

Tested Light Source - 1_PHOT_SKIN+BONES-4050lmChip-2700K-WallWash_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°

2°

1.50 m

40.7 W – PF 0.97 – DPF 0.97

243 V – 0.173 A

49.9 Hz

Main Light Measurement Results

Output

Efficiency

Peak Intensity and Beam Angle

Color Rendering Index

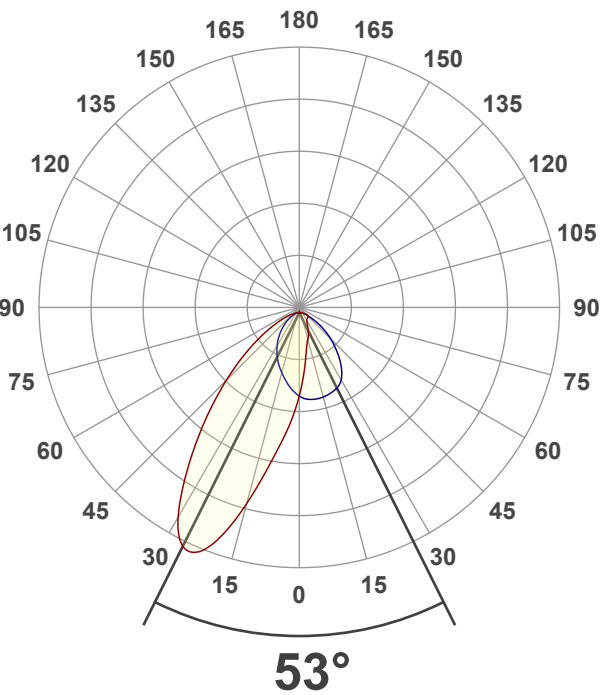
3169 lm

78 lm/W

3088 cd – 53°

CRI 91.3

Light Intensity Distribution



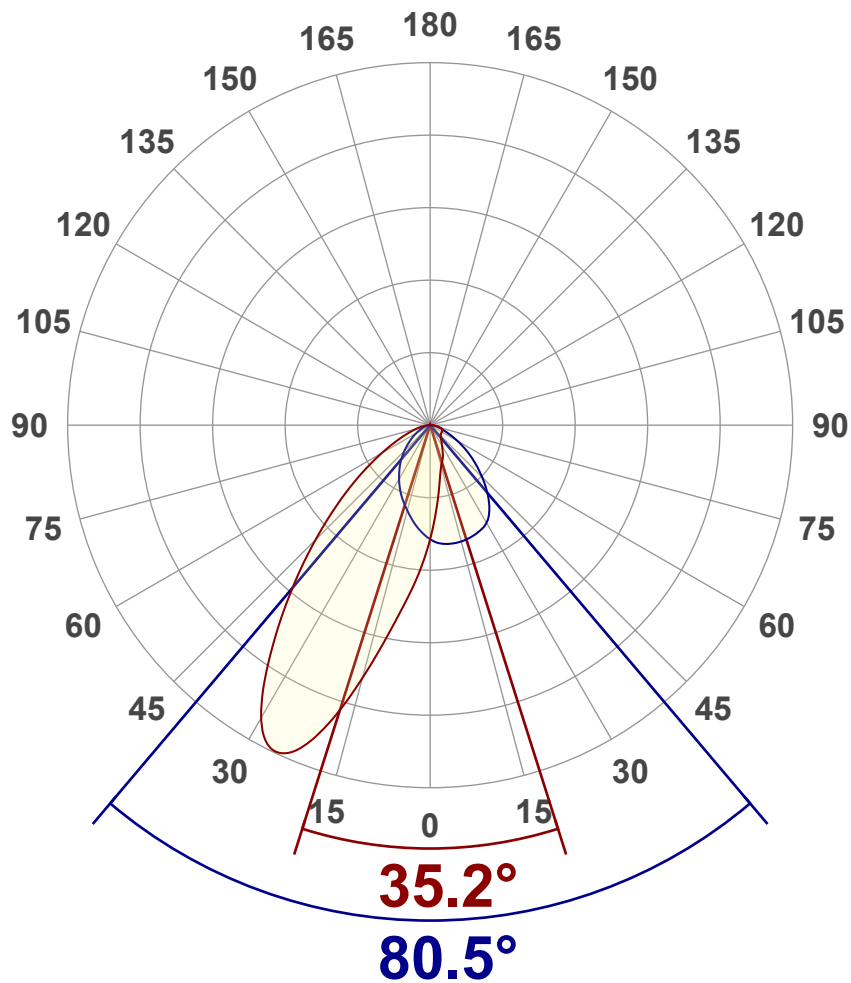
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Luminous Intensity diagram

Unit: 0-100% of peak intensity



Main Values

Output (total Lumen)	3169 lm
Peak Intensity	3088 cd
Beam Angle (50%)	53°
Beam Angle (90%)	80.5°
Beam Angle (10%)	34.9°

Cut-off Angle

Average 2,5%	157.7°
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Field Angle

Average 10%	108.7°
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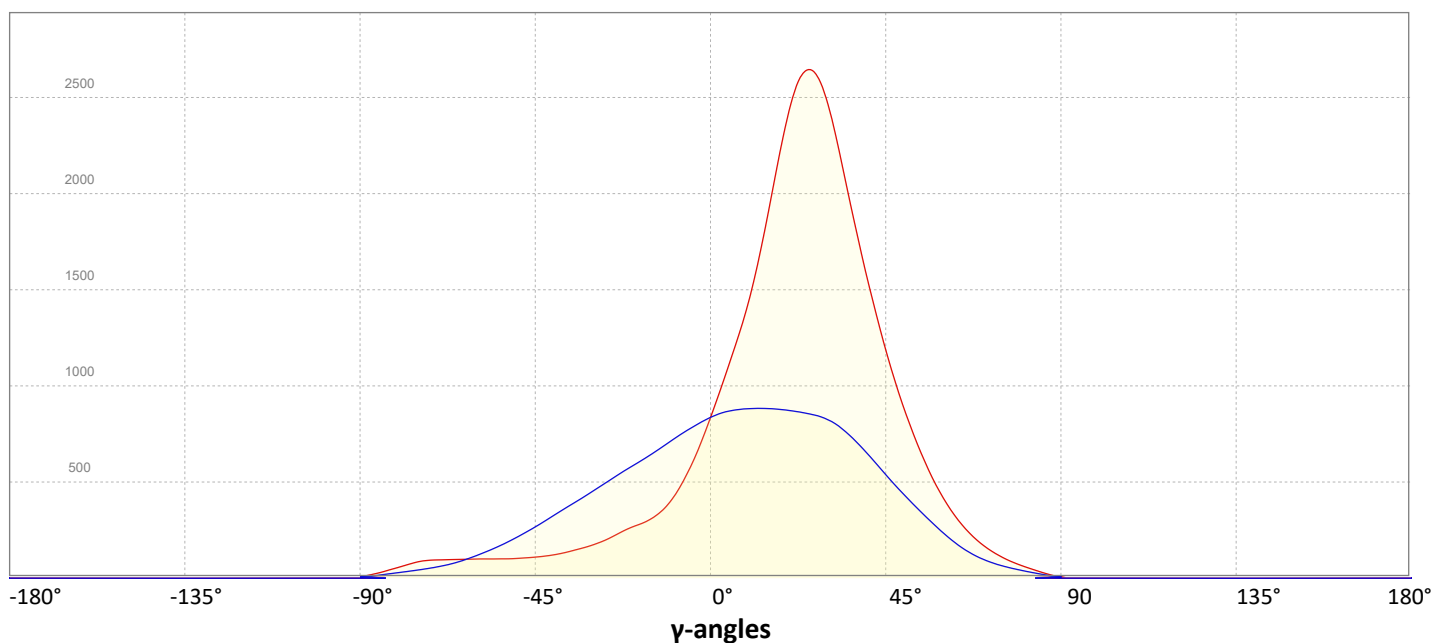
Intensity Ratio

In 120° cone	87.3%
In 90° cone	63.9%

C000-C180

C090-C270

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

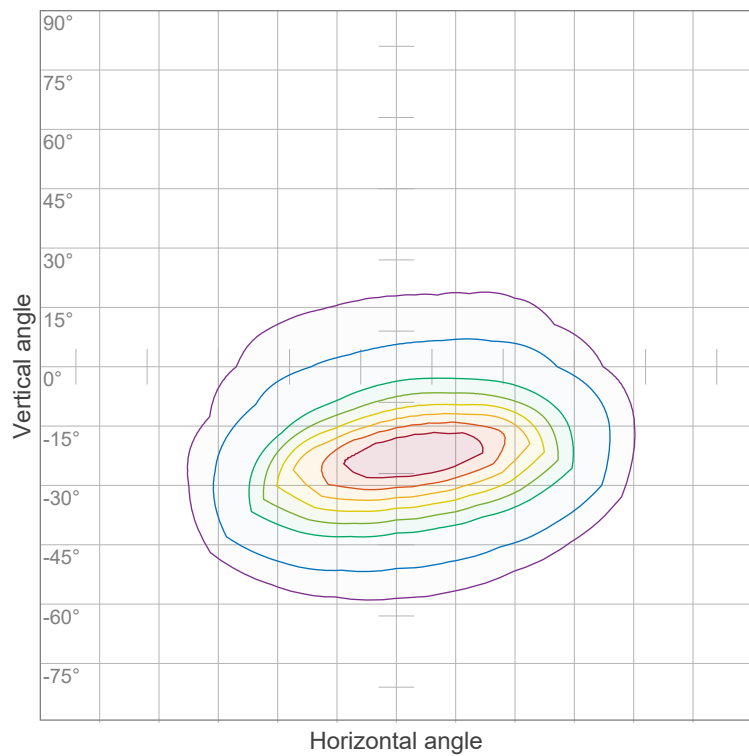


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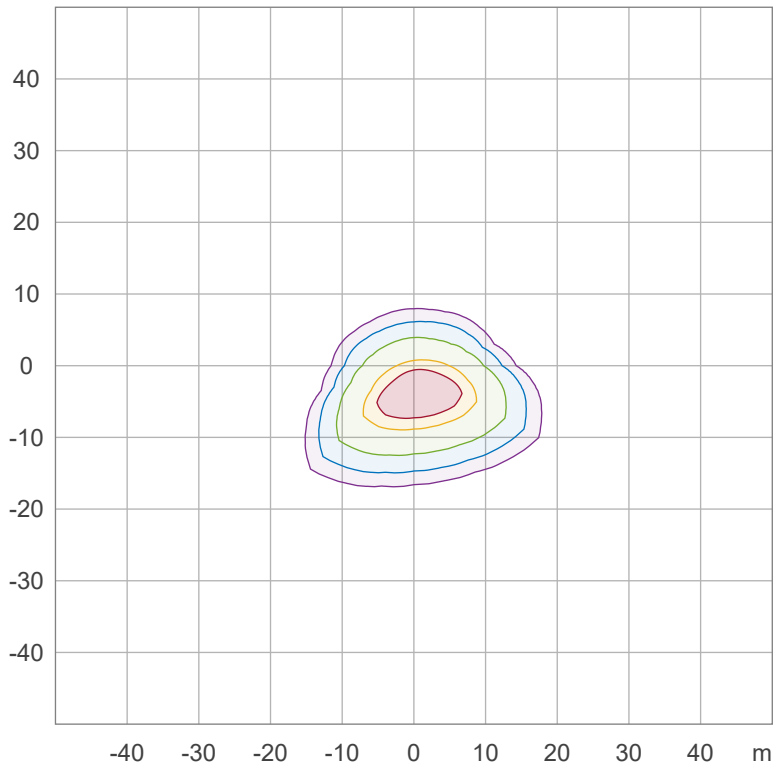
Iso-intensity Diagram (Iso-candela)



90 %	2777.7 cd
80 %	2469.1 cd
70 %	2160.5 cd
60 %	1851.8 cd
50 %	1543.2 cd
40 %	1234.6 cd
30 %	925.9 cd
20 %	617.3 cd
10 %	308.6 cd

Peak intensity: 3086.4 cd
Number of c-planes: 24

Iso-illuminance Diagram (Iso-lux)



50.0 %	11.8 lx
30.0 %	7.1 lx
10.0 %	2.4 lx
5.0 %	1.2 lx
3.0 %	0.7 lx

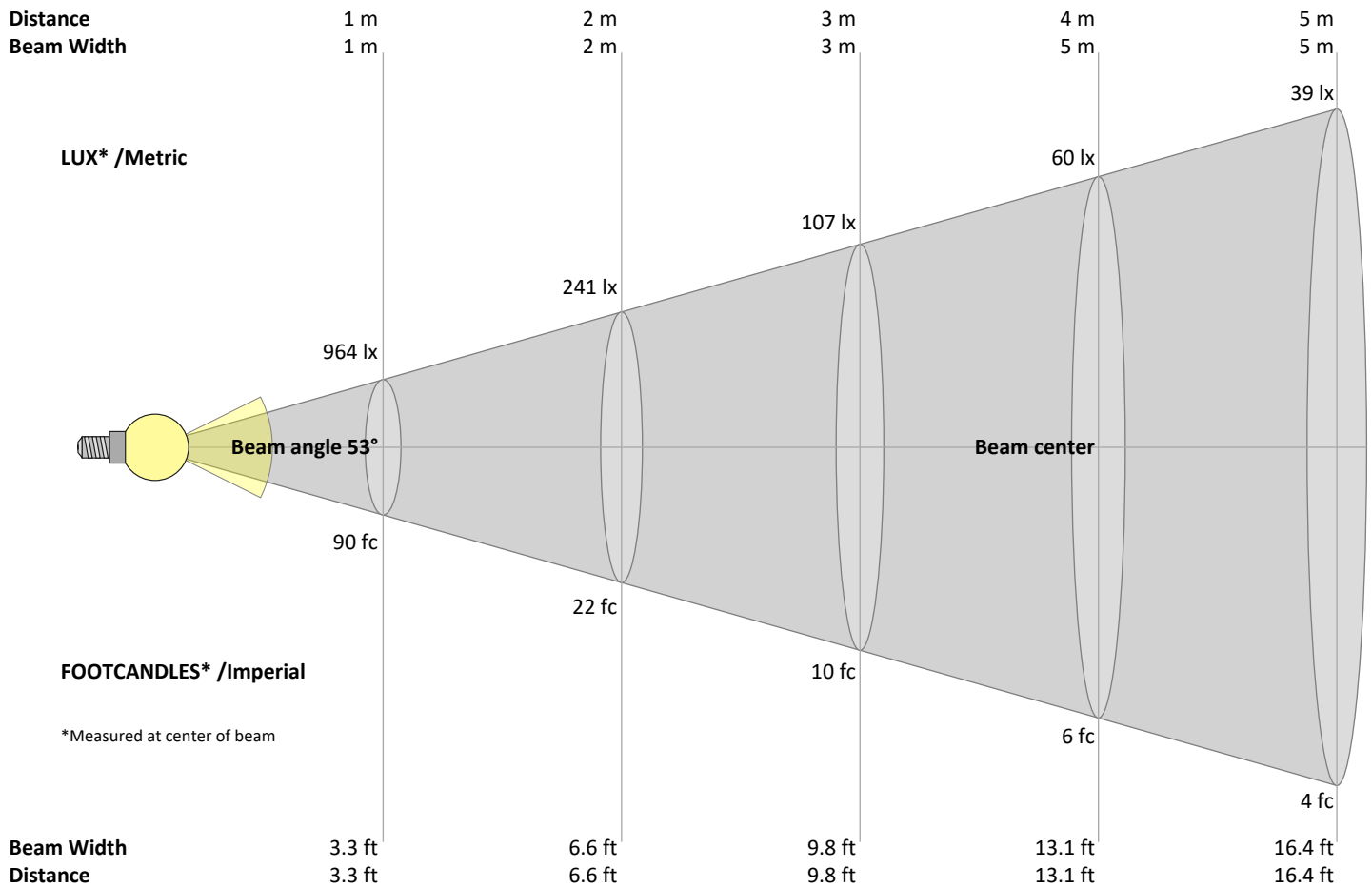
Peak illuminance: 23.7 lx
Mounting height: 10.0 m
Number of c-planes: 24

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Beam Details



Beam intensities from 1 – 20 m

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	m
3.3	6.6	9.8	13.1	16.4	19.7	23	26.2	29.5	32.8	36.1	39.4	42.7	45.9	49.2	52.5	55.8	59.1	62.3	65.6	ft
964	241	107	60	39	27	20	15	12	10	8	7	6	5	4	4	3	3	3	2	lux
89.6	22.4	10	5.6	3.6	2.5	1.8	1.4	1.1	0.9	0.7	0.6	0.5	0.5	0.4	0.3	0.3	0.3	0.2	0.2	fc

Intensities in 0° c-plane

0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°	95°	γ
964	676	470	361	308	251	201	168	141	126	118	115	115	112	109	98	66	33	9	0	cd
100%	70%	49%	37%	32%	26%	21%	17%	15%	13%	12%	12%	12%	12%	11%	10%	7%	3%	1%	0%	of 0°val

Intensities in 90° c-plane

0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°	95°	γ
964	1003	1017	1017	1007	988	950	871	755	622	494	376	268	177	115	74	46	24	7	0	cd
100%	104%	106%	106%	104%	102%	99%	90%	78%	64%	51%	39%	28%	18%	12%	8%	5%	2%	1%	0%	of 0°val

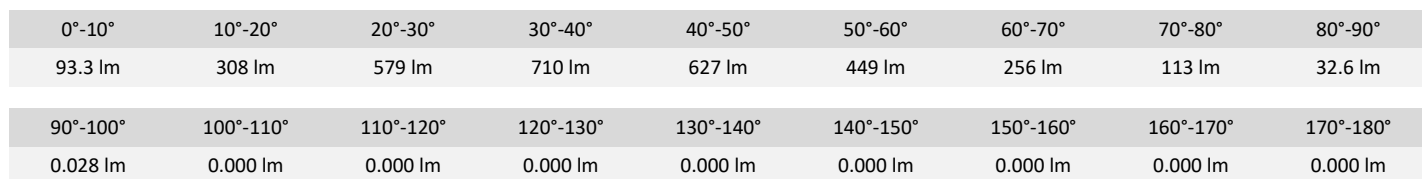
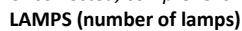
Intensities in 180° c-plane

0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°	95°	γ
964	1300	1682	2214	2783	3046	2856	2349	1824	1372	1000	702	474	310	198	125	75	36	6	0	cd
100%	135%	174%	230%	289%	316%	296%	244%	189%	142%	104%	73%	49%	32%	21%	13%	8%	4%	1%	0%	of 0°val

Intensities in 270° c-plane

0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°	95°	γ
964	901	826	747	674	601	526	452	380	308	243	185	137	96	69	49	33	18	4	0	cd
100%	93%	86%	77%	70%	62%	55%	47%	39%	32%	25%	19%	14%	10%	7%	5%	3%	2%	0%	0%	of 0°val

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Outdoor Light Planning

Lumen per Zone

Zone (°)	Lumen	% Total
0-10°	93 lm	2.9%
10-20°	308 lm	9.7%
20-30°	579 lm	18.3%
30-40°	710 lm	22.4%
40-50°	627 lm	19.8%
50-60°	449 lm	14.2%
60-70°	256 lm	8.1%
70-80°	113 lm	3.6%
80-90°	33 lm	1.0%
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	3169 lm	100.0%

Intensity peaks

Max intensity	3088 cd
Intensity, 90°	9 cd
Intensity, 0°	964 cd

Zonal Lumen summary

Zone (°)	Lumen	% Total
0-30°	981 lm	30.9%
0-40°	1691 lm	53.3%
0-60°	2767 lm	87.3%
60-90°	402 lm	12.7%
70-100°	146 lm	4.6%
90-120°	0 lm	0.0%
0-90°	3169 lm	100.0%
90-180°	0 lm	0.0%
0-180°	3169 lm	100.0%

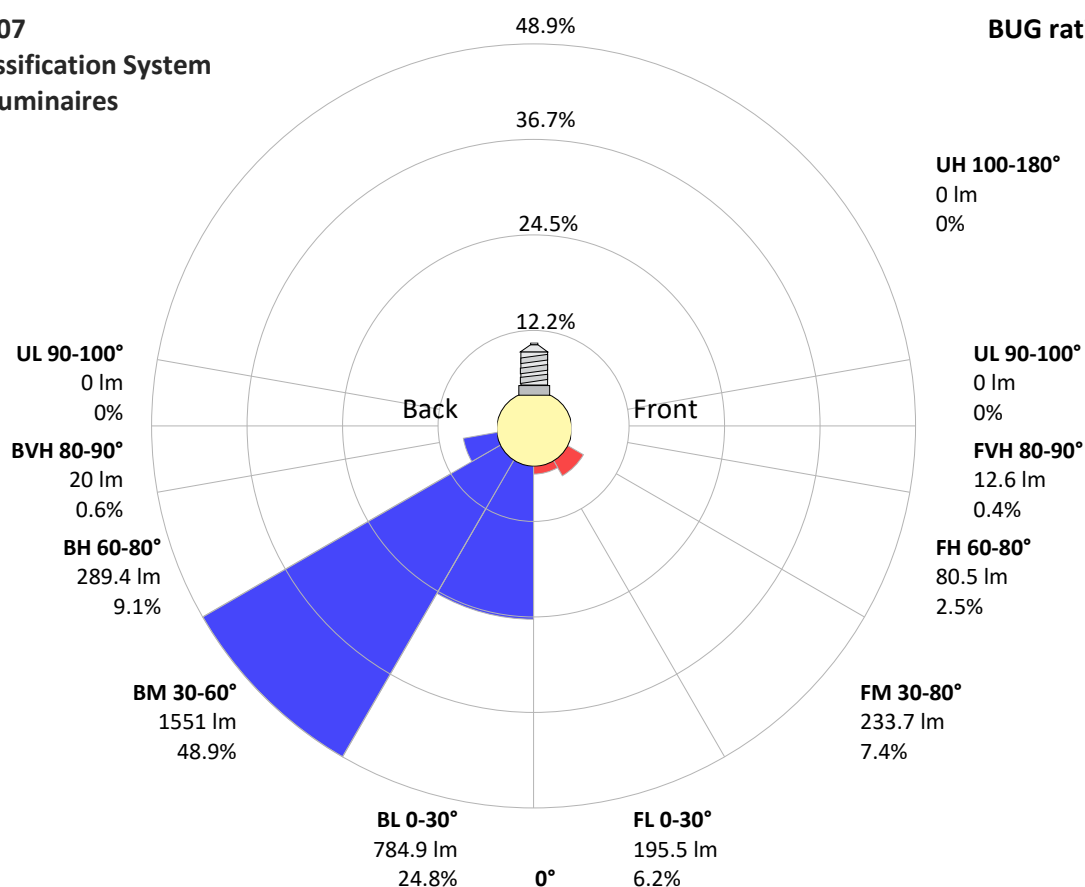
BUG rating

	Lumen	% Total
Forward light		
Low(0-30°)	196 lm	6.2%
Medium(30-60°)	234 lm	7.4%
High(60-80°)	80 lm	2.5%
Very high(80-90°)	13 lm	0.4%
Back light		
Low(0-30°)	785 lm	24.8%
Medium(30-60°)	1551 lm	48.9%
High(60-80°)	289 lm	9.1%
Very high(80-90°)	20 lm	0.6%
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 B2 U1 G1



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Power Details

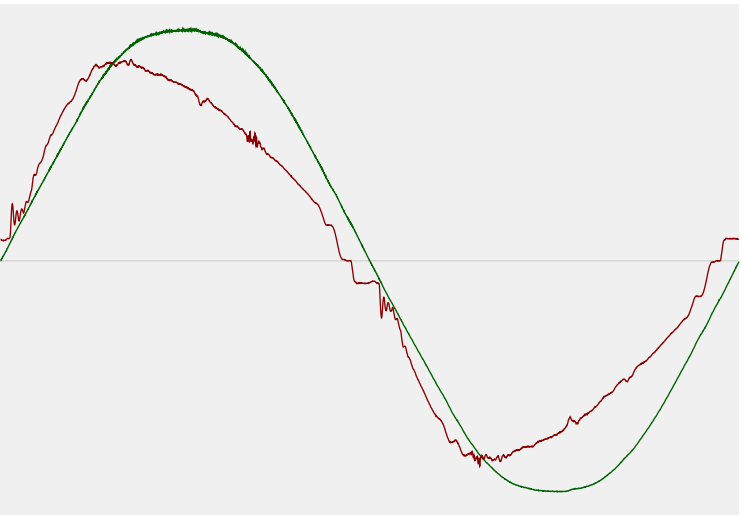
Input Power

Power feed to light source	40.7 W
Frequency of input power	49.9 Hz
RMS Input voltage feed, V_{RMS}	243 V
RMS Input current feed, I_{RMS}	0.173 A
Volt-Ampere or apparent power = $V_{RMS} * I_{RMS}$	42.1 VA
Displacement factor of AC power feed	0.97
Power factor of AC current feed	0.97
Total harmonic distortion of the current	11.26%
Total harmonic distortion of the voltage	1.64%

Efficiency

Radiated power efficiency	28.2%
Lumen efficiency	78 lm/W

Input Power Curve



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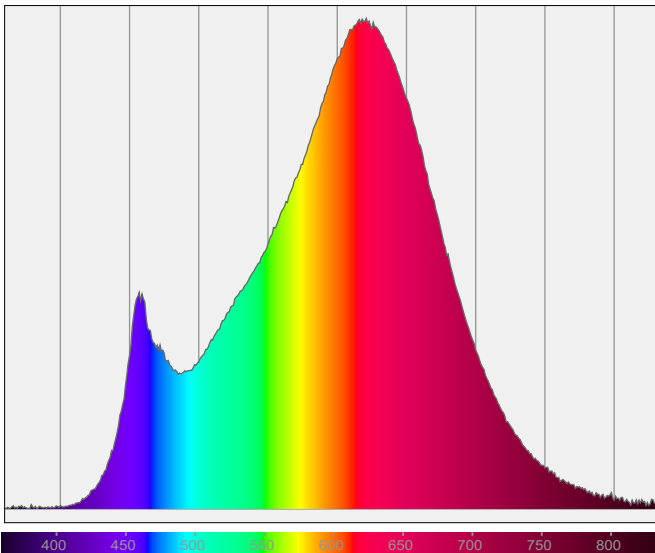
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Color Measurements

Correlated Color Temperature	CCT = 2700 K
Color Rendering TM30-18	R _f 90.6 — R _g 98.6
Color Shift, CIE duv	Duv ±0.0003

Spectral distribution



Color details

Correlated Color Temperature	CCT = 2700 K	Color coordinates CIE 1931	(x;y) = (0.460;0.411)
Color Rendering Index	CRI 91.3	Color coordinate CIEs 1960	(u;v) = (0.263;0.352)
Color Rendering Index, R9 (red component)	R9 = 57.8	Color deviation from BBL	Duv = ±0.0003
Color Rendering TM30-18	R _f 90.6 — R _g 98.6	Color coordinate CIEs 1976 (CIELUV)	(u';v') = (0.263;0.263)
Color Quality Scale	CQS = 88.9		

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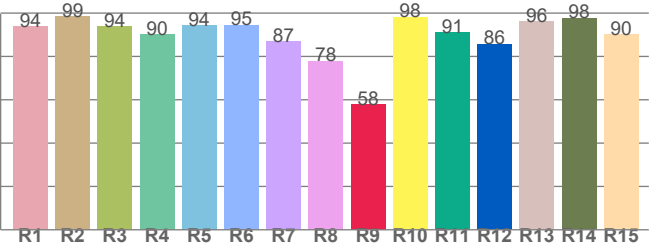
CIE 1931



CIE 1931 – zoomed on Planckian locus



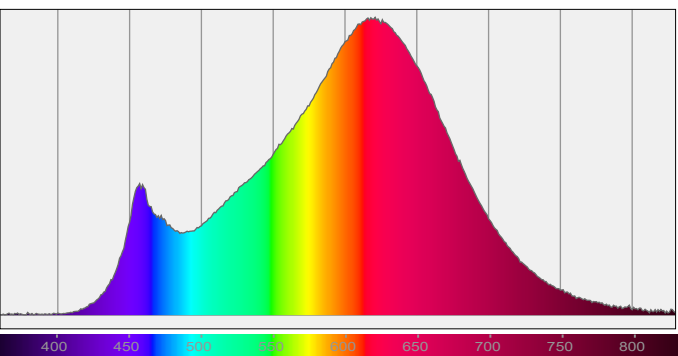
Color Rendering Index per reference color (CIE 1995)



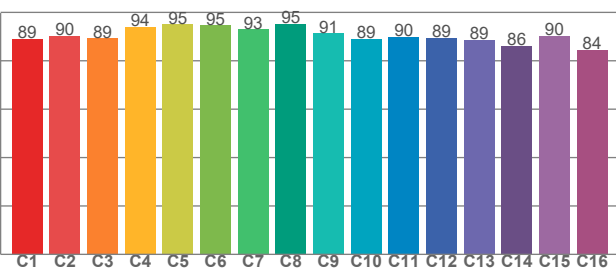
CRI R values, only R1-R8 are used to calculate final CRI value

R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
93.9	98.6	93.8	90.3	94.5	94.6	86.9	78.0	57.8	98.3	90.9	85.8	96.2	97.7	90.1

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



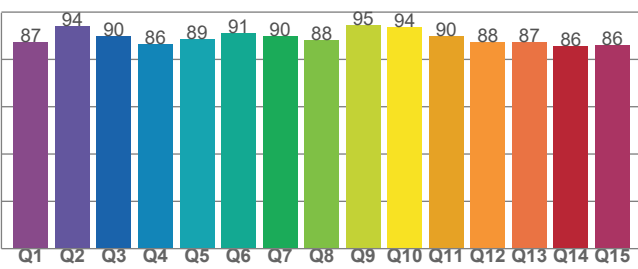
TM30-18 Rf-values per hue bin



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
88.9	90.3	89.2	94.1	95.0	94.5	92.9	95.2	91.3	88.9	89.9	89.4	88.7	86.1	90.3	84.5

Color Quality Scale by reference color



CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
87.1	94.0	89.8	86.5	88.7	91.2	89.7	88.3	94.6	93.5	90.0	87.5	87.1	85.8	86.0