Report No.: Test Time: 2019-07-02 13:23

Luminaire Property

Luminaire Manufacturer:
Luminaire Description: TR19D063 150W-1 Voltage: 229.8 V
Current: 0.674 A Power: 152.90 W
Power Factor: 0.987

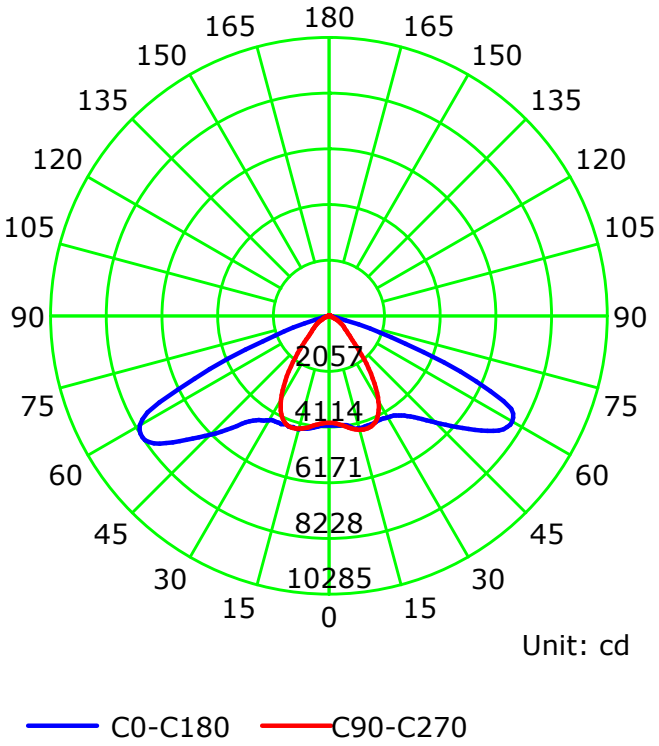
Photometric Results

CIE Class: Direct Total Rated Lamp Lumens: 14329.0 lm
Measurement Flux: 14329 lm Efficiency: 100%
Downward Ratio: 100% Upward Ratio: 0%
Field Angle(C0/C180,C90/C270,C45/C225,C135/315): 147.9, 119.0, 141.6, 140.8
Beam Angle(C0/C180,C90/C270,C45/C225,C135/315): 135.5, 76.1, 120.7, 115.8
Luminaire Efficacy Rating (LER): 93.76 Central Intensity: 4045.11 cd
Max. Intensity: 8228.14 cd Pos of Max. Intensity: H180 V57
S/MH(C0/C180): 2.09 S/MH(C90/C270): 1.26

Picture Of Luminaire

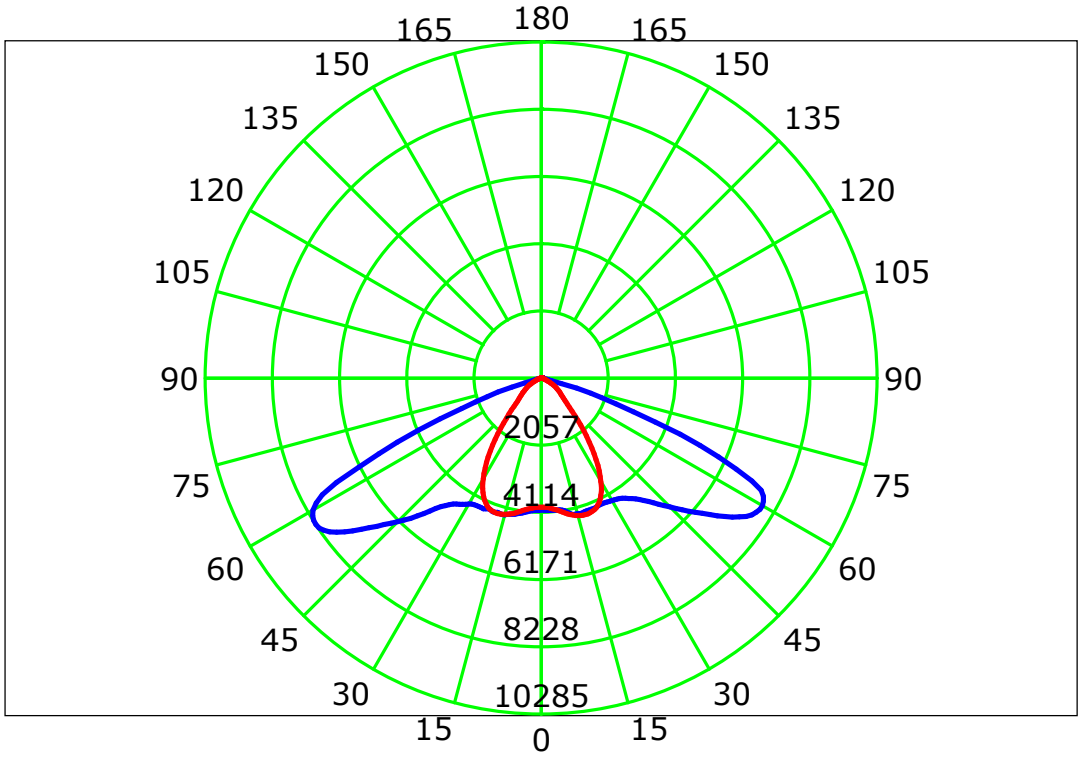


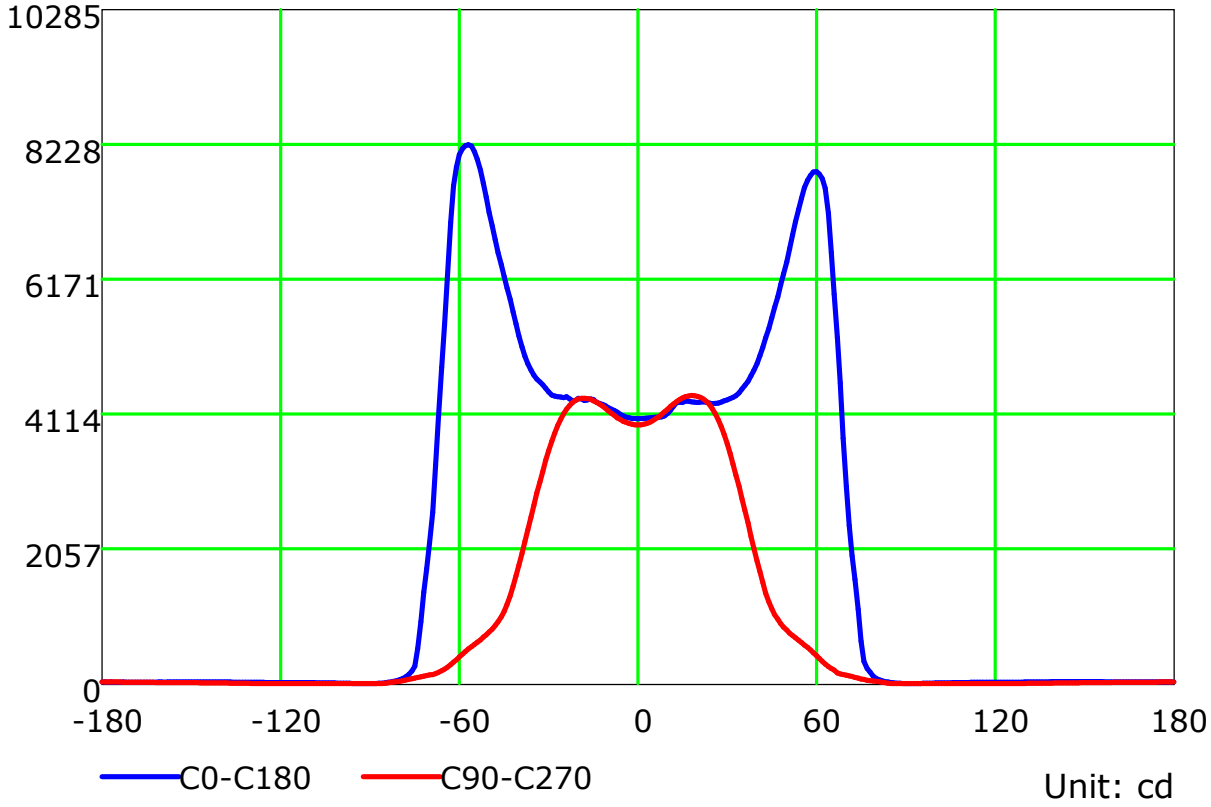
Luminous Intensity Distribution Curve



C Plane (°):0.0-360.0: 30.0 Gamma Plane (°):0.0-180.0:1.0
Test Lab: TRONTOP Test Device: GPM-1600L
Test Type: TYPE C Distance: 7.340 m
Temperature: Humidity:
Operator: Inspector:

Luminous Intensity Distribution Curve





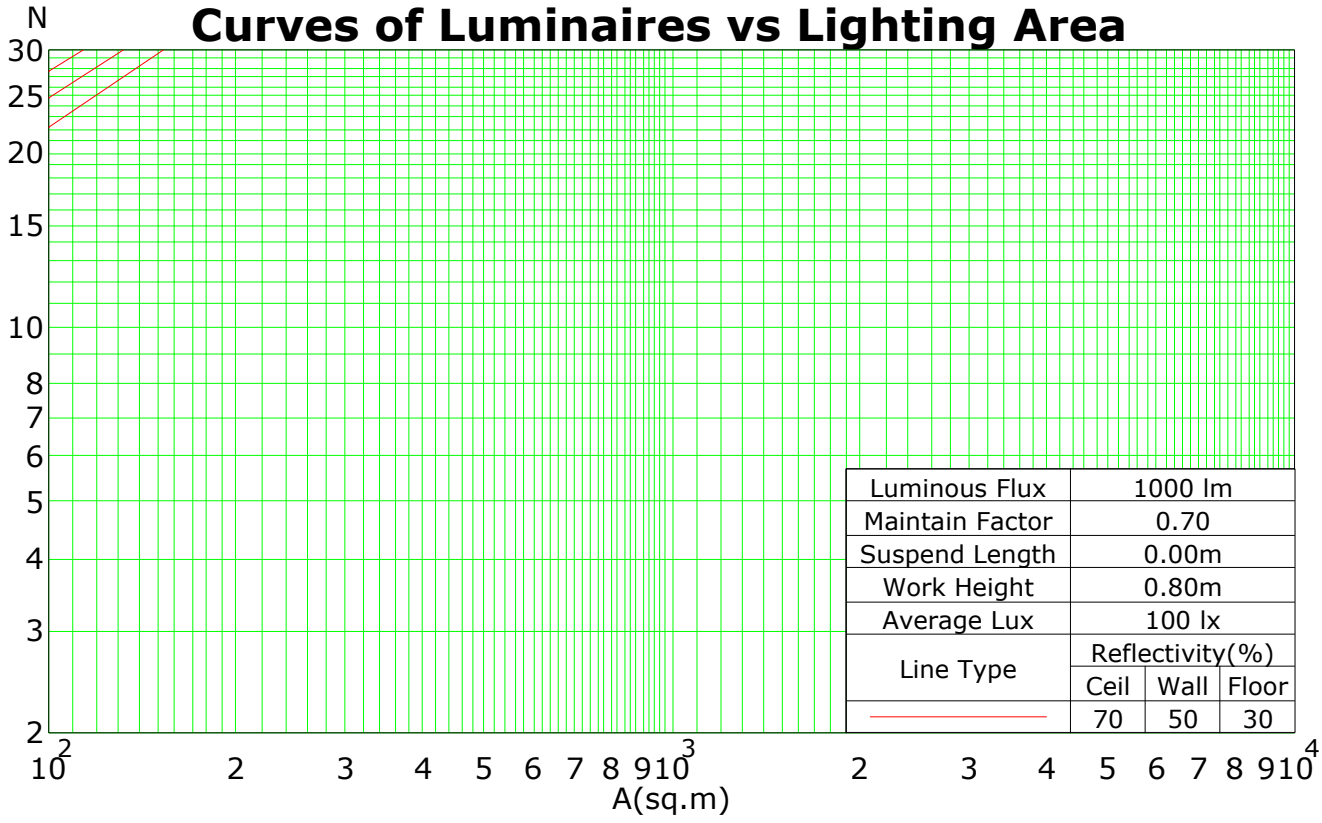
C Plane (°):0.0-360.0: 30.0
Gamma Plane (°):0.0-180.0:1.0
Test Lab: TRONTOP
Test Device: GPM-1600L
Test Type: TYPE C
Distance: 7.340 m
Temperature:
Humidity:
Operator:
Inspector:

Coefficients Of Utilization - Zonal Cavity Method

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	110	106	102	98	107	103	100	97	99	96	94	95	93	91	91	90	88	86
2	100	92	86	81	98	91	85	80	87	82	78	84	80	76	81	77	74	72
3	91	81	73	67	89	79	72	66	76	70	65	74	68	64	71	67	63	61
4	83	72	63	56	81	70	62	56	68	61	55	65	59	54	63	58	54	51
5	76	64	55	48	74	62	54	48	60	53	47	58	52	47	56	51	46	44
6	70	57	48	42	68	56	47	41	54	47	41	52	46	41	51	45	40	38
7	65	51	42	36	63	50	42	36	49	41	36	47	41	36	46	40	35	33
8	60	47	38	32	59	46	38	32	44	37	32	43	36	31	42	36	31	29
9	56	42	34	29	55	42	34	29	41	33	28	40	33	28	39	32	28	26
10	52	39	31	26	51	38	31	26	37	30	25	36	30	25	36	30	25	23

Spacing Criteria (0-180): 2.09
Spacing Criteria (90-270): 1.26
Spacing Criteria (Diagonal): 1.62

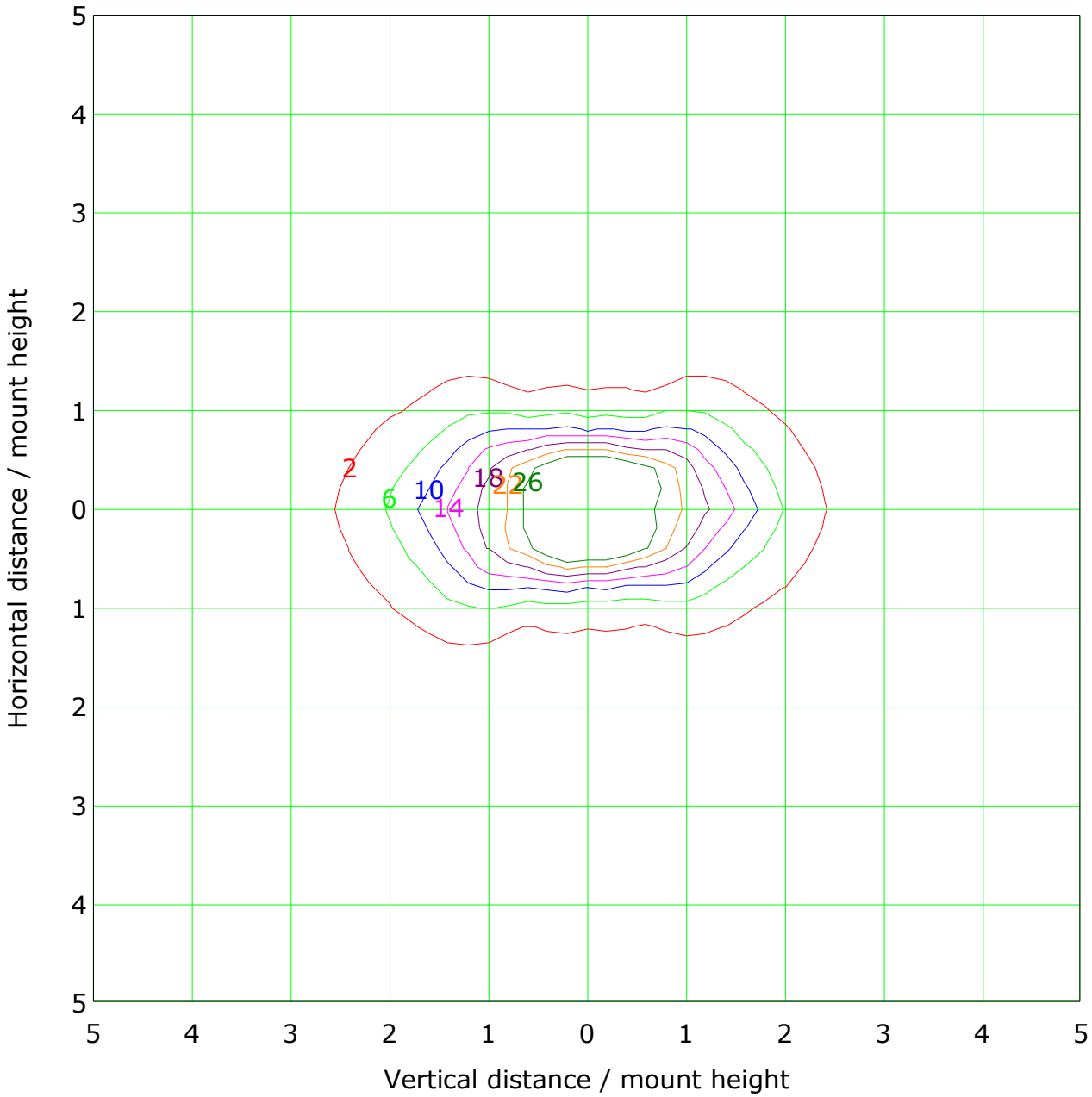
Curves of Luminaires vs Lighting Area



C Plane (°):0.0-360.0: 30.0
Test Lab: TRONTOP
Test Type: TYPE C
Temperature:
Operator:

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1600L
Distance: 7.340 m
Humidity:
Inspector:

IsoLux Plot



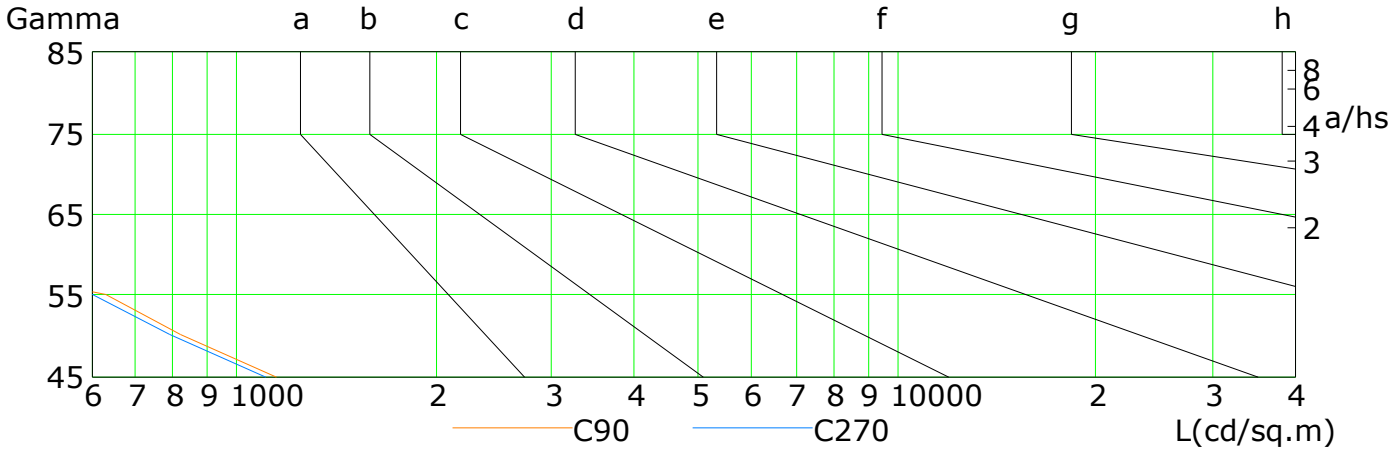
Mounting Height: 10.0m Max Lux(100%): 40.7 lx

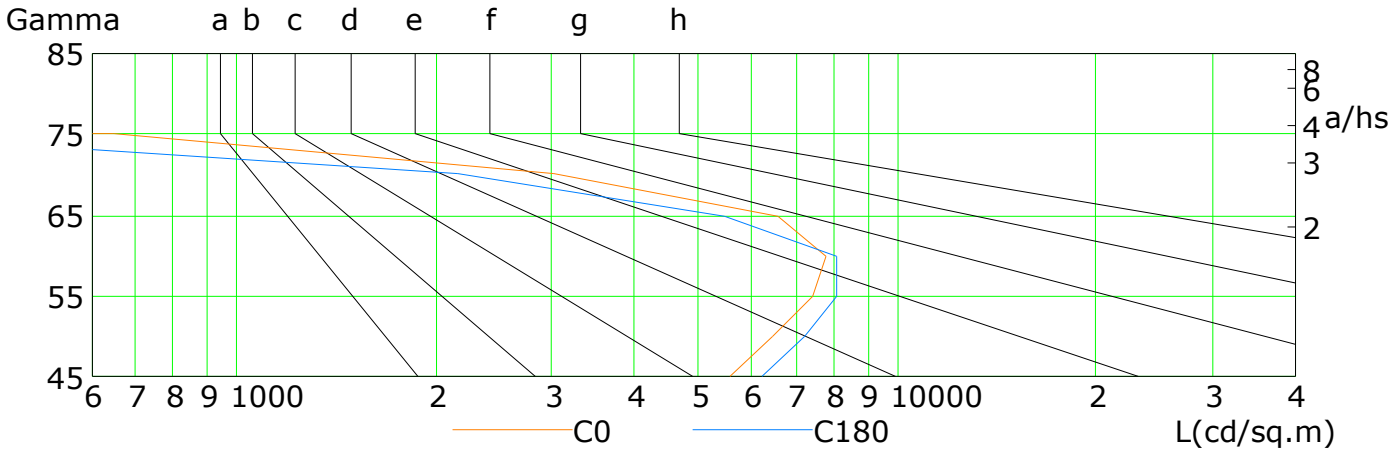
(5%): 2.0 lx
(15%): 6.1 lx
(25%): 10.2 lx
(35%): 14.3 lx
(45%): 18.3 lx
(55%): 22.4 lx
(65%): 26.5 lx

C Plane (°):0.0-360.0: 30.0
Gamma Plane (°):0.0-180.0:1.0
Test Lab: TRONTOP
Test Device: GPM-1600L
Test Type: TYPE C
Distance: 7.340 m
Temperature:
Humidity:
Operator:
Inspector:

Lum Limit Curve

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
		a	b	c	d	e	f	g	h



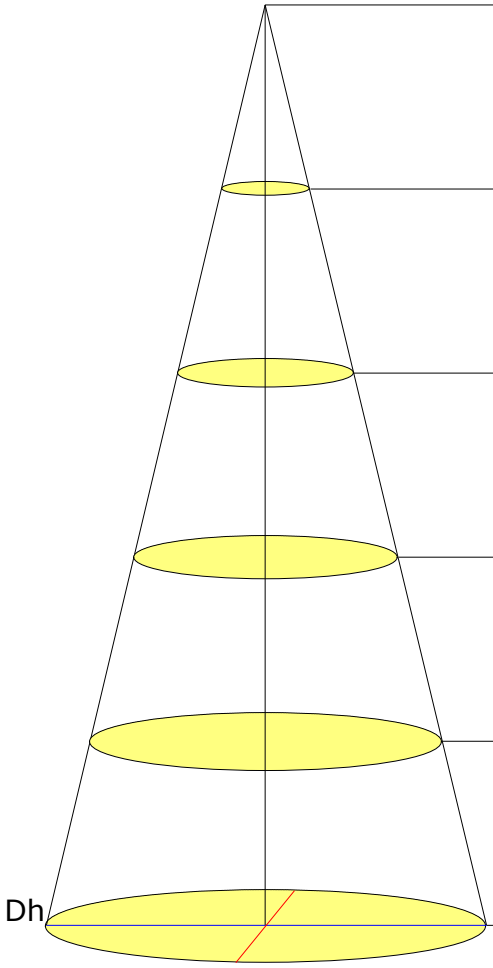


L(cd/sq.m)	G45	G50	G55	G60	G65	G70	G75	G80	G85
C0	5582	6438	7410	7817	6585	3012	647	82	18
C90	1148	818	629	428	233	130	73	34	2
C180	6219	7195	8124	8074	5485	2147	268	61	13
C270	1100	790	601	410	222	134	86	37	6

C Plane (°):0.0-360.0: 30.0
Test Lab: TRONTOP
Test Type: TYPE C
Temperature:
Operator:

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1600L
Distance: 7.340 m
Humidity:
Inspector:

Illuminance at a Distance



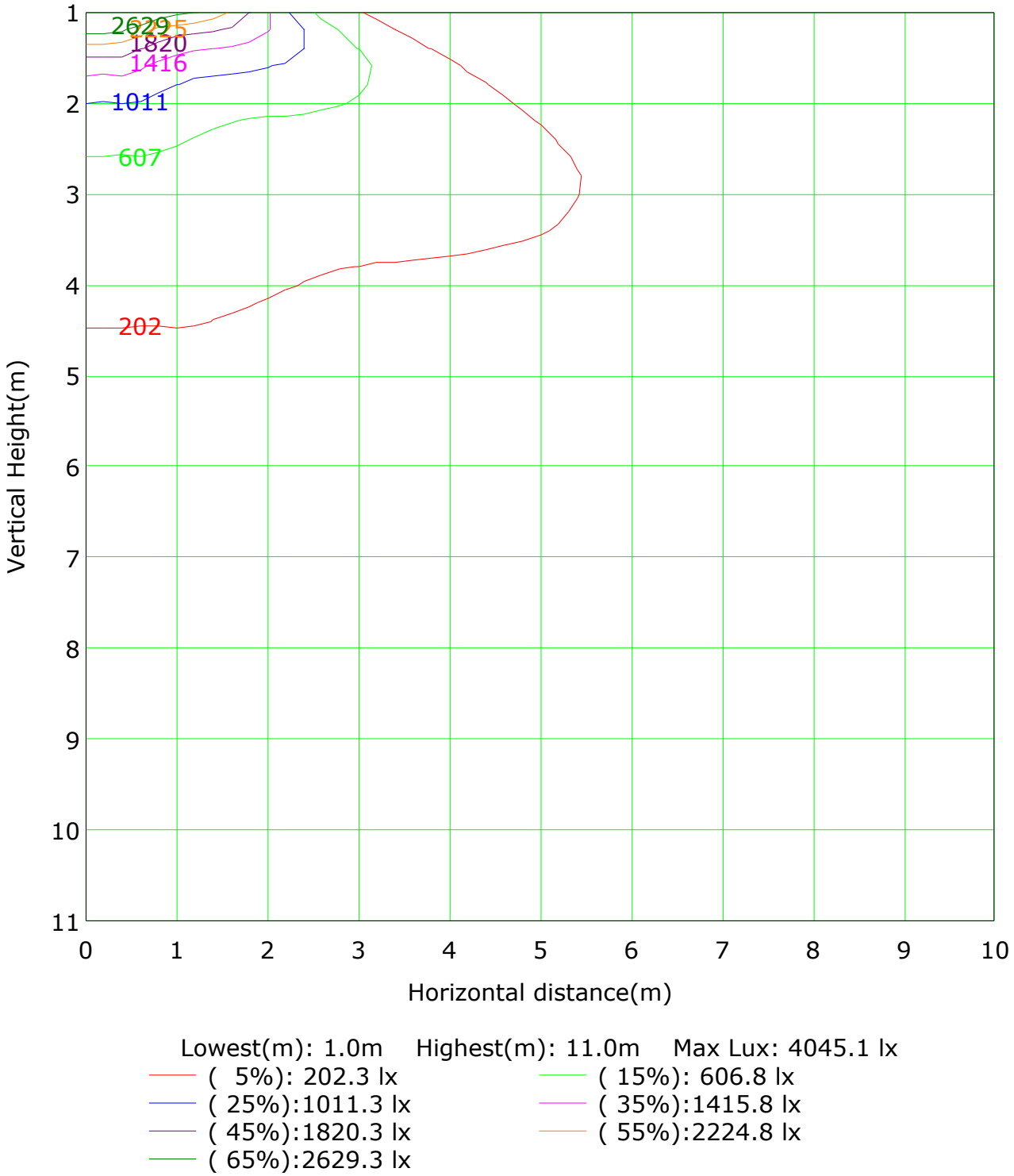
Dist(m)	Enadir(lx)	Dh/Dv_B(m)	S_B(sq.m)	Eav_B(lx)
10.0	40.45	48.90/15.66	806.7	7.61
20.0	10.11	97.81/31.32	3226.8	1.90
30.0	4.49	146.71/46.99	7260.3	0.85
40.0	2.53	195.61/62.65	12907.2	0.48
50.0	1.62	244.52/78.31	20167.6	0.30

Beam Angle(B): H135.5 V76.1 Field Angle(F): H147.9 V119.0

C Plane (°):0.0-360.0: 30.0
Test Lab: TRONTOP
Test Type: TYPE C
Temperature:
Operator:

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1600L
Distance: 7.340 m
Humidity:
Inspector:

Vertical IsoLux Plot

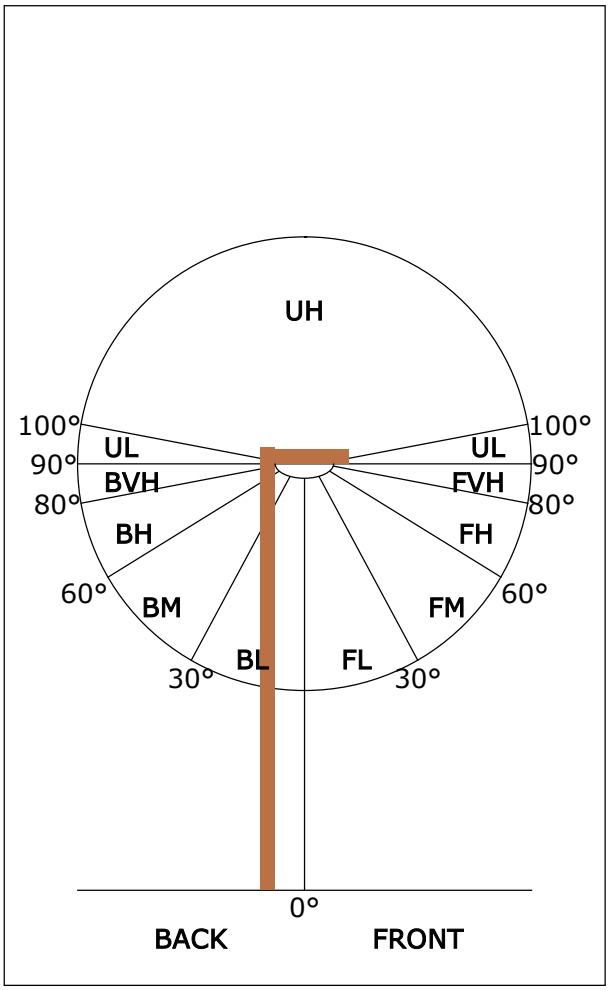


Lowest(m): 1.0m Highest(m): 11.0m Max Lux: 4045.1 lx

(5%): 202.3 lx
(15%): 606.8 lx
(25%):1011.3 lx
(35%):1415.8 lx
(45%):1820.3 lx
(55%):2224.8 lx
(65%):2629.3 lx

C Plane (°):0.0-360.0: 30.0
Gamma Plane (°):0.0-180.0:1.0
Test Lab: TRONTOP
Test Device: GPM-1600L
Test Type: TYPE C
Distance: 7.340 m
Temperature:
Humidity:
Operator:
Inspector:

FLUX DISTRIBUTION TABLE BASED ON THE IESNA LUMINAIRE CLASSIFICATION SYSTEM



ZONE	LUMENS	% LAMP LUMENS
FORWARD LIGHT	7098	49.5
FL (0°-30°)	1835	12.8
FM (30°-60°)	4191	29.2
FH (60°-80°)	1066	7.4
FVH (80°-90°)	7	0.0
BACK LIGHT	7165	50.0
BL (0°-30°)	1832	12.8
BM (30°-60°)	4250	29.7
BH (60°-80°)	1074	7.5
BVH (80°-90°)	8	0.1
UP LIGHT	66	0.5
UL (90°-100°)	1	0.0
UH (100°-180°)	65	0.5
TRAPPED LIGHT	NA	NA

BUG(**B**acklight,**U**plight,**G**lare) Rating Base On TM-15-07	
Asymmetrical Luminaire Types (Type I,II,III,IV)	B3 U2 G3
Quadrilateral Symmetrical Luminaire Types (Type V,Area Light)	B3 U2 G1

C Plane (°):0.0-360.0: 30.0
Test Lab: TRONTOP
Test Type: TYPE C
Temperature:
Operator:

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1600L
Distance: 7.340 m
Humidity:
Inspector:

Zonal Lumen

Gamma [°]	Imean [cd]	Zonal Flux [lm]	Sum Zonal Flux [lm]	Rel Zonal Flux [%]	Sum Rel Zonal Flux [%]
0.0-1.0	3978.9	3.8	3.8	0.03	0.03
1.0-2.0	3982.4	11.4	15.2	0.08	0.11
2.0-3.0	3989.6	19.1	34.3	0.13	0.24
3.0-4.0	4000.2	26.8	61.1	0.19	0.43
4.0-5.0	4013.8	34.5	95.6	0.24	0.67
5.0-6.0	4032.5	42.4	138.0	0.30	0.96
6.0-7.0	4054.9	50.3	188.4	0.35	1.31
7.0-8.0	4079.5	58.4	246.7	0.41	1.72
8.0-9.0	4106.9	66.6	313.3	0.46	2.19
9.0-10.0	4137.7	74.9	388.2	0.52	2.71
10.0-11.0	4173.9	83.4	471.6	0.58	3.29
11.0-12.0	4213.4	92.1	563.7	0.64	3.93
12.0-13.0	4251.9	100.9	664.7	0.70	4.64
13.0-14.0	4289.7	109.8	774.5	0.77	5.40
14.0-15.0	4324.1	118.7	893.2	0.83	6.23
15.0-16.0	4353.4	127.6	1020.8	0.89	7.12
16.0-17.0	4377.5	136.3	1157.1	0.95	8.08
17.0-18.0	4396.6	145.0	1302.1	1.01	9.09
18.0-19.0	4414.7	153.6	1455.7	1.07	10.16
19.0-20.0	4429.4	162.1	1617.9	1.13	11.29
20.0-21.0	4439.3	170.5	1788.3	1.19	12.48
21.0-22.0	4447.2	178.7	1967.1	1.25	13.73
22.0-23.0	4453.3	186.9	2154.0	1.30	15.03
23.0-24.0	4455.7	194.8	2348.8	1.36	16.39
24.0-25.0	4451.9	202.5	2551.3	1.41	17.80
25.0-26.0	4445.6	209.9	2761.1	1.46	19.27
26.0-27.0	4436.1	217.1	2978.2	1.51	20.78
27.0-28.0	4418.4	223.7	3201.9	1.56	22.35
28.0-29.0	4395.1	230.0	3431.9	1.60	23.95
29.0-30.0	4366.6	235.8	3667.7	1.65	25.60
30.0-31.0	4334.8	241.3	3909.0	1.68	27.28
31.0-32.0	4299.6	246.4	4155.3	1.72	29.00
32.0-33.0	4259.9	251.0	4406.3	1.75	30.75
33.0-34.0	4217.4	255.3	4661.6	1.78	32.53
34.0-35.0	4171.2	259.1	4920.7	1.81	34.34
35.0-36.0	4124.4	262.6	5183.3	1.83	36.17

C Plane (°):0.0-360.0: 30.0
Test Lab: TRONTOP
Test Type: TYPE C
Temperature:
Operator:

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1600L
Distance: 7.340 m
Humidity:
Inspector:

Zonal Lumen (Continue 1)

Gamma [°]	Imean [cd]	Zonal Flux [lm]	Sum Zonal Flux [lm]	Rel Zonal Flux [%]	Sum Rel Zonal Flux [%]
36.0-37.0	4077.0	265.9	5449.2	1.86	38.03
37.0-38.0	4026.7	268.8	5718.0	1.88	39.91
38.0-39.0	3977.2	271.5	5989.5	1.89	41.80
39.0-40.0	3928.6	274.0	6263.6	1.91	43.71
40.0-41.0	3883.1	276.5	6540.1	1.93	45.64
41.0-42.0	3842.0	279.2	6819.3	1.95	47.59
42.0-43.0	3800.1	281.5	7100.8	1.96	49.56
43.0-44.0	3760.2	283.8	7384.7	1.98	51.54
44.0-45.0	3724.3	286.3	7670.9	2.00	53.53
45.0-46.0	3691.3	288.7	7959.7	2.01	55.55
46.0-47.0	3661.9	291.3	8250.9	2.03	57.58
47.0-48.0	3633.6	293.8	8544.7	2.05	59.63
48.0-49.0	3606.2	296.2	8840.9	2.07	61.70
49.0-50.0	3580.6	298.6	9139.5	2.08	63.78
50.0-51.0	3553.1	300.7	9440.1	2.10	65.88
51.0-52.0	3524.8	302.5	9742.6	2.11	67.99
52.0-53.0	3492.5	303.8	10046.5	2.12	70.11
53.0-54.0	3450.7	304.2	10350.7	2.12	72.24
54.0-55.0	3400.1	303.5	10654.2	2.12	74.35
55.0-56.0	3334.7	301.4	10955.6	2.10	76.46
56.0-57.0	3255.0	297.7	11253.2	2.08	78.53
57.0-58.0	3163.8	292.6	11545.8	2.04	80.58
58.0-59.0	3054.2	285.6	11831.4	1.99	82.57
59.0-60.0	2931.1	276.9	12108.4	1.93	84.50
60.0-61.0	2788.2	266.1	12374.5	1.86	86.36
61.0-62.0	2628.6	253.3	12627.8	1.77	88.13
62.0-63.0	2454.9	238.8	12866.6	1.67	89.79
63.0-64.0	2240.4	219.9	13086.5	1.53	91.33
64.0-65.0	2002.7	198.2	13284.7	1.38	92.71
65.0-66.0	1768.4	176.5	13461.1	1.23	93.94
66.0-67.0	1524.7	153.3	13614.5	1.07	95.01
67.0-68.0	1290.0	130.7	13745.2	0.91	95.93
68.0-69.0	1076.0	109.8	13855.0	0.77	96.69
69.0-70.0	886.2	91.0	13946.0	0.64	97.33
70.0-71.0	730.2	75.5	14021.5	0.53	97.85
71.0-72.0	592.6	61.6	14083.1	0.43	98.28

C Plane (°):0.0-360.0: 30.0
Test Lab: TRONTOP
Test Type: TYPE C
Temperature:
Operator:

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1600L
Distance: 7.340 m
Humidity:
Inspector:

Zonal Lumen (Continue 2)

Gamma [°]	Imean [cd]	Zonal Flux [lm]	Sum Zonal Flux [lm]	Rel Zonal Flux [%]	Sum Rel Zonal Flux [%]
72.0-73.0	468.7	49.0	14132.1	0.34	98.63
73.0-74.0	353.3	37.1	14169.2	0.26	98.89
74.0-75.0	245.2	25.9	14195.2	0.18	99.07
75.0-76.0	164.8	17.5	14212.7	0.12	99.19
76.0-77.0	118.2	12.6	14225.3	0.09	99.28
77.0-78.0	90.1	9.6	14234.9	0.07	99.34
78.0-79.0	70.5	7.6	14242.5	0.05	99.40
79.0-80.0	54.6	5.9	14248.4	0.04	99.44
80.0-81.0	42.5	4.6	14253.0	0.03	99.47
81.0-82.0	33.2	3.6	14256.6	0.03	99.49
82.0-83.0	24.7	2.7	14259.2	0.02	99.51
83.0-84.0	17.0	1.8	14261.1	0.01	99.53
84.0-85.0	10.2	1.1	14262.2	0.01	99.53
85.0-86.0	5.1	0.6	14262.8	0.00	99.54
86.0-87.0	2.4	0.3	14263.0	0.00	99.54
87.0-88.0	1.1	0.1	14263.2	0.00	99.54
88.0-89.0	0.4	0.0	14263.2	0.00	99.54
89.0-90.0	0.1	0.0	14263.2	0.00	99.54
90.0-91.0	0.0	0.0	14263.2	0.00	99.54
91.0-92.0	0.0	0.0	14263.2	0.00	99.54
92.0-93.0	0.1	0.0	14263.2	0.00	99.54
93.0-94.0	0.3	0.0	14263.3	0.00	99.54
94.0-95.0	0.5	0.1	14263.3	0.00	99.54
95.0-96.0	0.7	0.1	14263.4	0.00	99.54
96.0-97.0	0.9	0.1	14263.5	0.00	99.54
97.0-98.0	1.1	0.1	14263.6	0.00	99.54
98.0-99.0	1.4	0.2	14263.8	0.00	99.54
99.0-100.0	1.8	0.2	14264.0	0.00	99.55
100.0-101.0	2.2	0.2	14264.2	0.00	99.55
101.0-102.0	2.5	0.3	14264.5	0.00	99.55
102.0-103.0	3.0	0.3	14264.8	0.00	99.55
103.0-104.0	3.4	0.4	14265.1	0.00	99.55
104.0-105.0	3.8	0.4	14265.5	0.00	99.56
105.0-106.0	4.3	0.4	14266.0	0.00	99.56
106.0-107.0	4.6	0.5	14266.5	0.00	99.56
107.0-108.0	5.0	0.5	14267.0	0.00	99.57

C Plane (°):0.0-360.0: 30.0
Test Lab: TRONTOP
Test Type: TYPE C
Temperature:
Operator:

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1600L
Distance: 7.340 m
Humidity:
Inspector:

Zonal Lumen (Continue 3)

Gamma [°]	Imean [cd]	Zonal Flux [lm]	Sum Zonal Flux [lm]	Rel Zonal Flux [%]	Sum Rel Zonal Flux [%]
108.0-109.0	5.4	0.6	14267.6	0.00	99.57
109.0-110.0	5.7	0.6	14268.1	0.00	99.58
110.0-111.0	5.9	0.6	14268.8	0.00	99.58
111.0-112.0	6.2	0.6	14269.4	0.00	99.58
112.0-113.0	6.4	0.6	14270.0	0.00	99.59
113.0-114.0	6.8	0.7	14270.7	0.00	99.59
114.0-115.0	7.1	0.7	14271.4	0.00	99.60
115.0-116.0	7.3	0.7	14272.1	0.01	99.60
116.0-117.0	7.6	0.7	14272.9	0.01	99.61
117.0-118.0	8.1	0.8	14273.7	0.01	99.61
118.0-119.0	8.4	0.8	14274.5	0.01	99.62
119.0-120.0	8.8	0.8	14275.3	0.01	99.63
120.0-121.0	9.1	0.9	14276.2	0.01	99.63
121.0-122.0	9.5	0.9	14277.1	0.01	99.64
122.0-123.0	10.0	0.9	14278.0	0.01	99.64
123.0-124.0	10.5	1.0	14279.0	0.01	99.65
124.0-125.0	10.9	1.0	14279.9	0.01	99.66
125.0-126.0	11.4	1.0	14281.0	0.01	99.67
126.0-127.0	11.9	1.1	14282.0	0.01	99.67
127.0-128.0	12.3	1.1	14283.1	0.01	99.68
128.0-129.0	12.8	1.1	14284.2	0.01	99.69
129.0-130.0	13.2	1.1	14285.3	0.01	99.70
130.0-131.0	13.7	1.1	14286.4	0.01	99.70
131.0-132.0	14.2	1.2	14287.6	0.01	99.71
132.0-133.0	14.7	1.2	14288.8	0.01	99.72
133.0-134.0	15.1	1.2	14290.0	0.01	99.73
134.0-135.0	15.5	1.2	14291.2	0.01	99.74
135.0-136.0	16.0	1.2	14292.5	0.01	99.75
136.0-137.0	16.7	1.3	14293.7	0.01	99.75
137.0-138.0	17.1	1.3	14295.0	0.01	99.76
138.0-139.0	17.5	1.3	14296.3	0.01	99.77
139.0-140.0	18.0	1.3	14297.5	0.01	99.78
140.0-141.0	18.5	1.3	14298.8	0.01	99.79
141.0-142.0	18.9	1.3	14300.1	0.01	99.80
142.0-143.0	19.3	1.3	14301.4	0.01	99.81
143.0-144.0	19.7	1.3	14302.7	0.01	99.82

C Plane (°):0.0-360.0: 30.0
Test Lab: TRONTOP
Test Type: TYPE C
Temperature:
Operator:

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1600L
Distance: 7.340 m
Humidity:
Inspector:

Zonal Lumen (Continue 4)

Gamma [°]	Imean [cd]	Zonal Flux [lm]	Sum Zonal Flux [lm]	Rel Zonal Flux [%]	Sum Rel Zonal Flux [%]
144.0-145.0	20.0	1.3	14304.0	0.01	99.83
145.0-146.0	20.2	1.3	14305.2	0.01	99.83
146.0-147.0	20.5	1.2	14306.5	0.01	99.84
147.0-148.0	20.8	1.2	14307.7	0.01	99.85
148.0-149.0	21.0	1.2	14308.9	0.01	99.86
149.0-150.0	21.1	1.2	14310.1	0.01	99.87
150.0-151.0	21.2	1.1	14311.2	0.01	99.88
151.0-152.0	21.3	1.1	14312.3	0.01	99.88
152.0-153.0	21.4	1.1	14313.4	0.01	99.89
153.0-154.0	21.5	1.1	14314.5	0.01	99.90
154.0-155.0	21.7	1.0	14315.5	0.01	99.91
155.0-156.0	21.8	1.0	14316.5	0.01	99.91
156.0-157.0	21.9	1.0	14317.4	0.01	99.92
157.0-158.0	21.9	0.9	14318.3	0.01	99.93
158.0-159.0	22.1	0.9	14319.2	0.01	99.93
159.0-160.0	22.3	0.9	14320.1	0.01	99.94
160.0-161.0	22.4	0.8	14320.9	0.01	99.94
161.0-162.0	22.5	0.8	14321.7	0.01	99.95
162.0-163.0	22.7	0.7	14322.4	0.01	99.95
163.0-164.0	22.9	0.7	14323.2	0.00	99.96
164.0-165.0	23.0	0.7	14323.8	0.00	99.96
165.0-166.0	23.2	0.6	14324.5	0.00	99.97
166.0-167.0	23.4	0.6	14325.1	0.00	99.97
167.0-168.0	23.5	0.6	14325.6	0.00	99.98
168.0-169.0	23.7	0.5	14326.1	0.00	99.98
169.0-170.0	23.9	0.5	14326.6	0.00	99.98
170.0-171.0	24.1	0.4	14327.1	0.00	99.99
171.0-172.0	24.3	0.4	14327.5	0.00	99.99
172.0-173.0	24.5	0.4	14327.8	0.00	99.99
173.0-174.0	24.6	0.3	14328.1	0.00	99.99
174.0-175.0	24.7	0.3	14328.4	0.00	100.00
175.0-176.0	24.9	0.2	14328.6	0.00	100.00
176.0-177.0	25.0	0.2	14328.8	0.00	100.00
177.0-178.0	25.1	0.1	14328.9	0.00	100.00
178.0-179.0	25.2	0.1	14328.9	0.00	100.00
179.0-180.0	25.3	0.0	14329.0	0.00	100.00

C Plane (°):0.0-360.0: 30.0
Test Lab: TRONTOP
Test Type: TYPE C
Temperature:
Operator:

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1600L
Distance: 7.340 m
Humidity:
Inspector: