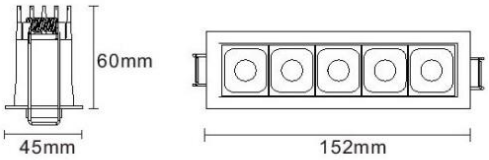
Product Overview

Product Name / Code	LINX 11W Linear Downlight Fixed - LC4471
Description	4000K, IP40, 40°, White Trim/Black Insert, Phase Dim
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	1/05/2023 4:48:50 PM
Operator	Johnny Elmer
C-Planes Measured	36
Measurement Resolution	10°
Measurement Distance	464.4cm
Measurement Number	VFR-230501-0073-MS
Tracking Link	http://www.visosystems.com/tracking/?id=VT230510-003333

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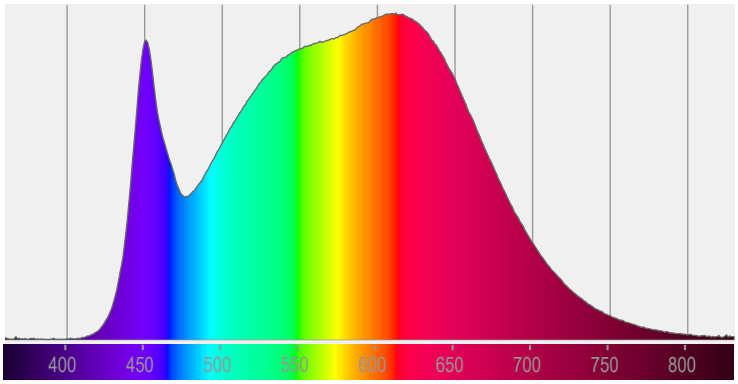
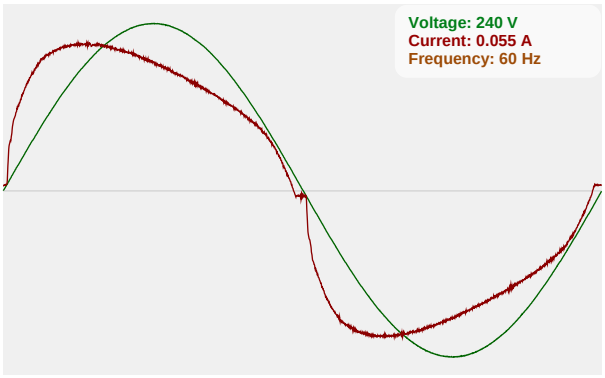
Performance

Total Lumen Output	1053 lm
Light Efficiency	83 Lumen/Watt
Peak (cd)	2286 cd
Nominal Power	12.6 W
Input Voltage	240 V
Frequency of Input Power	60 Hz
Power Factor	0.95
Warm-up (stabilisation) Time	Lamp stabilized in 1 hour 1 min
Warm-up Variation	-8.5

Spectral Power Distribution (SPD)



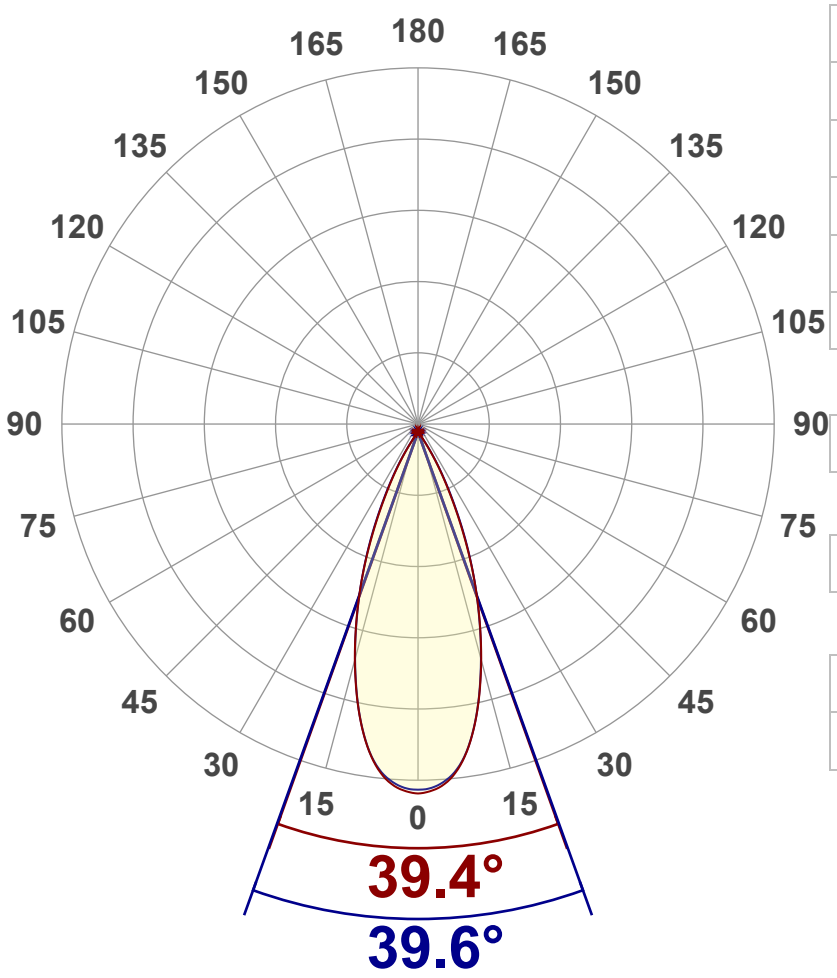
Input Power Curve



Optic Specifications

Correlated Colour Temperature, Target	4000K
Correlated Colour Temperature, Measured	3957K
Colour Rendering Index	CRI 91.3
R9 Value	R9 = 56.7
Colour Rendering TM30-18	R_f 90.3 - R_g 96.5
Colour Quality Scale	CQS = 91.5
Beam Angle	39.5°

Angular Distribution – 0° / 90° Plane



Main Values

Total Lumen Output	1053 lm
Lumen Up% / Down%	0.4 % / 99.6%
Peak Intensity	2286 cd
Beam Angle (50%)	39.5°
Beam Angle (90%)	39.6°
Beam Angle (10%)	39.5°

Cut-off Angle

Average 2.5%	75.7°

Field Angle

Average 10%	65.4°

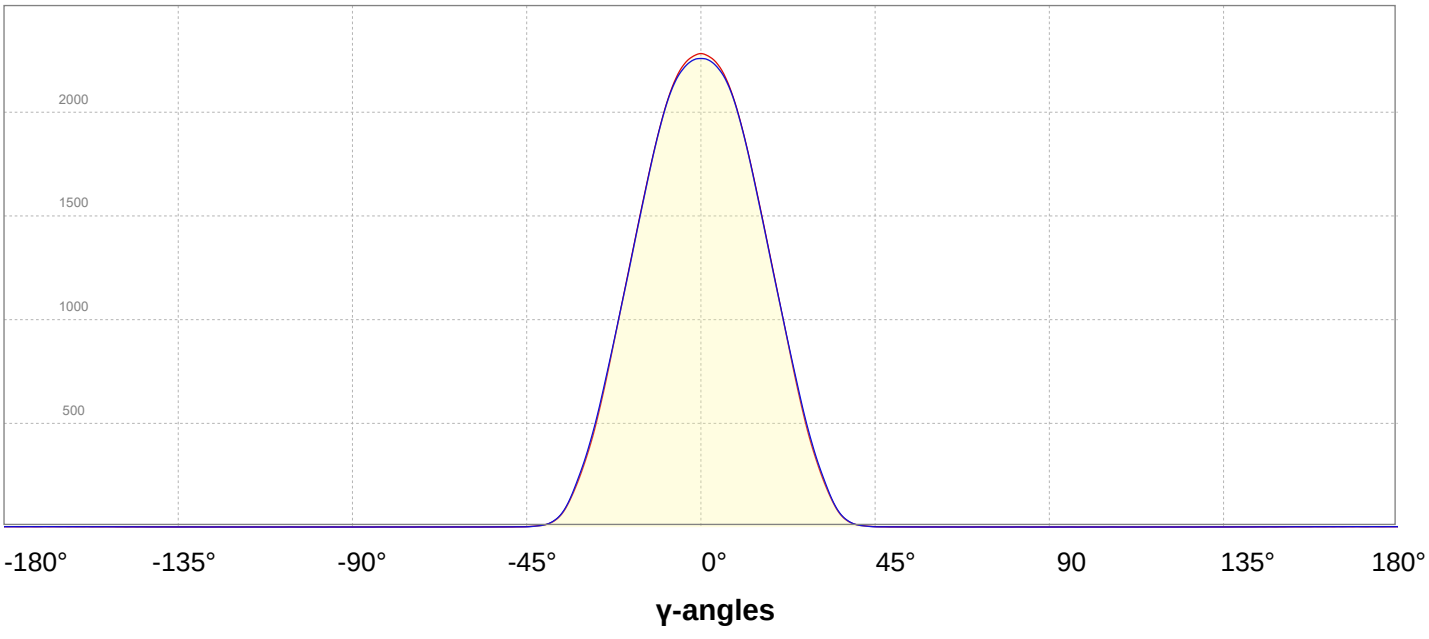
Intensity Ratio

In 120° Cone	99.5%
In 90° Cone	99.3%

C000-C180

C090-C270

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



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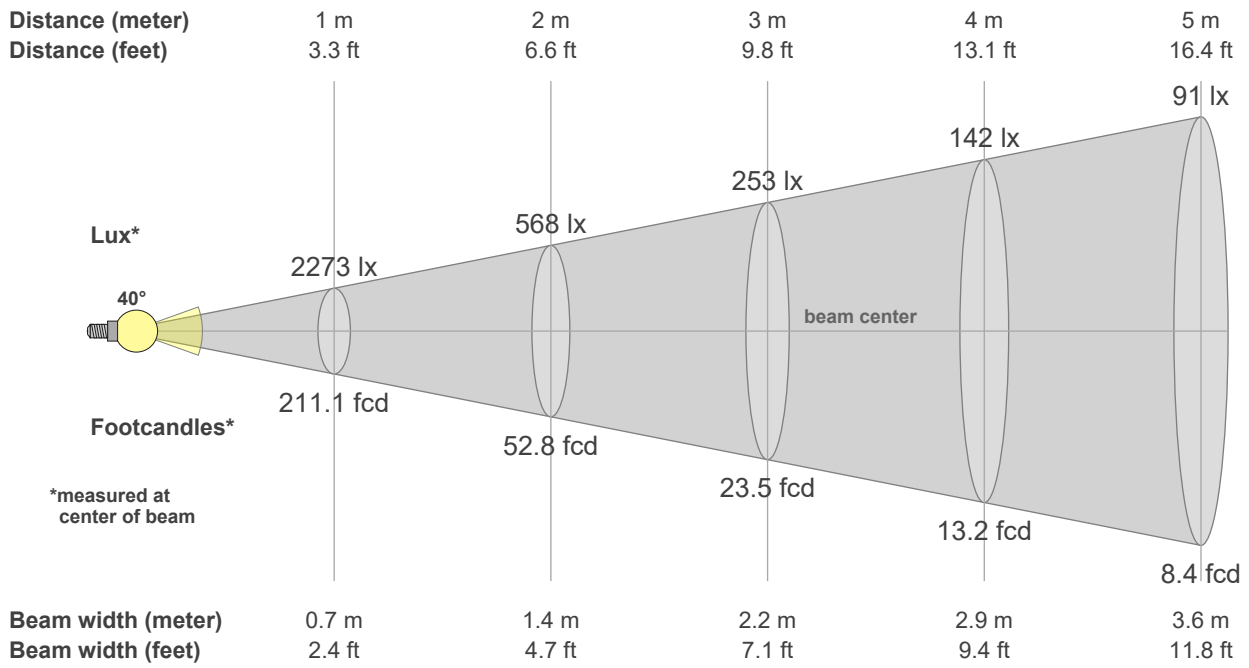
Beam Details



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
2273	568	253	142	91	63	46	36	28	23	19	16	13	12	10	9	8	7	6	6	lux
211.1	52.8	23.5	13.2	8.4	5.9	4.3	3.3	2.6	2.1	1.7	1.5	1.2	1.1	0.9	0.8	0.7	0.7	0.6	0.5	fc

Intensities in 0° c-plane

0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°	γ
2273	2269	2238	2180	2090	1968	1820	1653	1477	1296	1114	932	751	582	434	312	209	124	63	29	cd
100%	100 %	98%	96%	92%	87%	80%	73%	65%	57%	49%	41%	33%	26%	19%	14%	9%	5%	3%	1%	of 0°val

Intensities in 90° c-plane

0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°	γ
2273	2251	2221	2169	2086	1965	1817	1649	1472	1291	1112	935	764	598	450	325	220	129	65	30	cd
100%	99%	98%	95%	92%	86%	80%	73%	65%	57%	49%	41%	34%	26%	20%	14%	10%	6%	3%	1%	of 0°val

Intensities in 180° c-plane

0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°	γ
2273	2269	2238	2180	2090	1968	1820	1653	1477	1296	1114	932	751	582	434	312	209	124	63	29	cd
100%	100 %	98%	96%	92%	87%	80%	73%	65%	57%	49%	41%	33%	26%	19%	14%	9%	5%	3%	1%	of 0°val

Intensities in 270° c-plane

0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°	γ
2273	2251	2221	2169	2086	1965	1817	1649	1472	1291	1112	935	764	598	450	325	220	129	65	30	cd
100%	99%	98%	95%	92%	86%	80%	73%	65%	57%	49%	41%	34%	26%	20%	14%	10%	6%	3%	1%	Of 0°val

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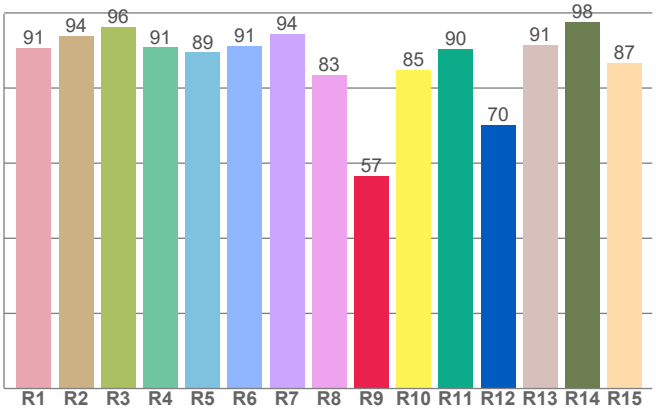
Colour Details

Correlated Colour Temperature, Target	CCT = 4000K
Correlated Colour Temperature, Measured	CCT = 3957K
Colour Rendering Index	CRI 91.3
Colour Rendering Index R9 Value	R9 = 56.7
Colour Rendering TM30-18	R_f 90.3, R_g 96.5
Colour Quality Scale	CQS = 91.5

MacAdam Steps	SDCM = 4.1
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 = 0.0046
Colour Coordinate CIEs 1976 (CIELUV)	(u';v') = (0.225;0.225)

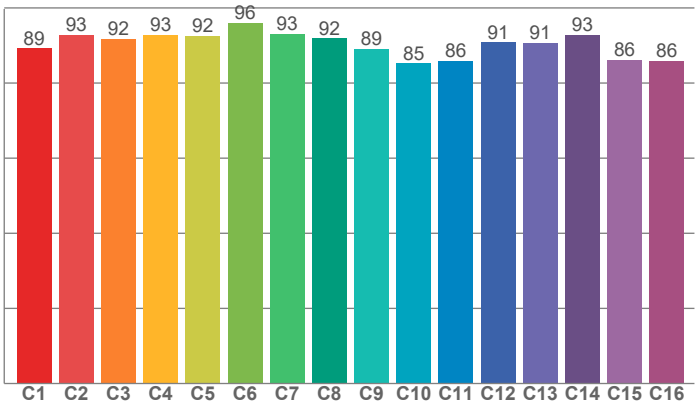
Colour Rendering Index per reference colour (CIE 1995)



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
90.6	93.9	96.2	90.8	89.5	91.3	94.5	83.5	56.7	84.8	90.3	70.3	91.4	97.6	86.7

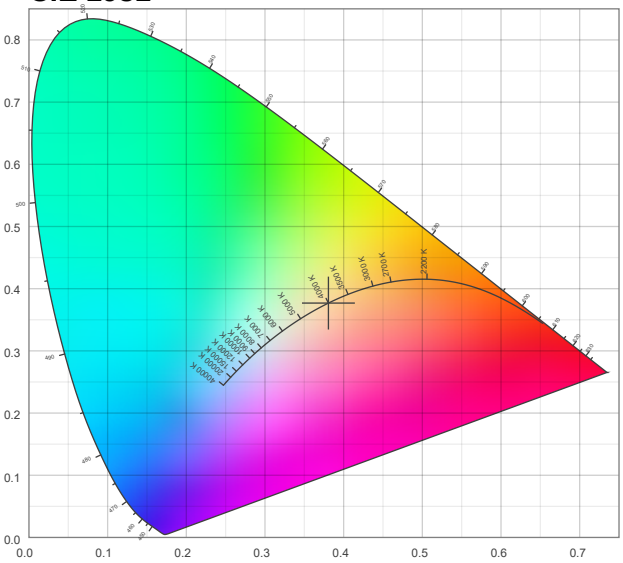
TM30-18 Rf-values per hue bin



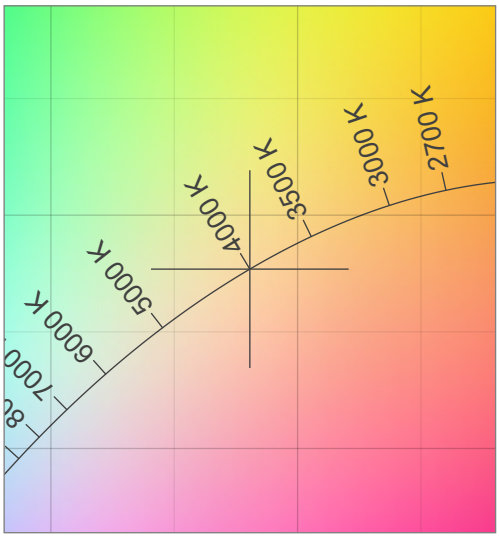
TM30 C values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
89.2	92.9	91.9	92.9	92.5	95.9	93.0	91.9	89.0	85.2	86.0	90.8	90.7	92.8	86.1	85.9

CIE 1931



CIE 1931 – Zoomed



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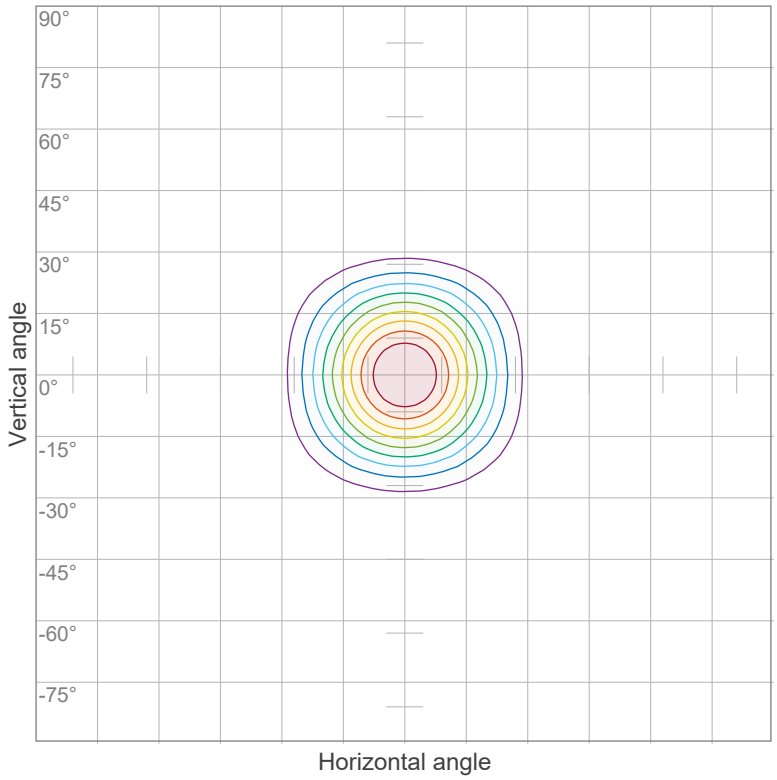
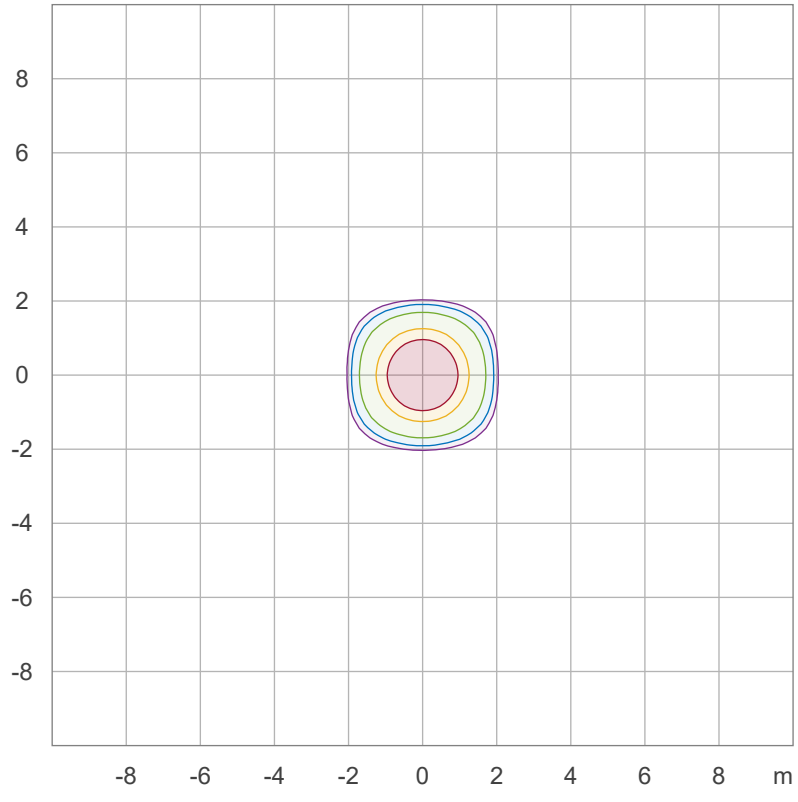
Iso-intensity Diagram (Iso-Candela)



90 %	2054.5 cd
80 %	1826.3 cd
70 %	1598.0 cd
60 %	1369.7 cd
50 %	1141.4 cd
40 %	913.1 cd
30 %	684.8 cd
20 %	456.6 cd
10 %	228.3 cd

Peak intensity: 2282.8 cd
Number of c-planes: 36

Iso-illuminance Diagram (Iso-lux)



50.0 %	126.8 lx
30.0 %	76.1 lx
10.0 %	25.4 lx
5.0 %	12.7 lx
3.0 %	7.6 lx

Peak illuminance: 253.5 lx
Mounting height: 3.0 m
Number of c-planes: 36

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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**										
2H	2H	11.8	12.3	11.9	12.5	12.7	11.6	12.1	11.7	12.3	12.5
	3H	11.5	12.1	11.9	12.3	12.5	11.3	12.0	11.7	12.2	12.4
	4H	11.4	12.0	11.8	12.3	12.5	11.3	11.9	11.6	12.1	12.3
	6H	11.4	11.9	11.7	12.2	12.6	11.3	11.8	11.5	12.1	12.4
	8H	11.4	11.9	11.7	12.2	12.6	11.2	11.7	11.5	12.0	12.4
	12H	11.3	11.8	11.7	12.2	12.6	11.1	11.6	11.5	12.0	12.4
4H	2H	11.4	12.0	11.8	12.3	12.5	11.2	11.9	11.6	12.1	12.3
	3H	11.3	11.8	11.7	12.1	12.6	11.1	11.6	11.5	12.0	12.4
	4H	11.2	11.6	11.6	12.0	12.6	11.0	11.4	11.4	11.9	12.4
	6H	11.1	11.6	11.6	11.9	12.3	10.9	11.4	11.4	11.7	12.1
	8H	11.0	11.5	11.6	11.8	12.2	10.9	11.3	11.4	11.7	12.0
	12H	11.0	11.3	11.5	11.7	12.2	10.8	11.1	11.3	11.6	12.0
8H	4H	11.0	11.5	11.5	11.8	12.2	10.9	11.3	11.4	11.7	12.0
	6H	11.0	11.3	11.5	11.7	12.2	10.8	11.1	11.3	11.5	12.1
	8H	11.0	11.2	11.5	11.7	12.3	10.8	11.0	11.3	11.5	12.2
	12H	10.9	11.1	11.5	11.6	12.2	10.7	10.9	11.3	11.4	12.0
12H	4H	11.0	11.3	11.5	11.7	12.2	10.8	11.1	11.3	11.5	12.0
	6H	11.0	11.2	11.5	11.7	12.3	10.8	11.0	11.3	11.5	12.2
	8H	10.9	11.1	11.5	11.6	12.2	10.7	10.9	11.3	11.4	12.0

Variations with the observer position for the luminaire spacings, S:		
S = 1.0H	6.1 / -14.8	5.9 / -16.5
S = 1.5H	8.9 / -14.9	8.7 / -16.7
S = 2.0H	10.9 / -15.1	10.7 / -17.0

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	114	112	110	108	112	110	108	106	106	104	103	102	101	100	98	98	97	95
2	110	106	102	99	108	104	101	98	101	98	96	98	96	94	95	93	92	90
3	105	100	96	93	104	99	95	92	96	93	90	94	91	89	92	89	88	86
4	101	95	90	87	100	94	90	86	92	88	85	90	87	84	88	86	83	82
5	97	90	86	82	96	90	85	82	88	84	81	86	83	80	85	82	80	78
6	94	86	81	78	92	86	81	78	84	80	77	83	79	77	82	78	76	75
7	90	83	78	74	89	82	77	74	81	76	73	80	76	73	78	75	73	71
8	87	79	74	71	86	78	74	70	77	73	70	76	73	70	76	72	70	68
9	84	76	71	68	83	75	71	67	74	70	67	74	70	67	73	69	67	66
10	81	73	68	65	80	72	68	65	72	67	64	71	67	64	70	67	64	63

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Flicker Details

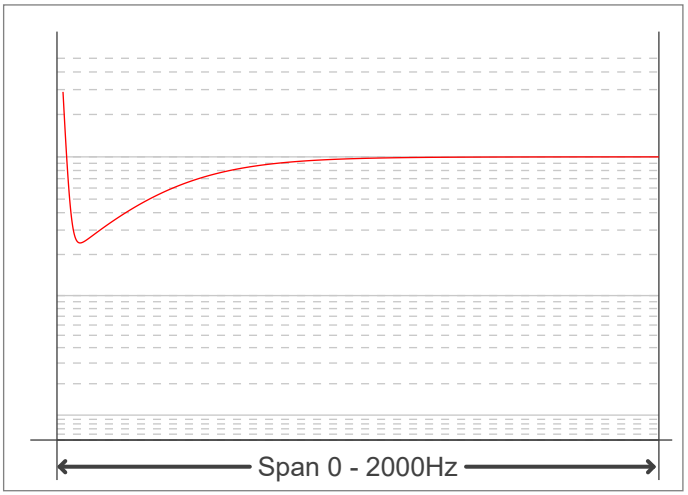
Flicker Meter Type	Viso Systems LabFlicker
Frequency of Input Power	60 Hz
Flicker/TLA Sample Rate	20000 sample/s

Measurement Time

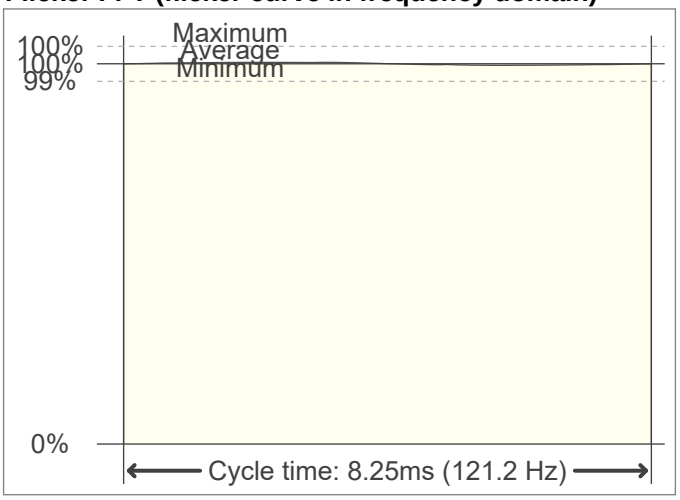
PstLM	180 sec
All other indices	1.2 sec

Flicker Indices	**(IES)**
Flicker Percentage	0.44%
Flicker Frequency	121.21 Hz
Flicker Index	0
Flicker SVM Value	0.01
Flicker PstLM Value	0.05

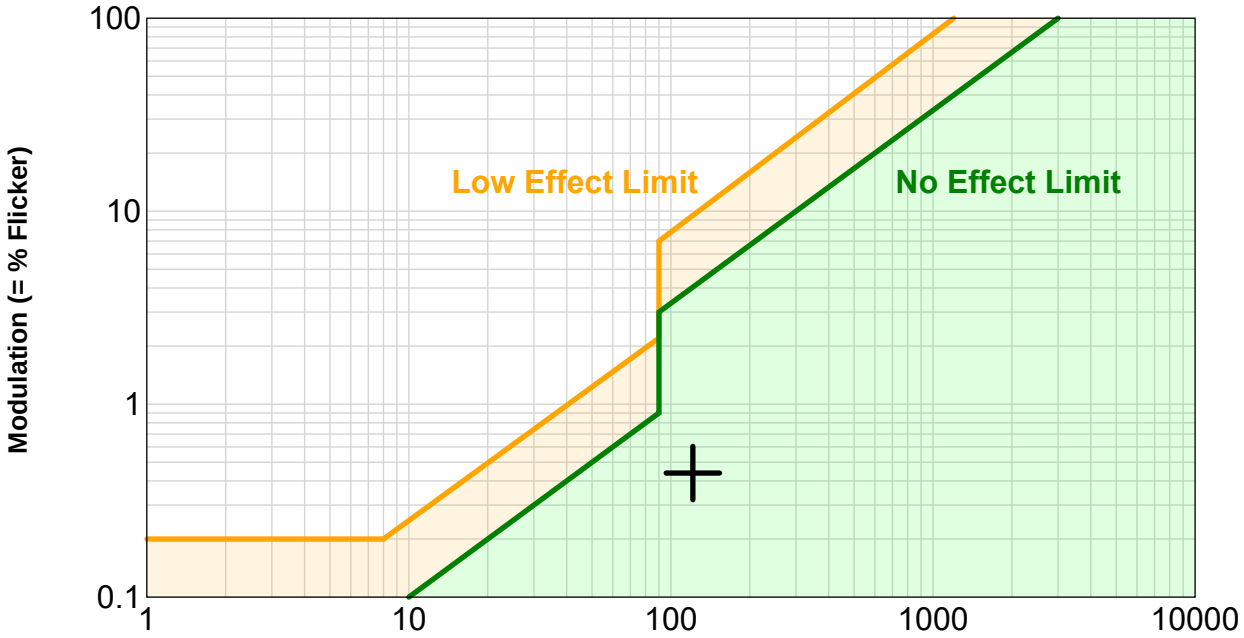
Flicker Frame



Flicker FFT (flicker curve in frequency domain)



IEEE 1789 Frequency/Modulation Plot



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