

IESNA LM79 - 2008 Test Report

Photometric testing and evaluation in accordance with LM79-2008

Report prepared for:	R. STAHL Schaltgeräte GmbH Nordstrasse 10 99427 Weimar / Germany
Report number:	LM79-20240829-1013447 / 01

Sample tested:	6002/4 GR.4 6402/4 GR.4 with clear cover, with diffuser
Start date of test:	2024-08-29
Manufacturer:	R. STAHL Schaltgeräte GmbH

Testing laboratory:	ILEXA GbR Werner-von-Siemens-Strasse 4a 98693 Ilmenau / Germany Tel.: (+49) 3677 / 466 33 0 Fax: (+49) 3677 / 466 33 14 Internet: www.ilexa.de
----------------------------	---

Testing location:	Technische Universität Ilmenau Fachgebiet Lichttechnik Professor-Schmidt-Strasse 26 98693 Ilmenau / Germany
--------------------------	--

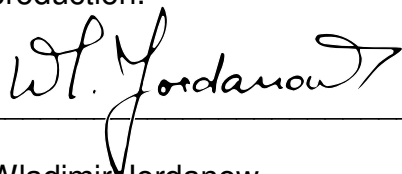
Table of contents

1.	Scope of testing.....	3
2.	Test method.....	3
3.	Description of test sample.....	4
3.1.	General information.....	4
3.2.	Manufacturer specifications.....	4
3.3.	Pictures test sample.....	5
4.	Measurement results.....	6
5.	Results goniophotometer.....	7
5.1.	Candela plots.....	7
5.2.	Illuminance plots.....	9
6.	Results spectroradiometer.....	10
6.1.	Relative spectral distribution.....	10
6.2.	Chromaticity diagram.....	11
6.3.	Color calculation.....	12
7.	List of testing equipments.....	13

General information

This report may not be reproduced except in full without permission of ILEXA GbR.

This technical report may only be quoted in full. Any use for advertising purposes must be granted in writing. This report is the result of a single examination of the object in question and is not generally applicable evaluation of the quality of other products in regular production.



Wladimir Jordanow
ILEXA GbR president

1. Scope of testing

Photometric and electrical testing in accordance with IESNA LM 79-2008 IES (Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products).

Start date of test: 2024-08-29

Report and test prepared by: Kranhold / ILEXA GbR

2. Test method

Testing is performed in accordance with the procedures outlined in IESNA LM79-2008. The testing location is a temperature - controlled, draft free photometric laboratory.

All measurements are made using the goniophotometer / spectroradiometer test method.

3. Description of test sample

3.1. General information

Sample received:	2024-08-21
Manufacturer:	R. STAHL Schaltgeräte GmbH Business Unit Light and Signaling Nordstrasse 10 99427 Weimar / Germany
Product type:	Luminaire
Sample tested:	6002/4 GR.4 6402/4 GR.4 with clear cover, with diffuser
Model number:	WE24-08-14 4000K CRI 80
Driver:	internal
Fitted with:	LED BIN G 5H K

Dimensions of luminaire [mm]:

Length	1312	Diameter	-/-
Width	183	Height	128

Dimensions of luminous area [mm]:

Length	1285	Height C0	58
Width	145	Height C90	58
Diameter	-/-	Height C180	58
		Height C270	58

3.2. Manufacturer specifications

Rated power [W]:	-/-
Rated voltage [V]:	151...240 AC
Rated current [A]:	-/-
Rated frequency [Hz]:	50...60

3.3. Pictures test sample

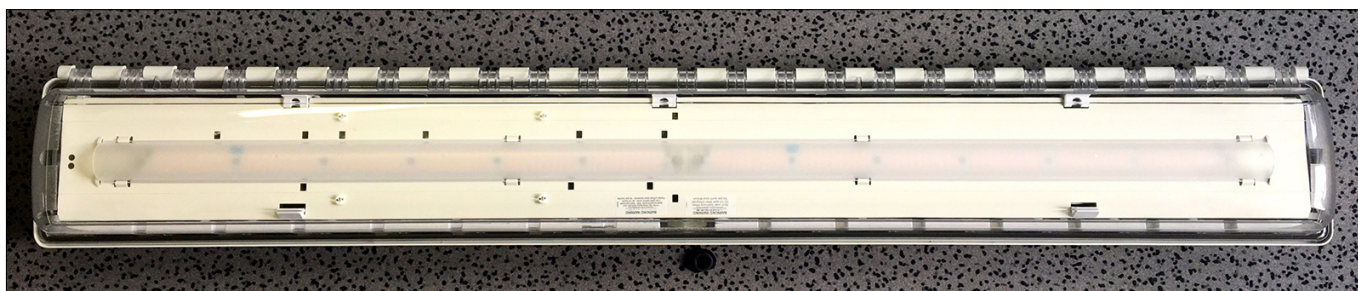


Figure 3.1: Test sample – general view

WE24-08-14 6002/4 & 6402/4 GR.4
4000K CRI80, LED BIN G 5H K

Figure 3.2: Test sample ID

4. Measurement results

The results were obtained after stabilization of the sample in accordance with the requirements set forth in section 5.0 of IES LM79-2008.

	Goniophotometer	Spectroradiometer
Total luminous flux [lm]	5603	-/-
Luminous efficacy [lm/W]	161.5	-/-
Correlated color temperature (CCT) [K]	-/-	4051
Color rendering index (CRI – R _a)	-/-	85.3
Color rendering index (CRI – R _e)	-/-	79.7
Chromaticity (x / y)	-/-	0.3769 / 0.3704

Table 4.1: Photometric results

Input power [W]	34.70
Input voltage [V]	229.9 AC
Input current [A]	0.161
Input frequency [Hz]	50.0

Table 4.2: Electrical parameters

Orientation (burning position) during test	horizontal
Prior operation time [minutes]	10
Stabilization time [minutes]	50
Total operating time [minutes]	> 180
Ambient temperature [°C]	25 ± 1

Table 4.3: Additional parameters

5. Results goniophotometer

5.1. Candela plots

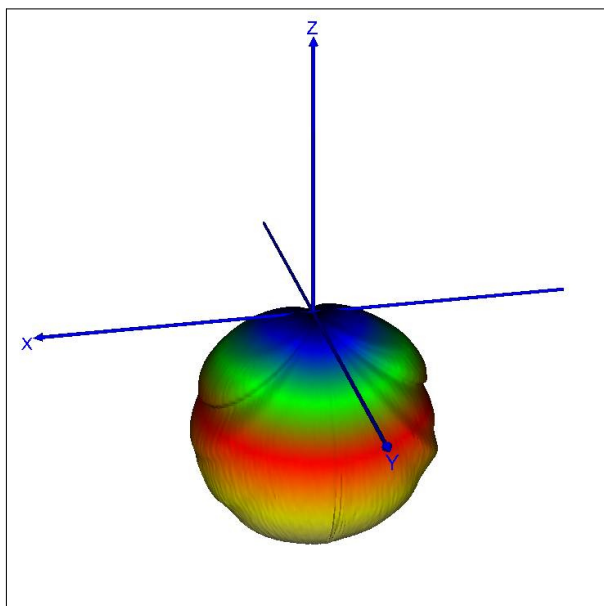


Figure 5.1: 3D - luminous intensity distribution

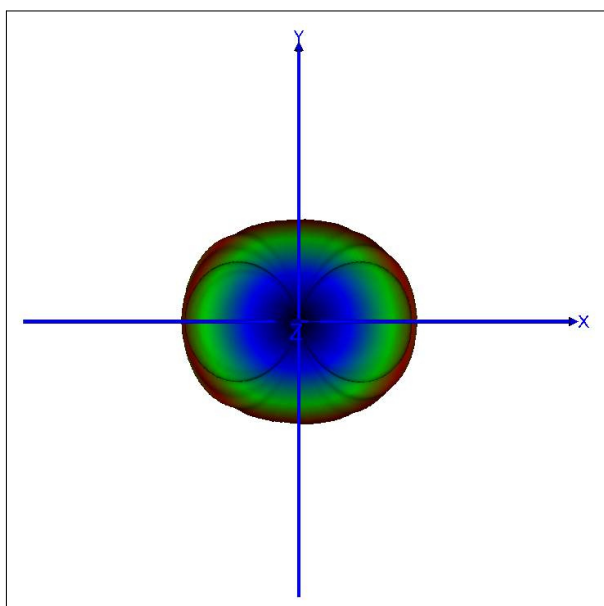


Figure 5.2: 3D - luminous intensity distribution

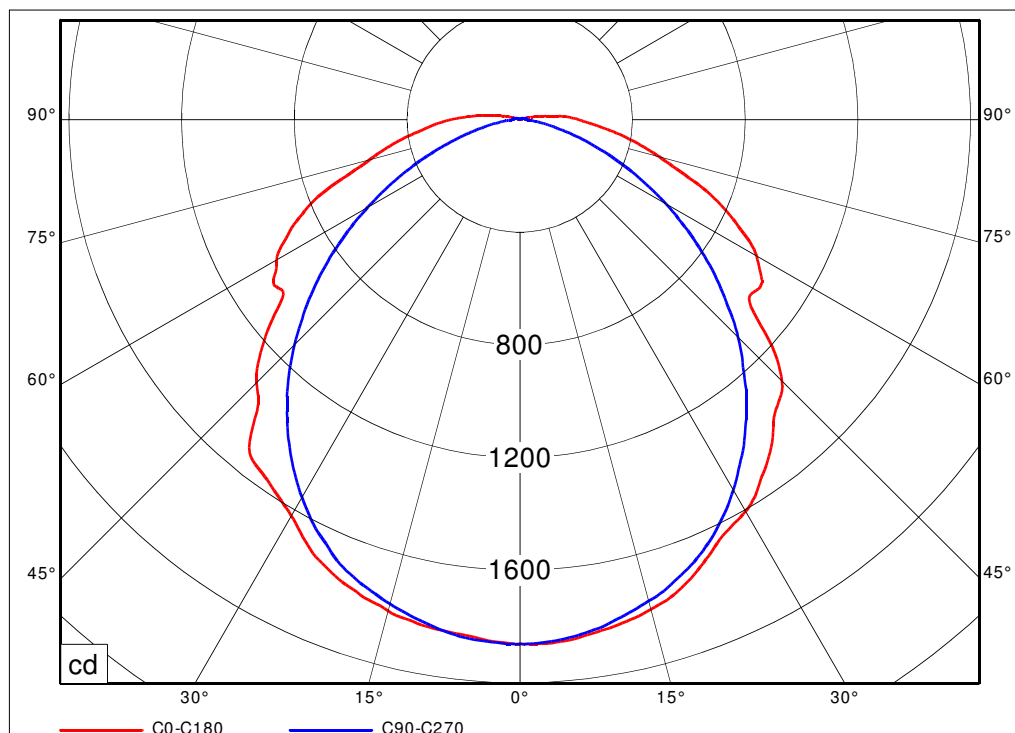


Figure 5.3: Polar candela distribution

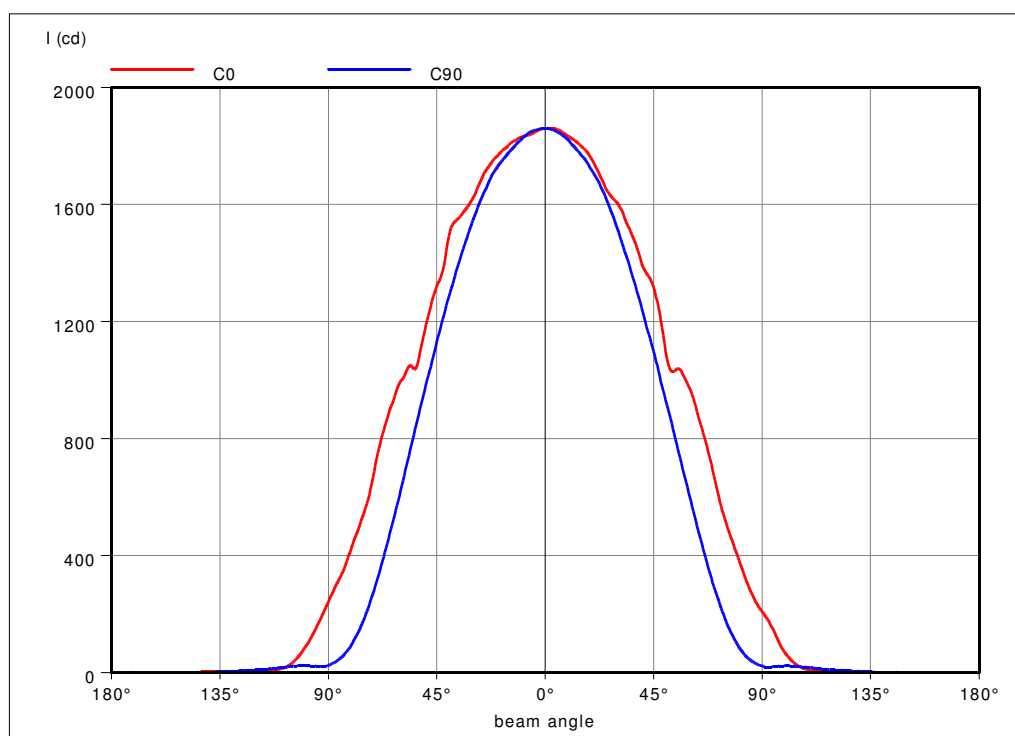


Figure 5.4: Cartesian candela distribution

5.2. Illuminance plots

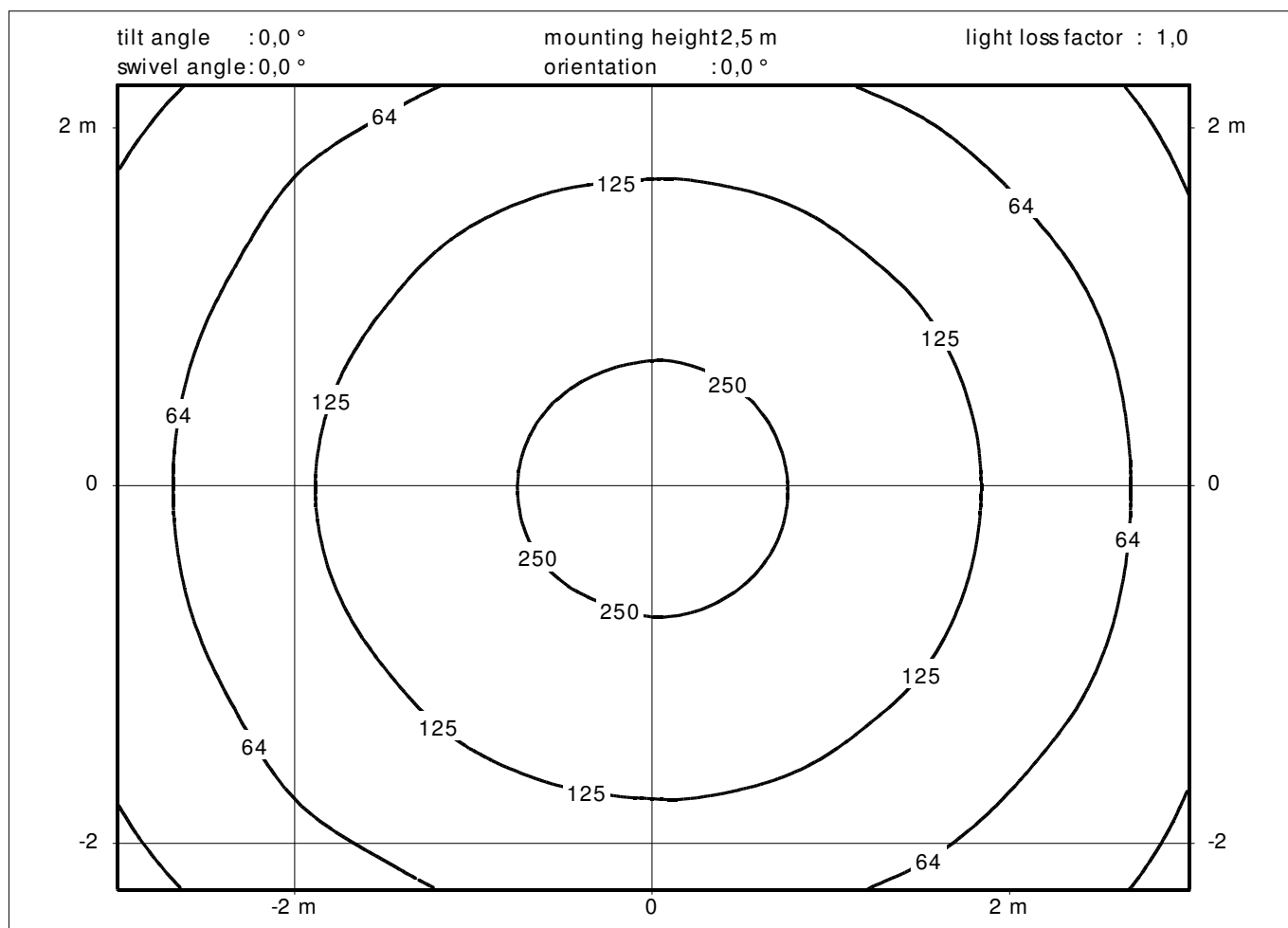


Figure 5.5: Isolux diagram

6. Results spectroradiometer

6.1. *Relative spectral distribution*

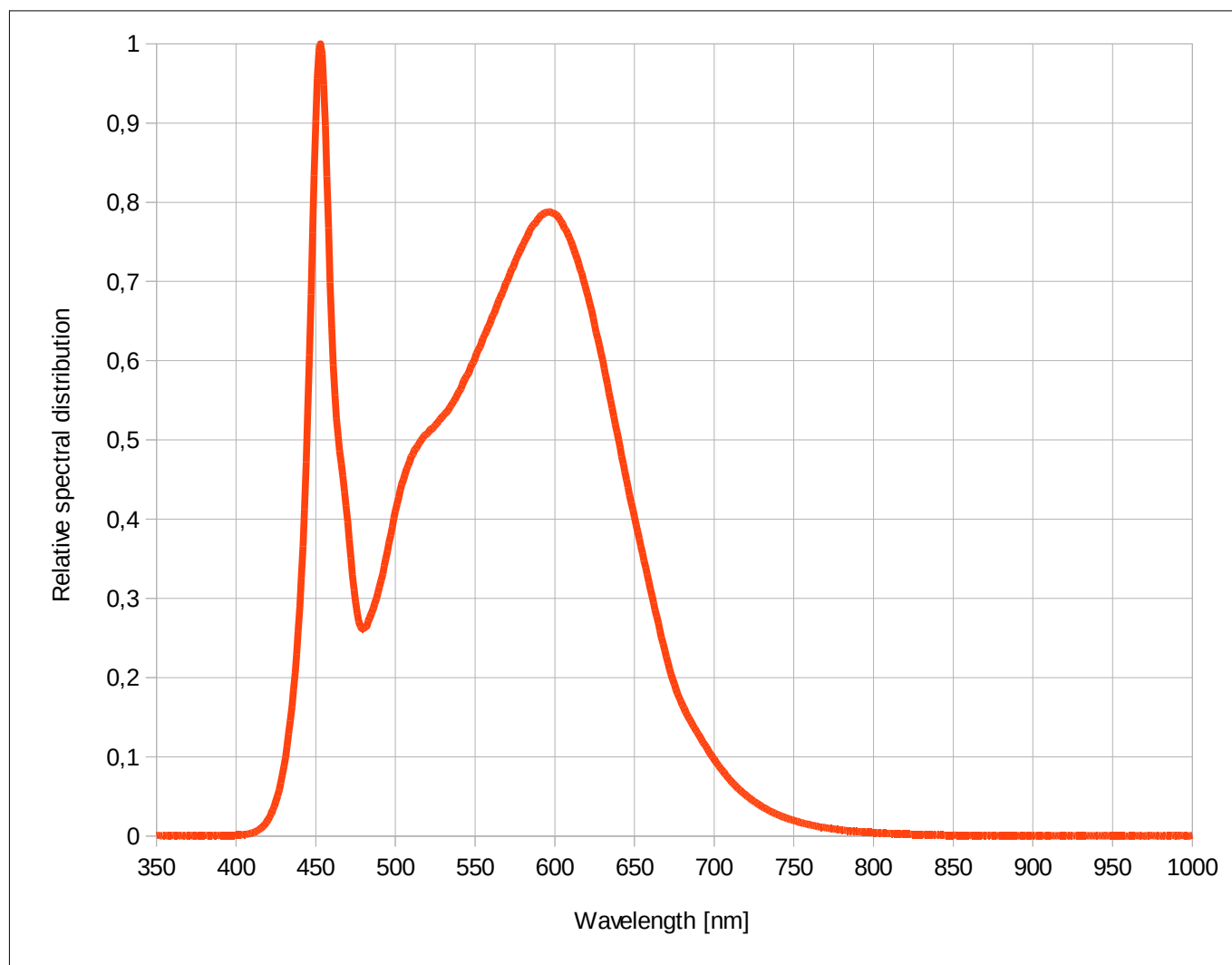


Diagram 6.1: Relative spectral distribution

6.2. Chromaticity diagram

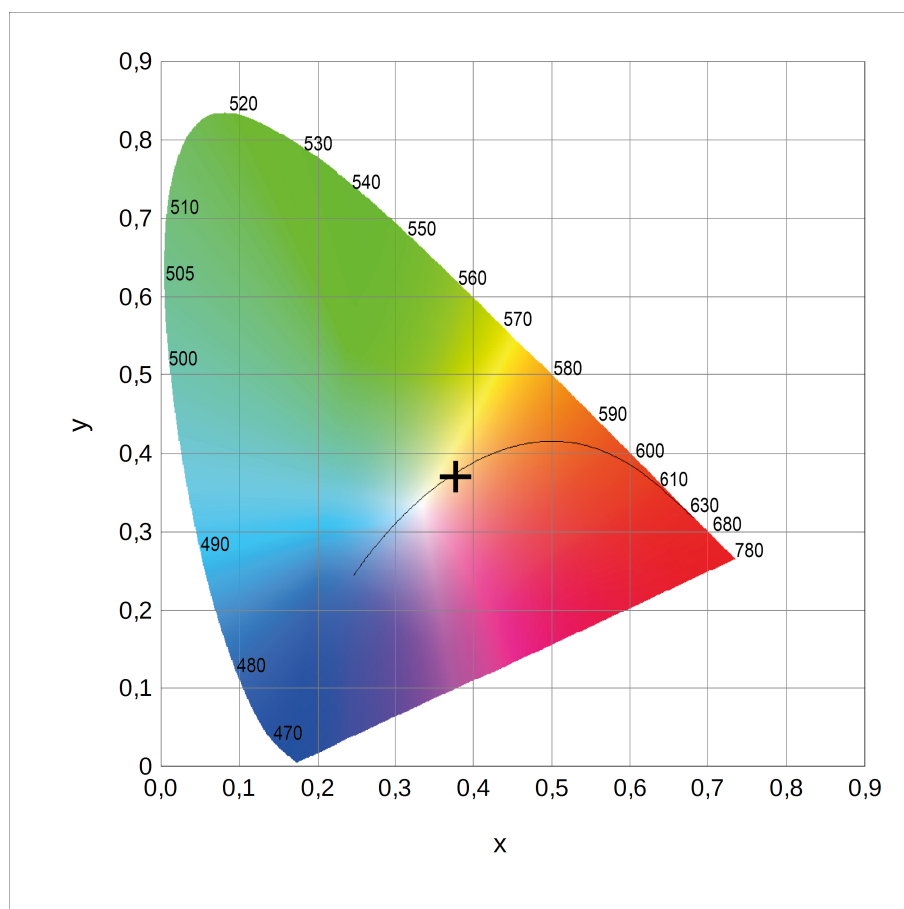


Diagram 6.2: Chromaticity diagram

Tristimulus Value	
x	0.3769
y	0.3704

Table 6.1: Chromaticity coordinates

The location of the tristimulus coordinates is indicated by the black cross on the diagram.

6.3. Color calculation

color sample	CRI	color sample	CRI
R1	84.6	R9	16.5
R2	93.1	R10	83.2
R3	95.8	R11	83.3
R4	83.4	R12	65.6
R5	84.8	R13	87.2
R6	89.3	R14	98.5
R7	85.3	R15	78.8
R8	66.3		
Ra	85.3	CCT [K]	4051
Re	79.7		

Table 6.2: Color calculation – CRI R1-R15, Ra, Re and correlated color temperature

7. List of testing equipments

Item	Manufacturer	Model	Calibration due
Goniophotometer	TechnoTeam	RiGo801	yearly
Power supply	Statron	Typ 1201	N/A
Power supply	Statron AG	BE2/01H-IP-R20-B	N/A
Power supply	Elgar	CW801	N/A
Power supply	TDK-Lambda	GEN60-12.5	N/A
Power supply	Delta Elektronika	ES 075-2	N/A
Digital power meter	Yokogawa	WT110	N/A
Digital power meter	Yokogawa	WT210	N/A
Digital Multimeter	Fluke	8845A	N/A
Digital oscilloscope	Tektronix	TDS3014B	N/A
Spectroradiometer	JETI	specbos 1211	yearly
Spectroradiometer	JETI	specbos 1201	yearly
Spectroradiometer	Optronic Laboratories	OL 750	yearly
Spectroradiometer	UPRtek	MK350S Premium	yearly
Integrating sphere	GL Optic	GLS 500	N/A

Table 7.1: Test instrumentation