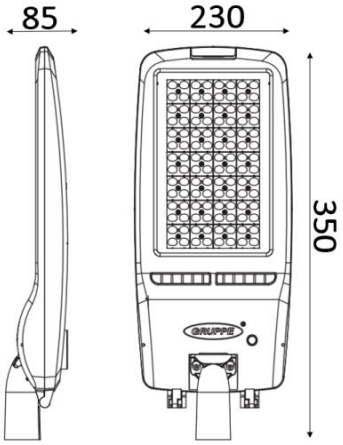
Product Overview

Product Name / Code	GRANGE 60W Streetlight - LC2121-T3
Description	Spigot Dia 60mm, 4000K, Non-Dim, T3 Optic
Manufacturer	Decrolux Lighting Pty Ltd



Laboratory and Equipment

System Name / Model	LabSpion / Freedom VIS (Custom Viso)
Manufacturer / Serial Number	Ibsen Photonics, Denmark / 2417457569
Sensor Name	LabSensor Model2
Sensor Serial Number / Calibration Date	3430823524 / 7/12/2022

Measurement Details

Test Date and Time	23/05/2023 2:40:54 PM
Operator	Johnny Elmer
C-Planes Measured	24
Measurement Resolution	15°
Measurement Distance	476.1cm
Measurement Number	VFR-230523-0093-MS
Tracking Link	http://www.visosystems.com/tracking/?id=VT230523-009267

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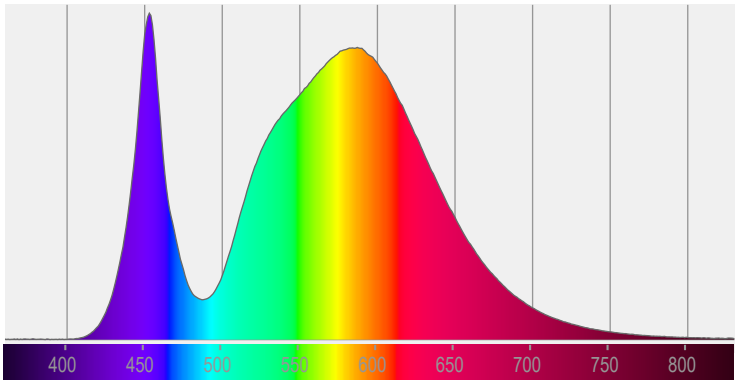
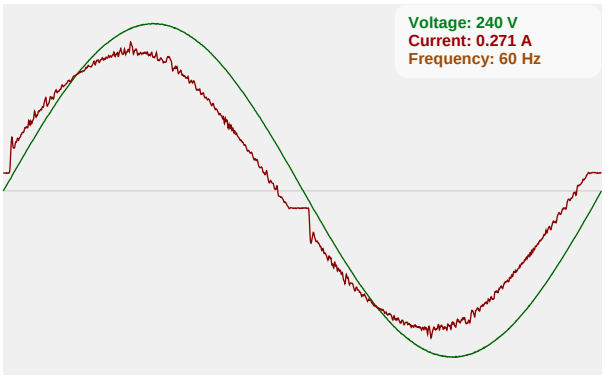
Performance

Total Lumen Output	9760 lm
Light Efficiency	155 Lumen/Watt
Peak (cd)	5712 cd
Nominal Power	63.0 W
Input Voltage	240 V
Frequency of Input Power	60 Hz
Power Factor	0.97
Warm-up (stabilisation) Time	Lamp stabilized in 1 hour 1 min
Warm-up Variation	-8.5

Spectral Power Distribution (SPD)



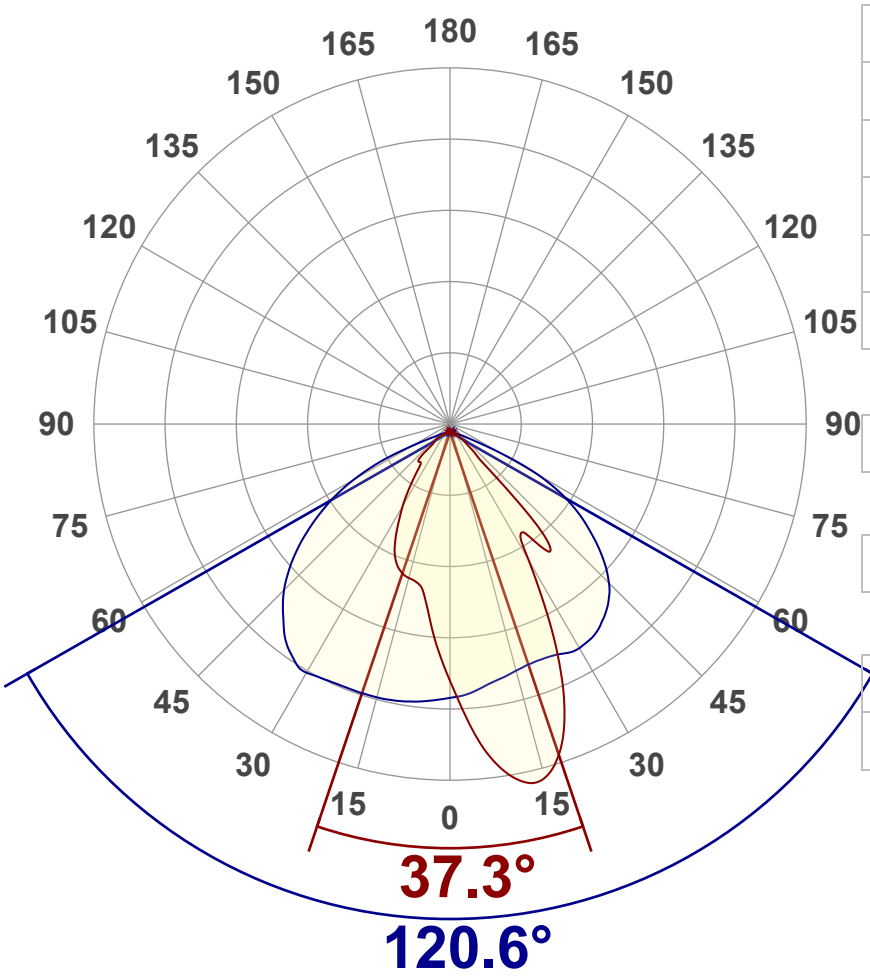
Input Power Curve



Optic Specifications

Correlated Colour Temperature, Target	4000K
Correlated Colour Temperature, Measured	3961K
Colour Rendering Index	CRI 72.3
R9 Value	R9 = -27.8
Colour Rendering TM30-18	R_f 74.4 - R_g 92.5
Colour Quality Scale	CQS = 71.0
Beam Angle	77.9°

Angular Distribution – 0° / 90° Plane



Main Values

Total Lumen Output	9760 lm
Lumen Up% / Down%	0.16 % / 99.84%
Peak Intensity	5712 cd
Beam Angle (50%)	77.9°
Beam Angle (90%)	120.6°
Beam Angle (10%)	48.9°

Cut-off Angle

Average 2.5%	147.9°

Field Angle

Average 10%	124.9°

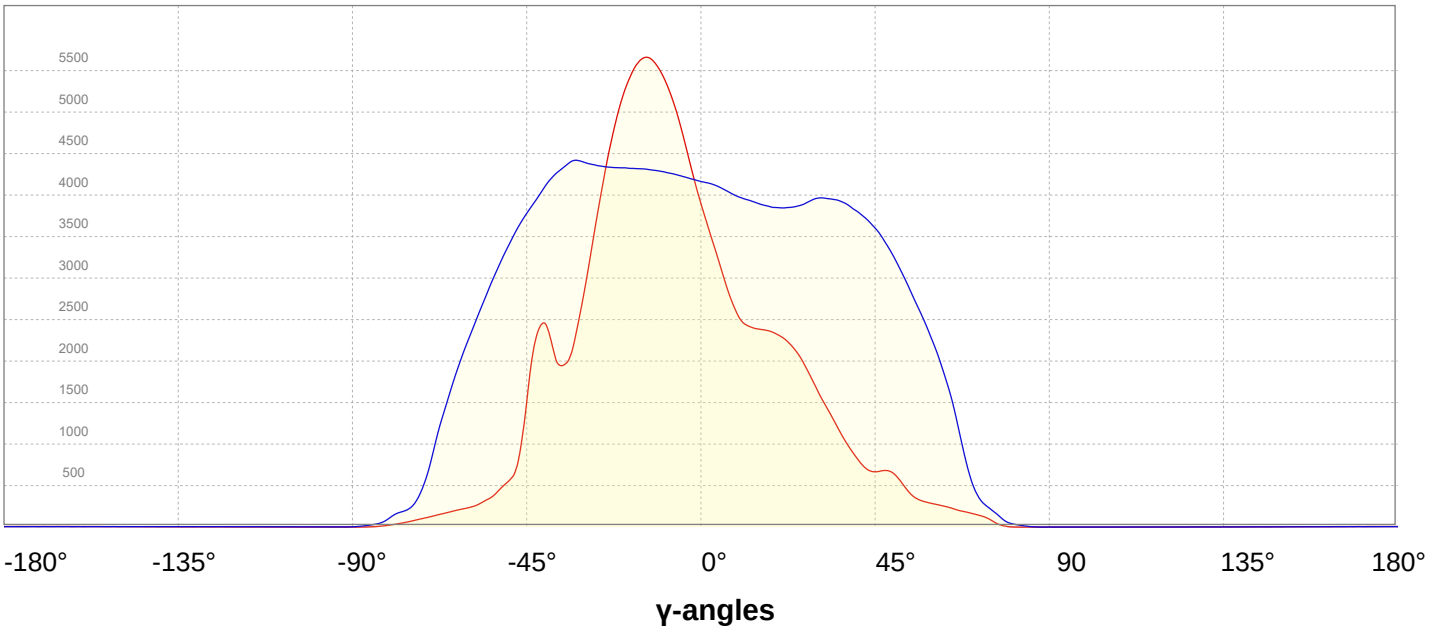
Intensity Ratio

In 120° Cone	89.5%
In 90° Cone	64.5%

C000-C180

C090-C270

Linear Distribution Diagram – Intensity (candela) vs γ-angle



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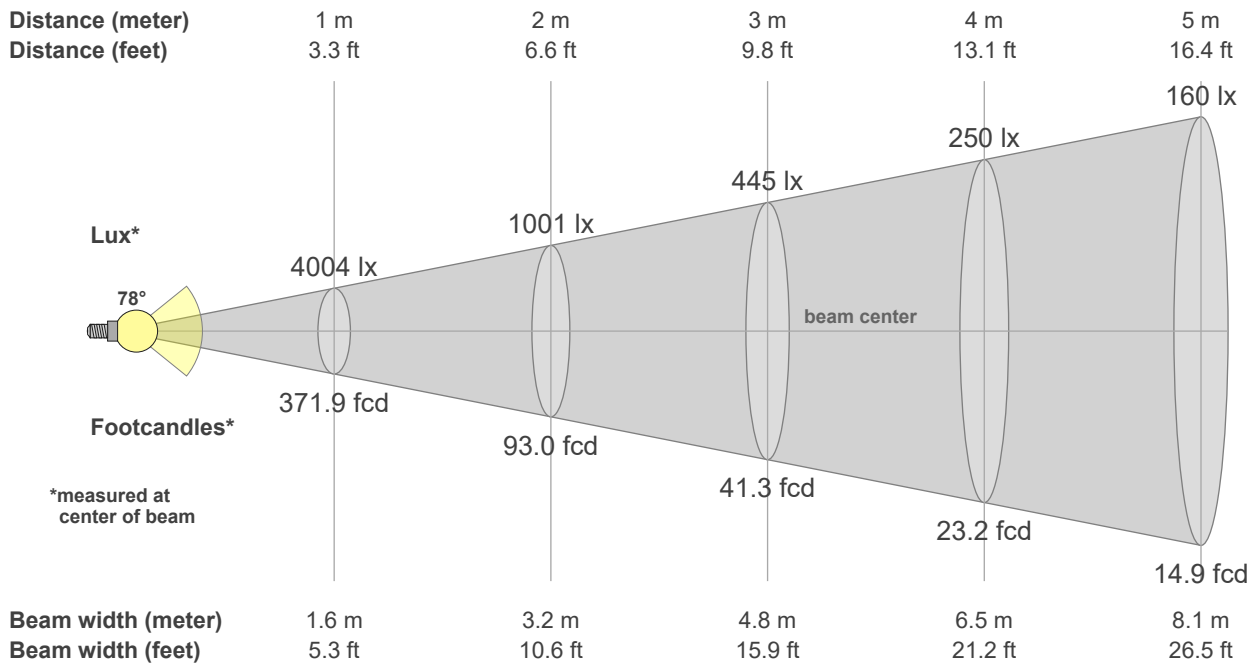
Beam Details



Beam intensities from 1 – 20m

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
4004	1001	445	250	160	111	82	63	49	40	33	28	24	20	18	16	14	12	11	10	lux
371.9	93	41.3	23.2	14.9	10.3	7.6	5.8	4.6	3.7	3.1	2.6	2.2	1.9	1.7	1.5	1.3	1.1	1	0.9	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
4004	4785	5451	5646	5214	4216	2870	1969	2428	1499	540	336	234	180	123	69	26	4	1	1	cd
100%	120 %	136 %	141 %	130 %	105 %	72%	49%	61%	37%	13%	8%	6%	5%	3%	2%	1%	0%	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
4004	4091	3974	3896	3848	3868	3960	3941	3814	3601	3239	2755	2219	1496	544	210	46	6	0	0	cd
100%	102%	99%	97%	96%	97%	99%	98%	95%	90%	81%	69%	55%	37%	14%	5%	1%	0%	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
4004	3145	2518	2385	2313	2091	1657	1227	849	667	635	366	281	224	164	82	3	1	1	0	cd
100%	79%	63%	60%	58%	52%	41%	31%	21%	17%	16%	9%	7%	6%	4%	2%	0%	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
4004	4228	4283	4315	4328	4343	4393	4351	4121	3778	3362	2843	2265	1593	748	236	123	27	4	2	cd
100%	106 %	107 %	108 %	108 %	108 %	110 %	109 %	103 %	94%	84%	71%	57%	40%	19%	6%	3%	1%	0%	0%	Of 0°val

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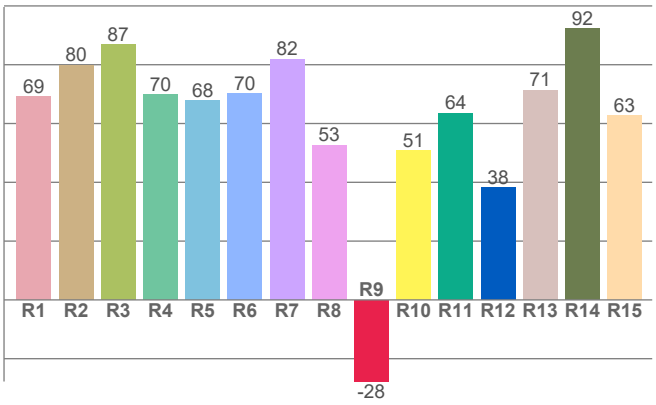
Colour Details

Correlated Colour Temperature, Target	CCT = 4000K
Correlated Colour Temperature, Measured	CCT = 3961K
Colour Rendering Index	CRI 72.3
Colour Rendering Index R9 Value	R9 = -27.8
Colour Rendering TM30-18	R_f 74.4, R_g 92.5
Colour Quality Scale	CQS = 71.0

MacAdam Steps	SDCM = 1.3
Colour Coordinates CIE 1931	(x;y) = (0.381;0.377)
Colour Coordinates CIEs 1960	(u;v) = (0.225; 0.334)
Colour Deviation from BBL	Duv = 0.0009
Colour Coordinate CIEs 1976 (CIELUV)	(u';v') = (0.225;0.225)

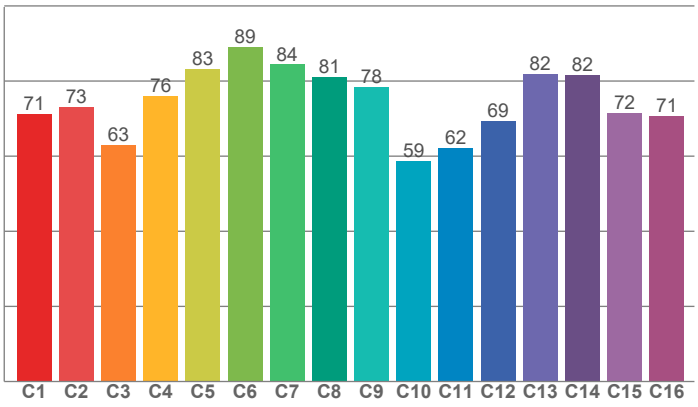
Colour Rendering Index per reference colour (CIE 1995)



CRI R values, only R1-R8 are used to calculate final CRI value

R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
69.2	79.9	86.9	69.8	67.8	70.2	81.8	52.6	-27.8	50.7	63.5	38.1	71.3	92.4	62.7

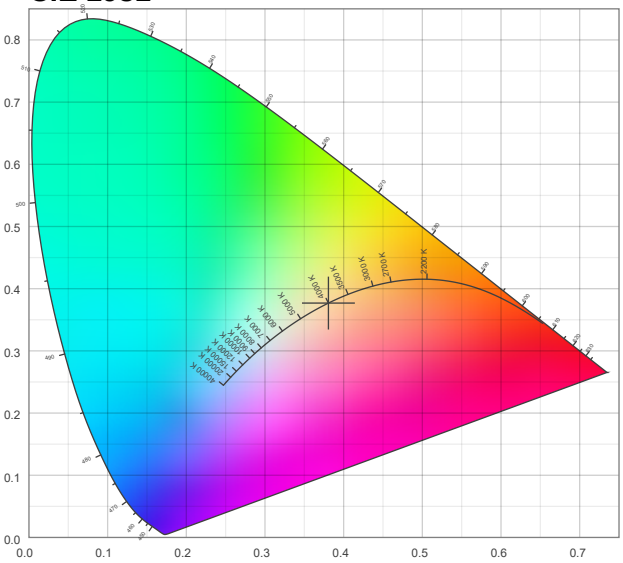
TM30-18 Rf-values per hue bin



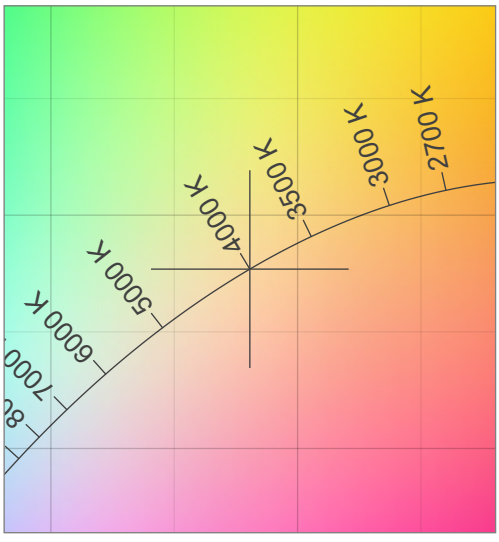
TM30 C values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
71.3	73.1	63.0	76.0	83.2	89.0	84.4	81.1	78.3	58.6	62.1	69.4	81.8	81.7	71.6	70.6

CIE 1931



CIE 1931 – Zoomed



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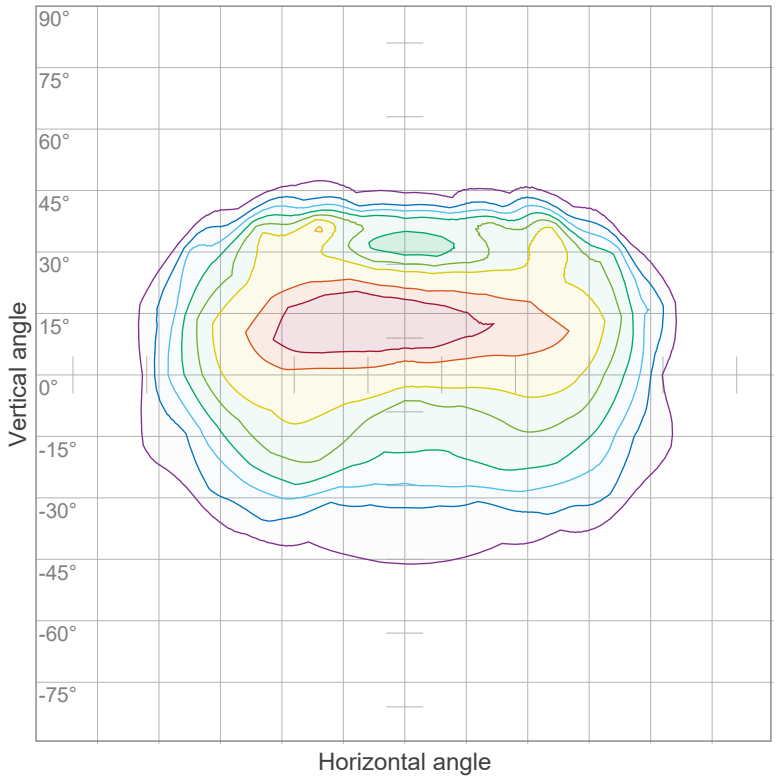
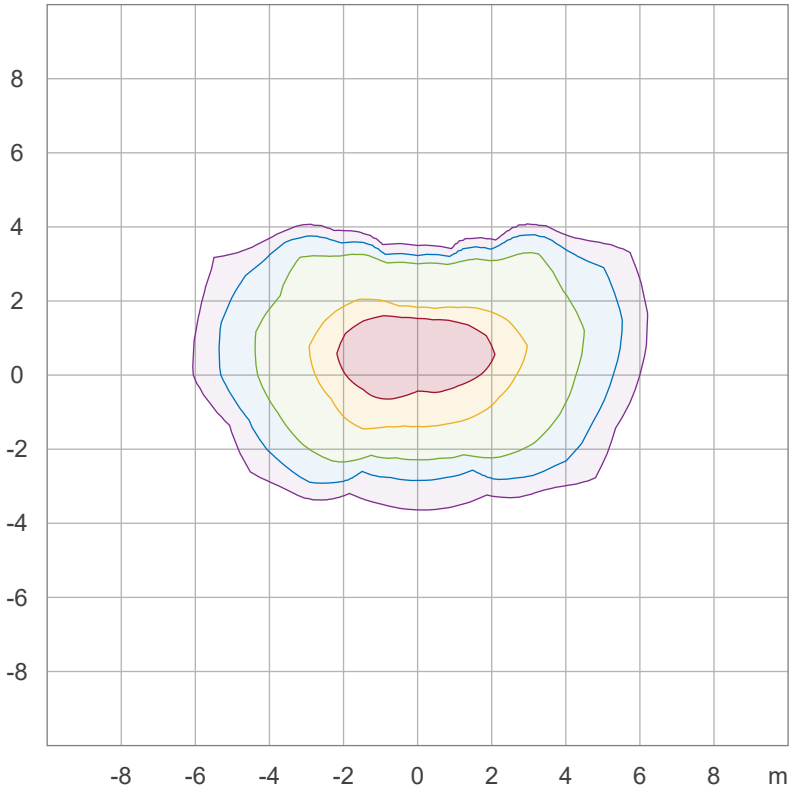
Iso-intensity Diagram (Iso-Candela)



90 %	5139.8 cd
80 %	4568.7 cd
70 %	3997.6 cd
60 %	3426.5 cd
50 %	2855.5 cd
40 %	2284.4 cd
30 %	1713.3 cd
20 %	1142.2 cd
10 %	571.1 cd

Peak intensity: 5710.9 cd
Number of c-planes: 24

Iso-illuminance Diagram (Iso-lux)



50.0 %	291.2 lx
30.0 %	174.7 lx
10.0 %	58.2 lx
5.0 %	29.1 lx
3.0 %	17.5 lx

Peak illuminance: 582.4 lx
Mounting height: 3.0 m
Number of c-planes: 24

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Light Planning – UGR table

Uncorrected, comprehensive UGR table according to 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

UGR data could not be calculated due to missing dimensions. Goto Edit->Photometric->Dimensions and set the fixture/lamp dimensions.

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	105	101	98	100	98	95	96	94	92	93	91	90	88
2	102	95	89	84	99	93	88	83	90	85	81	86	83	79	83	80	78	76
3	94	85	77	72	91	83	76	71	80	74	70	77	73	69	75	71	67	65
4	86	76	68	62	84	74	67	61	72	66	60	70	64	60	68	63	59	57
5	80	68	60	54	78	67	59	54	65	58	53	63	57	52	61	56	52	50
6	74	62	53	47	72	61	53	47	59	52	47	57	51	46	56	50	46	44
7	69	56	48	42	67	55	48	42	54	47	42	52	46	41	51	45	41	39
8	64	51	43	38	63	51	43	38	49	42	38	48	42	37	47	41	37	35
9	60	47	39	34	59	47	39	34	46	39	34	45	38	34	44	38	34	32
10	56	44	36	31	55	43	36	31	42	36	31	41	35	31	40	35	31	29

Flicker Details

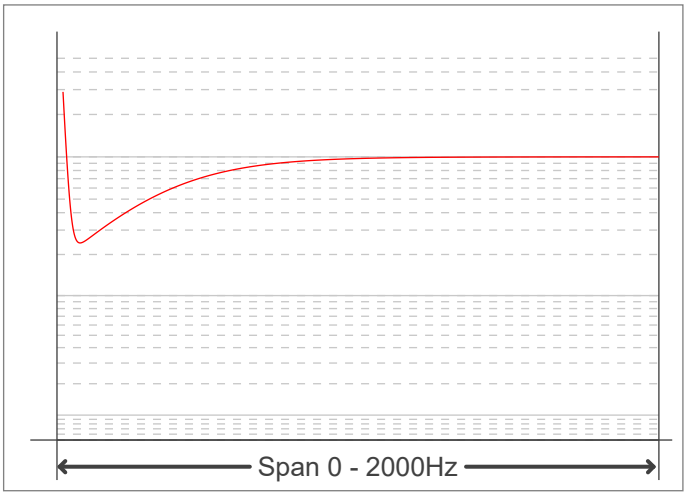
Flicker Meter Type	Viso Systems LabFlicker
Frequency of Input Power	60 Hz
Flicker/TLA Sample Rate	20000 sample/s

Measurement Time

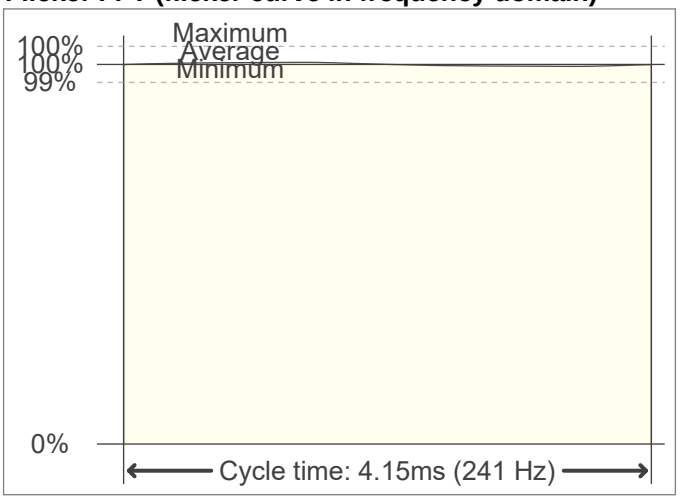
PstLM	180 sec
All other indices	1.2 sec

Flicker Indices	**(IES)**
Flicker Percentage	0.62%
Flicker Frequency	240.96 Hz
Flicker Index	0
Flicker SVM Value	0.01
Flicker PstLM Value	0

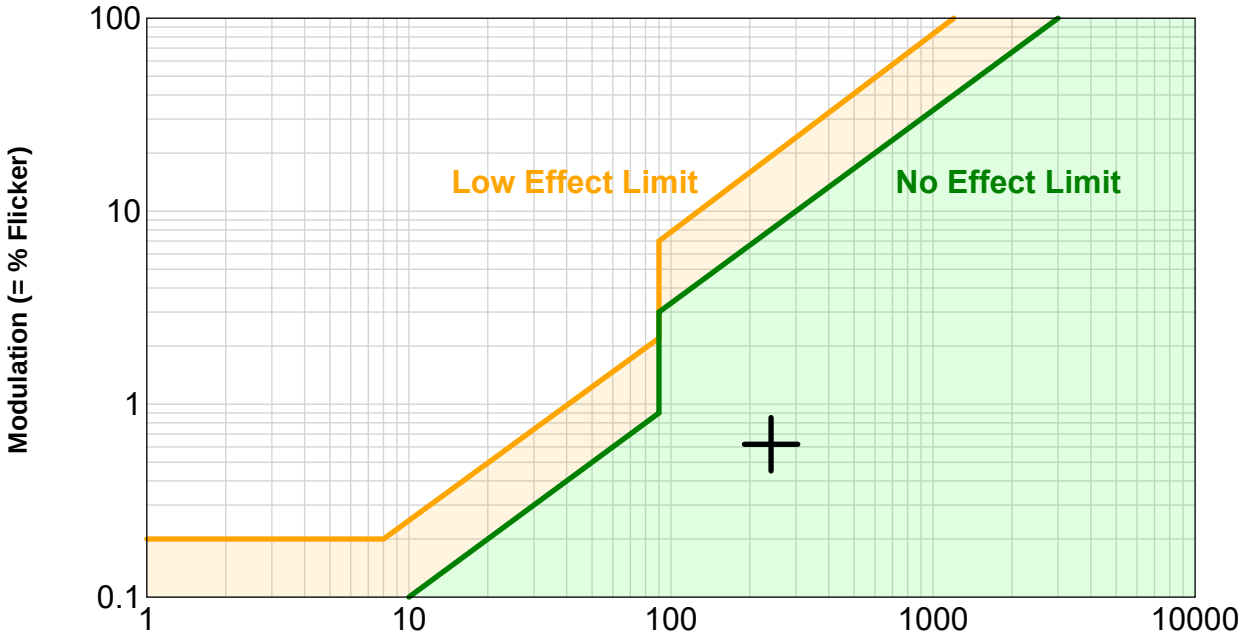
Flicker Frame



Flicker FFT (flicker curve in frequency domain)



IEEE 1789 Frequency/Modulation Plot



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