



PHOTOMETRIC LIGHT REPORT

Batten light | 603mm | 20W | IP20 | 3-CCT

Article number: 136-300



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TRONIX

136-300 Batten light | 603mm | 20W | IP20 | 3-CCT

Introduction

Purpose of this Document

This document provides accurate and objective photometric data for Tronix Lighting item 136-300. 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 136-300 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 136-300 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	18.1 W – PF 0.93 – DPF 0.95
Frequency of Input Power	50 Hz
Warm-up Time and Variation	Lamp stabilized in 21 min 2 sec --4.7%

Tested light source

Manufacturer and Order Code	Tronix Lighting – 136-300
Product Description	Batten light 603mm 20W IP20 3-CCT

Main Light Measurement Results

Output – Total Lumen (Up% / Down%)	2394 lm – 15.8% / 84.2%
Efficiency	132 lm/W
Energy efficiency class	E
Peak Intensity and Beam Angle	579 cd – 128.5°
Correlated Colour Temperature	CCT = 4354 K
Colour Shift. CIE duv	Duv -0.0065
Colour Rendering Index	CRI 88.3
Colour Rendering TM30-18	R _f 86.0 – R _g 98.7
Television Lighting Consistency Index	TLCI = 77
Flicker	SVM 2.43 – PstLM 0.34

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Electrical measurement details

Input Power

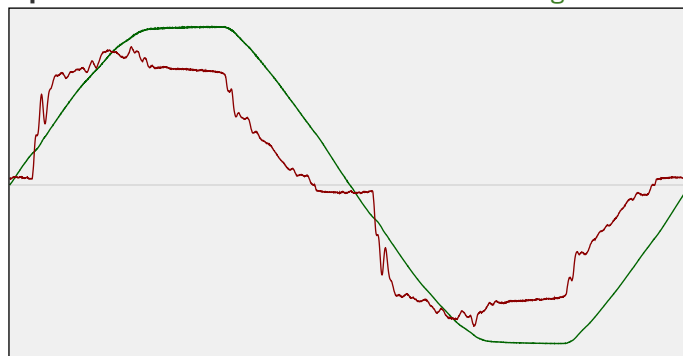
RMS Input voltage feed. V_{RMS} 233 V
 RMS Input current feed. I_{RMS} 0.083 A
 Total input power 18.1 W

Frequency of input power 50 Hz
 Power factor 0.93
 Displacement power factor 0.95

Total harmonic distortion of the current 18.55%
 Total harmonic distortion of the voltage 2.79%

Input Power Curve

Voltage - Current



Efficiency

Radiated power efficiency: 42.5%



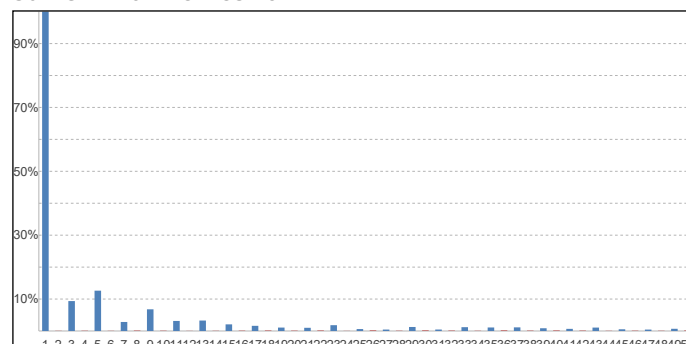
Lumen efficiency: 132 lm/W



Harmonics

3rd Harmonic 9.37%
 5th Harmonic 12.62%
 7th Harmonic 2.82%
 9th Harmonic 6.79%
 11th Harmonic 3.15%

Current Harmonics %



Stabilization Details

Warm-up Conditions

Stable period	15 min	CCT start	4341 K
Stable change max	2.0%	CCT shift	+13 K
Minimum warm-up time	15 min	CCT end	4354 K

Colour temperature change during warm-up

Warm-up Results

Total warmup time	Lamp stabilized in 21 min 2 sec	Output start	2506 lm
Warmup variation	-4.7%	Output change	-112 lm
		Output end	2394 lm

Output intensity change during warm-up

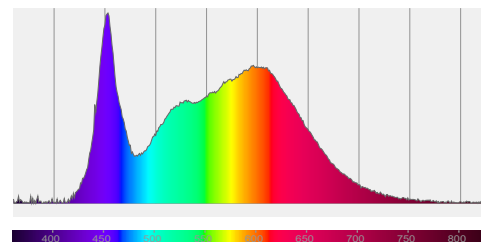
136-300 Batten light | 603mm | 20W | IP20 | 3-CCT

Colour measurement details

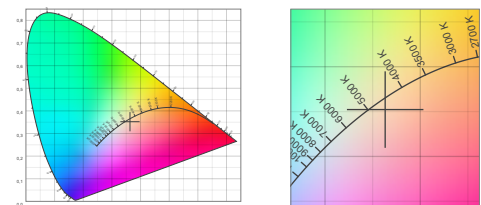
Total lumen output 2394 lm
 Correlated Colour Temperature 4354 K
 Colour coordinates CIE 1931 (x;y) = (0.363;0.352)
 Colour deviation from BBL Duv = -0.0065

TM30-18 Colour Fidelity Index R_f 86.0
 TM30-18 Colour Gamut Index R_g 98.7
 Colour Rendering Index (Ra) CRI 88.3
 Colour Rendering Index. (red component) $R_9 = 33.5$

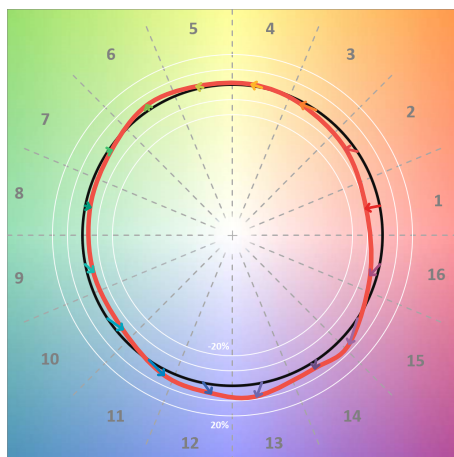
Colour Quality Scale CQS = 84.6
 Television Lighting Consistency Index TLCI = 77



Relative spectral power distribution



TM30 details

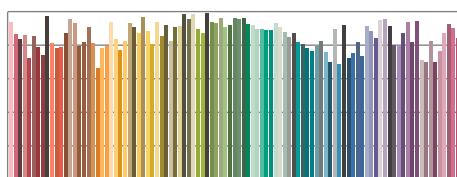


TM30 Colour vectors per hue bin

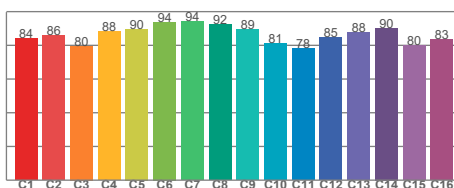


TM30 Colour distortion

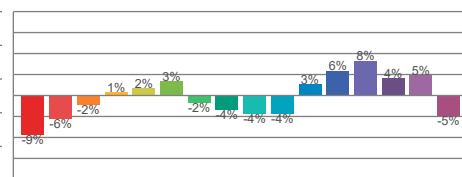
Hue Bin	R_f	Shifts (%)	
		Chroma	Hue
C1	84	-9%	0%
C2	86	-6%	6%
C3	80	-2%	11%
C4	88	1%	7%
C5	90	2%	4%
C6	94	3%	-1%
C7	94	-2%	-2%
C8	92	-4%	0%
C9	89	-4%	6%
C10	81	-4%	11%
C11	78	3%	14%
C12	85	6%	6%
C13	88	8%	-5%
C14	90	4%	-4%
C15	80	5%	-17%
C16	83	-5%	-8%



TM30-18 R_f -values per reference colour

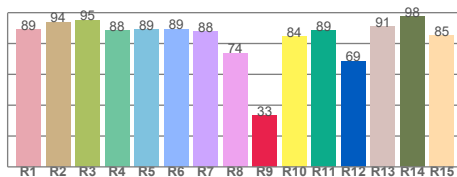


TM30-18 R_f -values per hue bin

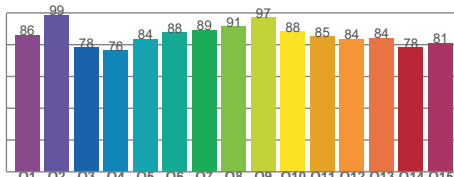


TM30 Chroma shift

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)

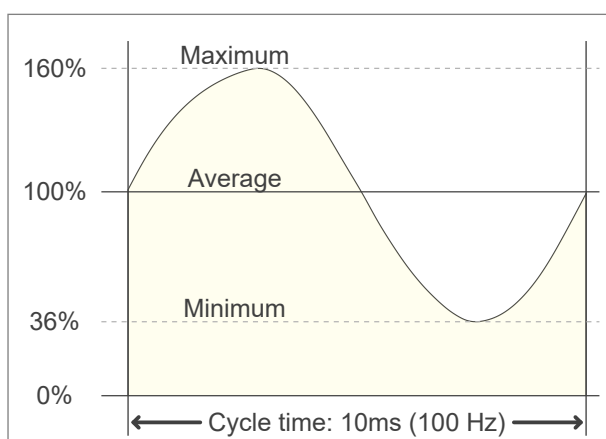
Flicker frequency	100 Hz
Percent flicker	63.46 %
Flicker index	0.2

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

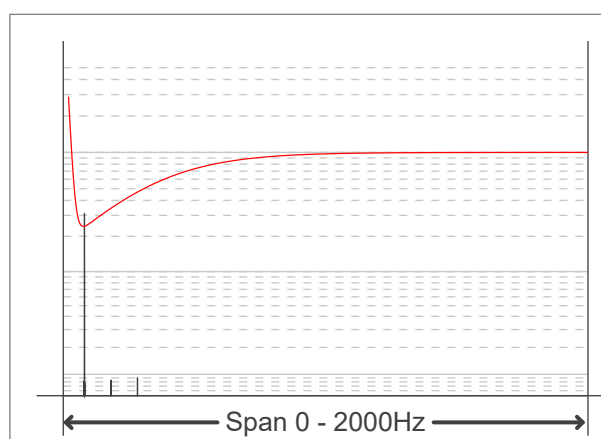
An LED luminaire is considered flicker-free if the SVM value is ≤ 0.4 and if the PstLM value is ≤ 1.0

PstLM value ($F < 80$ Hz)	0.34
SVM value ($80 < F < 2000$ Hz)	2.43

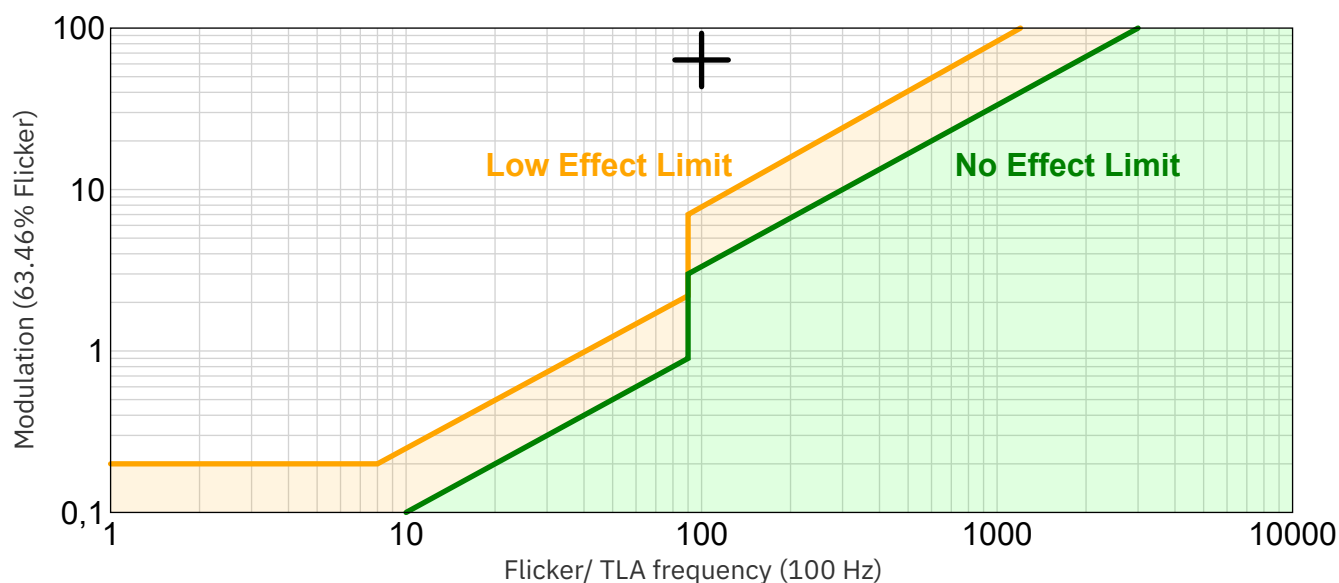
Flicker frame (one flicker period in time domain)



Flicker FFT (flicker curve in frequency domain)



IEEE 1789-2015 Lighting Flicker Risk Zones



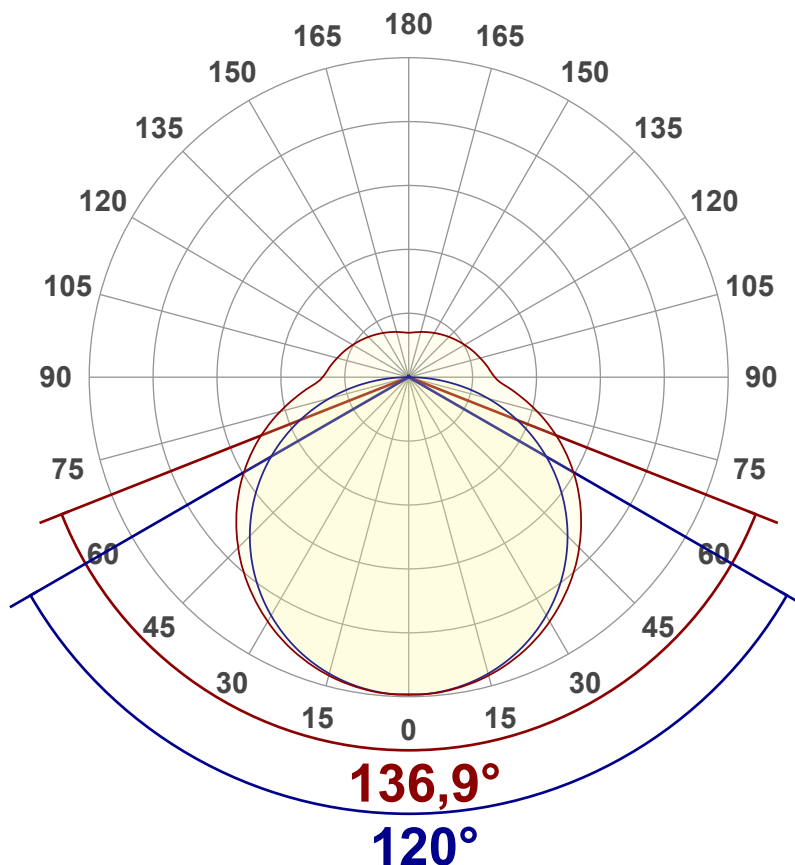
Document revision date: 1-7-2025 Measurement serial: VFR-250403-5261-MS

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Beam angle

Luminous Intensity diagram

Unit: 0-100% of peak intensity



Main Values

Output (total Lumen)	2394 lm
Lumen Up/Down	15.8% / 84.2%
Peak Intensity	579 cd
Beam Angle (50%)	128.5°
Beam Angle (90%)	120°
Beam Angle (10%)	136.9°

Cut-off Angle

Average 2.5%	268.6°
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Field Angle

Average 10%	264.3°
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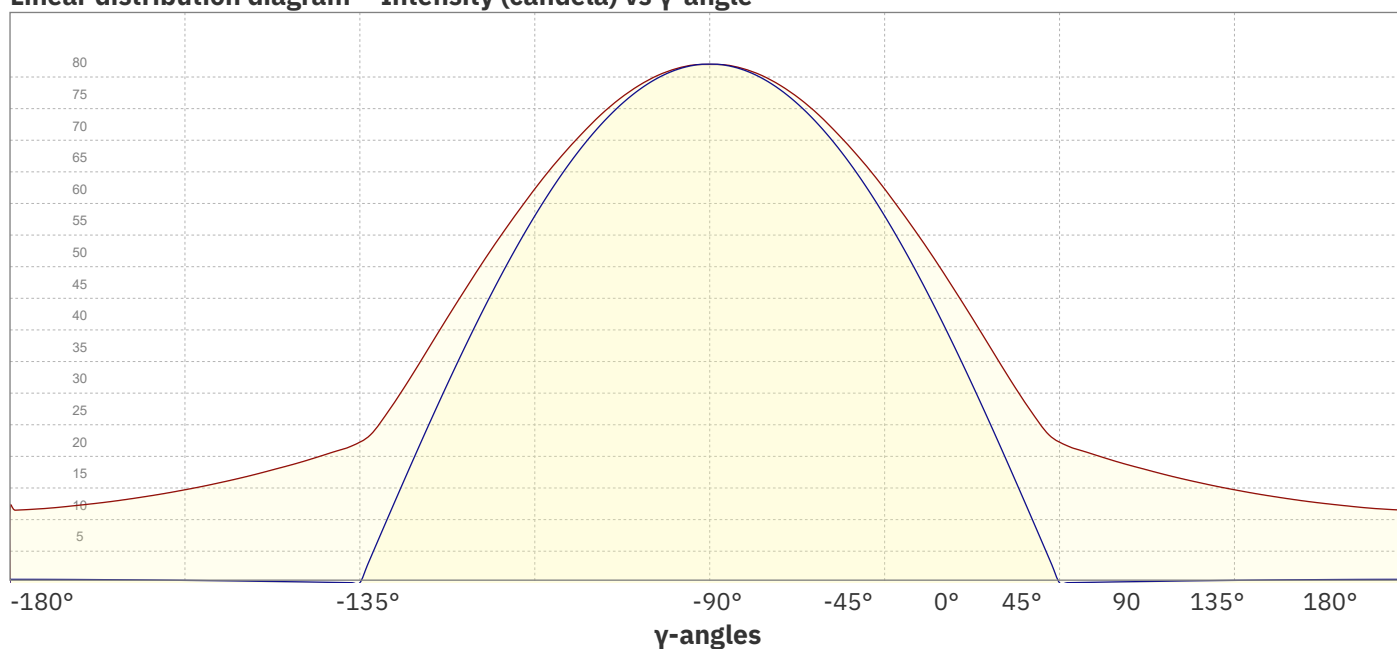
Intensity Ratio

In 120° cone	58.8%
In 90° cone	38.6%

C planes

C000-C180
C090-C270

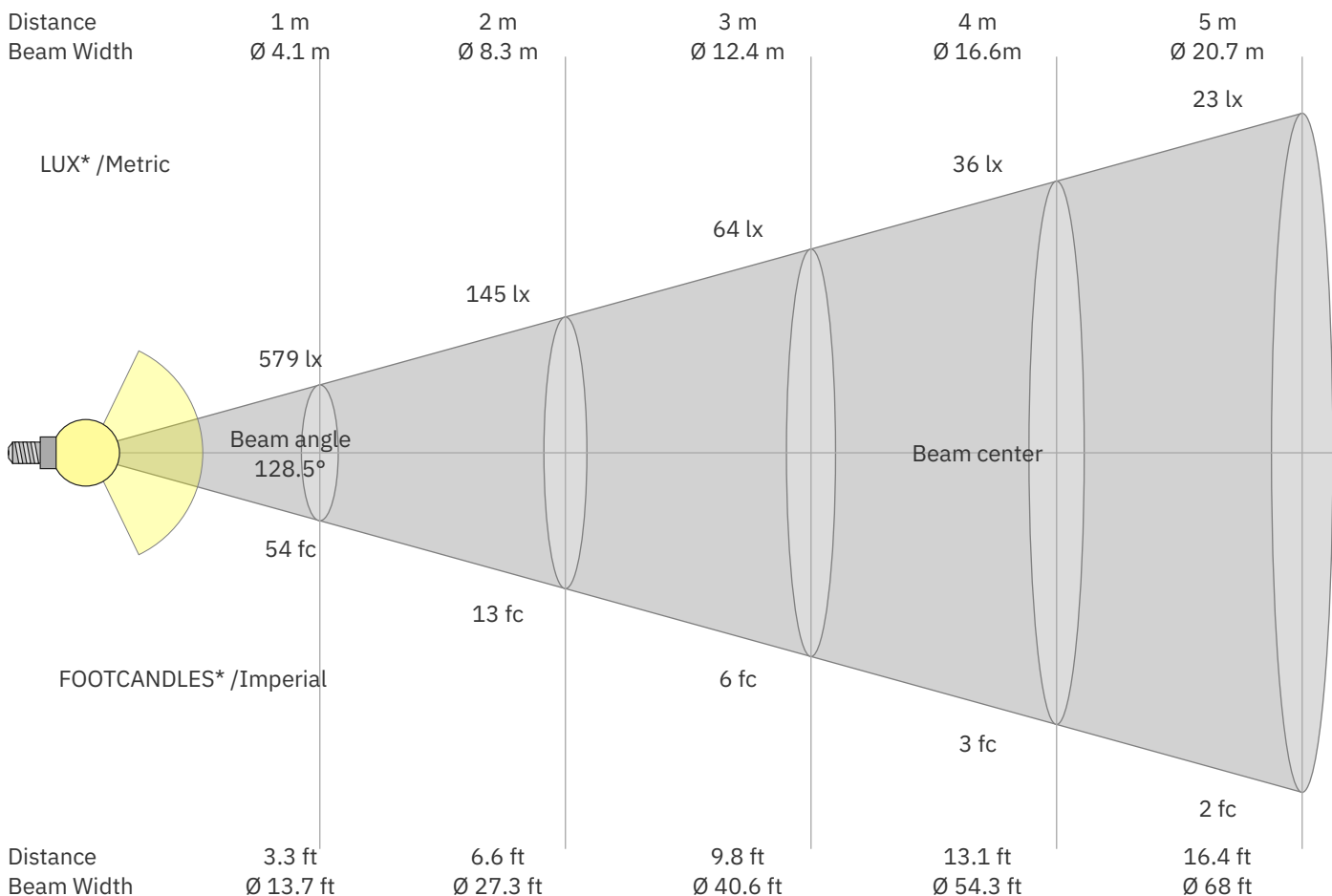
Linear distribution diagram - Intensity (candela) vs γ-angle



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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
579	145	64	36	23	16	12	9	7	6	5	4	3	3	3	2	2	2	2	1	lux
53.8	13.4	6	3.4	2.2	1.5	1.1	0.8	0.7	0.5	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.2	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
579	574	556	526	487	440	386	327	264	202	158	143	131	121	112	104	97	91	87	83	cd
100%	99%	96%	91%	84%	76%	67%	56%	46%	35%	27%	25%	23%	21%	19%	18%	17%	16%	15%	14%	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
579	572	551	516	469	410	341	263	179	91	0	1	1	2	2	3	3	3	4	4	cd
100%	99%	95%	89%	81%	71%	59%	45%	31%	16%	0%	0%	0%	0%	0%	0%	1%	1%	1%	1%	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
579	574	556	526	487	440	386	327	264	202	158	143	131	121	112	104	97	91	87	83	cd
100%	99%	96%	91%	84%	76%	67%	56%	46%	35%	27%	25%	23%	21%	19%	18%	17%	16%	15%	14%	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
579	572	551	516	469	410	341	263	179	91	0	1	1	2	2	3	3	3	4	4	cd
100%	99%	95%	89%	81%	71%	59%	45%	31%	16%	0%	0%	0%	0%	0%	0%	1%	1%	1%	1%	of 0°val

Light Planning – UGR table

Reflectances	70	70	50	50	30	70	70	50	50	30
ρ Ceiling	50	30	50	30	30	50	30	50	30	30
ρ Walls	20	20	20	20	20	20	20	20	20	20
ρ Floor										
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	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	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	115	115	115	115	111	111	111	111	102	102	102	95	95	95	88	88	88	84
1	103	98	93	88	99	94	89	85	87	83	80	80	77	74	74	72	69	66
2	93	84	76	70	89	81	74	68	74	69	64	69	64	60	64	60	57	53
3	84	73	64	57	80	70	62	56	65	58	53	60	54	50	55	51	47	44
4	77	64	55	48	73	62	53	47	57	50	44	53	47	42	49	44	40	37
5	70	57	48	41	67	55	46	40	51	44	38	47	41	36	44	39	34	32
6	65	51	42	35	62	49	41	34	46	38	33	43	36	31	40	34	30	27
7	60	46	37	31	57	45	36	30	42	34	29	39	32	28	36	31	26	24
8	56	42	33	27	53	41	32	27	38	31	26	35	29	25	33	28	23	21
9	52	38	30	24	50	37	29	24	35	28	23	33	26	22	31	25	21	19
10	49	35	27	22	47	34	27	22	32	25	21	30	24	20	28	23	19	17