



## PHOTOMETRIC LIGHT REPORT

# Wall lamp | 200x101x100 | black | 20W | 3000K | dim

Article number: 149-242



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**TRONIX**



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## Introduction

### Purpose of this Document

This document provides accurate and objective photometric data for Tronix Lighting item 149-242. 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 149-242 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 149-242 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	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	2 planes – 180°
γ (gamma)-Resolution	2.5°
Test Distance	1.14 m
Room Temperature and Humidity	22°C +/- 10% – RH 50% +/- 20%
Input Power. Power and Displacement Factors	21.6 W – PF 0.97 – DPF 0.98
Frequency of Input Power	50 Hz
Warm-up Time and Variation	Lamp stabilized in 15 min 0 sec --1.9%

### Tested light source

Manufacturer and Order Code	Tronix Lighting – 149-242
Product Description	Wall lamp   200x101x100   black   20W   3000K   dim

### Main Light Measurement Results

Output – Total Lumen (Up% / Down%)	1311 lm – 49.63% / 50.37%
Efficiency	61 lm/W
Energy efficiency class	G
Peak Intensity and Beam Angle	327 cd – 360°
Correlated Colour Temperature	CCT = 3148 K
Colour Shift. CIE duv	Duv -0.0022
Colour Rendering Index	CRI 91.9
Colour Rendering TM30-18	R <sub>f</sub> 88.6 – R <sub>g</sub> 104.7
Television Lighting Consistency Index	TLCI = 86
Flicker	SVM 0 – PstLM 0.02



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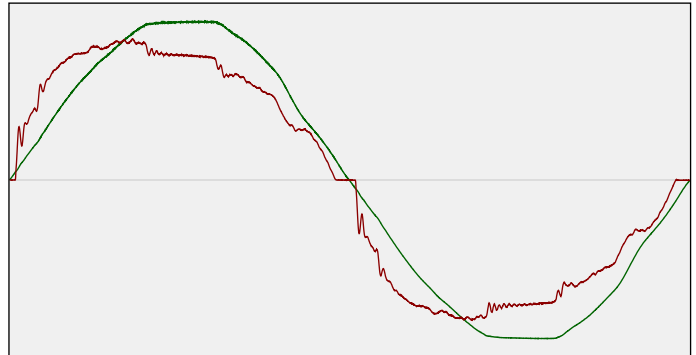
Electrical measurement details

**Input Power**

RMS Input voltage feed. $V_{RMS}$	230 V
RMS Input current feed. $I_{RMS}$	0.097 A
Total input power	21.6 W
Frequency of input power	50 Hz
Power factor	0.97
Displacement power factor	0.98
Total harmonic distortion of the current	14.42%
Total harmonic distortion of the voltage	2.49%

**Input Power Curve**

Voltage - Current



**Efficiency**

Radiated power efficiency: 21.6%



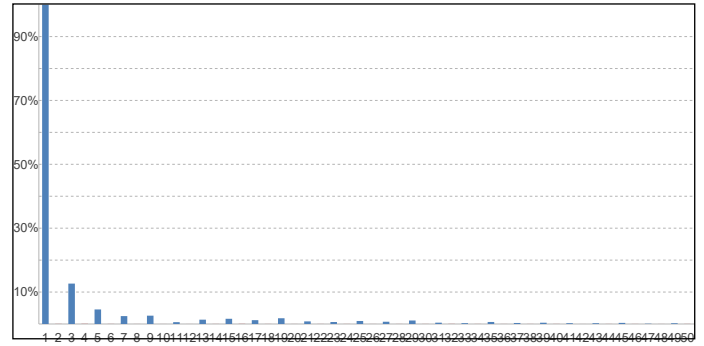
Lumen efficiency: 61 lm/W



**Harmonics**

3rd Harmonic	12.65%
5th Harmonic	4.55%
7th Harmonic	2.47%
9th Harmonic	2.61%
11th Harmonic	0.57%

**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	3160 K
CCT shift	-12 K
CCT end	3148 K

**Warm-up Results**

Total warmup time	Lamp stabilized in 15 min 0 sec
Warmup variation	-1.9%

**Output intensity change during warm-up**

Output start	1334 lm
Output change	-23 lm
Output end	1311 lm



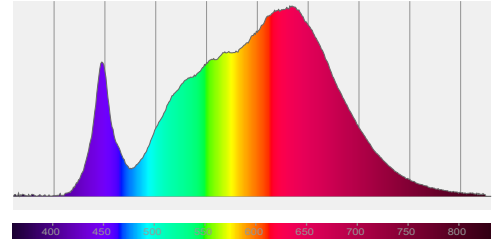
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## Colour measurement details

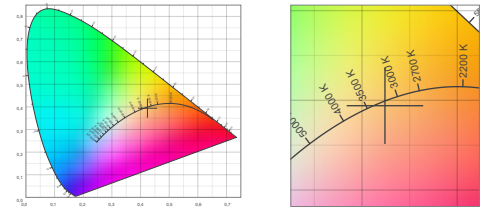
Total lumen output 1311 lm  
 Correlated Colour Temperature 3148 K  
 Colour coordinates CIE 1931 (x;y) = (0.424;0.394)  
 Colour deviation from BBL Duv = -0.0022

TM30-18 Colour Fidelity Index  $R_f$  88.6  
 TM30-18 Colour Gamut Index  $R_g$  104.7  
 Colour Rendering Index (Ra) CRI 91.9  
 Colour Rendering Index. (red component)  $R_9 = 75.7$

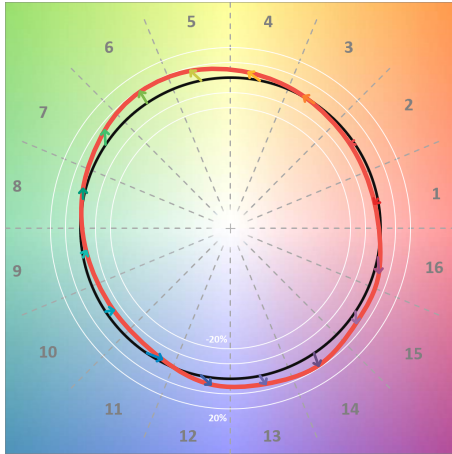
Colour Quality Scale CQS = 88.7  
 Television Lighting Consistency Index TLCI = 86



Relative spectral power distribution



## TM30 details

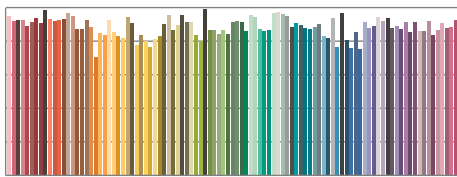


TM30 Colour vectors per hue bin

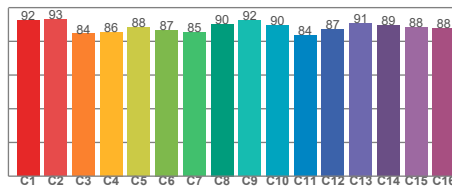


TM30 Colour distortion

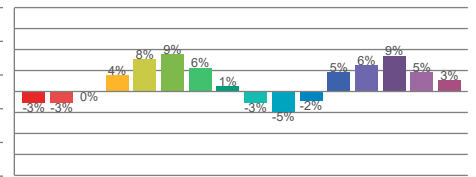
Hue Bin	$R_f$	Shifts (%)	
		Chroma	Hue
C1	92	-3%	-3%
C2	93	-3%	3%
C3	84	0%	8%
C4	86	4%	8%
C5	88	8%	6%
C6	87	9%	0%
C7	85	6%	-7%
C8	90	1%	-6%
C9	92	-3%	-4%
C10	90	-5%	2%
C11	84	-2%	10%
C12	87	5%	7%
C13	91	6%	3%
C14	89	9%	-2%
C15	88	5%	-6%
C16	88	3%	-10%



TM30-18  $R_f$ -values per reference colour

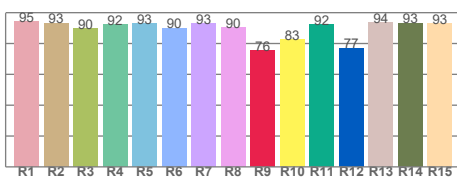


TM30-18  $R_f$ -values per hue bin

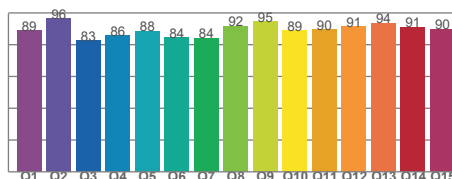


TM30 Chroma shift

## 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)**

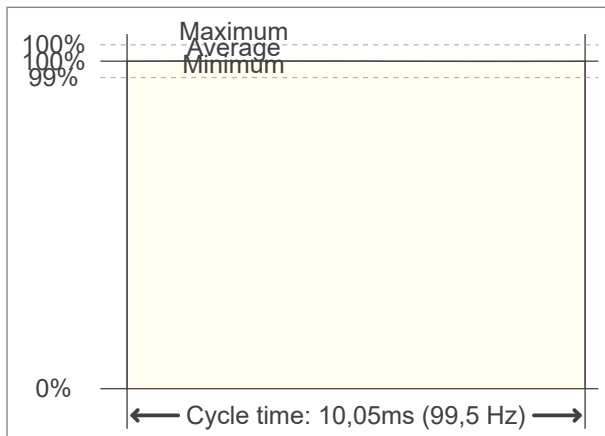
Flicker frequency	99.5 Hz
Percent flicker	0.16 %
Flicker index	0

**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  $\leq 0.4$  and if the PstLM value is  $\leq 1.0$

PstLM value (F < 80 Hz)	0.02
SVM value (80 < F < 2000 Hz)	0

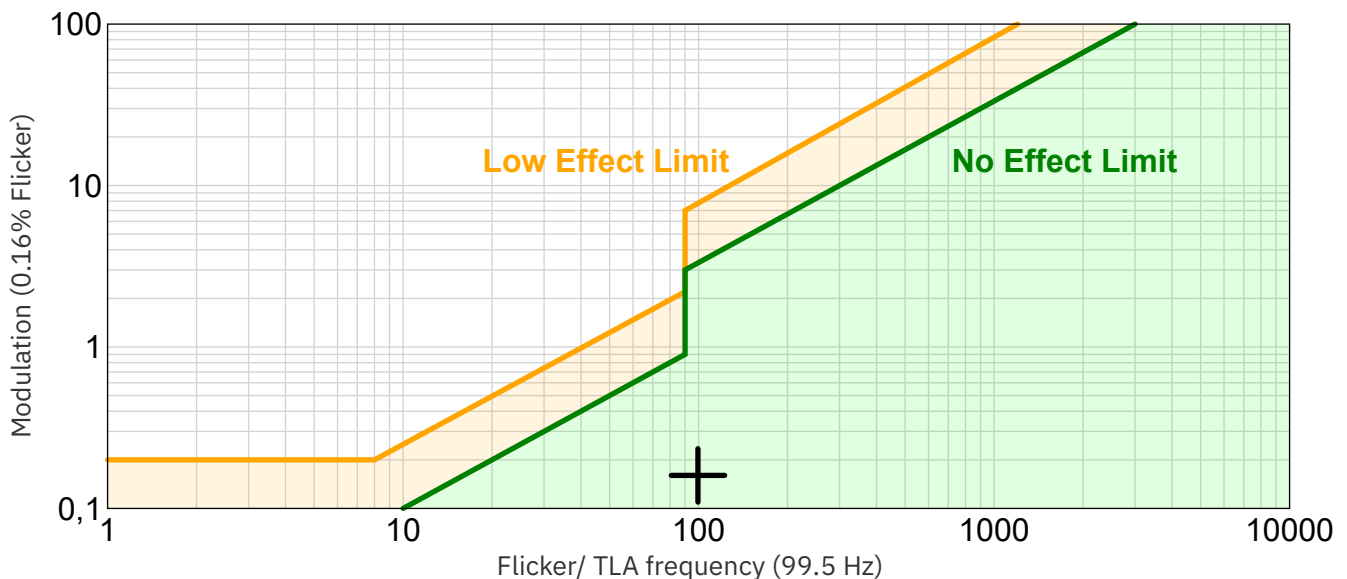
**Flicker frame (one flicker period in time domain)**



**Flicker FFT (flicker curve in frequency domain)**



**IEEE 1789-2015 Lighting Flicker Risk Zones**



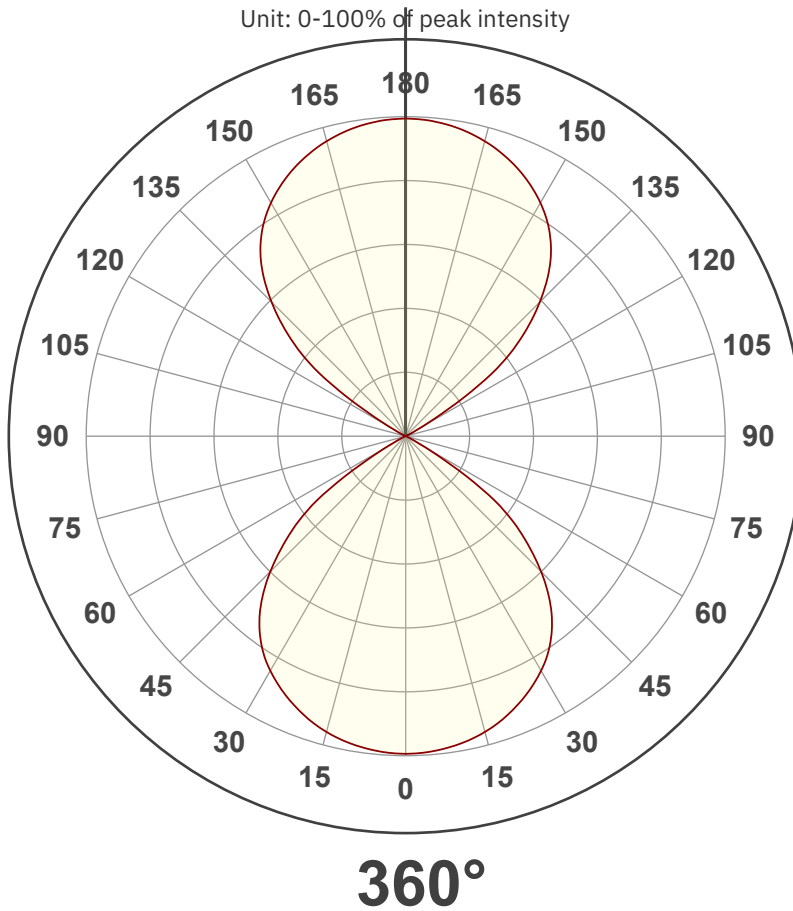
Document revision date: 1-7-2025 Measurement serial: VFR-250509-7273-SW



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Beam angle

**Luminous Intensity diagram**



**Main Values**

Output (total Lumen)	1311 lm
Lumen Up/Down	49.63% / 50.37%
Peak Intensity	327 cd
Beam Angle (50%)	360°
Beam Angle (90%)	360°
Beam Angle (10%)	360°

**Cut-off Angle**

Average 2.5%	360°
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**Field Angle**

Average 10%	360°
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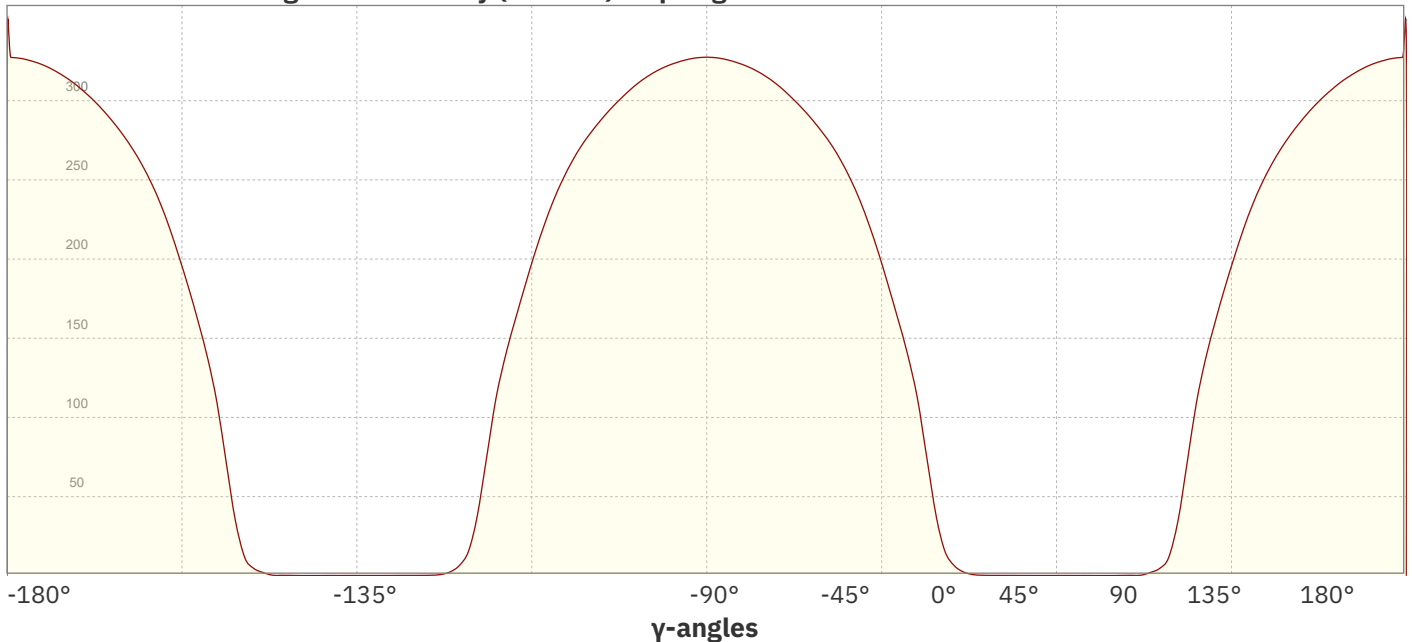
**Intensity Ratio**

In 120° cone	49.9%
In 90° cone	37.9%

**C planes**

- C000-C180
- C090-C270

**Linear distribution diagram - Intensity (candela) vs  $\gamma$ -angle**

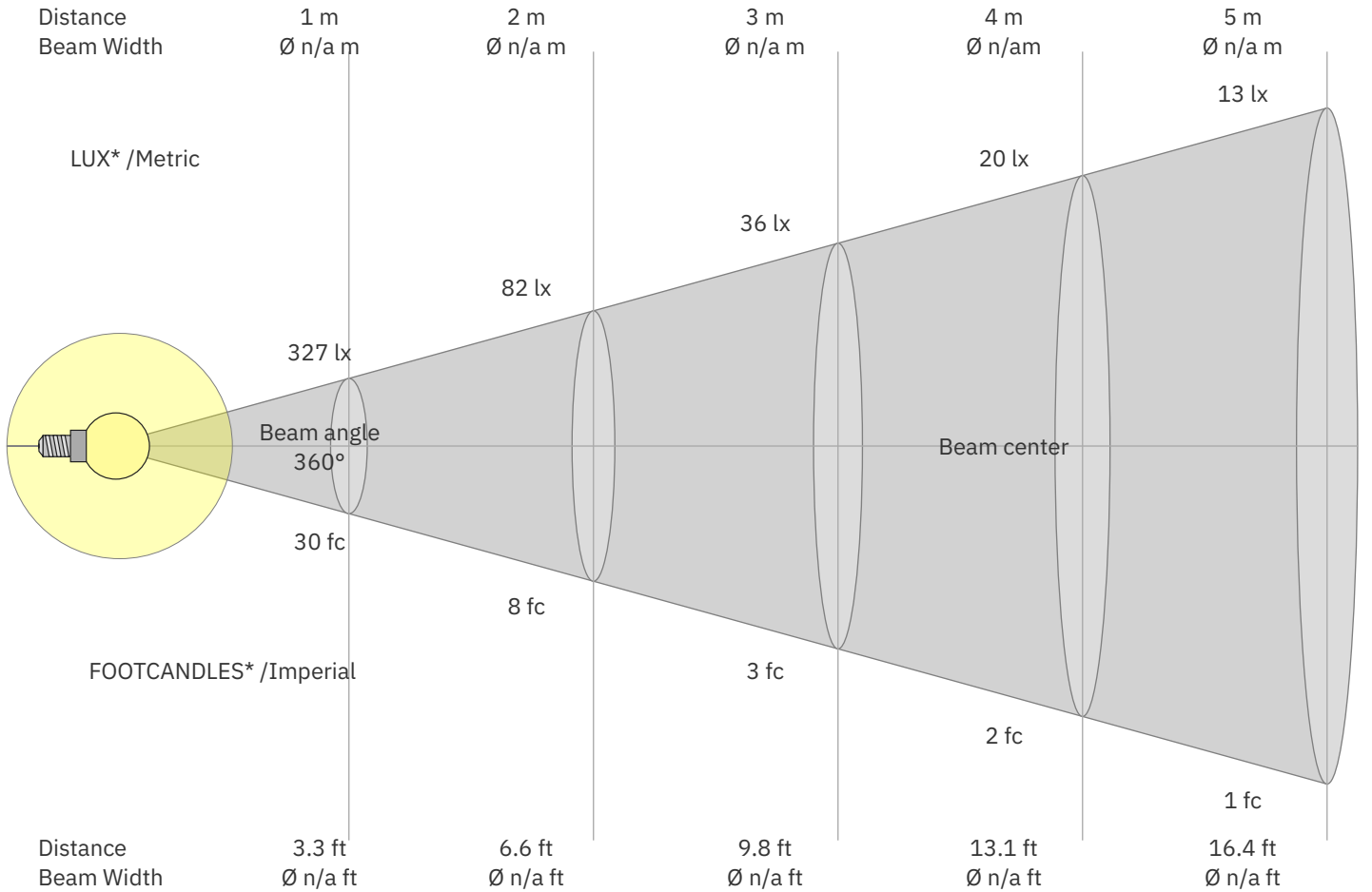


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Beam Details



\*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
327	82	36	20	13	9	7	5	4	3	3	2	2	2	1	1	1	1	1	1	lux
30.4	7.6	3.4	1.9	1.2	0.8	0.6	0.5	0.4	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	fc

Intensities in 0° c-plane

0°	9°	18°	27°	36°	45°	54°	63°	72°	81°	90°	99°	108°	117°	126°	135°	144°	153°	162°	171°	γ
327	323	310	288	255	197	114	9	0	0	0	0	0	6	109	195	253	287	309	323	cd
100%	99%	95%	88%	78%	60%	35%	3%	0%	0%	0%	0%	0%	2%	33%	60%	77%	88%	95%	99%	of 0°val

Intensities in 90° c-plane

0°	9°	18°	27°	36°	45°	54°	63°	72°	81°	90°	99°	108°	117°	126°	135°	144°	153°	162°	171°	γ
327	323	310	288	255	197	114	9	0	0	0	0	0	6	109	195	253	287	309	323	cd
100%	99%	95%	88%	78%	60%	35%	3%	0%	0%	0%	0%	0%	2%	33%	60%	77%	88%	95%	99%	of 0°val

Intensities in 180° c-plane

0°	9°	18°	27°	36°	45°	54°	63°	72°	81°	90°	99°	108°	117°	126°	135°	144°	153°	162°	171°	γ
327	323	310	288	255	197	114	9	0	0	0	0	0	6	109	195	253	287	309	323	cd
100%	99%	95%	88%	78%	60%	35%	3%	0%	0%	0%	0%	0%	2%	33%	60%	77%	88%	95%	99%	of 0°val

Intensities in 270° c-plane

0°	9°	18°	27°	36°	45°	54°	63°	72°	81°	90°	99°	108°	117°	126°	135°	144°	153°	162°	171°	γ
327	323	310	288	255	197	114	9	0	0	0	0	0	6	109	195	253	287	309	323	cd
100%	99%	95%	88%	78%	60%	35%	3%	0%	0%	0%	0%	0%	2%	33%	60%	77%	88%	95%	99%	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	16.1	16.8	16.9	17.6	18.7	16.1	16.8	16.9	17.6	18.7
	3H	15.8	16.4	16.7	17.3	18.3	15.8	16.4	16.7	17.3	18.3
	4H	15.6	16.2	16.6	17.1	18.2	15.6	16.2	16.6	17.1	18.2
	6H	15.5	16.0	16.4	17.0	18.1	15.5	16.0	16.4	17.0	18.1
	8H	15.4	16.0	16.4	16.9	18.0	15.4	16.0	16.4	16.9	18.0
	12H	15.4	16.0	16.3	16.8	17.9	15.4	16.0	16.3	16.8	17.9
4H	2H	15.8	16.4	16.7	17.3	18.3	15.8	16.4	16.7	17.3	18.3
	3H	15.5	16.2	16.5	17.0	18.1	15.5	16.2	16.5	17.0	18.1
	4H	15.3	16.2	16.3	16.8	17.9	15.3	16.2	16.3	16.8	17.9
	6H	15.2	15.7	16.2	16.5	17.6	15.2	15.7	16.2	16.5	17.6
	8H	15.1	15.5	16.1	16.4	17.5	15.1	15.5	16.1	16.4	17.5
	12H	15.0	15.3	16.0	16.3	17.4	15.0	15.3	16.0	16.3	17.4
8H	4H	15.1	15.5	16.1	16.4	17.5	15.1	15.5	16.1	16.4	17.5
	6H	15.0	15.2	16.0	16.2	17.4	15.0	15.2	16.0	16.2	17.4
	8H	14.9	15.1	15.9	16.1	17.3	14.9	15.1	15.9	16.1	17.3
	12H	14.8	15.0	15.8	16.0	17.2	14.8	15.0	15.8	16.0	17.2
12H	4H	15.0	15.3	16.0	16.3	17.4	15.0	15.3	16.0	16.3	17.4
	6H	14.9	15.1	15.9	16.1	17.3	14.9	15.1	15.9	16.1	17.3
	8H	14.8	15.0	15.8	16.0	17.2	14.8	15.0	15.8	16.0	17.2

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

S = 1.0H	0.8 / -1.3	0.8 / -1.3
S = 1.5H	2.4 / -14.1	2.4 / -14.1
S = 2.0H	4.2 / -24.4	4.2 / -24.4

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	107	107	107	107	99	99	99	99	84	84	69	69	69	56	56	50
1	99	96	92	89	92	89	86	83	75	74	72	63	62	61	52	51
2	92	85	80	75	85	79	75	71	68	64	62	57	55	53	48	46
3	84	76	69	64	78	71	65	61	61	57	53	52	49	46	43	41
4	78	68	61	55	72	63	57	52	55	50	46	47	43	41	40	37
5	72	61	54	48	66	57	51	46	50	45	41	43	39	36	36	33
6	66	55	48	42	61	52	45	40	45	40	36	39	35	32	33	30
7	62	50	43	37	57	47	40	36	41	36	32	35	31	28	30	27
8	57	46	38	33	53	43	36	32	37	32	29	33	29	26	28	25
9	53	42	35	30	49	39	33	28	34	29	26	30	26	23	26	23
10	50	38	31	27	46	36	30	26	32	27	23	28	24	21	24	21