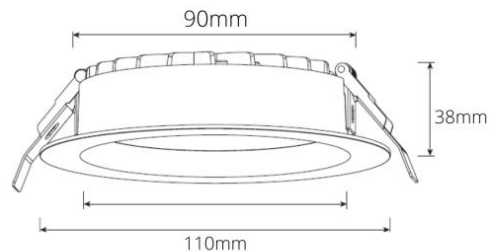




Product Overview

Product Name / Code	KARGO 10W Downlight - LC3611 (4000K)
Description	90mm Cutout, White Trim, Tri-Colour, IP54, 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

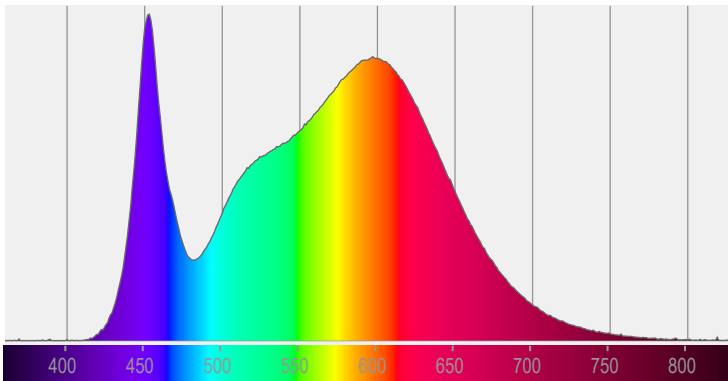
Test Date and Time	10/05/2023 4:56:12 PM
Operator	Johnny Elmer
C-Planes Measured	24
Measurement Resolution	15°
Measurement Distance	464.4cm
Measurement Number	VFR-230510-0082-MS
Tracking Link	http://www.visosystems.com/tracking/?id=VT230516-002260



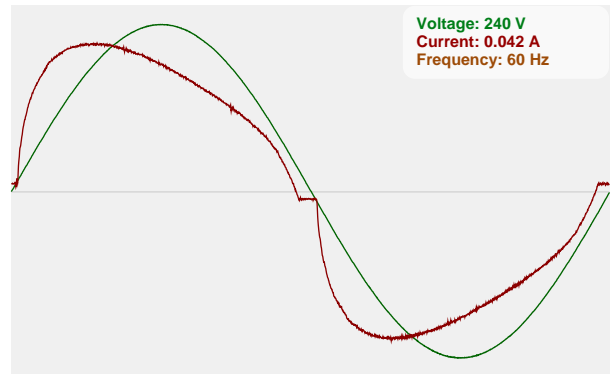
Performance

Total Lumen Output	1052 lm
Light Efficiency	111 Lumen/Watt
Peak (cd)	466 cd
Nominal Power	9.5 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)



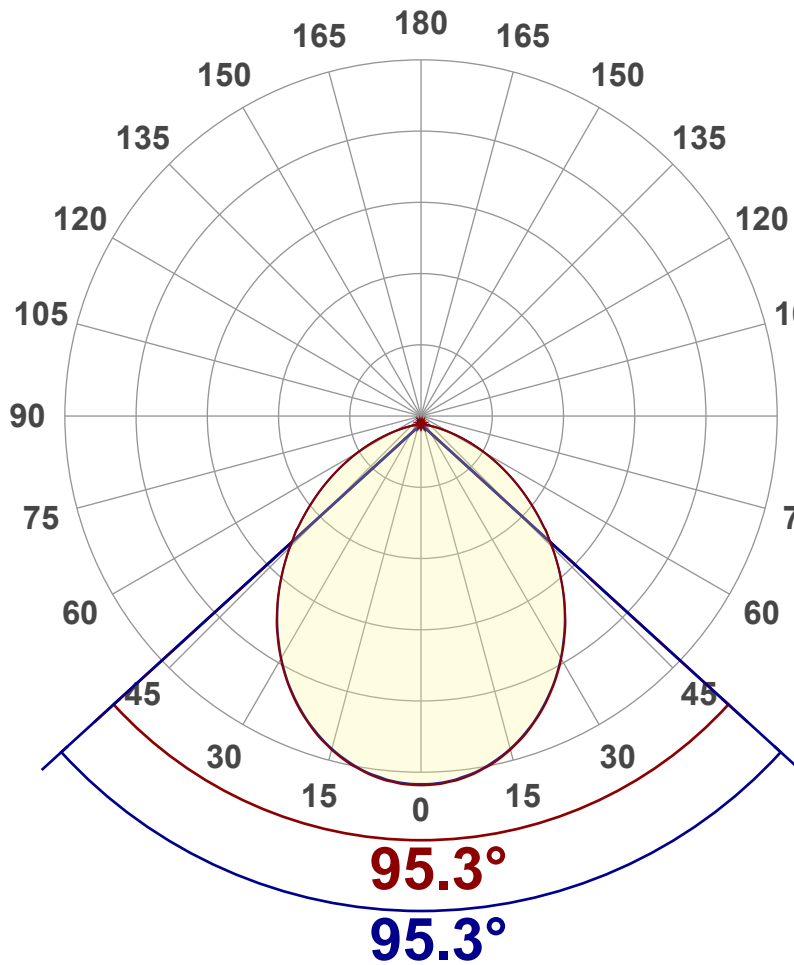
Input Power Curve



Optic Specifications

Correlated Colour Temperature, Target	4000K
Correlated Colour Temperature, Measured	3899K
Colour Rendering Index	CRI 85.1
R9 Value	R9 = 17.7
Colour Rendering TM30-18	R _f 84.6 - R _g 96.6
Colour Quality Scale	CQS = 82.9
Beam Angle	95.3°



Angular Distribution – 0° / 90° Plane

Main Values

Total Lumen Output	1052 lm
Lumen Up% / Down%	0.07 % / 99.93%
Peak Intensity	466 cd
Beam Angle (50%)	95.3°
Beam Angle (90%)	95.3°
Beam Angle (10%)	95.3°

Cut-off Angle

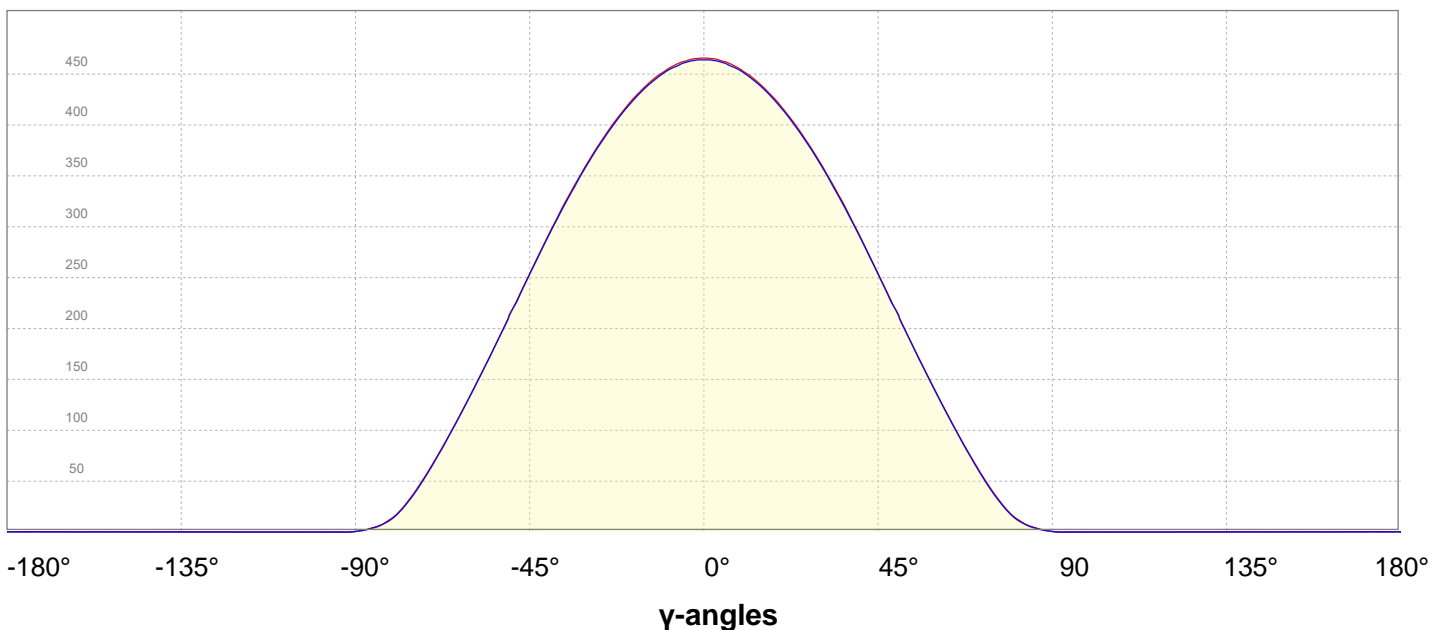
Average 2.5%	162.4°
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Field Angle

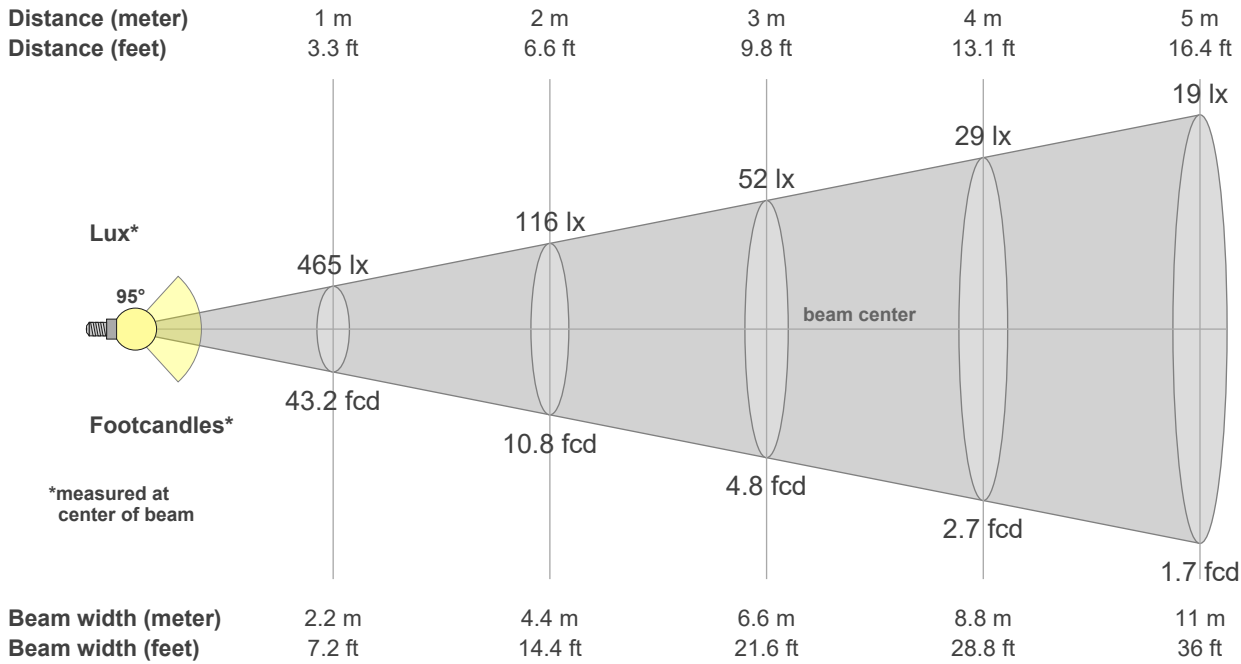
Average 10%	146.6°
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Intensity Ratio

In 120° Cone	86.0%
In 90° Cone	62.2%

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
465	116	52	29	19	13	9	7	6	5	4	3	3	2	2	2	2	1	1	1	lux
43.2	10.8	4.8	2.7	1.7	1.2	0.9	0.7	0.5	0.4	0.4	0.3	0.3	0.2	0.2	0.2	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
465	463	453	438	418	393	363	330	293	254	214	175	137	101	67	38	15	5	1	0	cd
100%	99%	97%	94%	90%	84%	78%	71%	63%	55%	46%	38%	29%	22%	14%	8%	3%	1%	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
465	461	452	437	416	391	362	328	292	253	215	174	136	100	66	37	15	4	1	0	cd
100%	99%	97%	94%	89%	84%	78%	71%	63%	54%	46%	37%	29%	22%	14%	8%	3%	1%	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
465	463	453	438	418	393	363	330	293	254	214	175	137	101	67	38	15	5	1	0	cd
100%	99%	97%	94%	90%	84%	78%	71%	63%	55%	46%	38%	29%	22%	14%	8%	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
465	461	452	437	416	391	362	328	292	253	215	174	136	100	66	37	15	4	1	0	cd
100%	99%	97%	94%	89%	84%	78%	71%	63%	54%	46%	37%	29%	22%	14%	8%	3%	1%	0%	0%	Of 0°val

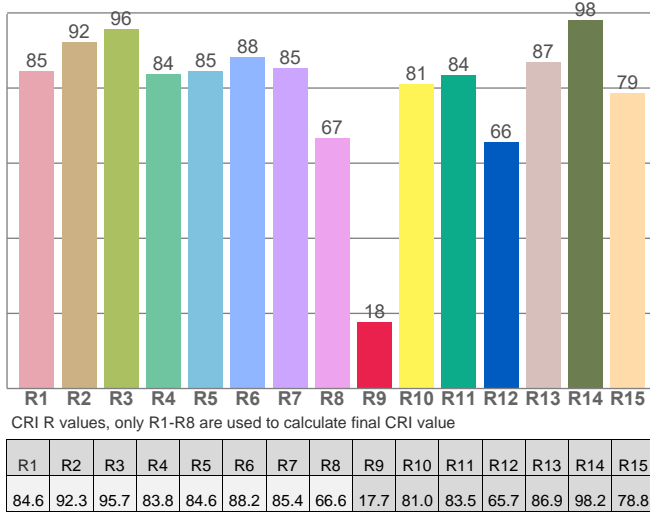


Colour Details

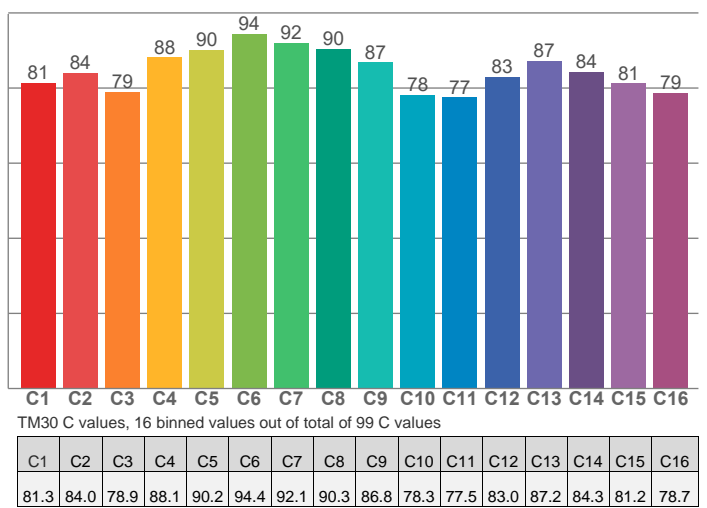
Correlated Colour Temperature, Target	CCT = 4000K
Correlated Colour Temperature, Measured	CCT = 3899K
Colour Rendering Index	CRI 85.1
Colour Rendering Index R9 Value	R9 = 17.7
Colour Rendering TM30-18	R _f 84.6, R _g 96.6
Colour Quality Scale	CQS = 82.9

MacAdam Steps	SDCM = 3.4
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 = -0.0037
Colour Coordinate CIEs 1976 (CIELUV)	(u';v') = (0.225;0.225)

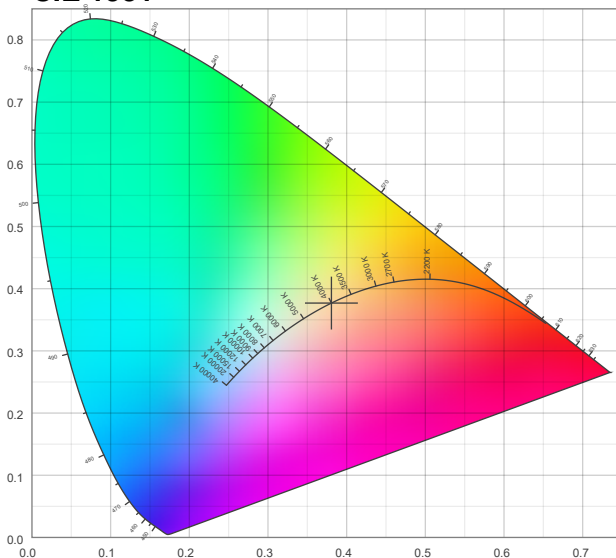
Colour Rendering Index per reference colour (CIE 1995)



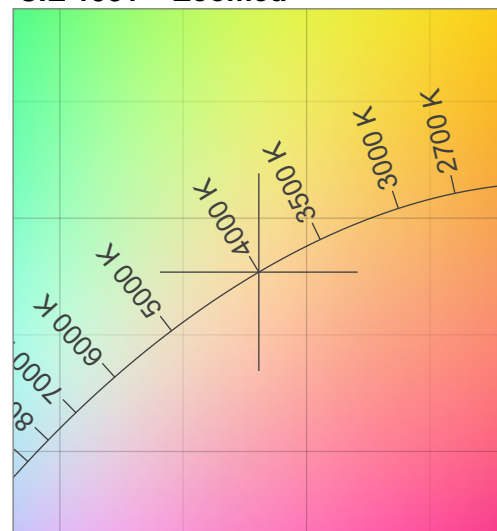
TM30-18 R_f-values per hue bin



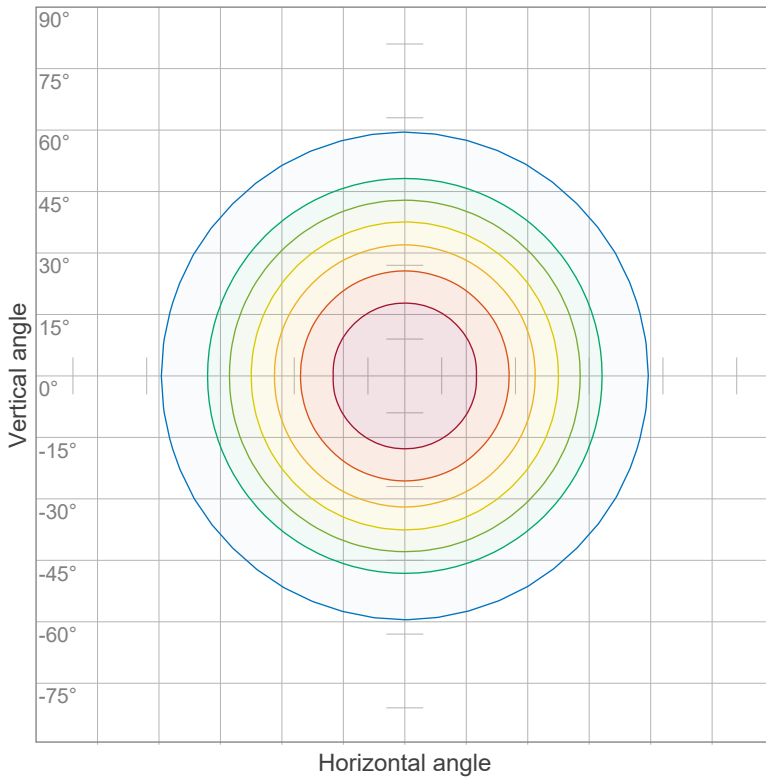
CIE 1931



CIE 1931 – Zoomed



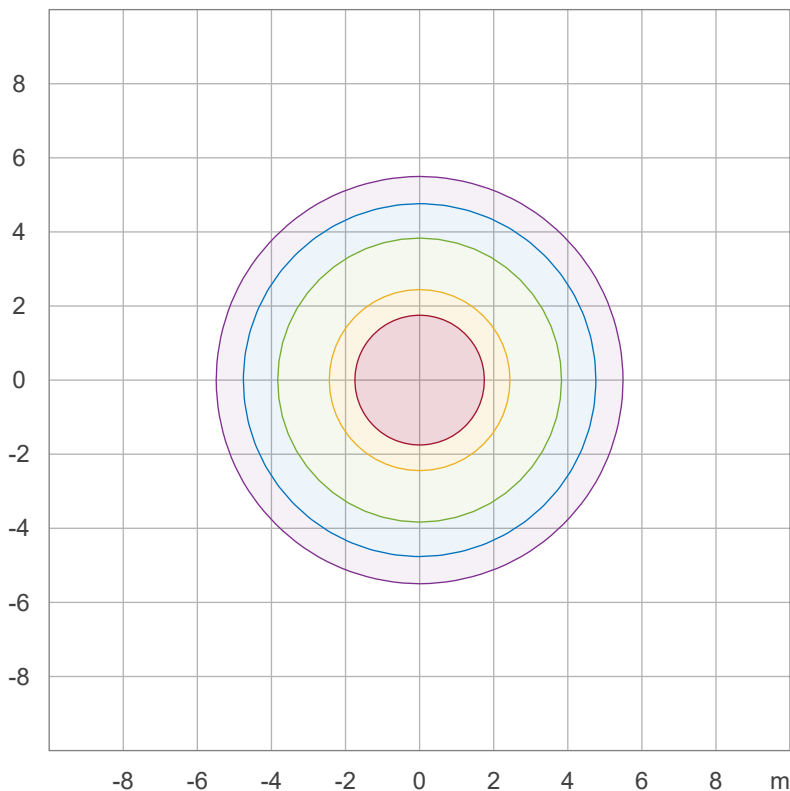
Iso-intensity Diagram (Iso-Candela)



90 %	419.1 cd
80 %	372.5 cd
70 %	325.9 cd
60 %	279.4 cd
50 %	232.8 cd
40 %	186.3 cd
30 %	139.7 cd
20 %	93.1 cd
10 %	46.6 cd

Peak intensity: 465.6 cd
Number of c-planes: 24

Iso-illuminance Diagram (Iso-lux)



50.0 %	25.9 lx
30.0 %	15.5 lx
10.0 %	5.2 lx
5.0 %	2.6 lx
3.0 %	1.6 lx

Peak illuminance: 51.7 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	24.8	25.9	25.0	26.2	26.4	24.8	25.9	25.0	26.2	26.4
	3H	25.5	26.6	25.9	26.9	27.1	25.4	26.6	25.9	26.9	27.1
	4H	25.6	26.8	26.1	27.0	27.3	25.6	26.7	26.0	27.0	27.3
	6H	25.8	26.7	26.1	27.0	27.4	25.7	26.7	26.0	27.0	27.3
	8H	25.7	26.6	26.1	27.0	27.4	25.7	26.6	26.0	26.9	27.3
	12H	25.7	26.6	26.0	26.9	27.4	25.6	26.5	26.0	26.9	27.3
4H	2H	25.1	26.2	25.5	26.5	26.7	25.1	26.2	25.5	26.5	26.7
	3H	26.1	27.0	26.4	27.3	27.8	26.1	27.0	26.4	27.3	27.7
	4H	26.2	27.1	26.7	27.5	28.0	26.2	27.0	26.7	27.5	28.0
	6H	26.3	27.1	26.8	27.5	27.8	26.3	27.1	26.8	27.4	27.8
	8H	26.3	27.0	26.8	27.4	27.8	26.3	27.0	26.8	27.3	27.7
	12H	26.3	26.9	26.8	27.3	27.7	26.2	26.8	26.7	27.2	27.7
8H	4H	26.3	27.0	26.8	27.4	27.8	26.3	27.0	26.8	27.4	27.7
	6H	26.4	26.9	26.9	27.4	27.9	26.4	26.9	26.9	27.4	27.9
	8H	26.4	26.9	26.9	27.4	28.0	26.4	26.9	26.9	27.4	28.0
	12H	26.4	26.8	27.0	27.3	27.9	26.4	26.8	27.0	27.3	27.9
12H	4H	26.2	26.8	26.7	27.3	27.7	26.2	26.8	26.7	27.2	27.7
	6H	26.4	26.9	26.9	27.4	28.0	26.4	26.8	26.9	27.4	28.0
	8H	26.4	26.8	27.0	27.3	27.9	26.4	26.8	27.0	27.3	27.9

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

S = 1.0H	0.2 / -0.3	0.2 / -0.3
S = 1.5H	0.5 / -0.9	0.5 / -0.9
S = 2.0H	1.3 / -1.9	1.3 / -1.9

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	110	106	102	99	108	104	100	97	100	97	94	96	93	91	92	90	89	87
2	101	94	88	82	99	92	86	81	88	84	80	85	81	78	82	79	76	74
3	93	83	76	70	91	82	75	69	79	73	68	76	71	67	74	69	66	64
4	86	74	66	60	83	73	66	60	71	64	59	68	63	58	66	61	57	55
5	79	67	59	52	77	66	58	52	64	57	51	62	56	51	60	55	50	48
6	73	61	52	46	71	60	52	46	58	51	46	56	50	45	55	49	45	43
7	68	55	47	41	66	54	47	41	53	46	41	52	45	40	50	44	40	38
8	63	51	42	37	62	50	42	37	49	42	37	47	41	36	46	40	36	34
9	59	47	39	33	58	46	38	33	45	38	33	44	37	33	43	37	33	31
10	56	43	35	30	55	43	35	30	42	35	30	41	34	30	40	34	30	28

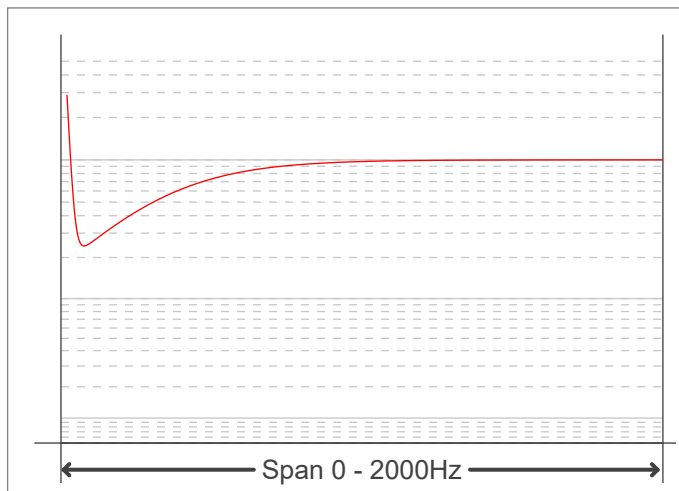
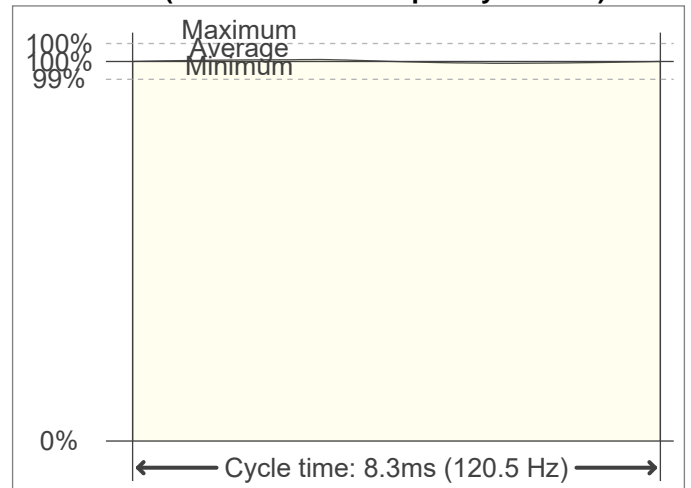


Flicker Details

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	0.55%
Flicker Frequency	120.48 Hz
Flicker Index	0
Flicker SVM Value	0.02
Flicker PstLM Value	0.04

Flicker Frame

Flicker FFT (flicker curve in frequency domain)

IEEE 1789 Frequency/Modulation Plot
