
NATA

Client:

LumCAT: 61.0077.000 CR01D04112CC

Luminaire: 2

Report No: GC2019031803

Voltage(V): 11.0900

Test No: GC2019042409

Current(A): 0.2180

LampCAT: CREE XML COLOR

Power (W): 2.4180

Lamp flux(lm): 168.0

PF: 0.0000

Number of Lamps: 1

Ballast type: DC

Length(mm): 41

Width(mm): 41

Phm Type: C

Height(mm): 0

Photometric Results

Lumens(lm): 144.25, Efficiency(%): 85.86% , Luminous Efficacy(lm/W): 59.66

Central intensity(cd): 1805.906, Maximum intensity(cd): 1805.906

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=12.4

[C90/270]Total=12.4

Field angle(10%Imax): [C0/180]Total=23.6

[C90/270]Total=23.6

Maximum s/h(1/2): C0_180=0.22 C90_270=0.22

Maximum s/h(1/4): C0_180=0.22 C90_270=0.22

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 85.86%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 89.966%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	1805.906	0.000	0	.000%	.000%
1.0	1771.102	1.712	1.712	1.019%	1.187%
2.0	1667.461	4.935	6.647	2.938%	4.608%
3.0	1514.320	7.610	14.257	4.530%	9.883%
4.0	1324.730	9.503	23.76	5.657%	16.471%
5.0	1138.943	10.599	34.358	6.309%	23.819%
6.0	948.853	10.972	45.33	6.531%	31.425%
7.0	754.755	10.574	55.905	6.294%	38.755%
8.0	591.398	9.634	65.539	5.735%	45.434%
9.0	434.412	8.314	73.852	4.949%	51.198%
10.0	310.184	6.738	80.591	4.011%	55.869%
11.0	241.263	5.510	86.101	3.280%	59.689%
12.0	164.503	4.436	90.536	2.640%	62.764%
13.0	115.137	3.319	93.855	1.975%	65.064%
14.0	86.885	2.586	96.441	1.539%	66.857%
15.0	68.020	2.127	98.568	1.266%	68.331%
16.0	53.803	1.785	100.353	1.063%	69.569%
17.0	44.262	1.527	101.88	.909%	70.627%
18.0	37.301	1.345	103.225	.800%	71.559%
19.0	31.978	1.205	104.43	.717%	72.395%
20.0	27.668	1.092	105.522	.650%	73.152%
21.0	24.251	0.997	106.518	.593%	73.843%
22.0	21.495	0.919	107.438	.547%	74.480%
23.0	19.575	0.862	108.299	.513%	75.078%
24.0	17.909	0.820	109.119	.488%	75.646%
25.0	16.305	0.778	109.897	.463%	76.185%
26.0	15.103	0.741	110.638	.441%	76.699%
27.0	13.971	0.711	111.35	.423%	77.192%
28.0	13.015	0.683	112.033	.407%	77.666%
29.0	12.101	0.657	112.69	.391%	78.121%
30.0	11.320	0.632	113.322	.376%	78.560%
31.0	10.631	0.611	113.933	.364%	78.983%
32.0	10.090	0.594	114.527	.353%	79.395%
33.0	9.640	0.581	115.108	.346%	79.798%
34.0	9.183	0.570	115.678	.339%	80.193%
35.0	8.789	0.558	116.236	.332%	80.579%
36.0	8.494	0.550	116.786	.328%	80.961%
37.0	8.149	0.543	117.329	.323%	81.337%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	7.840	0.534	117.863	.318%	81.707%
39.0	7.580	0.526	118.389	.313%	82.072%
40.0	7.355	0.521	118.91	.310%	82.433%
41.0	7.200	0.518	119.428	.309%	82.792%
42.0	6.975	0.515	119.943	.307%	83.149%
43.0	6.806	0.510	120.454	.304%	83.503%
44.0	6.750	0.512	120.965	.305%	83.858%
45.0	6.743	0.519	121.484	.309%	84.218%
46.0	6.673	0.525	122.008	.312%	84.581%
47.0	6.581	0.527	122.536	.314%	84.947%
48.0	6.546	0.531	123.066	.316%	85.315%
49.0	6.497	0.536	123.602	.319%	85.686%
50.0	6.448	0.540	124.142	.321%	86.060%
51.0	6.405	0.544	124.685	.324%	86.437%
52.0	6.349	0.547	125.233	.326%	86.816%
53.0	6.251	0.548	125.781	.326%	87.196%
54.0	6.188	0.548	126.329	.326%	87.576%
55.0	6.195	0.553	126.882	.329%	87.960%
56.0	6.237	0.562	127.444	.334%	88.349%
57.0	6.244	0.571	128.014	.340%	88.745%
58.0	6.258	0.578	128.592	.344%	89.145%
59.0	6.307	0.587	129.18	.350%	89.553%
60.0	6.321	0.597	129.776	.355%	89.966%
61.0	6.370	0.606	130.382	.361%	90.386%
62.0	6.405	0.616	130.998	.366%	90.813%
63.0	6.370	0.621	131.619	.370%	91.244%
64.0	6.286	0.621	132.24	.370%	91.674%
65.0	6.209	0.618	132.858	.368%	92.103%
66.0	6.159	0.617	133.475	.367%	92.531%
67.0	6.103	0.617	134.092	.367%	92.958%
68.0	6.026	0.614	134.706	.366%	93.384%
69.0	5.934	0.610	135.317	.363%	93.807%
70.0	5.815	0.603	135.92	.359%	94.225%
71.0	5.590	0.589	136.509	.351%	94.634%
72.0	5.428	0.573	137.082	.341%	95.031%
73.0	5.309	0.561	137.644	.334%	95.420%
74.0	5.133	0.549	138.193	.327%	95.801%
75.0	4.950	0.533	138.725	.317%	96.170%

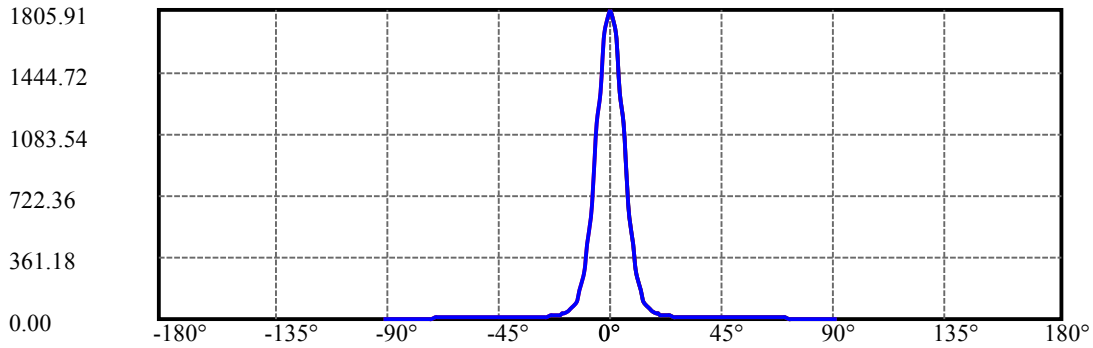
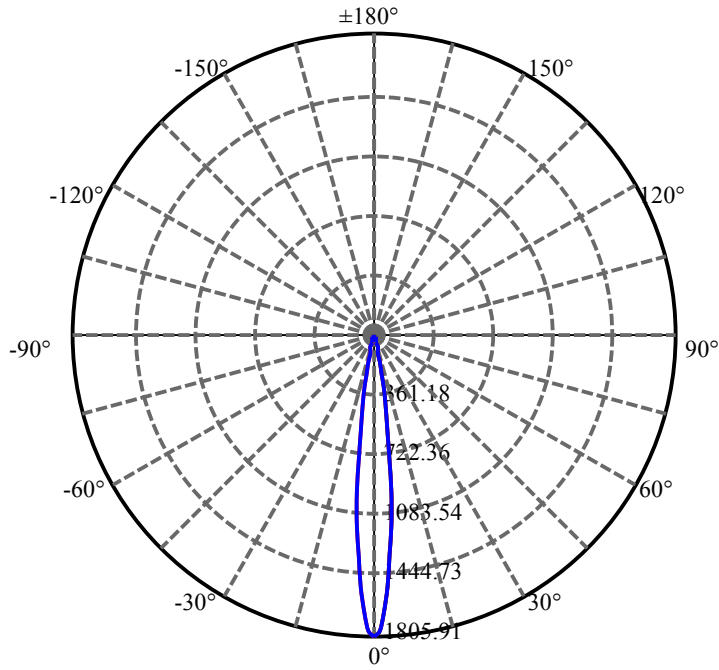
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	4.795	0.517	139.243	.308%	96.529%
77.0	4.627	0.502	139.745	.299%	96.877%
78.0	4.493	0.488	140.233	.291%	97.215%
79.0	4.254	0.470	140.703	.280%	97.541%
80.0	4.015	0.446	141.149	.265%	97.850%
81.0	3.741	0.419	141.568	.250%	98.141%
82.0	3.509	0.393	141.962	.234%	98.413%
83.0	3.319	0.371	142.333	.221%	98.671%
84.0	3.164	0.353	142.686	.210%	98.916%
85.0	2.960	0.334	143.02	.199%	99.147%
86.0	2.735	0.311	143.331	.185%	99.363%
87.0	2.313	0.276	143.608	.164%	99.555%
88.0	1.983	0.235	143.843	.140%	99.718%
89.0	1.800	0.207	144.05	.123%	99.862%
90.0	1.842	0.200	144.25	.119%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	113.32	67.45%	78.56%
0-40	118.91	70.78%	82.43%
0-60	129.78	77.25%	89.97%
0-90	144.05	85.74%	99.86%
0-120	144.05	85.74%	99.86%
0-180	144.25	85.86%	100.00%
60-90	14.87	8.85%	10.31%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-33.51	115.40	68.69%	80.00%

ZONAL LUMEN SUMMARY

0-10	80.59
10-20	24.93
20-30	7.80
30-40	5.59
40-50	5.23
50-60	5.63
60-70	6.14
70-80	5.23
80-90	2.90
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00



C0(Max): —————

C0/C180: —————

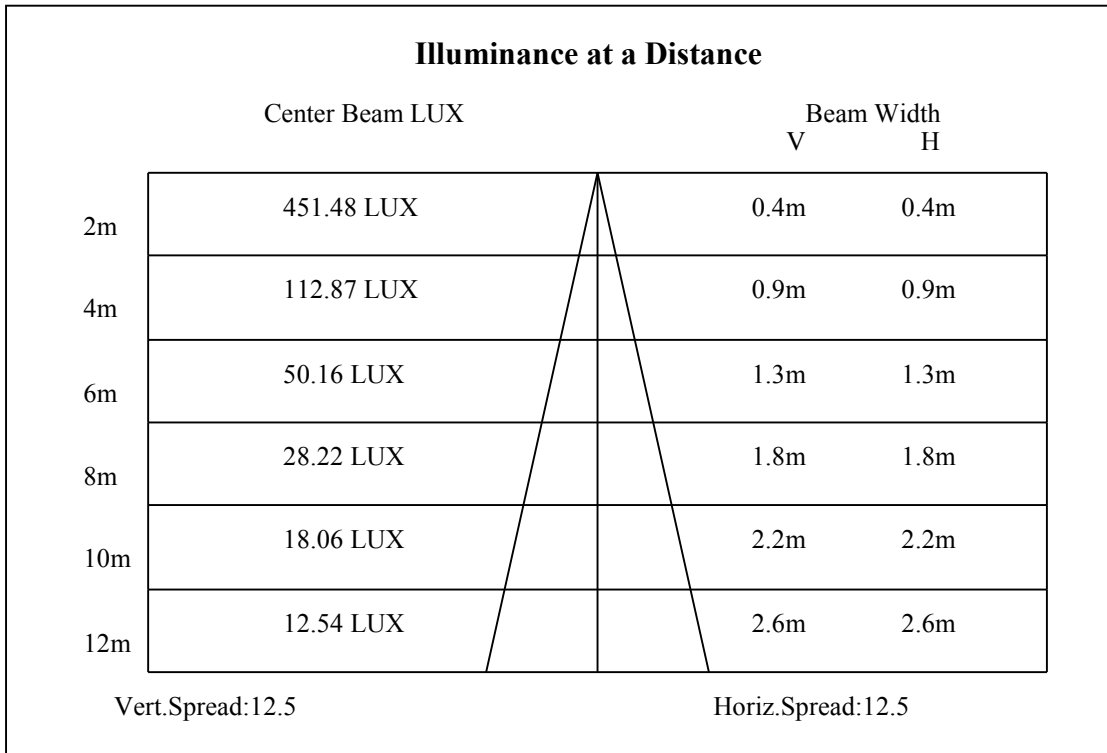
C90/C270: —————

Field angle(10%Imax):C0/180Left:11.8 Right:11.8

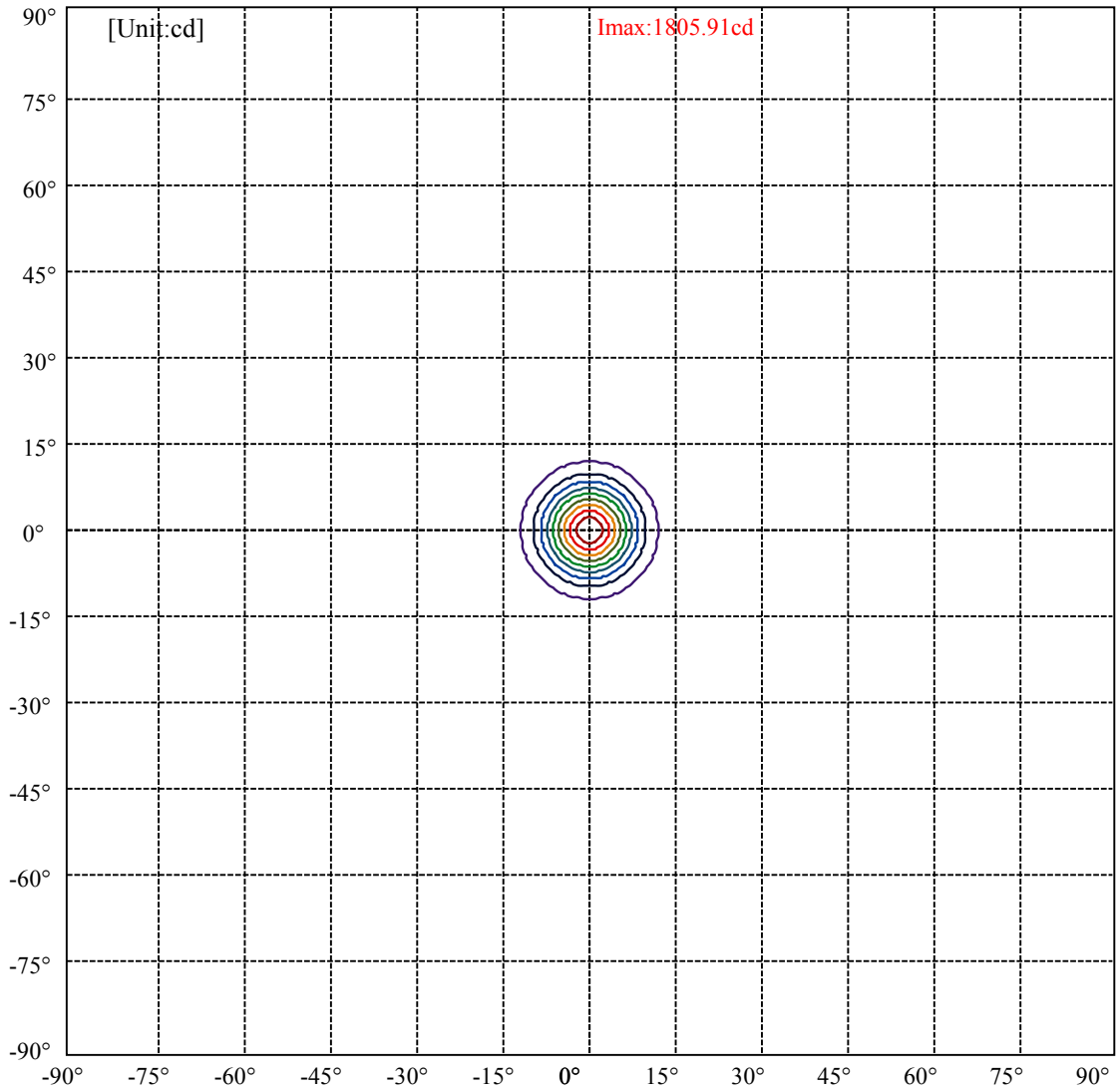
:C90/270Left:11.8 Right:11.8

Beam Angle(50%Imax):C0/180Left:6.2 Right:6.2

:C90/270Left:6.2 Right:6.2



ISO-Intensity(V-H)

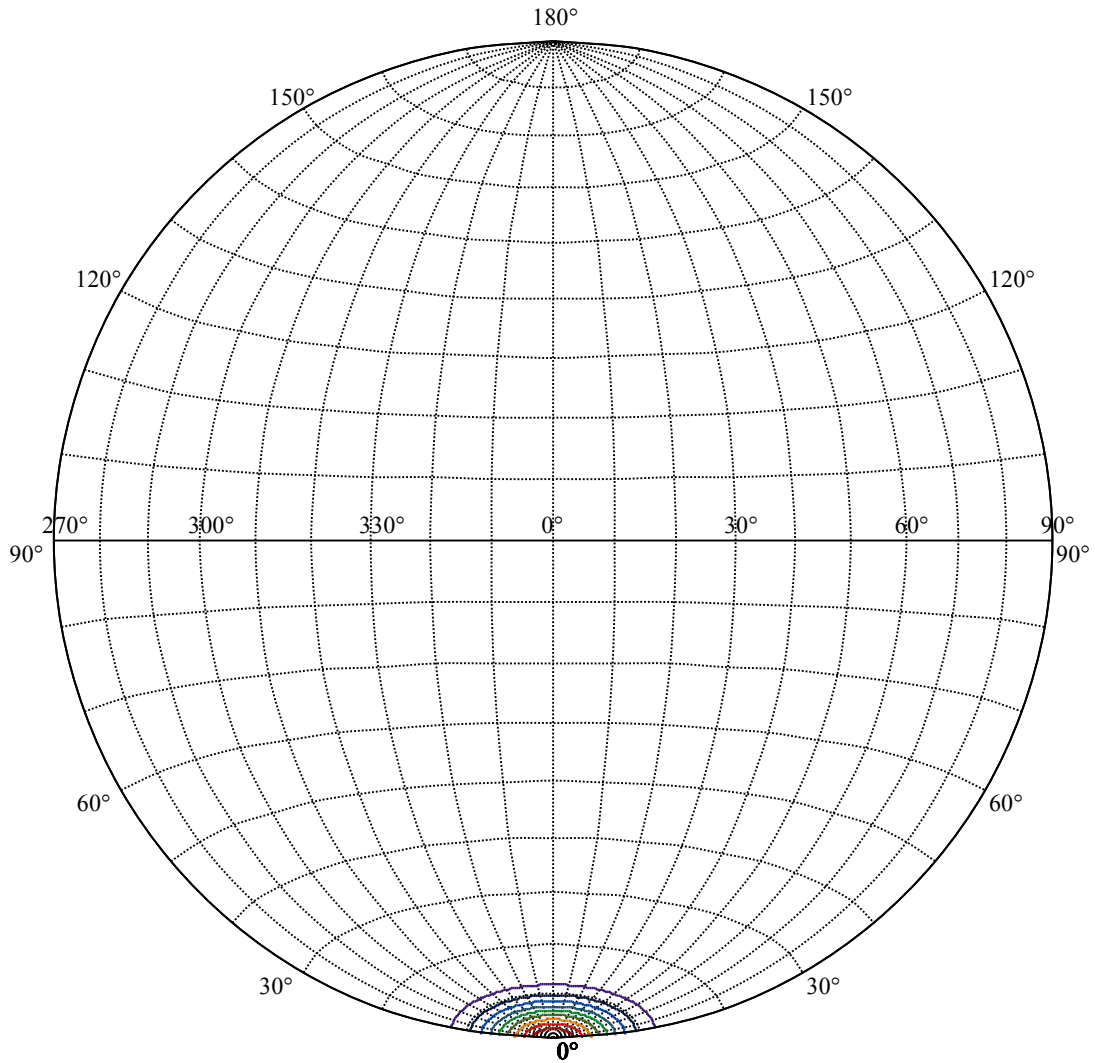


(10%Imax)	180.591	—
(20%Imax)	361.181	—
(30%Imax)	541.772	—
(40%Imax)	722.362	—
(50%Imax)	902.953	—
(60%Imax)	1083.54	—
(70%Imax)	1264.13	—
(80%Imax)	1444.72	—
(90%Imax)	1625.32	—

Equipment: GMS1980
Temperature(°C): 10.0

Date: 2019/4/24
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50



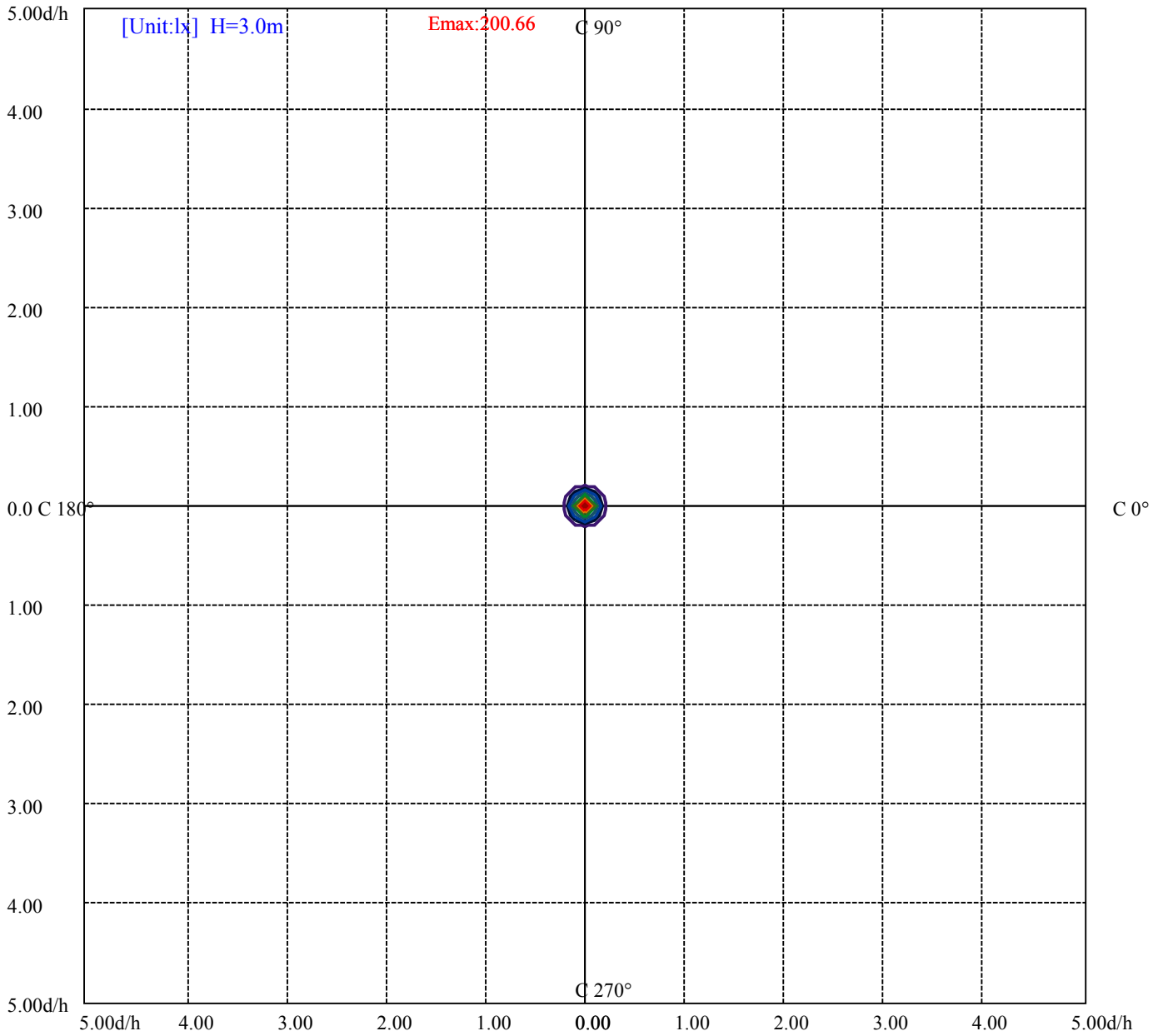
House

[Unit:cd]

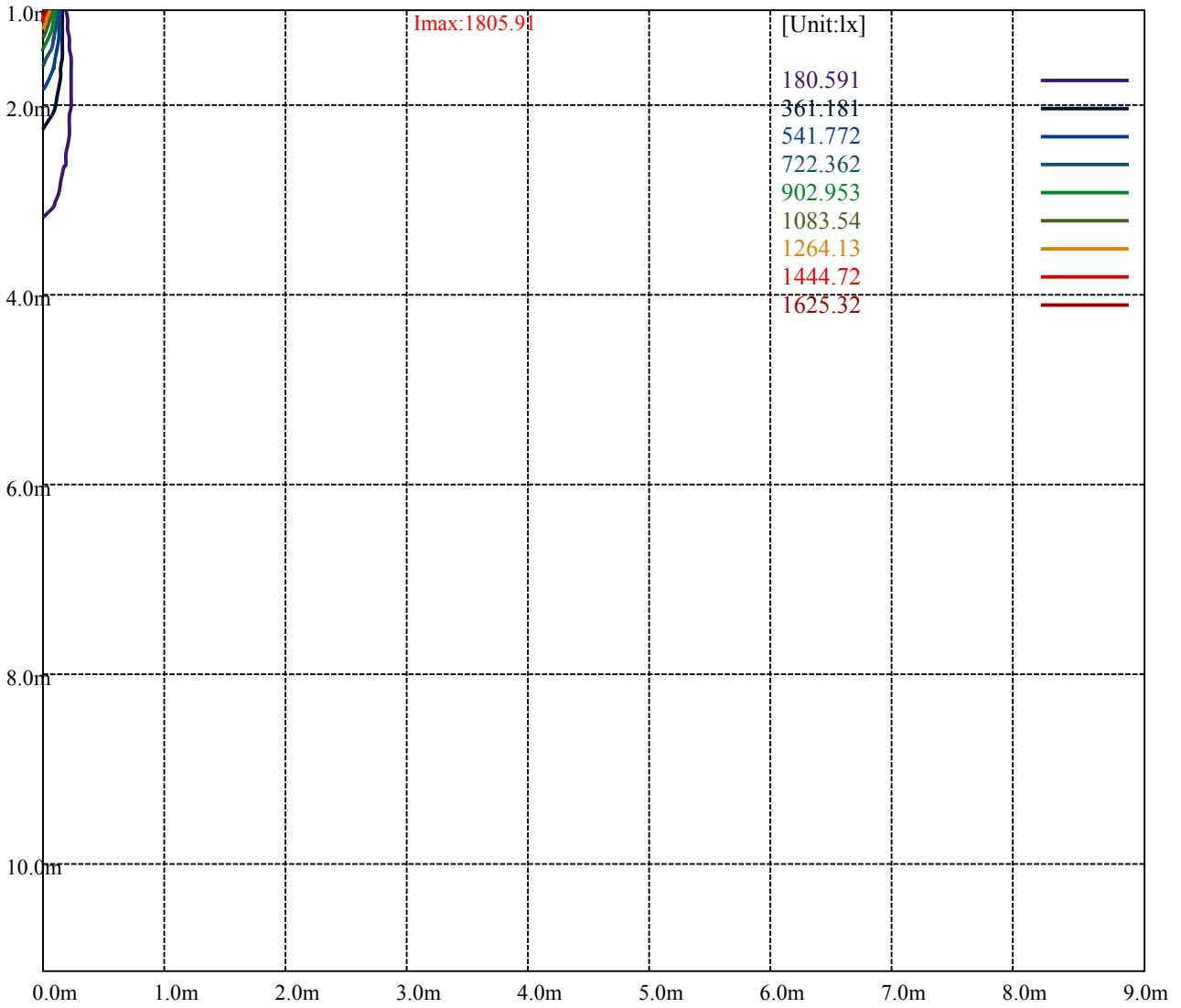
Road

Imax:1805.91

(10%Imax) 180.591	—
(20%Imax) 361.181	—
(30%Imax) 541.772	—
(40%Imax) 722.362	—
(50%Imax) 902.953	—
(60%Imax) 1083.54	—
(70%Imax) 1264.13	—
(80%Imax) 1444.72	—
(90%Imax) 1625.32	—



(10%Emax) 20.06556	—
(20%Emax) 40.13111	—
(30%Emax) 60.19667	—
(40%Emax) 80.26222	—
(50%Emax) 100.3278	—
(60%Emax) 120.3933	—
(70%Emax) 140.4589	—
(80%Emax) 160.5244	—
(90%Emax) 180.59	—



Luminance Table

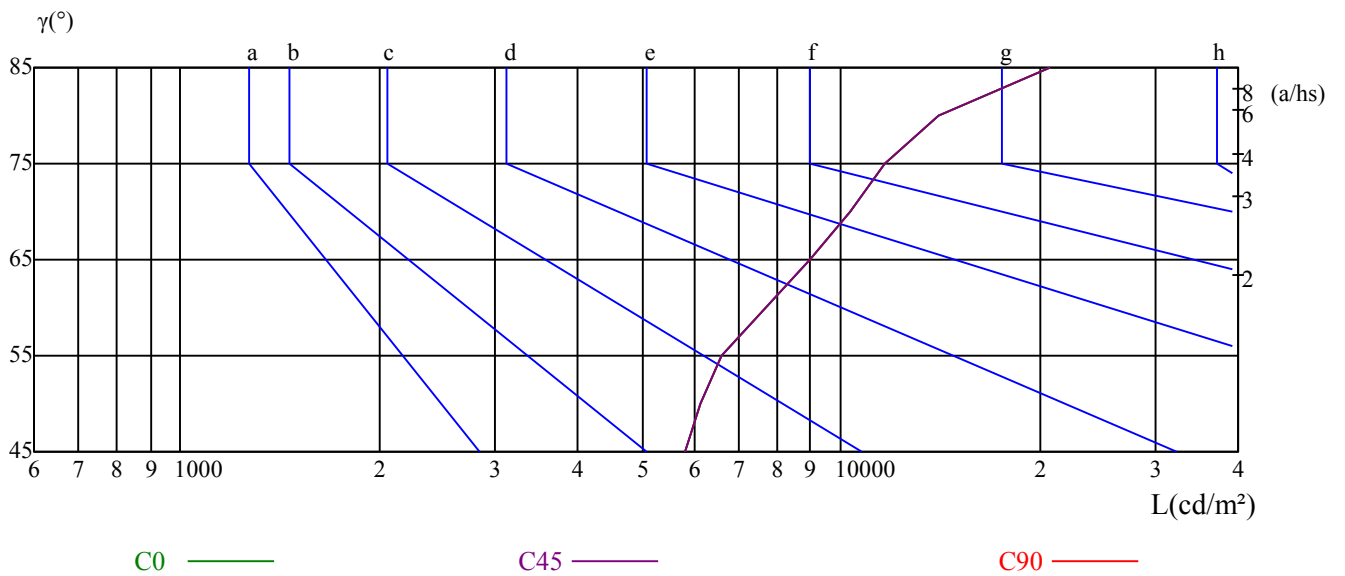
γ	45	50	55	60	65	70	75	80	85
C0	5814	6115	6584	7707	8956	10365	11660	14096	20707
C45	5814	6115	6584	7707	8956	10365	11660	14096	20707
C90	5814	6115	6584	7707	8956	10365	11660	14096	20707

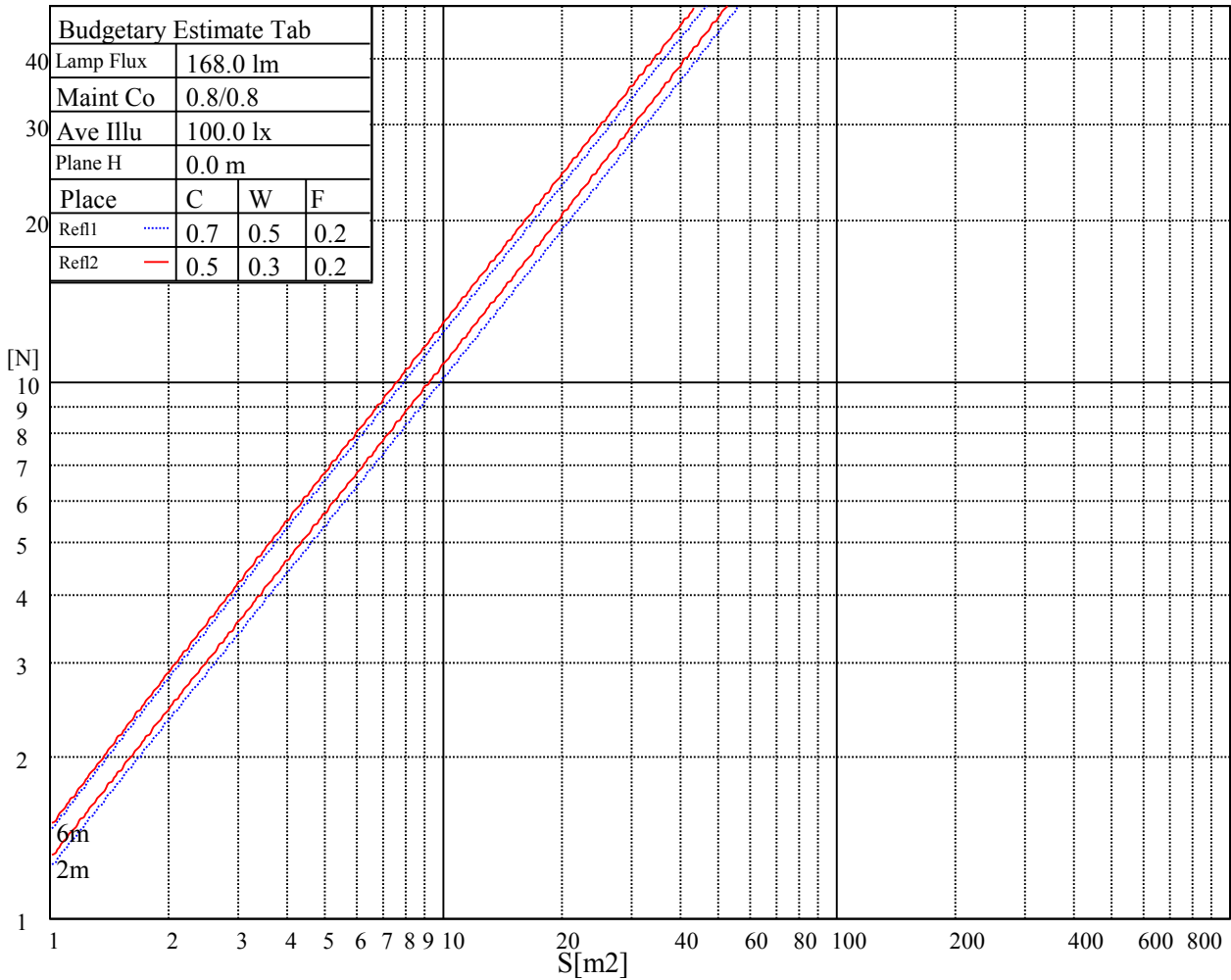
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
8956	8956	8956	11660	11660	11660	20707	20707	20707

Glare Table

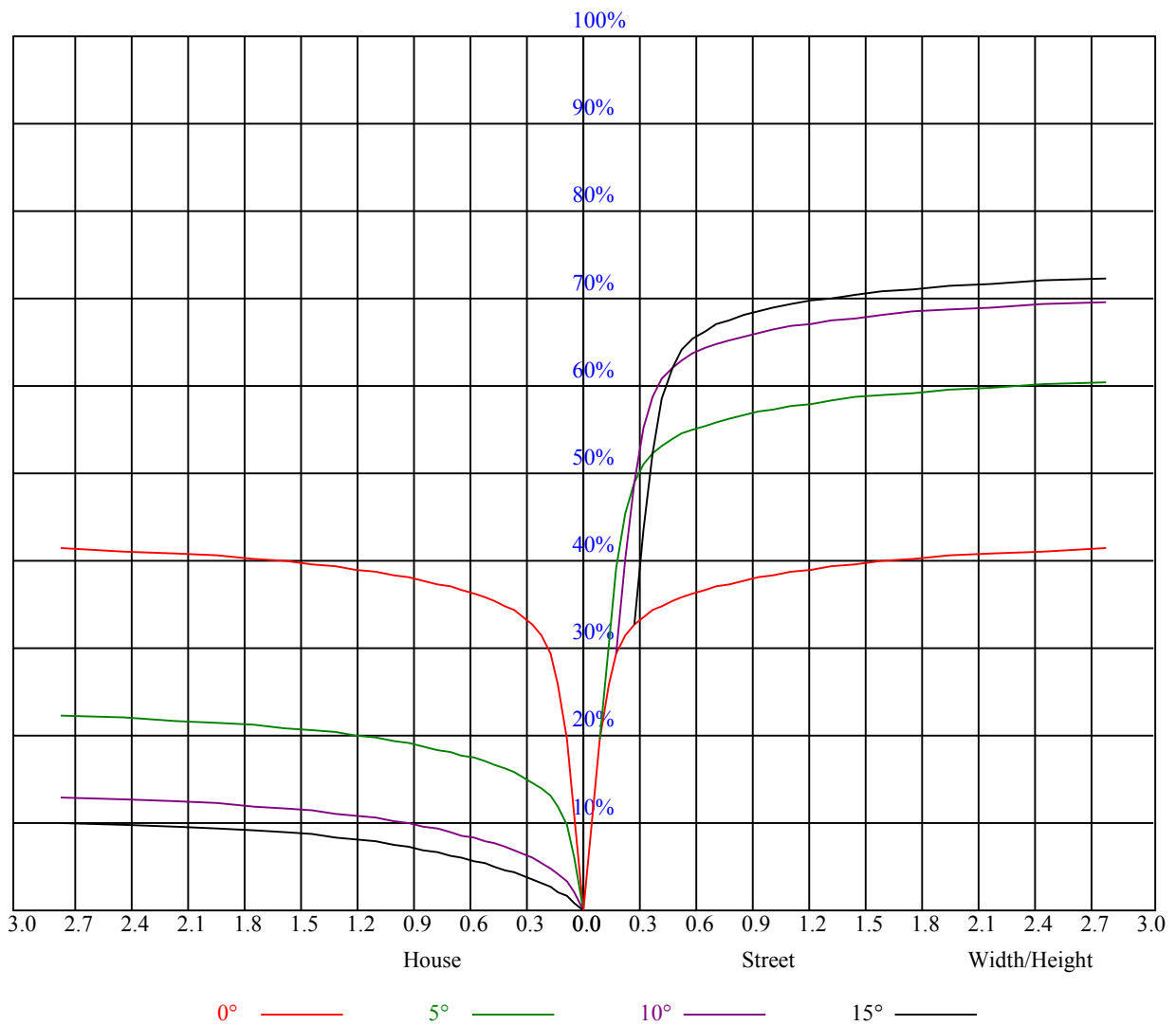
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

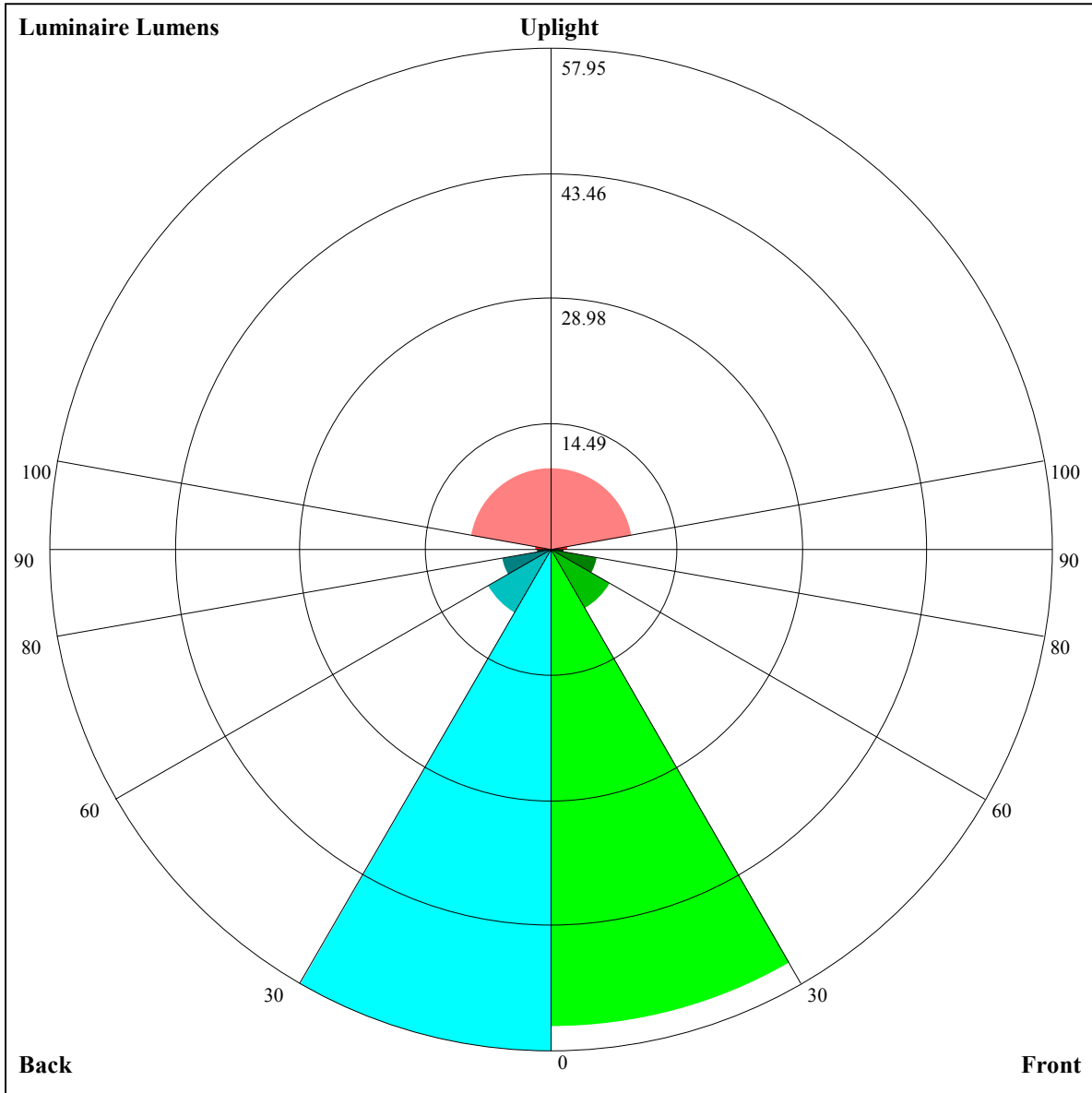
Luminance Limiting Curve





RHOCC	80			70			50			30			10			0
RHOW	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR	COEFFICIENTS OF UTILIZATION RHOFC=20 CU															
0	1.02	1.02	1.02	1.00	1.00	1.00	0.95	0.95	0.95	0.91	0.91	0.91	0.88	0.88	0.88	0.86
1	0.95	0.92	0.90	0.93	0.91	0.89	0.89	0.88	0.86	0.86	0.85	0.84	0.83	0.82	0.81	0.80
2	0.89	0.86	0.83	0.87	0.84	0.82	0.85	0.82	0.80	0.82	0.80	0.78	0.80	0.78	0.77	0.75
3	0.84	0.81	0.77	0.83	0.80	0.77	0.81	0.78	0.76	0.79	0.77	0.74	0.77	0.75	0.73	0.72
4	0.81	0.77	0.74	0.80	0.76	0.73	0.78	0.75	0.72	0.76	0.74	0.72	0.75	0.73	0.71	0.70
5	0.78	0.74	0.71	0.77	0.73	0.70	0.76	0.72	0.70	0.74	0.72	0.69	0.73	0.71	0.69	0.68
6	0.76	0.71	0.69	0.75	0.71	0.68	0.74	0.70	0.68	0.73	0.70	0.67	0.72	0.69	0.67	0.66
7	0.73	0.69	0.67	0.73	0.69	0.67	0.72	0.69	0.66	0.71	0.68	0.66	0.70	0.68	0.66	0.65
8	0.72	0.68	0.65	0.71	0.68	0.65	0.70	0.67	0.65	0.70	0.67	0.65	0.69	0.66	0.64	0.63
9	0.70	0.66	0.64	0.70	0.66	0.64	0.69	0.66	0.64	0.68	0.66	0.63	0.68	0.65	0.63	0.62
10	0.69	0.65	0.63	0.68	0.65	0.63	0.68	0.65	0.63	0.67	0.65	0.63	0.67	0.64	0.62	0.62





Luminaire Lumens:

FL=55.17,FM=7.93,FH=5.34,FVH=1.45

BL=57.95,BM=8.44,BH=5.86,BVH=1.64

UL=2.01,UH=9.56

BUG Rating:B0-U1-G0

Intensity data(cd)

C/γ(°)	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0
0.0	1772.44	1762.31	1663.31	1535.06	1397.25	1155.38	973.69	800.44	618.19
45.0	1797.75	1752.75	1637.44	1489.50	1299.94	1103.06	919.13	720.56	563.06
90.0	1831.50	1798.88	1701.56	1541.25	1362.94	1112.23	972.84	770.74	603.73
135.0	1821.94	1841.63	1782.00	1655.44	1503.00	1334.81	1107.56	920.25	740.81
180.0	1772.44	1724.63	1612.13	1451.81	1234.13	1116.39	906.02	704.36	541.91
225.0	1797.75	1767.94	1686.94	1521.00	1358.44	1105.31	963.28	759.60	594.06
270.0	1831.50	1787.63	1679.63	1511.44	1337.63	1149.75	920.25	743.06	578.25
315.0	1821.94	1733.06	1576.69	1409.06	1104.53	1034.61	828.06	619.03	491.18
360.0	1772.44	1762.31	1663.31	1535.06	1397.25	1155.38	973.69	800.44	618.19
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	460.13	357.75	285.75	181.07	130.39	95.85	74.31	58.11	46.80
45.0	407.81	286.88	235.91	150.19	103.78	79.71	63.00	48.66	40.67
90.0	454.33	304.59	218.98	159.24	113.34	82.80	65.19	51.53	41.85
135.0	557.44	404.44	295.31	231.86	143.33	109.07	84.99	65.87	52.48
180.0	389.93	274.67	201.60	143.78	108.62	81.51	62.61	51.64	43.82
225.0	432.34	305.78	222.02	155.76	115.26	85.33	65.53	53.21	44.21
270.0	406.13	297.56	285.75	156.71	108.84	84.26	66.88	53.16	43.48
315.0	367.20	249.81	184.78	137.42	97.54	76.56	61.65	48.26	40.78
360.0	460.13	357.75	285.75	181.07	130.39	95.85	74.31	58.11	46.80
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	39.88	34.71	28.91	25.37	22.39	20.25	18.79	17.33	15.69
45.0	34.59	30.04	25.54	22.61	20.03	18.17	16.37	14.91	13.89
90.0	35.44	29.98	26.16	22.84	19.97	18.11	16.71	14.91	13.84
135.0	43.71	36.34	30.88	27.34	24.02	21.60	19.41	17.72	16.43
180.0	36.73	32.18	28.29	24.24	21.94	20.31	18.62	17.10	15.81
225.0	36.34	31.67	27.96	24.08	21.60	19.74	18.28	16.54	15.36
270.0	36.96	31.56	27.34	24.41	21.54	19.52	17.89	16.43	15.19
315.0	34.76	29.36	26.27	23.12	20.48	18.90	17.21	15.53	14.63
360.0	39.88	34.71	28.91	25.37	22.39	20.25	18.79	17.33	15.69
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	14.34	13.50	12.43	11.76	10.97	10.24	9.73	9.23	8.55
45.0	12.77	11.81	10.97	10.24	9.51	9.00	8.55	7.99	7.71
90.0	12.88	11.87	10.97	10.29	9.68	9.06	8.72	8.33	7.93
135.0	15.36	14.23	13.39	12.32	11.59	11.03	10.63	10.18	9.68
180.0	14.68	13.95	12.77	11.87	11.14	10.63	10.13	9.73	9.34
225.0	14.12	13.28	12.32	11.53	10.86	10.29	9.84	9.34	9.06
270.0	13.89	12.88	12.09	11.31	10.63	10.13	9.68	9.28	8.94
315.0	13.73	12.60	11.87	11.25	10.69	10.35	9.84	9.39	9.11
360.0	14.34	13.50	12.43	11.76	10.97	10.24	9.73	9.23	8.55
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	8.21	7.88	7.48	7.31	6.98	6.75	6.58	6.47	6.53
45.0	7.48	7.20	6.98	6.69	6.58	6.41	6.19	6.08	6.02
90.0	7.71	7.37	7.09	6.86	6.69	6.58	6.41	6.19	6.13
135.0	9.28	8.94	8.49	8.16	7.88	7.76	7.43	7.20	7.03
180.0	9.11	8.78	8.44	8.16	7.88	7.65	7.43	7.31	7.26
225.0	8.78	8.38	8.16	7.88	7.65	7.48	7.37	7.20	7.20
270.0	8.66	8.33	8.04	7.76	7.59	7.48	7.20	7.03	6.98
315.0	8.72	8.33	8.04	7.82	7.59	7.48	7.20	6.98	6.86
360.0	8.21	7.88	7.48	7.31	6.98	6.75	6.58	6.47	6.53

Intensity data(cd)

C/γ(°)	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0
0.0	6.58	6.81	6.58	6.53	6.53	6.41	6.36	6.13	5.91
45.0	6.08	5.91	5.79	5.63	5.51	5.51	5.46	5.34	5.29
90.0	6.13	6.08	6.02	6.13	6.02	5.96	6.02	6.08	6.02
135.0	6.98	6.86	6.81	6.81	6.86	6.75	6.69	6.69	6.53
180.0	7.20	7.03	6.98	6.86	6.86	6.92	6.86	6.75	6.69
225.0	7.26	7.14	6.92	6.86	6.75	6.75	6.75	6.81	6.64
270.0	6.86	6.75	6.69	6.69	6.75	6.58	6.47	6.47	6.41
315.0	6.86	6.81	6.86	6.86	6.69	6.69	6.64	6.53	6.53
360.0	6.58	6.81	6.58	6.53	6.53	6.41	6.36	6.13	5.91
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	5.63	5.57	5.74	5.85	6.13	6.47	6.64	6.69	6.92
45.0	5.29	5.29	5.34	5.29	5.29	5.23	5.23	5.18	5.23
90.0	5.96	6.02	6.02	6.02	6.08	6.08	6.13	6.13	6.19
135.0	6.47	6.47	6.53	6.36	6.30	6.24	6.36	6.47	6.47
180.0	6.69	6.69	6.75	6.86	6.92	7.03	6.98	7.14	7.14
225.0	6.69	6.75	6.81	7.03	6.86	6.86	6.81	6.98	7.09
270.0	6.24	6.24	6.19	6.08	6.08	6.08	5.96	5.85	5.79
315.0	6.53	6.53	6.53	6.47	6.41	6.47	6.47	6.53	6.41
360.0	5.63	5.57	5.74	5.85	6.13	6.47	6.64	6.69	6.92
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	6.81	6.53	6.30	6.36	6.47	6.58	6.53	6.58	6.41
45.0	5.12	5.01	4.95	4.84	4.78	4.61	4.50	4.33	3.99
90.0	6.24	6.24	6.24	6.19	6.13	6.08	6.02	5.91	5.74
135.0	6.36	6.24	6.24	6.24	6.08	5.96	5.91	5.79	5.63
180.0	7.14	7.20	7.20	7.20	7.14	7.09	7.09	6.98	6.75
225.0	7.20	7.14	6.98	6.92	6.86	6.81	6.64	6.47	6.24
270.0	5.79	5.68	5.51	5.40	5.34	5.18	5.01	4.89	4.67
315.0	6.30	6.24	6.24	6.13	6.02	5.91	5.79	5.57	5.29
360.0	6.81	6.53	6.30	6.36	6.47	6.58	6.53	6.58	6.41
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	6.30	6.24	6.08	5.91	5.79	5.68	5.51	5.29	4.95
45.0	3.83	3.66	3.54	3.38	3.32	3.15	3.04	2.93	2.81
90.0	5.63	5.51	5.29	5.06	4.84	4.56	4.33	3.99	3.71
135.0	5.46	5.29	5.18	5.01	4.84	4.67	4.50	4.28	4.11
180.0	6.58	6.53	6.19	5.91	5.79	5.63	5.79	5.34	5.01
225.0	6.02	5.91	5.79	5.57	5.29	5.12	4.89	4.67	4.39
270.0	4.50	4.33	4.16	4.05	3.99	3.88	3.71	3.66	3.54
315.0	5.12	5.01	4.84	4.73	4.50	4.33	4.16	3.88	3.60
360.0	6.30	6.24	6.08	5.91	5.79	5.68	5.51	5.29	4.95
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	4.56	4.16	3.88	3.54	3.26	2.98	2.53	1.86	1.46
45.0	2.64	2.48	2.31	2.31	2.25	1.91	1.46	1.35	1.41
90.0	3.49	3.21	2.98	2.81	2.53	2.25	1.91	1.58	1.41
135.0	3.88	3.66	3.49	3.26	3.15	3.09	2.76	2.59	2.36
180.0	4.33	3.99	3.66	3.49	3.21	2.76	2.31	2.03	2.08
225.0	4.16	3.99	3.83	3.66	3.43	3.26	2.81	2.25	1.91
270.0	3.43	3.38	3.26	3.26	3.09	3.09	2.70	2.42	2.03
315.0	3.43	3.21	3.15	2.98	2.76	2.53	2.03	1.80	1.74
360.0	4.56	4.16	3.88	3.54	3.26	2.98	2.53	1.86	1.46

Intensity data(cd)

C/ γ (°)	90.0
0.0	1.35
45.0	1.69
90.0	1.52
135.0	2.48
180.0	2.03
225.0	1.91
270.0	2.03
315.0	1.74
360.0	1.35