

ROOT® BAR SMD

PHOTOMETRIC TEST REPORT



Table of Contents

Report Introduction 3

Overview 4

Full On 5

White 8

RGB 11



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

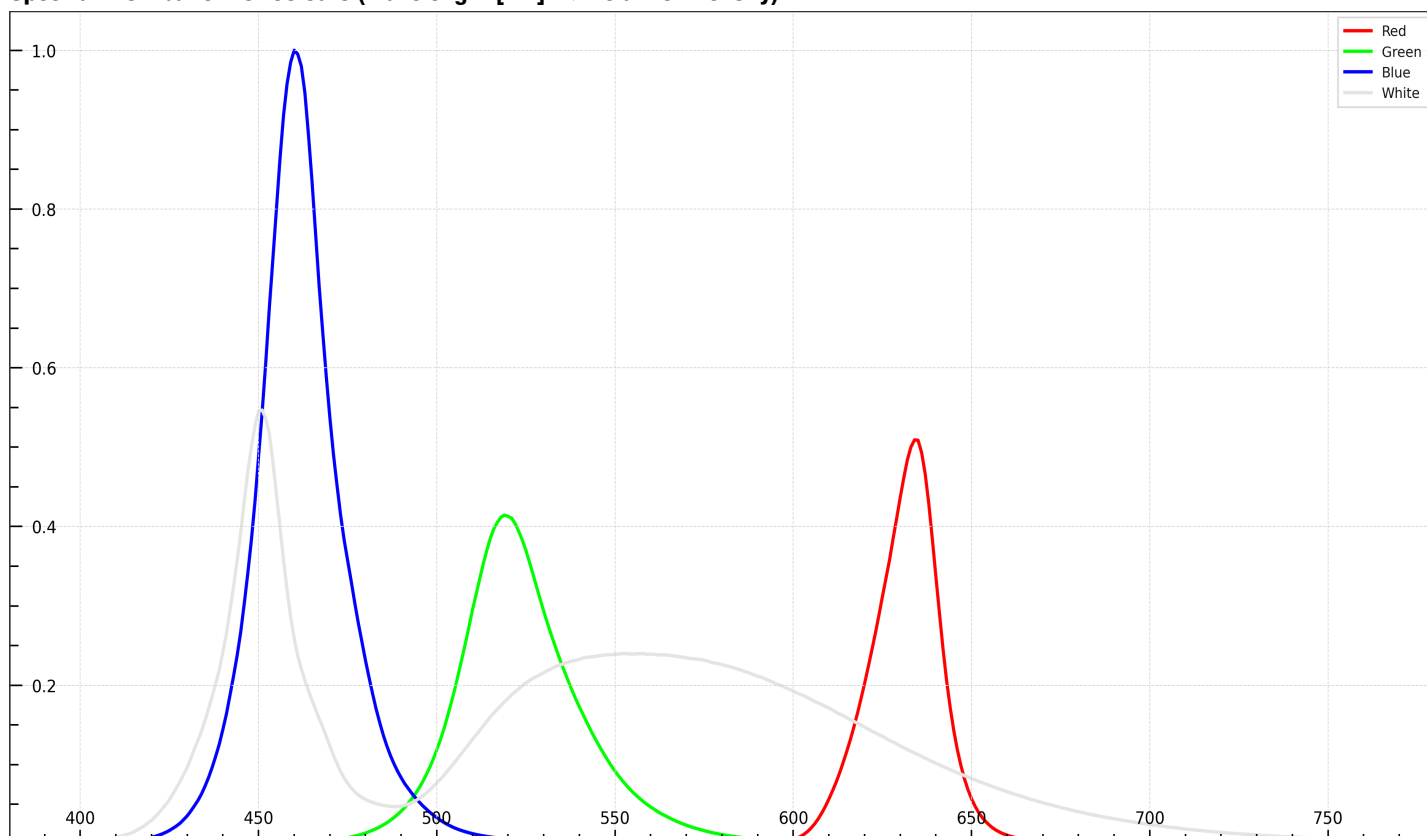
Overview

LED Colours	Lum flux [lm]	x	y
Red	415	0.7000	0.2975
Green	1533	0.1616	0.7236
Blue	304	0.1414	0.0465
White	2943	0.3187	0.3264

CIE 1931 Chromaticity Diagram - 2° Standard Observer



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

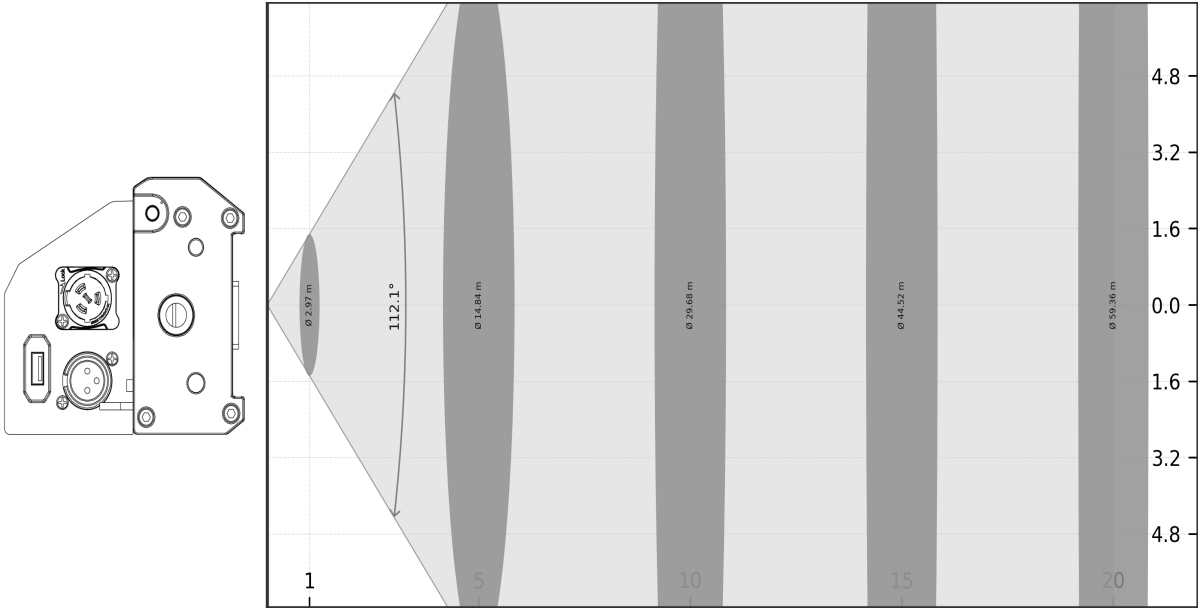




Full On – Photometric Report

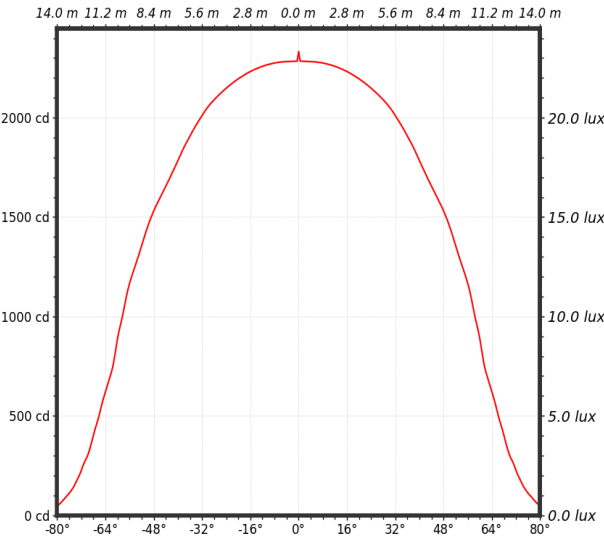
Beam Angle [°]	Field Angle [°]	Luminous flux [lm]	Power [W]	Luminous Efficacy [lm/W]
112.1	143.6	6091	135	45.1

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

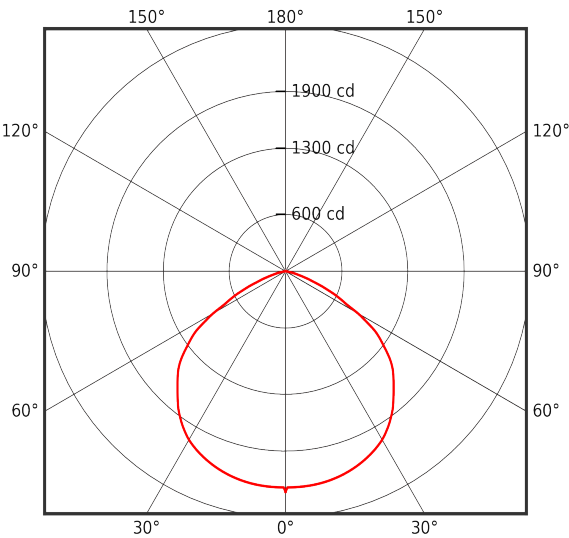


Distance [m]	1	5	10	15	20
Illuminance [lx]	2331	93	23	10	6
Diameter [m]	2.97	14.84	29.68	44.52	59.36

Light Distribution Diagrams / Illuminance



Average Light Distribution / Illuminance over all planes



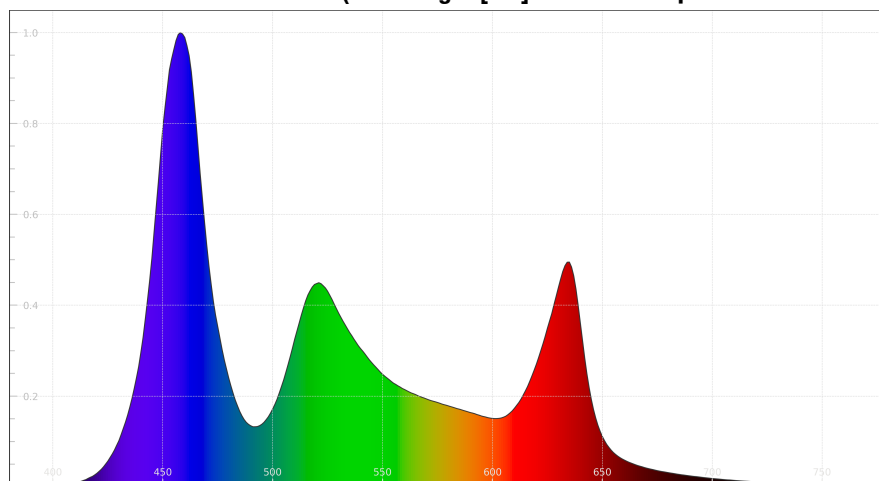
Fixture Settings: Dimmer at 100%; RGBW at 100%

Full On – Colorimetric Report

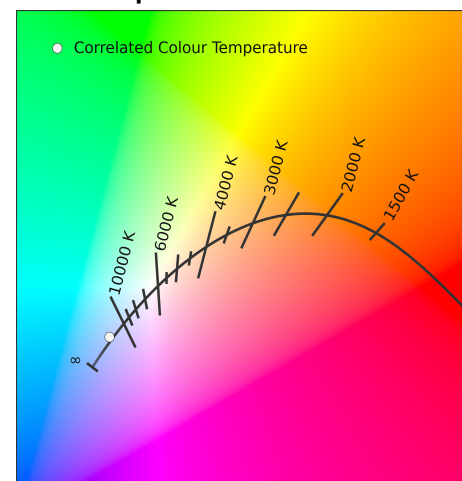
Colorimetric Characteristics

Correlated Colour Temperature [K]	CCT	14116	Luminous Flux [lm]	Lum Flux	6091
Colour Deviation from Black	D_{uv}	-0.0028	Colour Rendering Index	CRI Ra	84
Colour Coordinate CIE 1931	x	0.2677	Red Component	CRI R9	-17
Colour Coordinate CIE 1931	y	0.2672	Colour Fidelity	TM30 R_f	83
Colour Coordinate CIE 1976	u'	0.1888	Colour Gamut	TM30 R_g	104
Colour Coordinate CIE 1976	v'	0.4240	Television Lighting Consistency Index	TLCI	80
Spectral Similarity Index	SSI[CIE D14116]	45			

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



Colour Temperature

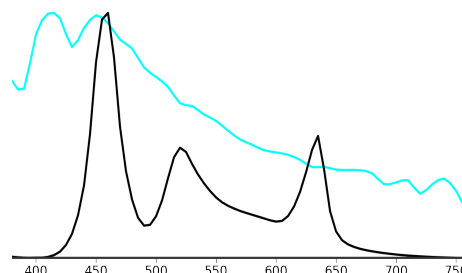


Television Lighting Consistency Index-2012

CCT = D14116 (-0.5) **TLCI-2012 : 80 (D14116)**



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

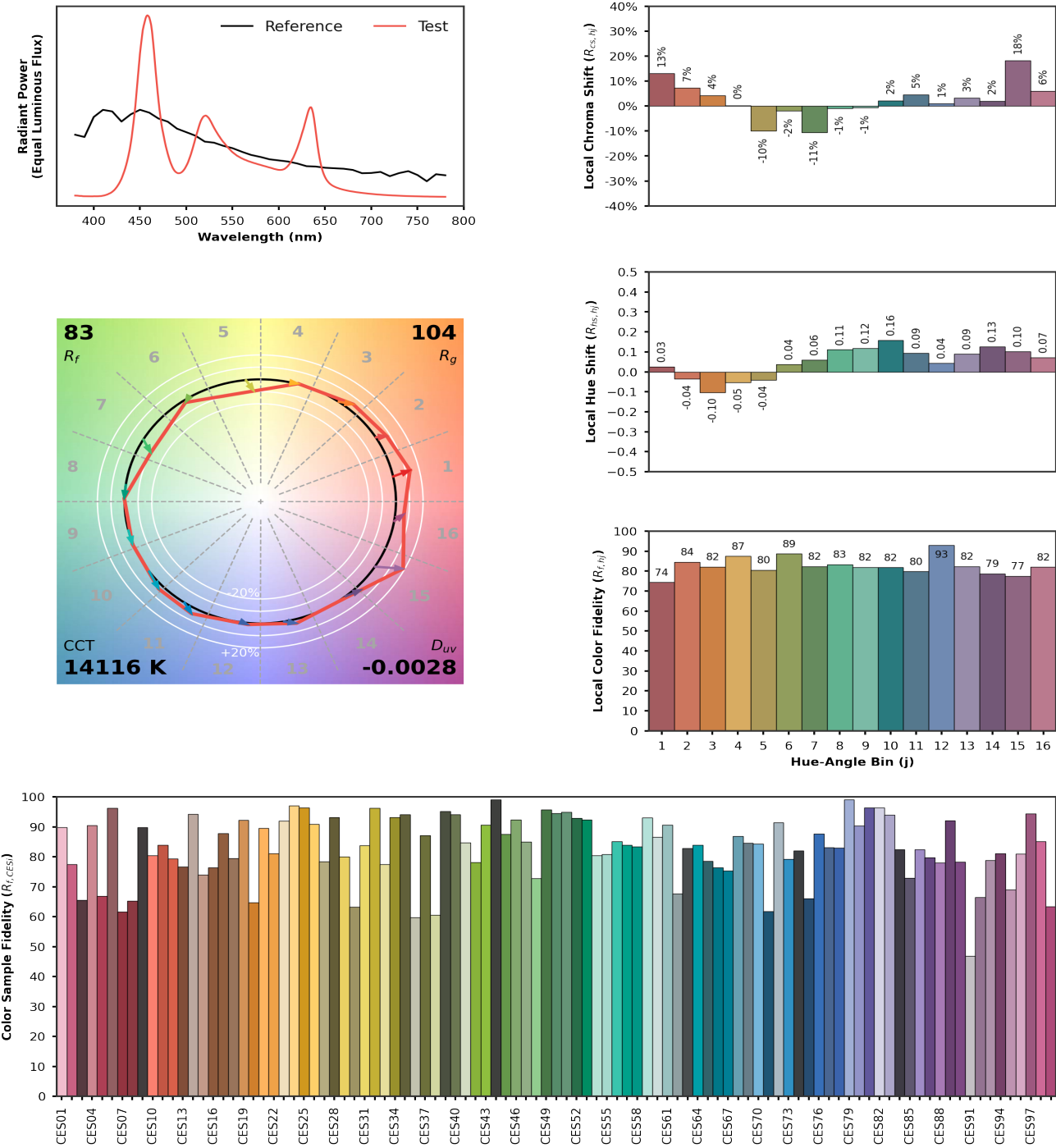


Fixture Settings: Dimmer at 100%; RGBW at 100%



Full On – Colorimetric Report

IES TM-30-18 Colour Rendition Report



x 0.2677
y 0.2672
u' 0.1888
v' 0.4240

CIE 13.31-1995
(CRI)
 R_a 84
 R_9 -17

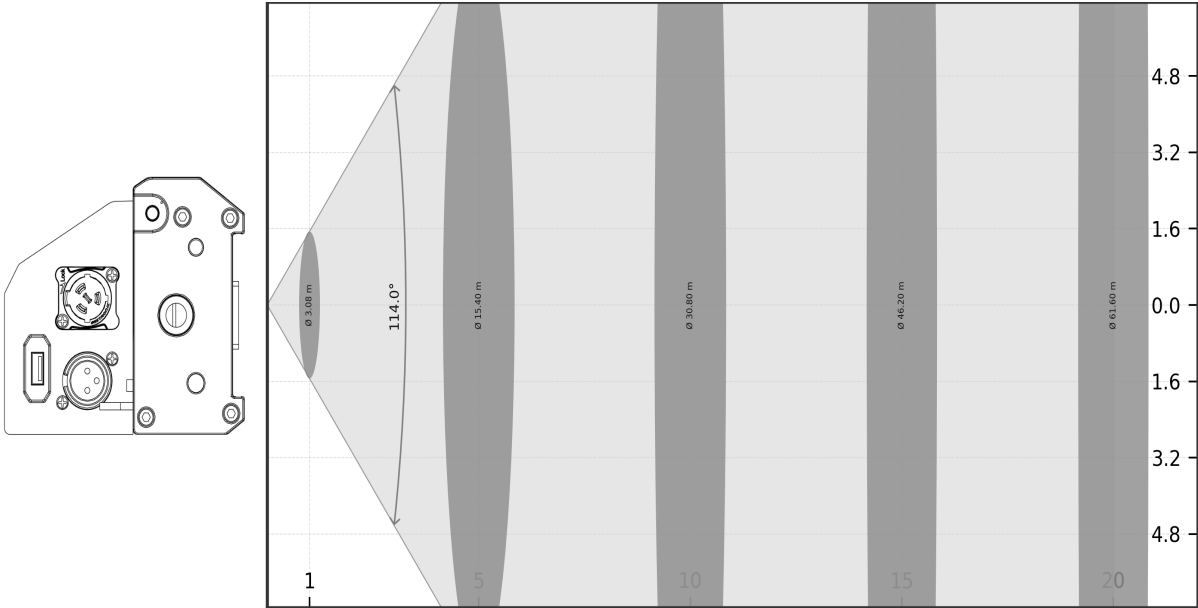
Fixture Settings: Dimmer at 100%; RGBW at 100%



White – Photometric Report

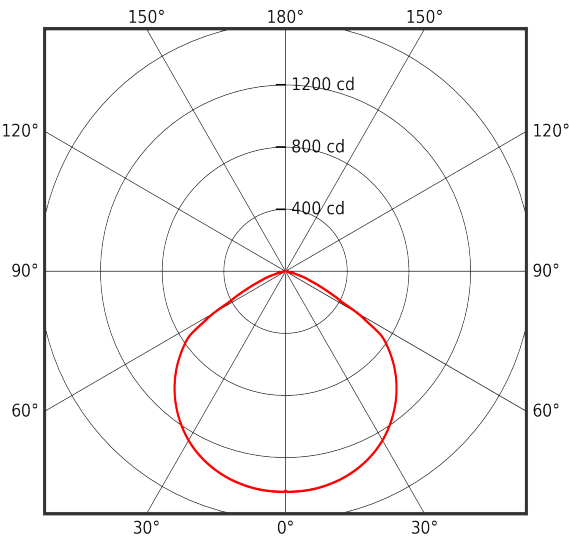
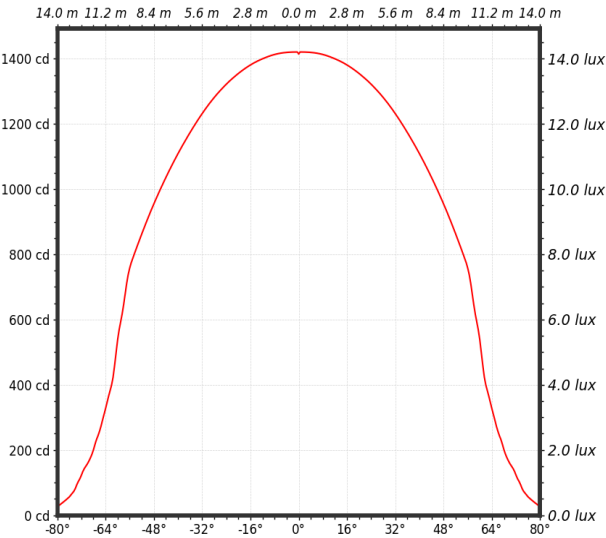
Beam Angle [°]	Field Angle [°]	Luminous flux [lm]	Power [W]	Luminous Efficacy [lm/W]
114.0	142.1	3732	35	106.6

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



Distance [m]	1	5	10	15	20
Illuminance [lx]	1415	57	14	6	4
Diameter [m]	3.08	15.40	30.80	46.20	61.60

Light Distribution Diagrams / Illuminance



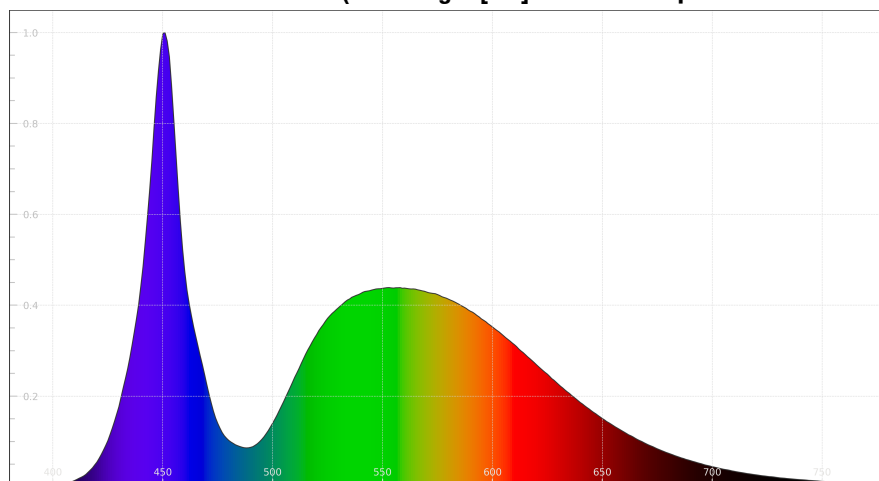
Fixture Settings: Dimmer at 100%; RGB at 0%; W at 100%

White – Colorimetric Report

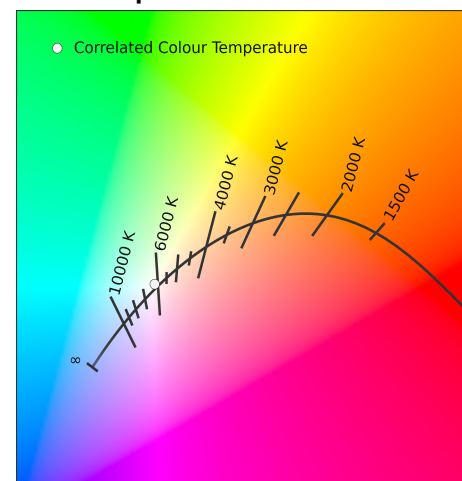
Colorimetric Characteristics

Correlated Colour Temperature [K]	CCT	6198	Luminous Flux [lm]	Lum Flux	3732
Colour Deviation from Black	D_{uv}	-0.0011	Colour Rendering Index	CRI Ra	74
Colour Coordinate CIE 1931	x	0.3187	Red Component	CRI R9	-13
Colour Coordinate CIE 1931	y	0.3264	Colour Fidelity	TM30 R_f	73
Colour Coordinate CIE 1976	u'	0.2030	Colour Gamut	TM30 R_g	94
Colour Coordinate CIE 1976	v'	0.4678	Television Lighting Consistency Index	TLCI	46
Spectral Similarity Index	SSI[CIE D6198]	55			

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



Colour Temperature

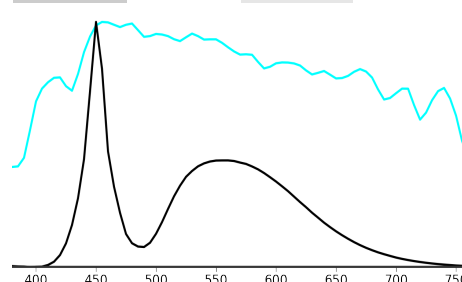


Television Lighting Consistency Index-2012

CCT = D6198 (-0.2) **TLCI-2012 : 46 (D6198)**



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

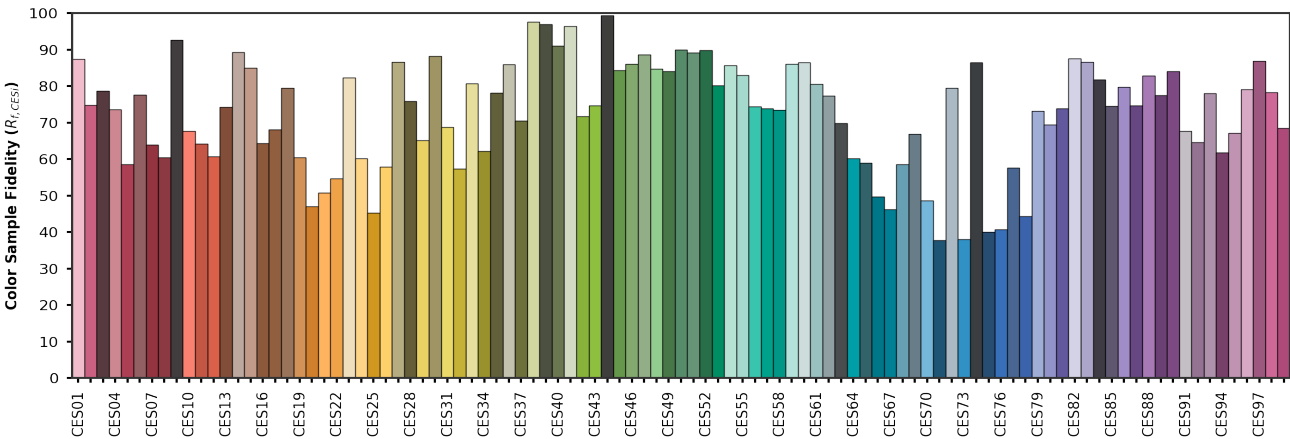
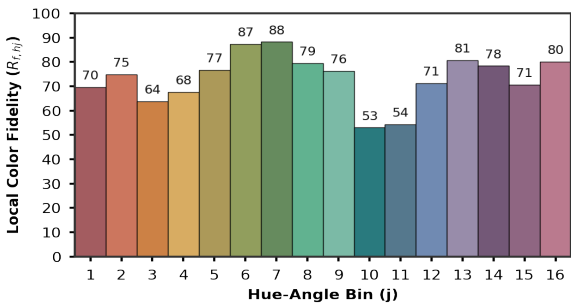
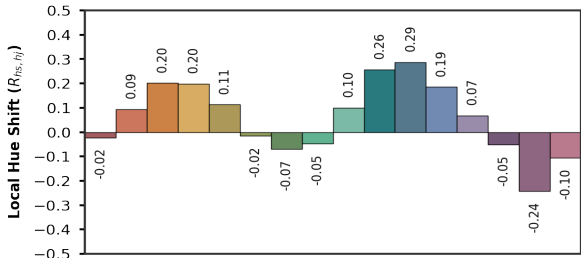
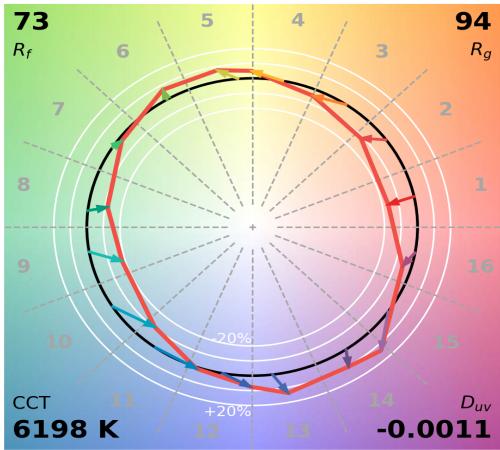
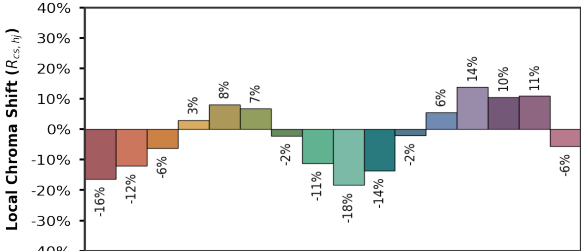
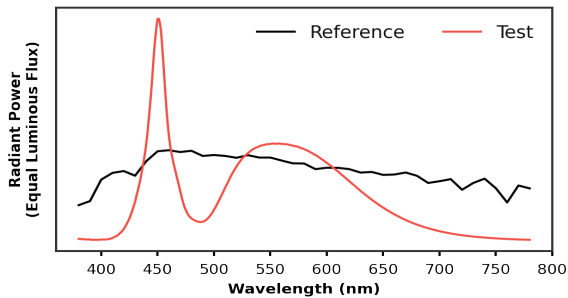


Fixture Settings: Dimmer at 100%; RGB at 0%; W at 100%



White – Colorimetric Report

IES TM-30-18 Colour Rendition Report



x 0.3187
y 0.3264
u' 0.2030
v' 0.4678

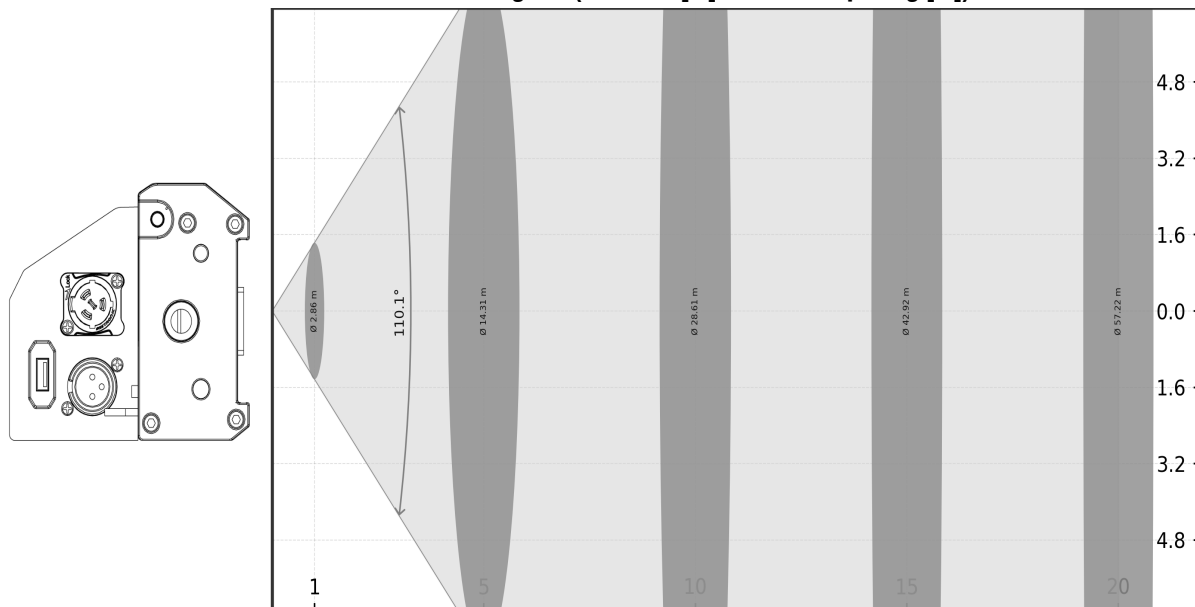
CIE 13.31-1995
(CRI)
Ra 74
R9 -13

Fixture Settings: Dimmer at 100%; RGB at 0%; W at 100%

RGB – Photometric Report

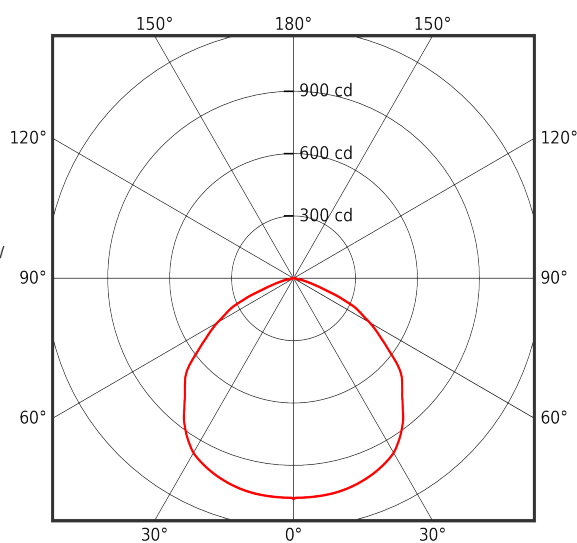
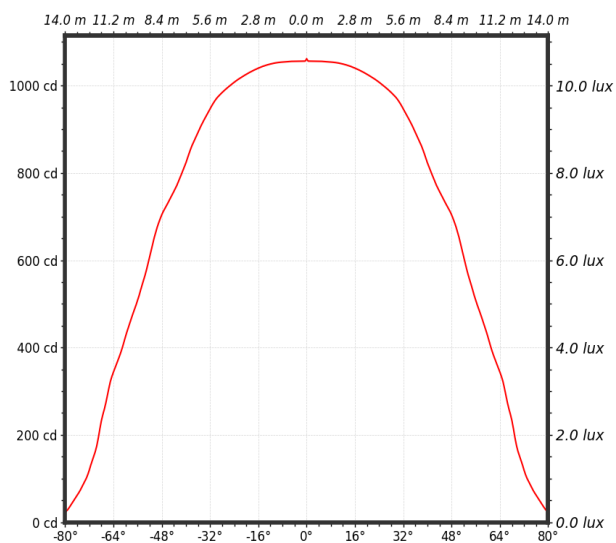
Beam Angle [°]	Field Angle [°]	Luminous flux [lm]	Power [W]	Luminous Efficacy [lm/W]
110.1	145.3	2873	104	27.6

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



Distance [m]	1	5	10	15	20
Illuminance [lx]	1061	42	11	5	3
Diameter [m]	2.86	14.31	28.61	42.92	57.22

Light Distribution Diagrams / Illuminance



Fixture Settings: Dimmer at 100%; RGB at 100%; W at 0%