



Lisun Goniophotometer Test Report

Product Info

Luminaire Category : Встраиваемый светодиодный светильник

Luminaire : Constructor 10W

Lamp Category : 3000K CRI90

Lamp : COB LED

Manufacturer : VERLUISANT

Submitter : 04.10.2024

Number of Lamps : 1

Lumens per Lamp : 574 lm

Luminous Length : -30 mm

Luminous Width : -30 mm

Luminous Height : 0 mm

Electric Parameters

Voltage : 220.23 V Current : 0.0847 A Power : 10.07 W Power Factor : 0.540 Frequency : 50.00 Hz

Photometric Parameters

CIE Class : Direct

Measurement Flux : 574.3 lm

Upward Ratio : 0.00 %

Maximum Intensity : 1695.32 cd

Central Intensity : 1667.40 cd

Luminaire Efficacy Rating (LER) : 57

Conical Flux (90°) : 573.83 lm (99.9%)

Beam Angle (C0-C180,C90-C270) : 32.8 °, 32.5 °

Field Angle (C0-C180,C90-C270) : 56.0 °, 56.9 °

Total Rated Lamp Lumens : 574.3 lm

Efficiency : 100.00 %

Downward Ratio : 100.00 %

Position Of Maximum Intensity : C270° γ3°

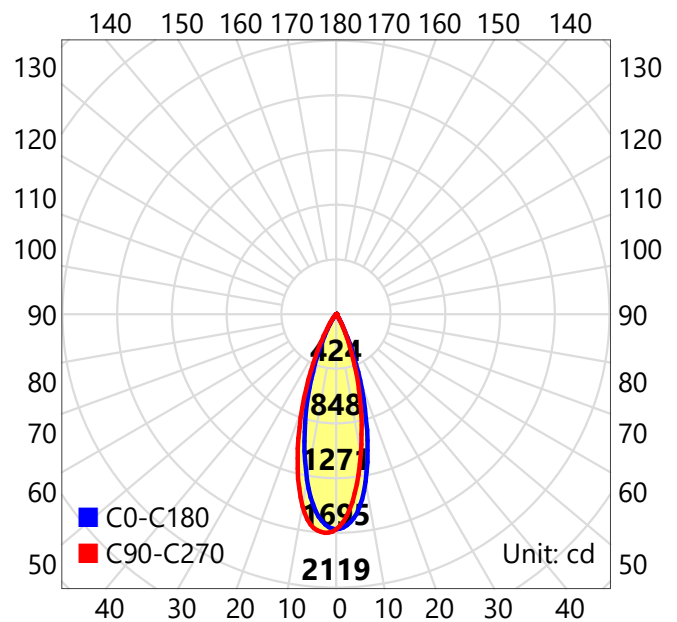
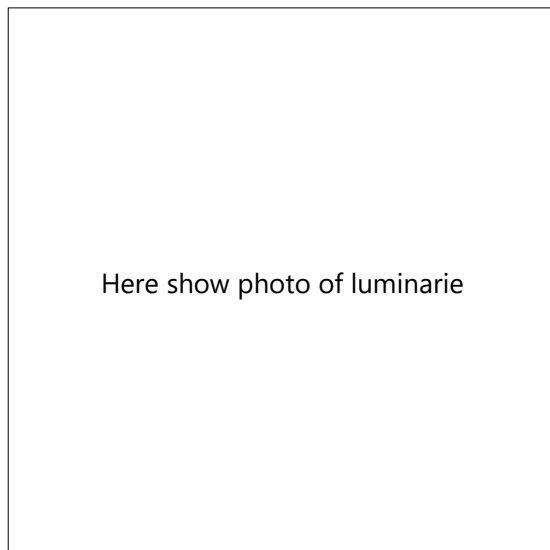
S/MH(C0-C180,C90-C270) : 0.54, 0.55

Energy Efficiency Class : G (EU 2019/2015 ηTM:67lm/W)

Conical Flux (120°) : 574.30 lm (100.0%)

Beam Angle (C45-C225,C135-C315) : 33.0 °, 32.2 °

Field Angle (C45-C225,C135-C315) : 56.8 °, 56.4 °



Test Type : Type C Test Distance : 9.665 m

C Plane (°): 0.0-360.0:30.0 γ (°): 0.0-90.0:1.0

Test Device : Lisun LSG-1890B

Temperature : 25.0°C Humidity : 65.0%

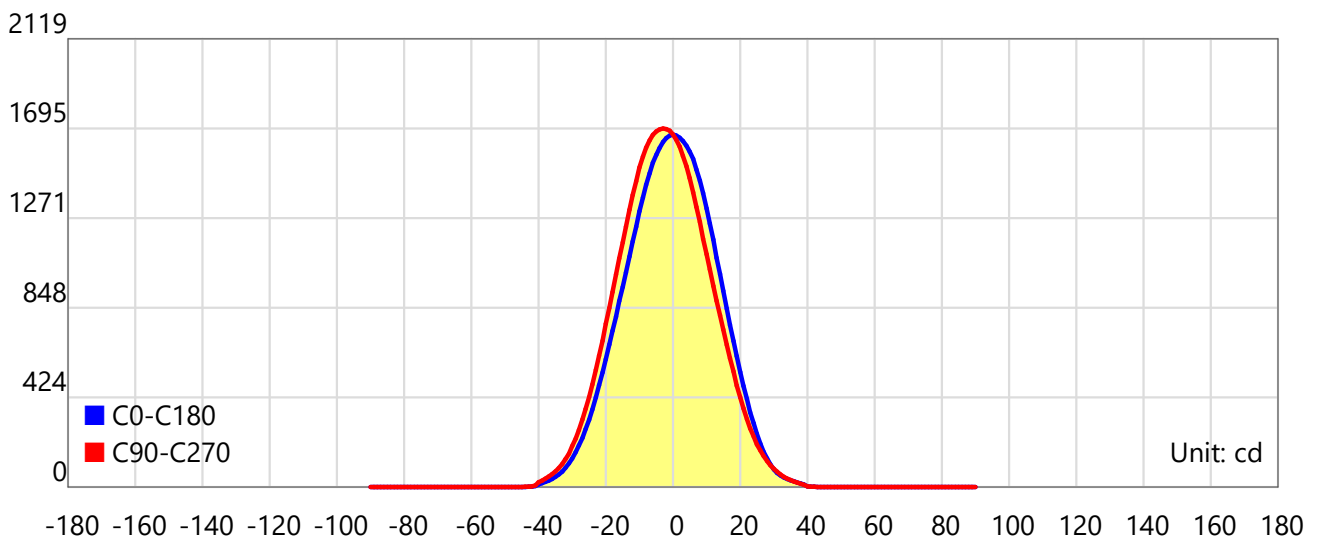
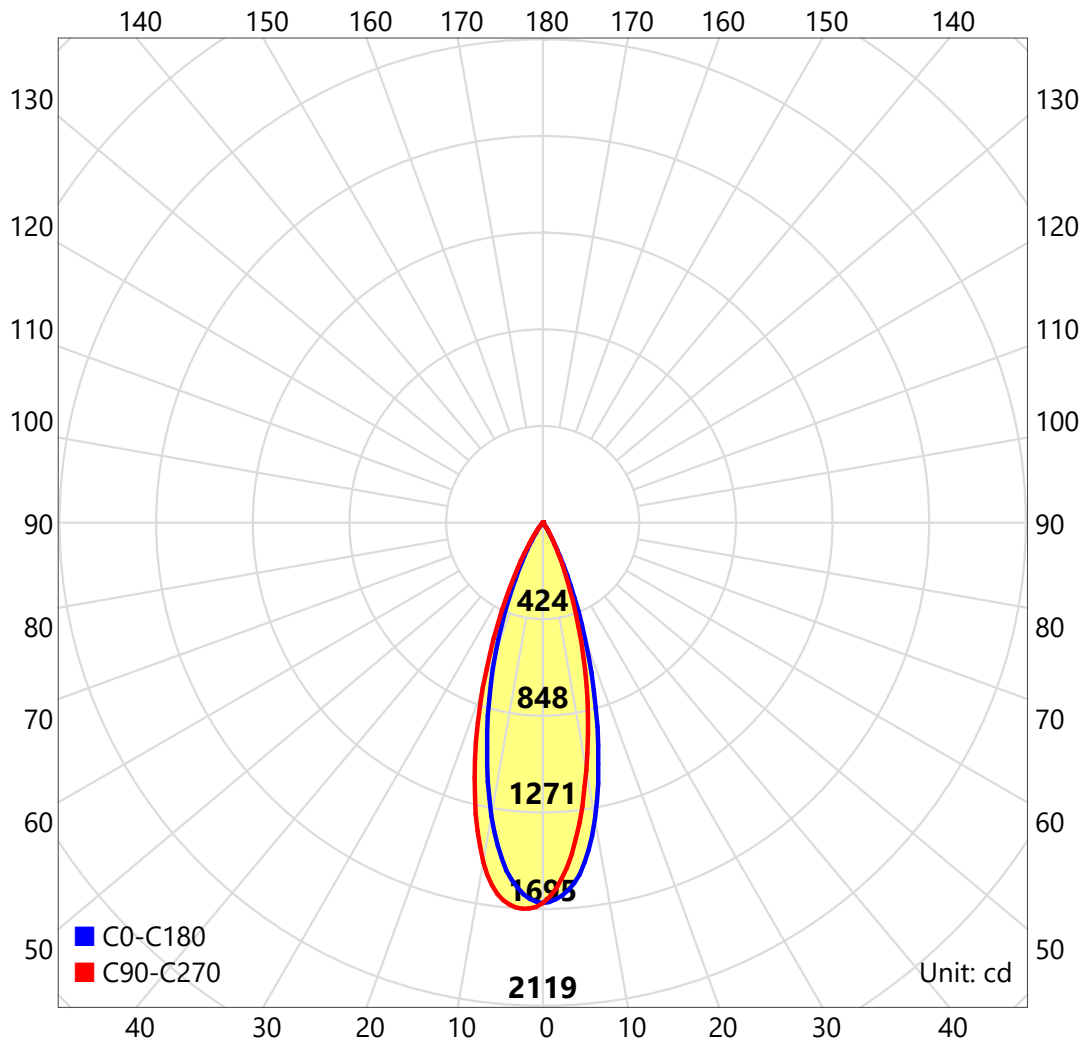
Test Lab :

Review By :

Test By :



Light Distribution Curve



Test Type: Type C

Test Distance: 9.665 m

C Plane (°): 0.0-360.0:30.0

γ (°): 0.0-90.0:1.0

Test Device: Lisun LSG-1890B

Temperature: 25.0°C

Humidity: 65.0%

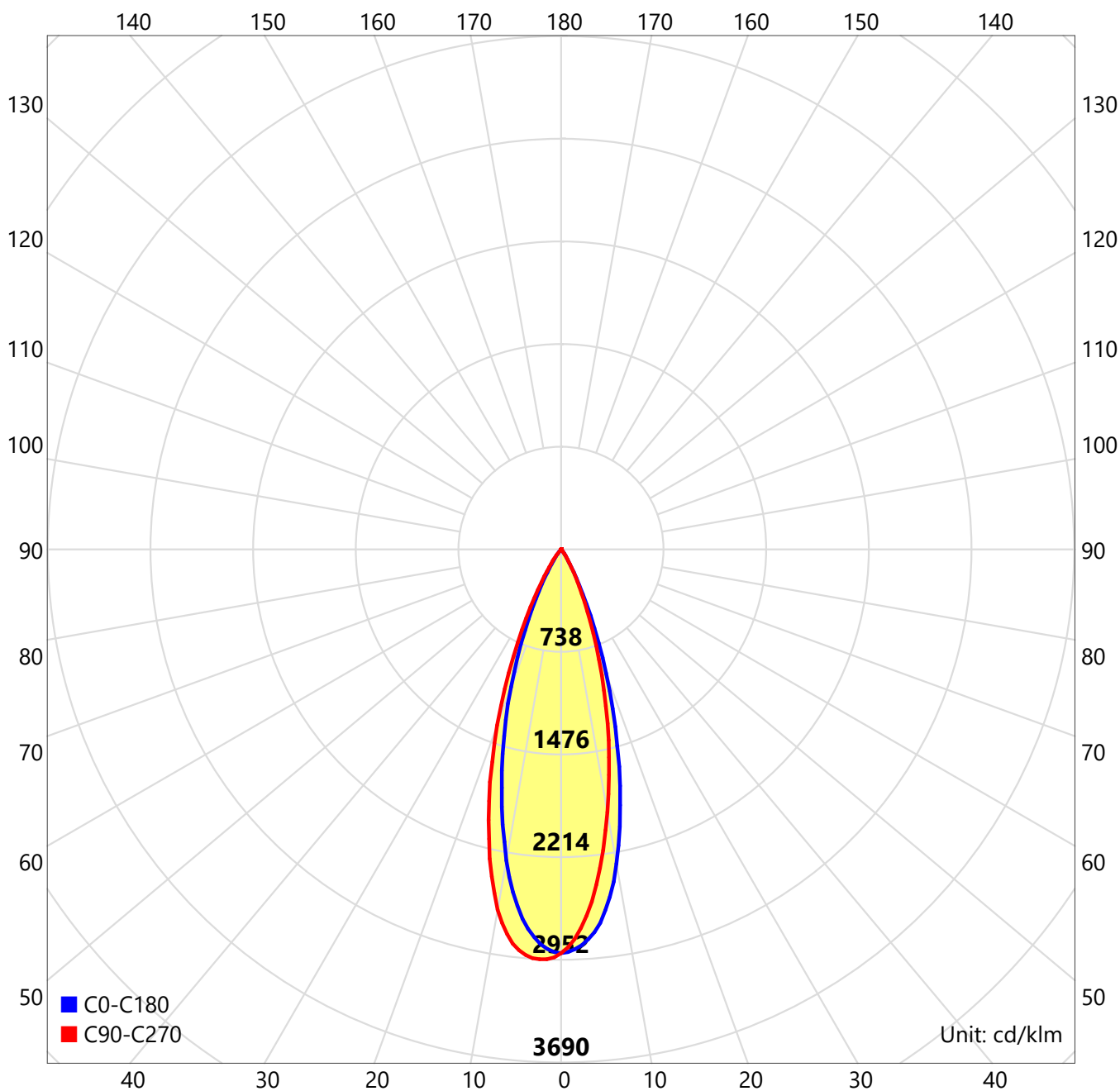
Test Lab:

Test By:

Review By:



Light Distribution Curve (cd/klm)



COB LED/3000K CRI90

$\eta=100\%$

Test Type : Type C

Test Distance : 9.665 m

C Plane (°): 0.0-360.0:30.0

γ (°): 0.0-90.0:1.0

Test Device : Lisun LSG-1890B

Temperature : 25.0°C

Humidity : 65.0%

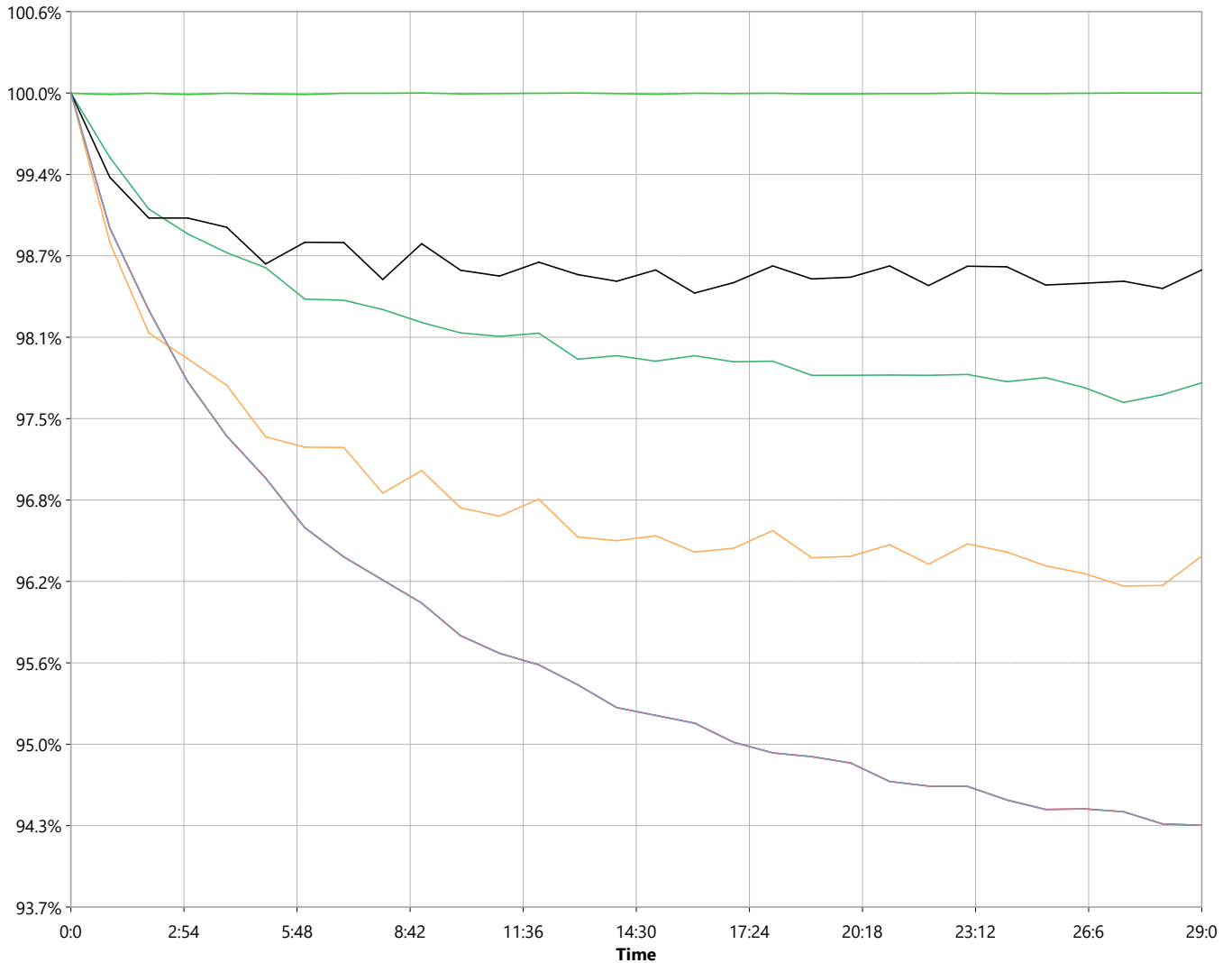
Test Lab :

Test By :

Review By :



Warmup Log



Stable time: 29:0

Uptime: 0:0

Parameters	Maximum	Minimum	Change
Luminous intensity ,cd	1771.91	1671.27	100.64
Power ,W	10.47	10.07	0.40
Voltage ,V	220.24	220.22	0.03
Current ,A	0.0868	0.0847	0.0021
Power Factor	0.548	0.540	0.009
Illumination ,lx	18.967	17.890	1.077



UGR

Reflectance										
Ceiling (cavity)	0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
Wall	0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
Reference plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Room dimensions	Viewed crosswise					Viewed endwise				
X=2H Y=2H	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf
3H	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf
4H	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf
6H	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf
8H	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf
12H	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf
X=4H Y=2H	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf
3H	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf
4H	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf
6H	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf
8H	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf
12H	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf
X=8H Y=4H	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf
6H	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf
8H	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf
12H	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf
X=12H Y=4H	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf
6H	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf
8H	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf	-inf

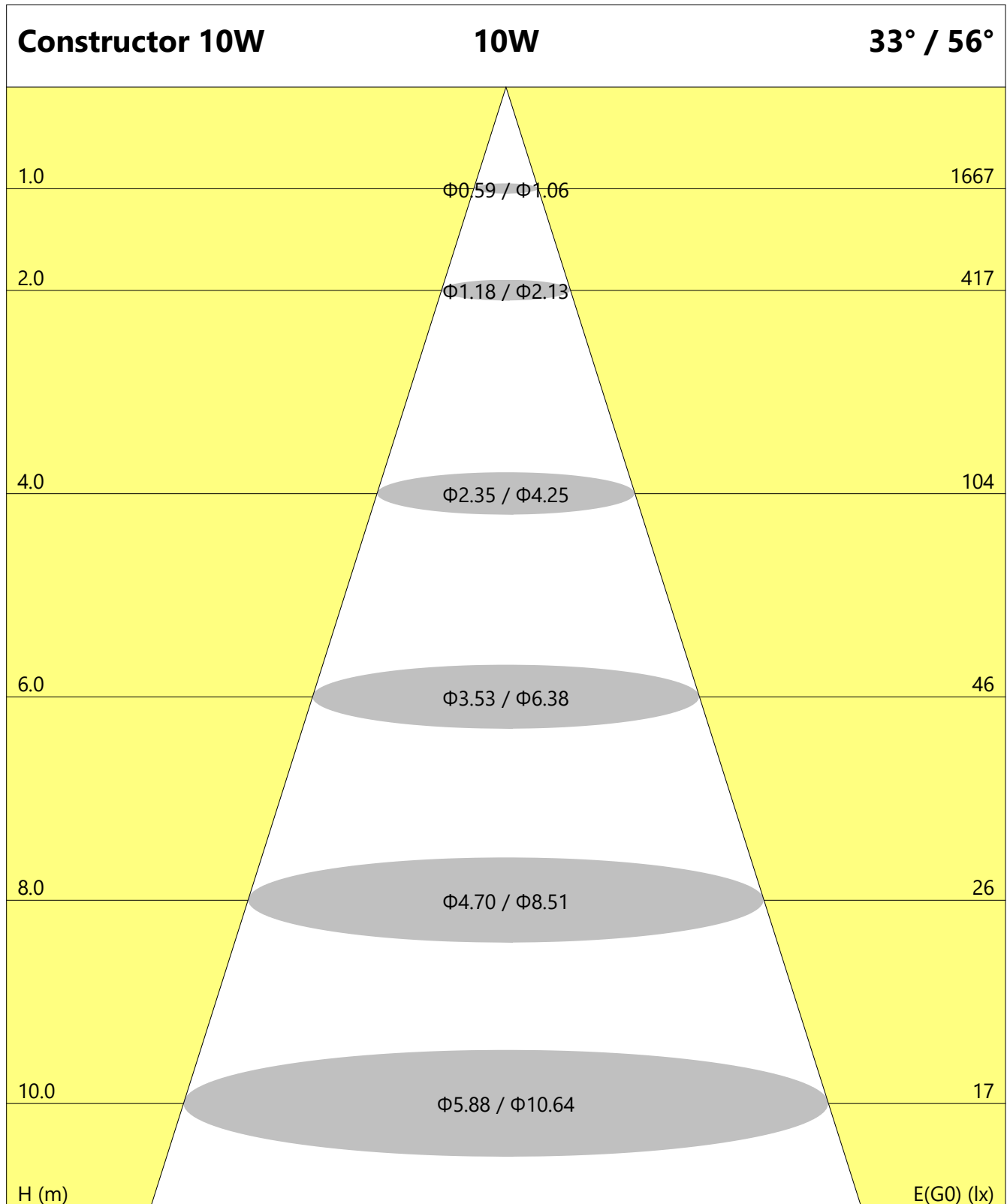
Calculate in accordance with CIE 190:2010. The table is corrected with 574lm ($8\log(F/F_0) = -1.9$).

Reflectance										
Ceiling (cavity)	0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
Wall	0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
Reference plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Room dimensions	Viewed crosswise					Viewed endwise				
X=2H Y=2H	11.9	12.5	12.1	12.7	12.9	14.8	15.5	15.1	15.7	15.9
3H	11.7	12.3	12.0	12.6	12.8	14.7	15.3	15.0	15.5	15.8
4H	11.7	12.2	12.0	12.5	12.7	14.6	15.2	14.9	15.4	15.7
6H	11.6	12.1	11.9	12.4	12.7	14.5	15.1	14.9	15.3	15.6
8H	11.6	12.1	11.9	12.4	12.7	14.5	15.0	14.8	15.3	15.6
12H	11.5	12.0	11.9	12.3	12.6	14.5	15.0	14.8	15.3	15.6
X=4H Y=2H	11.7	12.2	12.0	12.5	12.7	14.6	15.2	14.9	15.4	15.7
3H	11.5	12.0	11.9	12.3	12.6	14.5	15.0	14.8	15.3	15.6
4H	11.4	11.9	11.8	12.2	12.6	14.4	14.8	14.8	15.1	15.5
6H	11.3	11.7	11.8	12.1	12.5	14.3	14.7	14.7	15.0	15.4
8H	11.3	11.7	11.7	12.0	12.4	14.2	14.6	14.7	15.0	15.4
12H	11.2	11.6	11.7	12.0	12.4	14.2	14.5	14.6	14.9	15.4
X=8H Y=4H	11.3	11.7	11.7	12.0	12.4	14.2	14.6	14.7	15.0	15.4
6H	11.2	11.5	11.7	11.9	12.4	14.1	14.4	14.6	14.9	15.3
8H	11.2	11.4	11.6	11.8	12.3	14.1	14.3	14.6	14.8	15.3
12H	11.1	11.3	11.6	11.8	12.3	14.1	14.3	14.5	14.7	15.2
X=12H Y=4H	11.2	11.6	11.7	12.0	12.4	14.2	14.5	14.6	14.9	15.4
6H	11.2	11.4	11.6	11.8	12.3	14.1	14.3	14.6	14.8	15.3
8H	11.1	11.3	11.6	11.8	12.3	14.1	14.3	14.5	14.7	15.2
Variations with the observer position at spacings										
S=1.0H						+6.2/-inf				
S=1.5H						+9.1/-inf				
S=2.0H						+11.1/-inf				

Calculate in accordance with CIE Pub.117. The table is corrected with 574lm ($8\log(F/F_0) = -1.9$).



Lux-Distance



Test Type : Type C

Test Distance : 9.665 m

C Plane (°): 0.0-360.0:30.0

γ (°): 0.0-90.0:1.0

Test Device : Lisun LSG-1890B

Temperature : 25.0°C

Humidity : 65.0%

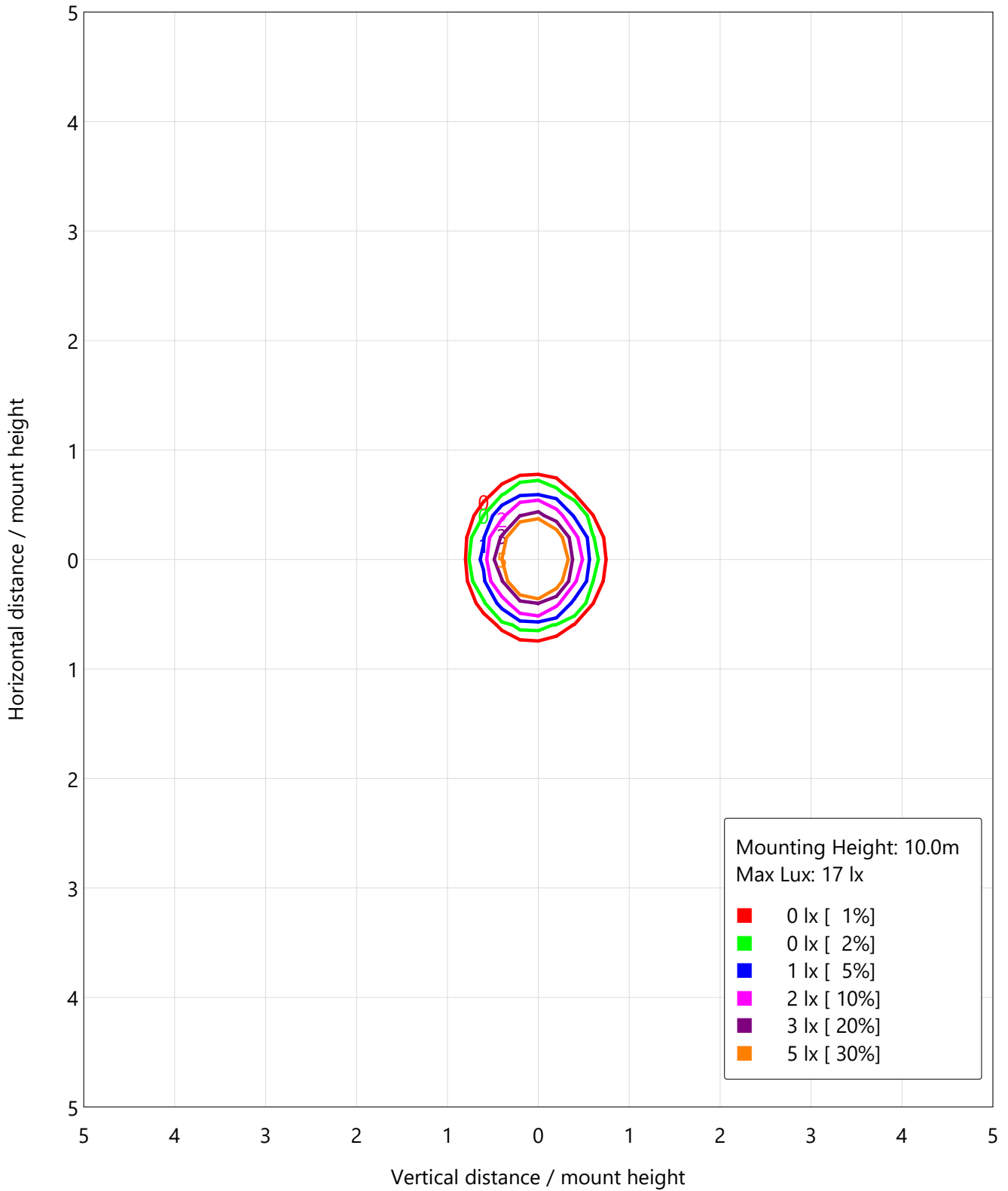
Test Lab :

Test By :

Review By :

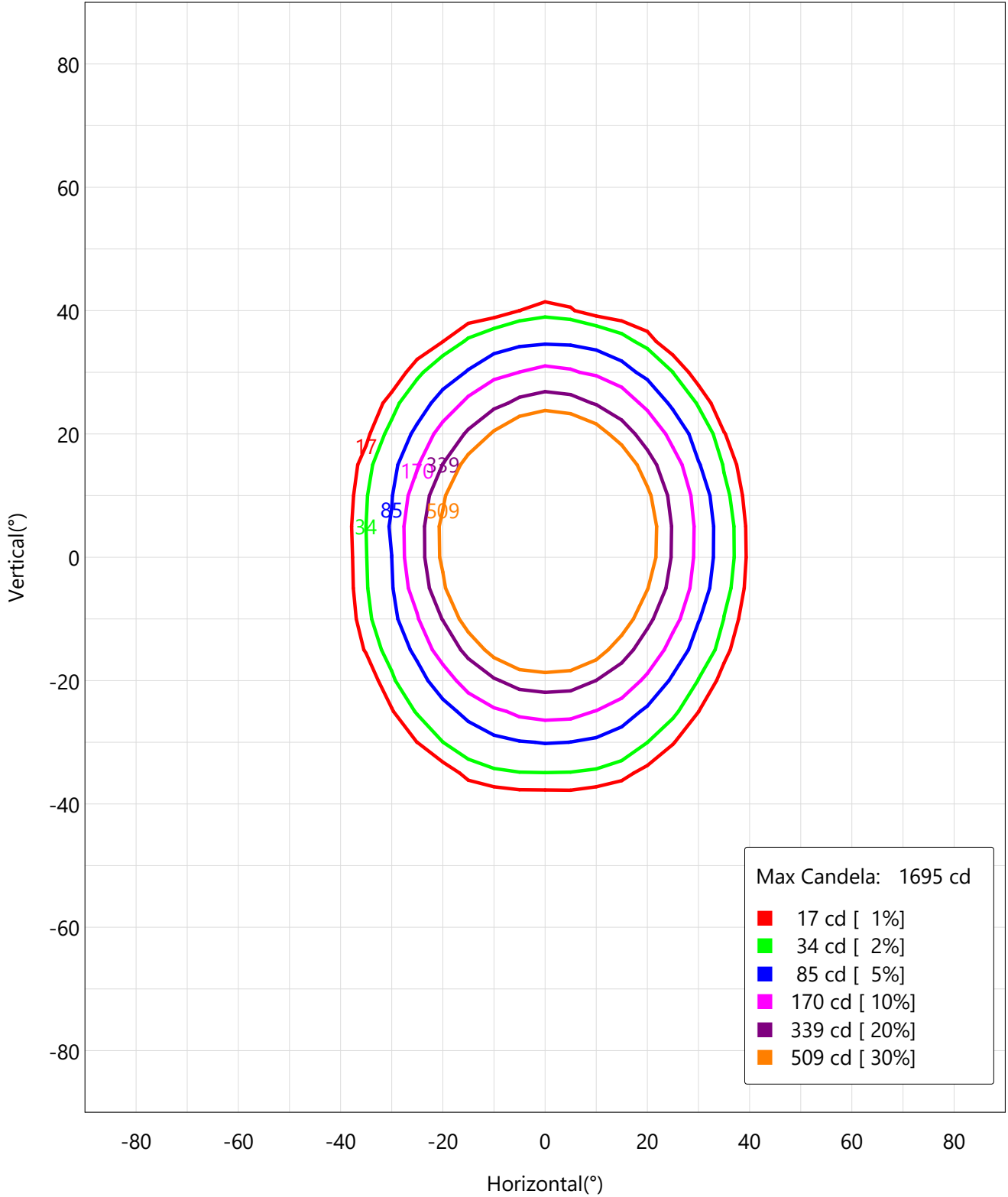


IsoLux





IsoCandela



Test Type : Type C

Test Distance : 9.665 m

C Plane (°): 0.0-360.0:30.0

γ (°): 0.0-90.0:1.0

Test Device : Lisun LSG-1890B

Temperature : 25.0°C

Humidity : 65.0%

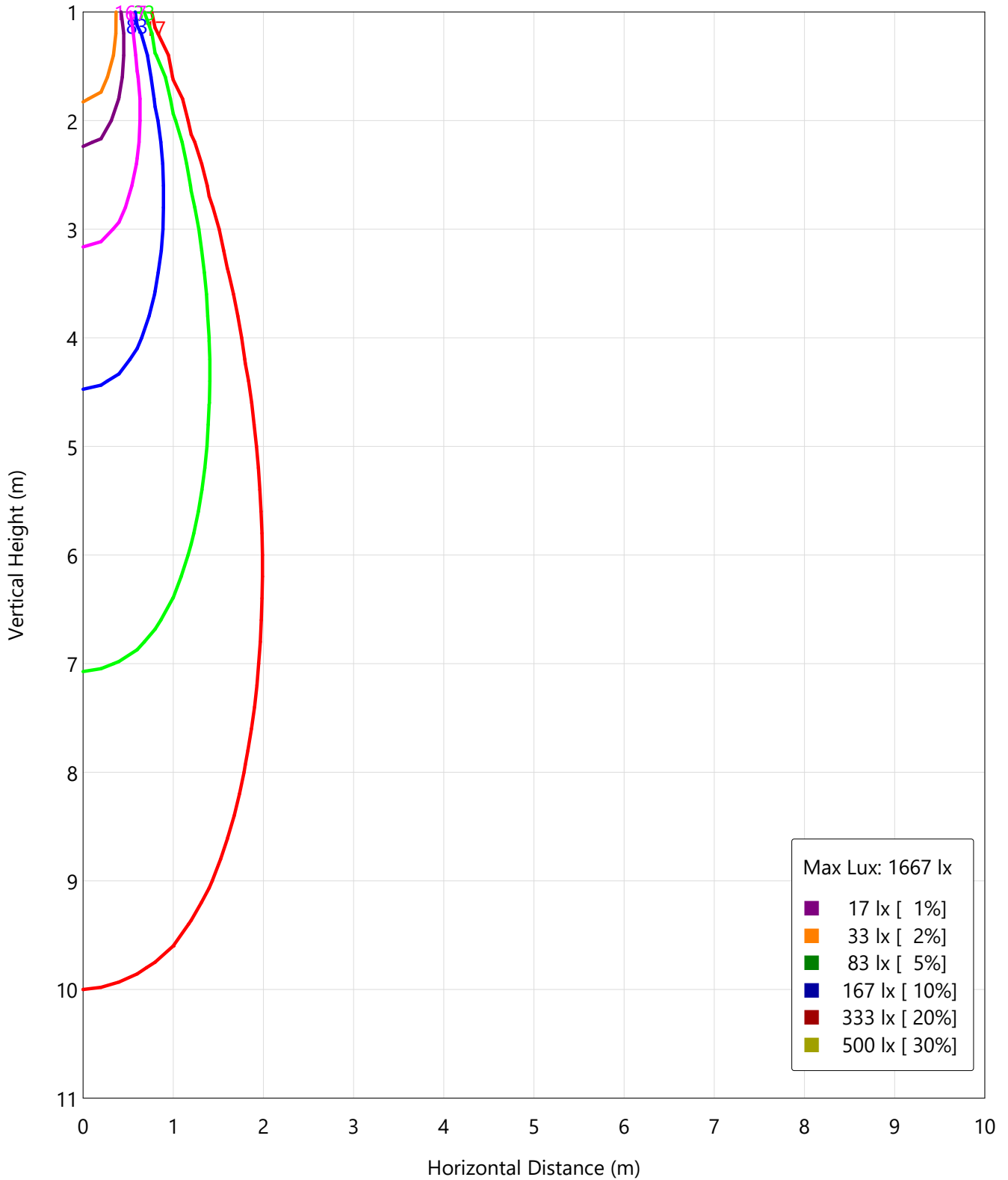
Test Lab :

Test By :

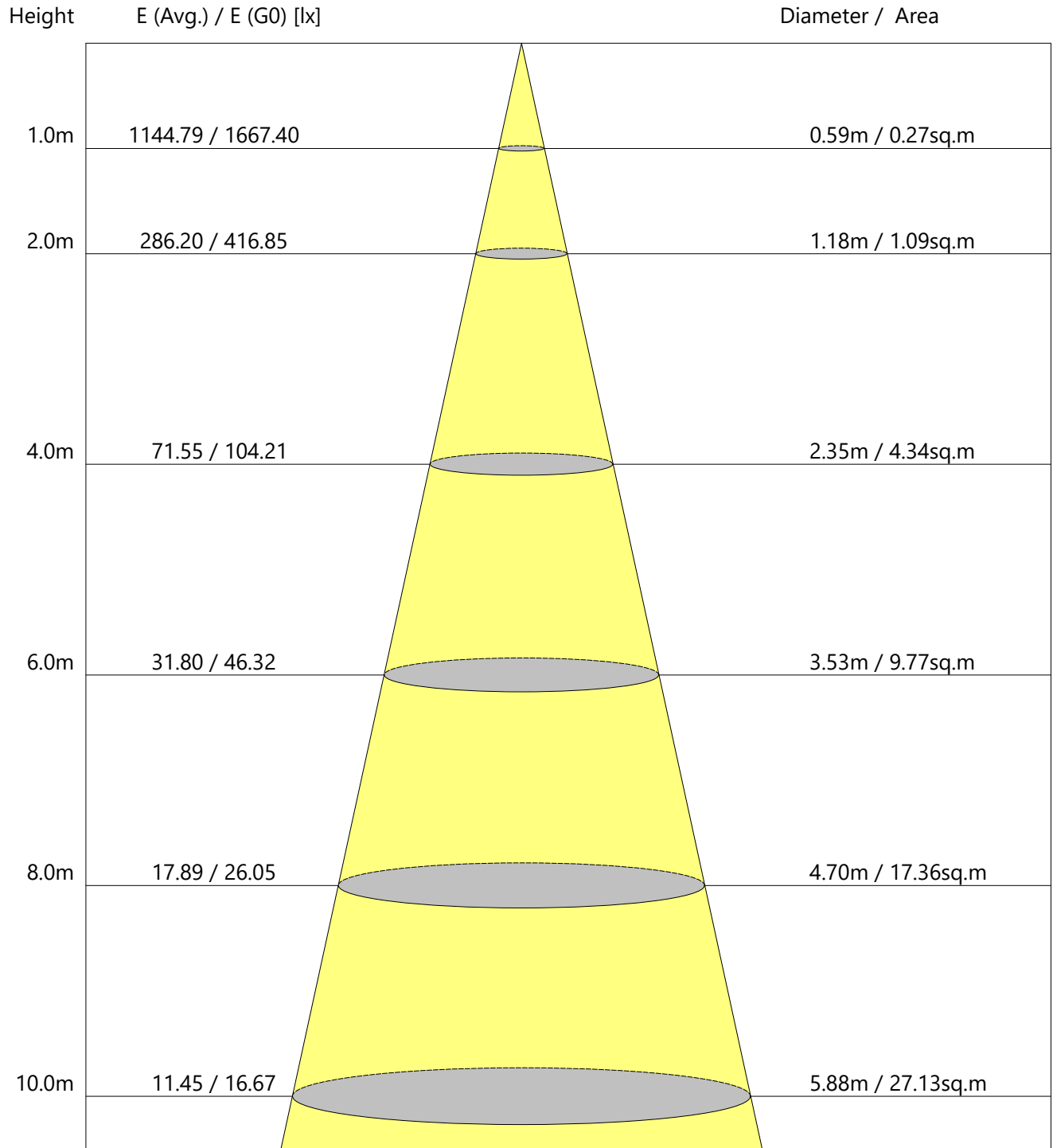
Review By :



Vertical IsoLux Plot



Average Illuminance Effective Figure



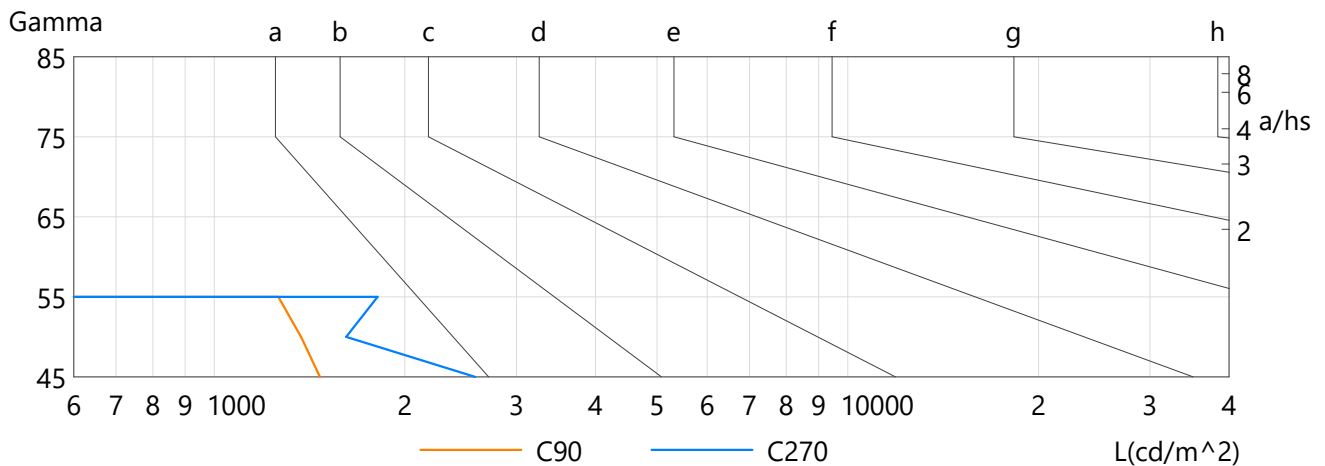
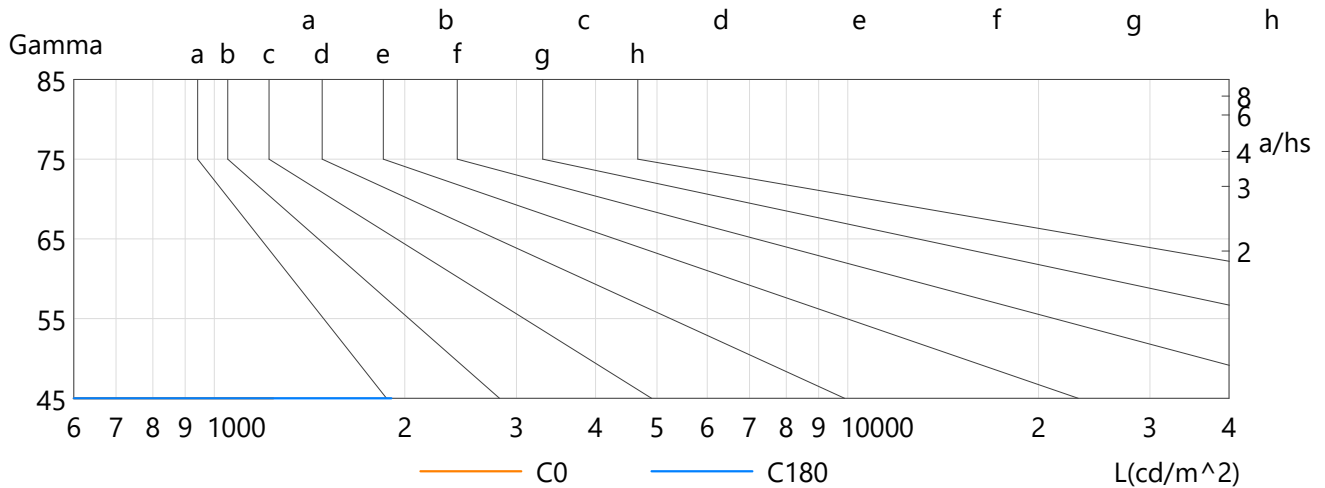
Beam Angle: 32.8° Flux Out: 310.53lm



Luminance Limit Curve

L (cd/m ²)	G45	G50	G55	G60	G65	G70	G75	G80	G85
C0	1240	0	0	0	0	0	0	0	0
C90	1469	1371	1262	0	0	0	0	0	0
C180	1904	0	0	0	0	0	0	0	0
C270	2582	1616	1811	0	0	0	0	0	0

Dazzle	Quality	Illuminance (lx)							
1.15	A	2000	1000	500	<=300				
1.50	B	2000		1000	500	<=300			
1.85	C	2000			1000	500	<=300		
2.20	D	2000				1000	500	<=300	
2.55	E	2000					1000	500	<=300





TM5 UF Table

Utilisation Factors UF (F)			SHR NOM = 0.75								
Room Reflectance			Room Index(RI)								
C	W	F	0.75	1.00	1.25	1.50	2.00	2.50	3.00	4.00	5.00
0.70	0.50	0.20	0.98	1.02	1.04	1.06	1.09	1.10	1.12	1.13	1.14
	0.30		0.94	0.98	1.01	1.03	1.06	1.08	1.09	1.11	1.13
	0.20		0.92	0.96	0.99	1.01	1.04	1.06	1.08	1.10	1.11
0.50	0.50	0.20	0.97	1.00	1.02	1.04	1.06	1.07	1.08	1.09	1.10
	0.30		0.94	0.97	1.00	1.01	1.04	1.05	1.07	1.08	1.09
	0.20		0.92	0.95	0.98	1.00	1.02	1.04	1.05	1.07	1.08
0.30	0.50	0.20	0.95	0.99	1.00	1.02	1.03	1.04	1.05	1.06	1.06
	0.30		0.93	0.96	0.98	1.00	1.02	1.03	1.04	1.05	1.06
	0.20		0.91	0.94	0.97	0.98	1.00	1.02	1.03	1.04	1.05
0.00	0.00	0.00	0.90	0.93	0.95	0.96	0.97	0.98	0.99	1.00	1.00

Utilisation Factors UF (W)			SHR NOM = 0.75								
Room Reflectance			Room Index(RI)								
C	W	F	0.75	1.00	1.25	1.50	2.00	2.50	3.00	4.00	5.00
0.70	0.50	0.20	0.41	0.34	0.29	0.25	0.20	0.17	0.14	0.11	0.09
	0.30		0.34	0.29	0.25	0.22	0.18	0.15	0.13	0.10	0.09
	0.20		0.29	0.25	0.22	0.20	0.16	0.14	0.12	0.10	0.08
0.50	0.50	0.20	0.39	0.31	0.26	0.23	0.18	0.19	0.13	0.10	0.08
	0.30		0.33	0.27	0.23	0.20	0.16	0.14	0.12	0.09	0.08
	0.20		0.28	0.24	0.21	0.18	0.15	0.13	0.11	0.09	0.07
0.30	0.50	0.20	0.36	0.29	0.24	0.21	0.16	0.13	0.11	0.09	0.07
	0.30		0.31	0.26	0.22	0.19	0.15	0.12	0.11	0.08	0.07
	0.20		0.27	0.23	0.20	0.17	0.14	0.12	0.10	0.08	0.07
0.00	0.00	0.00	0.12	0.09	0.07	0.06	0.05	0.04	0.03	0.02	0.02

Utilisation Factors UF (C)			SHR NOM = 0.75								
Room Reflectance			Room Index(RI)								
C	W	F	0.75	1.00	1.25	1.50	2.00	2.50	3.00	4.00	5.00
0.70	0.50	0.20	0.12	0.13	0.15	0.16	0.17	0.18	0.19	0.20	0.21
	0.30		0.09	0.11	0.12	0.14	0.15	0.17	0.18	0.19	0.20
	0.20		0.07	0.09	0.10	0.12	0.14	0.15	0.16	0.18	0.19
0.50	0.50	0.20	0.11	0.13	0.14	0.15	0.17	0.18	0.18	0.19	0.20
	0.30		0.09	0.10	0.12	0.13	0.15	0.16	0.17	0.18	0.19
	0.20		0.07	0.09	0.10	0.12	0.13	0.15	0.16	0.17	0.18
0.30	0.50	0.20	0.11	0.12	0.14	0.15	0.16	0.17	0.18	0.19	0.19
	0.30		0.08	0.10	0.12	0.13	0.14	0.16	0.17	0.18	0.18
	0.20		0.07	0.08	0.10	0.11	0.13	0.15	0.15	0.17	0.18
0.00	0.00	0.00	NA	NA	NA	NA	NA	NA	NA	NA	NA

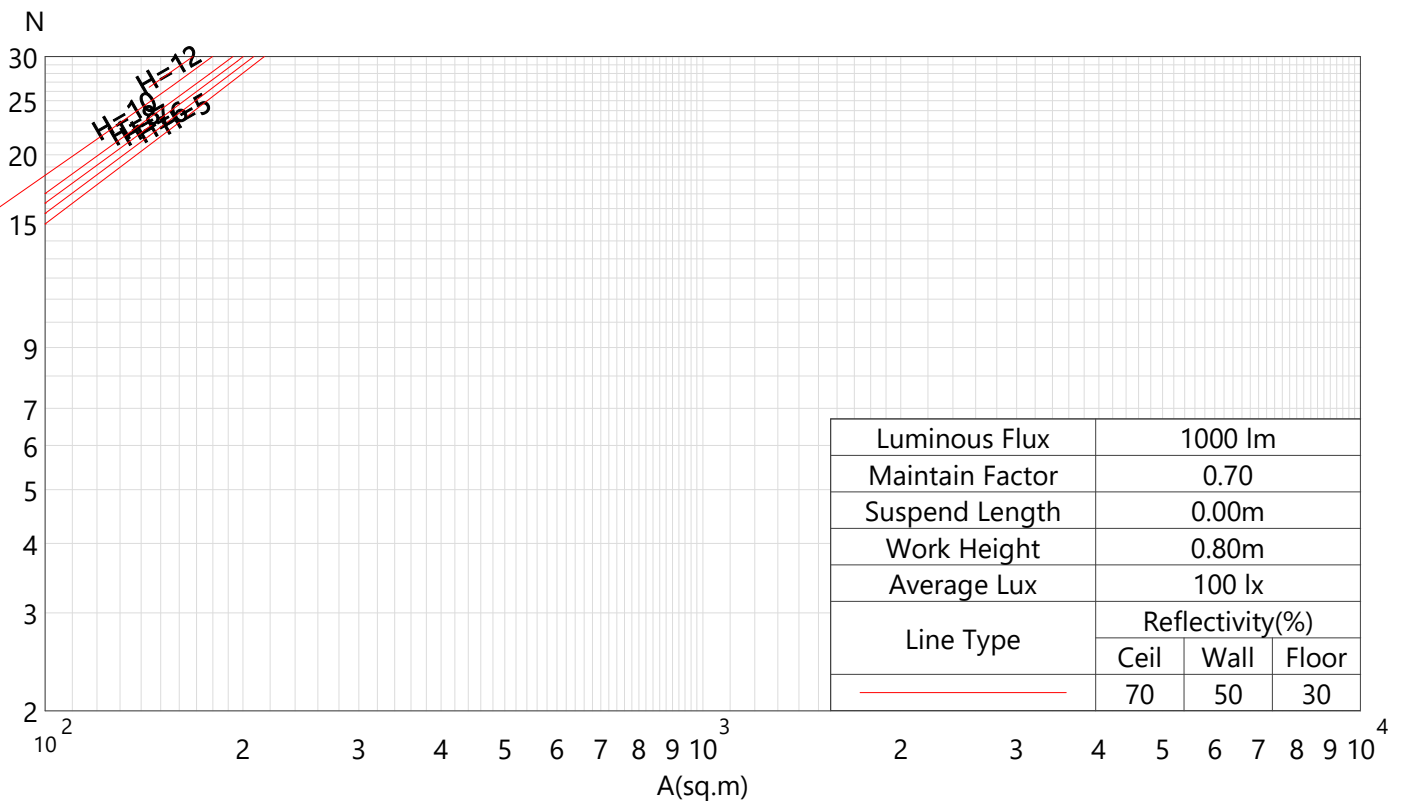
Rating: 10W Photometrically tested without ceiling board.
 Multiply UF values by service correction factors
 Calculate in accordance with CIBSE Technical Memorandum No.5/1980



Indoor CU, Curves of Luminaires vs Lighting Area

RC	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.5	0.5	0.5	0.3	0.3	0.3	0.1	0.1	0.1	0
RW	0.7	0.5	0.3	0.1	0.7	0.5	0.3	0.1	0.5	0.3	0.1	0.5	0.3	0.1	0.5	0.3	0.1	0
RCR	RF = 0.2																	
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	115	112	110	109	112	110	109	107	106	105	104	103	102	101	99	98	98	96
2	111	107	103	101	108	105	102	100	102	100	98	99	97	95	96	95	93	92
3	107	102	98	95	105	100	97	94	98	95	92	95	93	91	93	91	90	88
4	103	97	93	89	101	96	92	89	94	91	88	92	89	87	90	88	86	85
5	99	93	88	85	98	92	88	85	90	87	84	89	86	83	87	85	83	81
6	96	89	84	81	95	88	84	81	87	83	80	86	82	80	85	82	79	78
7	93	86	81	78	92	85	81	78	84	80	77	83	79	77	82	79	76	75
8	90	82	78	75	89	82	78	75	81	77	74	80	77	74	79	76	74	73
9	87	79	75	72	86	79	75	72	78	74	72	77	74	71	77	73	71	70
10	84	77	72	69	83	76	72	69	76	72	69	75	71	69	74	71	69	68

Spacing Criteria: 0.54 (0-180), 0.55 (90-270), 0.54 (Diagonal)



Test Type : Type C
Test Device : Lisun LSG-1890B
Test Lab :
Test By :

Test Distance : 9.665 m

C Plane (°): 0.0-360.0:30.0
Temperature : 25.0°C

γ (°): 0.0-90.0:1.0
Humidity : 65.0%

Review By :



Zonal Flux

Gamma °	I _{mean} cd	Zonal Flux lm	Sum Zonal Flux lm	Rel Zonal Flux %	Sum Rel Zonal Flux %
0.0-1.0	1665.4	1.6	1.6	0.28	0.28
1.0-2.0	1657.7	4.8	6.4	0.83	1.11
2.0-3.0	1642.4	7.9	14.2	1.37	2.47
3.0-4.0	1620.6	10.8	25.1	1.89	4.36
4.0-5.0	1592.6	13.7	38.8	2.39	6.75
5.0-6.0	1557.6	16.4	55.1	2.85	9.60
6.0-7.0	1514.6	18.8	73.9	3.27	12.87
7.0-8.0	1463.7	21.0	94.9	3.65	16.52
8.0-9.0	1405.7	22.8	117.7	3.97	20.49
9.0-10.0	1342.1	24.3	142.0	4.23	24.72
10.0-11.0	1274.0	25.5	167.4	4.43	29.15
11.0-12.0	1201.5	26.3	193.7	4.57	33.73
12.0-13.0	1127.5	26.8	220.4	4.66	38.39
13.0-14.0	1053.3	27.0	247.4	4.70	43.08
14.0-15.0	978.5	26.9	274.3	4.68	47.76
15.0-16.0	903.8	26.5	300.8	4.61	52.37
16.0-17.0	830.0	25.9	326.6	4.50	56.87
17.0-18.0	757.4	25.0	351.6	4.35	61.22
18.0-19.0	686.2	23.9	375.5	4.16	65.38
19.0-20.0	617.5	22.6	398.1	3.94	69.31
20.0-21.0	551.0	21.2	419.2	3.68	73.00
21.0-22.0	487.9	19.6	438.8	3.41	76.41
22.0-23.0	429.2	18.0	456.9	3.14	79.55
23.0-24.0	374.4	16.4	473.2	2.85	82.40
24.0-25.0	323.7	14.7	487.9	2.56	84.96
25.0-26.0	278.0	13.1	501.1	2.29	87.25
26.0-27.0	237.1	11.6	512.7	2.02	89.27
27.0-28.0	200.5	10.2	522.8	1.77	91.04
28.0-29.0	168.3	8.8	531.6	1.53	92.57
29.0-30.0	140.4	7.6	539.2	1.32	93.89
30.0-31.0	116.2	6.5	545.7	1.13	95.02
31.0-32.0	95.7	5.5	551.2	0.96	95.97
32.0-33.0	78.8	4.6	555.8	0.81	96.78
33.0-34.0	64.9	3.9	559.7	0.68	97.46
34.0-35.0	53.5	3.3	563.1	0.58	98.04
35.0-36.0	44.1	2.8	565.9	0.49	98.53
36.0-37.0	36.1	2.4	568.2	0.41	98.94
37.0-38.0	28.9	1.9	570.1	0.34	99.28
38.0-39.0	22.1	1.5	571.7	0.26	99.54
39.0-40.0	14.7	1.0	572.7	0.18	99.72

Test Type : Type C Test Distance : 9.665 m
 Test Device : Lisun LSG-1890B
 Test Lab :
 Test By :

C Plane (°): 0.0-360.0:30.0 γ (°): 0.0-90.0:1.0
 Temperature : 25.0°C Humidity : 65.0%
 Review By :



Zonal Flux

Gamma °	lmean cd	Zonal Flux lm	Sum Zonal Flux lm	Rel Zonal Flux %	Sum Rel Zonal Flux %
40.0-41.0	7.7	0.5	573.2	0.09	99.81
41.0-42.0	3.5	0.3	573.5	0.04	99.86
42.0-43.0	2.1	0.2	573.6	0.03	99.88
43.0-44.0	1.5	0.1	573.7	0.02	99.90
44.0-45.0	1.1	0.1	573.8	0.01	99.92
45.0-46.0	0.9	0.1	573.9	0.01	99.93
46.0-47.0	0.7	0.1	574.0	0.01	99.94
47.0-48.0	0.6	0.0	574.0	0.01	99.95
48.0-49.0	0.5	0.0	574.0	0.01	99.96
49.0-50.0	0.4	0.0	574.1	0.01	99.96
50.0-51.0	0.5	0.0	574.1	0.01	99.97
51.0-52.0	0.5	0.0	574.2	0.01	99.98
52.0-53.0	0.5	0.0	574.2	0.01	99.98
53.0-54.0	0.3	0.0	574.2	0.01	99.99
54.0-55.0	0.2	0.0	574.3	0.00	99.99
55.0-56.0	0.2	0.0	574.3	0.00	100.00
56.0-57.0	0.1	0.0	574.3	0.00	100.00
57.0-58.0	0.1	0.0	574.3	0.00	100.00
58.0-59.0	0.0	0.0	574.3	0.00	100.00
59.0-60.0	0.0	0.0	574.3	0.00	100.00
60.0-61.0	0.0	0.0	574.3	0.00	100.00
61.0-62.0	0.0	0.0	574.3	0.00	100.00
62.0-63.0	0.0	0.0	574.3	0.00	100.00
63.0-64.0	0.0	0.0	574.3	0.00	100.00
64.0-65.0	0.0	0.0	574.3	0.00	100.00
65.0-66.0	0.0	0.0	574.3	0.00	100.00
66.0-67.0	0.0	0.0	574.3	0.00	100.00
67.0-68.0	0.0	0.0	574.3	0.00	100.00
68.0-69.0	0.0	0.0	574.3	0.00	100.00
69.0-70.0	0.0	0.0	574.3	0.00	100.00
70.0-71.0	0.0	0.0	574.3	0.00	100.00
71.0-72.0	0.0	0.0	574.3	0.00	100.00
72.0-73.0	0.0	0.0	574.3	0.00	100.00
73.0-74.0	0.0	0.0	574.3	0.00	100.00
74.0-75.0	0.0	0.0	574.3	0.00	100.00
75.0-76.0	0.0	0.0	574.3	0.00	100.00
76.0-77.0	0.0	0.0	574.3	0.00	100.00
77.0-78.0	0.0	0.0	574.3	0.00	100.00
78.0-79.0	0.0	0.0	574.3	0.00	100.00
79.0-80.0	0.0	0.0	574.3	0.00	100.00

Test Type : Type C Test Distance : 9.665 m
 Test Device : Lisun LSG-1890B
 Test Lab :
 Test By :

C Plane (°): 0.0-360.0:30.0 γ (°): 0.0-90.0:1.0
 Temperature : 25.0°C Humidity : 65.0%
 Review By :

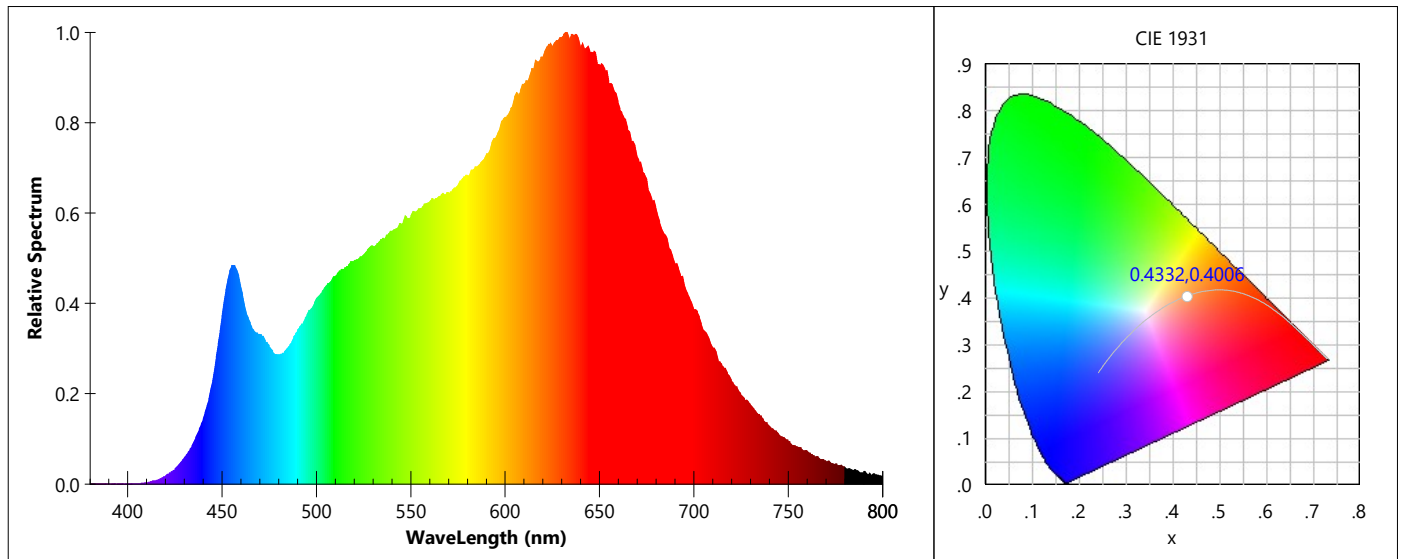


Zonal Flux

Gamma °	lmean cd	Zonal Flux lm	Sum Zonal Flux lm	Rel Zonal Flux %	Sum Rel Zonal Flux %
80.0-81.0	0.0	0.0	574.3	0.00	100.00
81.0-82.0	0.0	0.0	574.3	0.00	100.00
82.0-83.0	0.0	0.0	574.3	0.00	100.00
83.0-84.0	0.0	0.0	574.3	0.00	100.00
84.0-85.0	0.0	0.0	574.3	0.00	100.00
85.0-86.0	0.0	0.0	574.3	0.00	100.00
86.0-87.0	0.0	0.0	574.3	0.00	100.00
87.0-88.0	0.0	0.0	574.3	0.00	100.00
88.0-89.0	0.0	0.0	574.3	0.00	100.00
89.0-90.0	0.0	0.0	574.3	0.00	100.00



Color Properties



Colorimetric

CIE(x,y): 0.4332,0.4006	CIE(u,v): 0.2496,0.3463	CIE(u',v'): 0.2496,0.5194
CCT: 3036 K (Duv=-0.000870)	Dominant Wavelength: 602.3 nm	Color Purity: 0.503
Peak Wavelength: 632.4 nm	Half Width: 166.7 nm	Color Ratio: R:0.251, G:0.714, B:0.035
Luminous Flux: 574.30 lm	Radiant Power: 2.157 W	

Color Render Index: Ra: 97.3

R1: 97	R2: 98	R3: 100	R4: 98	R5: 97	R6: 95	R7: 97	R8: 97
R9: 96	R10: 96	R11: 98	R12: 86	R13: 97	R14: 99	R15: 98	

Color Quality Scale: Qa: 95.8 , Qf: 95.1 , Qp: 98.5 , Qg: 98.6

Q1: 92	Q2: 96	Q3: 96	Q4: 95	Q5: 96	Q6: 96	Q7: 98	Q8: 98
Q9: 97	Q10: 97	Q11: 97	Q12: 97	Q13: 98	Q14: 96	Q15: 95	

TM-30-18: Rf: 94 , Rg: 99