

ROOT® BAR BATTERY

PHOTOMETRIC TEST REPORT



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Report Introduction

About this report

We measure total luminous flux with state-of-the-art equipment, such as an integrating sphere and a goniophotometer, based on a 6-Axis industry Robot. In this process we rely on our professional Cameo photometric laboratory or certified partners. Our measurements reflect the utilised flux emitted from the luminaire at all radiating angles considering the zoom range.

We process our measurement data in a specialized software to calculate all photometric data. This photometric report includes spectra, light distribution, TM30-15, TLCl, and many other standardised reports. Additionally, we provide photometric data in IES and LDT file format.

Measurement conditions

- Stabilised laboratory room temperature for absolute consistency
- Stabilised luminaires (max. $\pm 0.5\%$ flux for at least 15min)
- Goniophotometer resolution: $\gamma = 5^\circ$ and C-level = 0.1°
- Distance > photometric limit distance (tolerance < 1.0%)
- Calibrated and accurate tools

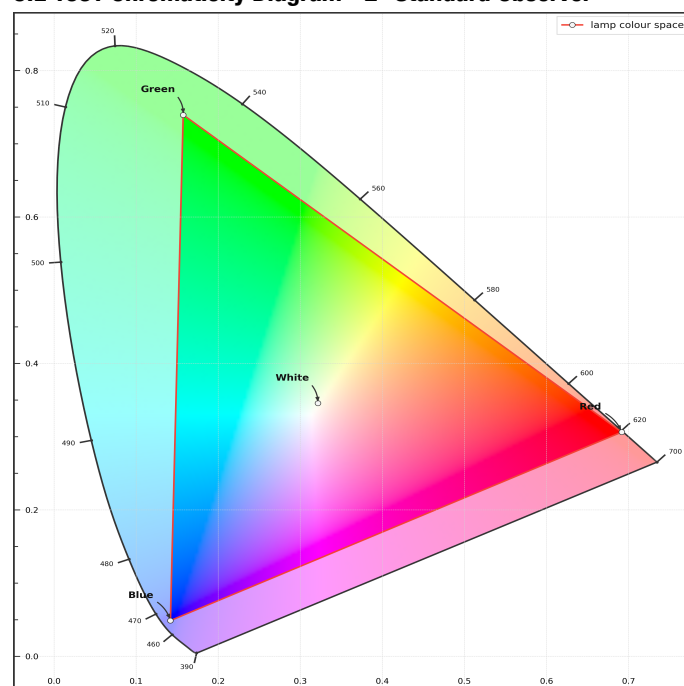
Equipment

- Goniometer with 6-Axis Robogonio by Opsira including Spectral Radiometer Spec`3 and frc-f-l, a fast Class-L Photometer for flicker etc.
- Integrating sphere UKU800 by Opsira
- Spectral Radiometer Spec`3 by Opsira
- Luxmeter Gossen MavoLux 5032-C
- Handheld-Spectrometer Gossen MavoSpec M600A
- Handheld-Spectrometer UPR-Tec MK350S Premium

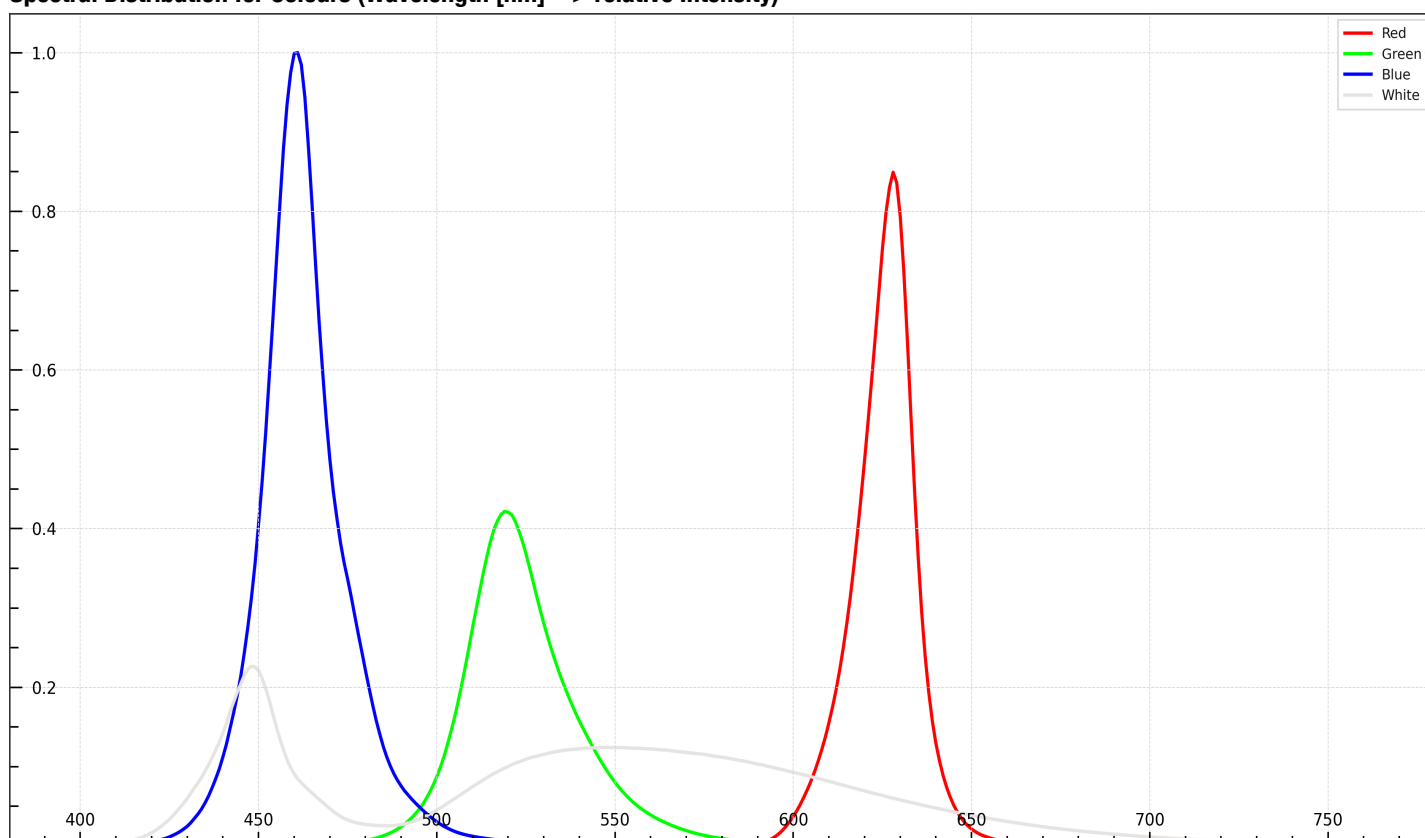
Overview

LED Colours	Lum flux [lm]	x	y
Red	347	0.6917	0.3063
Green	681	0.1574	0.7395
Blue	140	0.1418	0.0489
White	712	0.3215	0.3457

CIE 1931 Chromaticity Diagram - 2° Standard Observer



Spectral Distribution for Colours (Wavelength [nm] --> relative Intensity)

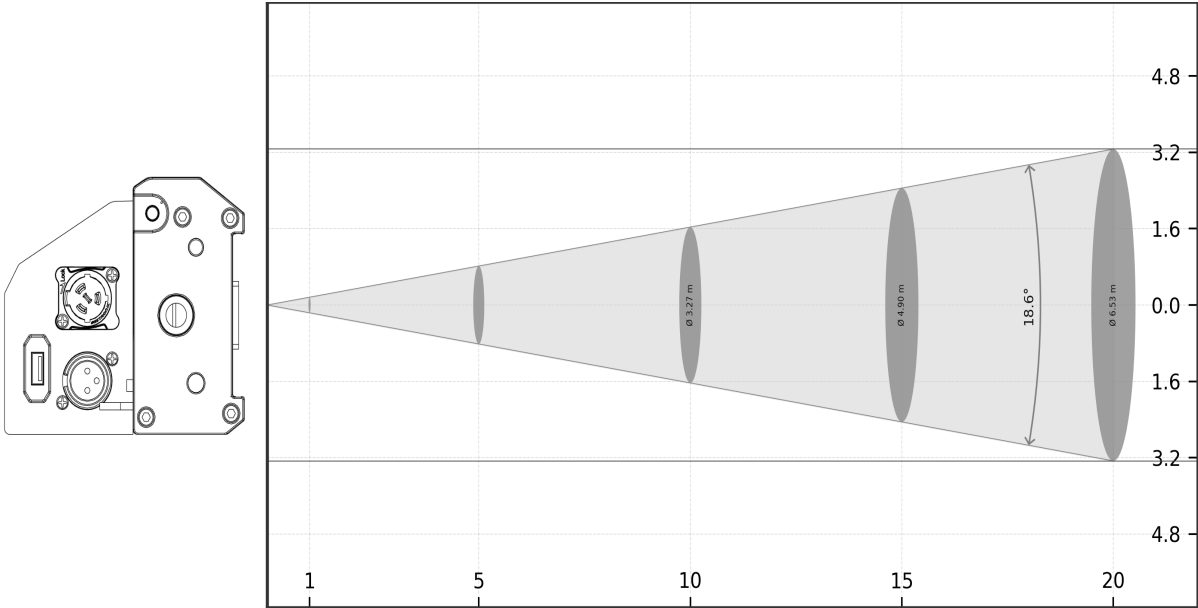




Full On – Photometric Report

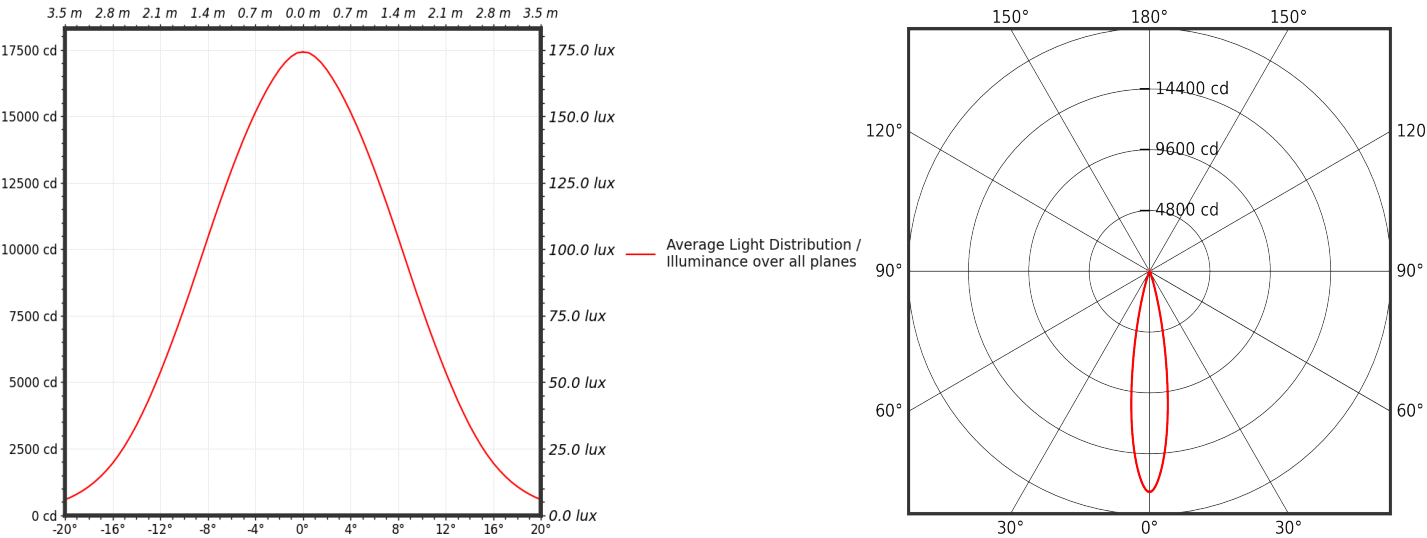
Beam Angle [°]	Field Angle [°]	Luminous flux [lm]	Power [W]	Luminous Efficacy [lm/W]
18.6	32.8	2119	62	34.2

Distance-Diameter-Diagram (Distance [m] --> Beam Opening [m])



Distance [m]	1	5	10	15	20
Illuminance [lx]	17413	697	174	77	44
Diameter [m]	0.33	1.63	3.27	4.90	6.53

Light Distribution Diagrams / Illuminance



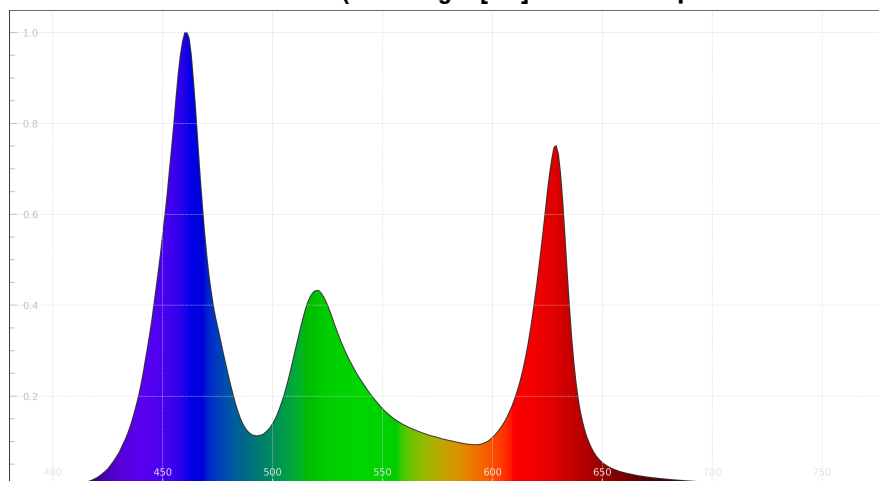
Fixture Settings: Dimmer at 100%; RGBW at 100%; Power Mode Full

Full On – Colorimetric Report

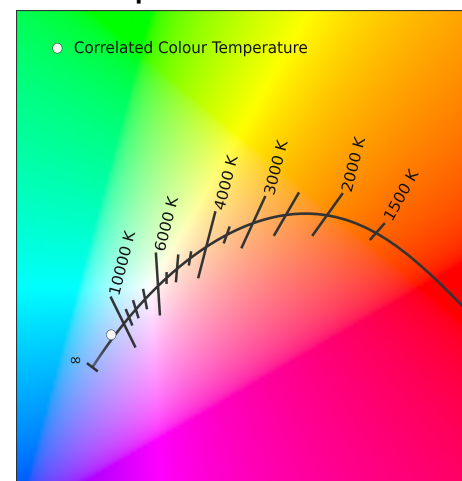
Colorimetric Characteristics

Correlated Colour Temperature [K]	CCT	13345	Luminous Flux [lm]	Lum Flux	2119
Colour Deviation from Black	D_{uv}	-0.0156	Colour Rendering Index	CRI Ra	57
Colour Coordinate CIE 1931	x	0.2785	Red Component	CRI R9	-137
Colour Coordinate CIE 1931	y	0.2577	Colour Fidelity	TM30 R_f	71
Colour Coordinate CIE 1976	u'	0.2012	Colour Gamut	TM30 R_g	111
Colour Coordinate CIE 1976	v'	0.4190	Television Lighting Consistency Index	TLCI	1
Spectral Similarity Index	SSI[CIE D13345]	32			

CIE 1931 2° Standard Observer (Wavelength [nm] --> relative Spectral Distribution)

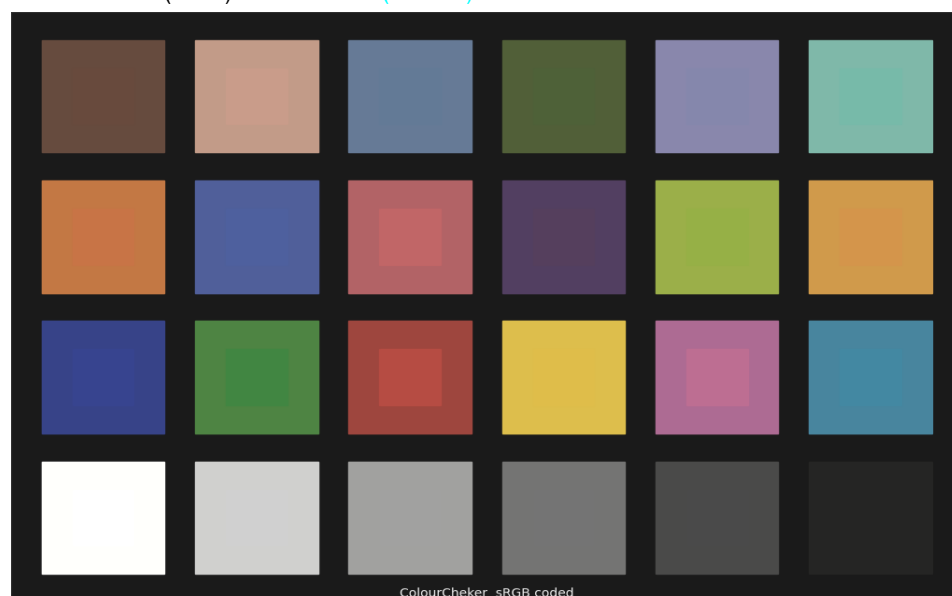


Colour Temperature

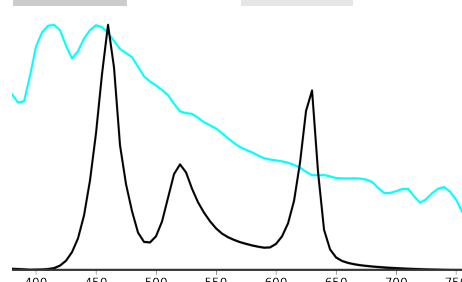


Television Lighting Consistency Index-2012

CCT = D13345 (-2.9) **TLCI-2012 : 1** (D13345)



Sector	Lightness	Chroma	Hue
R	---	---	0
R/Y	0	-	+++
Y	0	0	106*-
Y/G	0	-	---
G	0	--	---
G/C	0	--	-
C	0	--	0
C/B	0	0	25*-
B	0	-	0
B/M	0	0	-
M	0	+	---
M/R	---	-	---

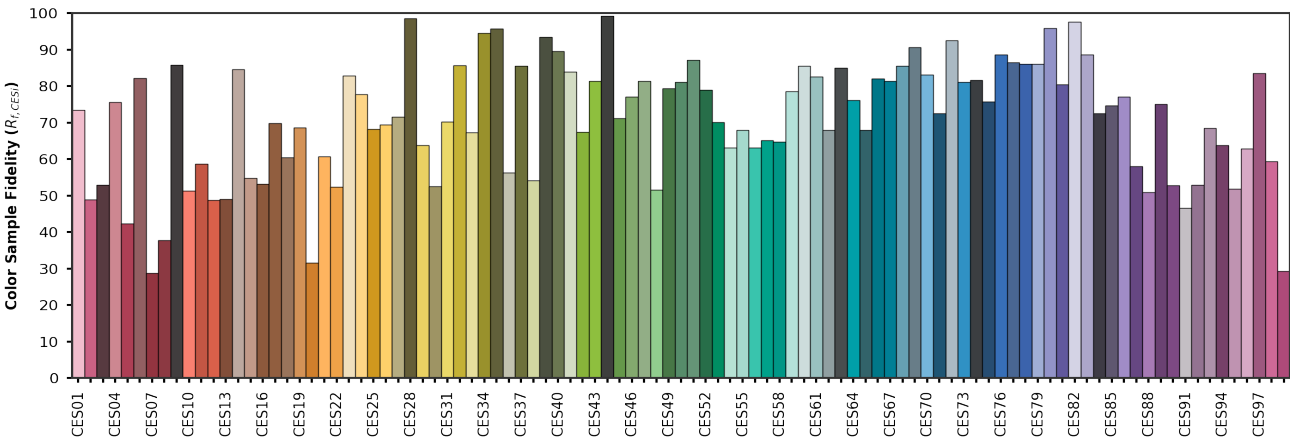
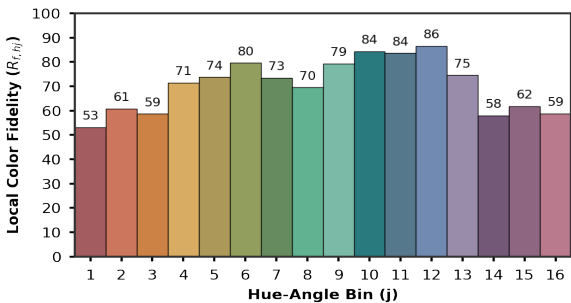
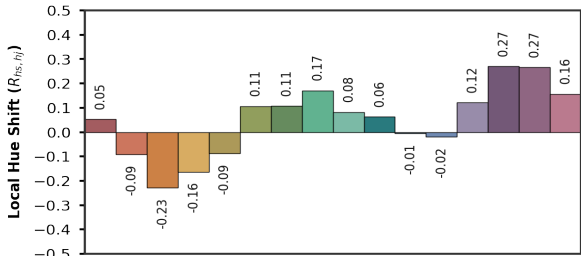
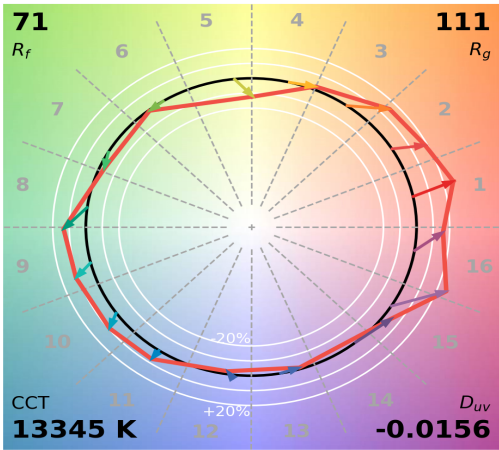
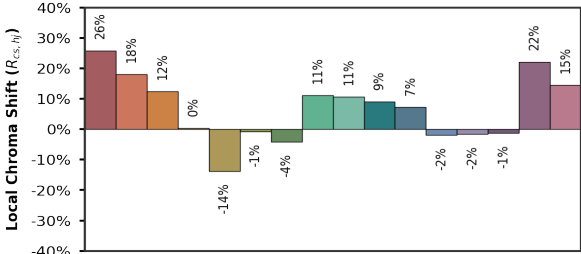
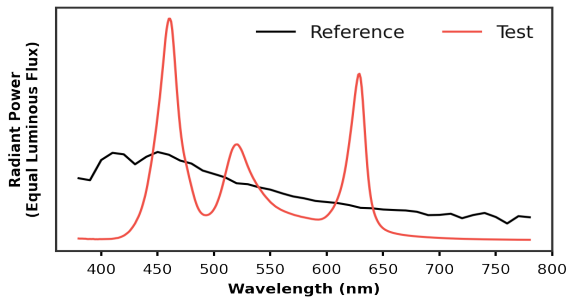


Fixture Settings: Dimmer at 100%; RGBW at 100%; Power Mode Full



Full On – Colorimetric Report

IES TM-30-18 Colour Rendition Report



x 0.2785
y 0.2577
u' 0.2012
v' 0.4190

CIE 13.31-1995
(CRI)
Ra 57
R9 -137

Fixture Settings: Dimmer at 100%; RGBW at 100%; Power Mode Full