


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

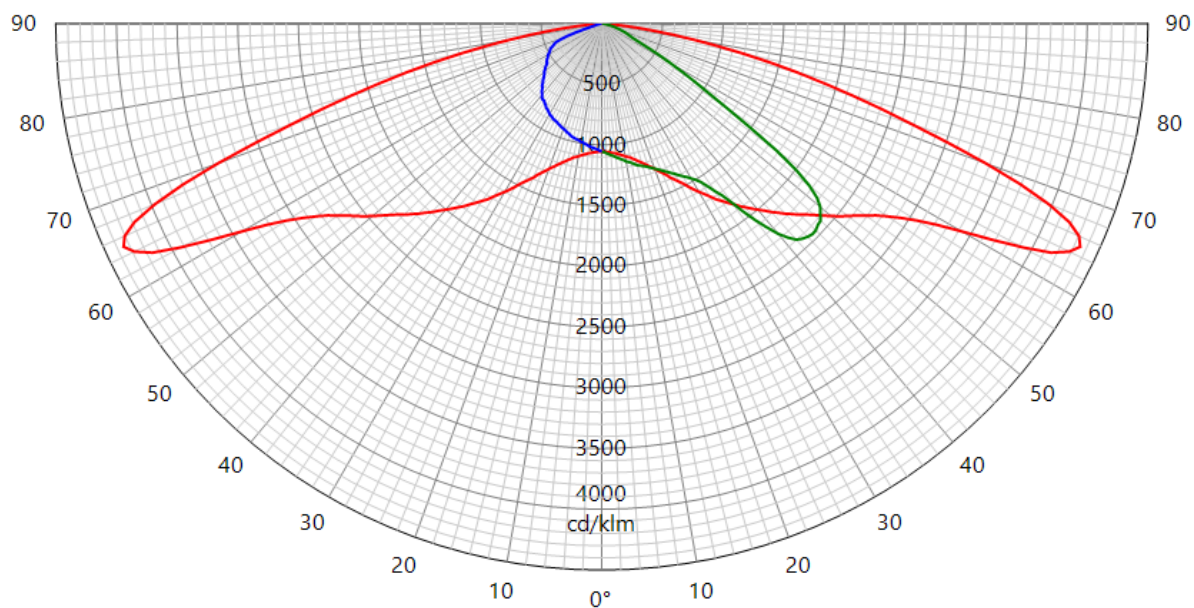
Origin Schröder TOV	Production Schröder TOV	Luminaire IZYLUM 3	Inclination 0°	Request # FD40026
Source				
Type LED	BIN RB	Trademark Samsung	Reference LH351C	# LEDs 40
Reflector #	Reflector			
5307	No			
Master	Reflector Schröder Led assembly Extra-wide Assembled 0,0°			5307
Protector Refractor Lens				
Protector	Glass Extra Clear Flat Smooth			
Lens	Gaggione 5307 PMMA			
Laboratory observation				
IZYLUM 3 with 40 Samsung LH351C (NW740) bin RB Used flux for efficiency matrix calculation = 7523 lm - CCT = 3897 K - CRI = 73,37 (see sphere test report 2020/115 to 2020/116).				
Purpose DOC	Sample date 13-11-2019		Sample # 39P058	
Observation				
DOC IZYLUM 3 with lenses 5307				
Flux coefficient multiplier (only for efficiency matrix): From 350 to 200 mA : 0,605 From 350 to 500 mA : 1,355 From 350 to 700 mA : 1,778				
Fixture powered with driver Philips XiFP 75W 0,2-0,7A SNLDAE 230V C133 SxT for matrix @200/350/500mA Fixture powered with driver Philips XiFP 110W 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	44877
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LUMINOUS INTENSITY DIAGRAM

Origin Schröder TOV		Production Schröder TOV		Luminaire IZYLUM 3		Inclination 0°	Request # FD40026
Source	Type LED	BIN RB	Trademark Samsung	Reference LH351C	# LEDs 40	Reflector 5307	
Reflector	Schröder Led assembly Extra-wide Assembled 0,0°					No	5307
Matrices	448771 Φ 0-90° = 6231lm - 90-180° = 0lm					Absolute measurement	
Protector Refractor Lens	Protector Glass Extra Clear Flat Smooth - IZYLUM 3 Lens 40 x Gaggione 5307 PMMA						
Observation	<p>Matrix in total flux @350 mA</p> <p>Light losses due to thermal stabilization: 2,3 %</p> <p>Electrical measurement on LED (#1) : Voltage = 110,44 V Current = 0,350 A Power = 38,72 W</p> <p>Electrical measurement on driver (#1) : Voltage = 230,00 V Current = 0,193 A Power = 43,48 W PF = 0,975</p> <p>Total luminaire power = 43,48 W : Lm/Watt = 143,31 lm/W</p> <p>Driver #1 : See observations for driver details - , PCBA 00-84-624B</p>						

Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	↕
20 - 160	4349	65	S	1054	25,4°	04-02-2020	
90	2454	45	D				
270	1054	0	G				

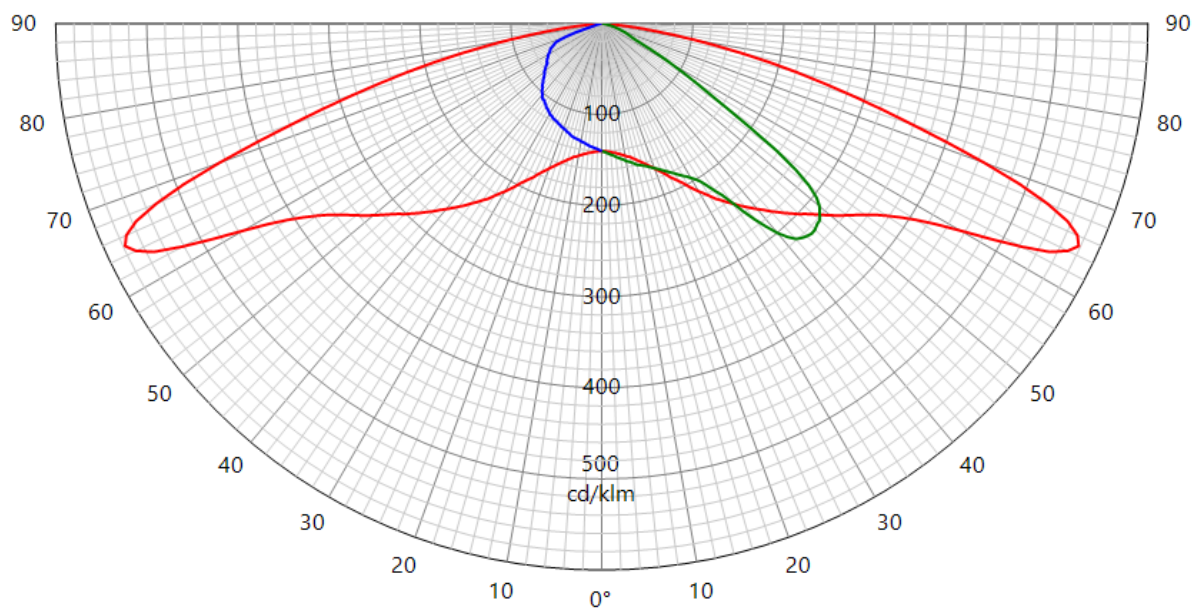


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LUMINOUS INTENSITY DIAGRAM

Origin Schröder TOV		Production Schröder TOV		Luminaire IZYLUM 3		Inclination 0°		Request # FD40026	
Source	Type LED	BIN RB	Trademark Samsung	Reference LH351C	# LEDs 40	Reflector 5307			
Reflector	Schröder Led assembly Extra-wide Assembled 0,0°				No		5307		
Matrices	448772		η 0-90° = 82,8% - 90-180° = 0,0%			Relative measurement			
Protector Refractor Lens	Protector Glass Extra Clear Flat Smooth - IZYLUM 3 Lens 40 x Gaggione 5307 PMMA								
Observation	<p>Matrix in efficiency @350 mA</p> <p>Light losses due to thermal stabilization: 2,3 %</p> <p>Electrical measurement on LED (#1) : Voltage = 110,44 V Current = 0,350 A Power = 38,72 W</p> <p>Electrical measurement on driver (#1) : Voltage = 230,00 V Current = 0,193 A Power = 43,48 W PF = 0,975</p> <p>Total luminaire power = 43,48 W</p> <p>Driver #1 : See observations for driver details - , PCBA 00-84-624B</p>								

Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	↕
20 - 160	578	65	S	140	25,4°	04-02-2020	
90	326	45	D				
270	140	0	G				

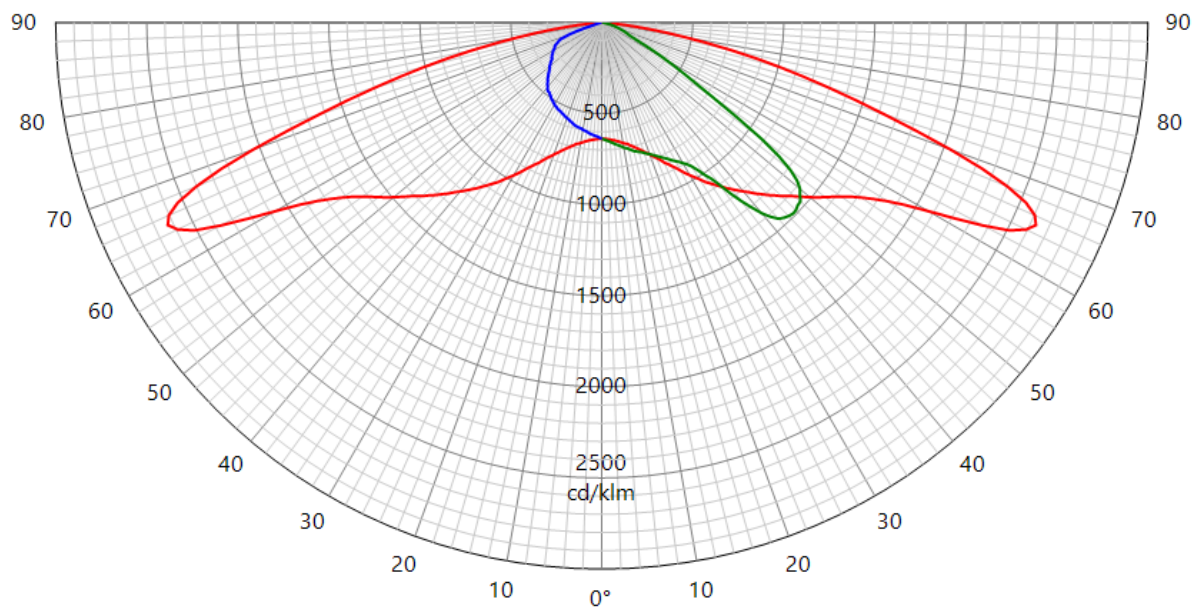


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LUMINOUS INTENSITY DIAGRAM

Origin Schröder TOV		Production Schröder TOV		Luminaire IZYLUM 3		Inclination 0°	Request # FD40026
Source	Type LED	BIN RB	Trademark Samsung	Reference LH351C	# LEDs 40	Reflector 5307	
Reflector	Schröder Led assembly Extra-wide Assembled 0,0°					No	5307
Matrices	448773	Φ 0-90° = 3770lm - 90-180° = 0lm				Absolute measurement	
Protector Refractor Lens	Protector Glass Extra Clear Flat Smooth - IZYLUM 3 Lens 40 x Gaggione 5307 PMMA						
Observation	<p>Matrix in total flux @200 mA</p> <p>Light losses due to thermal stabilization: 1,0 %</p> <p>Electrical measurement on LED (#1) : Voltage = 108,40 V Current = 0,201 A Power = 21,86 W</p> <p>Electrical measurement on driver (#1) : Voltage = 230,00 V Current = 0,119 A Power = 25,99 W PF = 0,945</p> <p>Total luminaire power = 25,99 W : Lm/Watt = 145,05 lm/W</p> <p>Driver #1 : See observations for driver details - , PCBA 00-84-624B</p>						

Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	↕
20 - 160	2631	65	S	637	25,4°	04-02-2020	
90	1484	45	D				
270	637	0	G				

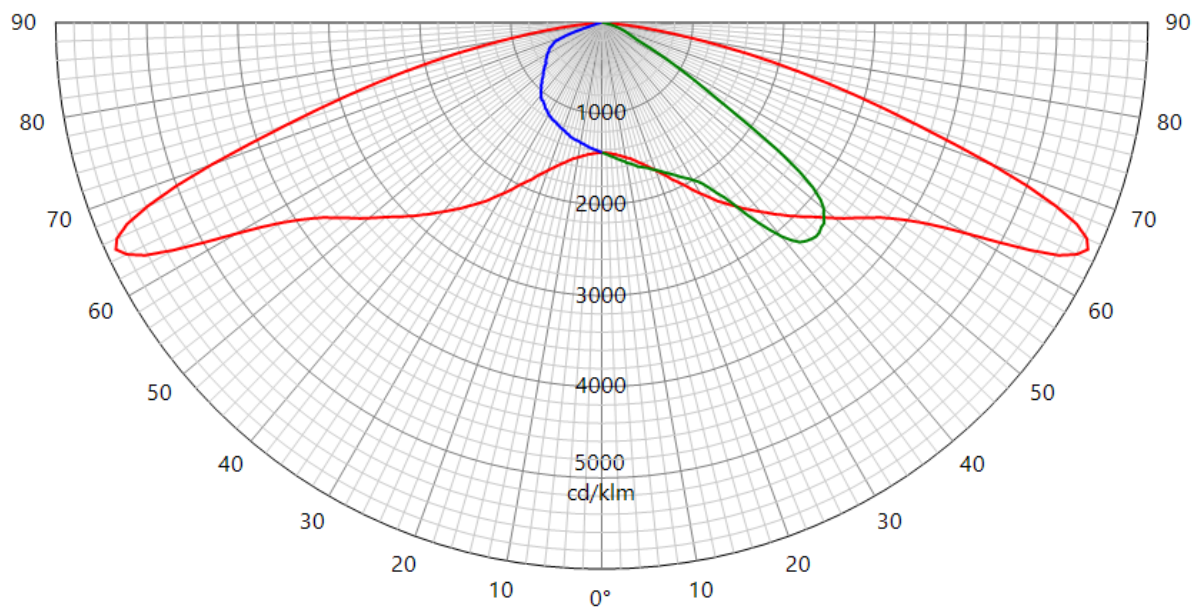


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LUMINOUS INTENSITY DIAGRAM

Origin Schröder TOV		Production Schröder TOV		Luminaire IZYLUM 3		Inclination 0°	Request # FD40026
Source	Type LED	BIN RB	Trademark Samsung	Reference LH351C	# LEDs 40	Reflector 5307	
Reflector	Schröder Led assembly Extra-wide Assembled 0,0°					No	5307
Matrices	448774 Φ 0-90° = 8443lm - 90-180° = 0lm					Absolute measurement	
Protector Refractor Lens	Protector Glass Extra Clear Flat Smooth - IZYLUM 3 Lens 40 x Gaggione 5307 PMMA						
Observation	<p>Matrix in total flux @500 mA</p> <p>Light losses due to thermal stabilization: 3,8 %</p> <p>Electrical measurement on LED (#1) : Voltage = 112,28 V Current = 0,500 A Power = 56,16 W</p> <p>Electrical measurement on driver (#1) : Voltage = 230,00 V Current = 0,271 A Power = 61,58 W PF = 0,984</p> <p>Total luminaire power = 61,58 W : Lm/Watt = 137,11 lm/W</p> <p>Driver #1 : See observations for driver details - , PCBA 00-84-624B</p>						

Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	↕
20 - 160	5892	65	S	1427	25,4°	04-02-2020	
90	3324	45	D				
270	1427	0	G				

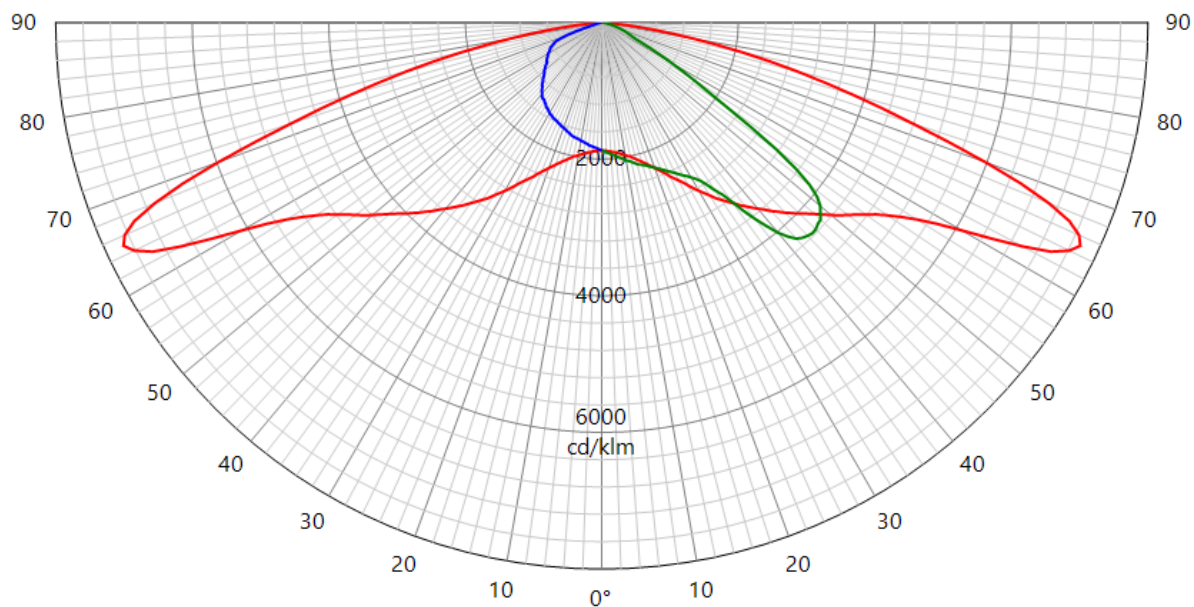


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LUMINOUS INTENSITY DIAGRAM

Origin Schröder TOV		Production Schröder TOV		Luminaire IZYLUM 3		Inclination 0°	Request # FD40026
Source	Type LED	BIN RB	Trademark Samsung	Reference LH351C	# LEDs 40	Reflector 5307	
Reflector	Schröder Led assembly Extra-wide Assembled 0,0°					No	5307
Matrices	448775 Φ 0-90° = 11079lm - 90-180° = 0lm					Absolute measurement	
Protector Refractor Lens	Protector Glass Extra Clear Flat Smooth - IZYLUM 3 Lens 40 x Gaggione 5307 PMMA						
Observation	<p>Matrix in total flux @700 mA</p> <p>Light losses due to thermal stabilization: 6,2 %</p> <p>Electrical measurement on LED (#1) : Voltage = 113,60 V Current = 0,700 A Power = 79,51 W</p> <p>Electrical measurement on driver (#1) : Voltage = 230,00 V Current = 0,379 A Power = 86,63 W PF = 0,991</p> <p>Total luminaire power = 86,63 W : Lm/Watt = 127,89 lm/W</p> <p>Driver #1 : See observations for driver details - , PCBA 00-84-624B</p>						

Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	↕
20 - 160	7732	65	S	1873	25,4°	04-02-2020	
90	4362	45	D				
270	1873	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: +/- 0.25%
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)

End of test report
