

Photometric Data Sheet

Laboratory and Equipment

Test Lab
Spectrometer Manufacturer and Model
Measurement Date

Industrial Commercial Lighting - St. Louis, Missouri
LabSpion – Type C, horizontal
11/7/2022

Measurement Conditions

Tested c-planes
Tested Gamma Resolution
Input Power

16 planes – 22.5°
5°
164.6 W

Tested Light Source

Luminaire
Basic Luminous Shape
Manufacturer
Description

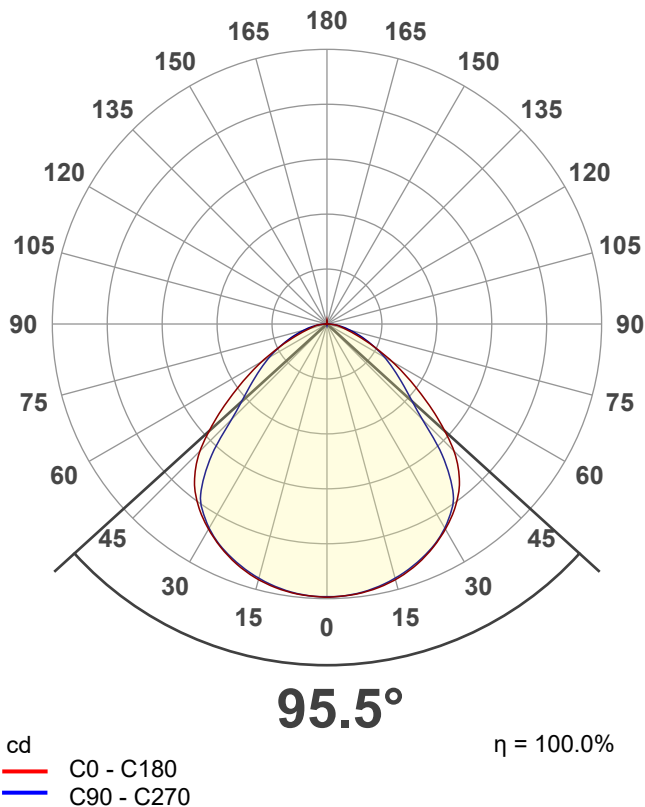
ICLH-50K165ML-P1WH
PANEL
Industrial Commercial Lighting
165W 2ft Linear High Bay LED Light

Main Light Measurement Results

Output – Total Lumen (Up% / Down%)
Efficiency
Peak Intensity
Correlated Color Temperature, CCT
Color Rendering Index
TM30
SDCM

22088 lm – 0.4% / 99.6%
134 lm/W
9434 cd
5342 K
CRI 84.4
83.4
5.1

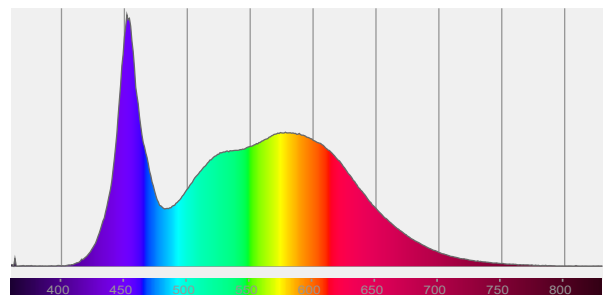
Polar Light Distribution Diagram



Product Photo

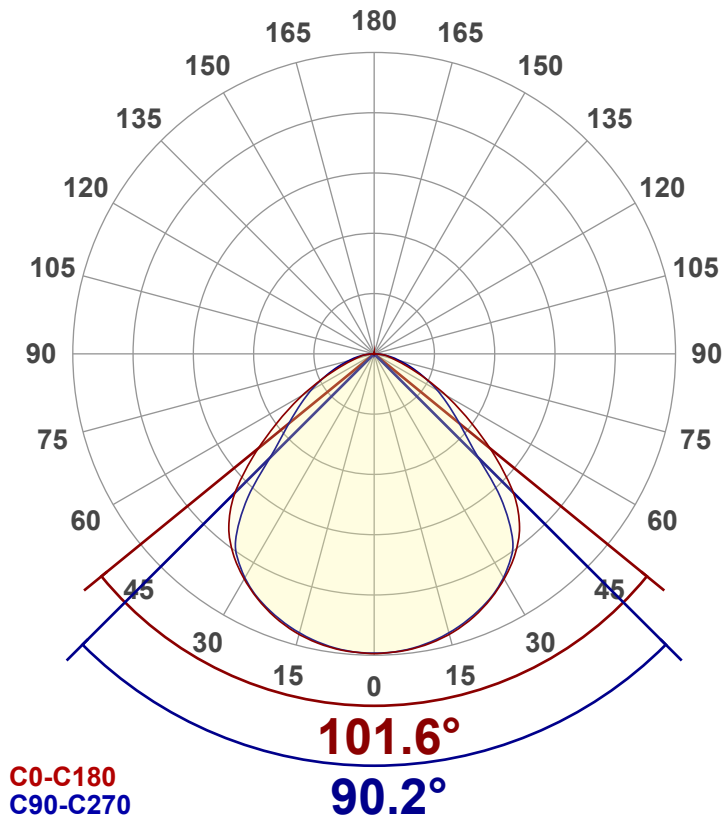


Spectral Power Distribution



Luminous Intensity Diagram

Unit: 0-100% of peak intensity



Main Values

Output (total Lumen)	22088 lm
Lumen Up% / Down%	0.4% / 99.6%
Peak Intensity	9434 cd
Beam Angle (50%-FWHM)	95.49°
Beam Angle - Horizontal	90.2°
Beam Angle - Vertical	101.6°

Cut-off Angle

Average 2.5%	171.1°
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Field Angle

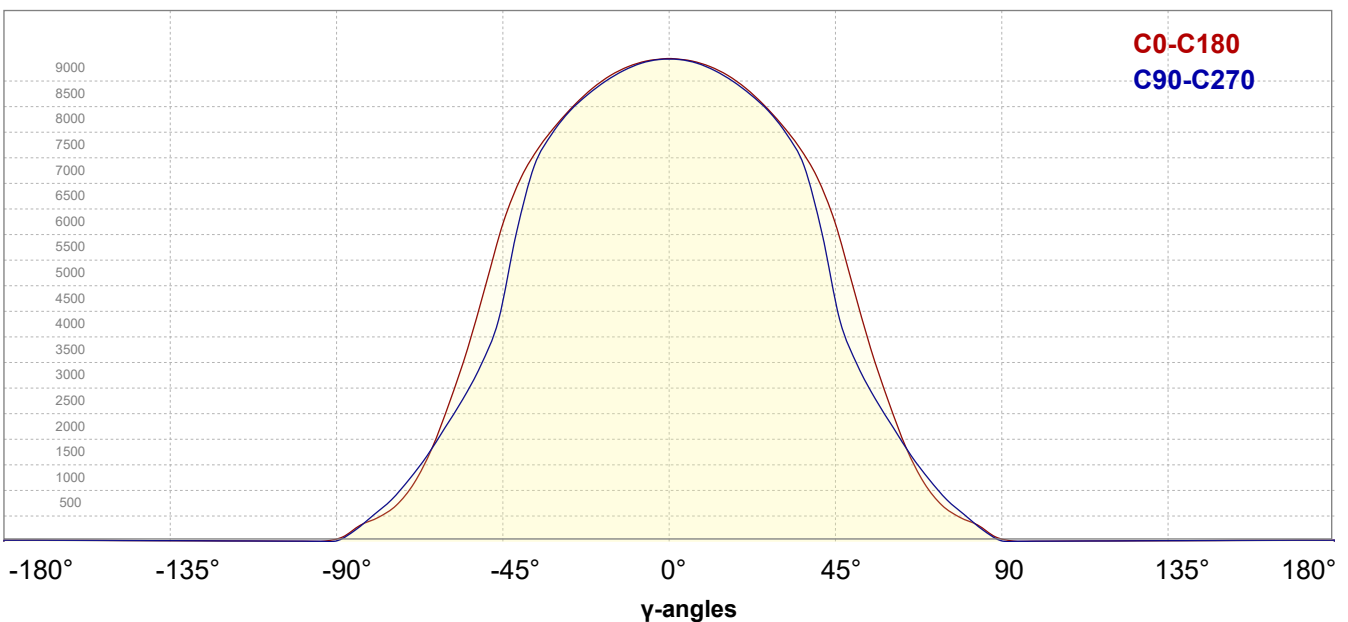
Average 10%	148°
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Intensity Ratio

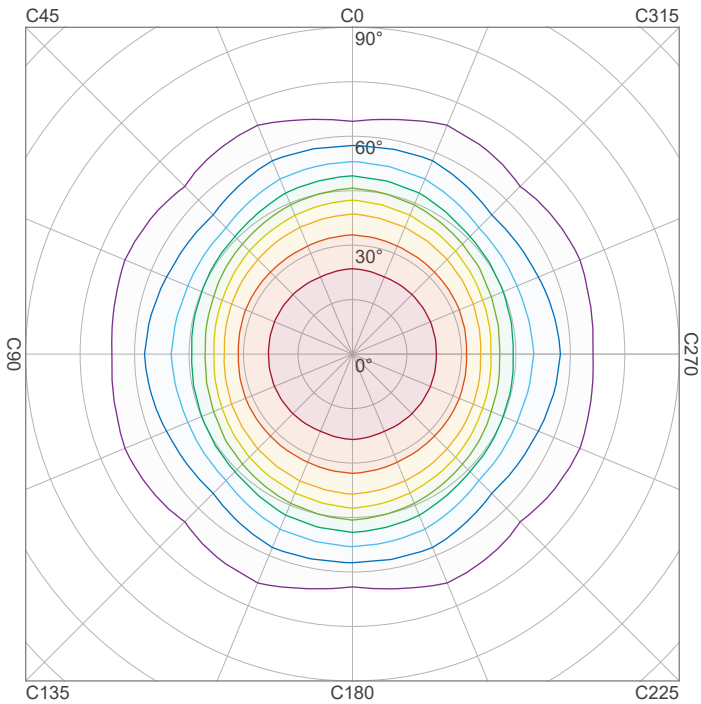
In 120° cone	86.6%
In 90° cone	65.4%

Linear Distribution Diagram

Intensity [cd]



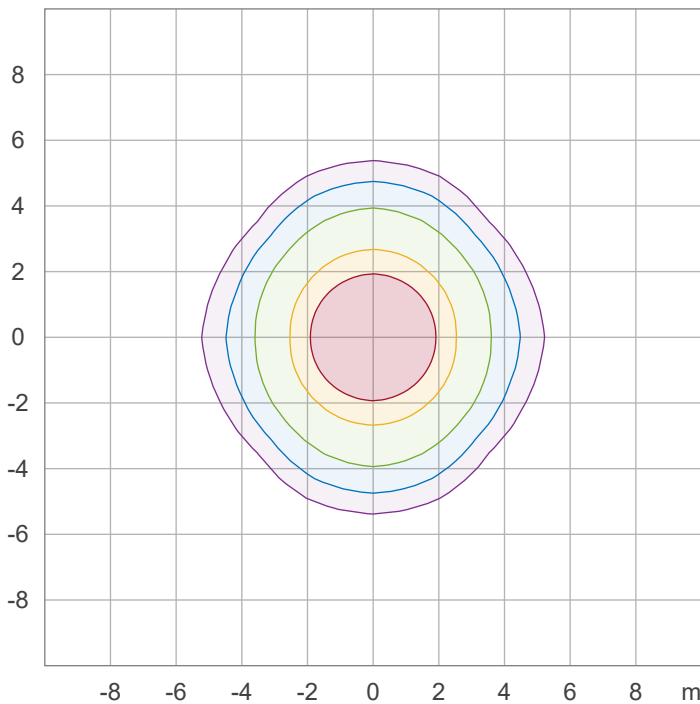
Iso-intensity Diagram (Iso-candela)



90 %	8491.0 cd
80 %	7547.6 cd
70 %	6604.1 cd
60 %	5660.7 cd
50 %	4717.2 cd
40 %	3773.8 cd
30 %	2830.3 cd
20 %	1886.9 cd
10 %	943.4 cd

Peak intensity: 9434.5 cd
 Number of c-planes: 16

Iso-illuminance Diagram (Iso-lux)



50.0 %	523.9 lx
30.0 %	314.3 lx
10.0 %	104.8 lx
5.0 %	52.4 lx
3.0 %	31.4 lx

Peak illuminance: 1047.8 lx
 Mounting height: 3.0 m
 Number of c-planes: 16



Color Details

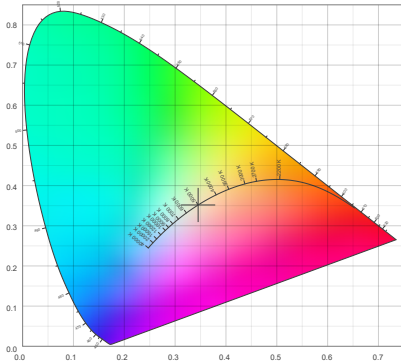
Correlated Color Temperature, Measured
 Color Rendering Index
 Color Rendering Index, R9 (red)
 Color Rendering TM30-18

CCT = 5342 K
 CRI 84.4
 R9 = 13.6
 Rf 83.4
 Rg 95.7

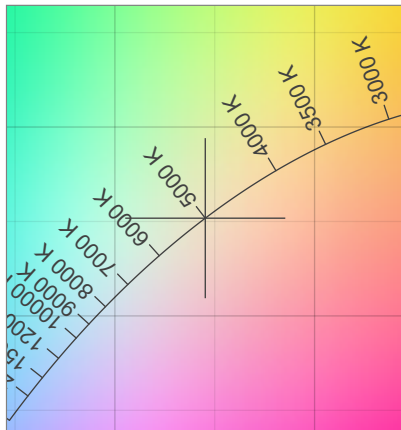
Color deviation from BBL
 Color coordinates CIE 1931
 Color coordinate CIEs 1960
 Color coordinate CIEs 1976
 Color Quality Scale

Duv = -0.0014
 (x;y) = (0.345;0.352)
 (u;v) = (0.211;0.323)
 (u';v') = (0.211;0.485)
 CQS = 80.2

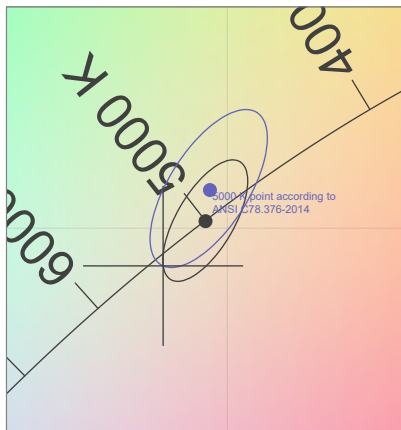
CIE 1931 Chromaticity Diagram



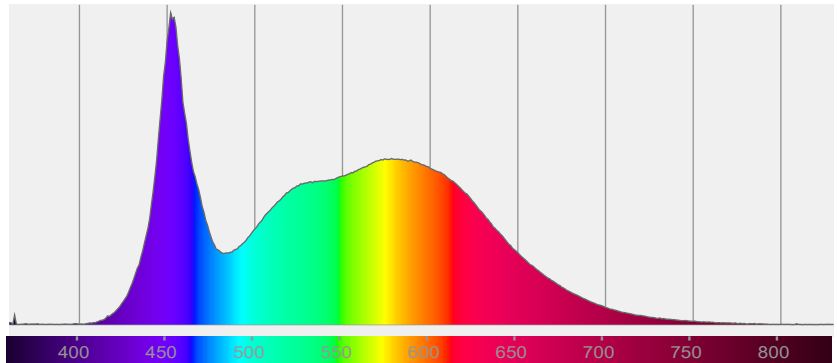
CIE 1931 Chromaticity - Zoomed



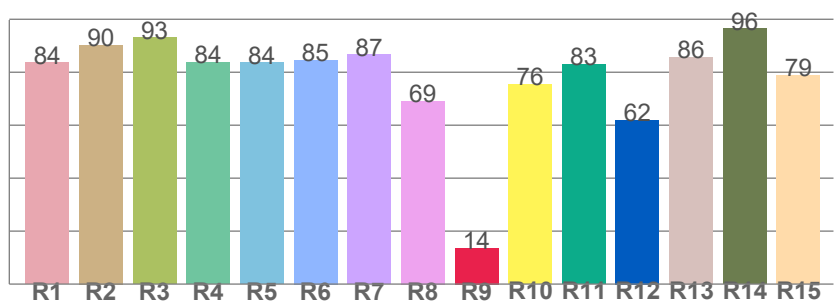
CIE 1931 Chromaticity - SDCM



Spectral Power Distribution



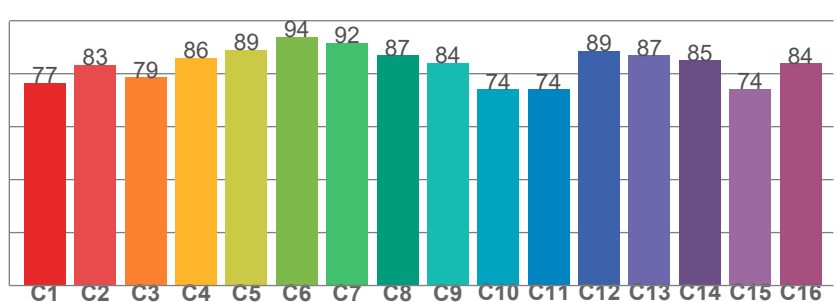
Color Rendering Index per Reference Color (CIE 1995)



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
83.6	90.3	93.0	83.8	83.7	84.6	86.7	69.1	13.6	75.5	83.0	61.9	85.8	96.5	78.9

TM30-18 Rf-values per Hue Bin



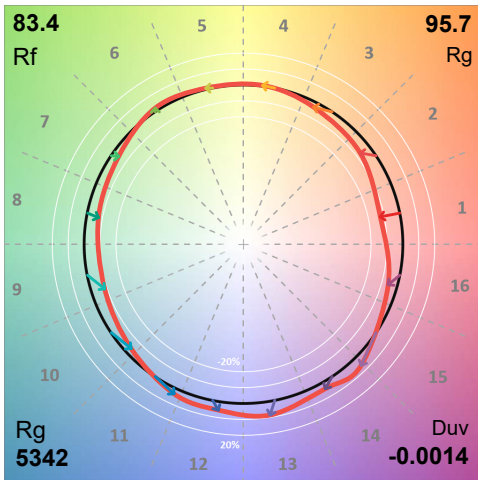
TM30-18 Rf-values per hue bin

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
76.5	83.4	78.7	86.1	89.1	93.9	91.7	86.9	84.2	74.1	74.0	88.7	87.0	85.1	74.3	84.1



Color details - ANSI/IES TM-30-18 Color Rendition Report

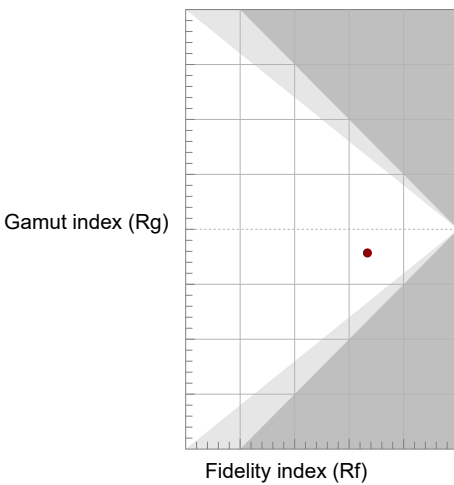
Color Vector Graphic



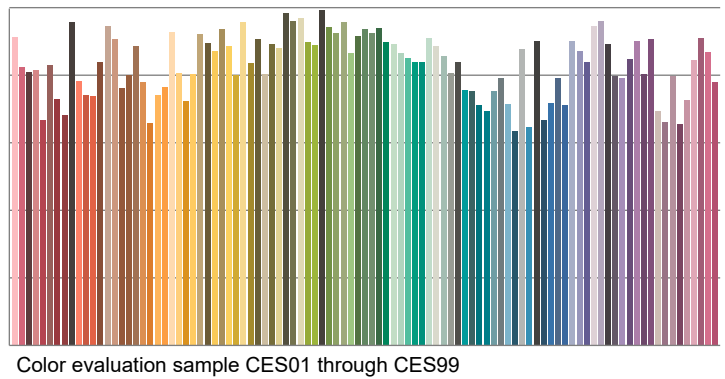
Color Distortion Graphic



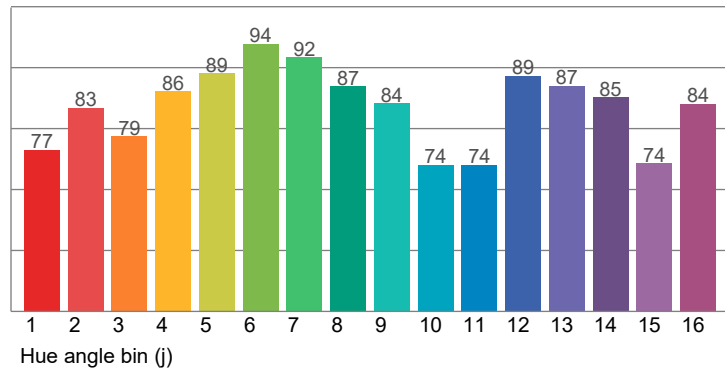
Gamut Index vs. Fidelity Index



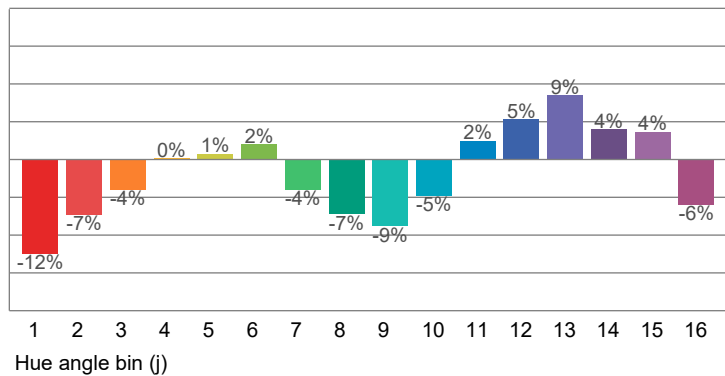
Color Rendition by Color Evaluation Sample (CES)



Local Color Fidelity (per hue bin)



Local Chroma Shift (per hue bin)

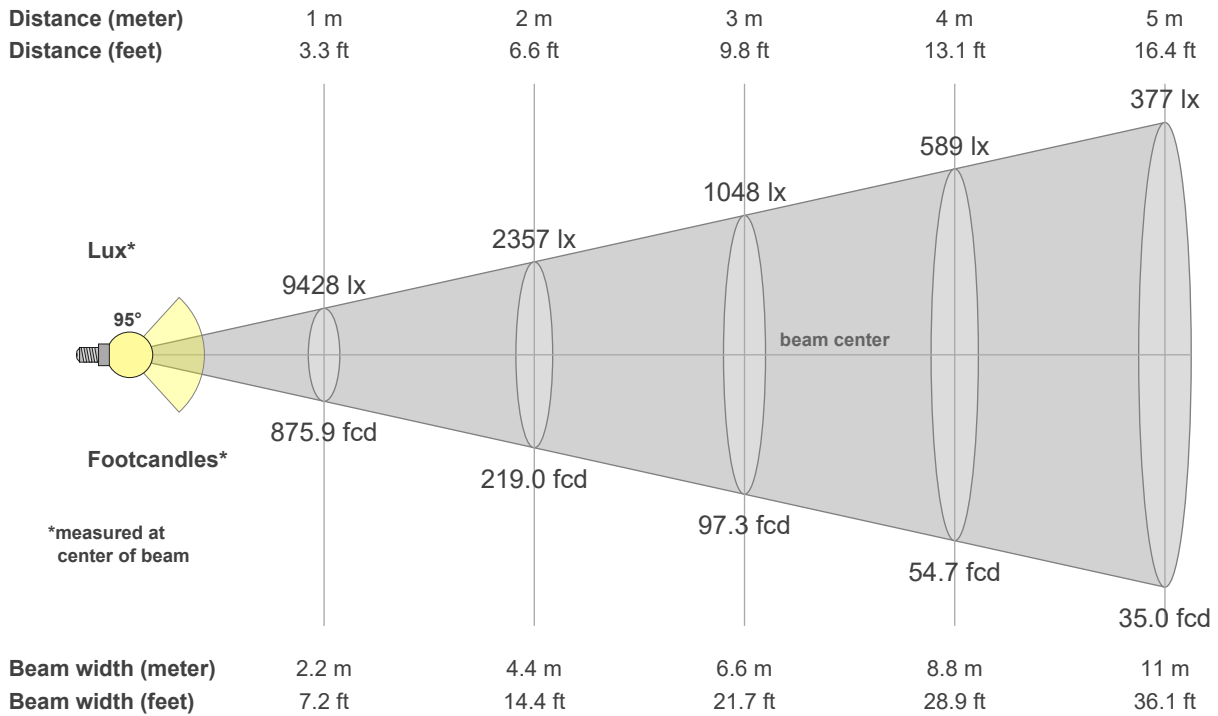


x 0.345
y 0.345
u' 0.211
v' 0.485

CIE	13.3-1995
Ra	84.4
R9	13.6

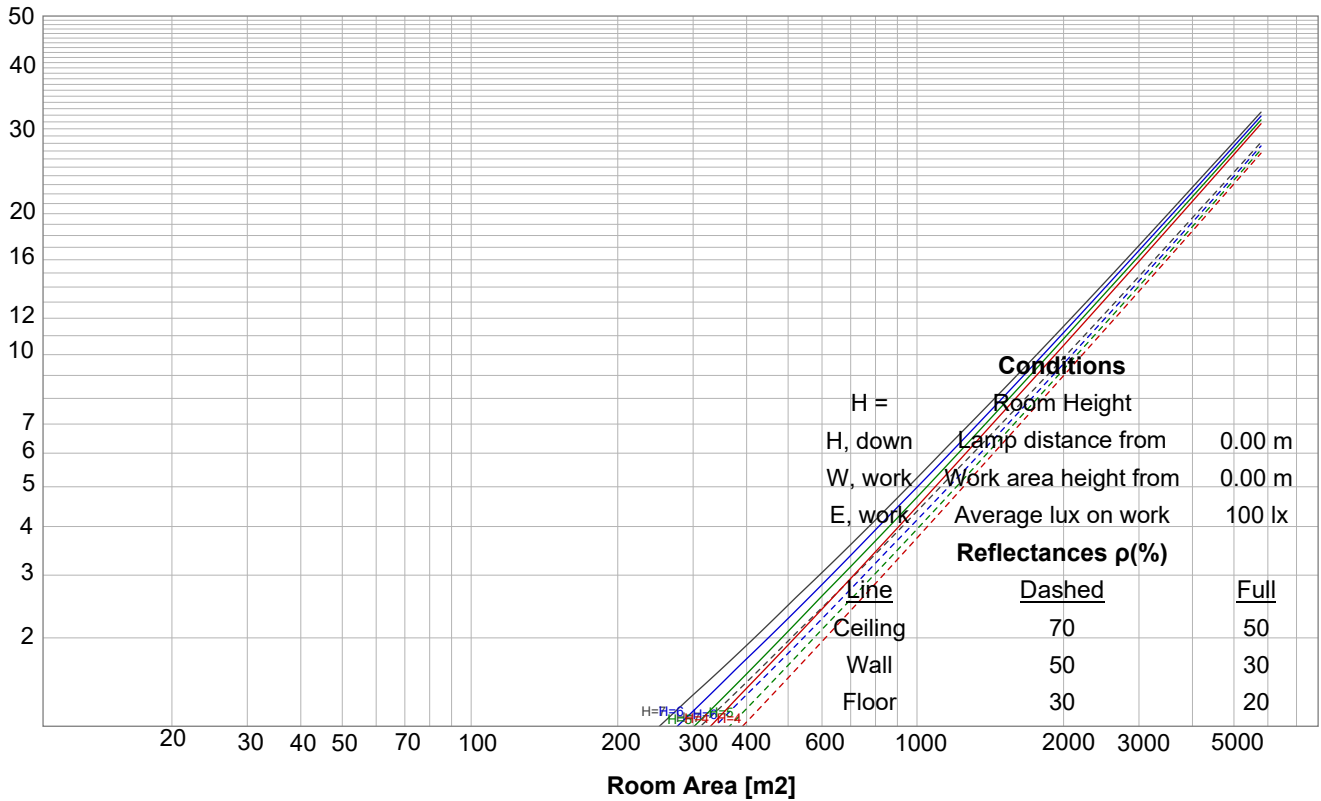


Beam Details



Luminaire budgetary diagram

LAMPS (number of lamps)



Intensity 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
9428	2357	1048	589	377	262	192	147	116	94	78	65	56	48	42	37	33	29	26	24	lux
875.9	219	97.3	54.7	35	24.3	17.9	13.7	10.8	8.8	7.2	6.1	5.2	4.5	3.9	3.4	3	2.7	2.4	2.2	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
9428	9401	9306	9140	8896	8574	8185	7724	7123	6203	4920	3670	2614	1707	1054	652	432	251	63	9	cd
100%	100%	99%	97%	94%	91%	87%	82%	76%	66%	52%	39%	28%	18%	11%	7%	5%	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
9428	9385	9273	9090	8844	8537	8126	7536	6392	4740	3622	2894	2301	1733	1248	828	518	222	20	7	cd
100%	100%	98%	96%	94%	91%	86%	80%	68%	50%	38%	31%	24%	18%	13%	9%	5%	2%	0%	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
9428	9401	9306	9140	8896	8574	8185	7724	7123	6203	4920	3670	2614	1707	1054	652	432	251	63	9	cd
100%	100%	99%	97%	94%	91%	87%	82%	76%	66%	52%	39%	28%	18%	11%	7%	5%	3%	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
9428	9385	9273	9090	8844	8537	8126	7536	6392	4740	3622	2894	2301	1733	1248	828	518	222	20	7	cd
100%	100%	98%	96%	94%	91%	86%	80%	68%	50%	38%	31%	24%	18%	13%	9%	5%	2%	0%	0%	of 0°val



UGR Table

Corrected, comprehensive UGR table according to 117-1995, S/H ratio=0.25

Reflectances		70	70	50	50	30	70	70	50	50	30
ρ Ceiling		70	70	50	50	30	70	70	50	50	30
ρ Walls		50	30	50	30	30	50	30	50	30	30
ρ Floor		20	20	20	20	20	20	20	20	20	20
Room size		Viewed Crosswise					Viewed Endwise				
H = mounting height above eye level		(Viewing direction orthogonal to lamp length axis)					(Viewing direction parallel to lamp length axis)				
	X Y										
2H	2H	26.3	27.4	26.5	27.7	27.9	25.4	26.5	25.6	26.8	27.0
	3H	27.0	28.1	27.4	28.4	28.6	26.3	27.4	26.7	27.7	27.9
	4H	27.2	28.3	27.6	28.6	28.8	26.7	27.8	27.1	28.1	28.3
	6H	27.5	28.5	27.8	28.7	29.1	27.1	28.1	27.4	28.4	28.7
	8H	27.6	28.5	27.9	28.8	29.2	27.2	28.1	27.6	28.5	28.9
	12H	27.6	28.5	28.0	28.9	29.3	27.3	28.2	27.7	28.5	29.0
4H	2H	26.4	27.5	26.8	27.8	28.0	25.6	26.7	26.0	27.0	27.2
	3H	27.4	28.3	27.8	28.7	29.1	26.9	27.8	27.2	28.1	28.6
	4H	27.8	28.7	28.3	29.1	29.6	27.4	28.2	27.9	28.7	29.2
	6H	28.2	29.0	28.7	29.4	29.8	27.9	28.7	28.4	29.1	29.5
	8H	28.4	29.1	28.9	29.5	29.9	28.1	28.8	28.6	29.2	29.6
	12H	28.5	29.1	29.0	29.5	30.0	28.2	28.8	28.7	29.2	29.7
8H	4H	28.0	28.8	28.6	29.1	29.5	27.7	28.4	28.2	28.7	29.1
	6H	28.7	29.2	29.2	29.7	30.2	28.4	28.9	28.9	29.4	29.9
	8H	29.0	29.4	29.5	29.9	30.6	28.7	29.1	29.2	29.7	30.3
	12H	29.2	29.6	29.8	30.1	30.7	28.9	29.2	29.4	29.8	30.4
12H	4H	28.0	28.6	28.5	29.1	29.5	27.7	28.3	28.2	28.7	29.2
	6H	28.8	29.2	29.3	29.7	30.4	28.5	28.9	29.0	29.5	30.1
	8H	29.1	29.5	29.7	30.0	30.6	28.8	29.2	29.4	29.7	30.3
Variations with the observer position for the luminaire spacings, S:											
S = 1.0H		0.2 / -0.2					0.2 / -0.3				
S = 1.5H		0.5 / -0.6					0.5 / -0.5				
S = 2.0H		1.2 / -1.2					1.1 / -0.9				

Coefficients of utilization

Ceiling reflectance	80				70				50			30			10			0
Wall reflectance	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
Floor reflectance	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
RCR (Room Cavity Ratio) Room values are expressed as percentage of Lumen delivered to the task surface																		
0	119.0	119.0	119.0	119.0	116.1	116.1	116.1	116.1	110.9	110.9	110.9	106.1	106.1	106.1	101.7	101.7	101.7	99.6
1	110.0	105.7	101.9	98.5	107.3	103.4	100.0	96.9	99.2	96.3	93.8	95.2	93.0	90.8	91.6	89.8	88.1	86.1
2	101.2	93.8	87.7	82.6	98.6	91.9	86.3	81.6	88.4	83.7	79.6	85.1	81.2	77.8	82.1	78.9	76.0	74.0
3	93.1	83.6	76.2	70.4	90.7	82.0	75.2	69.7	79.1	73.2	68.4	76.3	71.4	67.2	73.8	69.6	66.1	64.0
4	85.9	75.0	66.9	60.8	83.7	73.7	66.2	60.4	71.2	64.7	59.5	68.9	63.3	58.7	66.7	61.9	57.9	55.9
5	79.5	67.6	59.3	53.2	77.5	66.5	58.7	52.9	64.4	57.6	52.3	62.5	56.5	51.7	60.6	55.4	51.2	49.2
6	73.8	61.3	53.0	47.0	71.9	60.4	52.5	46.8	58.6	51.6	46.4	57.0	50.7	46.0	55.4	49.9	45.6	43.6
7	68.6	55.9	47.7	42.0	66.9	55.1	47.3	41.8	53.6	46.6	41.5	52.2	45.9	41.2	50.8	45.2	40.9	39.0
8	64.1	51.3	43.2	37.7	62.5	50.6	42.9	37.6	49.3	42.3	37.4	48.0	41.7	37.1	46.9	41.2	36.9	35.1
9	60.0	47.2	39.4	34.2	58.6	46.6	39.2	34.1	45.5	38.7	33.9	44.4	38.2	33.7	43.4	37.7	33.5	31.8
10	56.3	43.7	36.1	31.1	55.0	43.2	35.9	31.0	42.2	35.5	30.9	41.2	35.1	30.7	40.3	34.7	30.6	28.9



Power Details

Input power

Frequency of input power	60 Hz
Power feed to light source	164.6 W
RMS Input voltage feed V,RMS	114 V
RMS Input current feed I,RMS	1.45 A
Volt-Amp or apparent power = V,RMS*I,RMS	165.27 VA
Displacement factor of AC power feed	1.0
Power factor of AC current feed	1.0
Total harmonic distortion of the current	8.11%
Total harmonic distortion of the voltage	2.51%

Input power curve



Efficiency

Radiated power efficiency	42.5%
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Lumen efficiency	134 lm/W
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Stabilization details

Warmup Conditions

Stable period	15 min
Stable change max	2.0%
Minimum time	15 min

Color Temperature Change

CCT start	4844 K
CCT end	5342 K

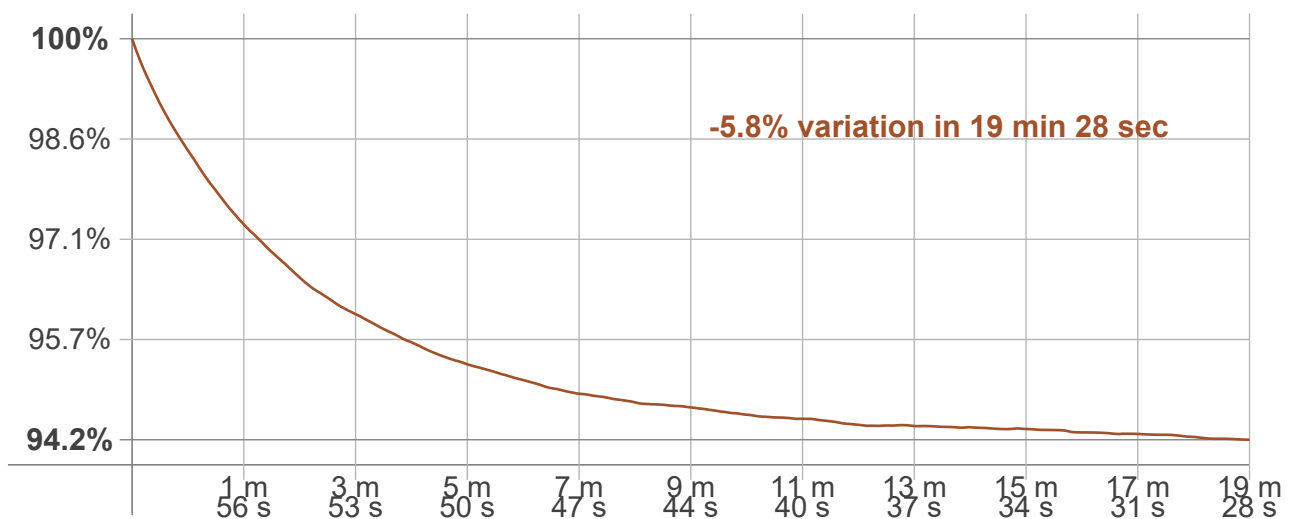
Warmup Result

Total warmup time	Lamp stabilized
Warmup variation	-5.8%

Output Change

Output start	23623 lm
Output change	-1535 lm
Output end	22088 lm

Stabilization Curve



Flicker T TLA Details

Flicker Meter Type	Viso Systems LabFlicker
Frequency of input power	60 Hz
Flicker/TLA sample rate	20000 samples/s

Measurement time	
PstLM	180 sec.
All other indices	1.5 sec.

Flicker indices according to Illuminating Engineering Society

Flicker frequency	119.76 Hz
Percent Flicker	26.5 %
Flicker index	0.08

Flicker indices according to California Energy Commission (CEC)

JA8/10 40 Hz	1.54 %
JA8/10 90 Hz	4.76 %
JA8/10 200 Hz	26.75 %
JA8/10 400 Hz	26.69 %
JA8/10 1000 Hz	26.93 %

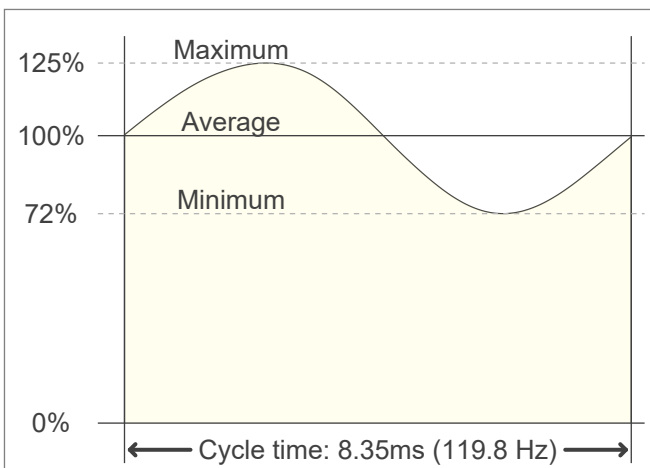
TLA indices (re IEC TR 61547-1, IEC 61000-3-3 and IEC

PstLM value (F < 80 Hz)	0.04
SVM value (80 < F < 2000 Hz)	0.94

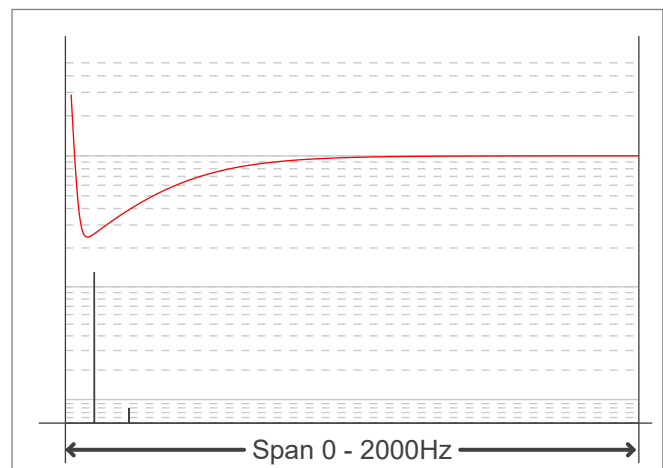
Flicker indices according to Lighting Research Center (2015)

Perception metric, Assist Mp	0.28
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Flicker frame (frame of one flicker period in time domain)



Flicker FFT (flicker curve in frequency domain)



IEEE 1789 Frequency/modulation Plot

