PHOTOMETRIC LIGHT REPORT

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

Article number: 175-555

Go to the webshop of Tronix Lighting

TRONIX

175-555 LED spot | 50mm | white | 5 watt | 38° | 2000~2700K | dtw

Introduction

Purpose of this Document

This document provides accurate and objective photometric data for Tronix Lighting item 175-555. 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 175-555 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 175-555 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.

175-555 LED spot | 50mm | white | 5 watt | 38° | 2000~2700K | dtw

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	Vitrek 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	0.66 m
Room Temperature and Humidity	22°C +/- 10% – RH 50% +/- 20%
Input Power. Power and Displacement Factors	6.2 W – PF 0.98 – DPF 1.0
Frequency of Input Power	50.1 Hz
Warm-up Time and Variation	Lamp stabilized in 24 min 55 sec –-8.0%

Tested light source

Manufacturer and Order Code	Tronix Lighting – 175-555
Product Description	LED spot | 50mm | white | 5 watt | 38° | 2000~2700K | dtw

Main Light Measurement Results

Output – Total Lumen (Up% / Down%)	475 lm – 0% / 100%
Efficiency	76 lm/W
Energy efficiency class	G
Peak Intensity and Beam Angle	283 cd – 71.9°
Correlated Colour Temperature	CCT = 2968 K
Colour Shift. CIE duv	Duv -0.0096
Colour Rendering Index	CRI 86.5
Colour Rendering TM30-18	R_f 86.8 – R_g 98.1
Television Lighting Consistency Index	TLCI = 77
Flicker	SVM 0.39 – PstLM 0.18

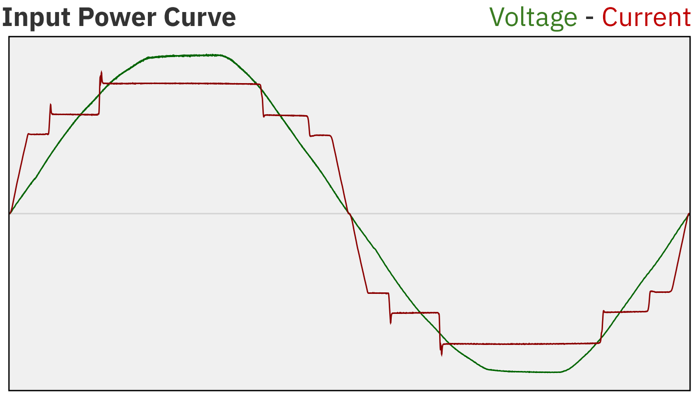
175-555 LED spot | 50mm | white | 5 watt | 38° | 2000~2700K | dtw

Electrical measurement details

Input Power

RMS Input voltage feed. V_{RMS}	229 V
RMS Input current feed. I_{RMS}	0.028 A
Total input power	6.2 W
Frequency of input power	50.1 Hz
Power factor	0.98
Displacement power factor	1.0
Total harmonic distortion of the current	21.38%
Total harmonic distortion of the voltage	2.73%

Input Power Curve



Efficiency

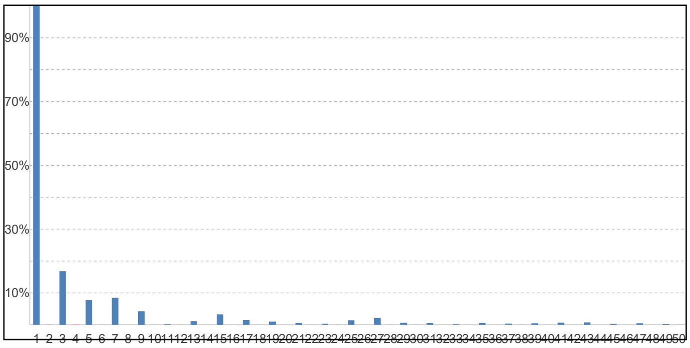
Radiated power efficiency: 25.1%

Lumen efficiency: 76 lm/W

Harmonics

3rd Harmonic	16.8%
5th Harmonic	7.74%
7th Harmonic	8.45%
9th Harmonic	4.26%
11th Harmonic	0.19%

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	2911 K
CCT shift	+57 K
CCT end	2968 K

Warm-up Results

Total warmup time	Lamp stabilized in 24 min 55 sec
Warmup variation	-8.0%

Output intensity change during warm-up

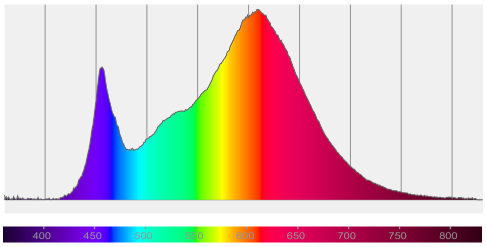
Output start	513 lm
Output change	-37 lm
Output end	475 lm

Document revision date: 27-10-2025 Measurement serial: VFR-251024-12228-SW

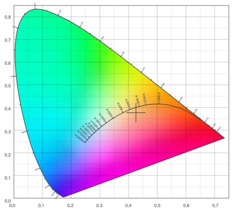
175-555 LED spot | 50mm | white | 5 watt | 38° | 2000~2700K | dtw

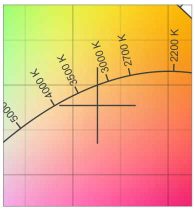
Colour measurement details

Total lumen output	475 lm
Correlated Colour Temperature	2968 K
Colour coordinates CIE 1931	(x;y) = (0.426;0.377)
Colour deviation from BBL	Duv = -0.0096
TM30-18 Colour Fidelity Index	R_f 86.8
TM30-18 Colour Gamut Index	R_g 98.1
Colour Rendering Index (Ra)	CRI 86.5
Colour Rendering Index. (red component)	R9 = 31.6
Colour Quality Scale	CQS = 84.3
Television Lighting Consistency Index	TLCI = 77

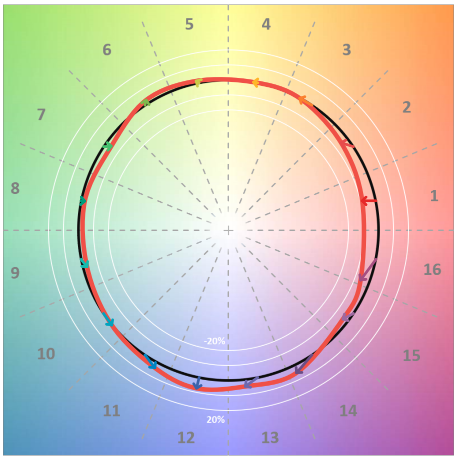


Relative spectral power distribution





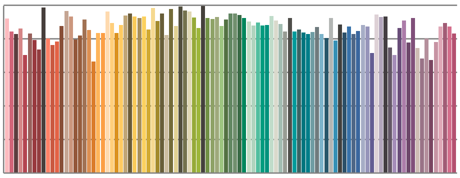
TM30 details



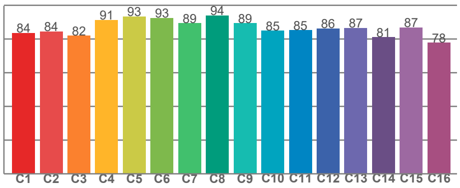
TM30 Colour vectors per hue bin

TM30 Colour distortion

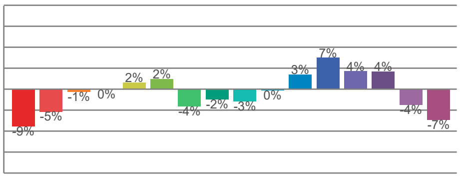
Hue Bin	R_f	Shifts (%) Chroma	Hue
C1	84	-9%	2%
C2	84	-5%	7%
C3	82	-1%	9%
C4	91	0%	3%
C5	93	2%	2%
C6	93	2%	-3%
C7	89	-4%	-3%
C8	94	-2%	0%
C9	89	-3%	6%
C10	85	0%	9%
C11	85	3%	10%
C12	86	7%	0%
C13	87	4%	-9%
C14	81	4%	-15%
C15	87	-4%	-7%
C16	78	-7%	-16%



TM30-18 Rf-values per reference colour

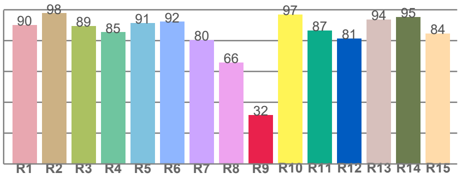


TM30-18 Rf-values per hue bin

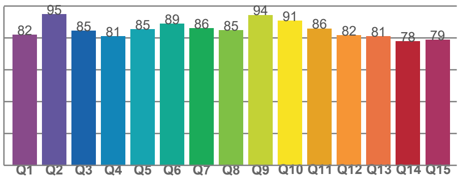


TM30 Chroma shift

Colour Quality details



Colour Rendering Index



Colour Qualitity Scale

Document revision date: 27-10-2025 Measurement serial: VFR-251024-12228-SW

175-555 LED spot | 50mm | white | 5 watt | 38° | 2000~2700K | dtw

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)

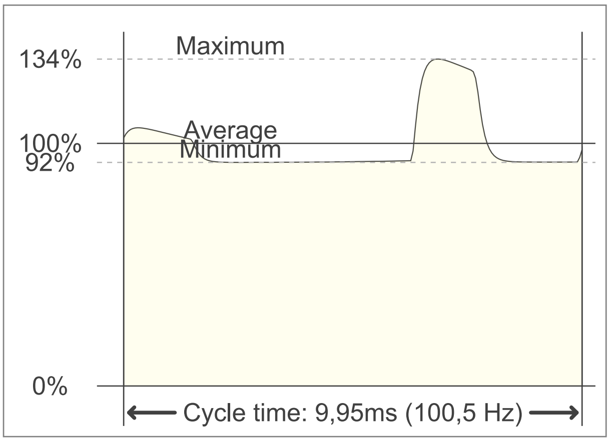
Flicker frequency	100.5 Hz
Percent flicker	18.92 %
Flicker index	0.05

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

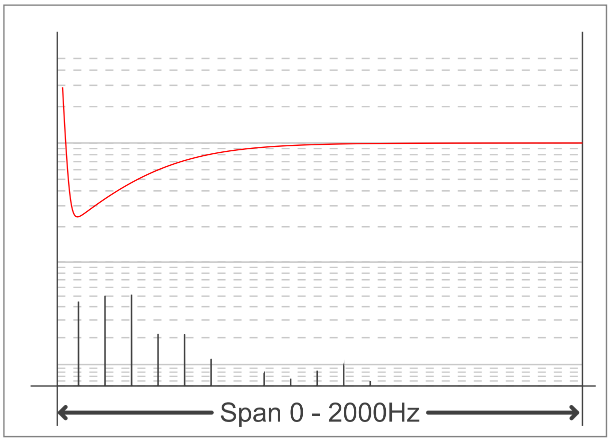
An LED luminaire is considered flicker-free if the SVM value is <= 0.4 and if the PstLM value is <=1.0

PstLM value (F < 80 Hz)	0.18
SVM value (80 < F < 2000 Hz)	0.39

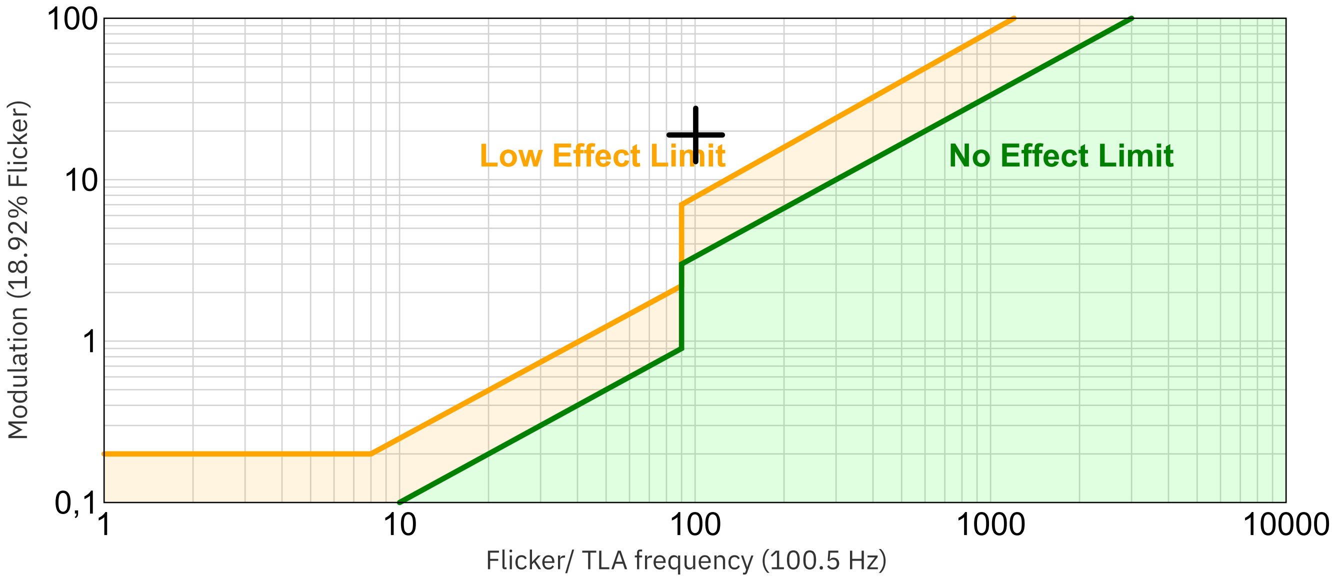
Flicker frame (one flicker period in time domain)



Flicker FFT (flicker curve in frequency domain)



IEEE 1789-2015 Lighting Flicker Risk Zones

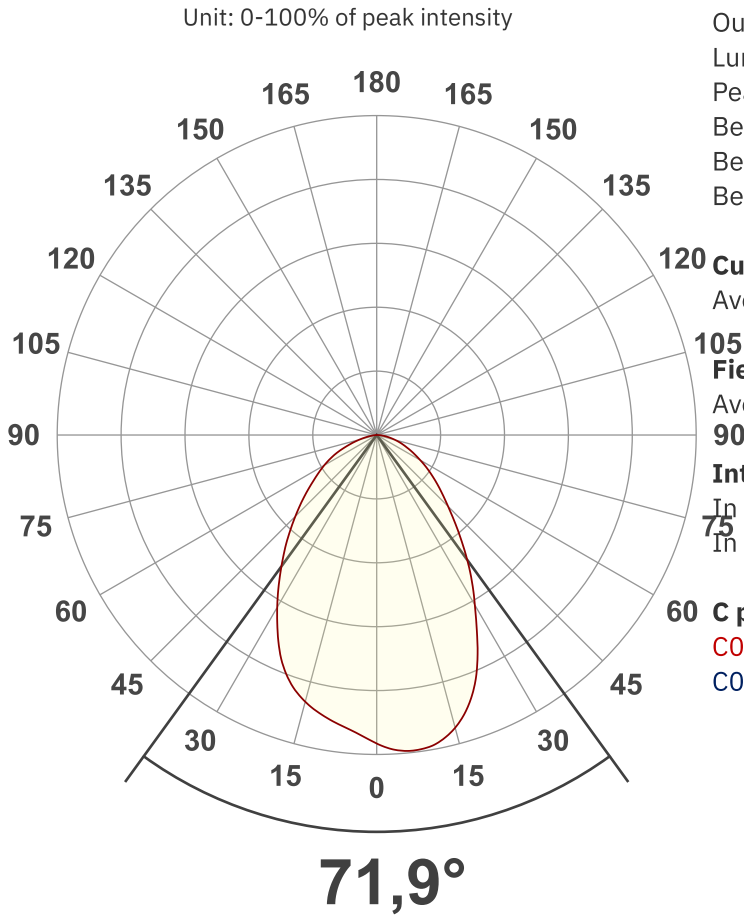


Document revision date: 27-10-2025 Measurement serial: VFR-251024-12228-SW

175-555 LED spot | 50mm | white | 5 watt | 38° | 2000~2700K | dtw

Beam angle

Luminous Intensity diagram



Main Values

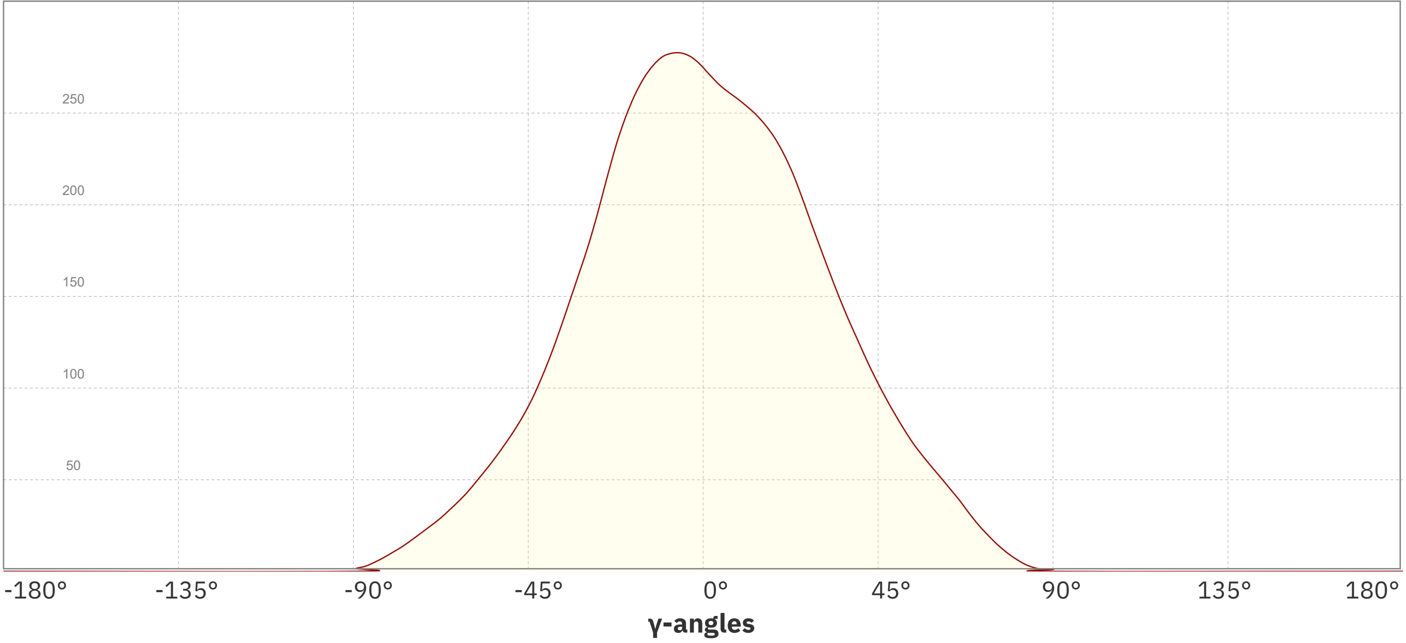
Output (total Lumen)	475 lm
Lumen Up/Down	0% / 100%
Peak Intensity	283 cd
Beam Angle (50%)	71.9°
Beam Angle (90%)	71.9°
Beam Angle (10%)	71.9°
Cut-off Angle	
Average 2.5%	162.8°
Field Angle	
Average 10%	137.7°
Intensity Ratio	
In 120° cone	87.6%
In 90° cone	68.4%

C planes

C000-C180

C090-C270

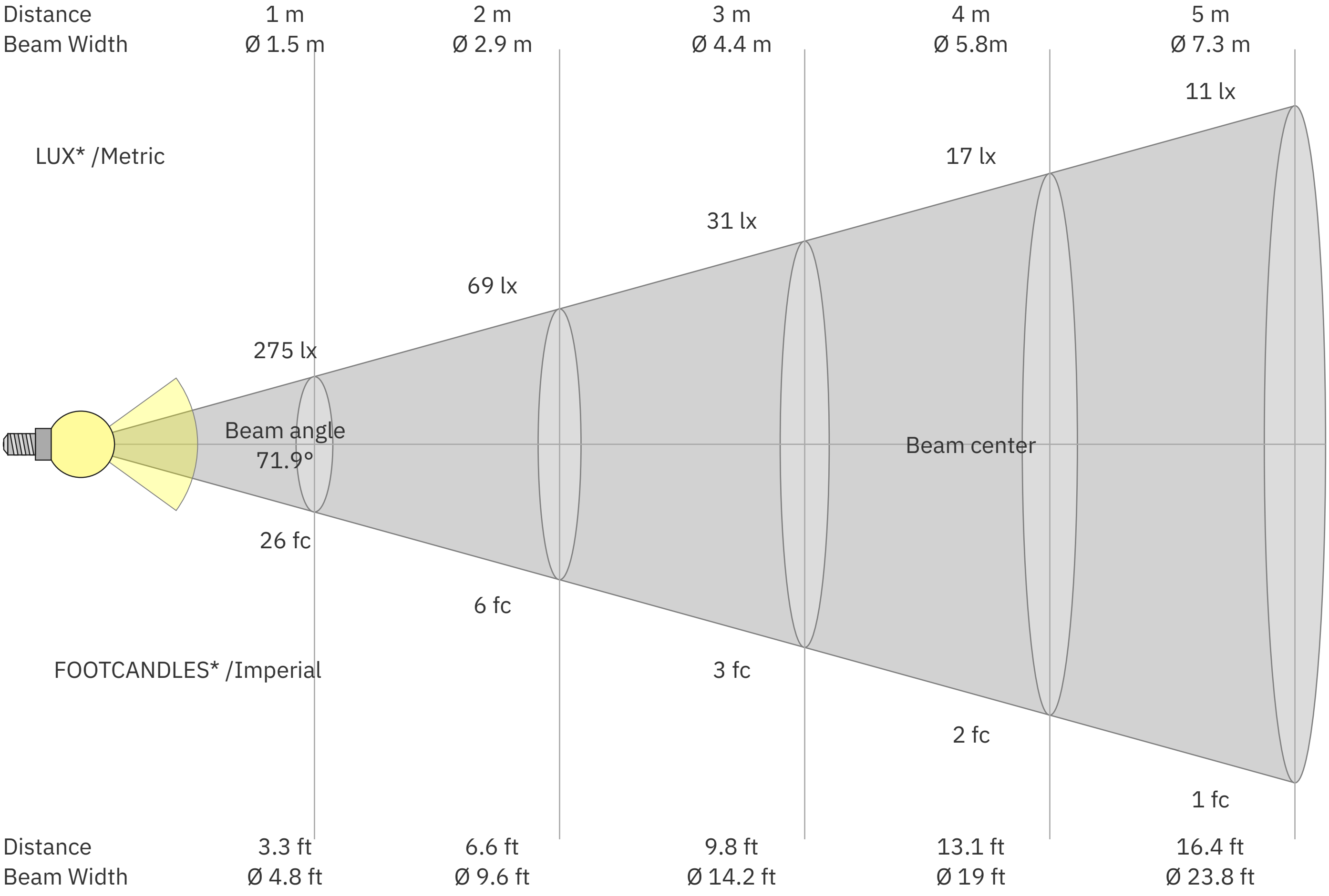
Linear distribution diagram - Intensity (candela) vs γ-angle



Document revision date: 27-10-2025 Measurement serial: VFR-251024-12228-SW

175-555 LED spot | 50mm | white | 5 watt | 38° | 2000~2700K | dtw

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
275	69	31	17	11	8	6	4	3	3	2	2	2	1	1	1	1	1	1	1	lux
25.5	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
275	282	281	270	248	213	175	143	114	90	73	58	45	34	25	17	10	5	0	0	cd
100%	103%	102%	98%	90%	77%	64%	52%	41%	33%	26%	21%	16%	12%	9%	6%	4%	2%	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
275	282	281	270	248	213	175	143	114	90	73	58	45	34	25	17	10	5	0	0	cd
100%	103%	102%	98%	90%	77%	64%	52%	41%	33%	26%	21%	16%	12%	9%	6%	4%	2%	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
275	264	256	246	230	206	177	149	125	103	83	67	54	41	28	16	7	2	1	0	cd
100%	96%	93%	89%	84%	75%	65%	54%	45%	37%	30%	24%	20%	15%	10%	6%	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
275	264	256	246	230	206	177	149	125	103	83	67	54	41	28	16	7	2	1	0	cd
100%	96%	93%	89%	84%	75%	65%	54%	45%	37%	30%	24%	20%	15%	10%	6%	3%	1%	0%	0%	of 0°val

Document revision date: 27-10-2025 Measurement serial: VFR-251024-12228-SW

175-555 LED spot | 50mm | white | 5 watt | 38° | 2000~2700K | dtw

Light Planning – UGR table

Uncorrected. comprehensive UGR table according to CIE 117-1995

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		**Viewed Crosswise** (Viewing direction orthogonal to lamp length axis)					**Viewed Endwise** (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	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	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

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	111	106	106	106	102	102	102	100
1	111	107	103	100	108	104	101	98	100	98	95	96	94	92	93	91	89	87
2	102	95	89	84	100	93	88	83	90	85	82	87	83	80	84	81	78	76
3	94	85	78	73	92	84	77	72	81	75	71	78	74	70	76	72	68	67
4	88	77	69	64	85	76	69	63	73	67	62	71	66	61	69	65	61	59
5	81	70	62	56	79	69	61	56	67	60	55	65	59	55	63	58	54	52
6	76	64	56	50	74	63	56	50	61	55	50	60	54	49	58	53	49	47
7	71	59	51	45	69	58	51	45	57	50	45	55	49	45	54	48	44	43
8	67	54	47	41	65	54	46	41	52	46	41	51	45	41	50	45	40	39
9	63	50	43	38	61	50	43	38	49	42	37	48	42	37	47	41	37	35
10	59	47	40	35	58	46	39	35	45	39	35	45	39	34	44	38	34	33

Document revision date: 27-10-2025 Measurement serial: VFR-251024-12228-SW