

Light Measurement Report

Print date: 2023-09-21

Measurement date and time: 2023-08-29 11:42:13 AM – Measurement no. VFR-230829-0020-MS

Measurement tracking No. and Link: [n/a](#)

Operator: BP



Laboratory and Equipment

Laboratory Owner and Location

Goniospectrometer System and Type

Sensor Name, Calibr. Date and Serial No.

Spectrometer Manufacturer and Model

Moss LED, Toronto, Ontario, Canada

BaseSpion – Type C, horizontal

BaseSensor – 2023-06-27 – 2807073281

Ibsen Photonics, Denmark – Freedom VIS (Custom Viso)

Measurement Conditions

Number of C-planes and Resolution

γ (gamma)-Resolution

Test Distance

Input Power

Input RMS Voltage and Current

Frequency of Input Power

12 planes – 30°

5°

4.50 m

8.8 W

24.0 V – 0.365 A

0 Hz

Tested Light Source

Product Name

Item No. and Manufacturer

Product Description (line 1)

CV-DWCOBI1008-2765-95-24-WBEW-WW

1008 leds/m, Warm White 2700K – MossLED Inc.

Main Light Measurement Results

Output – Total Lumen (Up% / Down%)

Efficiency

Peak Intensity and Beam Angle

Correlated Color Temperature, Target/Measured

Color Rendering Index

Color Rendering TM30-18

Color Shift, CIE duv and MacAdam Steps

Flicker

631 lm – 0.2% / 99.8%

72 lm/W

208 cd – 115°

CCT = 2700 K / 2637 K

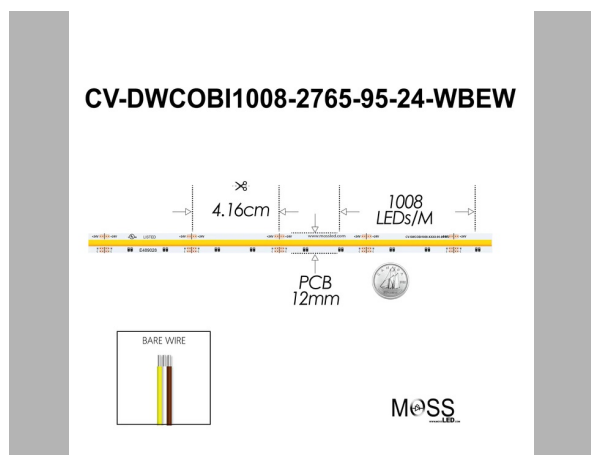
CRI 96.4

R_f 91.3 – R_g 95.6

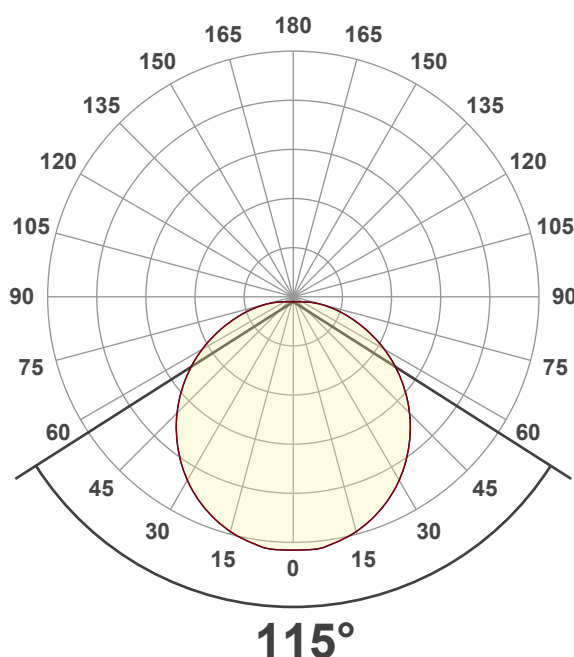
Duv 0.0037 – SDCM 5.4

SVM n/a – PstLM n/a

Product picture



50% Beam angle



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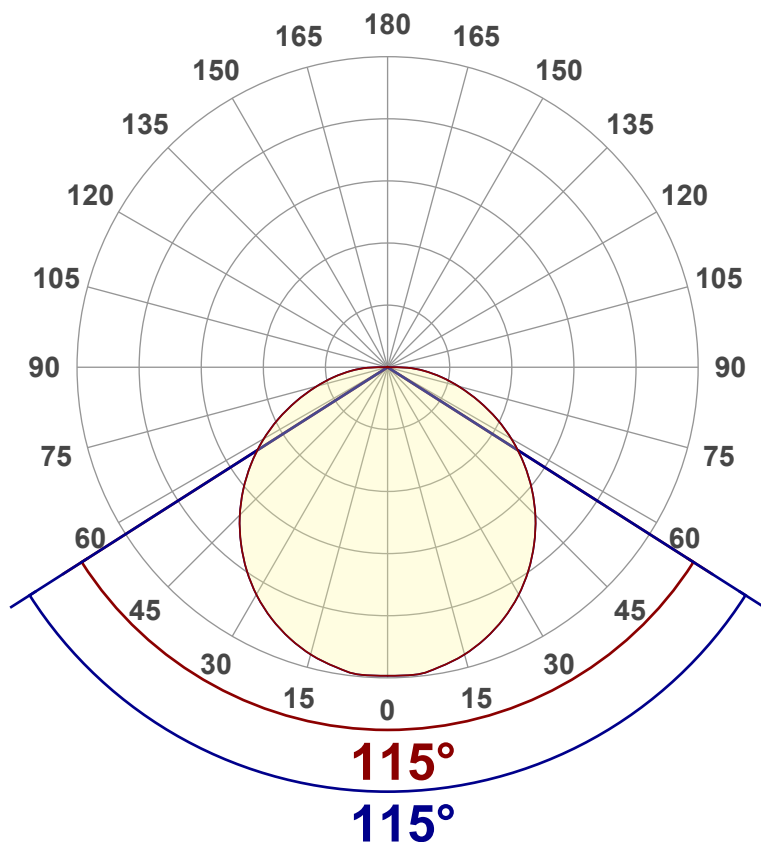
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Luminous Intensity diagram

Unit: 0-100% of peak intensity



Main Values

Output (total Lumen)	631 lm
Lumen Up% / Down%	0.2% / 99.8%
Peak Intensity	208 cd
Beam Angle (50%)	115°
Beam Angle (90%)	115°
Beam Angle (10%)	115°

Cut-off Angle

Average 2,5%	179.4°
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Field Angle

Average 10%	171.7°
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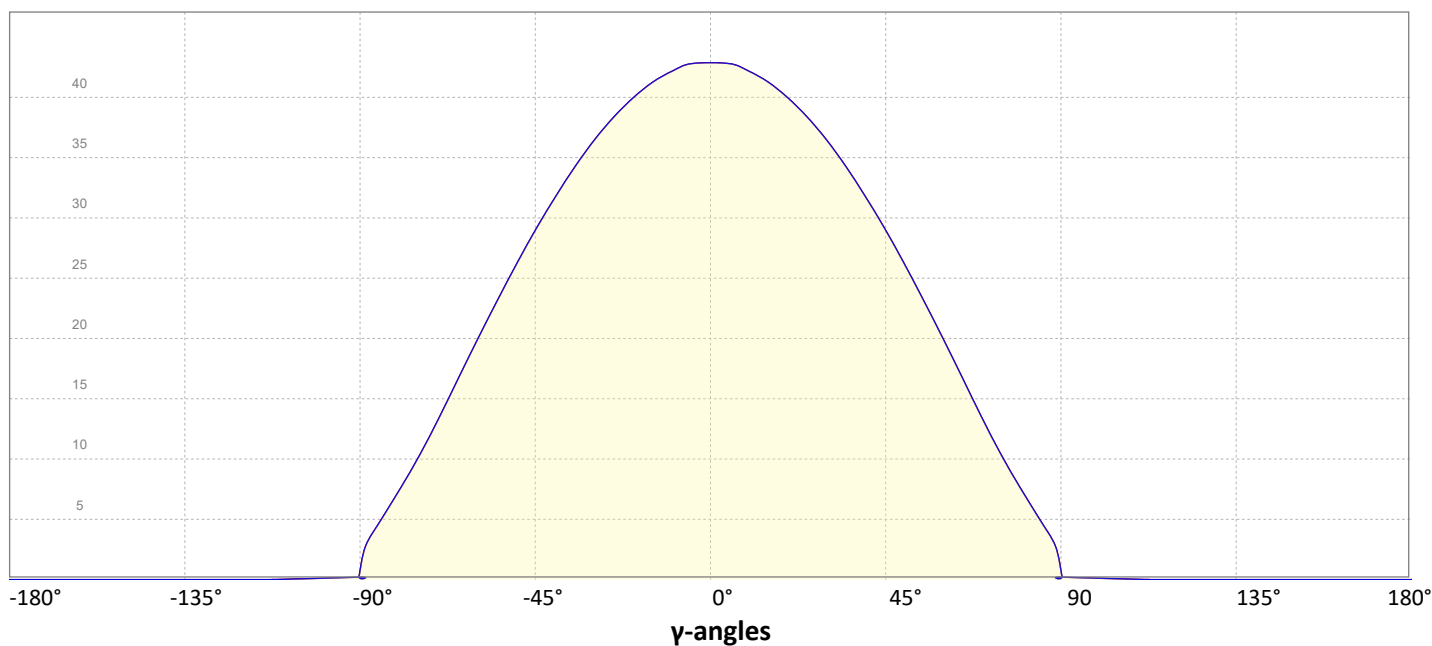
Intensity Ratio

In 120° cone	75.0%
In 90° cone	50.7%

C000-C180

C090-C270

Linear distribution diagram - Intensity (candela) vs γ-angle



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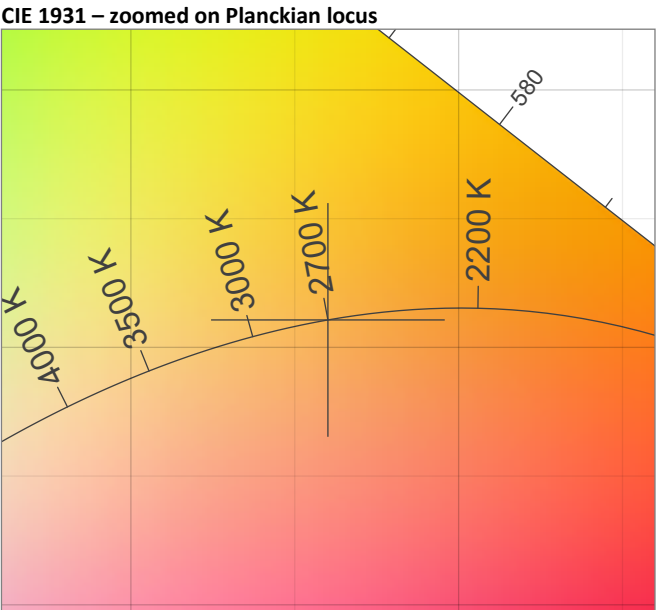
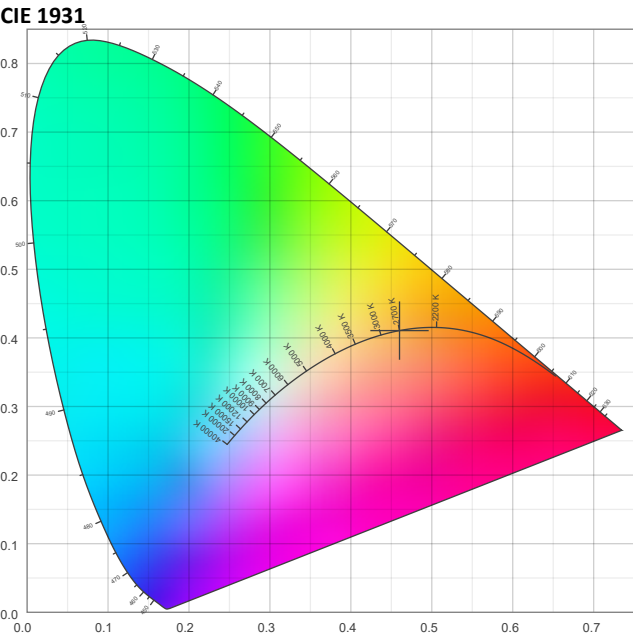
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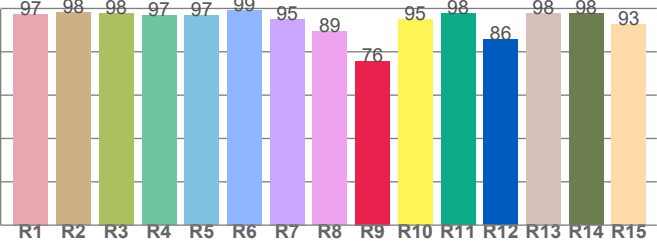
Color details

Correlated Color Temperature, Target CCT = 2700 K
Correlated Color Temperature, Measured CCT = 2637 K
Color Rendering Index CRI 96.4
Color Rendering Index, R9 (red component) R9 = 75.7
Color Rendering TM30-18 R_f 91.3 – R_g 95.6
Color Quality Scale CQS = 89.1

MacAdam Steps
Color coordinates CIE 1931 (x;y) = (0.460;0.411)
Color coordinate CIEs 1960 (u;v) = (0.263;0.352)
Color deviation from BBL Duv = 0.0037
Color coordinate CIEs 1976 (CIELUV) (u';v') = (0.263;0.527)



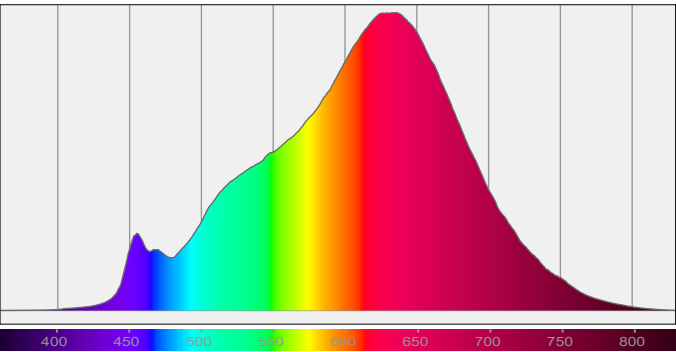
Color Rendering Index per reference color (CIE 1995)



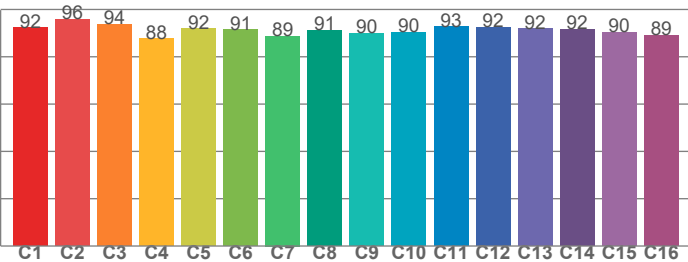
CRI R values, only R1-R8 are used to calculate final CRI value

R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
97.5	98.0	97.9	96.9	96.8	99.3	95.2	89.5	75.7	94.9	97.8	85.5	97.7	97.8	92.6

Spectral power distribution (SPD) – 0-100%



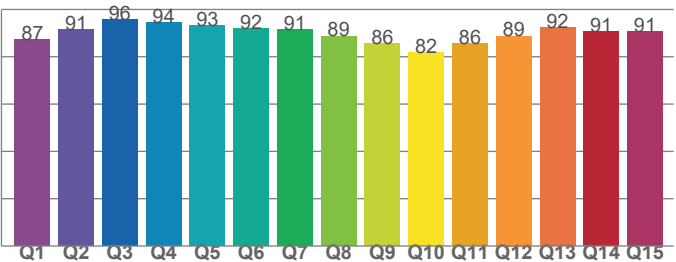
TM30-18 R_f-values per hue bin



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
92.3	95.9	93.8	87.5	91.9	91.3	88.8	91.1	89.8	90.3	92.6	92.5	91.9	91.6	90.4	89.1

Color Quality Scale by reference color

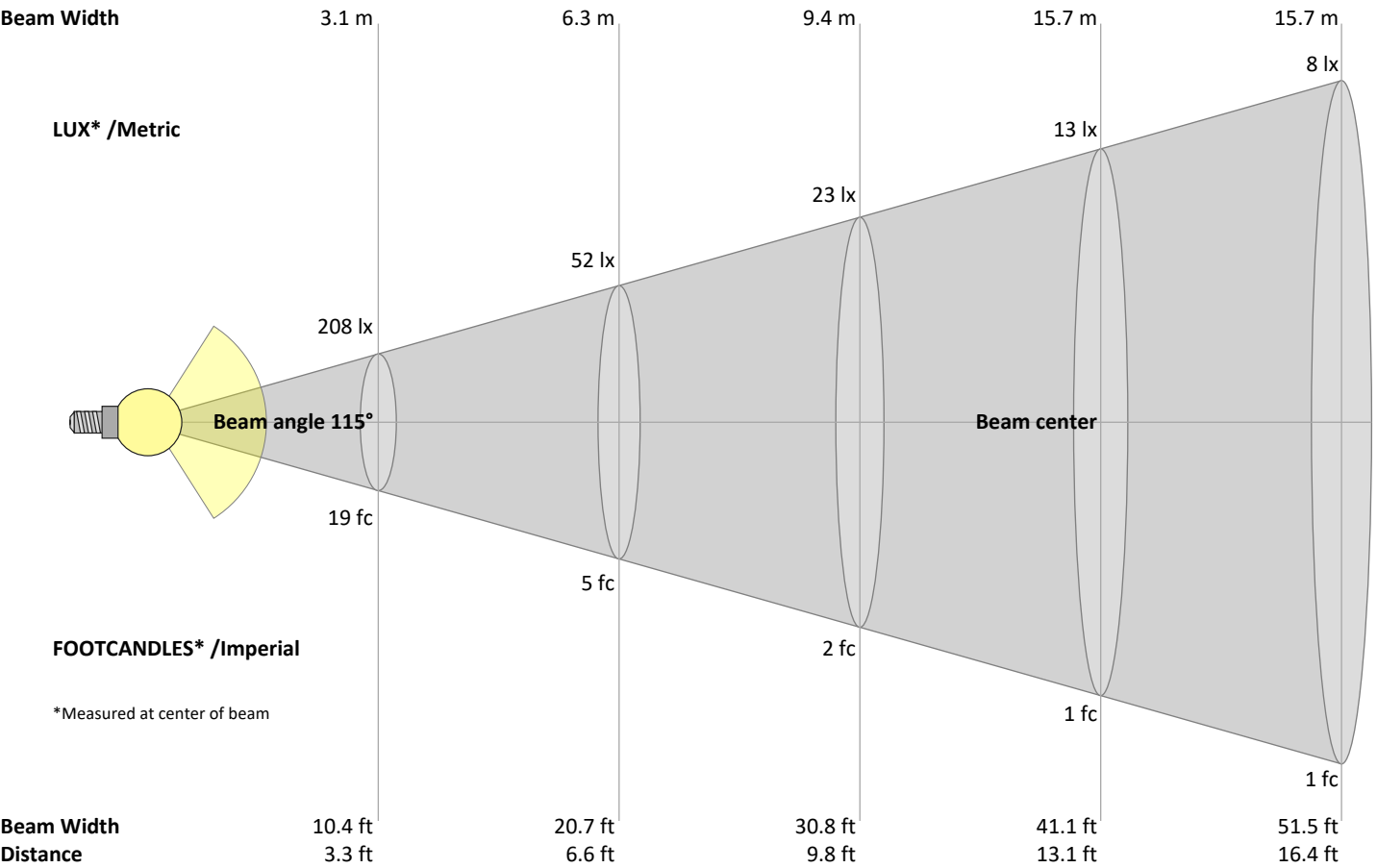


CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
87.1	91.4	95.6	94.4	93.3	91.9	91.4	88.7	85.5	81.8	85.6	88.8	92.4	90.5	90.8

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Beam intensities from 1 – 20 m

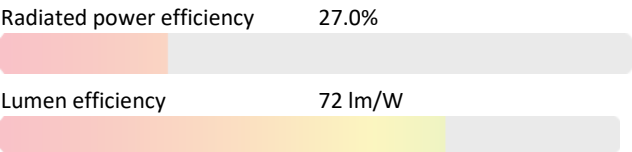
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	m
3.3	6.6	9.8	13.1	16.4	19.7	23	26.2	29.5	32.8	36.1	39.4	42.7	45.9	49.2	52.5	55.8	59.1	62.3	65.6	ft
208	52	23	13	8	6	4	3	3	2	2	1	1	1	1	1	1	1	1	1	lux
19.3	4.8	2.1	1.2	0.8	0.5	0.4	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	fc

Power Details

Input Power

Power feed to light source	8.8 W
Frequency of input power	0 Hz
RMS Input voltage feed, V _{RMS}	24.0 V
RMS Input current feed, I _{RMS}	0.365 A
Power factor of AC current feed	1.0

Efficiency



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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		Viewed Crosswise					Viewed Endwise				
H = mounting height above eye level		(Viewing direction orthogonal to lamp length axis)					(Viewing direction parallel to lamp length axis)				
X	Y										
2H	2H	22.8	24.0	23.0	24.3	24.6	24.3	25.5	24.5	25.9	26.1
	3H	23.9	25.3	24.4	25.5	25.8	25.9	27.2	26.3	27.5	27.7
	4H	24.5	25.7	24.9	26.0	26.3	26.7	28.0	27.1	28.2	28.5
	6H	24.9	26.0	25.2	26.3	26.7	27.5	28.6	27.8	28.9	29.3
	8H	25.0	26.1	25.4	26.4	26.8	27.8	28.9	28.2	29.2	29.6
	12H	25.1	26.2	25.5	26.5	27.0	28.2	29.2	28.5	29.5	30.0
4H	2H	23.4	24.7	23.8	24.9	25.2	24.6	25.9	25.0	26.1	26.4
	3H	24.9	25.9	25.3	26.3	26.7	26.5	27.6	26.9	27.9	28.4
	4H	25.4	26.4	25.9	26.8	27.4	27.4	28.3	27.8	28.7	29.3
	6H	25.9	26.9	26.4	27.2	27.6	28.2	29.1	28.7	29.5	29.9
	8H	26.1	27.0	26.6	27.3	27.7	28.6	29.4	29.1	29.8	30.2
	12H	26.2	27.0	26.7	27.4	27.9	29.0	29.7	29.5	30.1	30.6
8H	4H	25.8	26.6	26.3	27.0	27.4	27.5	28.3	28.0	28.7	29.1
	6H	26.4	27.1	26.9	27.5	28.1	28.5	29.1	29.0	29.6	30.2
	8H	26.7	27.3	27.2	27.8	28.5	29.0	29.6	29.5	30.1	30.7
	12H	26.9	27.4	27.5	27.9	28.5	29.5	29.9	30.0	30.4	31.1
12H	4H	25.8	26.5	26.3	26.9	27.4	27.5	28.2	28.0	28.6	29.1
	6H	26.5	27.1	27.1	27.6	28.3	28.5	29.1	29.0	29.6	30.3
	8H	26.8	27.3	27.4	27.8	28.5	29.0	29.5	29.6	30.0	30.6
Variations with the observer position for the luminaire spacings, S:											
S = 1.0H		0.1 / -0.1					0.1 / -0.1				
S = 1.5H		0.2 / -0.3					0.3 / -0.3				
S = 2.0H		0.5 / -0.7					0.7 / -0.7				

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	108	102	98	93	105	100	96	92	96	92	89	92	89	86	88	86	84	81
2	97	89	81	75	95	87	80	74	83	77	73	80	75	71	77	73	69	67
3	89	78	69	62	86	76	68	62	73	66	60	70	64	59	67	62	58	56
4	81	68	59	52	79	67	59	52	65	57	51	62	56	50	60	54	50	47
5	74	61	52	45	72	60	51	45	58	50	44	56	49	44	54	48	43	41
6	69	55	46	39	67	54	45	39	52	44	39	50	43	38	49	43	38	36
7	64	50	41	34	62	49	40	34	47	40	34	46	39	34	44	38	33	31
8	59	45	37	31	58	45	36	31	43	36	30	42	35	30	41	35	30	28
9	55	42	33	28	54	41	33	28	40	32	27	39	32	27	38	32	27	25
10	52	38	30	25	51	38	30	25	37	30	25	36	29	25	35	29	25	23