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

Digitally signed by Gabriel LEOR
Date: 2021.09.07 09:00:52 EEST
Reason: MoldSign Signature
Location: Moldova

Origin	Production	Luminaire	Inclination	Request #
TUNGSRAM-Schréder Zrt. Hungary	TUNGSRAM-Schréder Zrt. Hungary	VOLTANA 0	0°	FD39019

Source

Type	BIN	Trademark	Reference	# LEDs	Reflector
LED	40-70M-4-TB-RB	Samsung	LH351C	8	5137

Master	Reflector	No
-	Schreder Led assembly Medium Assembled 0.0°	5137

Protector Refractor Lens

Protector Glass Extra Clear Flat Smooth
Lens Gaggione 5137 PMMA

Laboratory observation

VOLTANA 0 with 8 SAMSUNG LH351C
Used flux for efficiency matrix calculation = 1538 lm - CCT = 3841 K - CRI = 72,07 (see sphere test report 2019/58 on appendix).

Purpose	Sample date	Sample #
DOC	08-01-2019	39R005

Observation

DOC VOLTANA 0 with lenses 5137

Flux coefficient multiplicator (only for efficiency matrix):
From 350 to 500 mA : 1,379
From 350 to 700 mA : 1,849
From 350 to 1000 mA : 2,474

Fixture powered with driver Philips Xi FP 22W 0,3-1,0A SNLDAE 230V S175 sXt DALI for matrix @350/500/700mA
Fixture powered with driver Philips Xi FP 40W 0,3-1,0A SNLDAE 230V S175 sXt DALI for matrix @1000mA

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		
RCA	CLD	RLABO	1	226-TEST NBN EN ISO/IEC 17025 : 2005	42552

LUMINOUS INTENSITY DIAGRAM

Origin	Production	Luminaire	Inclination	Request #
TUNGSRAM-Schréder Zrt. Hungary	TUNGSRAM-Schréder Zrt. Hungary	VOLTANA 0	0°	FD39019

	Type	BIN	Trademark	Reference	# LEDs	Reflector
Source	LED	40-70M-4-TB-RB	Samsung	LH351C	8	5137
Reflector	Schreder Led assembly Medium Assembled 0.0°			No	5137	
Matrices	**425521**	Φ 0-90° = 1336lm - 90-180° = 0lm			Absolute measurement	
Protector Refractor Lens	Protector	Glass Extra Clear Flat Smooth - VOLTANA 1				
	Lens	8 x Gaggione 5137 PMMA				

Observation

Matrix in total flux @350 mA

Light losses due to thermal stabilization: 1 %

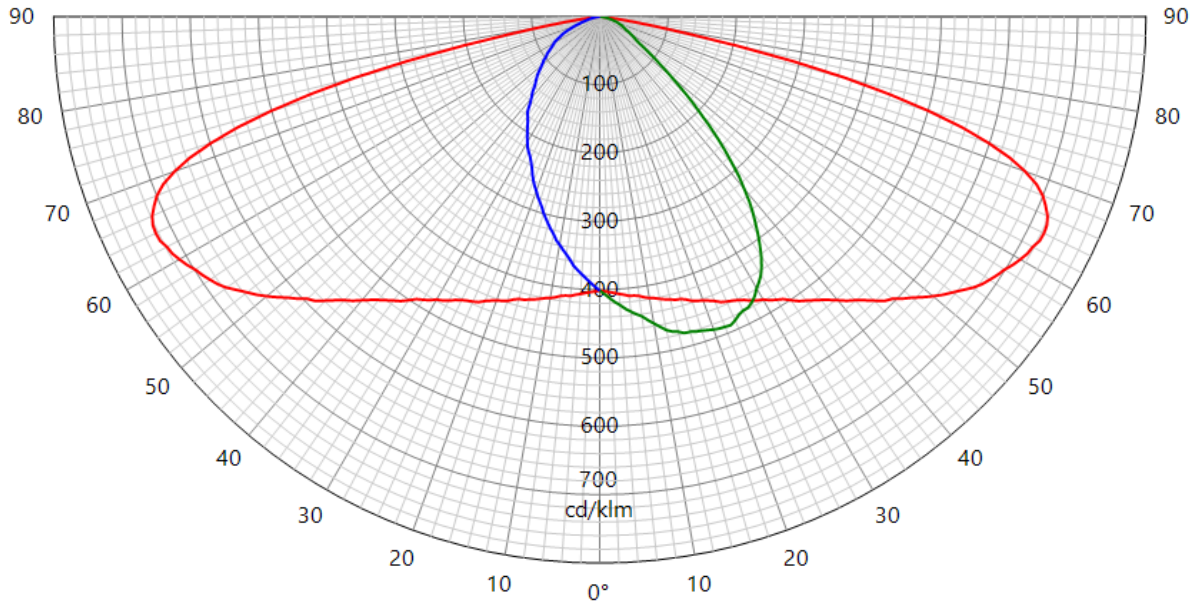
Electrical measurement on LED (#1) : Voltage = 22.32 V Current = 0.350 A Power = 7.81 W

Electrical measurement on driver (#1) : Voltage = 230.00 V Current = 0.046 A Power = 10.19 W PF = 0.957

Total luminaire power = 10.19 W : Lm/Watt = 131.13 lm/W

Driver #1 : See observations for driver details - PCB 00-71-636 A

Plane	I Peak	Peak position	Index	I zero	Laboratory ambiant t°	Measurement date
15 - 165	724	64	S	401	25.1°	06-02-2019
90	491	23	D			
270	401	0	G			



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LUMINOUS INTENSITY DIAGRAM

Origin	Production	Luminaire	Inclination	Request #
TUNGSRAM-Schréder Zrt. Hungary	TUNGSRAM-Schréder Zrt. Hungary	VOLTANA 0	0°	FD39019

Source	Type	BIN	Trademark	Reference	# LEDs	Reflector
	LED	40-70M-4-TB-RB	Samsung	LH351C	8	5137

Reflector	Schreder Led assembly Medium Assembled 0.0°	No	5137
Matrices	**425522** η 0-90° = 86.9% - 90-180° = 0.0%		Relative measurement
Protector Refractor Lens	Protector Glass Extra Clear Flat Smooth - VOLTANA 1 Lens 8 x Gaggione 5137 PMMA		

Observation

Matrix in efficiency @350 mA

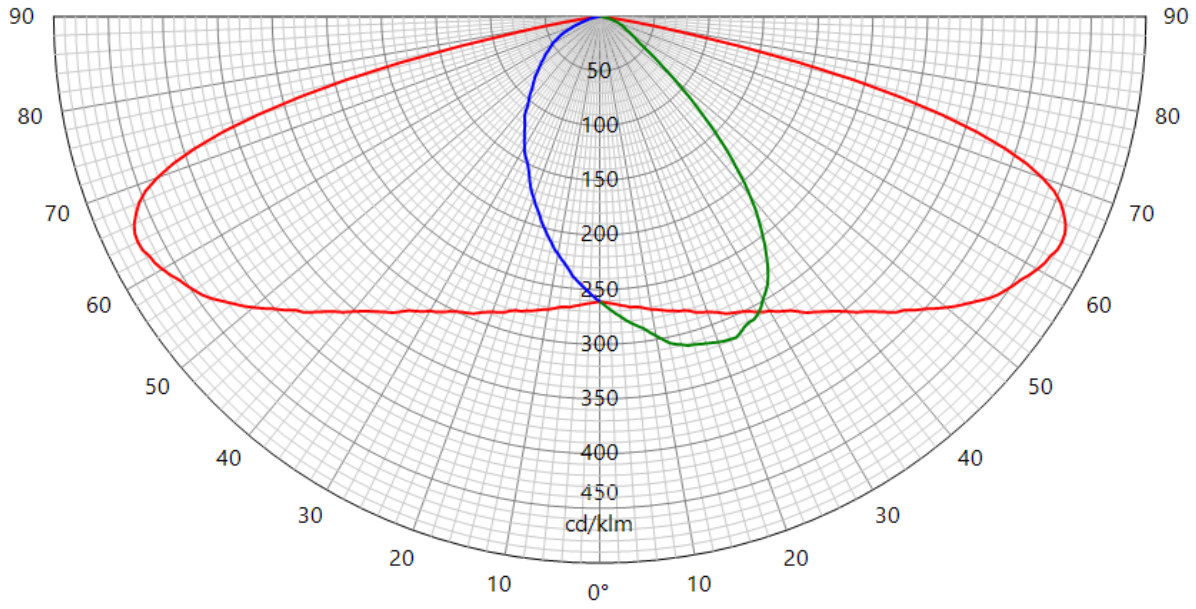
Light losses due to thermal stabilization: 1 %

Electrical measurement on LED (#1) :	Voltage = 22.32 V	Current = 0.350 A	Power = 7.81 W	
Electrical measurement on driver (#1) :	Voltage = 230.00 V	Current = 0.046 A	Power = 10.19 W	PF = 0.957

Total luminaire power = 10.19 W

Driver #1 : See observations for driver details - PCB 00-71-636 A

Plane	I Peak	Peak position	Index	I zero	Laboratory ambiant t°	Measurement date
15 - 165	471	64	S	261	25.1°	06-02-2019
90	319	23	D			
270	261	0	G			



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LUMINOUS INTENSITY DIAGRAM

Origin	Production	Luminaire	Inclination	Request #
TUNGSRAM-Schréder Zrt. Hungary	TUNGSRAM-Schréder Zrt. Hungary	VOLTANA 0	0°	FD39019

Source	Type	BIN	Trademark	Reference	# LEDs	Reflector
	LED	40-70M-4-TB-RB	Samsung	LH351C	8	5137

Reflector	Schreder Led assembly Medium Assembled 0.0°	No	5137
Matrices	**425523** Φ 0-90° = 1843lm - 90-180° = 0lm		Absolute measurement
Protector Refractor Lens	Protector Glass Extra Clear Flat Smooth - VOLTANA 1 Lens 8 x Gaggione 5137 PMMA		

Observation

Matrix in total flux @500 mA

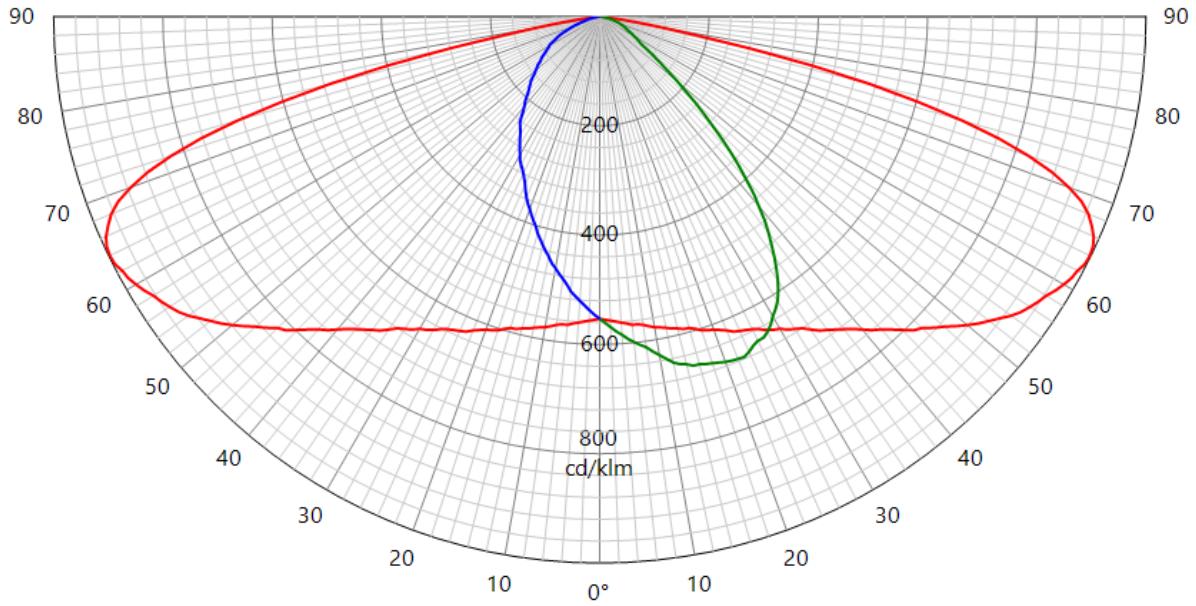
Light losses due to thermal stabilization: 1,5 %

Electrical measurement on LED (#1) :	Voltage = 22.76 V	Current = 0.500 A	Power = 11.38 W	
Electrical measurement on driver (#1) :	Voltage = 230.00 V	Current = 0.063 A	Power = 14.16 W	PF = 0.974

Total luminaire power = 14.16 W : Lm/Watt = 130.13 lm/W

Driver #1 : See observations for driver details - PCB 00-71-636 A

Plane	I Peak	Peak position	Index	I zero	Laboratory ambiant t°	Measurement date
15 - 165	998	64	S	553	25.1°	06-02-2019
90	677	23	D			
270	553	0	G			



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LUMINOUS INTENSITY DIAGRAM

Origin	Production	Luminaire	Inclination	Request #
TUNGSRAM-Schréder Zrt. Hungary	TUNGSRAM-Schréder Zrt. Hungary	VOLTANA 0	0°	FD39019

	Type	BIN	Trademark	Reference	# LEDs	Reflector
Source	LED	40-70M-4-TB-RB	Samsung	LH351C	8	5137
Reflector	Schreder Led assembly Medium Assembled 0.0°			No	5137	
Matrices	**425524**	Φ 0-90° = 2471lm - 90-180° = 0lm			Absolute measurement	
Protector Refractor Lens	Protector	Glass Extra Clear Flat Smooth - VOLTANA 1				
	Lens	8 x Gaggione 5137 PMMA				

Observation

Matrix in total flux @700 mA

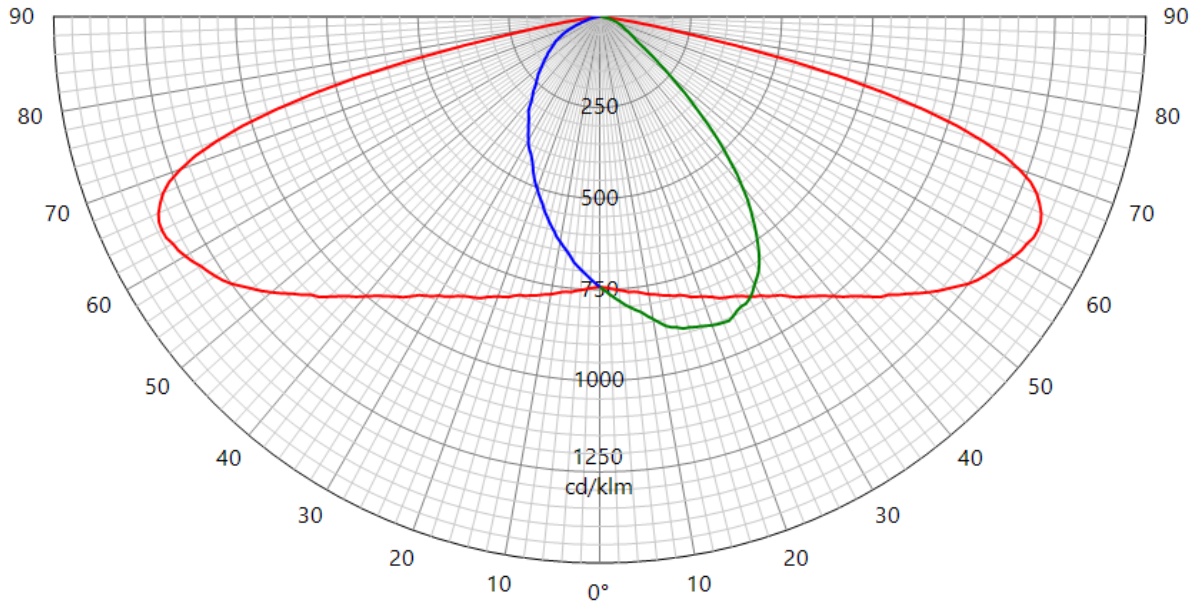
Light losses due to thermal stabilization: 2 %

Electrical measurement on LED (#1) :	Voltage = 23.26 V	Current = 0.700 A	Power = 16.29 W	
Electrical measurement on driver (#1) :	Voltage = 230.00 V	Current = 0.087 A	Power = 19.79 W	PF = 0.985

Total luminaire power = 19.79 W : Lm/Watt = 124.84 lm/W

Driver #1 : See observations for driver details - PCB 00-71-636 A

Plane	I Peak	Peak position	Index	I zero	Laboratory ambiant t°	Measurement date
15 - 165	1338	64	S	742	25.1°	06-02-2019
90	907	23	D			
270	742	0	G			



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LUMINOUS INTENSITY DIAGRAM

Origin	Production	Luminaire	Inclination	Request #
TUNGSRAM-Schréder Zrt. Hungary	TUNGSRAM-Schréder Zrt. Hungary	VOLTANA 0	0°	FD39019

Source	Type	BIN	Trademark	Reference	# LEDs	Reflector
	LED	40-70M-4-TB-RB	Samsung	LH351C	8	5137

Reflector	Schreder Led assembly Medium Assembled 0.0°	No	5137
Matrices	**425525** Φ 0-90° = 3306lm - 90-180° = 0lm		Absolute measurement
Protector Refractor Lens	Protector Glass Extra Clear Flat Smooth - VOLTANA 1 Lens 8 x Gaggione 5137 PMMA		

Observation

Matrix in total flux @1000 mA

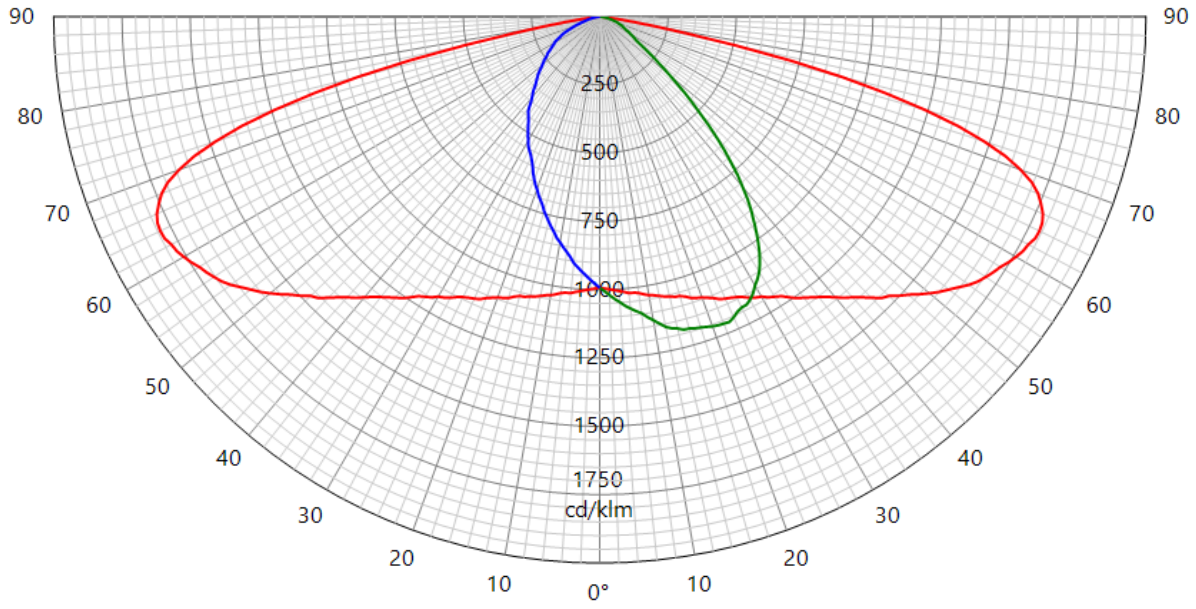
Light losses due to thermal stabilization: 2,5 %

Electrical measurement on LED (#1) :	Voltage = 23.93 V	Current = 1.000 A	Power = 23.93 W	
Electrical measurement on driver (#1) :	Voltage = 230.00 V	Current = 0.128 A	Power = 28.74 W	PF = 0.978

Total luminaire power = 28.74 W : Lm/Watt = 115.02 lm/W

Driver #1 : See observations for driver details - PCB 00-71-636 A

Plane	I Peak	Peak position	Index	I zero	Laboratory ambiant t°	Measurement date
15 - 165	1791	64	S			
90	1214	23	D	992	25.1°	11-02-2019
270	992	0	G			



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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)