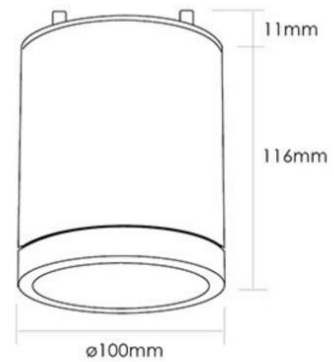


Product Overview

Product Name / Code	LITHO 9W Exterior Can Light - LC4108
Description	3000K, IP65, Sandy Anthracite, Non-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

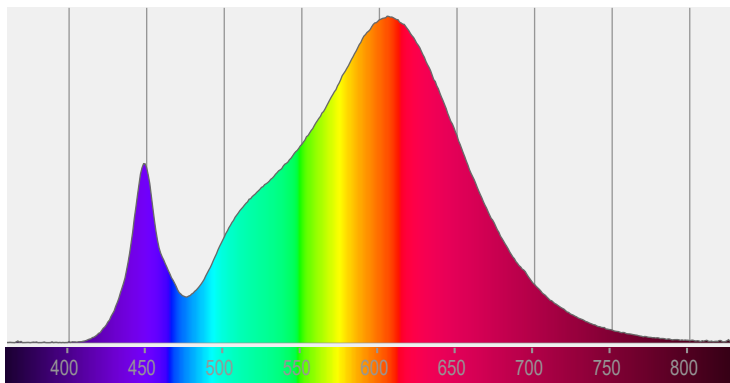
Test Date and Time	25/08/2023 10:46:36 AM
Operator	JE
C-Planes Measured	24
Measurement Resolution	15°
Measurement Distance	465.3cm
Measurement Number	VFR-230825-0186-MS
Tracking Link	http://www.visosystems.com/tracking/?id=VT230825-005667



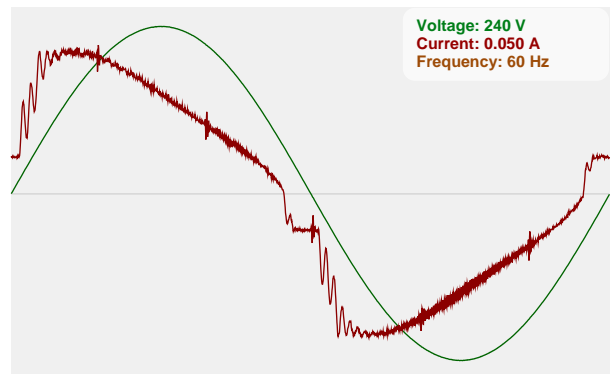
Performance

Total Lumen Output	1134lm
Light Efficiency	108 Lumen/Watt
Peak (cd)	1131cd
Nominal Power	10.5W
Input Voltage	240V
Frequency of Input Power	60Hz
Power Factor	0.87
Warm-up (stabilisation) Time	Lamp stabilized in 1 hour 2 min
Warm-up Variation	-2.1%

Spectral Power Distribution (SPD)



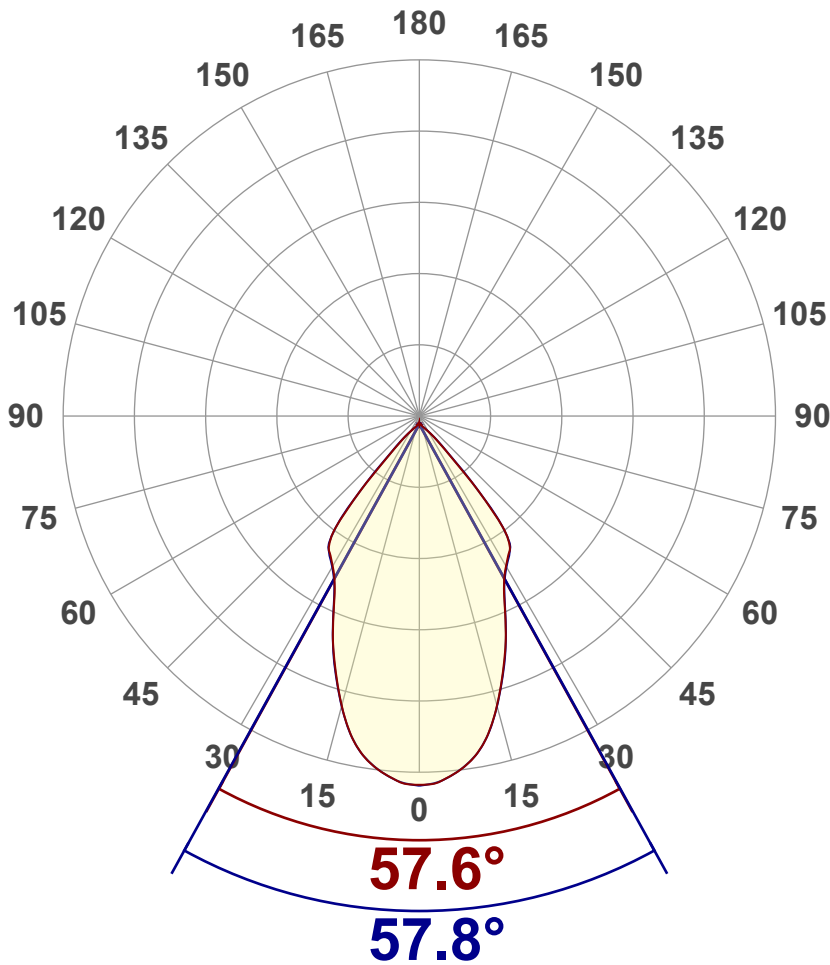
Input Power Curve



Optic Specifications

Correlated Colour Temperature, Target	3000K
Correlated Colour Temperature, Measured	2940K
Colour Rendering Index	CRI 83.8
R9 Value	R9 = 14.6
Colour Rendering TM30-18	R _f 84.9 - R _g 98.3
Colour Quality Scale	CQS = 82.5
Beam Angle	57.4°



Angular Distribution – 0° / 90° Plane

Main Values

Total Lumen Output	1134 lm
Lumen Up% / Down%	0.19 % / 99.81%
Peak Intensity	1131 cd
Beam Angle (50%)	57.4°
Beam Angle (90%)	57.8°
Beam Angle (10%)	57.1°

Cut-off Angle

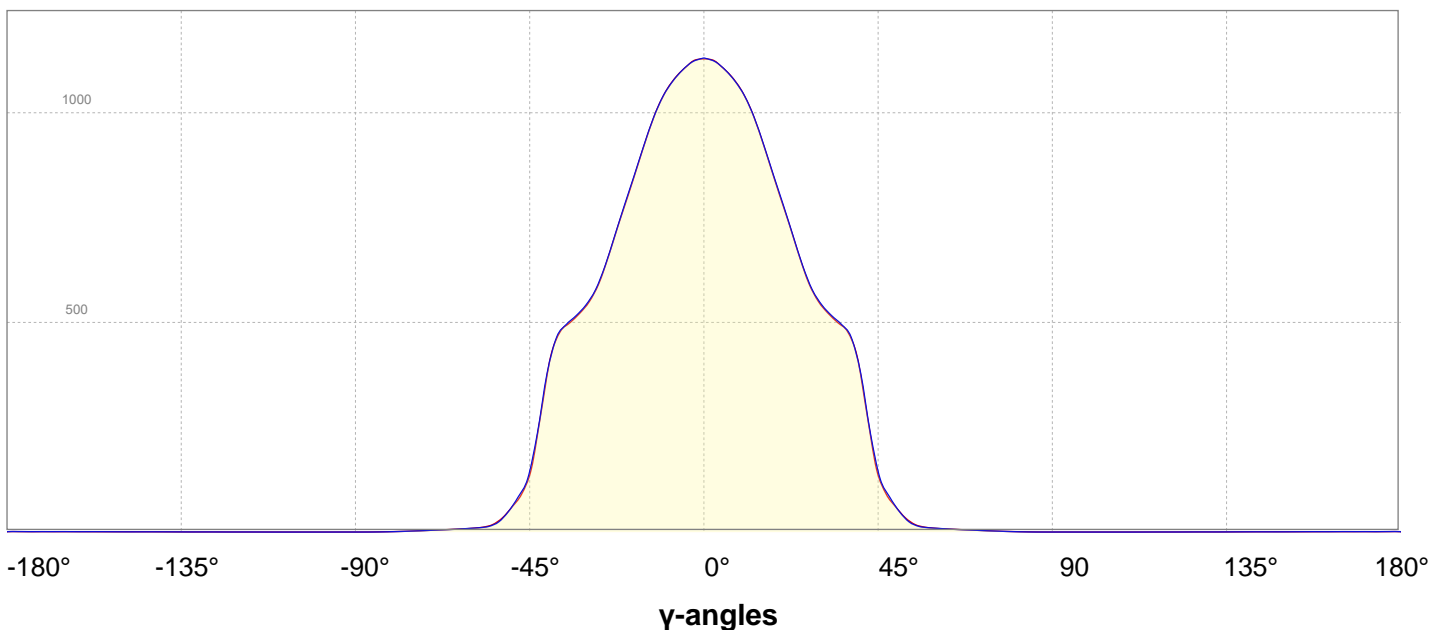
Average 2.5%	105.6°
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Field Angle

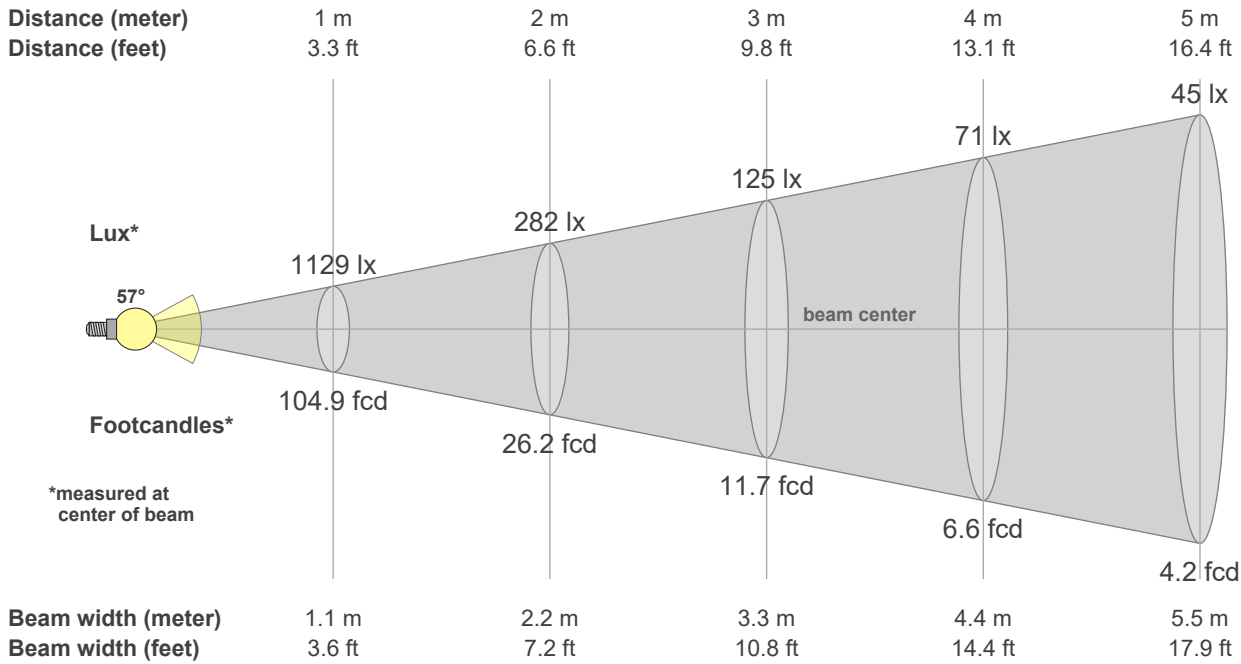
Average 10%	92.1°
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Intensity Ratio

In 120° Cone	99.0%
In 90° Cone	94.1%

C000-C180
C090-C270
Linear Distribution Diagram – Intensity (candela) vs γ -angle


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
1129	282	125	71	45	31	23	18	14	11	9	8	7	6	5	4	4	3	3	3	lux
104.9	26.2	11.7	6.6	4.2	2.9	2.1	1.6	1.3	1	0.9	0.7	0.6	0.5	0.5	0.4	0.4	0.3	0.3	0.3	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°	y
1129	1126	1113	1097	1075	1048	1011	961	906	848	791	735	677	622	577	545	522	505	487	456	cd
100%	100%	99%	97%	95%	93%	90%	85%	80%	75%	70%	65%	60%	55%	51%	48%	46%	45%	43%	40%	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°	y
1129	1125	1114	1097	1076	1047	1009	962	907	850	794	736	678	624	577	548	526	508	489	465	cd
100%	100%	99%	97%	95%	93%	89%	85%	80%	75%	70%	65%	60%	55%	51%	49%	47%	45%	43%	41%	of 0°val

Intensities in 180° c-plane {INT_TABLE_180_START}

•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	y
																				cd
%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	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°	y
1129	1125	1114	1097	1076	1047	1009	962	907	850	794	736	678	624	577	548	526	508	489	465	cd
100%	100%	99%	97%	95%	93%	89%	85%	80%	75%	70%	65%	60%	55%	51%	49%	47%	45%	43%	41%	Of 0°val

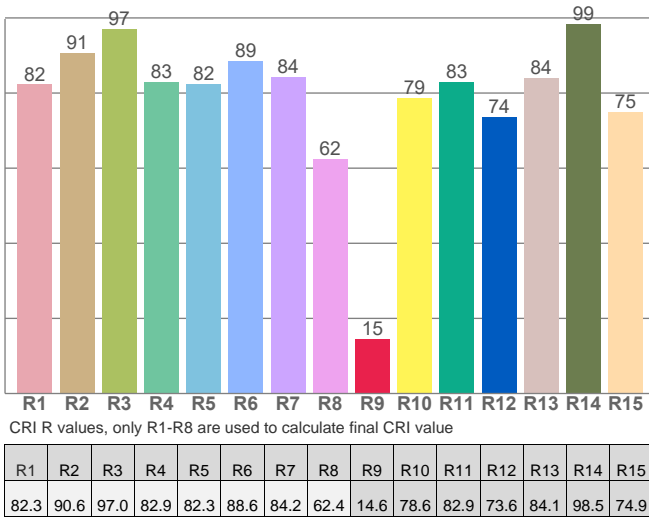


Colour Details

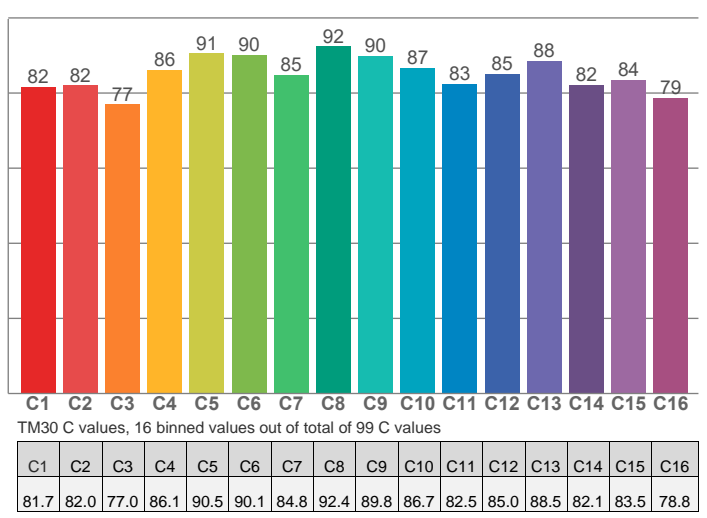
Correlated Colour Temperature, Target	CCT = 3000K
Correlated Colour Temperature, Measured	CCT = 2940K
Colour Rendering Index	CRI 83.8
Colour Rendering Index R9 Value	R9 = 14.6
Colour Rendering TM30-18	R _f 84.9, R _g 98.3
Colour Quality Scale	CQS = 82.5

MacAdam Steps	SDCM = 2.1
Colour Coordinates CIE 1931	(x;y) = (0.437;0.404)
Colour Coordinates CIEs 1960	(u;v) = (0.251; 0.348)
Colour Deviation from BBL	Duv = -0.0007
Colour Coordinate CIEs 1976 (CIELUV)	(u';v') = (0.251;0.521)

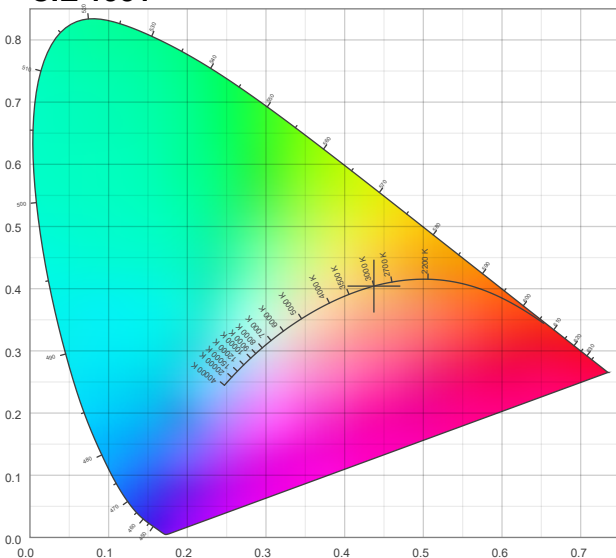
Colour Rendering Index per reference colour (CIE 1995)



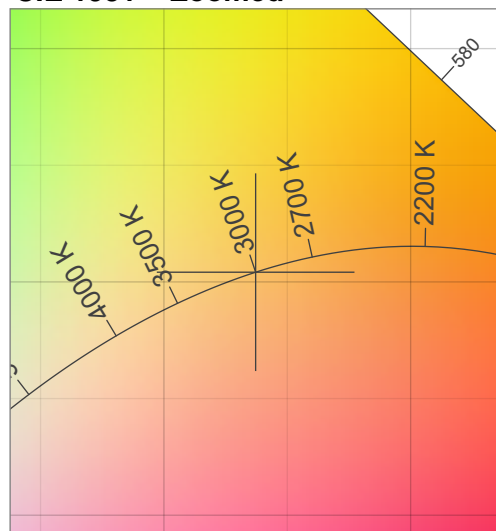
TM30-18 Rf-values per hue bin



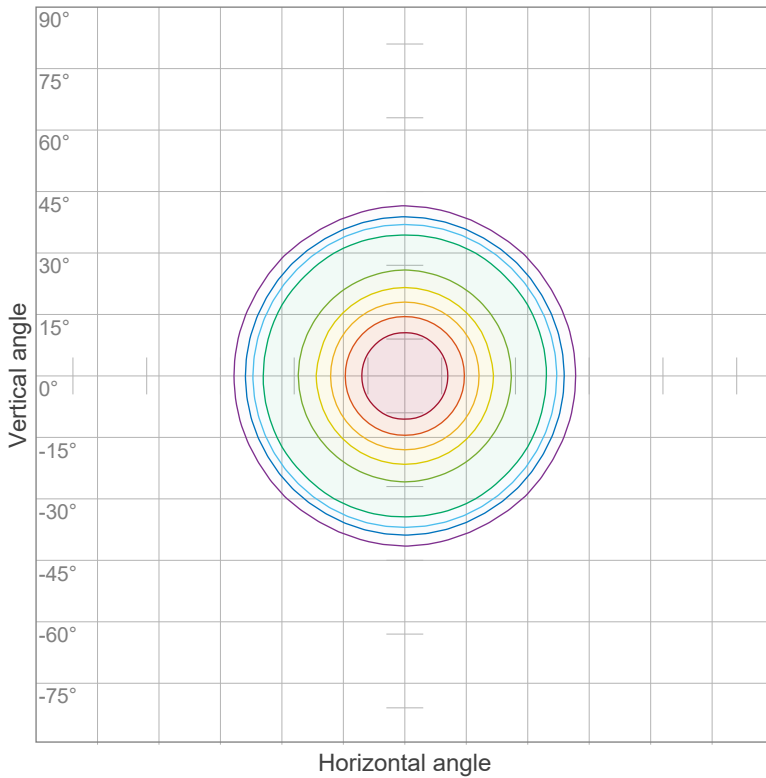
CIE 1931



CIE 1931 – Zoomed



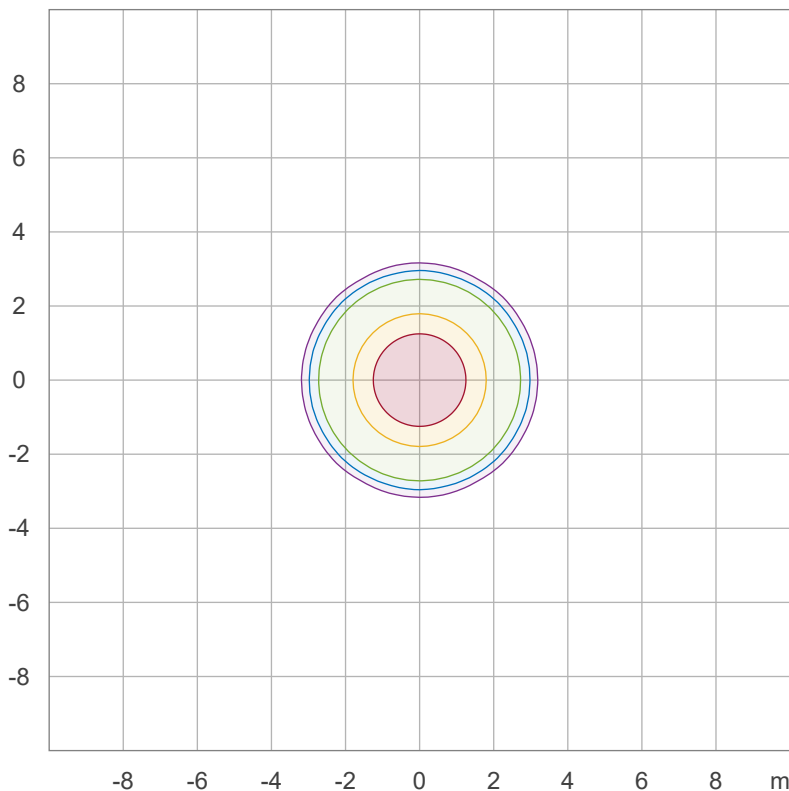
Iso-intensity Diagram (Iso-Candela)



90 %	1016.3 cd
80 %	903.4 cd
70 %	790.4 cd
60 %	677.5 cd
50 %	564.6 cd
40 %	451.7 cd
30 %	338.8 cd
20 %	225.8 cd
10 %	112.9 cd

Peak intensity: 1129.2 cd
Number of c-planes: 24

Iso-illuminance Diagram (Iso-lux)



50.0 %	62.7 lx
30.0 %	37.6 lx
10.0 %	12.5 lx
5.0 %	6.3 lx
3.0 %	3.8 lx

Peak illuminance: 125.4 lx
Mounting height: 3.0 m
Number of c-planes: 24



Light Planning – UGR table

Uncorrected, comprehensive UGR table according to 117-1995

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					Viewed Endwise				
H = mounting height above eye level											
X	Y	(Viewing direction orthogonal to lamp length axis)					(Viewing direction parallel to lamp length axis)				
2H	2H	21.3	22.0	21.4	22.3	22.5	21.4	22.1	21.5	22.3	22.5
	3H	21.0	21.9	21.4	22.1	22.3	21.1	21.9	21.5	22.1	22.3
	4H	21.0	21.8	21.4	22.0	22.2	21.0	21.8	21.4	22.1	22.3
	6H	21.0	21.6	21.3	21.9	22.3	21.0	21.7	21.3	22.0	22.3
	8H	20.9	21.5	21.2	21.9	22.3	21.0	21.6	21.3	21.9	22.3
	12H	20.8	21.5	21.2	21.8	22.3	20.9	21.5	21.3	21.9	22.3
4H	2H	21.0	21.7	21.4	22.0	22.2	21.0	21.8	21.4	22.0	22.3
	3H	20.9	21.5	21.2	21.8	22.3	20.9	21.5	21.3	21.9	22.3
	4H	20.7	21.3	21.1	21.7	22.2	20.8	21.4	21.2	21.8	22.3
	6H	20.6	21.2	21.1	21.6	21.9	20.7	21.3	21.2	21.6	22.0
	8H	20.6	21.1	21.1	21.5	21.9	20.7	21.2	21.2	21.5	21.9
	12H	20.5	21.0	21.0	21.4	21.8	20.6	21.0	21.1	21.4	21.9
8H	4H	20.6	21.1	21.1	21.5	21.9	20.7	21.2	21.2	21.5	21.9
	6H	20.5	20.9	21.0	21.4	21.9	20.6	21.0	21.1	21.4	22.0
	8H	20.5	20.8	21.0	21.3	22.0	20.6	20.9	21.1	21.4	22.0
	12H	20.5	20.7	21.1	21.2	21.8	20.5	20.8	21.1	21.3	21.9
12H	4H	20.5	21.0	21.0	21.4	21.8	20.6	21.0	21.1	21.4	21.9
	6H	20.5	20.8	21.0	21.3	22.0	20.6	20.9	21.1	21.4	22.0
	8H	20.5	20.7	21.1	21.2	21.8	20.5	20.8	21.1	21.3	21.9

Variations with the observer position for the luminaire spacings, S:

S = 1.0H	3.0 / -12.4	3.0 / -12.5
S = 1.5H	5.4 / -14.5	5.4 / -14.5
S = 2.0H	7.4 / -15.5	7.4 / -15.5

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	0			
Floor reflectance	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	113	110	107	105	111	108	106	103	104	102	100	100	99	97	97	95	94	92
2	107	102	97	94	105	100	96	93	97	93	91	94	91	89	91	89	87	85
3	101	94	89	84	99	93	88	84	90	86	82	87	84	81	85	82	80	78
4	95	87	81	77	93	86	80	76	84	79	75	82	78	74	80	76	73	72
5	90	81	75	70	88	80	74	70	78	73	69	76	72	68	75	71	68	66
6	85	75	69	64	83	74	68	64	73	68	64	71	67	63	70	66	63	61
7	80	70	64	59	79	70	63	59	68	63	59	67	62	58	66	61	58	57
8	76	66	59	55	75	65	59	55	64	58	54	63	58	54	62	57	54	52
9	72	62	55	51	71	61	55	51	60	55	51	59	54	51	58	54	50	49
10	68	58	52	48	67	57	52	47	57	51	47	56	51	47	55	50	47	46

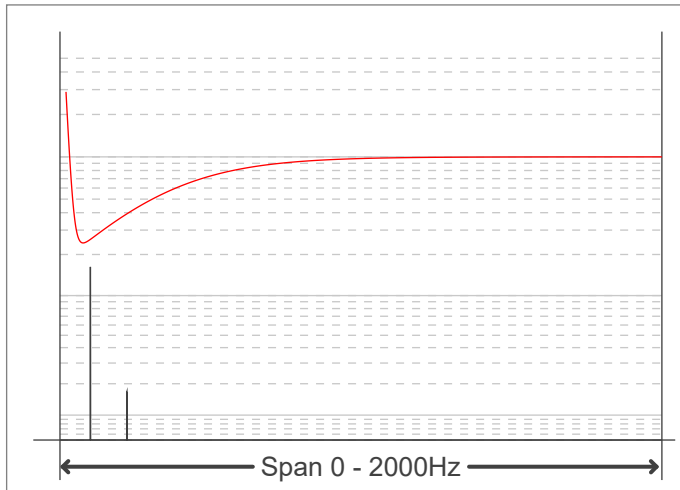


Flicker Details

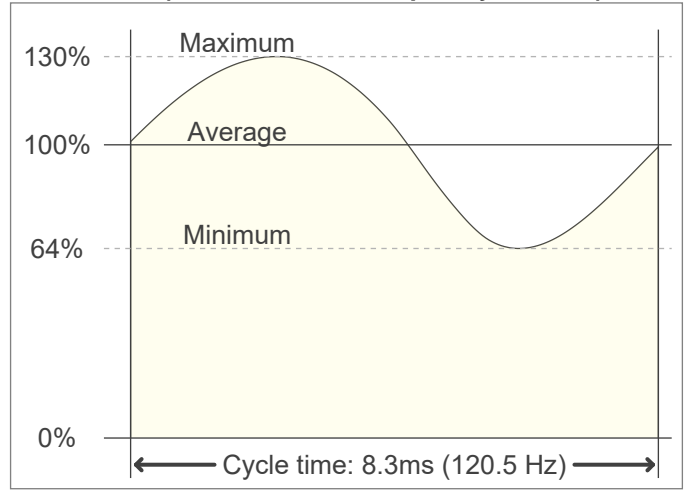
Flicker Meter Type	Viso Systems LabFlicker
Frequency of Input Power	60Hz
Flicker/TLA Sample Rate	20000 sample/s
Measurement Time	
PstLM	180 sec
All other indices	1.2 sec

Flicker Indices (IES)	
Flicker Percentage	33.68%
Flicker Frequency	120.48Hz
Flicker Index	0.1
Flicker SVM Value	1.18
Flicker PstLM Value	0.03

Flicker Frame



Flicker FFT (flicker curve in frequency domain)



IEEE 1789 Frequency/Modulation Plot

