



PHOTOMETRIC LIGHT REPORT

Tri-proof lightbar | 1260mm | IP65 | 40W | 3- CCT | DALI

Article number: 950-196



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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 950-196. 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 950-196 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 950-196 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	4 planes – 90°
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	36.9 W – PF 0.97 – DPF 0.97
Frequency of Input Power	50 Hz
Warm-up Time and Variation	Lamp stabilized in 15 min 8 sec – +3.7%

Tested light source

Manufacturer and Order Code	Tronix Lighting – 950-196
Product Description	Tri-proof lightbar 1260mm IP65 40W 3-CCT DALI

Main Light Measurement Results

Output – Total Lumen (Up% / Down%)	5164 lm – 0.01% / 99.99%
Efficiency	140 lm/W
Energy efficiency class	D
Peak Intensity and Beam Angle	1536 cd – 126.3°
Correlated Colour Temperature	CCT = 4352 K
Colour Shift. CIE duv	Duv -0.0039
Colour Rendering Index	CRI 86.3
Colour Rendering TM30-18	R _f 84.0 – R _g 97.3
Television Lighting Consistency Index	TLCI = 75
Flicker	SVM 0.01 – PstLM 0.06

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Electrical measurement details

Input Power

RMS Input voltage feed. V_{RMS}

230 V

RMS Input current feed. I_{RMS}

0.166 A

Total input power

36.9 W

Frequency of input power

50 Hz

Power factor

0.97

Displacement power factor

0.97

Total harmonic distortion of the current

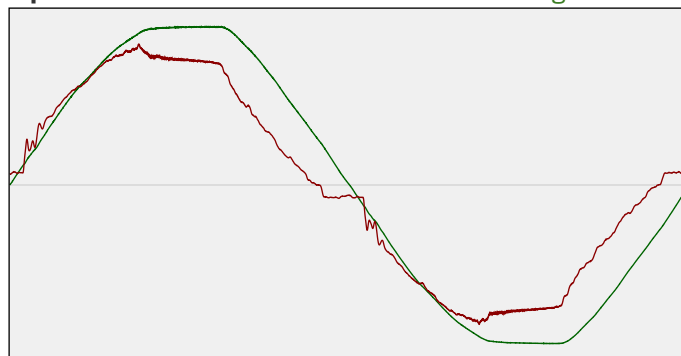
10.75%

Total harmonic distortion of the voltage

2.55%

Input Power Curve

Voltage - Current



Efficiency

Radiated power efficiency: 43.4%



Lumen efficiency: 140 lm/W



Harmonics

3rd Harmonic

7.13%

5th Harmonic

6.51%

7th Harmonic

0.97%

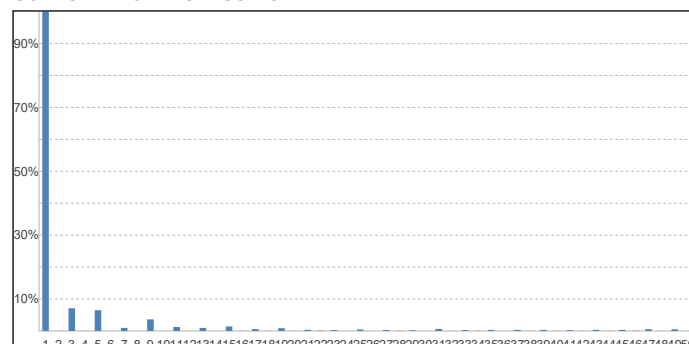
9th Harmonic

3.65%

11th Harmonic

1.27%

Current Harmonics %



Stabilization Details

Warm-up Conditions

Stable period

15 min CCT start

4350 K

Stable change max

2.0% CCT shift

+2 K

Minimum warm-up time

15 min CCT end

4352 K

Colour temperature change during warm-up

Warm-up Results

Total warmup time

Lamp stabilized in 15 min 8 sec

Output intensity change during warm-up

Output start

5123 lm

Warmup variation

+3.7%

Output change

+41 lm

Output end

5164 lm

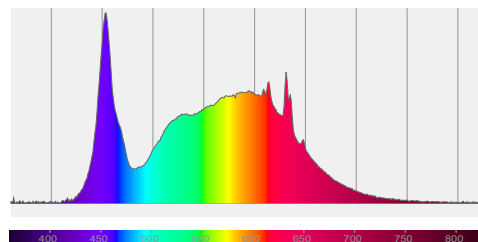
950-196 Tri-proof lightbar | 1260mm | IP65 | 40W | 3-CCT | DALI

Colour measurement details

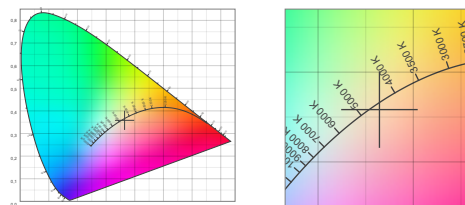
Total lumen output 5164 lm
 Correlated Colour Temperature 4352 K
 Colour coordinates CIE 1931 (x;y) = (0.364;0.358)
 Colour deviation from BBL Duv = -0.0039

TM30-18 Colour Fidelity Index R_f 84.0
 TM30-18 Colour Gamut Index R_g 97.3
 Colour Rendering Index (Ra) CRI 86.3
 Colour Rendering Index. (red component) $R_9 = 29.1$

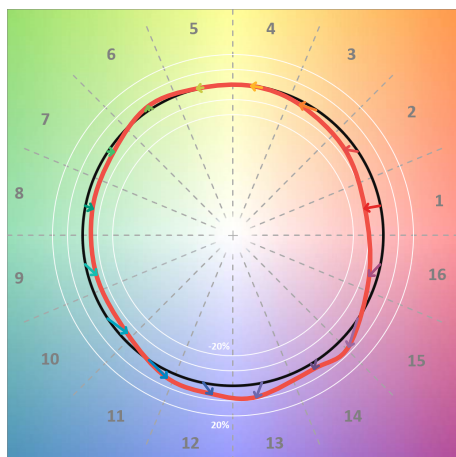
Colour Quality Scale CQS = 82.9
 Television Lighting Consistency Index TLCI = 75



Relative spectral power distribution



TM30 details

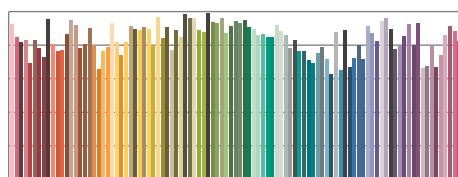


TM30 Colour vectors per hue bin

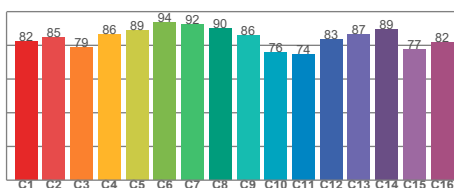


TM30 Colour distortion

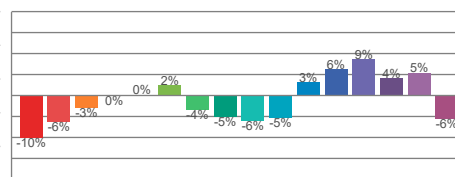
Hue Bin	R_f	Shifts (%)	
		Chroma	Hue
C1	82	-10%	0%
C2	85	-6%	6%
C3	79	-3%	11%
C4	86	0%	7%
C5	89	0%	4%
C6	94	2%	-1%
C7	92	-4%	-2%
C8	90	-5%	1%
C9	86	-6%	8%
C10	76	-5%	15%
C11	74	3%	16%
C12	83	6%	7%
C13	87	9%	-5%
C14	89	4%	-4%
C15	77	5%	-19%
C16	82	-6%	-9%



TM30-18 R_f -values per reference colour

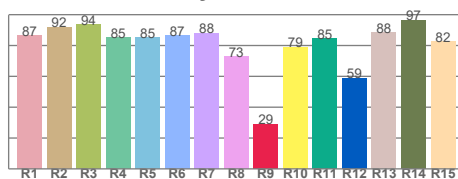


TM30-18 R_f -values per hue bin

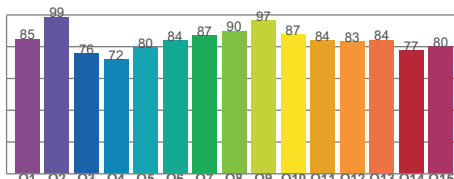


TM30 Chroma shift

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)

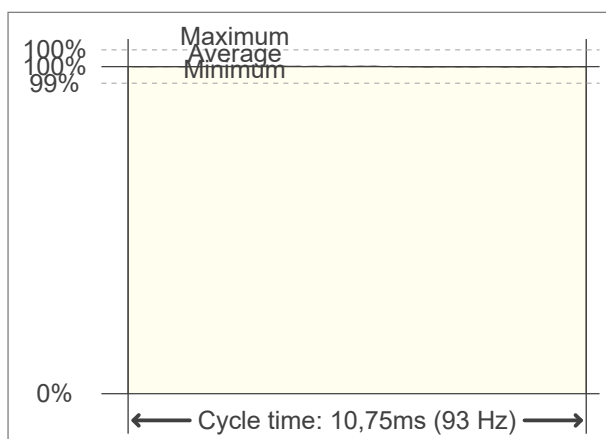
Flicker frequency	93.02 Hz
Percent flicker	0.28 %
Flicker index	0

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

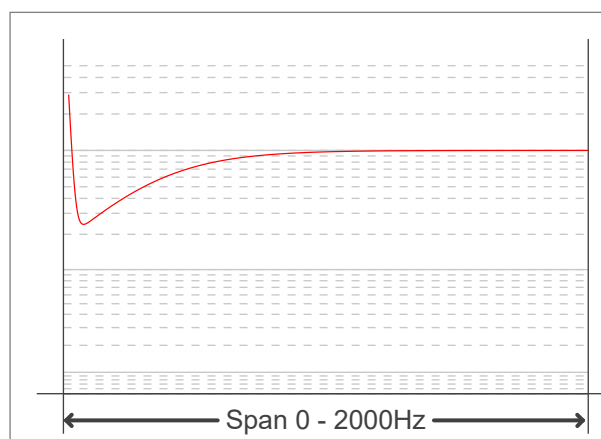
An LED luminaire is considered flicker-free if the SVM value is ≤ 0.4 and if the PstLM value is ≤ 1.0

PstLM value ($F < 80$ Hz)	0.06
SVM value ($80 < F < 2000$ Hz)	0.01

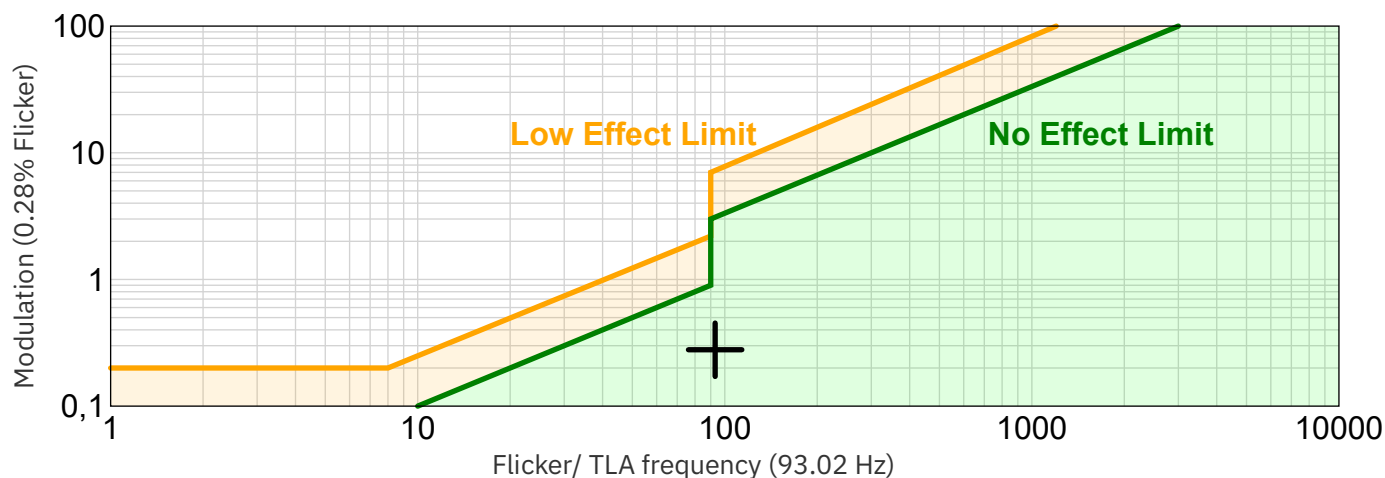
Flicker frame (one flicker period in time domain)



Flicker FFT (flicker curve in frequency domain)



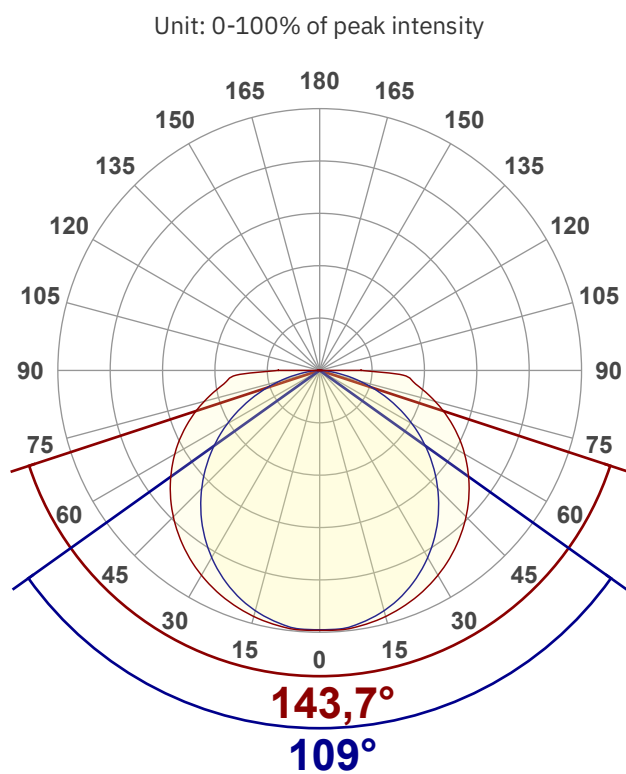
IEEE 1789-2015 Lighting Flicker Risk Zones



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Beam angle

Luminous Intensity diagram



Main Values

Output (total Lumen)	5164 lm
Lumen Up/Down	0.01% / 99.99%
Peak Intensity	1536 cd
Beam Angle (50%)	126.3°
Beam Angle (90%)	109°
Beam Angle (10%)	143.7°

Cut-off Angle

Average 2.5%	176.1°
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Field Angle

Average 10%	169.3°
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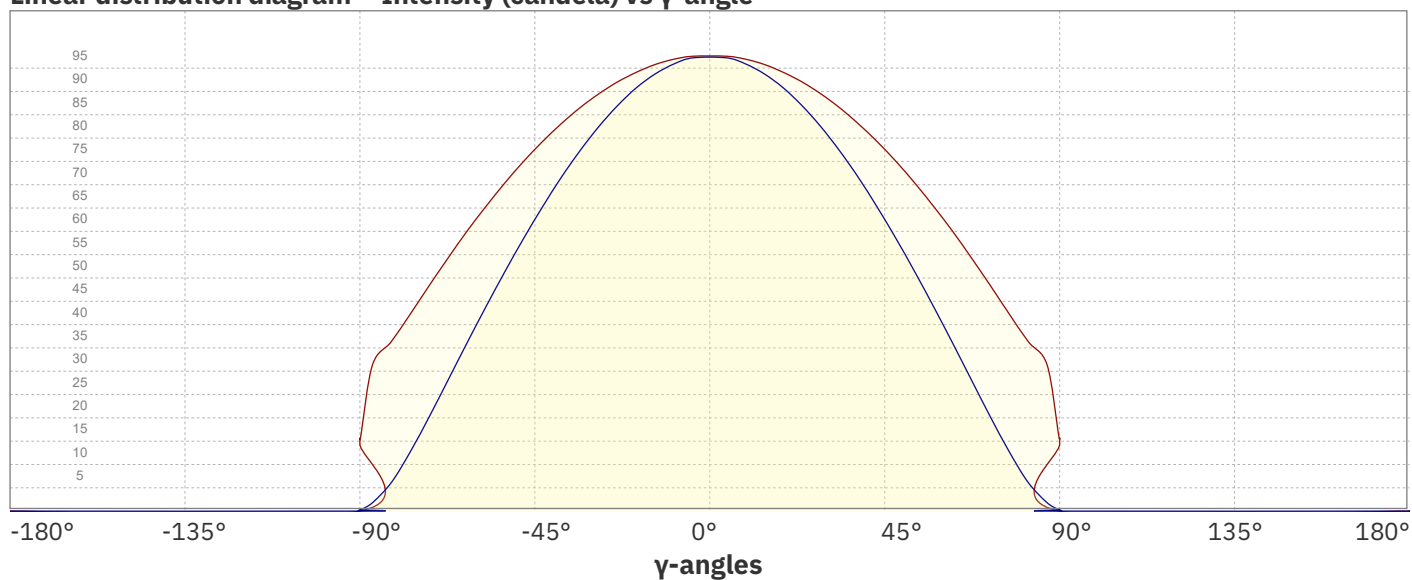
Intensity Ratio

In 120° cone	71.1%
In 90° cone	47.0%

C planes

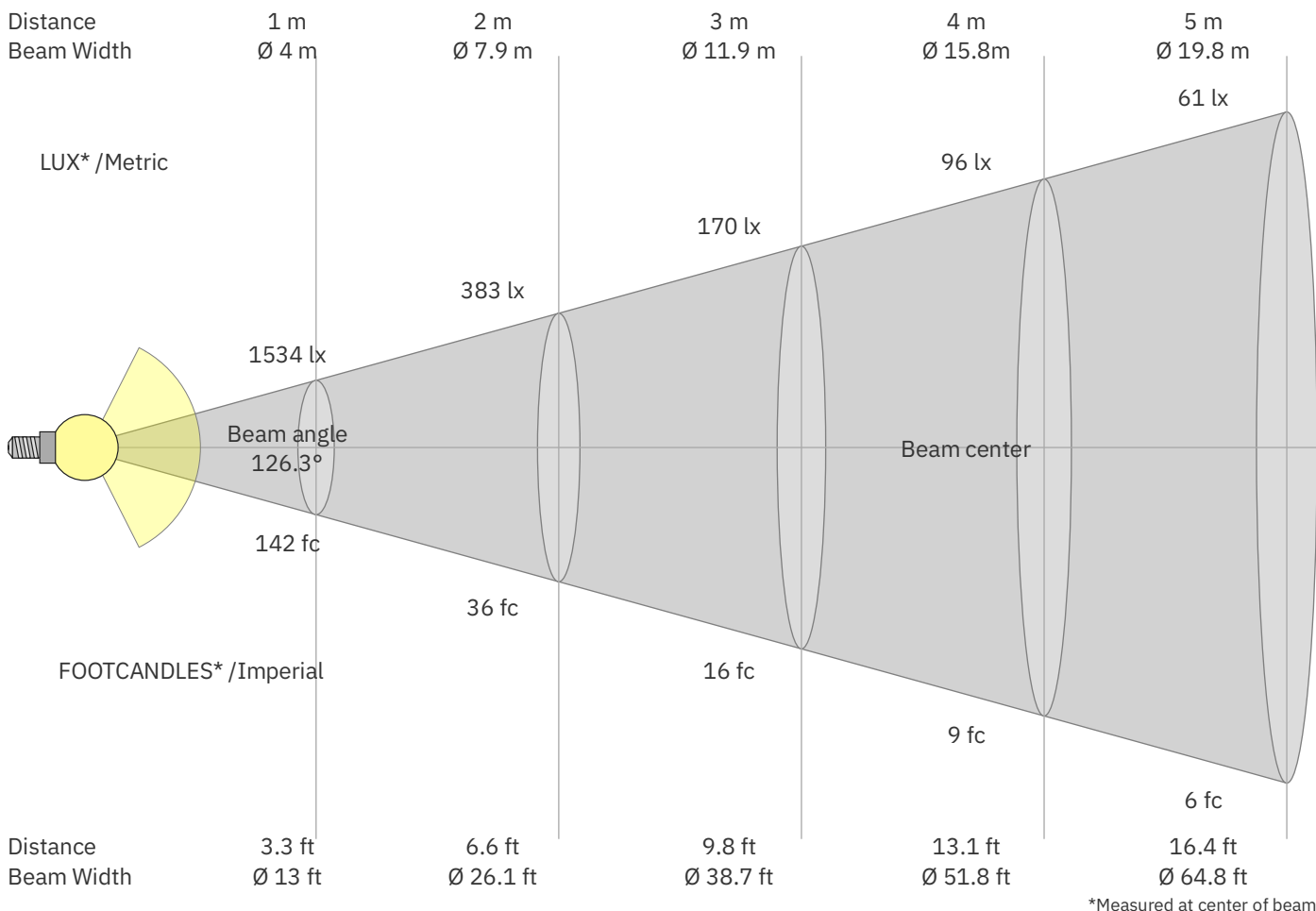
C000-C180
C090-C270

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
1534	383	170	96	61	43	31	24	19	15	13	11	9	8	7	6	5	5	4	4	lux
142.5	35.6	15.8	8.9	5.7	4	2.9	2.2	1.8	1.4	1.2	1	0.8	0.7	0.6	0.6	0.5	0.4	0.4	0.4	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
1534	1535	1523	1503	1475	1439	1395	1344	1286	1221	1149	1071	987	898	803	706	609	522	227	0	cd
100%	100%	99%	98%	96%	94%	91%	88%	84%	80%	75%	70%	64%	59%	52%	46%	40%	34%	15%	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
1534	1528	1505	1467	1416	1351	1274	1187	1090	984	872	753	629	502	374	250	137	53	4	0	cd
100%	100%	98%	96%	92%	88%	83%	77%	71%	64%	57%	49%	41%	33%	24%	16%	9%	3%	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
1534	1535	1523	1503	1475	1439	1395	1344	1286	1221	1149	1071	987	898	803	706	609	522	227	0	cd
100%	100%	99%	98%	96%	94%	91%	88%	84%	80%	75%	70%	64%	59%	52%	46%	40%	34%	15%	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
1534	1528	1505	1467	1416	1351	1274	1187	1090	984	872	753	629	502	374	250	137	53	4	0	cd
100%	100%	98%	96%	92%	88%	83%	77%	71%	64%	57%	49%	41%	33%	24%	16%	9%	3%	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	21.2	22.6	21.5	22.9	23.1	20.6	21.9	20.9	22.3	22.5
	3H	23.1	24.5	23.6	24.8	25.0	22.0	23.4	22.4	23.7	23.9
	4H	24.1	25.4	24.5	25.7	26.0	22.6	23.9	23.0	24.2	24.4
	6H	25.1	26.3	25.5	26.6	27.0	23.0	24.2	23.3	24.4	24.8
	8H	25.6	26.7	25.9	27.0	27.4	23.1	24.2	23.4	24.5	24.9
	12H	26.0	27.1	26.4	27.4	27.9	23.1	24.2	23.5	24.6	25.0
4H	2H	21.8	23.1	22.2	23.4	23.6	21.3	22.6	21.7	22.9	23.2
	3H	24.0	25.1	24.4	25.5	25.9	23.0	24.1	23.4	24.5	24.9
	4H	25.0	26.1	25.5	26.5	27.0	23.6	24.7	24.1	25.1	25.6
	6H	26.1	27.1	26.6	27.5	27.9	24.2	25.1	24.7	25.5	25.9
	8H	26.7	27.6	27.2	28.0	28.3	24.3	25.2	24.8	25.6	26.0
	12H	27.2	28.0	27.7	28.4	28.9	24.4	25.2	24.9	25.6	26.1
8H	4H	25.3	26.2	25.8	26.6	27.0	24.1	25.0	24.6	25.4	25.8
	6H	26.6	27.3	27.1	27.8	28.4	24.8	25.5	25.3	26.0	26.6
	8H	27.3	27.9	27.8	28.5	29.1	25.1	25.8	25.6	26.3	26.9
	12H	28.0	28.5	28.6	29.0	29.7	25.3	25.9	25.9	26.4	27.0
12H	4H	25.3	26.1	25.8	26.5	27.0	24.2	25.0	24.7	25.4	25.9
	6H	26.7	27.3	27.2	27.9	28.5	25.0	25.6	25.5	26.2	26.8
	8H	27.4	28.0	28.0	28.5	29.1	25.4	25.9	25.9	26.4	27.0
Variations with the observer position for the luminaire spacings. S:											
S = 1.0H				0.0 / 0.0				0.1 / -0.1			
S = 1.5H				0.1 / -0.1				0.1 / -0.2			
S = 2.0H				0.2 / -0.3				0.4 / -0.5			

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	106	106	106	102	102	102	100	
1	107	101	96	91	104	99	94	90	94	90	87	90	87	84	87	84	82	79
2	96	87	79	73	93	85	78	72	81	75	70	78	73	68	75	70	67	64
3	87	75	66	59	84	74	65	59	71	64	58	68	62	57	65	60	56	53
4	79	66	57	50	77	65	56	49	62	55	49	60	53	48	58	52	47	45
5	73	59	49	42	71	58	49	42	56	48	42	54	47	41	52	46	41	38
6	67	53	44	37	65	52	43	37	50	42	36	48	41	36	47	40	36	33
7	62	48	39	32	60	47	38	32	46	38	32	44	37	32	43	36	31	29
8	58	44	35	29	56	43	34	29	42	34	28	40	33	28	39	33	28	26
9	54	40	31	26	53	39	31	26	38	31	25	37	30	25	36	30	25	23
10	51	37	29	23	49	36	28	23	35	28	23	34	28	23	33	27	23	21