



PHOTOMETRIC LIGHT REPORT

Floodlight pro | 50W | 120° | warm white 3000K

Article number: 146-320



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TRONIX



146-320 Floodlight pro | 50W | 120° | warm white 3000K

Introduction

Purpose of this Document

This document provides accurate and objective photometric data for Tronix Lighting item 146-320. 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 146-320 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 146-320 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.



146-320 Floodlight pro | 50W | 120° | warm white 3000K

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	Vitretek 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	2.5°
Test Distance	1.81 m
Room Temperature and Humidity	22°C +/- 10% – RH 50% +/- 20%
Input Power. Power and Displacement Factors	49.5 W – PF 0.95 – DPF 0.95
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 – 146-320
Product Description	Floodlight pro 50W 120° warm white 3000K

Main Light Measurement Results

Output – Total Lumen (Up% / Down%)	6500 lm – 0.08% / 99.92%
Efficiency	131 lm/W
Energy efficiency class	E
Peak Intensity and Beam Angle	2334 cd – 114.3°
Correlated Colour Temperature	CCT = 3088 K
Colour Shift. CIE duv	Duv -0.0007
Colour Rendering Index	CRI 72.3
Colour Rendering TM30-18	R _f 73.5 – R _g 96.7
Television Lighting Consistency Index	TLCI = 44
Flicker	SVM 1.48 – PstLM 0.11



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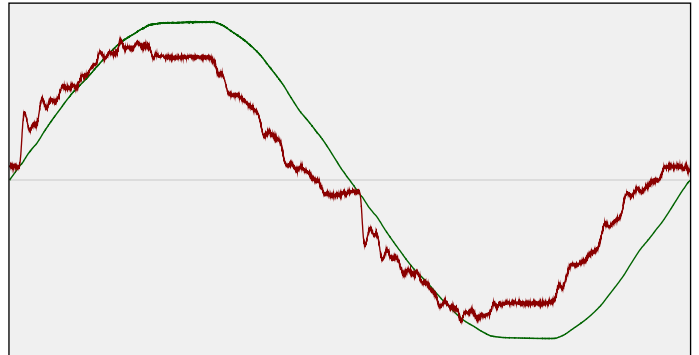
Electrical measurement details

Input Power

RMS Input voltage feed. V_{RMS}	230 V
RMS Input current feed. I_{RMS}	0.227 A
Total input power	49.5 W
Frequency of input power	50 Hz
Power factor	0.95
Displacement power factor	0.95
Total harmonic distortion of the current	10.45%
Total harmonic distortion of the voltage	2.32%

Input Power Curve

Voltage - Current



Efficiency

Radiated power efficiency: 37.7%



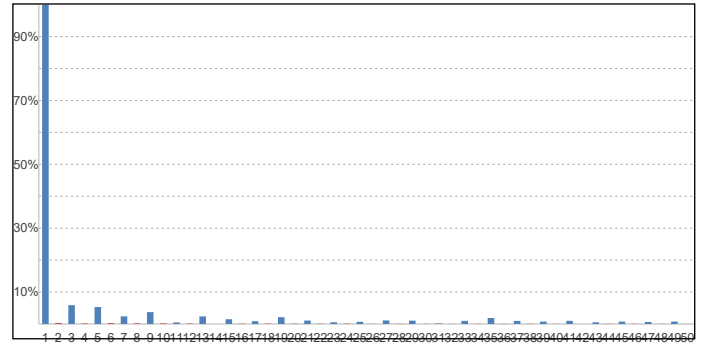
Lumen efficiency: 131 lm/W



Harmonics

3rd Harmonic	5.89%
5th Harmonic	5.3%
7th Harmonic	2.38%
9th Harmonic	3.72%
11th Harmonic	0.48%

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	3087 K
CCT shift	+1 K
CCT end	3088 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	6533 lm
Output change	-33 lm
Output end	6500 lm



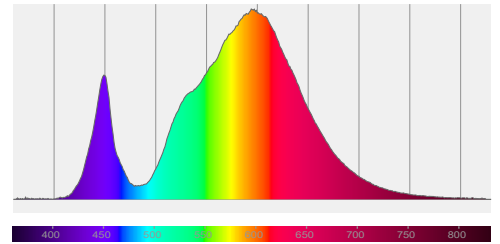
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Colour measurement details

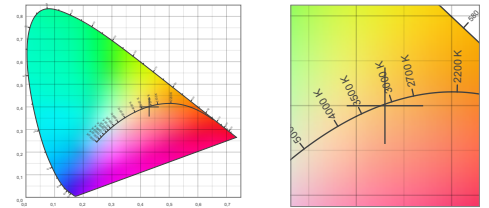
Total lumen output 6500 lm
 Correlated Colour Temperature 3088 K
 Colour coordinates CIE 1931 (x;y) = (0.430;0.400)
 Colour deviation from BBL Duv = -0.0007

TM30-18 Colour Fidelity Index R_f 73.5
 TM30-18 Colour Gamut Index R_g 96.7
 Colour Rendering Index (Ra) CRI 72.3
 Colour Rendering Index. (red component) R9 = -25.6

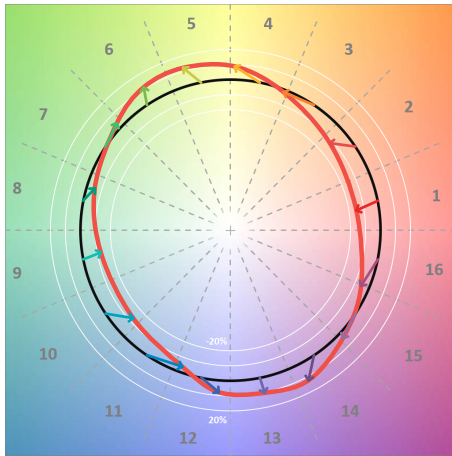
Colour Quality Scale CQS = 71.0
 Television Lighting Consistency Index TLCI = 44



Relative spectral power distribution



TM30 details

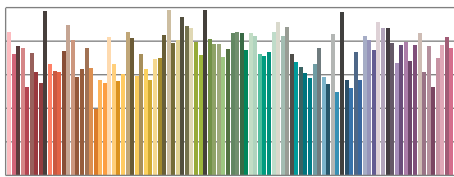


TM30 Colour vectors per hue bin

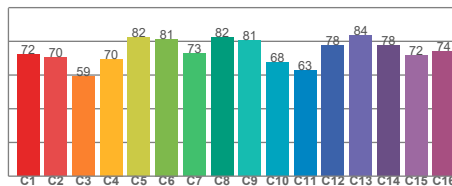


TM30 Colour distortion

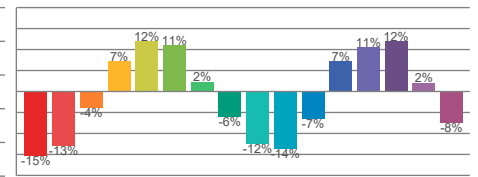
Hue Bin	R _f	Shifts (%)	
		Chroma	Hue
C1	72	-15%	-3%
C2	70	-13%	11%
C3	59	-4%	21%
C4	70	7%	18%
C5	82	12%	10%
C6	81	11%	-5%
C7	73	2%	-17%
C8	82	-6%	-10%
C9	81	-12%	-2%
C10	68	-14%	13%
C11	63	-7%	24%
C12	78	7%	13%
C13	84	11%	1%
C14	78	12%	-12%
C15	72	2%	-18%
C16	74	-8%	-19%



TM30-18 R_f-values per reference colour

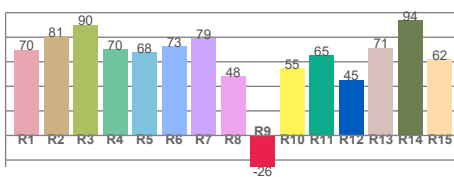


TM30-18 R_f-values per hue bin

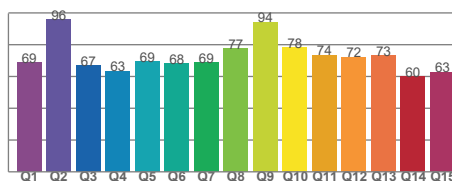


TM30 Chroma shift

Colour Quality details



Colour Rendering Index



Colour Quality 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)

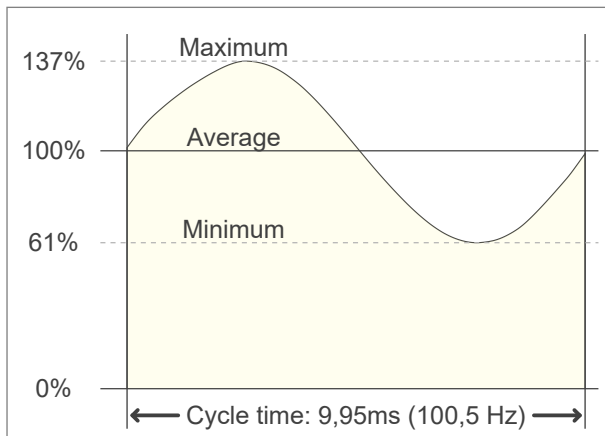
Flicker frequency	100.5 Hz
Percent flicker	38.48 %
Flicker index	0.12

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

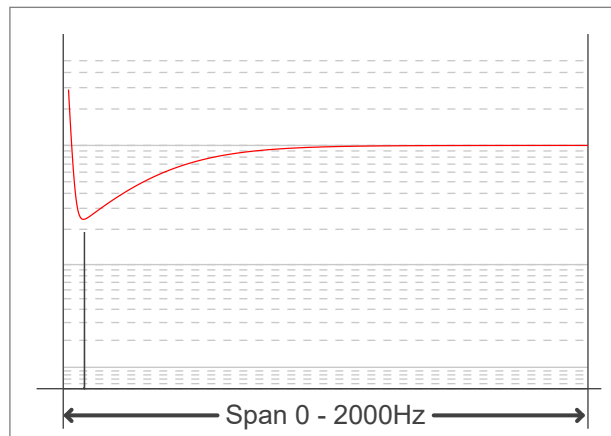
An LED luminaire is considered flicker-free if the SVM value is ≤ 0.4 and if the PstLM value is ≤ 1.0

PstLM value (F < 80 Hz)	0.11
SVM value (80 < F < 2000 Hz)	1.48

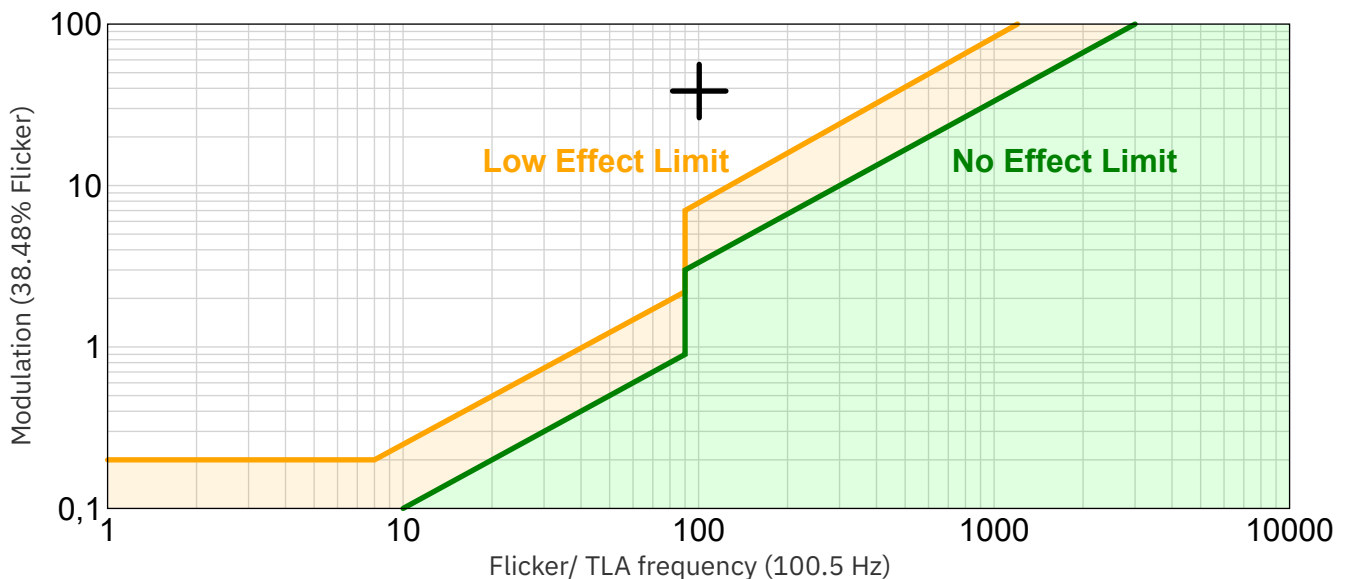
Flicker frame (one flicker period in time domain)



Flicker FFT (flicker curve in frequency domain)



IEEE 1789-2015 Lighting Flicker Risk Zones



Document revision date: 1-7-2025 Measurement serial: VFR-250217-3074-MS

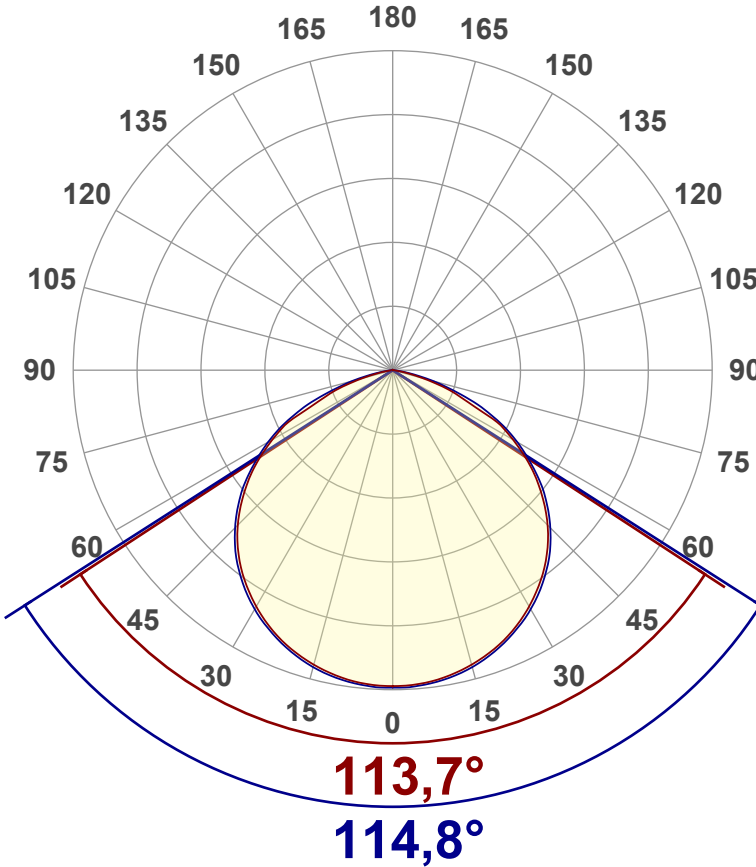


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Beam angle

Luminous Intensity diagram

Unit: 0-100% of peak intensity



Main Values

Output (total Lumen)	6500 lm
Lumen Up/Down	0.08% / 99.92%
Peak Intensity	2334 cd
Beam Angle (50%)	114.3°
Beam Angle (90%)	114.8°
Beam Angle (10%)	113.7°

Cut-off Angle

Average 2.5%	162.8°
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Field Angle

Average 10%	151.9°
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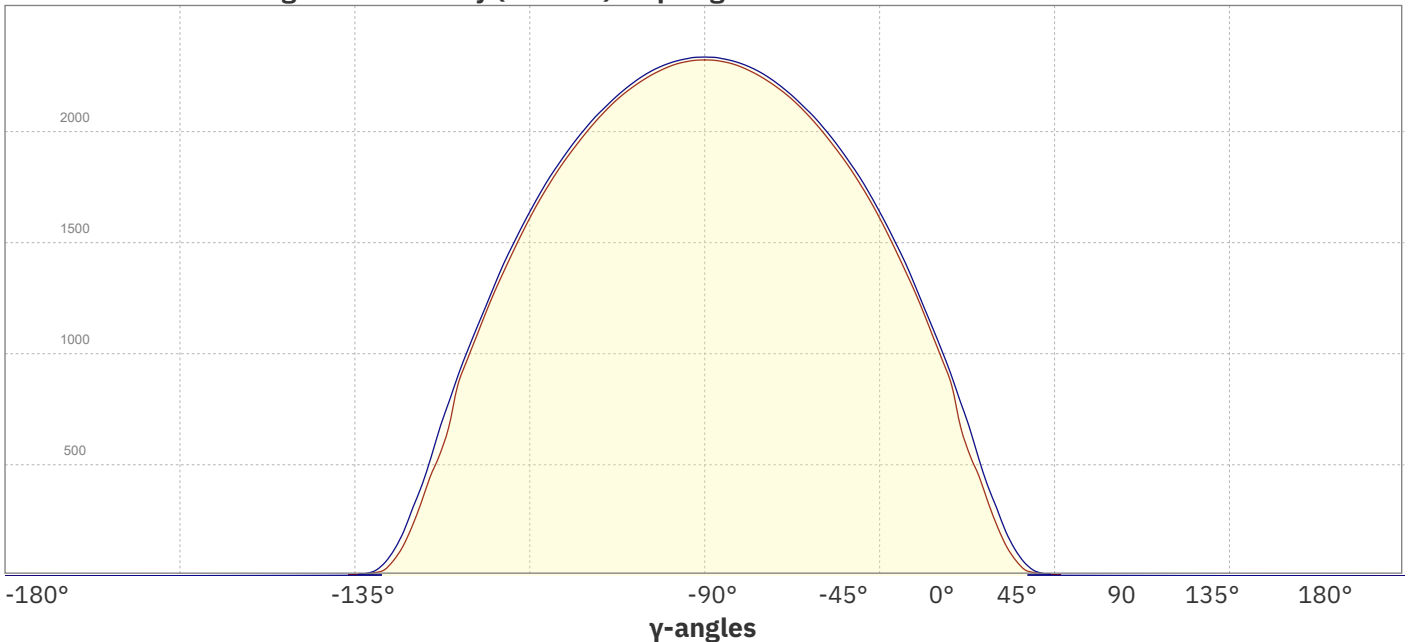
Intensity Ratio

In 120° cone	82.9%
In 90° cone	56.1%

C planes

- C000-C180
- C090-C270

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

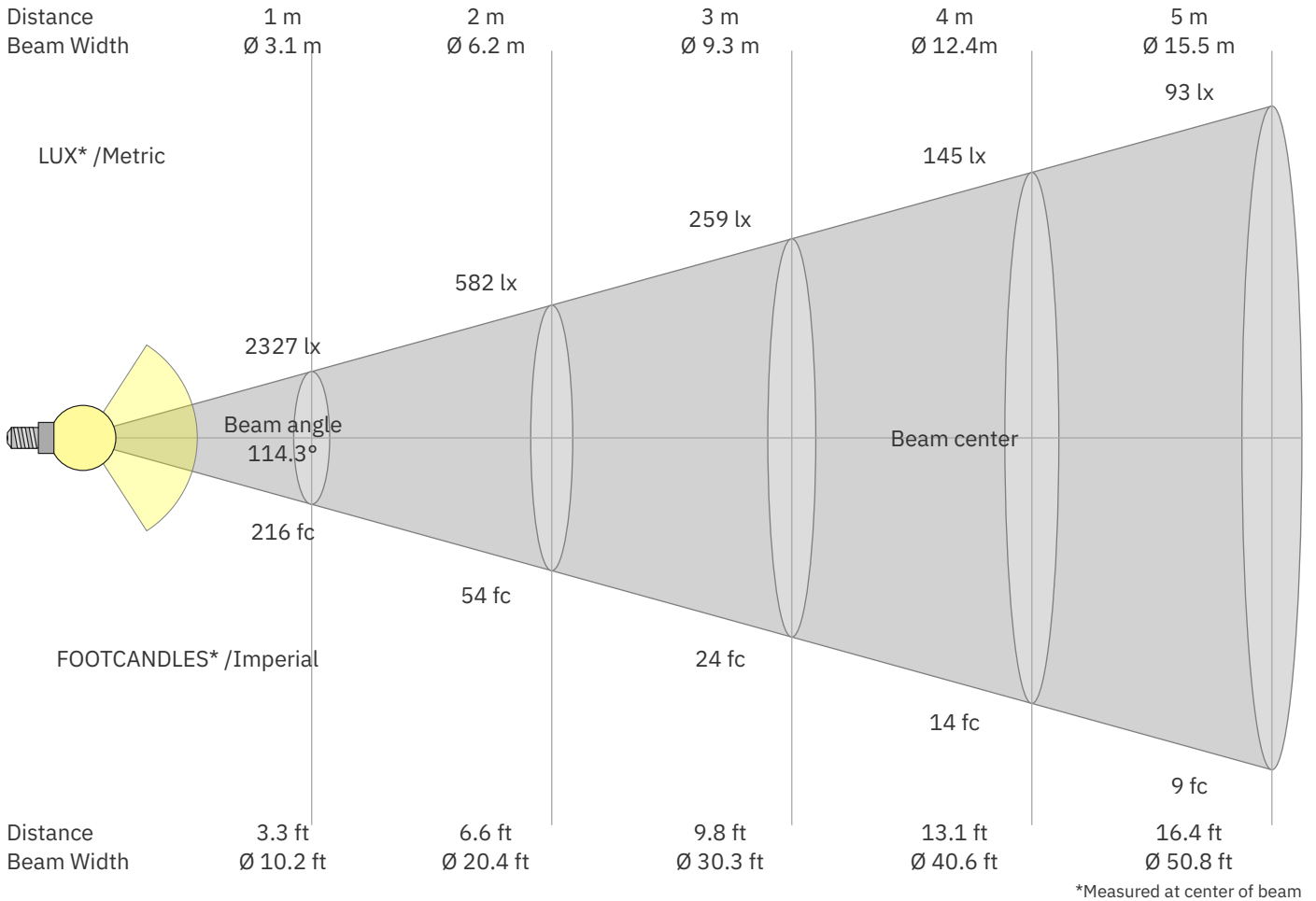


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Beam Details



*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
2327	582	259	145	93	65	47	36	29	23	19	16	14	12	10	9	8	7	6	6	lux
216.2	54	24	13.5	8.6	6	4.4	3.4	2.7	2.2	1.8	1.5	1.3	1.1	1	0.8	0.7	0.7	0.6	0.5	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
2327	2314	2286	2241	2181	2102	2006	1893	1763	1610	1433	1239	1021	738	471	235	70	14	5	0	cd
100%	99%	98%	96%	94%	90%	86%	81%	76%	69%	62%	53%	44%	32%	20%	10%	3%	1%	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
2327	2327	2302	2259	2198	2120	2029	1918	1791	1638	1467	1269	1057	823	556	310	115	23	2	2	cd
100%	100%	99%	97%	94%	91%	87%	82%	77%	70%	63%	55%	45%	35%	24%	13%	5%	1%	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
2327	2314	2286	2241	2181	2102	2006	1893	1763	1610	1433	1239	1021	738	471	235	70	14	5	0	cd
100%	99%	98%	96%	94%	90%	86%	81%	76%	69%	62%	53%	44%	32%	20%	10%	3%	1%	0%	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
2327	2327	2302	2259	2198	2120	2029	1918	1791	1638	1467	1269	1057	823	556	310	115	23	2	2	cd
100%	100%	99%	97%	94%	91%	87%	82%	77%	70%	63%	55%	45%	35%	24%	13%	5%	1%	0%	0%	of 0°val

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Light Planning – UGR table

Uncorrected, comprehensive UGR table according to CIE 117-1995

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		30.2	31.4	30.4	31.7	31.9	30.3	31.5	30.5	31.8	32.0
3H		31.1	32.3	31.5	32.6	32.8	31.5	32.7	31.9	33.0	33.2
4H		31.3	32.5	31.8	32.8	33.0	31.8	32.9	32.2	33.2	33.5
6H		31.4	32.5	31.8	32.7	33.1	31.9	33.0	32.3	33.2	33.6
8H		31.4	32.4	31.7	32.7	33.1	31.9	32.9	32.3	33.2	33.6
12H		31.3	32.3	31.7	32.6	33.1	31.9	32.8	32.2	33.2	33.6
4H 2H		30.7	31.9	31.1	32.1	32.4	30.8	32.0	31.2	32.2	32.5
3H		31.9	32.9	32.3	33.2	33.7	32.2	33.2	32.6	33.5	34.0
4H		32.1	33.0	32.6	33.4	34.0	32.5	33.4	33.0	33.8	34.4
6H		32.2	33.0	32.7	33.4	33.8	32.7	33.5	33.2	33.9	34.2
8H		32.2	32.9	32.7	33.3	33.7	32.7	33.4	33.2	33.8	34.2
12H		32.1	32.8	32.6	33.2	33.7	32.6	33.3	33.1	33.7	34.2
8H 4H		32.2	33.0	32.8	33.4	33.8	32.6	33.4	33.1	33.7	34.1
6H		32.4	32.9	32.9	33.4	33.9	32.8	33.4	33.3	33.8	34.4
8H		32.4	32.9	32.9	33.4	34.0	32.8	33.3	33.4	33.8	34.5
12H		32.3	32.7	32.9	33.2	33.9	32.8	33.2	33.4	33.7	34.3
12H 4H		32.2	32.8	32.7	33.3	33.7	32.6	33.2	33.1	33.6	34.1
6H		32.4	32.9	32.9	33.4	34.0	32.8	33.3	33.3	33.8	34.5
8H		32.3	32.8	32.9	33.3	33.9	32.8	33.2	33.4	33.7	34.3

Variations with the observer position for the luminaire spacings. S:

S = 1.0H	0.2 / -0.2	0.1 / -0.2
S = 1.5H	0.3 / -0.4	0.3 / -0.4
S = 2.0H	0.9 / -1.5	0.8 / -1.0

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	0			
Floor reflectance	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	106	106	106	102	102	102	100	
1	110	105	101	98	107	103	99	96	99	96	93	95	92	90	91	89	88	86
2	100	92	86	80	97	90	84	79	87	82	77	84	79	76	81	77	74	72
3	91	81	73	67	89	80	72	66	77	70	65	74	69	64	71	67	63	61
4	84	72	63	57	81	71	63	56	68	61	56	66	60	55	64	58	54	52
5	77	64	55	49	75	63	55	49	61	54	48	59	53	48	57	52	47	45
6	71	58	49	43	69	57	49	42	55	48	42	53	47	42	52	46	41	39
7	66	52	44	38	64	52	43	37	50	43	37	49	42	37	47	41	37	35
8	61	48	39	33	60	47	39	33	46	38	33	44	38	33	43	37	33	31
9	57	44	36	30	56	43	35	30	42	35	30	41	34	30	40	34	30	28
10	53	40	32	27	52	40	32	27	39	32	27	38	31	27	37	31	27	25