



PHOTOMETRIC LIGHT REPORT

Street light | 23/38/57/75W | 4000K

Article number: 220-053



Go to the
webshop
of Tronix
Lighting



TRONIX



220-053 Street light | 23/38/57/75W | 4000K

Introduction

Purpose of this Document

This document provides accurate and objective photometric data for Tronix Lighting item 220-053. 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 220-053 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 220-053 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.

220-053 Street light | 23/38/57/75W | 4000K

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	8 planes – 45°
γ (gamma)-Resolution	2.5°
Test Distance	1.81 m
Room Temperature and Humidity	22°C +/- 10% – RH 50% +/- 20%
Input Power. Power and Displacement Factors	76.6 W – PF 0.97 – DPF 0.97
Frequency of Input Power	50 Hz
Warm-up Time and Variation	n/a –NaN%

Tested light source

Manufacturer and Order Code	Tronix Lighting – 220-053
Product Description	Street light 23/38/57/73W 4000K

Main Light Measurement Results

Output – Total Lumen (Up% / Down%)	11264 lm – 0.11% / 99.89%
Efficiency	147 lm/W
Energy efficiency class	D
Peak Intensity and Beam Angle	3675 cd – 110.2°
Correlated Colour Temperature	CCT = 4038 K
Colour Shift. CIE duv	Duv -0.0029
Colour Rendering Index	CRI 82.3
Colour Rendering TM30-18	R _f 82.6 – R _g 95.6
Television Lighting Consistency Index	TLCI = 64
Flicker	SVM 0.01 – PstLM 0.01

220-053 Street light | 23/38/57/75W | 4000K

Electrical measurement details

Input Power

RMS Input voltage feed. V_{RMS}

231 V

RMS Input current feed. I_{RMS}

0.343 A

Total input power

76.6 W

Frequency of input power

50 Hz

Power factor

0.97

Displacement power factor

0.97

Total harmonic distortion of the current

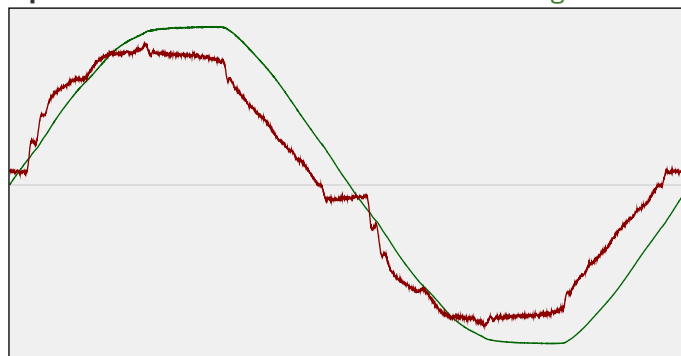
10.23%

Total harmonic distortion of the voltage

2.67%

Input Power Curve

Voltage - Current



Efficiency

Radiated power efficiency: 44.4%



Lumen efficiency: 147 lm/W



Harmonics

3rd Harmonic

4.37%

5th Harmonic

6.65%

7th Harmonic

1.78%

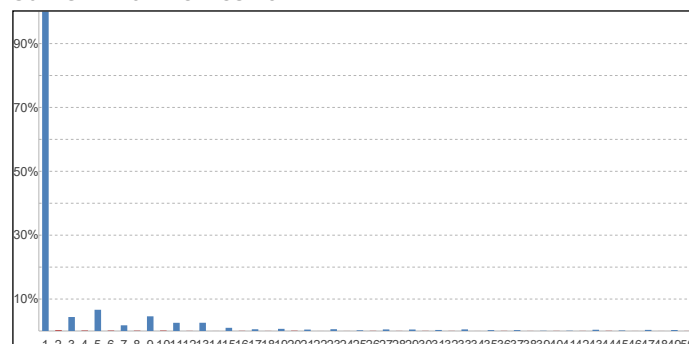
9th Harmonic

4.59%

11th Harmonic

2.56%

Current Harmonics %



Stabilization Details

Warm-up Conditions

Stable period

n/a CCT start

NaN K

Stable change max

n/a% CCT shift

NaN K

Minimum warm-up time

n/a CCT end

4038 K

Colour temperature change during warm-up

Warm-up Results

Total warmup time

n/a Output start

NaN lm

Warmup variation

NaN% Output change

NaN lm

Output intensity change during warm-up

Output end

11264 lm

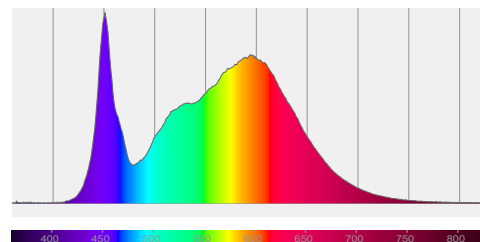
220-053 Street light | 23/38/57/75W | 4000K

Colour measurement details

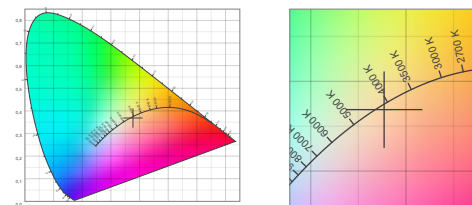
Total lumen output 11264 lm
 Correlated Colour Temperature 4038 K
 Colour coordinates CIE 1931 (x;y) = (0.377;0.368)
 Colour deviation from BBL Duv = -0.0029

TM30-18 Colour Fidelity Index R_f 82.6
 TM30-18 Colour Gamut Index R_g 95.6
 Colour Rendering Index (Ra) CRI 82.3
 Colour Rendering Index. (red component) $R_9 = 2.1$

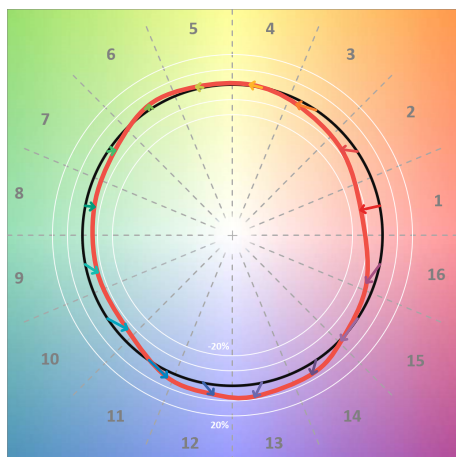
Colour Quality Scale CQS = 80.2
 Television Lighting Consistency Index TLCI = 64



Relative spectral power distribution



TM30 details

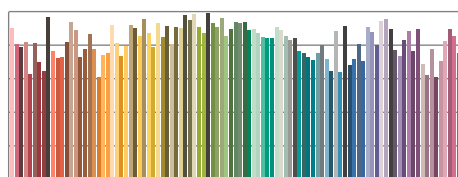


TM30 Colour vectors per hue bin

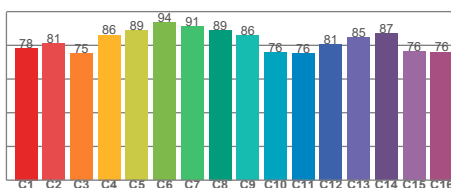


TM30 Colour distortion

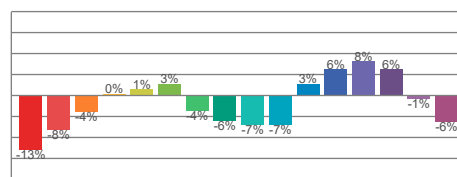
Hue Bin	R_f	Shifts (%)	
		Chroma	Hue
C1	78	-13%	0%
C2	81	-8%	7%
C3	75	-4%	13%
C4	86	0%	8%
C5	89	1%	4%
C6	94	3%	-2%
C7	91	-4%	-3%
C8	89	-6%	0%
C9	86	-7%	7%
C10	76	-7%	13%
C11	76	3%	16%
C12	81	6%	8%
C13	85	8%	-6%
C14	87	6%	-7%
C15	76	-1%	-18%
C16	76	-6%	-13%



TM30-18 R_f -values per reference colour

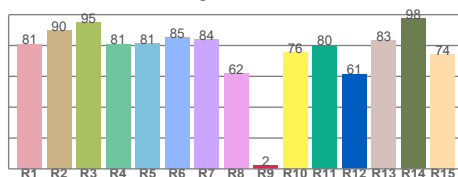


TM30-18 R_f -values per hue bin

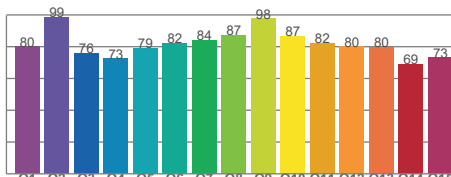


TM30 Chroma shift

Colour Quality details



Colour Rendering Index



Colour Quality Scale

220-053 Street light | 23/38/57/75W | 4000K

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)

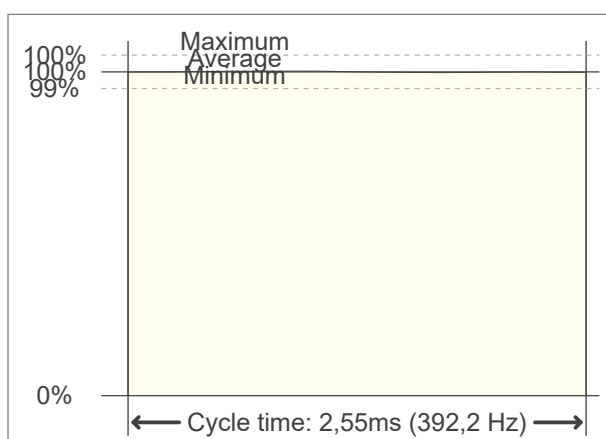
Flicker frequency	392.16 Hz
Percent flicker	1.31 %
Flicker index	0

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

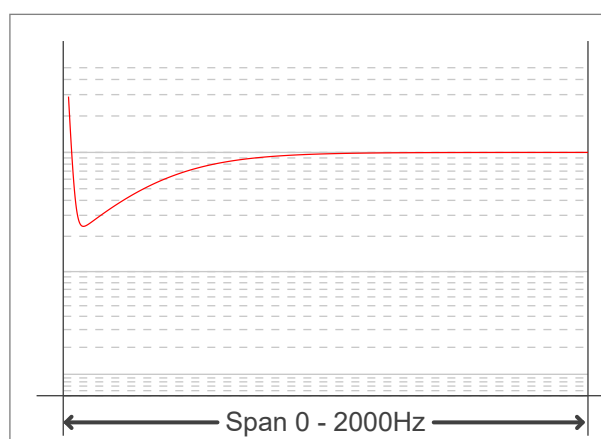
An LED luminaire is considered flicker-free if the SVM value is ≤ 0.4 and if the PstLM value is ≤ 1.0

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

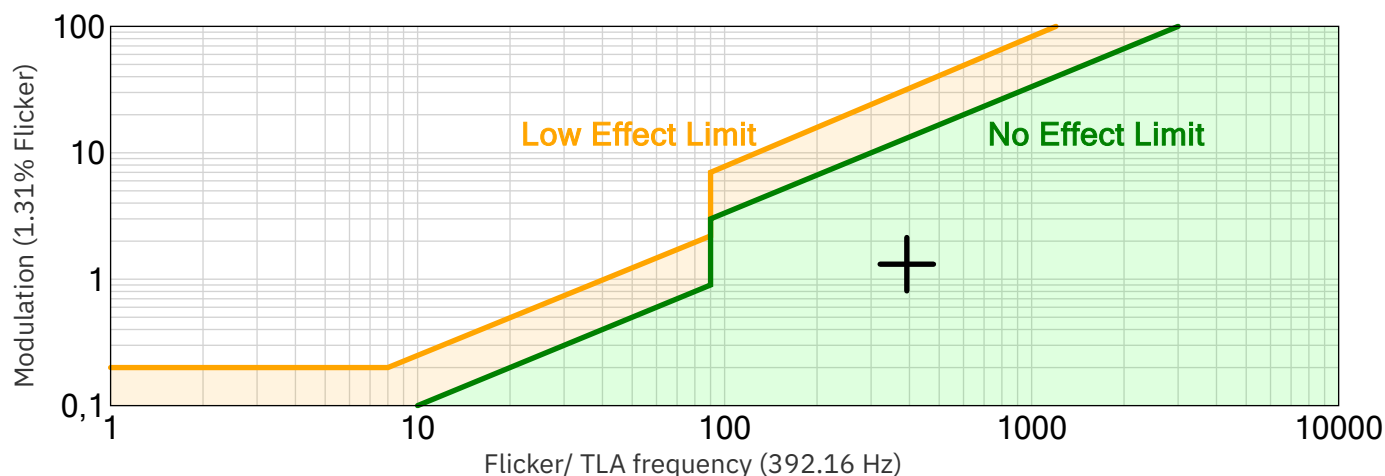
Flicker frame (one flicker period in time domain)



Flicker FFT (flicker curve in frequency domain)



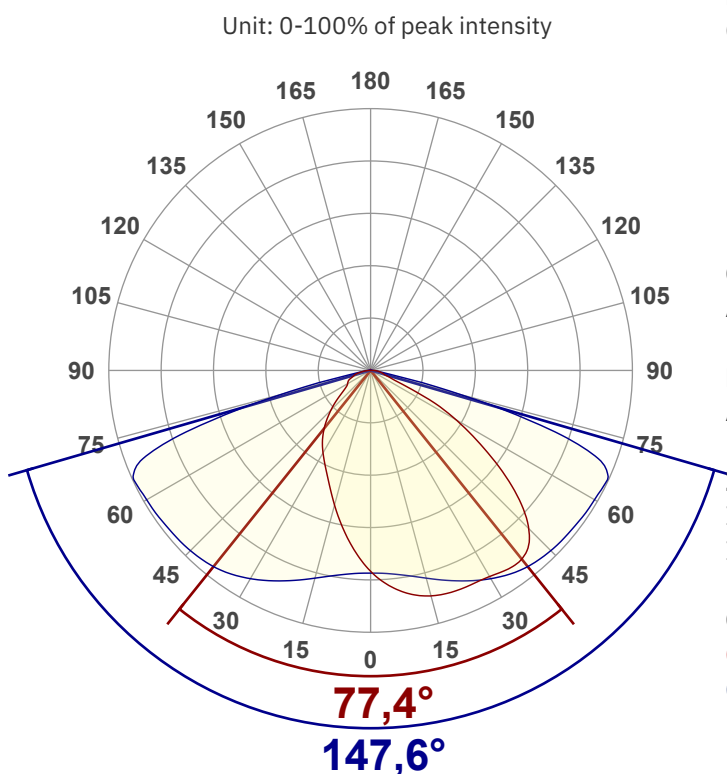
IEEE 1789-2015 Lighting Flicker Risk Zones



220-053 Street light | 23/38/57/75W | 4000K

Beam angle

Luminous Intensity diagram



Main Values

Output (total Lumen)	11264 lm
Lumen Up/Down	0.11% / 99.89%
Peak Intensity	3675 cd
Beam Angle (50%)	110.2°
Beam Angle (90%)	147.6°
Beam Angle (10%)	77.4°

Cut-off Angle

Average 2.5%	169°
--------------	------

Field Angle

Average 10%	144.7°
-------------	--------

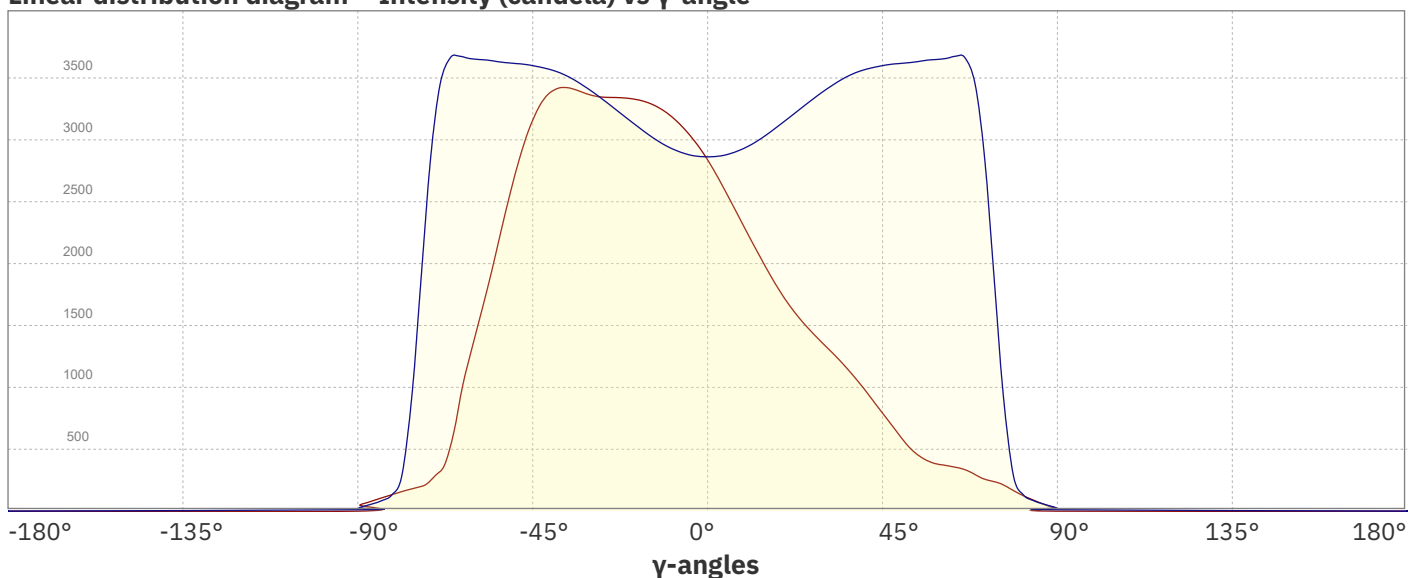
Intensity Ratio

In 120° cone	73.5%
In 90° cone	45.6%

C planes

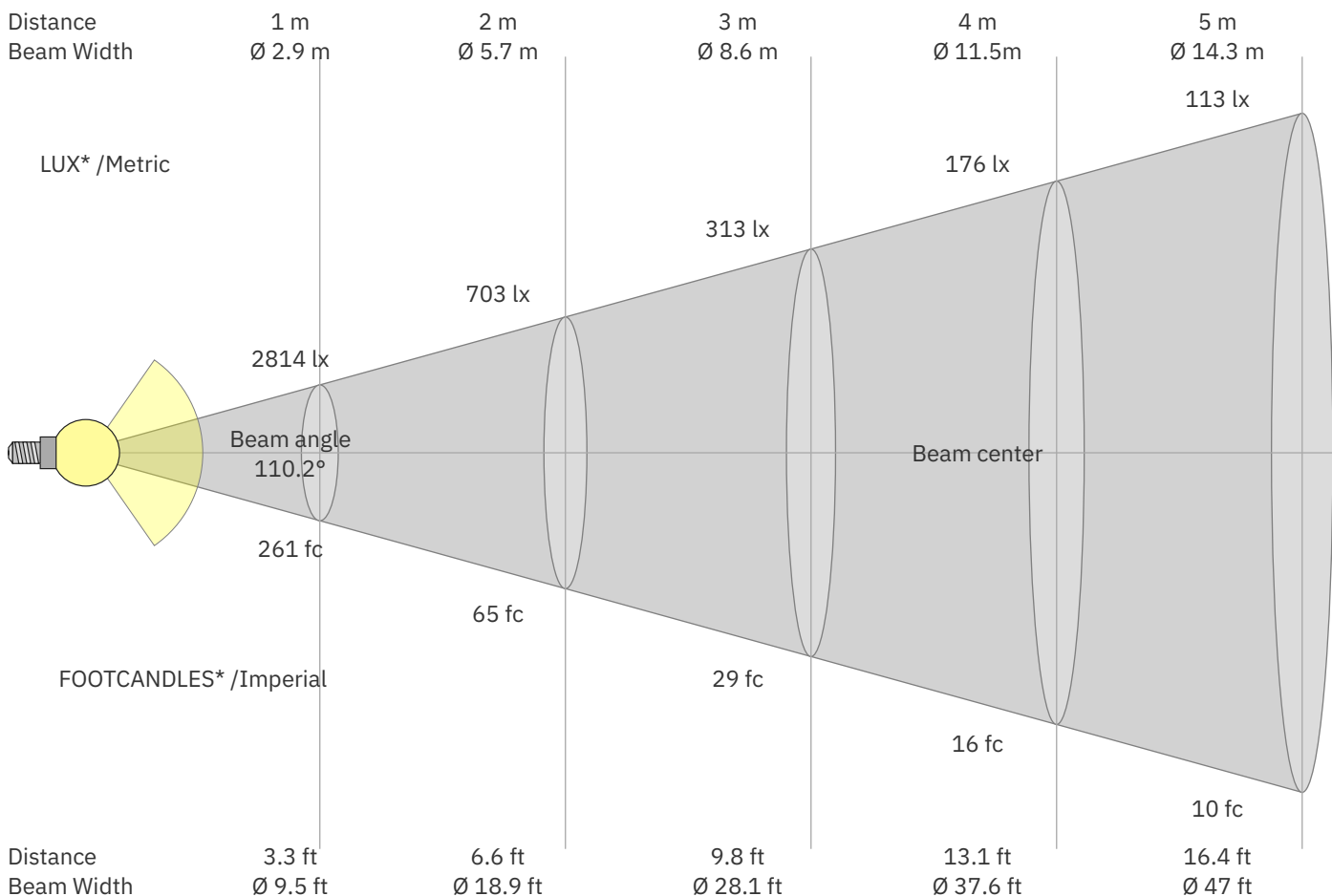
C000-C180
C090-C270

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



220-053 Street light | 23/38/57/75W | 4000K

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
2814	703	313	176	113	78	57	44	35	28	23	20	17	14	13	11	10	9	8	7	lux
261.4	65.3	29	16.3	10.5	7.3	5.3	4.1	3.2	2.6	2.2	1.8	1.5	1.3	1.2	1	0.9	0.8	0.7	0.7	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
2814	3051	3204	3294	3333	3343	3362	3413	3388	3151	2661	2012	1392	685	289	189	145	95	20	0	cd
100%	108%	114%	117%	118%	119%	120%	121%	120%	112%	95%	72%	49%	24%	10%	7%	5%	3%	1%	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
2814	2882	2942	3037	3155	3278	3396	3495	3562	3599	3618	3636	3653	3670	3161	1363	207	72	11	10	cd
100%	102%	105%	108%	112%	117%	121%	124%	127%	128%	129%	129%	130%	130%	112%	48%	7%	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
2814	2559	2260	1969	1711	1509	1344	1182	997	792	588	436	376	345	276	226	144	74	0	0	cd
100%	91%	80%	70%	61%	54%	48%	42%	35%	28%	21%	16%	13%	12%	10%	8%	5%	3%	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
2814	2882	2942	3037	3155	3278	3396	3495	3562	3599	3618	3636	3653	3670	3161	1363	207	72	11	10	cd
100%	102%	105%	108%	112%	117%	121%	124%	127%	128%	129%	129%	130%	130%	112%	48%	7%	3%	0%	0%	of 0°val

Light Planning – UGR table

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 (Viewing direction orthogonal to lamp length axis)					Viewed Endwise (Viewing direction parallel to lamp length axis)				
H = mounting height above eye level											
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
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	106	106	106	102	102	102	100	
1	108	103	99	95	105	101	97	93	97	93	90	93	90	87	89	87	85	83
2	97	89	81	75	95	87	80	74	83	77	72	80	75	71	77	73	69	67
3	88	77	68	61	85	75	67	60	72	65	59	69	63	58	66	61	57	55
4	80	67	58	50	77	66	57	50	63	55	49	61	54	49	58	53	48	46
5	73	59	50	42	71	58	49	42	56	48	42	54	47	41	52	46	41	38
6	67	53	43	36	65	52	43	36	50	42	36	48	41	35	46	40	35	33
7	62	47	38	32	60	47	38	31	45	37	31	43	36	31	42	36	31	29
8	57	43	34	28	56	42	34	28	41	33	27	40	32	27	38	32	27	25
9	53	39	31	25	52	39	30	25	37	30	24	36	29	24	35	29	24	22
10	50	36	28	22	48	35	27	22	34	27	22	33	27	22	32	26	22	20