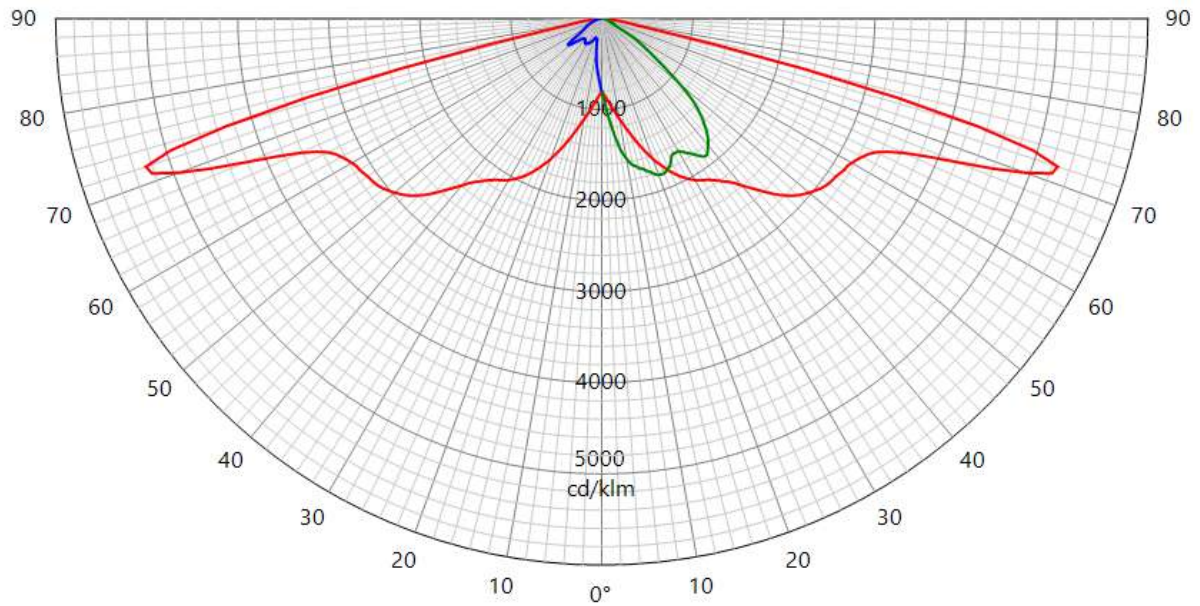
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### LUMINOUS INTENSITY DIAGRAM

Origin <b>Schröder Magyarország Zrt.</b>		Production <b>Schröder Magyarország Zrt.</b>		Luminaire <b>VOLTANA EVO 1</b>		Inclination <b>0°</b>	Request # <b>FD41030</b>
Source	Type <b>LED</b>	BIN <b>N6</b>	Trademark <b>Osram</b>	Reference <b>OSLON SQUARE GIANT</b>	# LEDs <b>16</b>	Reflector <b>5270</b>	
Reflector	<b>Schröder Led assembly Road lighting Assembled 0,0°</b>					No	<b>5270</b>
Matrices	<b>481235</b> $\Phi$ 0-90° = 4667lm - 90-180° = 0lm					<b>Absolute measurement</b>	
Protector Refractor Lens	Protector <b>integrated lenses</b> Lens <b>16 x Gaggione 5270 PC</b>						
Observation	Matrix in total flux @700 mA  Electrical measurement on LED (#1): Voltage = 45,03 V    Current = 0,700 A    Power = 31,53 W Electrical measurement on driver (#1): Voltage = 230,00 V    Current = 0,158 A    Power = 35,76 W    PF = 0,984 <b>Total luminaire power = 35,76 W : Lm/Watt = 130,51 lm/W</b>  Driver #1 : See observations for driver details - . . 00-57-060B						

Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	↕
20 - 160	5266	72	S	803	24,7°	02-02-2021	
90	1893	37	D				
270	803	0	G				

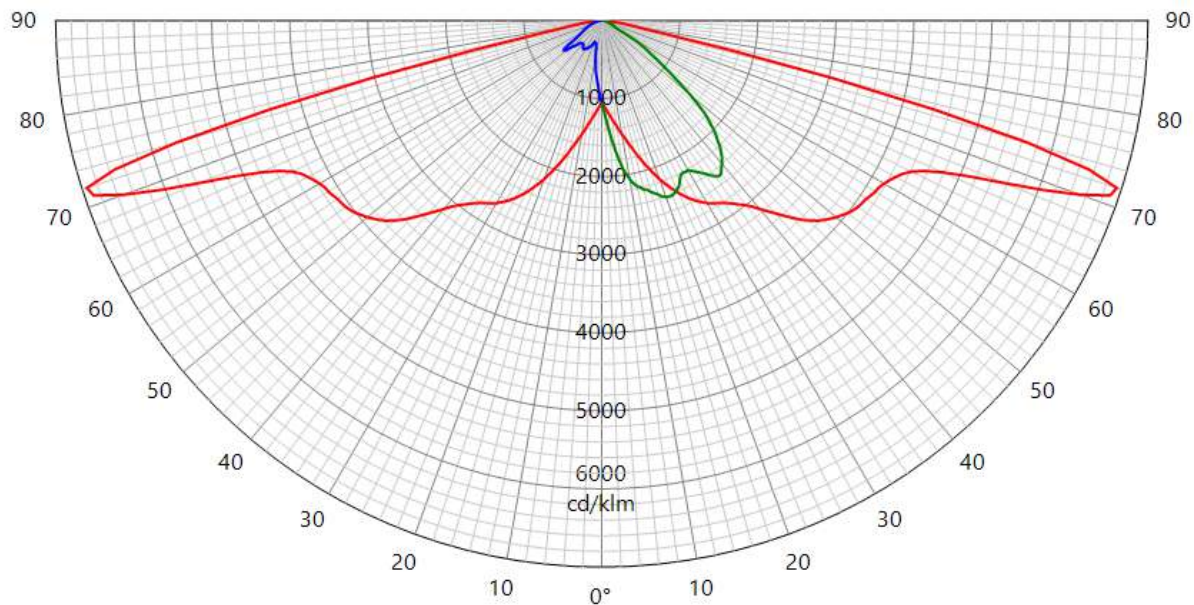


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### LUMINOUS INTENSITY DIAGRAM

Origin <b>Schröder Magyarország Zrt.</b>		Production <b>Schröder Magyarország Zrt.</b>		Luminaire <b>VOLTANA EVO 1</b>		Inclination <b>0°</b>	Request # <b>FD41030</b>
Source	Type <b>LED</b>	BIN <b>N6</b>	Trademark <b>Osram</b>	Reference <b>OSLON SQUARE GIANT</b>	# LEDs <b>16</b>	Reflector <b>5270</b>	
Reflector	<b>Schröder Led assembly Road lighting Assembled 0,0°</b>					No <b>5270</b>	
Matrices	<b>481236</b> $\Phi$ 0-90° = 6150lm - 90-180° = 0lm					<b>Absolute measurement</b>	
Protector Refractor Lens	Protector <b>integrated lenses</b> Lens <b>16 x Gaggione 5270 PC</b>						
Observation	Matrix in total flux @1000 mA  Electrical measurement on LED (#1): Voltage = 45,56 V    Current = 1,000 A    Power = 45,52 W Electrical measurement on driver (#1): Voltage = 230,00 V    Current = 0,227 A    Power = 51,20 W    PF = 0,981 <b>Total luminaire power = 51,20 W : Lm/Watt = 120,12 lm/W</b>  Driver #1 : See observations for driver details - . . 00-57-060B						

Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	↕
20 - 160	6940	72	S	1059	24,7°	02-02-2021	
90	2494	37	D				
270	1059	0	G				

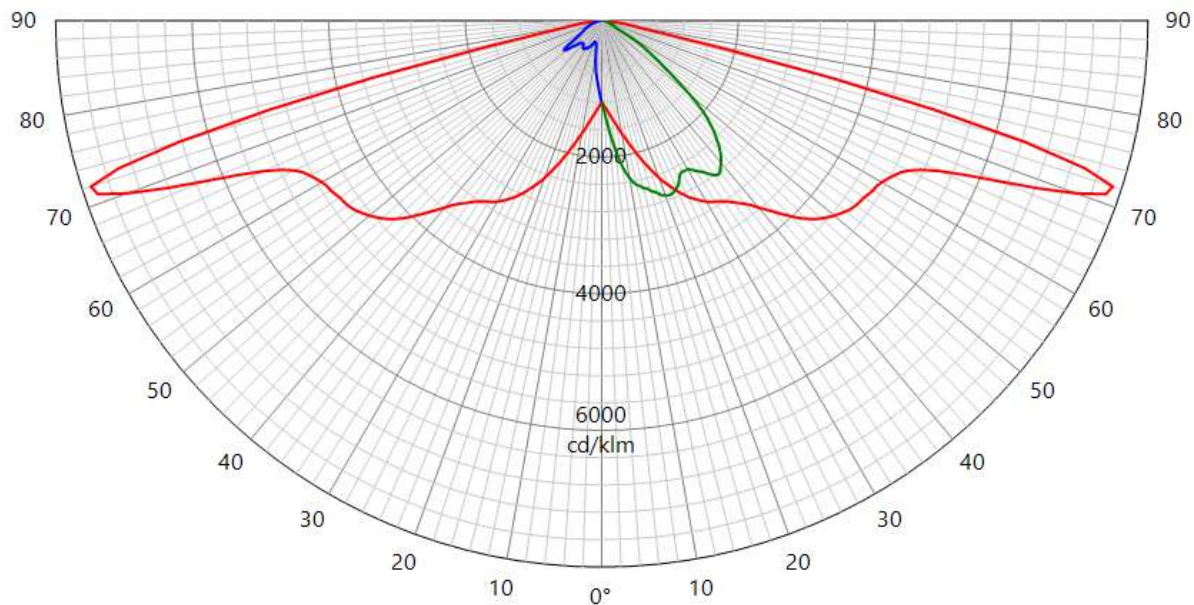


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### LUMINOUS INTENSITY DIAGRAM

Origin <b>Schröder Magyarország Zrt.</b>		Production <b>Schröder Magyarország Zrt.</b>		Luminaire <b>VOLTANA EVO 1</b>		Inclination <b>0°</b>	Request # <b>FD41030</b>
Source	Type <b>LED</b>	BIN <b>N6</b>	Trademark <b>Osram</b>	Reference <b>OSLON SQUARE GIANT</b>	# LEDs <b>16</b>	Reflector <b>5270</b>	
Reflector	<b>Schröder Led assembly Road lighting Assembled 0,0°</b>					No <b>5270</b>	
Matrices	<b>481237</b> $\Phi$ 0-90° = 6972lm - 90-180° = 0lm					<b>Absolute measurement</b>	
Protector Refractor Lens	Protector <b>integrated lenses</b> Lens <b>16 x Gaggione 5270 PC</b>						
Observation	Matrix in total flux @1200 mA  Electrical measurement on LED (#1): Voltage = 45,88 V    Current = 1,200 A    Power = 55,10 W Electrical measurement on driver (#1): Voltage = 230,00 V    Current = 0,272 A    Power = 61,58 W    PF = 0,984 <b>Total luminaire power = 61,58 W : Lm/Watt = 113,22 lm/W</b>  Driver #1 : See observations for driver details - . . 00-57-060B						

Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	↕
20 - 160	7868	72	S	1200	24,7°	02-02-2021	
90	2828	37	D				
270	1200	0	G				



**48123**



## 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: +/- 0.15%  
Voltage: +/- 0.10%  
Current: +/- 0.20%  
Electrical AC  
Power: +/- 0.20%  
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 —————