



PHOTOMETRIC LIGHT REPORT

LED spot | 50mm | black | 5 watt | 38° | 2000~2700K | dtw

Article number: 175-575



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Lighting



TRONIX



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Introduction

Purpose of this Document

This document provides accurate and objective photometric data for Tronix Lighting item 175-575. 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 175-575 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 175-575 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
Gonio spectrometer system and type
Spectrometer manufacturer and model

Flicker meter manufacturer and model
Oscilloscope manufacturer and model
Power meter manufacturer and model

Power source manufacturer and model

Datalogger Manufacturer and Model

Tronix Lighting BV. Uden. The Netherlands
Viso Systems Type C. horizontal
(Gonio) Ocean Optics STS VIS
(Sphere) Admesy HERA VIS 380–780nm
Viso Systems LabFlicker
Tektronix MDO3024 oscilloscope (4 Channels. 200 MHz)
Vitretek PA900 Precision Multi-Channel Harmonic Power Analyzer
(DC) Keithley Source Measure Unit SMU-2420 3A DC Source Meter
(AC) Chroma 61601 AC Source
Omega 8-Channel Thermocouple Thermometer/Data Logger

Measurement conditions gonio spectrometer

Number of C-planes and Resolution
 γ (gamma)-Resolution
Test Distance
Room Temperature and Humidity
Input Power. Power and Displacement Factors
Frequency of Input Power
Warm-up Time and Variation

2 planes – 180°
2.5°
0.66 m
22°C +/- 10% – RH 50% +/- 20%
6.5 W – PF 0.98 – DPF 1.0
50 Hz
Lamp stabilized in 26 min 45 sec --8.5%

Tested light source

Manufacturer and Order Code
Product Description

Tronix Lighting – 175-575
LED spot | 50mm | black | 5 watt | 38° | 2000~2700K | dtw

Main Light Measurement Results

Output – Total Lumen (Up% / Down%)
Efficiency
Energy efficiency class
Peak Intensity and Beam Angle
Correlated Colour Temperature
Colour Shift. CIE duv
Colour Rendering Index
Colour Rendering TM30-18
Television Lighting Consistency Index
Flicker

439 lm – 0% / 100%
68 lm/W
G
277 cd – 69.6°
CCT = 2971 K
Duv -0.0100
CRI 86.3
 R_f 86.7 – R_g 98.4
TLCI = 76
SVM 0.42 – PstLM 0.2

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Electrical measurement details

Input Power

RMS Input voltage feed. V_{RMS}

RMS Input current feed. I_{RMS}

Total input power

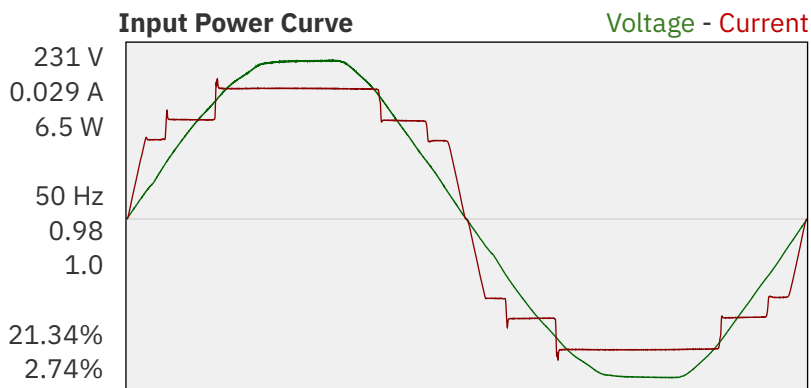
Frequency of input power

Power factor

Displacement power factor

Total harmonic distortion of the current

Total harmonic distortion of the voltage



Efficiency

Radiated power efficiency: 22.5%

Lumen efficiency: 68 lm/W

Harmonics

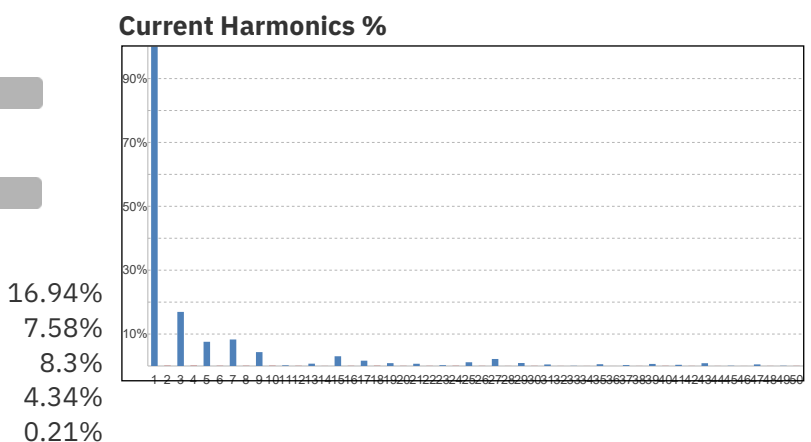
3rd Harmonic

5th Harmonic

7th Harmonic

9th Harmonic

11th Harmonic



Stabilization Details

Warm-up Conditions

Stable period

Stable change max

Minimum warm-up time

Colour temperature change during warm-up

15 min CCT start

2.0% CCT shift

15 min CCT end

2915 K

+56 K

2971 K

Warm-up Results

Total warmup time

Lamp stabilized in 26 min 45

sec

Warmup variation

-8.5%

Output intensity change during warm-up

Output start

Output change

Output end

478 lm

-39 lm

439 lm

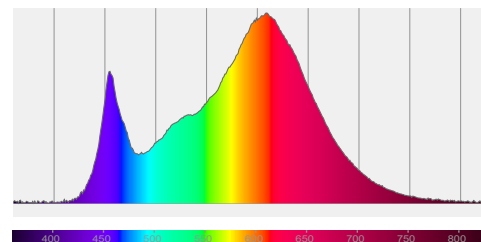
175-575 LED spot | 50mm | black | 5 watt | 38° | 2000~2700K | dtw

Colour measurement details

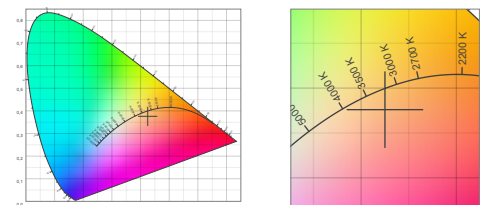
Total lumen output 439 lm
 Correlated Colour Temperature 2971 K
 Colour coordinates CIE 1931 (x;y) = (0.425;0.376)
 Colour deviation from BBL Duv = -0.0100

TM30-18 Colour Fidelity Index R_f 86.7
 TM30-18 Colour Gamut Index R_g 98.4
 Colour Rendering Index (Ra) CRI 86.3
 Colour Rendering Index. (red component) $R_9 = 30.4$

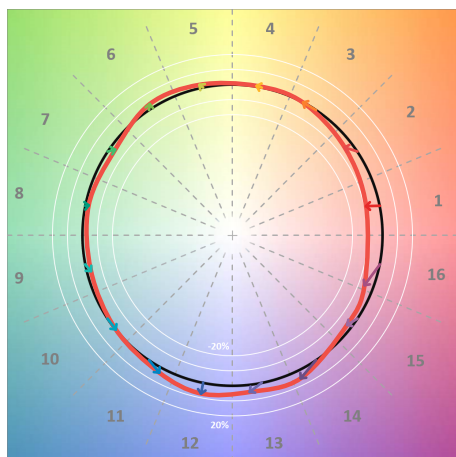
Colour Quality Scale CQS = 83.9
 Television Lighting Consistency Index TLCI = 76



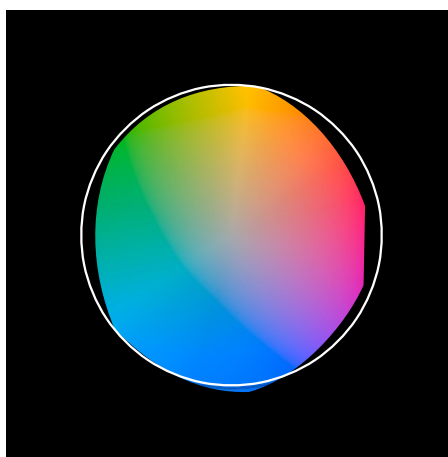
Relative spectral power distribution



TM30 details

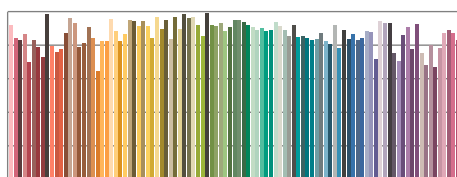


TM30 Colour vectors per hue bin

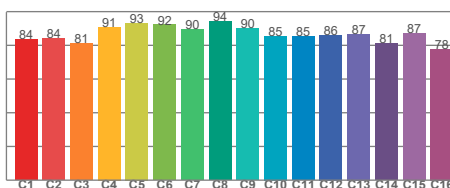


TM30 Colour distortion

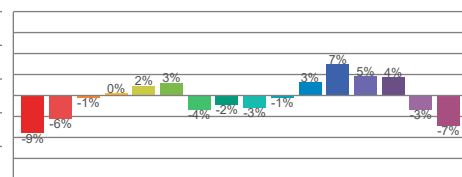
Hue Bin	R_f	Shifts (%)	
		Chroma	Hue
C1	84	-9%	2%
C2	84	-6%	7%
C3	81	-1%	10%
C4	91	0%	4%
C5	93	2%	2%
C6	92	3%	-3%
C7	90	-4%	-4%
C8	94	-2%	-1%
C9	90	-3%	5%
C10	85	-1%	9%
C11	85	3%	10%
C12	86	7%	0%
C13	87	5%	-9%
C14	81	4%	-15%
C15	87	-3%	-7%
C16	78	-7%	-16%



TM30-18 R_f -values per reference colour

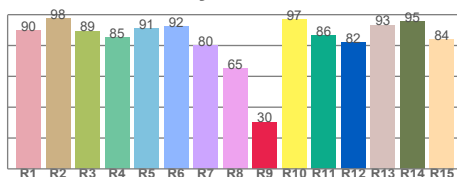


TM30-18 R_f -values per hue bin

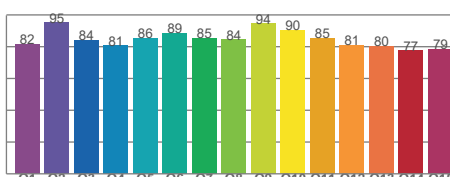


TM30 Chroma shift

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)

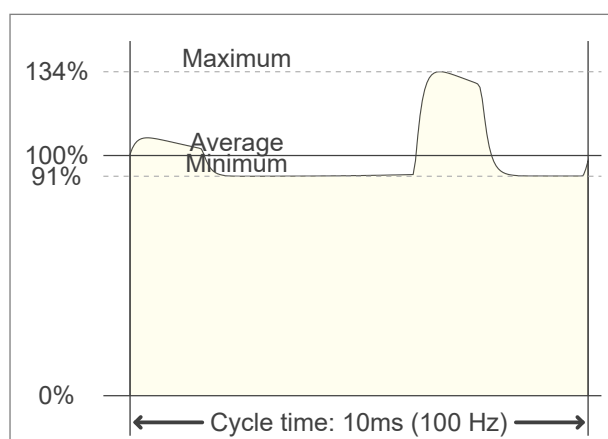
Flicker frequency	100 Hz
Percent flicker	19.93 %
Flicker index	0.05

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

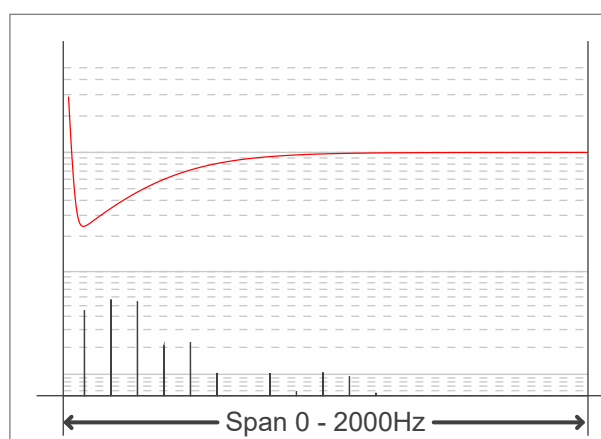
An LED luminaire is considered flicker-free if the SVM value is ≤ 0.4 and if the PstLM value is ≤ 1.0

PstLM value ($F < 80$ Hz)	0.2
SVM value ($80 < F < 2000$ Hz)	0.42

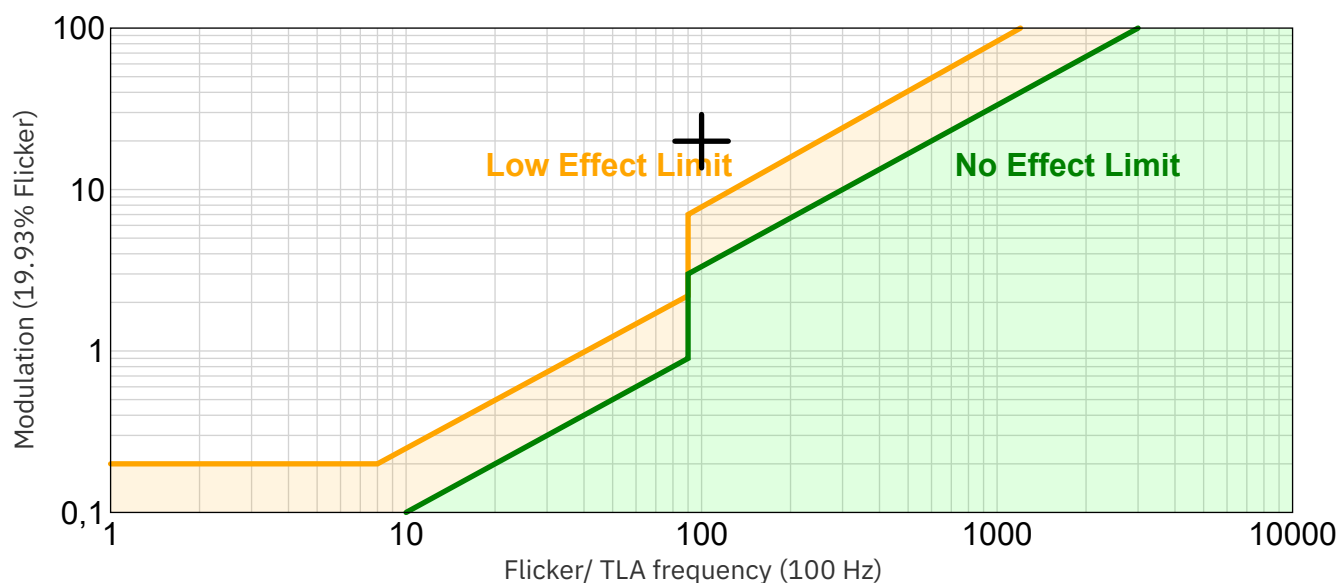
Flicker frame (one flicker period in time domain)



Flicker FFT (flicker curve in frequency domain)



IEEE 1789-2015 Lighting Flicker Risk Zones



Document revision date: 27-10-2025 Measurement serial: VFR-251024-12232-SW

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Beam angle

Luminous Intensity diagram

Unit: 0-100% of peak intensity

Main Values

Output (total Lumen)	439 lm
Lumen Up/Down	0% / 100%
Peak Intensity	277 cd
Beam Angle (50%)	69.6°
Beam Angle (90%)	69.6°
Beam Angle (10%)	69.6°

Cut-off Angle

Average 2.5%	157.9°
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Field Angle

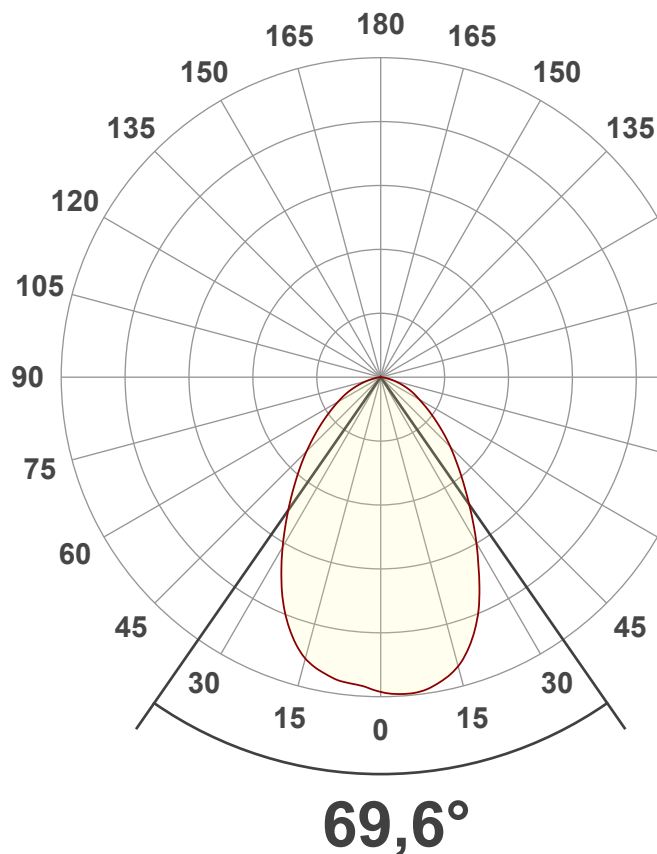
Average 10%	133.4°
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Intensity Ratio

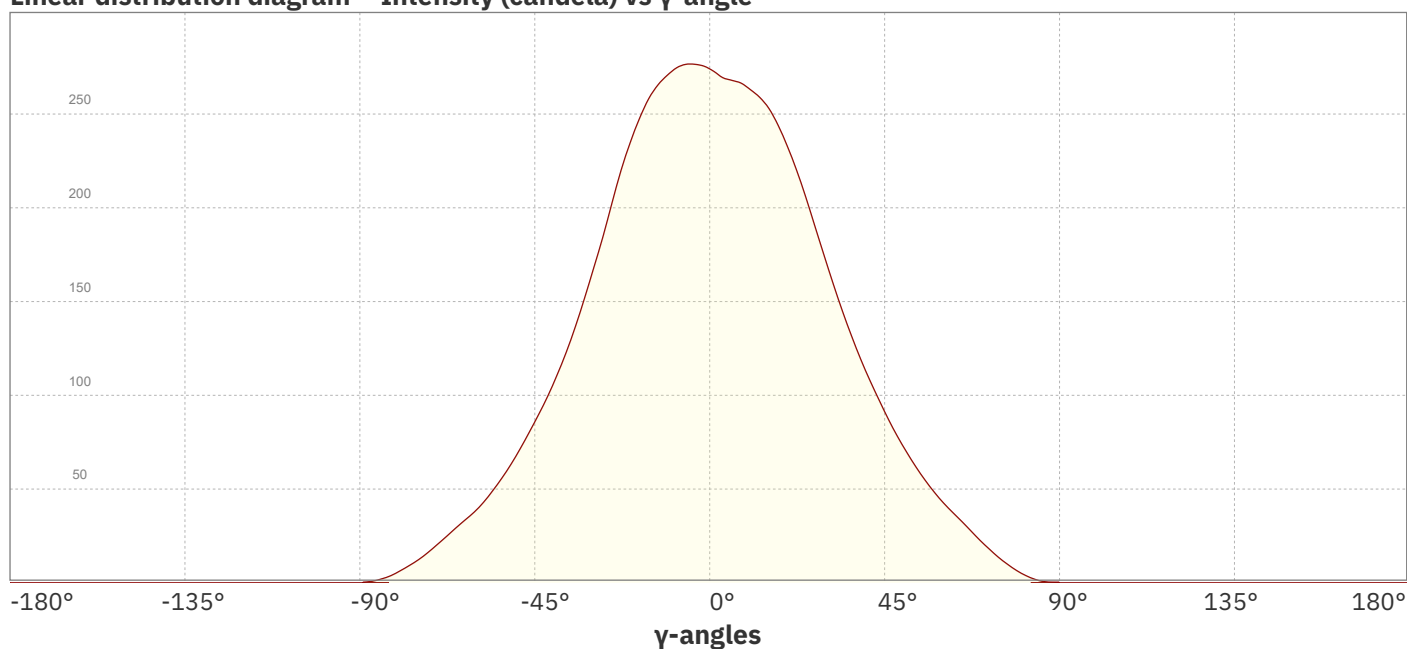
In 120° cone	89.5%
In 90° cone	71.3%

C planes

C000-C180
C090-C270



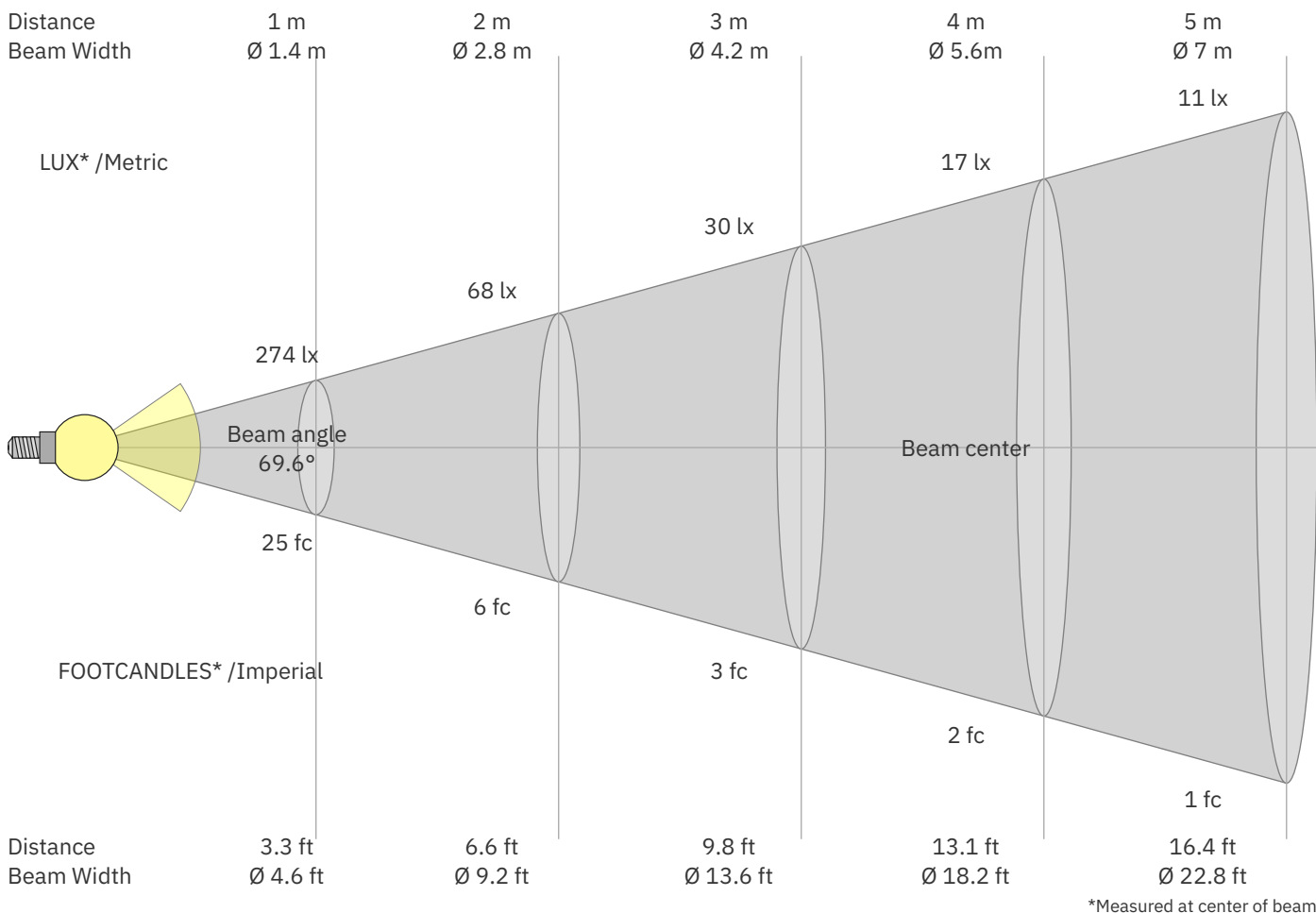
Linear distribution diagram - Intensity (candela) vs γ-angle



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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
274	68	30	17	11	8	6	4	3	3	2	2	2	1	1	1	1	1	1	1	lux
25.4	6.4	2.8	1.6	1	0.7	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	0.1	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
274	276	272	260	237	204	167	134	107	86	67	51	39	30	21	12	6	2	0	0	cd
100%	101%	99%	95%	87%	74%	61%	49%	39%	31%	24%	19%	14%	11%	8%	4%	2%	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
274	276	272	260	237	204	167	134	107	86	67	51	39	30	21	12	6	2	0	0	cd
100%	101%	99%	95%	87%	74%	61%	49%	39%	31%	24%	19%	14%	11%	8%	4%	2%	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
274	268	264	254	233	204	171	140	114	91	72	56	43	32	22	12	5	1	0	0	cd
100%	98%	96%	93%	85%	74%	62%	51%	42%	33%	26%	20%	16%	12%	8%	5%	2%	0%	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
274	268	264	254	233	204	171	140	114	91	72	56	43	32	22	12	5	1	0	0	cd
100%	98%	96%	93%	85%	74%	62%	51%	42%	33%	26%	20%	16%	12%	8%	5%	2%	0%	0%	0%	of 0°val

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Light Planning – UGR table

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										
X	Y	Viewed Crosswise				Viewed Endwise				
		(Viewing direction orthogonal to lamp length axis)				(Viewing direction parallel to lamp length axis)				
	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	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
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		

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	111	107	104	101	108	105	102	99	101	98	96	97	95	93	94	92	90	88
2	103	96	91	86	100	94	89	85	91	87	83	88	84	81	85	82	79	77
3	95	87	80	74	93	85	79	74	82	77	73	80	75	71	77	73	70	68
4	89	78	71	65	87	77	70	65	75	69	64	73	67	63	71	66	62	61
5	83	72	64	58	81	70	63	58	68	62	57	67	61	57	65	60	56	54
6	77	66	58	52	75	65	57	52	63	56	52	61	56	51	60	55	51	49
7	72	60	53	47	71	60	52	47	58	52	47	57	51	46	55	50	46	44
8	68	56	48	43	66	55	48	43	54	47	43	53	47	42	52	46	42	41
9	64	52	44	39	62	51	44	39	50	44	39	49	43	39	48	43	39	37
10	60	48	41	36	59	48	41	36	47	41	36	46	40	36	45	40	36	34