TECHLUME
AUSTRALIA

LM-79 Test Report

Testing Method:	IES Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products
Relevant Standards:	IES LM-79-08
Test Date and Time:	16/10/2023 6:03:54 PM
Test Location:	Techlume Australia - East Goderich Street Deloraine, TAS 7304
Operator:	Johnny Elmer
Measurement Number:	VFR-231016-0223-MS
Measurement Method:	Far Field, Type C Horizontal
Measurement Distance:	450.7 cm

Equipment Used

System Name:	LabSpion Goniometer
Sensor Name / Model:	Viso LabSensor Model2 / Freedom VIS (Custom Viso)
Spectrometer Range:	360 nm – 830 nm
Calibration Date:	7/12/2022
Flicker Meter Type:	Viso Systems LabFlicker
Manufacturer:	Viso Systems, Denmark

Test Conditions

Ambient Temperature:	25 °C ± 1 °C

Remarks

The results stated in this report represent the tested sample only. All photometric and colourimetric data has been measured in compliance with IES LM-79-08 standards.

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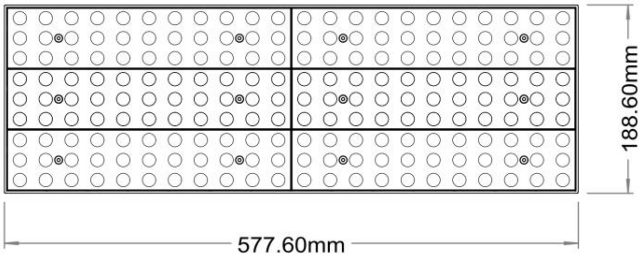
Product Overview

Product Description:	JARDAN 60W Aisle Track Light, 580x190mm, 4000K, CRI90, Non-Dim
Item Number:	LC7721
Manufacturer:	Decrolux Lighting Pty Ltd



Photometric Measurements

Total Luminous Flux	Luminous Efficacy	Luminous Intensity
8056 lm	139 Lumen/watt	5416 cd

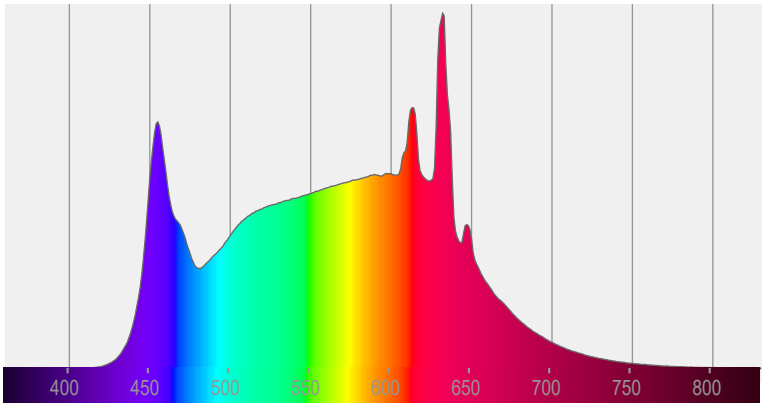
Correlated Colour Temperature, Target	Correlated Colour Temperature, Measured	Colour Rendering Index (CRI)
4000 K	3982 K	Ra 94.5

Electrical Measurements

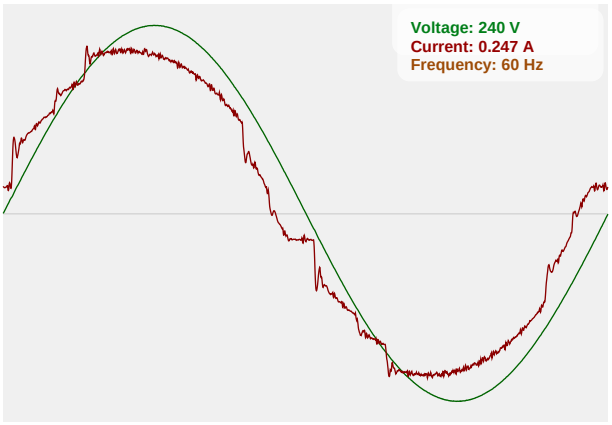
Input Voltage	Input Current	Input Power	Input Voltage Frequency
240 VAC	0.247 A	57.8 W	60 Hz

Power Factor	Stabilisation Time	Stabilisation Variation	Hours Operated Prior to Test
0.97	Lamp stabilized in 43 min 6 sec	-2.3%	0 hours

Spectral Power Distribution (SPD)



Input Power Curve

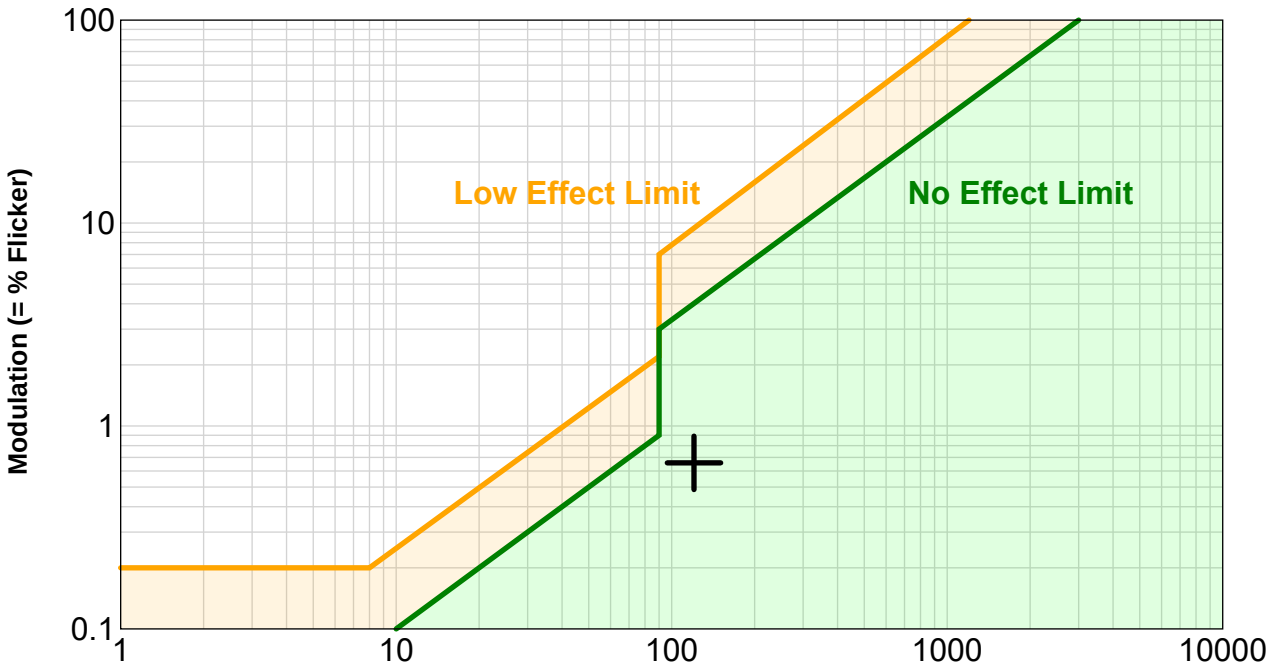


Flicker Details

Flicker Sample Rate	Flicker Percentage	Flicker Frequency	Flicker Index
20000 sample/s	0.66%	120.48 Hz	0

Flicker SVM Value	Flicker PstLM Value	Measurement Time (PstLM)	Measurement Time (all other indices)
0.02	0.02	180 s	1.2 s

IEEE 1789 Frequency/Modulation Plot



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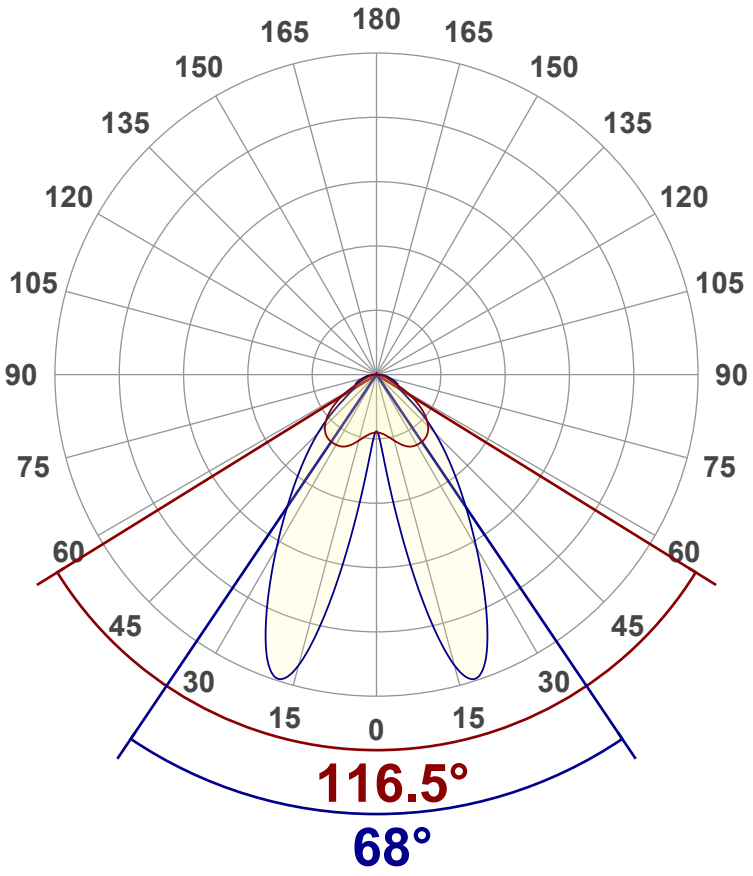
Angular Distribution – 0° / 90° Plane



Main Values

Total Lumen Output	8056 lm
Lumen Up%	0.28%
Lumen Down%	99.72%
Peak Intensity	5416 cd
Beam Angle (90%)	68°

Cut-off Angle

Average 2.5%	158.5°

Field Angle

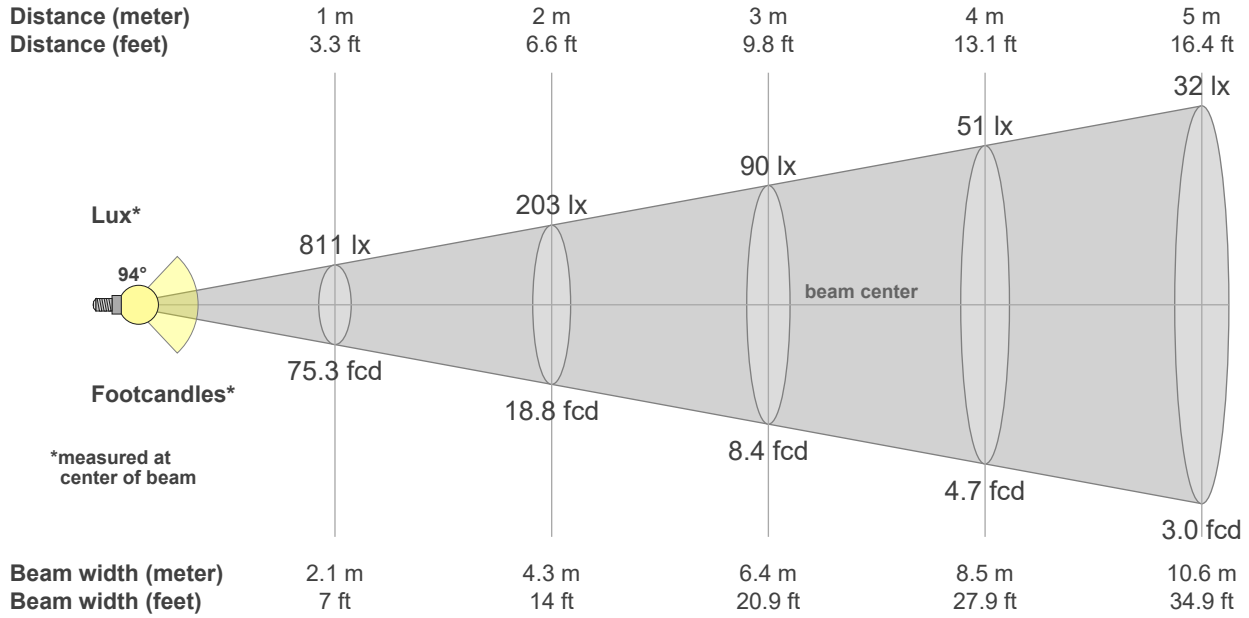
Average 10%	124.9°

Intensity Ratio

In 120° Cone	92.1%
In 90° Cone	68.6%

C000-C180

C090-C270



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
811	203	90	51	32	23	17	13	10	8	7	6	5	4	4	3	3	3	2	2	lux
75.3	18.8	8.4	4.7	3	2.1	1.5	1.2	0.9	0.8	0.6	0.5	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.2	fc

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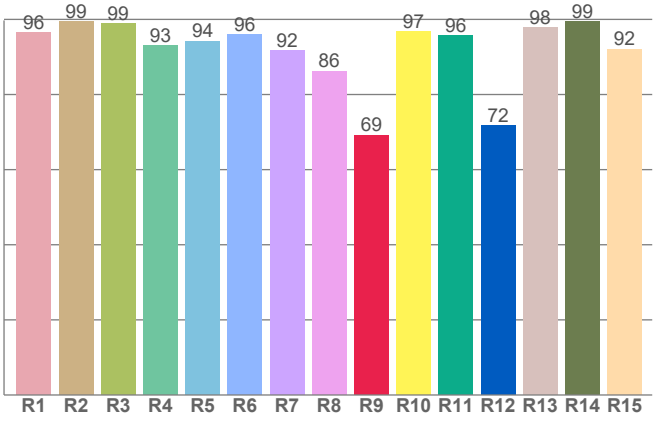
Colour Details

Colour Rendering Index (CRI)	Colour Rendering Index R9 Value	Colour Rendering TM30-18
Ra 94.5	R9 = 69.2	R_f 88.7, R_g 95.8

Colour Quality Scale	Correlated Colour Temperature, Target	Correlated Colour Temperature, Measured
CQS = 92.5	CCT = 4000 K	CCT = 3982 K

MacAdam Steps	Colour Coordinates CIE 1931	Colour Deviation from BBL
SDCM = 1.6	(x;y) = (0.381;0.377)	Duv = 0.0018

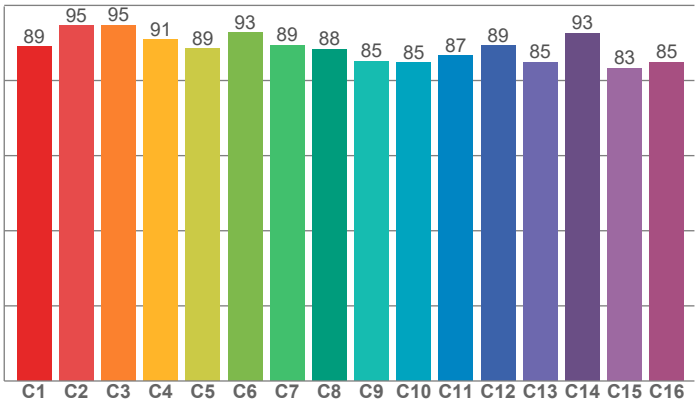
Colour Rendering Index per reference colour (CIE 1995)



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
96.4	99.3	98.9	92.9	94.2	96.0	91.7	86.2	69.2	96.8	95.7	71.7	97.8	99.4	92.1

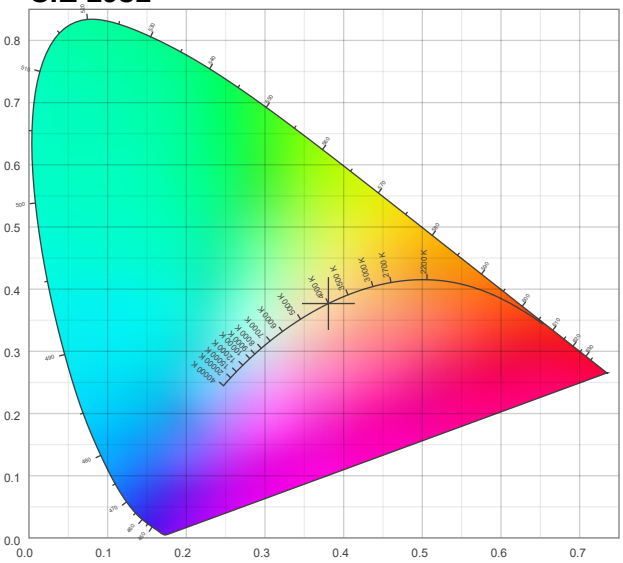
TM30-18 Rf-values per hue bin



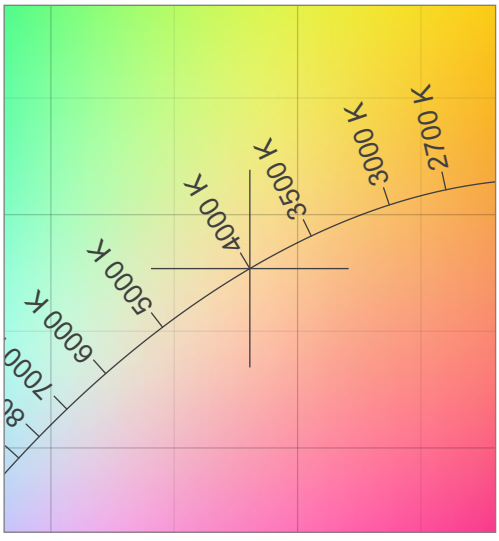
TM30 C values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
89.0	94.6	94.8	90.9	88.5	92.7	89.4	88.3	85.2	84.8	86.6	89.2	84.9	92.6	83.3	84.9

CIE 1931



CIE 1931 – Zoomed



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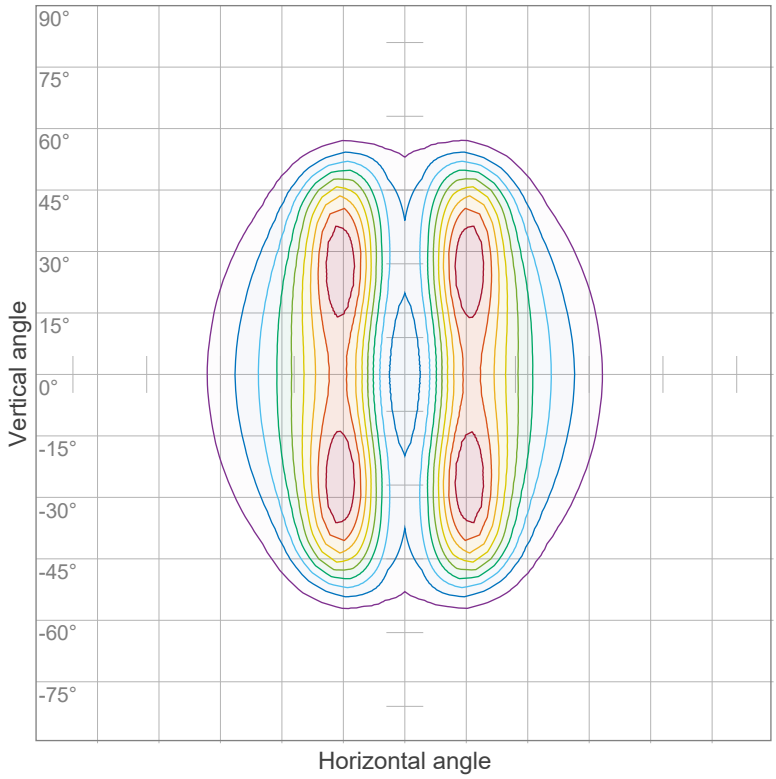
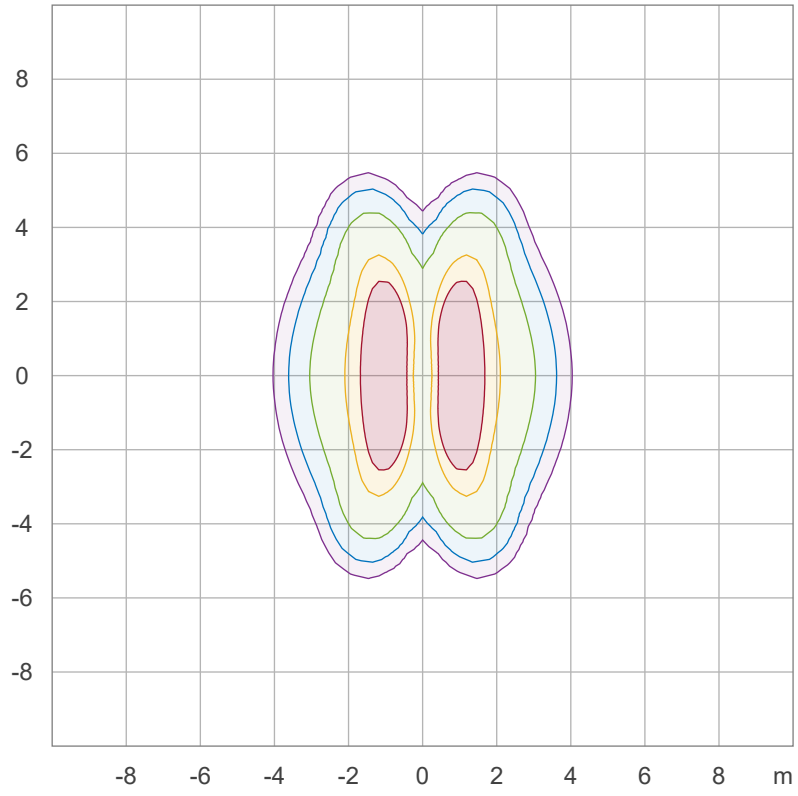
Iso-intensity Diagram (Iso-Candela)



90 %	4869.2 cd
80 %	4328.1 cd
70 %	3787.1 cd
60 %	3246.1 cd
50 %	2705.1 cd
40 %	2164.1 cd
30 %	1623.1 cd
20 %	1082.0 cd
10 %	541.0 cd

Peak intensity: 5410.2 cd
Number of c-planes: 72

Iso-illuminance Diagram (Iso-lux)



50.0 %	216.7 lx
30.0 %	130.0 lx
10.0 %	43.3 lx
5.0 %	21.7 lx
3.0 %	13.0 lx

Peak illuminance: 433.4 lx
Mounting height: 3.0 m
Number of c-planes: 72

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	25.4	26.4	25.6	26.7	26.9	18.8	19.9	19.0	20.2	20.4
	3H	25.3	26.4	25.7	26.6	26.8	19.1	20.2	19.5	20.4	20.6
	4H	25.2	26.3	25.6	26.6	26.8	19.3	20.4	19.7	20.6	20.9
	6H	25.3	26.2	25.6	26.5	26.8	19.7	20.6	20.0	20.9	21.2
	8H	25.2	26.1	25.6	26.4	26.8	19.8	20.7	20.1	21.0	21.4
	12H	25.2	26.0	25.6	26.4	26.8	19.9	20.7	20.2	21.1	21.5
4H	2H	25.1	26.2	25.5	26.4	26.7	19.5	20.5	19.9	20.8	21.1
	3H	25.2	26.0	25.6	26.4	26.8	19.9	20.8	20.3	21.1	21.6
	4H	25.1	25.9	25.6	26.3	26.9	20.1	20.9	20.6	21.3	21.9
	6H	25.1	25.9	25.6	26.2	26.6	20.4	21.2	20.9	21.5	21.9
	8H	25.1	25.8	25.6	26.2	26.6	20.6	21.3	21.1	21.6	22.0
	12H	25.1	25.7	25.6	26.1	26.6	20.7	21.3	21.2	21.7	22.2
8H	4H	25.1	25.7	25.6	26.1	26.5	20.2	20.9	20.7	21.2	21.6
	6H	25.1	25.6	25.6	26.1	26.6	20.6	21.1	21.1	21.6	22.1
	8H	25.1	25.6	25.7	26.1	26.7	20.8	21.2	21.3	21.8	22.4
	12H	25.1	25.5	25.7	26.0	26.6	21.0	21.4	21.6	21.9	22.5
12H	4H	25.0	25.6	25.5	26.0	26.5	20.2	20.7	20.7	21.1	21.6
	6H	25.1	25.5	25.6	26.0	26.7	20.6	21.0	21.1	21.6	22.2
	8H	25.1	25.5	25.7	26.0	26.6	20.8	21.2	21.4	21.7	22.3

Variations with the observer position for the luminaire spacings, S:		
S = 1.0H	2.0 / -3.3	1.4 / -1.5
S = 1.5H	3.5 / -5.4	2.5 / -2.1
S = 2.0H	5.2 / -6.9	3.3 / -2.5

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	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	104	101	98	100	98	95	96	94	92	93	91	90	88
2	102	95	89	84	100	93	88	83	90	85	81	87	83	80	84	81	78	76
3	94	85	78	72	92	83	77	71	80	75	70	78	73	69	75	71	68	66
4	87	76	68	62	85	75	67	62	72	66	61	70	65	60	68	63	59	57
5	80	68	60	54	78	67	60	54	65	58	53	63	57	53	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	47	42	54	47	41	52	46	41	51	45	41	39
8	64	51	43	37	62	50	43	37	49	42	37	48	41	37	47	41	36	35
9	59	47	39	33	58	46	38	33	45	38	33	44	37	33	43	37	33	31
10	55	43	35	30	54	42	35	30	41	34	30	40	34	30	39	34	30	28

NOTE: An asymmetry correction has been applied to the beam distribution of this measurement in order to accurately calculate UGR.