PHOTOMETRIC LIGHT REPORT

Floodlight | 150W/225W/300W | 100x60° | 3-CCT | light sensor

Article number: 146-373

Go to the webshop of Tronix Lighting

TRONIX

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Introduction

Purpose of this Document

This document provides accurate and objective photometric data for Tronix Lighting item 146-373. All information is based on actual measurements taken from standard production units. No modifications were made to enhance performance results. In some cases. minor adjustments—such as temporary removal of covers. cables. or mounting features—were necessary for testing purposes. These did not influence product performance.

Test Methodology

Testing was conducted using randomly selected. unopened samples from regular inventory. All tests comply with the LM-79-19 standard. the recognized method for photometric and electrical measurements of LED and OLED luminaires. This standard. an update of IES LM-79-2008. outlines environmental test conditions. stabilization procedures. measurement methods. and approved instruments. It uses absolute photometry. meaning results directly reflect the performance of the tested product. without comparison to rated lamp standards.

Product 146-373 was tested using:

- A photogoniometer to measure luminous intensity distribution at various angles
- An integrating sphere to determine total luminous flux and colour characteristics

Compliance & Certification

Item 146-373 meets the requirements of the following EU directives. Tronix Lighting certifies that all relevant tests were executed in accordance with the applicable standards. and the CE mark is applied accordingly:

- General Product Safety – Directive 2023/988/EC
- Low Voltage Directive (LVD) – Directive 2014/35/EU
- Electromagnetic Compatibility (EMC) – Directive 2004/108/EC
- Ecodesign – Directive 2009/125/EC
- RoHS 3 – Directive 2011/65/EU + Amendment 2015/863/EU

Recycling & Sustainability

Tronix Lighting is affiliated with national recycling systems for electrical and electronic waste. The luminaire is over 90% recyclable when disposed of as electronic waste at end of life. In addition. Tronix Lighting participates in national packaging recycling schemes. ensuring full compliance with both the WEEE and packaging directives.

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Laboratory and equipment

Laboratory owner and location	Tronix Lighting BV. Uden. The Netherlands
Gonio spectrometer system and type	Viso Systems Type C. horizontal
Spectrometer manufacturer and model	(Gonio) Ocean Optics STS VIS (Sphere) Admesy HERA VIS 380–780nm
Flicker meter manufacturer and model	Viso Systems LabFlicker
Oscilloscope manufacturer and model	Tektronix MDO3024 oscilloscope (4 Channels. 200 MHz)
Power meter manufacturer and model	Vitrek PA900 Precision Multi-Channel Harmonic Power Analyzer
Power source manufacturer and model	(DC) Keithley Source Measure Unit SMU-2420 3A DC Source Meter (AC) Chroma 61601 AC Source
Datalogger Manufacturer and Model	Omega 8-Channel Thermocouple Thermometer/Data Logger

Measurement conditions gonio spectrometer

Number of C-planes and Resolution	8 planes – 45°
γ (gamma)-Resolution	5°
Test Distance	1.81 m
Room Temperature and Humidity	22°C +/- 10% – RH 50% +/- 20%
Input Power. Power and Displacement Factors	294 W – PF 0.98 – DPF 0.98
Frequency of Input Power	50 Hz
Warm-up Time and Variation	Lamp stabilized in 15 min 1 sec –-0.5%

Tested light source

Manufacturer and Order Code	Tronix Lighting – 146-373
Product Description	Floodlight | 150W/225W/300W | 100x60° | 3-CCT | light sensor

Main Light Measurement Results

Output – Total Lumen (Up% / Down%)	43716 lm – 0.02% / 99.98%
Efficiency	149 lm/W
Energy efficiency class	D
Peak Intensity and Beam Angle	23759 cd – 85°
Correlated Colour Temperature	CCT = 3975 K
Colour Shift. CIE duv	Duv -0.0041
Colour Rendering Index	CRI 84.4
Colour Rendering TM30-18	R_f 83.5 – R_g 98.8
Television Lighting Consistency Index	TLCI = 67
Flicker	SVM 0.01 – PstLM 0.05

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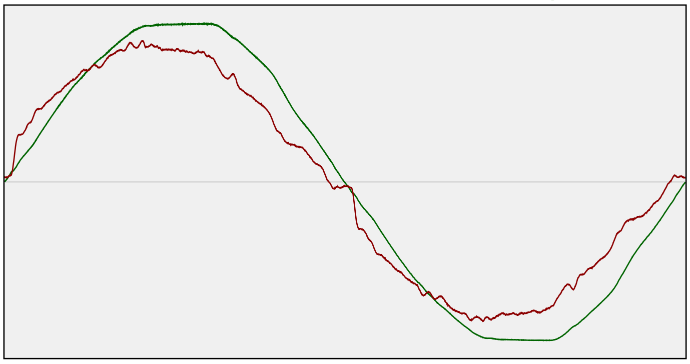
Electrical measurement details

Input Power	
RMS Input voltage feed. V_{RMS}	230 V
RMS Input current feed. I_{RMS}	1.31 A
Total input power	294 W
Frequency of input power	50 Hz
Power factor	0.98
Displacement power factor	0.98
Total harmonic distortion of the current	6.01%
Total harmonic distortion of the voltage	2.51%

Input Power Curve

Voltage - Current



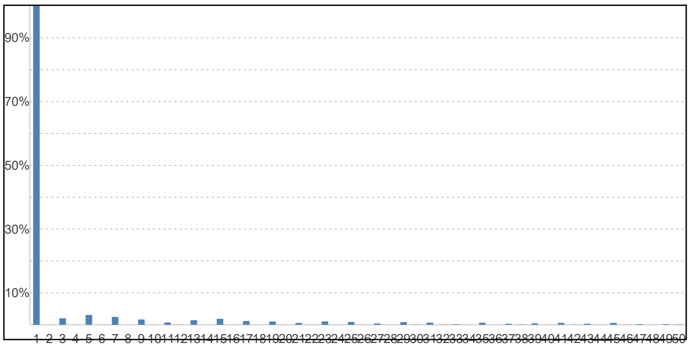
Efficiency

Radiated power efficiency: 45.9%

Lumen efficiency: 149 lm/W

Harmonics	
3rd Harmonic	2.04%
5th Harmonic	3.06%
7th Harmonic	2.46%
9th Harmonic	1.66%
11th Harmonic	0.69%

Current Harmonics %



Stabilization Details

Warm-up Conditions	
Stable period	15 min
Stable change max	2.0%
Minimum warm-up time	15 min

Colour temperature change during warm-up	
CCT start	3974 K
CCT shift	+1 K
CCT end	3975 K

Warm-up Results	
Total warmup time	Lamp stabilized in 15 min 1 sec
Warmup variation	-0.5%

Output intensity change during warm-up	
Output start	43940 lm
Output change	-224 lm
Output end	43716 lm

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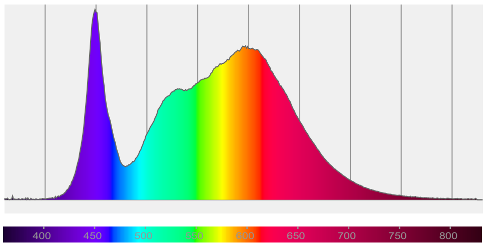
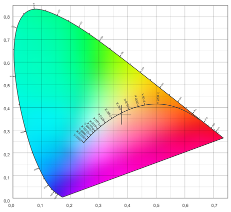
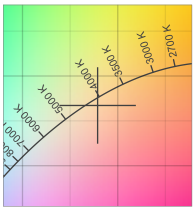
Colour measurement details

Total lumen output	43716 lm
Correlated Colour Temperature	3975 K
Colour coordinates CIE 1931	(x;y) = (0.379;0.367)
Colour deviation from BBL	Duv = -0.0041
TM30-18 Colour Fidelity Index	R_f 83.5
TM30-18 Colour Gamut Index	R_g 98.8
Colour Rendering Index (Ra)	CRI 84.4
Colour Rendering Index. (red component)	R9 = 17.3
Colour Quality Scale	CQS = 82.0
Television Lighting Consistency Index	TLCI = 67

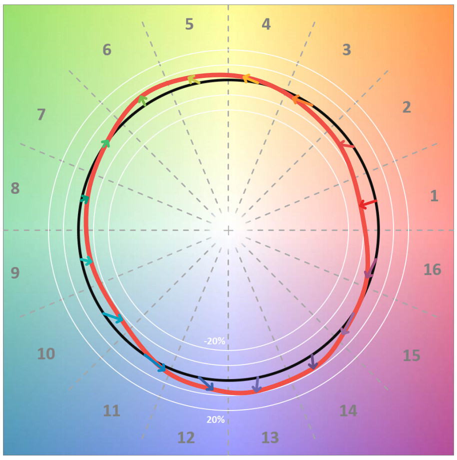


Relative spectral power distribution





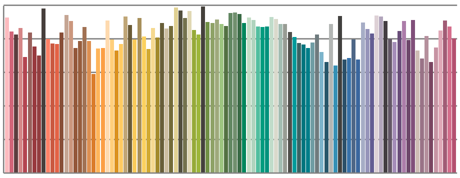
TM30 details



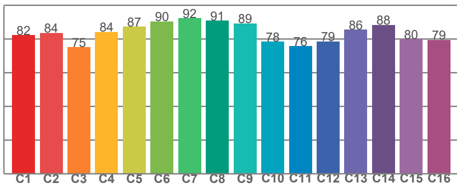
TM30 Colour vectors per hue bin

TM30 Colour distortion

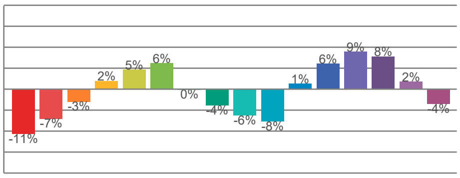
		Shifts (%)	
Hue Bin	R_f	Chroma	Hue
C1	82	-11%	-1%
C2	84	-7%	6%
C3	75	-3%	13%
C4	84	2%	10%
C5	87	5%	6%
C6	90	6%	-1%
C7	92	0%	-5%
C8	91	-4%	-3%
C9	89	-6%	3%
C10	78	-8%	10%
C11	76	1%	16%
C12	79	6%	10%
C13	86	9%	-3%
C14	88	8%	-4%
C15	80	2%	-15%
C16	79	-4%	-13%



TM30-18 Rf-values per reference colour

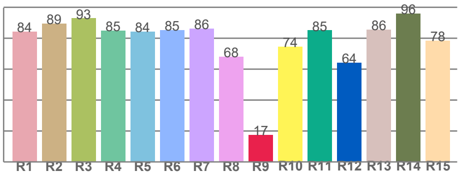


TM30-18 Rf-values per hue bin

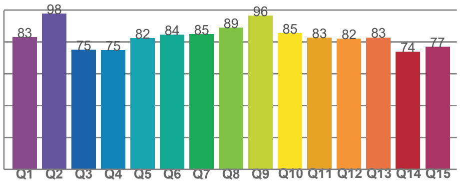


TM30 Chroma shift

Colour Quality details



Colour Rendering Index



Colour Qualitity Scale

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Flicker / temporal light artefacts details

Measurement conditions

Flicker meter type	Viso Systems LabFLicker
Flicker/TLA sample rate	20000 samples/s
Measurement time	5x 180 seconds (15 minutes) for PstLM. 1.2 sec for all other indices

Flicker indices according to Illuminating Engineering Society (IES)

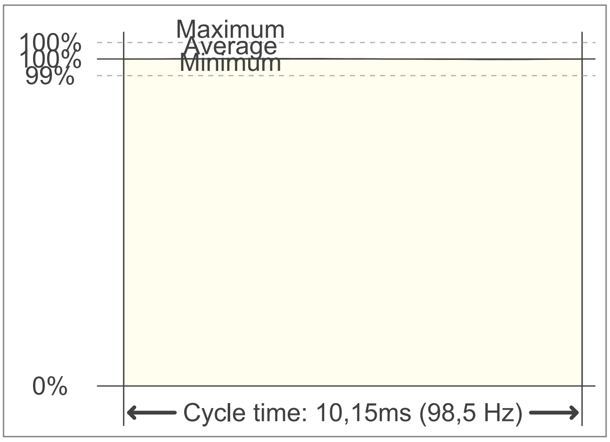
Flicker frequency	98.52 Hz
Percent flicker	0.23 %
Flicker index	0

TLA indices (according IEC TR 61547-1. EN 61000-3-3 and EN 61000-4-15)

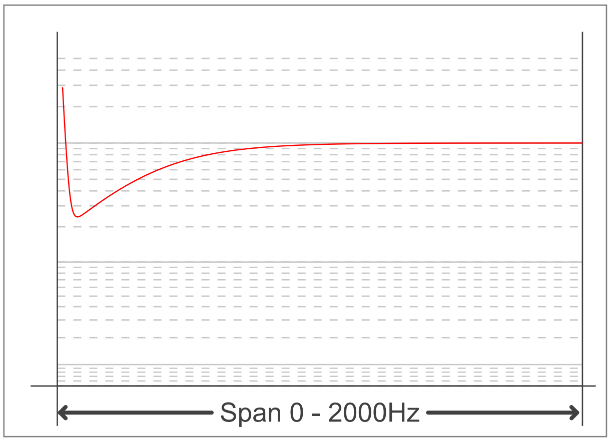
An LED luminaire is considered flicker-free if the SVM value is <= 0.4 and if the PstLM value is <=1.0

PstLM value (F < 80 Hz)	0.05
SVM value (80 < F < 2000 Hz)	0.01

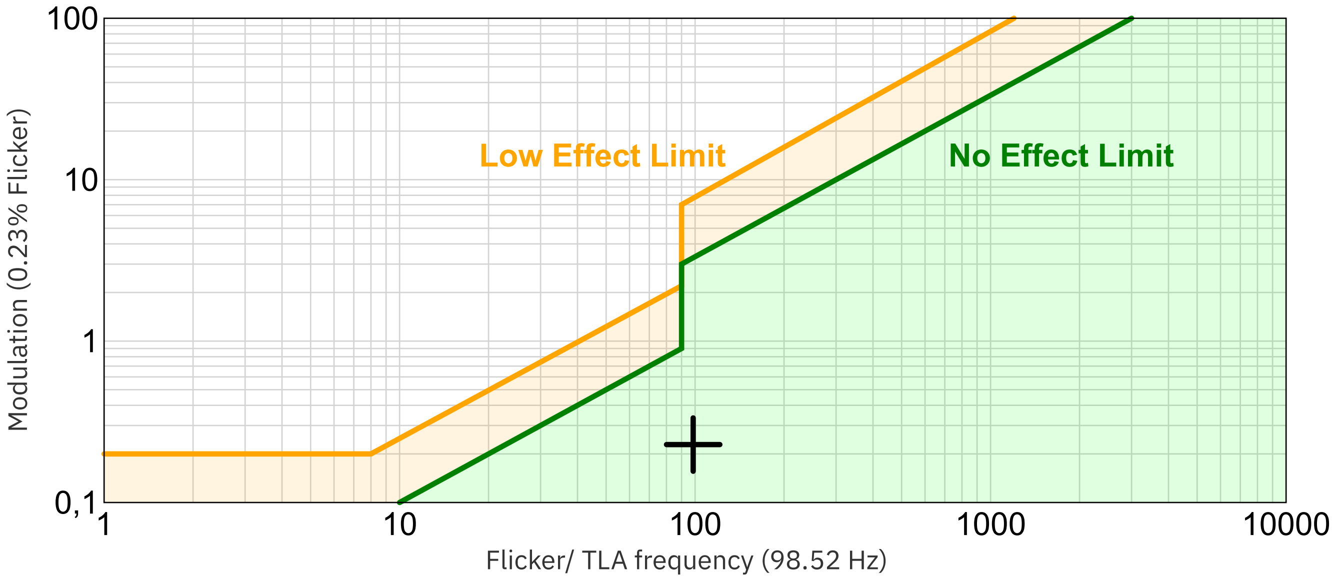
Flicker frame (one flicker period in time domain)



Flicker FFT (flicker curve in frequency domain)



IEEE 1789-2015 Lighting Flicker Risk Zones



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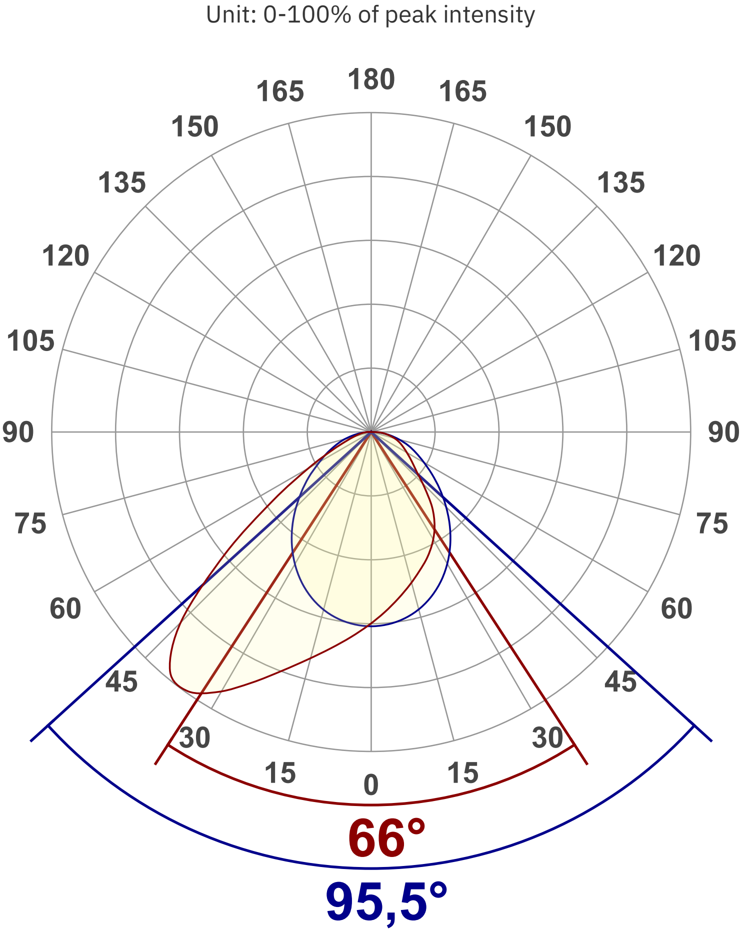
Beam angle

Luminous Intensity diagram



Main Values

Output (total Lumen)	43716 lm
Lumen Up/Down	0.02% / 99.98%
Peak Intensity	23759 cd
Beam Angle (50%)	85°
Beam Angle (90%)	95.5°
Beam Angle (10%)	66°

Cut-off Angle

Average 2.5%	176.3°

Field Angle

Average 10%	149.3°

Intensity Ratio

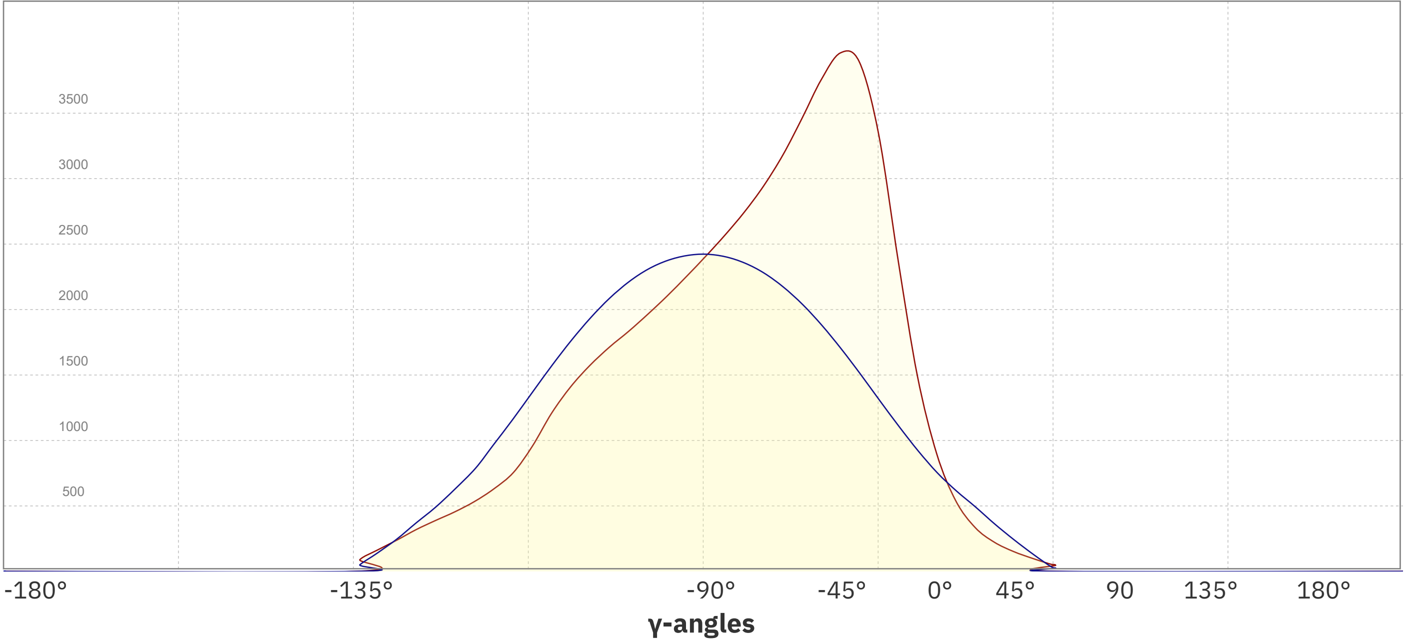
In 120° cone	83.0%
In 90° cone	56.7%

C planes

C000-C180

C090-C270

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



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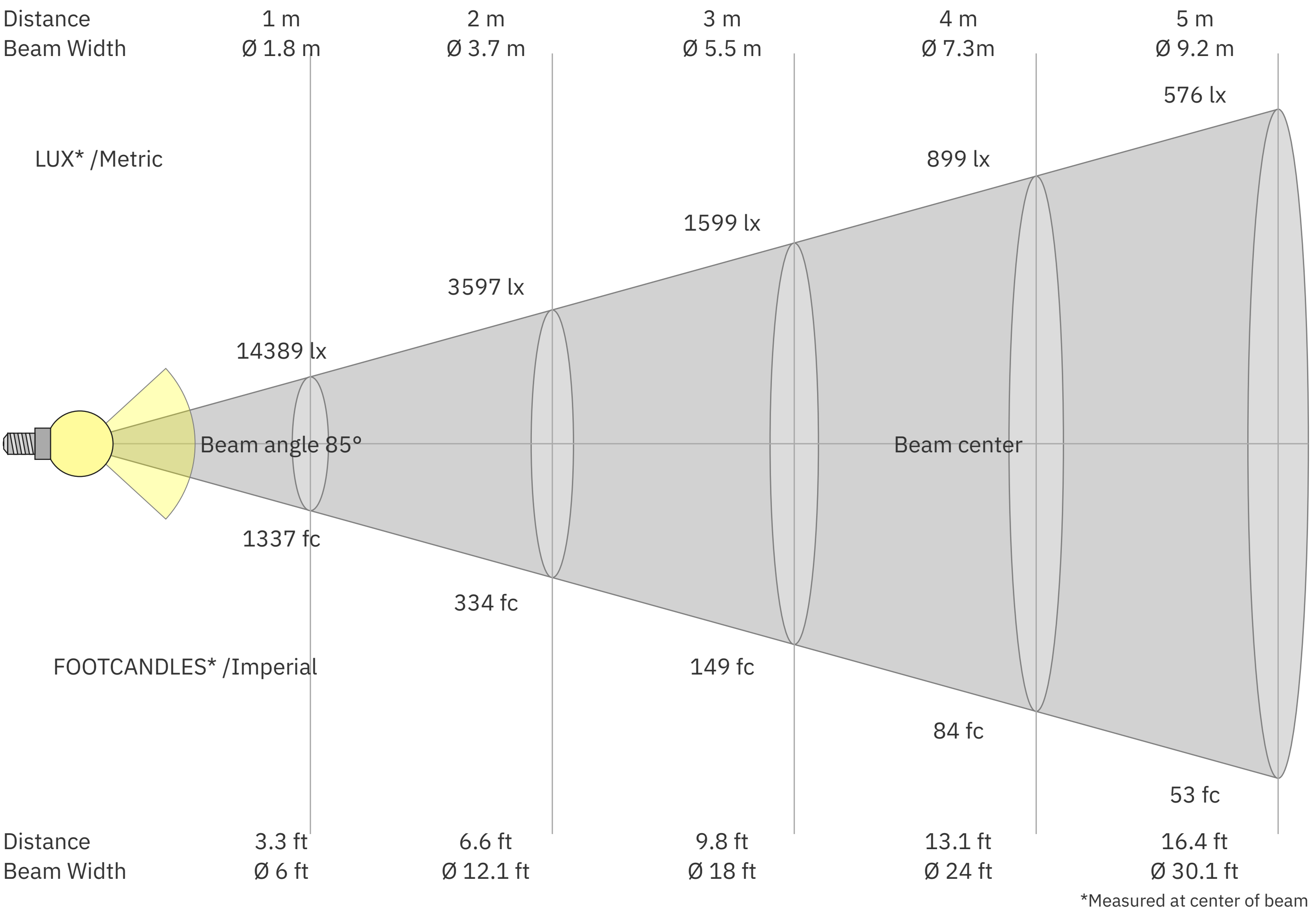
Beam Details



*Measured at center of beam

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
14389	3597	1599	899	576	400	294	225	178	144	119	100	85	73	64	56	50	44	40	36	lux
1336.7	334.2	148.5	83.5	53.5	37.1	27.3	20.9	16.5	13.4	11	9.3	7.9	6.8	5.9	5.2	4.6	4.1	3.7	3.3	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
14.4k	13.4k	12.5k	11.7k	10.9k	10.1k	9.3k	8.2k	6.9k	5.5k	4.4k	3.6k	3.1k	2.6k	2.2k	1.8k	1.3k	0.9k	0.0k	0.0k	cd
100%	93%	87%	81%	76%	70%	64%	57%	48%	38%	30%	25%	21%	18%	16%	13%	9%	6%	0%	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
14.4k	14.4k	14.2k	13.7k	13.1k	12.3k	11.4k	10.3k	9.1k	7.9k	6.7k	5.6k	4.6k	3.7k	3.0k	2.2k	1.4k	0.8k	0.2k	0.0k	cd
100%	100%	98%	95%	91%	86%	79%	72%	64%	55%	47%	39%	32%	26%	21%	15%	10%	5%	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
14.4k	15.3k	16.3k	17.5k	18.9k	20.6k	22.4k	23.7k	23.4k	20.1k	14.4k	9.1k	5.4k	3.2k	2.0k	1.3k	0.9k	0.6k	0.3k	0.0k	cd
100%	106%	114%	122%	132%	143%	156%	165%	162%	140%	100%	63%	38%	22%	14%	9%	6%	4%	2%	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
14.4k	14.4k	14.2k	13.8k	13.1k	12.3k	11.4k	10.3k	9.2k	7.9k	6.7k	5.6k	4.5k	3.6k	2.8k	2.0k	1.3k	0.7k	0.0k	0.0k	cd
100%	100%	99%	96%	91%	86%	79%	72%	64%	55%	47%	39%	31%	25%	19%	14%	9%	5%	0%	0%	of 0°val

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Light Planning – UGR table

Uncorrected. comprehensive UGR table according to CIE 117-1995

Reflectances											
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 H = mounting height above eye level		**Viewed Crosswise** (Viewing direction orthogonal to lamp length axis)					**Viewed Endwise** (Viewing direction parallel to lamp length axis)				
X	**Y**										
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
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	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Variations with the observer position for the luminaire spacings. S:		
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a

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	0
RCR	(RCR: Room Cavity Ratio)					Room Values are expressed as percentage of Lumen delivered to the task surface												
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	109	104	100	97	106	102	98	95	98	95	92	94	92	89	90	88	87	84
2	100	92	85	79	97	90	84	78	86	81	77	83	79	75	80	76	73	71
3	91	81	73	66	89	79	72	66	76	70	65	73	68	63	71	66	62	60
4	83	72	63	56	81	70	62	56	68	61	55	65	59	54	63	58	54	52
5	77	64	55	49	75	63	54	48	61	53	48	59	52	47	57	51	47	45
6	71	58	49	42	69	57	48	42	55	47	42	53	46	41	52	46	41	39
7	65	52	43	37	64	51	43	37	50	42	37	48	42	37	47	41	36	34
8	61	47	39	33	59	47	39	33	45	38	33	44	37	33	43	37	32	30
9	57	43	35	30	55	43	35	30	42	34	29	41	34	29	40	34	29	27
10	53	40	32	27	52	39	32	27	38	31	27	38	31	26	37	31	26	25