

Tested Light Source - 1\_PHOT\_NINETY-NINE-2125lmChip-3000K-WallWash-HoneycombLouvre\_2309

Laboratory and Equipment

Laboratory Owner and Location	Factorylux, Greenhill Mills, Hebden Bridge, HX7 5QF, UK
Goniospectrometer System and Type	BaseSpion – Type C, horizontal
Spectrometer Manufacturer and Model	Ibsen Photonics, Denmark – Freedom VIS (Custom Viso)

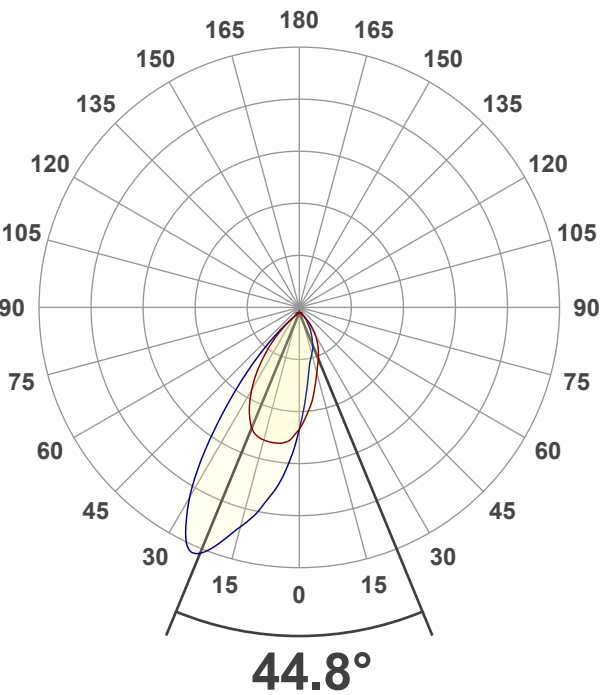
Measurement Conditions

Number of C-planes and Resolution	24 planes – 15°
γ (gamma)-Resolution	1.5°
Test Distance	1.50 m
Input Power, Power and Displ. Factors	16.0 W – PF 0.99 – DPF 0.99
Input RMS Voltage and Current	240 V – 0.068 A
Frequency of Input Power	50 Hz

Main Light Measurement Results

Output	535 lm
Efficiency	33 lm/W
Peak Intensity and Beam Angle	868 cd – 44.8°
Color Rendering Index	CRI 91.8

Light Intensity Distribution



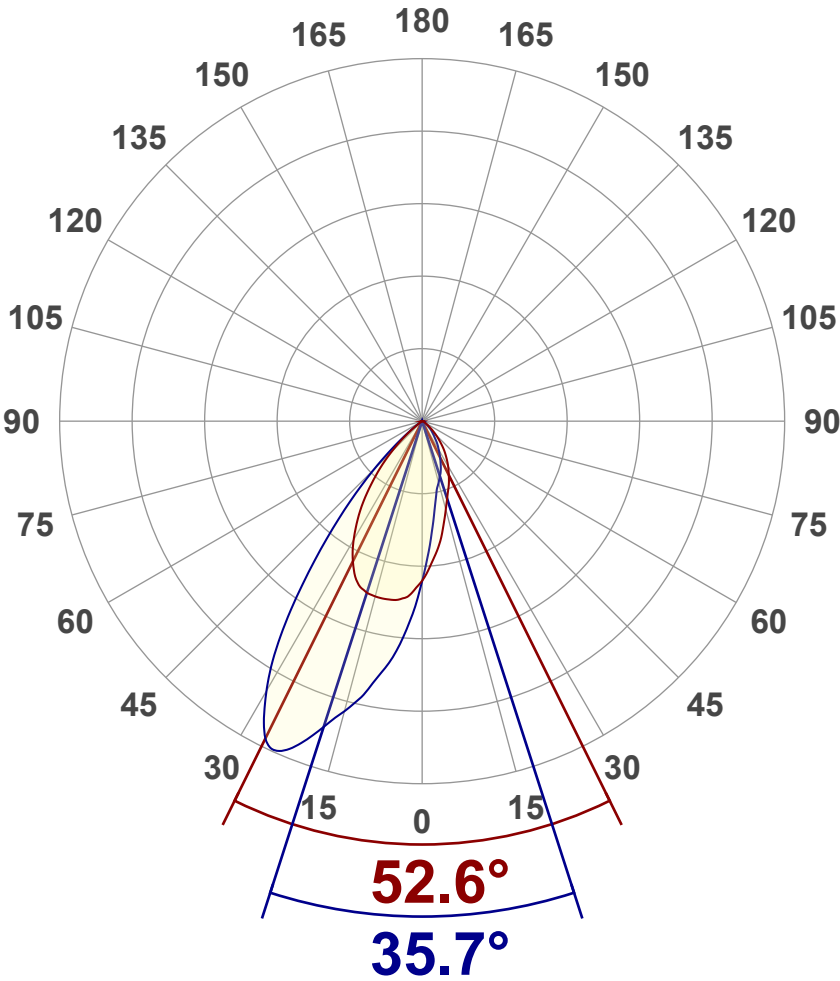
Goniophotometry Report

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Luminous Intensity diagram

Unit: 0-100% of peak intensity



Main Values

Output (total Lumen)	535 lm
Peak Intensity	868 cd
Beam Angle (50%)	44.8°
Beam Angle (90%)	35.7°
Beam Angle (10%)	57.8°

Cut-off Angle

Average 2,5%	107.3°
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Field Angle

Average 10%	86.9°
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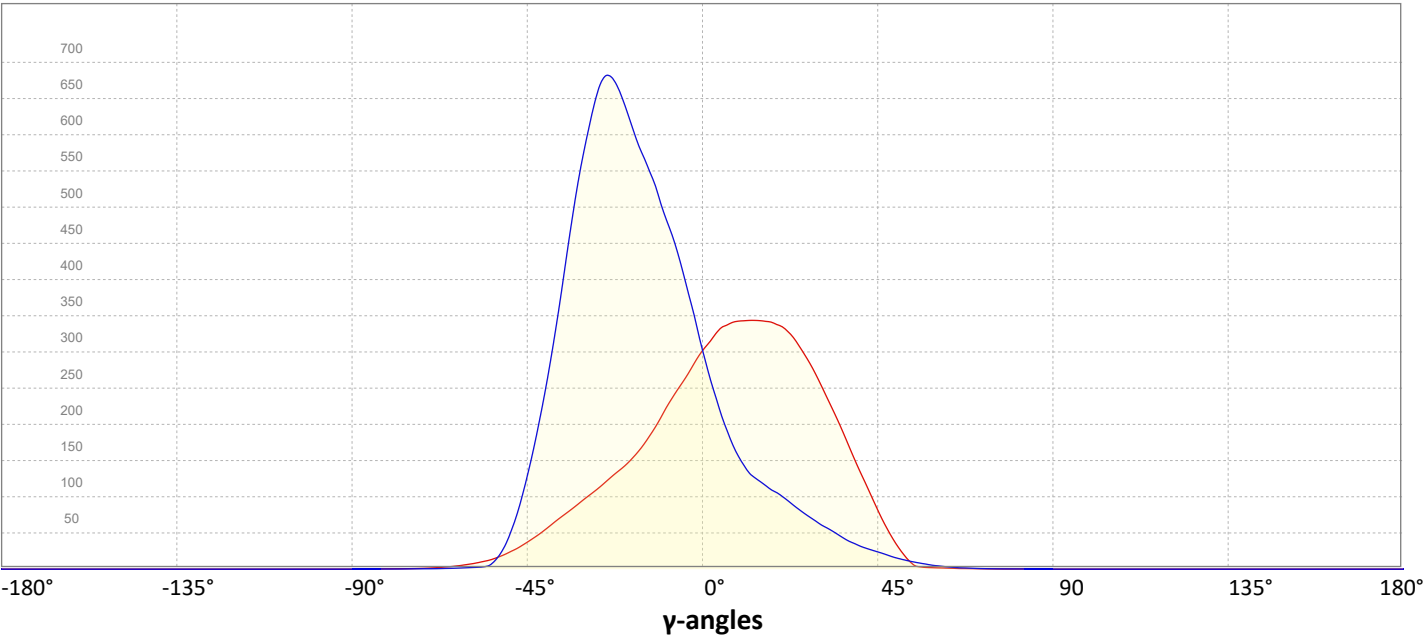
Intensity Ratio

In 120° cone	99.3%
In 90° cone	92.8%

C000-C180

C090-C270

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

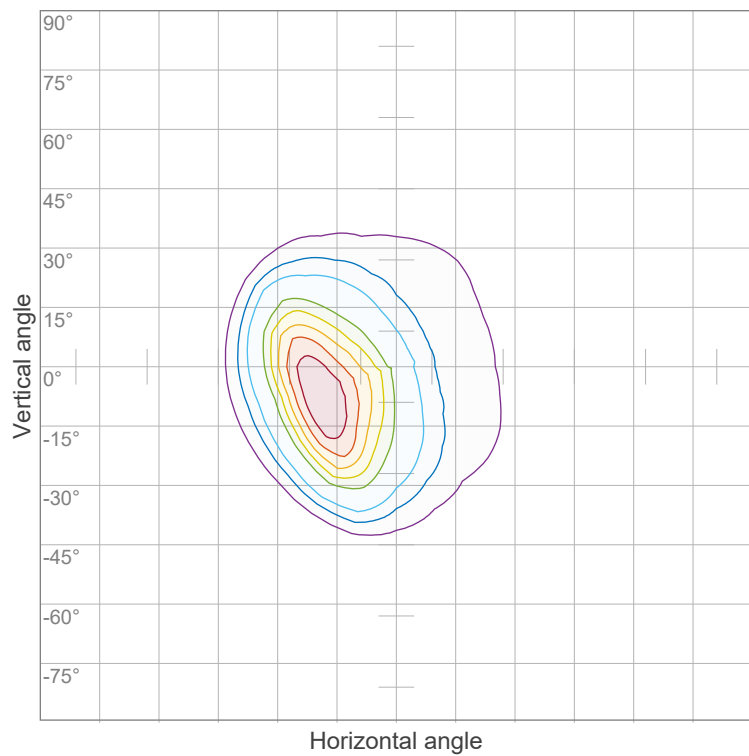


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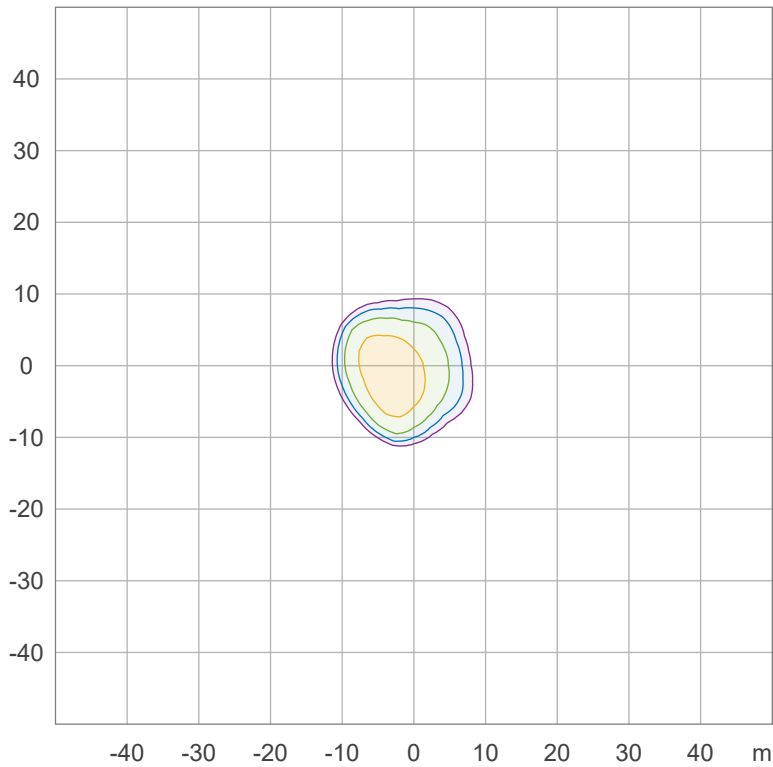
## Iso-intensity Diagram (Iso-candela)



90 %	780.2 cd
80 %	693.5 cd
70 %	606.8 cd
60 %	520.1 cd
50 %	433.4 cd
40 %	346.7 cd
30 %	260.1 cd
20 %	173.4 cd
10 %	86.7 cd

Peak intensity: 866.9 cd  
Number of c-planes: 24

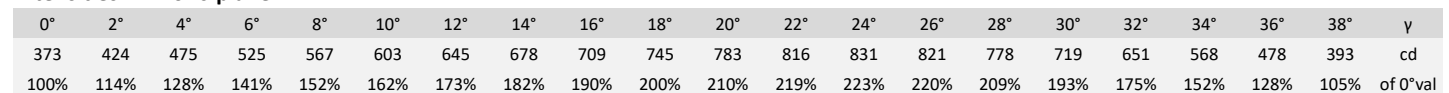
## Iso-illuminance Diagram (Iso-lux)



50.0 %	3.5 lx
30.0 %	2.1 lx
10.0 %	0.7 lx
5.0 %	0.4 lx
3.0 %	0.2 lx

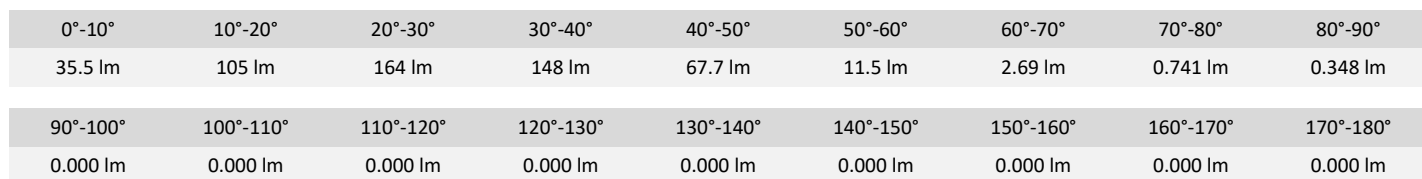
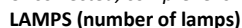
Peak illuminance: 7.1 lx  
Mounting height: 10.0 m  
Number of c-planes: 24

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Outdoor Light Planning

Lumen per Zone

Zone (γ)	Lumen	% Total
0-10°	35 lm	6.6%
10-20°	105 lm	19.7%
20-30°	164 lm	30.6%
30-40°	148 lm	27.6%
40-50°	68 lm	12.6%
50-60°	12 lm	2.2%
60-70°	3 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	535 lm	100.0%

Intensity peaks

Max intensity	868 cd
Intensity, 90°	0 cd
Intensity, 0°	373 cd

Zonal Lumen summary

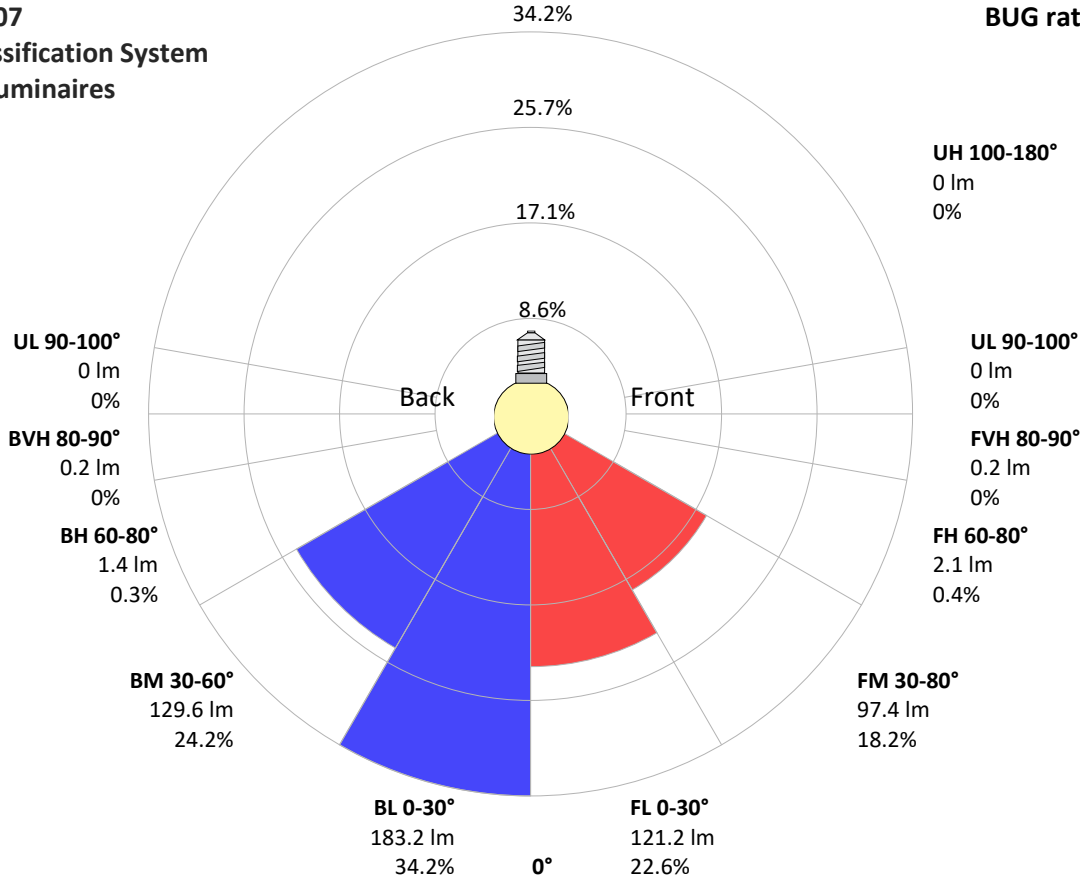
Zone (γ)	Lumen	% Total
0-30°	305 lm	56.9%
0-40°	452 lm	84.5%
0-60°	531 lm	99.3%
60-90°	4 lm	0.7%
70-100°	1 lm	0.2%
90-120°	0 lm	0.0%
0-90°	535 lm	100.0%
90-180°	0 lm	0.0%
0-180°	535 lm	100.0%

BUG rating

	Lumen	% Total
<b>Forward light</b>		
Low(0-30°)	121 lm	22.6%
Medium(30-60°)	97 lm	18.2%
High(60-80°)	2 lm	0.4%
Very high(80-90°)	0 lm	0.0%
<b>Back light</b>		
Low(0-30°)	183 lm	34.2%
Medium(30-60°)	130 lm	24.2%
High(60-80°)	1 lm	0.3%
Very high(80-90°)	0 lm	0.0%
<b>Uplight</b>		
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



# Goniophotometry Report

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## Power Details

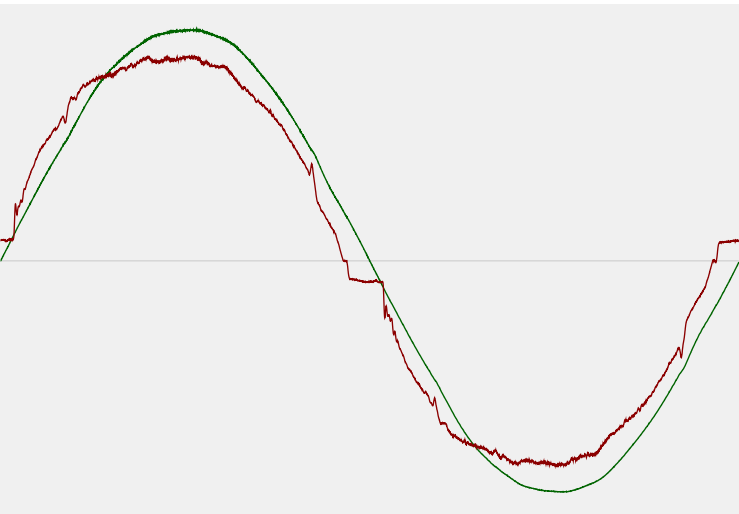
### Input Power

Power feed to light source	16.0 W
Frequency of input power	50 Hz
RMS Input voltage feed, $V_{RMS}$	240 V
RMS Input current feed, $I_{RMS}$	0.068 A
Volt-Ampere or apparent power = $V_{RMS} * I_{RMS}$	16.24 VA
Displacement factor of AC power feed	0.99
Power factor of AC current feed	0.99
Total harmonic distortion of the current	6.55%
Total harmonic distortion of the voltage	1.09%

### Efficiency

Radiated power efficiency	12.2%
<div><div></div></div>	
Lumen efficiency	33 lm/W
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### Input Power Curve

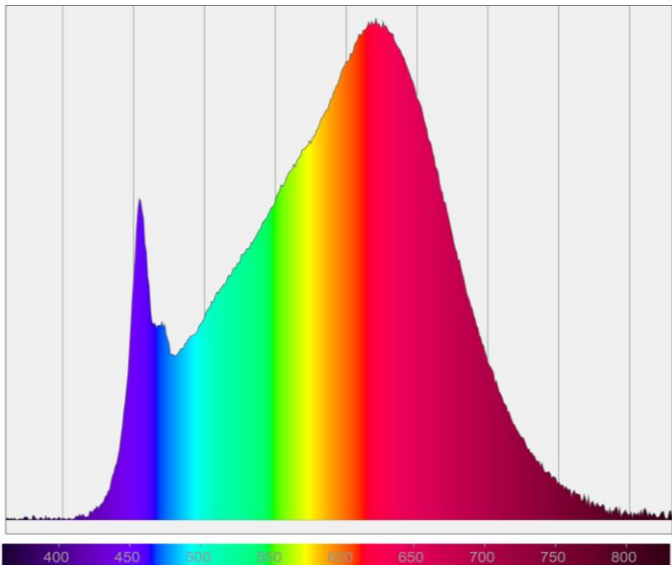




Color Measurements

Correlated Color Temperature	CCT = 3000 K
Color Rendering TM30-18	R <sub>f</sub> 91.0 – R <sub>g</sub> 97.7
Color Shift, CIE duv	Duv ±0.0003

Spectral distribution



Color details

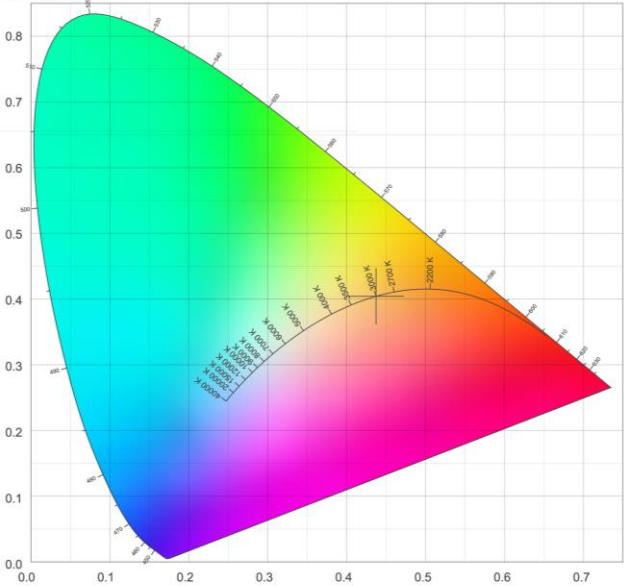
Correlated Color Temperature	CCT = 3000 K	Color coordinates CIE 1931	(x;y) = (0.437;0.404)
Color Rendering Index	CRI 94.1	Color coordinate CIEs 1960	(u;v) = (0.251;0.348)
Color Rendering Index, R9 (red component)	R9 = 68.6	Color deviation from BBL	Duv = ±0.0003
Color Rendering TM30-18	R <sub>f</sub> 91.0 – R <sub>g</sub> 97.7	Color coordinate CIEs 1976 (CIELUV)	(u';v') = (0.251;0.251)
Color Quality Scale	CQS = 91.8		

Goniophotometry Report

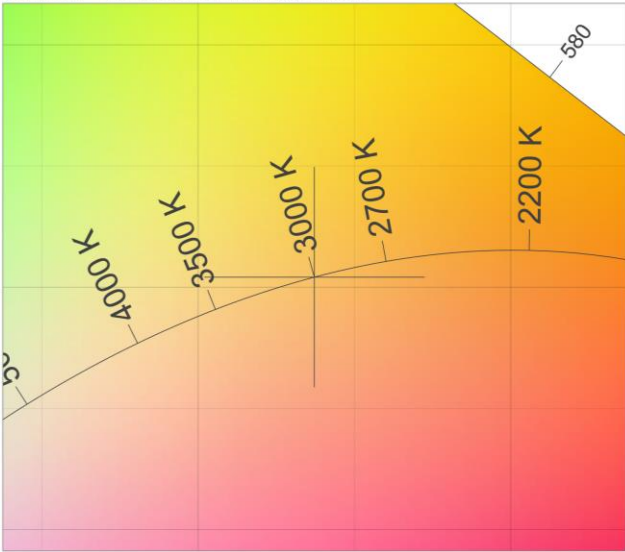
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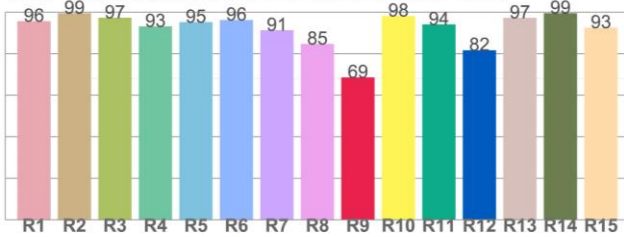
CIE 1931



CIE 1931 – zoomed on Planckian locus



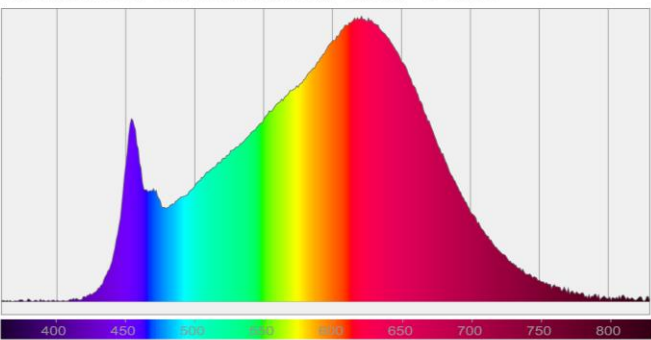
Color Rendering Index per reference color (CIE 1995)



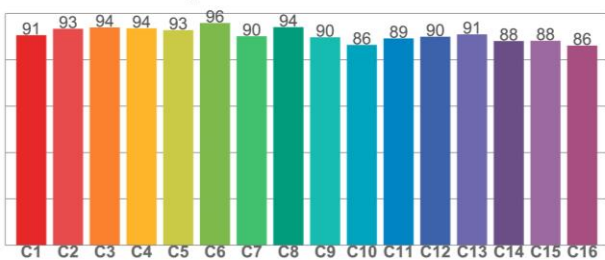
CRI R values, only R1-R8 are used to calculate final CRI value

R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
95.7	99.5	97.3	93.1	95.2	96.2	91.3	84.6	68.6	98.2	94.1	81.6	97.2	99.5	92.5

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



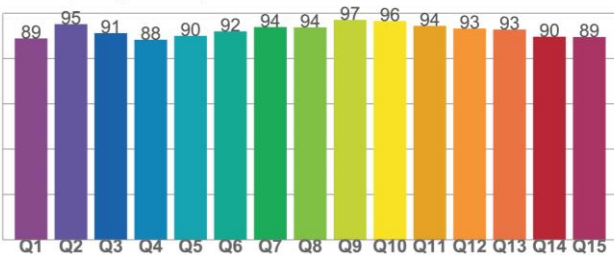
TM30-18 Rf-values per hue bin



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	93.9	93.6	92.8	95.9	90.1	94.0	89.7	86.4	89.2	89.9	90.9	88.1	88.2	86.1

Color Quality Scale by reference color



CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
88.8	95.1	91.2	88.2	89.9	91.9	93.8	93.7	97.0	96.5	94.4	93.2	92.8	89.6	89.5