

Goniophotometry Report

1_PHOT_NINETY-NINE-1875lmChip-3500K-WallWash-HoneycombLouvre_2309
www.factorylux.com



Tested Light Source - 1_PHOT_NINETY-NINE-1875lmChip-3500K-WallWash-HoneycombLouvre_2309

Laboratory and Equipment

Laboratory Owner and Location
Goniospectrometer System and Type
Spectrometer Manufacturer and Model

Factorylux, Greenhill Mills, Hebden Bridge, HX7 5QF, UK
BaseSpion – Type C, horizontal
Ibsen Photonics, Denmark – Freedom VIS (Custom Viso)

Measurement Conditions

Number of C-planes and Resolution
 γ (gamma)-Resolution
Test Distance
Input Power, Power and Displ. Factors
Input RMS Voltage and Current
Frequency of Input Power

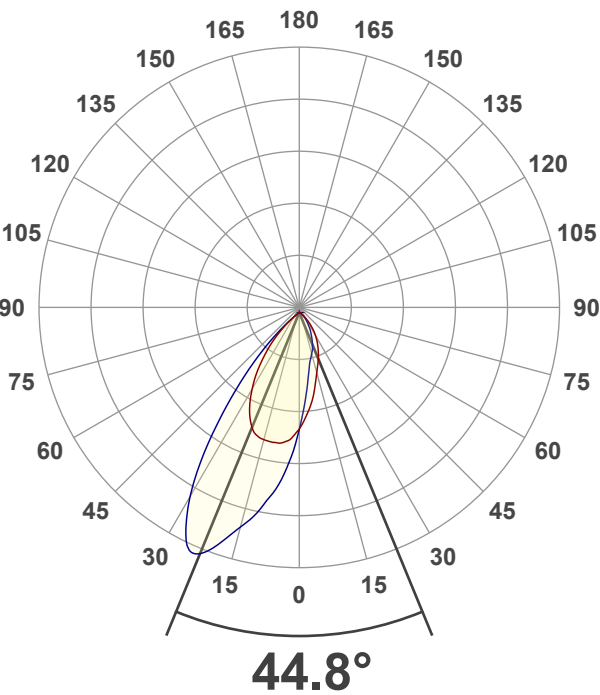
24 planes – 15°
1.5°
1.50 m
13.4 W – PF 0.98 – DPF 0.99
240 V – 0.057 A
50.1 Hz

Main Light Measurement Results

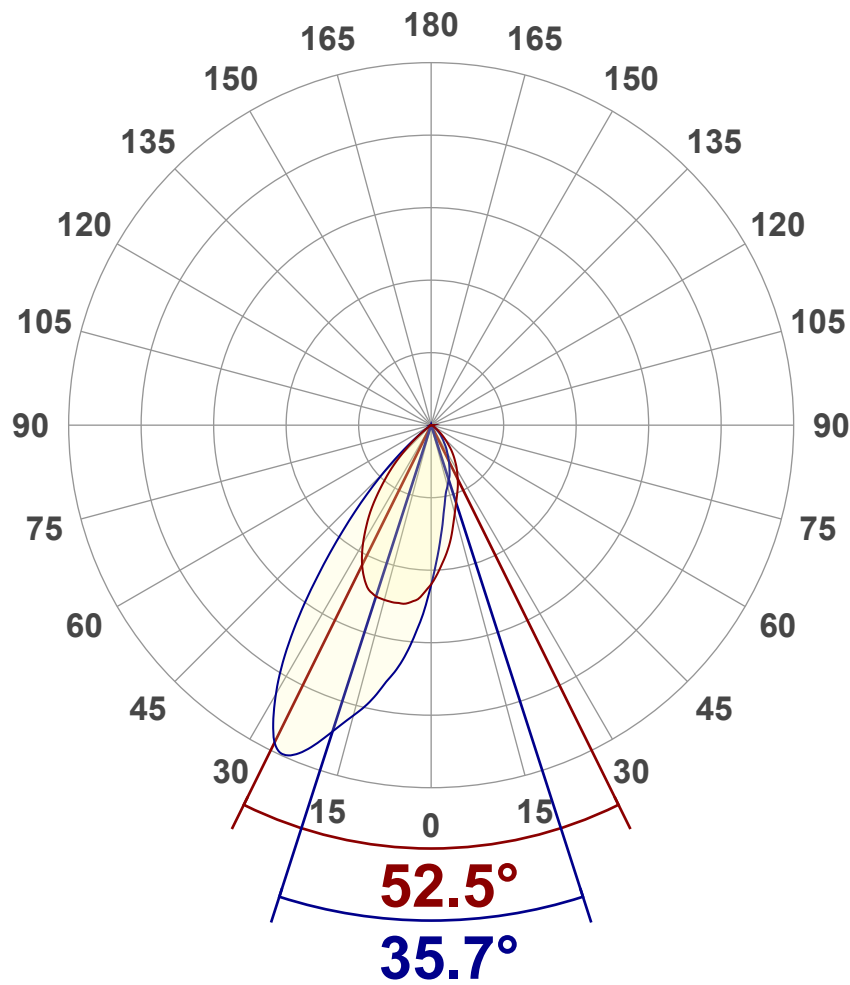
Output
Efficiency
Peak Intensity and Beam Angle
Color Rendering Index

494 lm
37 lm/W
802 cd – 44.8°
CRI 92.4

Light Intensity Distribution



Luminous Intensity diagramUnit: 0-100% of peak intensity



Main Values	
Output (total Lumen)	494 lm
Peak Intensity	802 cd
Beam Angle (50%)	44.8°
Beam Angle (90%)	35.7°
Beam Angle (10%)	57.8°

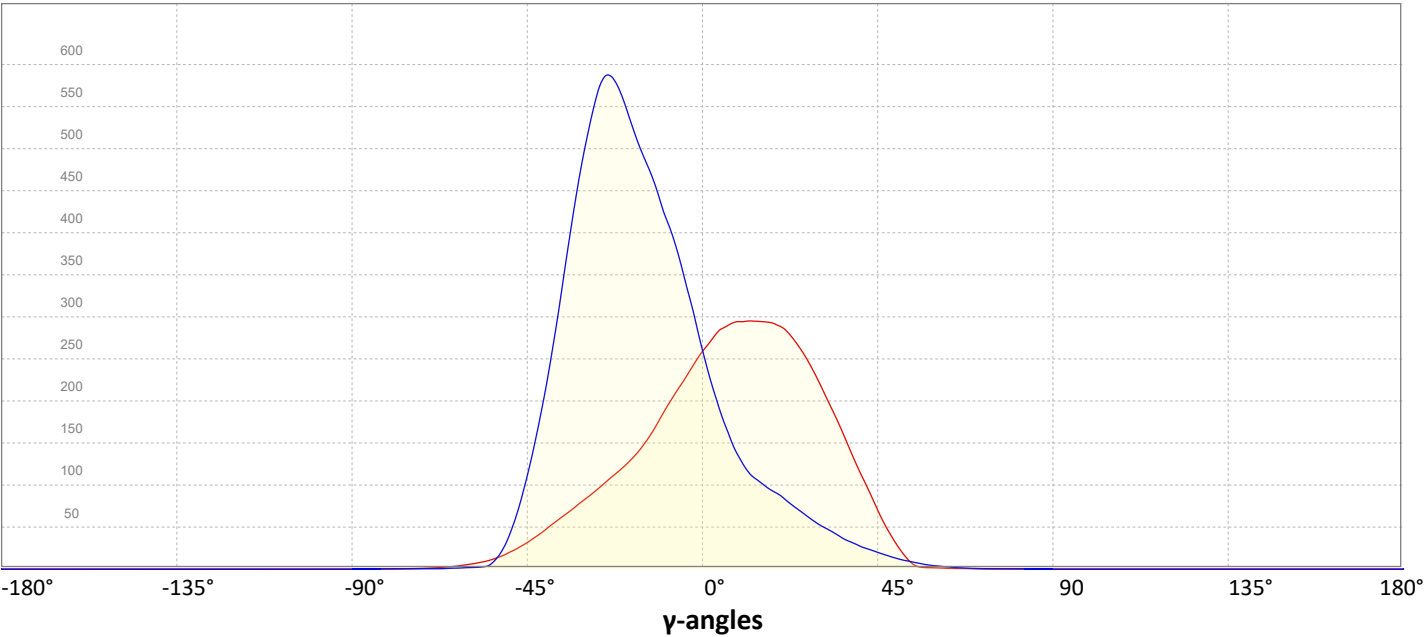
Cut-off Angle	
Average 2,5%	107.1°

Field Angle	
Average 10%	86.7°

Intensity Ratio	
In 120° cone	99.3%
In 90° cone	92.8%

C000-C180
C090-C270

Linear distribution diagram - Intensity (candela) vs γ-angle

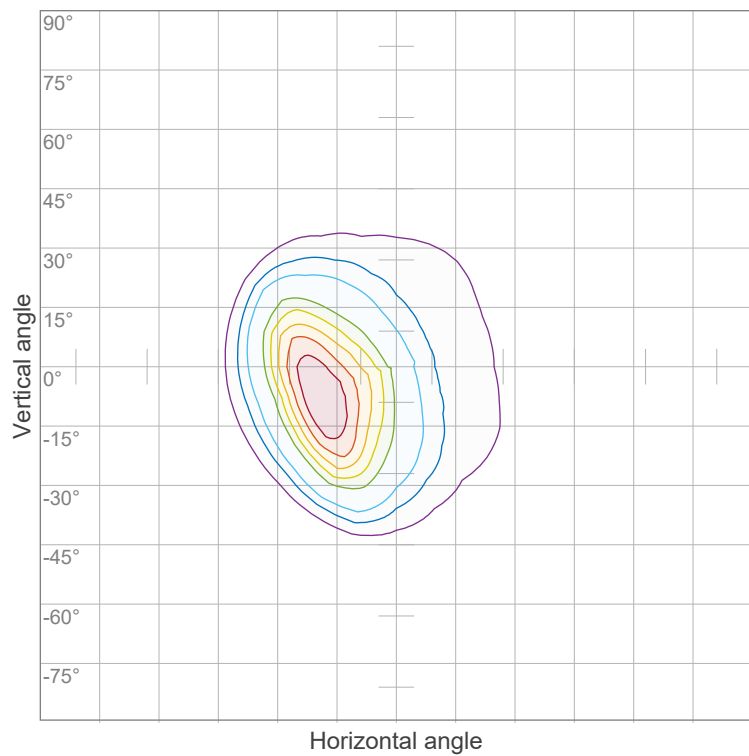


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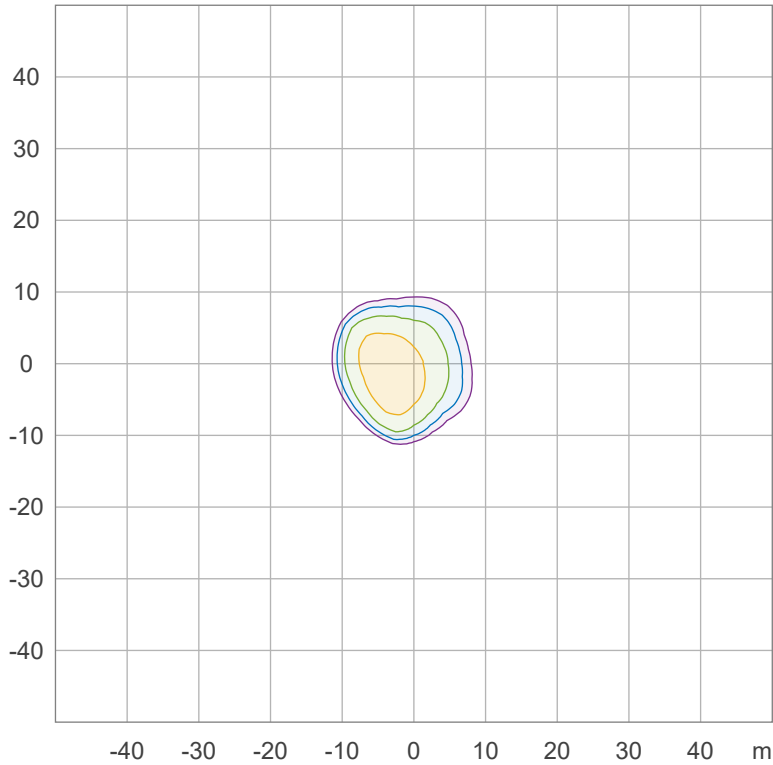
Iso-intensity Diagram (Iso-candela)



90 %	720.0 cd
80 %	640.0 cd
70 %	560.0 cd
60 %	480.0 cd
50 %	400.0 cd
40 %	320.0 cd
30 %	240.0 cd
20 %	160.0 cd
10 %	80.0 cd

Peak intensity: 800.0 cd
Number of c-planes: 24

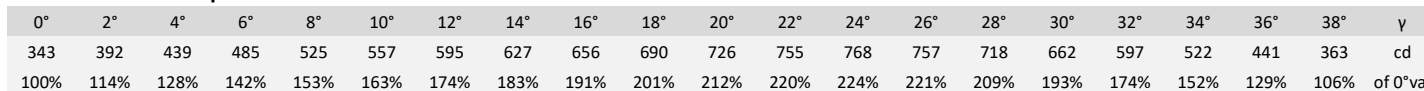
Iso-illuminance Diagram (Iso-lux)



50.0 %	3.3 lx
30.0 %	2.0 lx
10.0 %	0.7 lx
5.0 %	0.3 lx
3.0 %	0.2 lx

Peak illuminance: 6.5 lx
Mounting height: 10.0 m
Number of c-planes: 24

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[illegible]

Outdoor Light Planning

Lumen per Zone

Zone (γ)	Lumen	% Total
0-10°	33 lm	6.6%
10-20°	97 lm	19.7%
20-30°	151 lm	30.6%
30-40°	136 lm	27.6%
40-50°	63 lm	12.7%
50-60°	11 lm	2.1%
60-70°	2 lm	0.5%
70-80°	1 lm	0.1%
80-90°	0 lm	0.1%
90-100°	0 lm	0.0%
100-110°	0 lm	0.0%
110-120°	0 lm	0.0%
120-130°	0 lm	0.0%
130-140°	0 lm	0.0%
140-150°	0 lm	0.0%
150-160°	0 lm	0.0%
160-170°	0 lm	0.0%
170-180°	0 lm	0.0%
Total	494 lm	100.0%

Intensity peaks

Max intensity	802 cd
Intensity, 90°	0 cd
Intensity, 0°	343 cd

Zonal Lumen summary

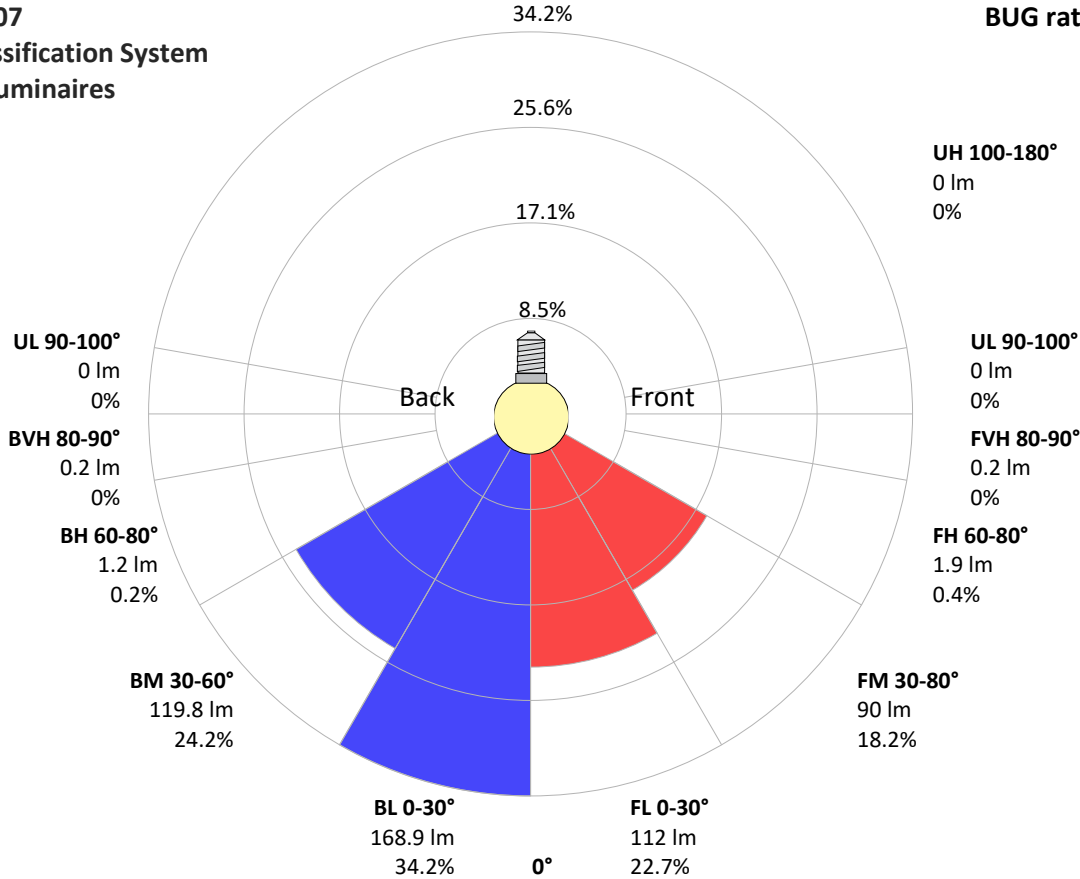
Zone (γ)	Lumen	% Total
0-30°	281 lm	56.9%
0-40°	417 lm	84.5%
0-60°	491 lm	99.3%
60-90°	3 lm	0.7%
70-100°	1 lm	0.2%
90-120°	0 lm	0.0%
0-90°	494 lm	100.0%
90-180°	0 lm	0.0%
0-180°	494 lm	100.0%

BUG rating

	Lumen	% Total
Forward light		
Low(0-30°)	112 lm	22.7%
Medium(30-60°)	90 lm	18.2%
High(60-80°)	2 lm	0.4%
Very high(80-90°)	0 lm	0.0%
Back light		
Low(0-30°)	169 lm	34.2%
Medium(30-60°)	120 lm	24.2%
High(60-80°)	1 lm	0.2%
Very high(80-90°)	0 lm	0.0%
Uplight		
Low(90-100°)	0 lm	0.0%
High(100-180°)	0 lm	0.0%

IESNA TM-15-07
Luminaire Classification System
For Outdoor Luminaires

BUG rating B1 U1 G0



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Power Details

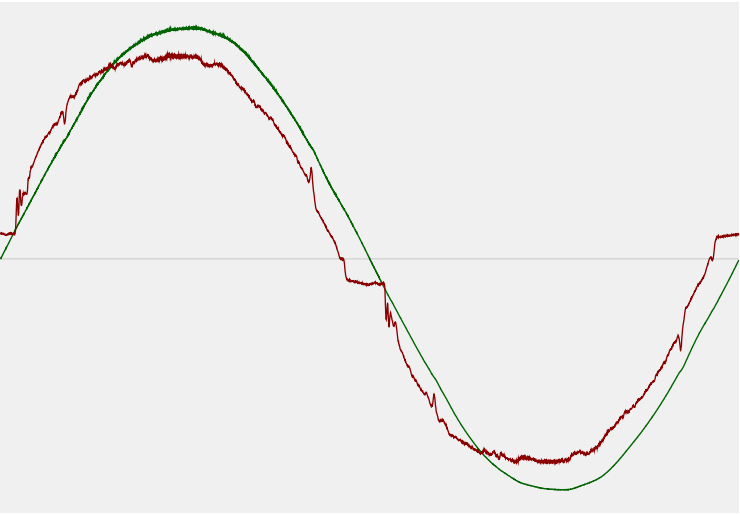
Input Power

Power feed to light source	13.4 W
Frequency of input power	50.1 Hz
RMS Input voltage feed, V_{RMS}	240 V
RMS Input current feed, I_{RMS}	0.057 A
Volt-Ampere or apparent power = $V_{RMS} * I_{RMS}$	13.64 VA
Displacement factor of AC power feed	0.99
Power factor of AC current feed	0.98
Total harmonic distortion of the current	6.63%
Total harmonic distortion of the voltage	1.12%

Efficiency

Radiated power efficiency	13.6%
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Lumen efficiency	37 lm/W
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Input Power Curve



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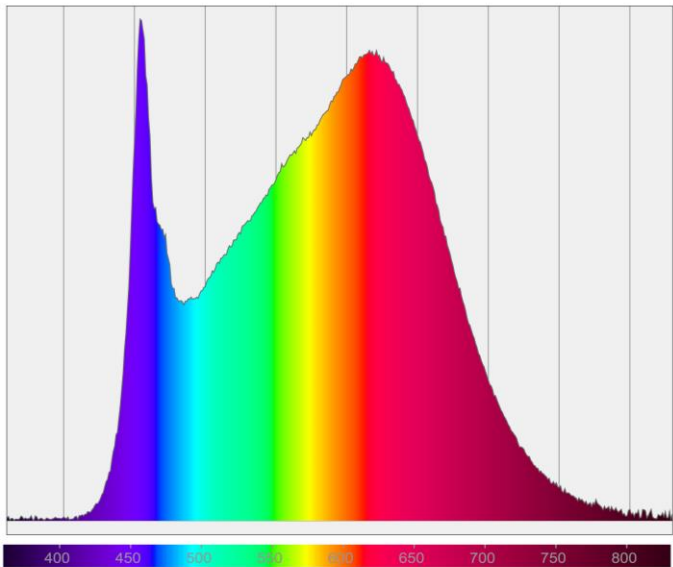
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Color Measurements

Correlated Color Temperature	CCT = 3500 K
Color Rendering TM30-18	R _f 90.2 — R _g 98.1
Color Shift, CIE duv	Duv ±0.0003

Spectral distribution



Color details

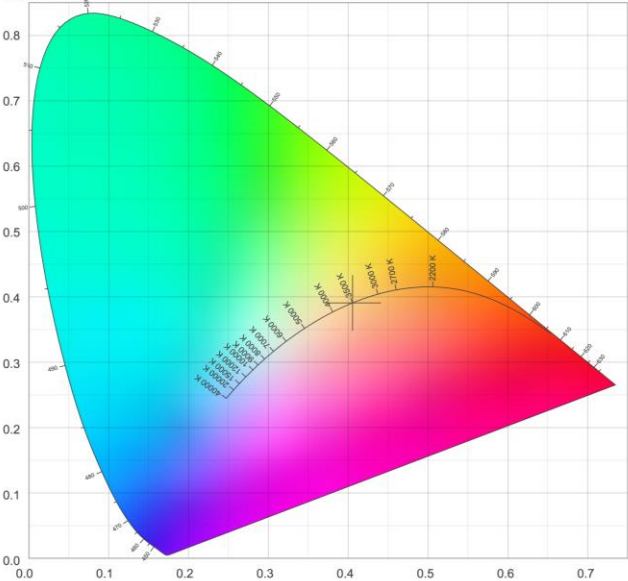
Correlated Color Temperature	CCT = 3500 K	Color coordinates CIE 1931	(x;y) = (0.406;0.391)
Color Rendering Index	CRI 94.0	Color coordinate CIEs 1960	(u;v) = (0.236;0.341)
Color Rendering Index, R9 (red component)	R9 = 77.7	Color deviation from BBL	Duv = ±0.0003
Color Rendering TM30-18	R _f 90.2 — R _g 98.1	Color coordinate CIEs 1976 (CIELUV)	(u';v') = (0.236;0.236)
Color Quality Scale	CQS = 92.3		

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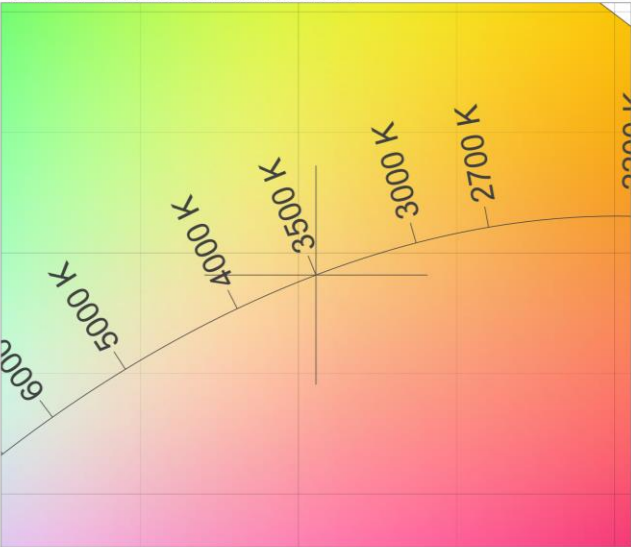
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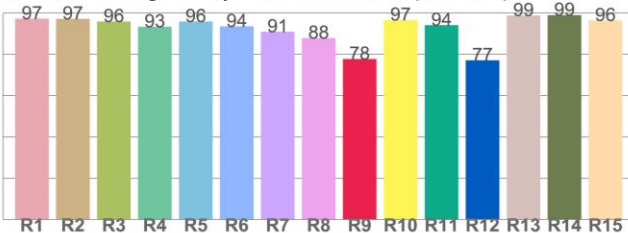
CIE 1931



CIE 1931 – zoomed on Planckian locus



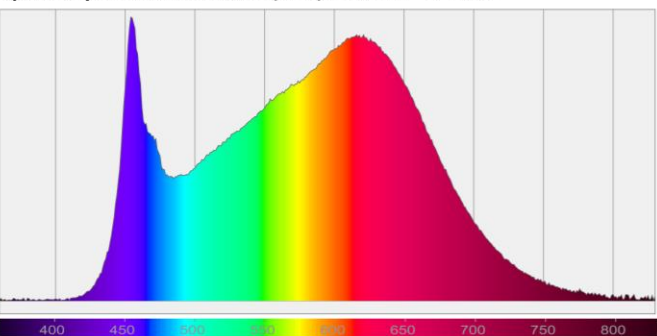
Color Rendering Index per reference color (CIE 1995)



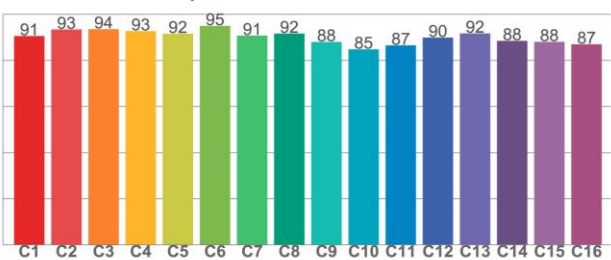
CRI R values, only R1-R8 are used to calculate final CRI value

R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
97.3	97.2	95.9	93.4	95.9	93.5	90.9	87.9	77.7	96.6	94.1	77.1	98.8	99.0	96.4

Spectral power distribution (SPD) / W/nm – 0-100%



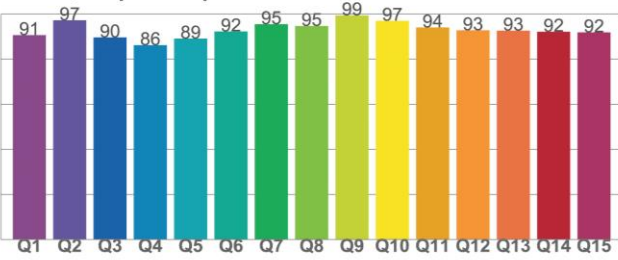
TM30-18 Rf-values per hue bin



TM30 C values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
90.6	93.4	93.6	92.7	91.6	95.0	90.7	91.6	88.0	84.8	86.5	89.9	91.7	88.5	88.1	87.0

Color Quality Scale by reference color



CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
90.6	97.2	89.6	86.2	89.1	92.3	95.5	94.7	99.4	97.0	94.0	92.8	92.6	92.1	91.8