Report No.: Test Time: 2019-07-02 11:34

Luminaire Property

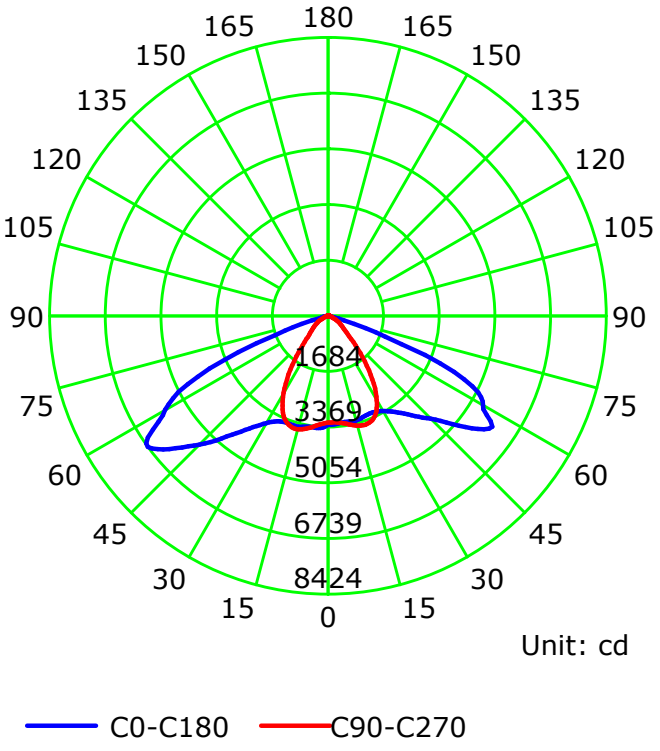
Luminaire Manufacturer:
Luminaire Description: TR19D063 120W Voltage: 230.1 V
Current: 0.540 A Power: 122.20 W
Power Factor: 0.984

Photometric Results

CIE Class: Direct Total Rated Lamp Lumens: 11288.1 lm
Measurement Flux: 11288.1 lm Efficiency: 100%
Downward Ratio: 100% Upward Ratio: 0%
Field Angle(C0/C180,C90/C270,C45/C225,C135/315): 147.0, 119.0, 142.1, 141.5
Beam Angle(C0/C180,C90/C270,C45/C225,C135/315): 134.7, 75.5, 119.0, 116.0
Luminaire Efficacy Rating (LER): 92.42 Central Intensity: 3294.59 cd
Max. Intensity: 6739.51 cd Pos of Max. Intensity: H180 V54
S/MH(C0/C180): 2.16 S/MH(C90/C270): 1.23

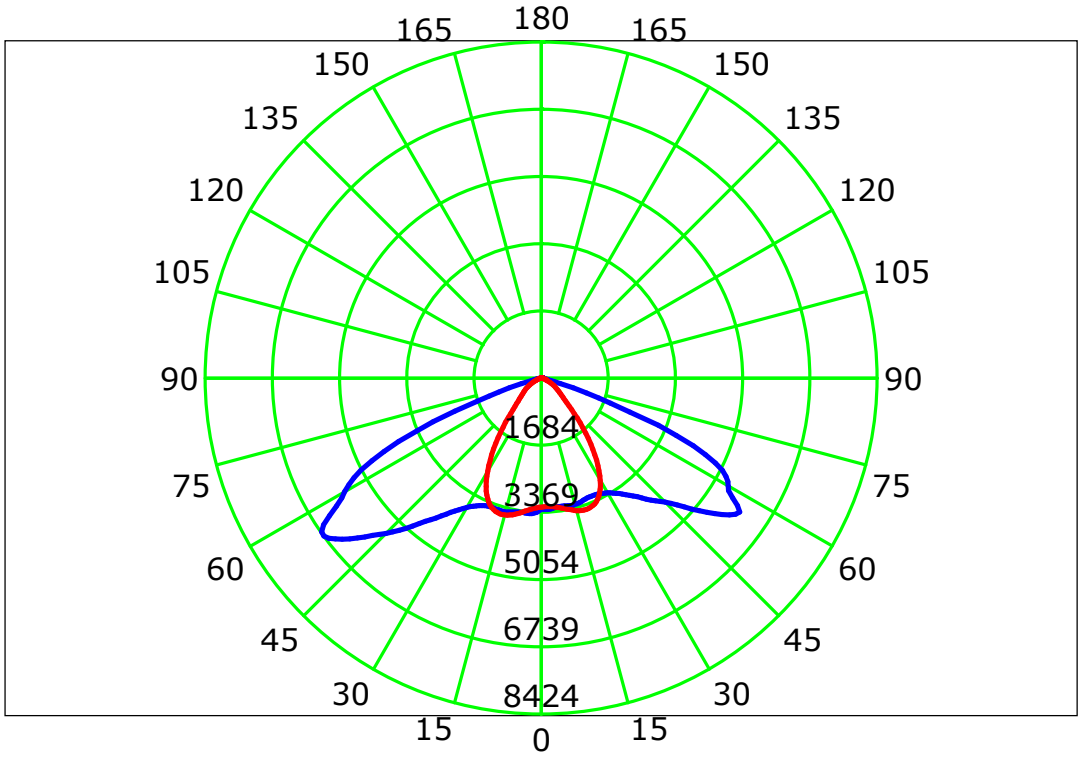
Picture Of Luminaire

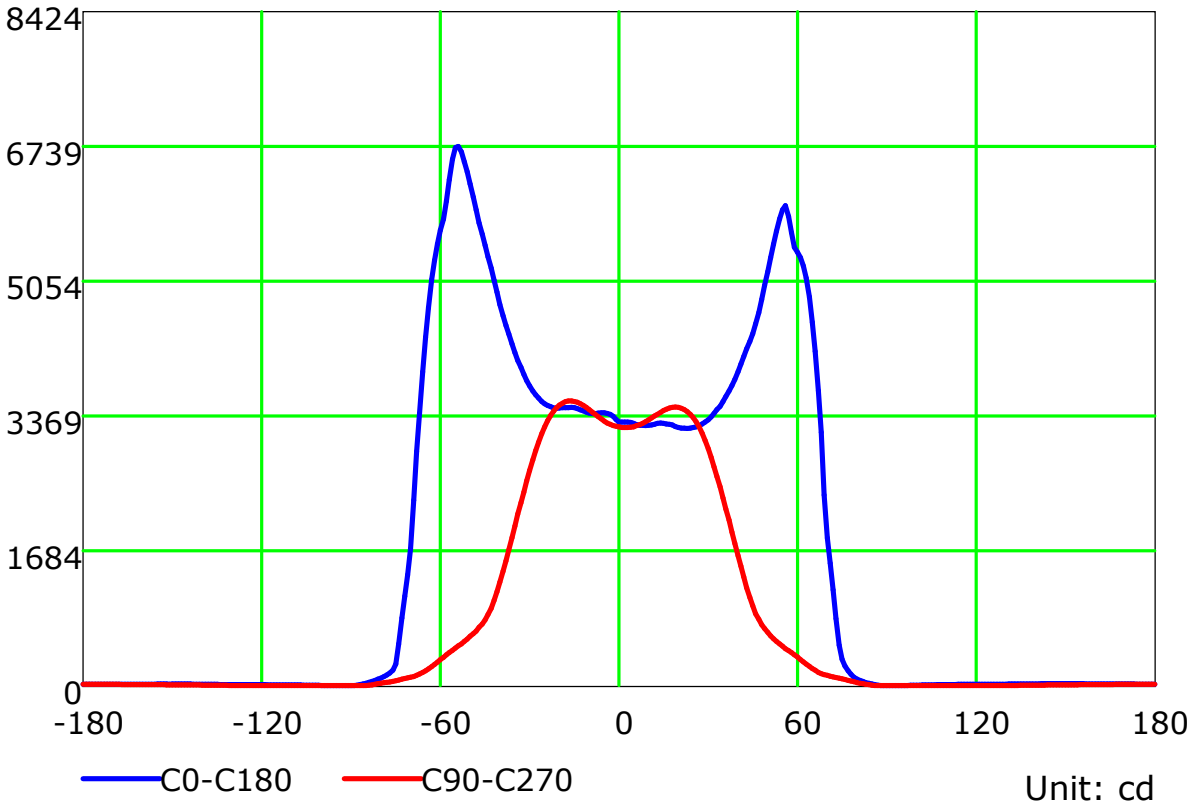
Luminous Intensity Distribution Curve



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
Test Lab: TRONTOP
Test Type: TYPE C
Temperature:
Operator:

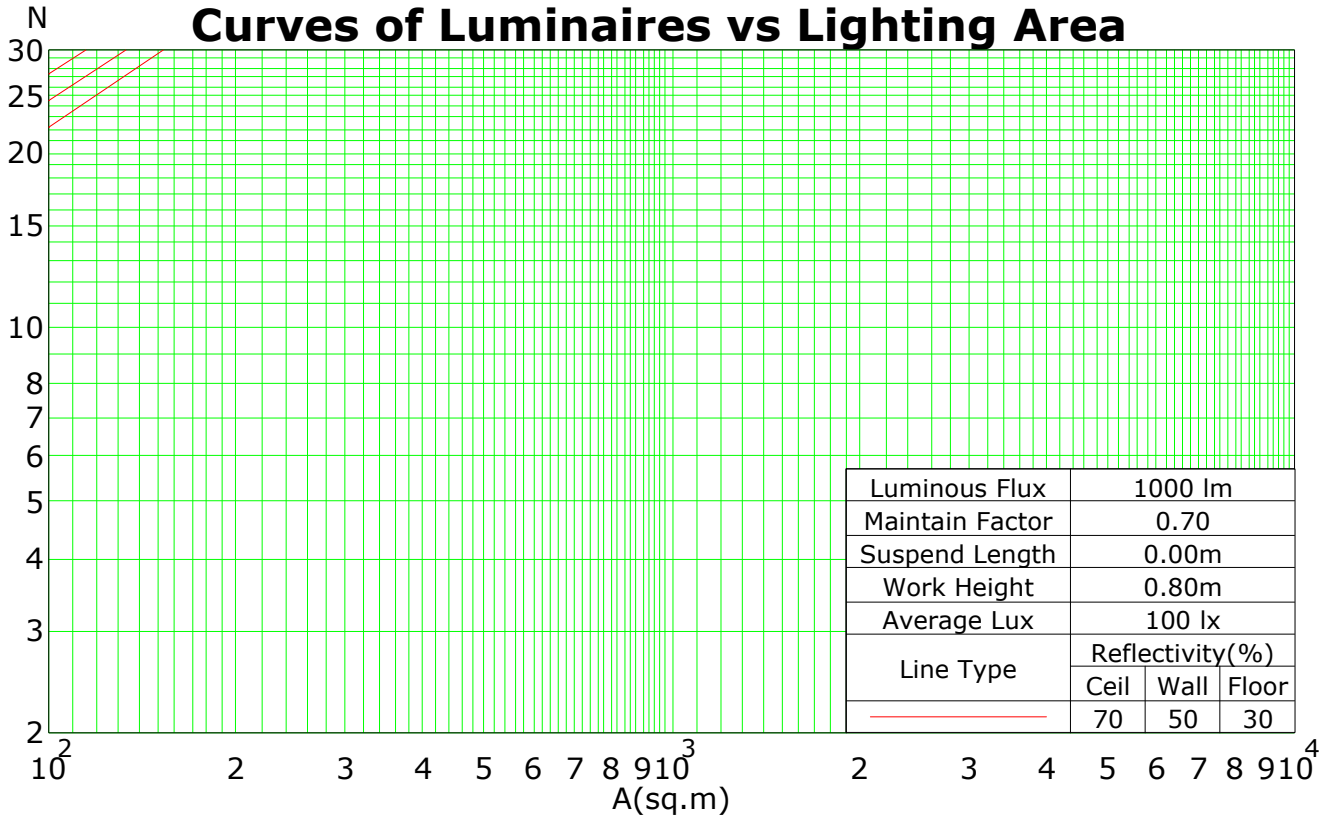
Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1600L
Distance: 7.340 m
Humidity:
Inspector:

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	92	90	88	86
2	100	93	86	81	98	91	85	80	87	82	78	84	80	76	81	77	74	72
3	91	81	74	67	89	80	73	67	77	71	65	74	69	64	71	67	63	61
4	84	72	63	57	81	70	62	56	68	61	55	66	60	55	63	58	54	52
5	77	64	55	48	74	63	54	48	61	53	48	59	52	47	57	51	46	44
6	70	57	48	42	68	56	48	42	54	47	41	53	46	41	51	45	40	38
7	65	52	43	37	63	51	42	36	49	42	36	48	41	36	46	40	36	34
8	60	47	38	32	59	46	38	32	45	37	32	43	37	32	42	36	32	30
9	56	43	34	29	55	42	34	29	41	34	29	40	33	28	39	33	28	26
10	53	39	31	26	51	39	31	26	38	31	26	37	30	26	36	30	25	24

Spacing Criteria (0-180): 2.16
Spacing Criteria (90-270): 1.23
Spacing Criteria (Diagonal): 1.60

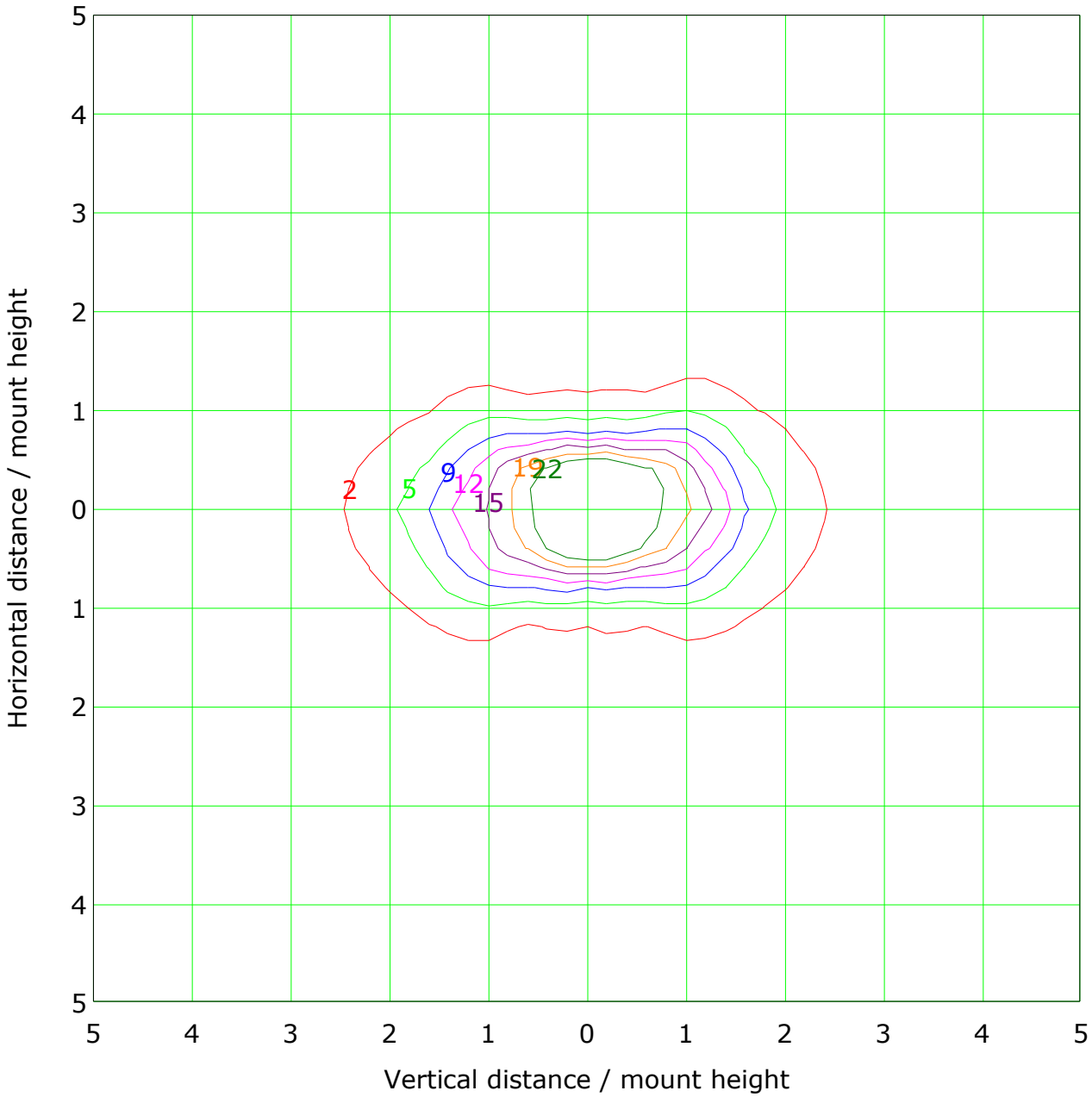
Curves of Luminaires vs Lighting Area



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



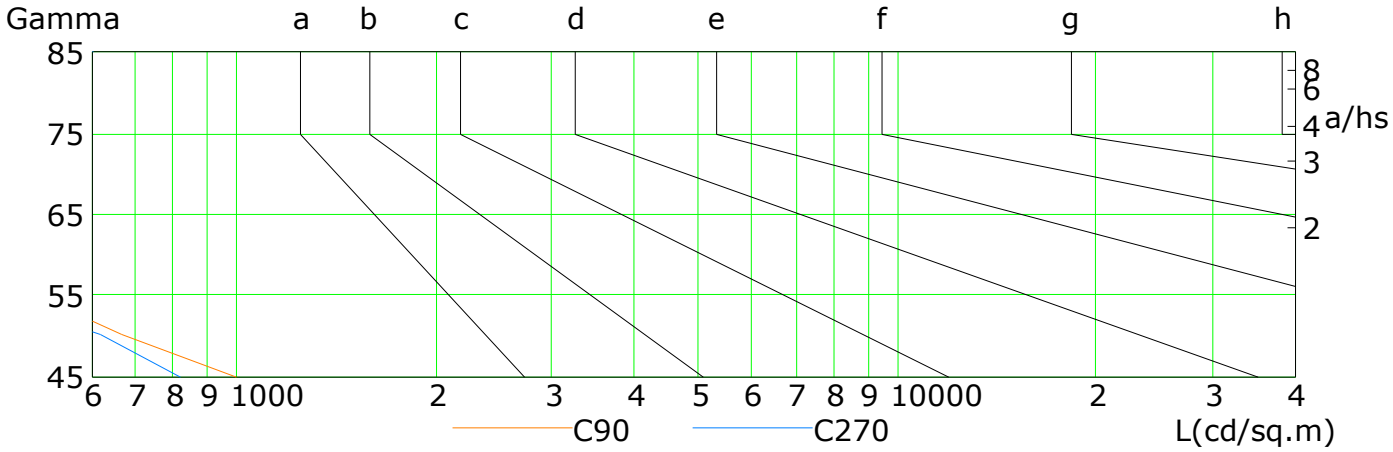
Mounting Height: 10.0m Max Lux(100%): 34.2 lx

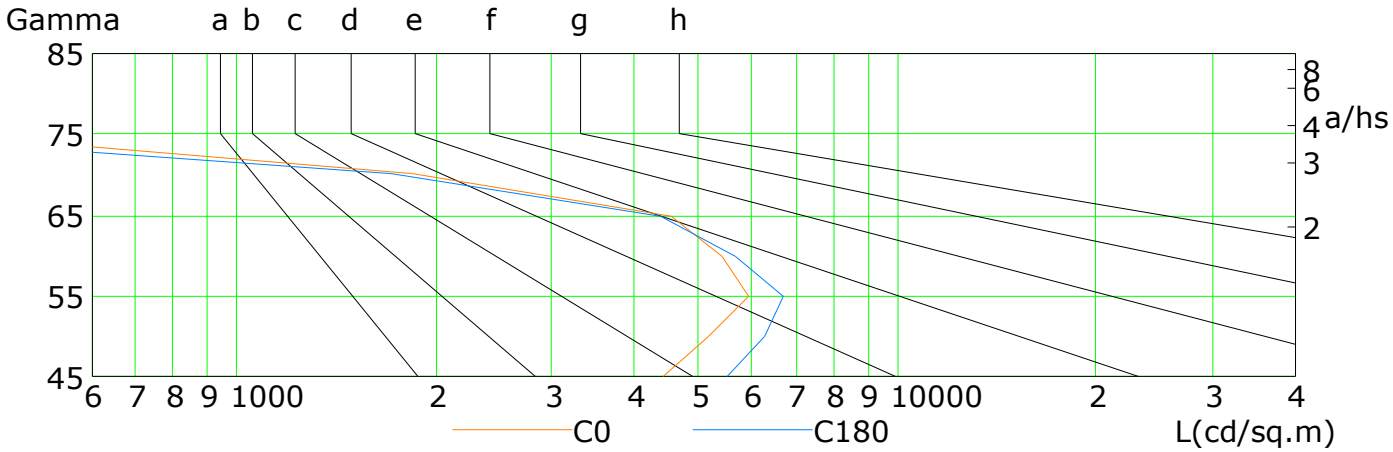
(5%): 1.7 lx
(15%): 5.1 lx
(25%): 8.5 lx
(35%): 12.0 lx
(45%): 15.4 lx
(55%): 18.8 lx
(65%): 22.2 lx

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



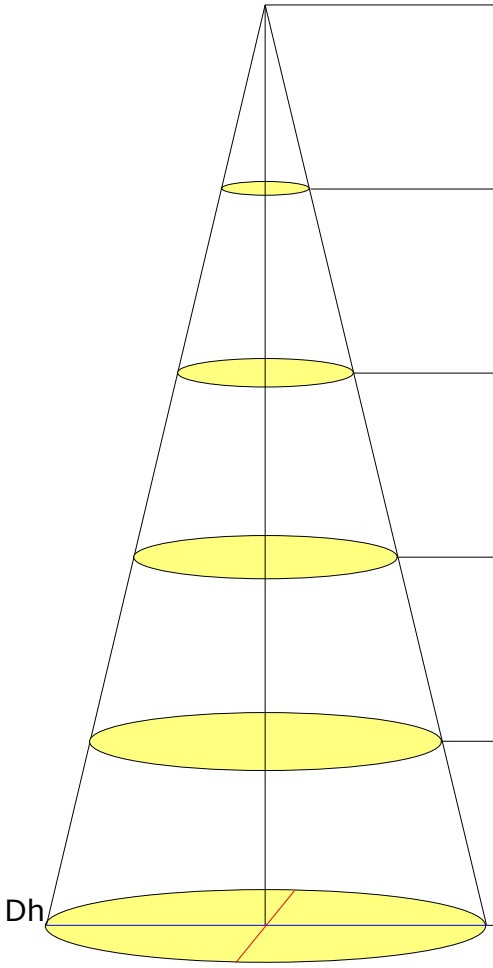


L(cd/sq.m)	G45	G50	G55	G60	G65	G70	G75	G80	G85
C0	4399	5176	5949	5417	4545	1849	332	83	20
C90	998	668	495	358	216	128	86	40	7
C180	5506	6272	6726	5694	4355	1709	269	95	31
C270	821	617	471	326	188	105	63	31	0

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:

Illuminance at a Distance



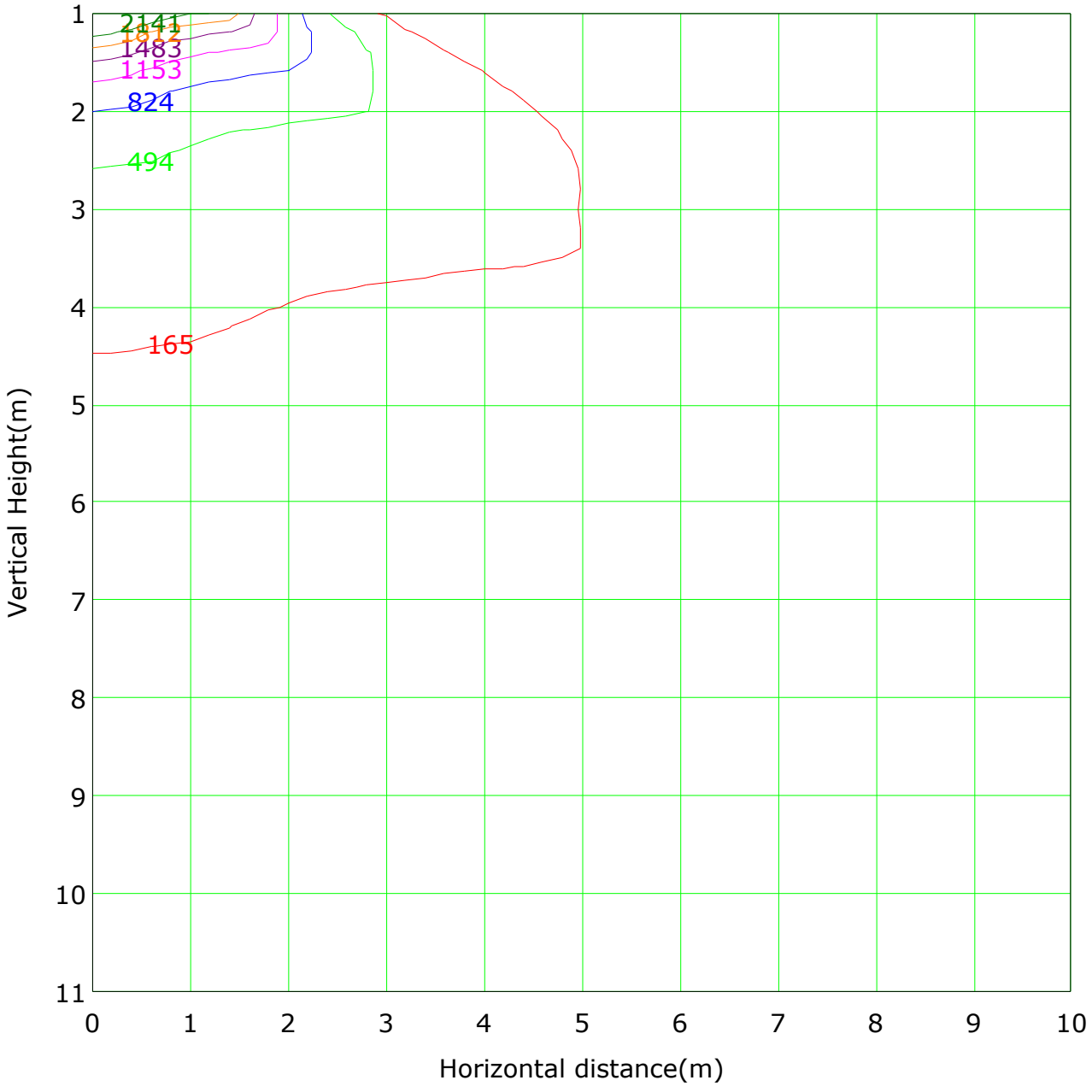
Dist(m)	Enadir(lx)	Dh/Dv_B(m)	S_B(sq.m)	Eav_B(lx)
10.0	32.95	47.90/15.48	762.9	6.30
20.0	8.24	95.79/30.96	3051.8	1.58
30.0	3.66	143.69/46.44	6866.4	0.70
40.0	2.06	191.58/61.92	12207.0	0.39
50.0	1.32	239.48/77.40	19073.4	0.25

Beam Angle(B): H134.7 V75.5 Field Angle(F): H147.0 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

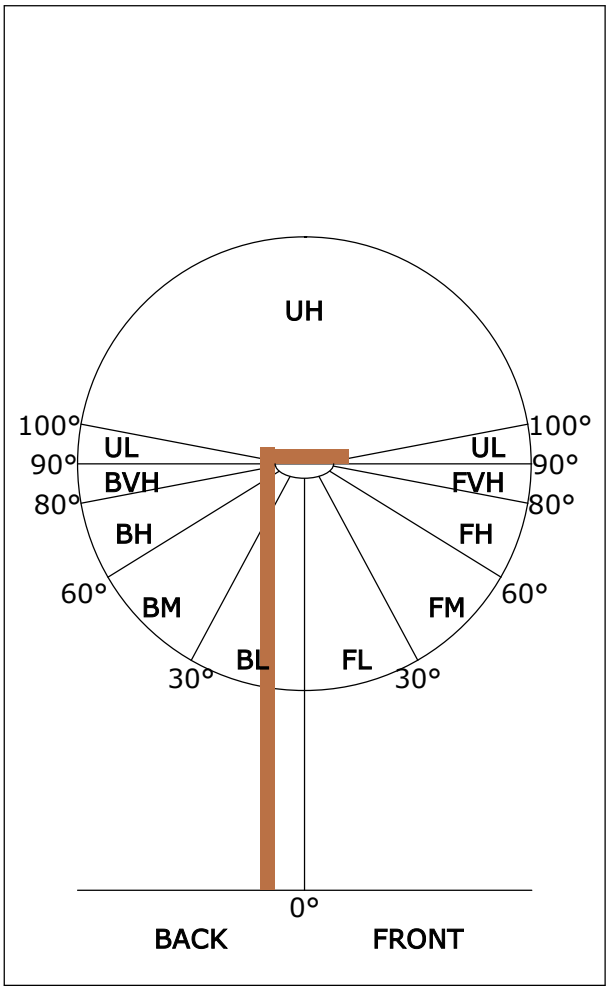


Lowest(m): 1.0m Highest(m): 11.0m Max Lux: 3294.6 lx

(5%): 164.7 lx
(15%): 494.2 lx
(25%): 823.6 lx
(35%):1153.1 lx
(45%):1482.6 lx
(55%):1812.0 lx
(65%):2141.5 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:

FLUX DISTRIBUTION TABLE BASED ON THE IESNA LUMINAIRE CLASSIFICATION SYSTEM



ZONE	LUMENS	% LAMP LUMENS
FORWARD LIGHT	5698	50.5
FL (0°-30°)	1437	12.7
FM (30°-60°)	3421	30.3
FH (60°-80°)	830	7.4
FVH (80°-90°)	10	0.1
BACK LIGHT	5545	49.1
BL (0°-30°)	1462	12.9
BM (30°-60°)	3325	29.5
BH (60°-80°)	751	6.7
BVH (80°-90°)	8	0.1
UP LIGHT	45	0.4
UL (90°-100°)	0	0.0
UH (100°-180°)	45	0.4
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 G2
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	3254.6	3.1	3.1	0.03	0.03
1.0-2.0	3266.6	9.4	12.5	0.08	0.11
2.0-3.0	3280.8	15.7	28.2	0.14	0.25
3.0-4.0	3293.1	22.0	50.2	0.20	0.44
4.0-5.0	3303.1	28.4	78.7	0.25	0.70
5.0-6.0	3312.6	34.8	113.5	0.31	1.01
6.0-7.0	3320.9	41.2	154.7	0.37	1.37
7.0-8.0	3329.1	47.7	202.3	0.42	1.79
8.0-9.0	3339.4	54.1	256.5	0.48	2.27
9.0-10.0	3350.9	60.6	317.1	0.54	2.81
10.0-11.0	3364.4	67.2	384.4	0.60	3.40
11.0-12.0	3380.0	73.9	458.3	0.65	4.06
12.0-13.0	3396.6	80.6	538.9	0.71	4.77
13.0-14.0	3414.6	87.4	626.3	0.77	5.55
14.0-15.0	3431.8	94.2	720.5	0.83	6.38
15.0-16.0	3447.2	101.0	821.5	0.89	7.28
16.0-17.0	3460.0	107.8	929.3	0.95	8.23
17.0-18.0	3469.9	114.4	1043.7	1.01	9.25
18.0-19.0	3477.7	121.0	1164.7	1.07	10.32
19.0-20.0	3483.0	127.5	1292.2	1.13	11.45
20.0-21.0	3486.4	133.9	1426.1	1.19	12.63
21.0-22.0	3488.2	140.2	1566.3	1.24	13.88
22.0-23.0	3488.4	146.4	1712.7	1.30	15.17
23.0-24.0	3486.7	152.5	1865.2	1.35	16.52
24.0-25.0	3483.0	158.4	2023.6	1.40	17.93
25.0-26.0	3477.8	164.2	2187.7	1.45	19.38
26.0-27.0	3470.0	169.8	2357.5	1.50	20.89
27.0-28.0	3459.2	175.2	2532.7	1.55	22.44
28.0-29.0	3445.6	180.3	2713.0	1.60	24.03
29.0-30.0	3429.0	185.2	2898.2	1.64	25.67
30.0-31.0	3410.0	189.8	3087.9	1.68	27.36
31.0-32.0	3388.7	194.2	3282.1	1.72	29.08
32.0-33.0	3366.1	198.3	3480.4	1.76	30.83
33.0-34.0	3342.6	202.3	3682.8	1.79	32.63
34.0-35.0	3315.9	206.0	3888.7	1.82	34.45
35.0-36.0	3288.6	209.4	4098.1	1.86	36.30

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	3261.9	212.8	4310.9	1.88	38.19
37.0-38.0	3232.6	215.8	4526.7	1.91	40.10
38.0-39.0	3203.3	218.7	4745.4	1.94	42.04
39.0-40.0	3174.4	221.4	4966.8	1.96	44.00
40.0-41.0	3146.4	224.1	5190.9	1.99	45.99
41.0-42.0	3118.7	226.6	5417.5	2.01	47.99
42.0-43.0	3087.6	228.7	5646.2	2.03	50.02
43.0-44.0	3057.7	230.8	5877.1	2.04	52.06
44.0-45.0	3028.8	232.8	6109.9	2.06	54.13
45.0-46.0	2999.7	234.6	6344.5	2.08	56.21
46.0-47.0	2972.1	236.4	6580.9	2.09	58.30
47.0-48.0	2945.2	238.1	6819.0	2.11	60.41
48.0-49.0	2920.8	239.9	7058.9	2.13	62.53
49.0-50.0	2898.7	241.7	7300.6	2.14	64.68
50.0-51.0	2874.5	243.2	7543.8	2.15	66.83
51.0-52.0	2848.3	244.4	7788.3	2.17	69.00
52.0-53.0	2819.4	245.3	8033.6	2.17	71.17
53.0-54.0	2783.1	245.3	8278.9	2.17	73.34
54.0-55.0	2734.9	244.2	8523.1	2.16	75.51
55.0-56.0	2664.2	240.8	8763.8	2.13	77.64
56.0-57.0	2565.1	234.6	8998.4	2.08	79.72
57.0-58.0	2445.9	226.2	9224.6	2.00	81.72
58.0-59.0	2308.2	215.8	9440.4	1.91	83.63
59.0-60.0	2158.7	204.0	9644.4	1.81	85.44
60.0-61.0	2001.1	191.0	9835.4	1.69	87.13
61.0-62.0	1852.8	178.6	10014.0	1.58	88.71
62.0-63.0	1724.3	167.7	10181.7	1.49	90.20
63.0-64.0	1587.8	155.8	10337.5	1.38	91.58
64.0-65.0	1443.9	142.9	10480.4	1.27	92.85
65.0-66.0	1301.3	129.8	10610.3	1.15	94.00
66.0-67.0	1149.7	115.6	10725.9	1.02	95.02
67.0-68.0	999.5	101.3	10827.2	0.90	95.92
68.0-69.0	841.3	85.8	10913.0	0.76	96.68
69.0-70.0	681.8	70.0	10983.0	0.62	97.30
70.0-71.0	559.4	57.8	11040.9	0.51	97.81
71.0-72.0	456.4	47.5	11088.3	0.42	98.23

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	357.4	37.4	11125.7	0.33	98.56
73.0-74.0	268.6	28.2	11153.9	0.25	98.81
74.0-75.0	194.1	20.5	11174.4	0.18	98.99
75.0-76.0	144.7	15.4	11189.8	0.14	99.13
76.0-77.0	113.2	12.1	11201.9	0.11	99.24
77.0-78.0	89.5	9.6	11211.5	0.08	99.32
78.0-79.0	72.2	7.8	11219.2	0.07	99.39
79.0-80.0	58.4	6.3	11225.5	0.06	99.45
80.0-81.0	47.2	5.1	11230.6	0.05	99.49
81.0-82.0	37.7	4.1	11234.7	0.04	99.53
82.0-83.0	28.7	3.1	11237.8	0.03	99.55
83.0-84.0	20.8	2.3	11240.1	0.02	99.57
84.0-85.0	14.0	1.5	11241.6	0.01	99.59
85.0-86.0	8.3	0.9	11242.5	0.01	99.60
86.0-87.0	4.4	0.5	11243.0	0.00	99.60
87.0-88.0	1.8	0.2	11243.2	0.00	99.60
88.0-89.0	0.4	0.0	11243.2	0.00	99.60
89.0-90.0	0.0	0.0	11243.2	0.00	99.60
90.0-91.0	0.0	0.0	11243.2	0.00	99.60
91.0-92.0	0.0	0.0	11243.2	0.00	99.60
92.0-93.0	0.0	0.0	11243.2	0.00	99.60
93.0-94.0	0.1	0.0	11243.2	0.00	99.60
94.0-95.0	0.1	0.0	11243.3	0.00	99.60
95.0-96.0	0.2	0.0	11243.3	0.00	99.60
96.0-97.0	0.4	0.0	11243.3	0.00	99.60
97.0-98.0	0.5	0.1	11243.4	0.00	99.60
98.0-99.0	0.6	0.1	11243.4	0.00	99.60
99.0-100.0	0.7	0.1	11243.5	0.00	99.61
100.0-101.0	1.0	0.1	11243.6	0.00	99.61
101.0-102.0	1.3	0.1	11243.8	0.00	99.61
102.0-103.0	1.6	0.2	11243.9	0.00	99.61
103.0-104.0	1.9	0.2	11244.1	0.00	99.61
104.0-105.0	2.2	0.2	11244.4	0.00	99.61
105.0-106.0	2.5	0.3	11244.7	0.00	99.62
106.0-107.0	2.8	0.3	11244.9	0.00	99.62
107.0-108.0	3.1	0.3	11245.3	0.00	99.62

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	3.4	0.4	11245.6	0.00	99.62
109.0-110.0	3.8	0.4	11246.0	0.00	99.63
110.0-111.0	4.0	0.4	11246.4	0.00	99.63
111.0-112.0	4.1	0.4	11246.9	0.00	99.63
112.0-113.0	4.4	0.4	11247.3	0.00	99.64
113.0-114.0	4.6	0.5	11247.8	0.00	99.64
114.0-115.0	4.8	0.5	11248.2	0.00	99.65
115.0-116.0	4.9	0.5	11248.7	0.00	99.65
116.0-117.0	5.1	0.5	11249.2	0.00	99.66
117.0-118.0	5.3	0.5	11249.7	0.00	99.66
118.0-119.0	5.4	0.5	11250.3	0.00	99.67
119.0-120.0	5.5	0.5	11250.8	0.00	99.67
120.0-121.0	5.8	0.5	11251.3	0.00	99.67
121.0-122.0	6.1	0.6	11251.9	0.01	99.68
122.0-123.0	6.4	0.6	11252.5	0.01	99.68
123.0-124.0	6.6	0.6	11253.1	0.01	99.69
124.0-125.0	6.9	0.6	11253.7	0.01	99.70
125.0-126.0	7.3	0.6	11254.4	0.01	99.70
126.0-127.0	7.6	0.7	11255.1	0.01	99.71
127.0-128.0	8.0	0.7	11255.7	0.01	99.71
128.0-129.0	8.4	0.7	11256.5	0.01	99.72
129.0-130.0	8.7	0.7	11257.2	0.01	99.73
130.0-131.0	9.0	0.7	11258.0	0.01	99.73
131.0-132.0	9.3	0.8	11258.7	0.01	99.74
132.0-133.0	9.8	0.8	11259.5	0.01	99.75
133.0-134.0	10.2	0.8	11260.3	0.01	99.75
134.0-135.0	10.6	0.8	11261.1	0.01	99.76
135.0-136.0	11.0	0.8	11262.0	0.01	99.77
136.0-137.0	11.3	0.8	11262.8	0.01	99.78
137.0-138.0	11.6	0.9	11263.7	0.01	99.78
138.0-139.0	12.0	0.9	11264.6	0.01	99.79
139.0-140.0	12.4	0.9	11265.4	0.01	99.80
140.0-141.0	12.8	0.9	11266.3	0.01	99.81
141.0-142.0	13.2	0.9	11267.2	0.01	99.82
142.0-143.0	13.4	0.9	11268.1	0.01	99.82
143.0-144.0	13.7	0.9	11269.0	0.01	99.83

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	14.1	0.9	11269.9	0.01	99.84
145.0-146.0	14.3	0.9	11270.8	0.01	99.85
146.0-147.0	14.5	0.9	11271.7	0.01	99.85
147.0-148.0	14.7	0.9	11272.6	0.01	99.86
148.0-149.0	15.0	0.9	11273.4	0.01	99.87
149.0-150.0	15.2	0.8	11274.3	0.01	99.88
150.0-151.0	15.3	0.8	11275.1	0.01	99.88
151.0-152.0	15.4	0.8	11275.9	0.01	99.89
152.0-153.0	15.6	0.8	11276.7	0.01	99.90
153.0-154.0	15.7	0.8	11277.5	0.01	99.91
154.0-155.0	15.8	0.7	11278.2	0.01	99.91
155.0-156.0	16.0	0.7	11278.9	0.01	99.92
156.0-157.0	16.1	0.7	11279.6	0.01	99.93
157.0-158.0	16.2	0.7	11280.3	0.01	99.93
158.0-159.0	16.2	0.6	11281.0	0.01	99.94
159.0-160.0	16.2	0.6	11281.6	0.01	99.94
160.0-161.0	16.4	0.6	11282.2	0.01	99.95
161.0-162.0	16.6	0.6	11282.8	0.01	99.95
162.0-163.0	16.7	0.6	11283.3	0.00	99.96
163.0-164.0	16.8	0.5	11283.8	0.00	99.96
164.0-165.0	16.9	0.5	11284.3	0.00	99.97
165.0-166.0	16.9	0.5	11284.8	0.00	99.97
166.0-167.0	17.0	0.4	11285.2	0.00	99.97
167.0-168.0	17.3	0.4	11285.6	0.00	99.98
168.0-169.0	17.3	0.4	11286.0	0.00	99.98
169.0-170.0	17.5	0.3	11286.4	0.00	99.98
170.0-171.0	17.6	0.3	11286.7	0.00	99.99
171.0-172.0	17.8	0.3	11287.0	0.00	99.99
172.0-173.0	18.0	0.3	11287.2	0.00	99.99
173.0-174.0	18.0	0.2	11287.5	0.00	99.99
174.0-175.0	18.0	0.2	11287.6	0.00	100.00
175.0-176.0	18.2	0.2	11287.8	0.00	100.00
176.0-177.0	18.2	0.1	11287.9	0.00	100.00
177.0-178.0	18.3	0.1	11288.0	0.00	100.00
178.0-179.0	18.3	0.1	11288.1	0.00	100.00
179.0-180.0	18.3	0.0	11288.1	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: