
Nata

Client:

LumCAT: 3-1880-L

Luminaire: 92.70.131.00

Report No: NT2018010913

Test No: GC2018010913

LampCAT: SEOUL SAWx15

Lamp flux(lm): 3105.0

Number of Lamps: 1

Length(mm): 74

Phm Type: C

Voltage(V): 34.6000

Current(A): 0.6400

Power (W): 22.1440

PF: 0.0000

Ballast type: DC

Width(mm): 74

Height(mm): 0

Photometric Results

Lumens(lm): 3027.29, Efficiency(%): 97.50% , Luminous Efficacy(lm/W): 136.71

Central intensity(cd): 23239.310, Maximum intensity(cd): 23239.310

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=15.0

[C90/270]Total=15.0

Field angle(10%Imax): [C0/180]Total=32.8

[C90/270]Total=32.8

Maximum s/h(1/2): C0_180=0.26 C90_270=0.26

Maximum s/h(1/4): C0_180=0.26 C90_270=0.26

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 97.67%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 98.276%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	23239.307	5.560	5.56	.179%	.184%
1.0	23021.145	44.059	49.619	1.419%	1.639%
2.0	22461.635	85.963	135.582	2.769%	4.479%
3.0	21457.545	123.149	258.731	3.966%	8.547%
4.0	19922.848	152.401	411.132	4.908%	13.581%
5.0	18053.682	172.549	583.682	5.557%	19.281%
6.0	14909.961	170.908	754.59	5.504%	24.926%
7.0	12729.590	170.122	924.712	5.479%	30.546%
8.0	10492.924	160.141	1084.853	5.158%	35.836%
9.0	8490.798	145.657	1230.511	4.691%	40.647%
10.0	6754.594	128.624	1359.134	4.142%	44.896%
11.0	5586.917	116.902	1476.037	3.765%	48.758%
12.0	4673.531	106.555	1582.592	3.432%	52.277%
13.0	3816.028	94.135	1676.727	3.032%	55.387%
14.0	3256.242	86.386	1763.113	2.782%	58.241%
15.0	2803.954	79.583	1842.696	2.563%	60.869%
16.0	2454.965	74.205	1916.901	2.390%	63.321%
17.0	2089.941	67.007	1983.908	2.158%	65.534%
18.0	1872.262	63.445	2047.354	2.043%	67.630%
19.0	1686.309	60.205	2107.559	1.939%	69.619%
20.0	1544.676	57.935	2165.494	1.866%	71.532%
21.0	1434.563	56.377	2221.87	1.816%	73.395%
22.0	1342.206	55.137	2277.008	1.776%	75.216%
23.0	1269.738	54.406	2331.413	1.752%	77.013%
24.0	1205.529	53.770	2385.184	1.732%	78.789%
25.0	1150.940	53.340	2438.524	1.718%	80.551%
26.0	1106.943	53.213	2491.737	1.714%	82.309%
27.0	1074.577	53.498	2545.235	1.723%	84.076%
28.0	1036.354	53.354	2598.589	1.718%	85.839%
29.0	997.973	53.057	2651.646	1.709%	87.591%
30.0	948.622	52.013	2703.659	1.675%	89.309%
31.0	868.260	49.039	2752.698	1.579%	90.929%
32.0	764.190	44.408	2797.106	1.430%	92.396%
33.0	662.377	39.561	2836.667	1.274%	93.703%
34.0	541.370	33.198	2869.865	1.069%	94.800%
35.0	421.003	26.481	2896.345	.853%	95.674%
36.0	316.120	20.376	2916.722	.656%	96.347%
37.0	216.778	14.306	2931.028	.461%	96.820%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	136.953	9.246	2940.274	.298%	97.125%
39.0	64.815	4.473	2944.747	.144%	97.273%
40.0	37.734	2.660	2947.407	.086%	97.361%
41.0	29.056	2.090	2949.497	.067%	97.430%
42.0	25.519	1.872	2951.37	.060%	97.492%
43.0	23.296	1.742	2953.112	.056%	97.550%
44.0	22.435	1.709	2954.821	.055%	97.606%
45.0	21.871	1.696	2956.517	.055%	97.662%
46.0	21.238	1.675	2958.192	.054%	97.717%
47.0	20.674	1.658	2959.85	.053%	97.772%
48.0	20.082	1.637	2961.487	.053%	97.826%
49.0	19.511	1.615	2963.102	.052%	97.880%
50.0	18.994	1.596	2964.697	.051%	97.932%
51.0	18.588	1.584	2966.282	.051%	97.985%
52.0	18.231	1.575	2967.857	.051%	98.037%
53.0	17.873	1.565	2969.422	.050%	98.088%
54.0	17.604	1.562	2970.984	.050%	98.140%
55.0	17.398	1.563	2972.547	.050%	98.192%
56.0	17.253	1.569	2974.115	.051%	98.243%
57.0	17.109	1.573	2975.689	.051%	98.295%
58.0	16.999	1.581	2977.27	.051%	98.348%
59.0	16.854	1.584	2978.854	.051%	98.400%
60.0	16.737	1.590	2980.443	.051%	98.452%
61.0	16.627	1.595	2982.038	.051%	98.505%
62.0	16.496	1.597	2983.635	.051%	98.558%
63.0	16.379	1.600	2985.236	.052%	98.611%
64.0	16.235	1.600	2986.836	.052%	98.664%
65.0	16.083	1.598	2988.434	.051%	98.716%
66.0	15.939	1.597	2990.031	.051%	98.769%
67.0	15.808	1.596	2991.627	.051%	98.822%
68.0	15.664	1.593	2993.22	.051%	98.874%
69.0	15.553	1.592	2994.812	.051%	98.927%
70.0	15.423	1.589	2996.401	.051%	98.979%
71.0	15.333	1.590	2997.991	.051%	99.032%
72.0	15.244	1.590	2999.581	.051%	99.085%
73.0	15.134	1.587	3001.168	.051%	99.137%
74.0	14.968	1.578	3002.746	.051%	99.189%
75.0	14.790	1.567	3004.312	.050%	99.241%

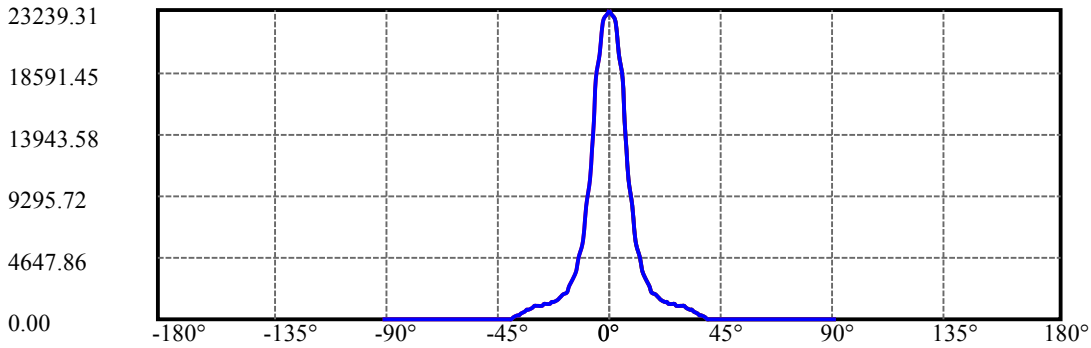
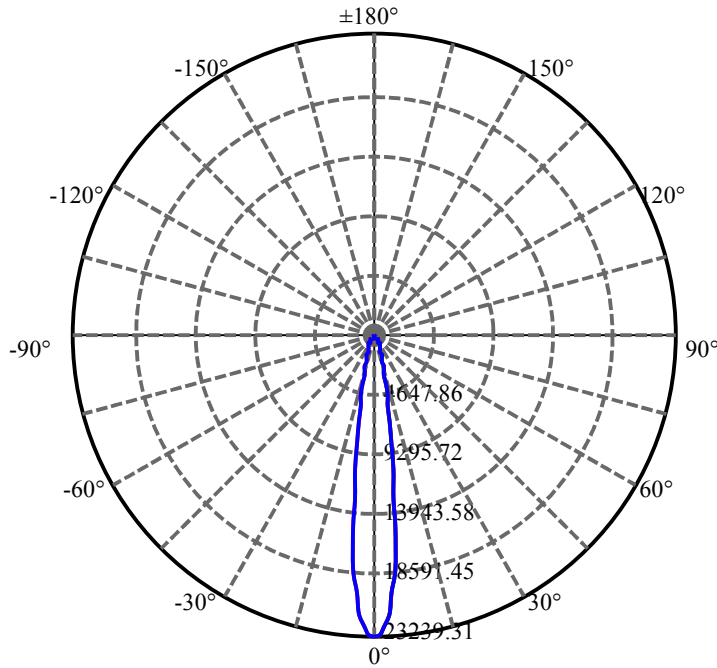
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	14.679	1.562	3005.874	.050%	99.292%
77.0	14.624	1.563	3007.437	.050%	99.344%
78.0	14.562	1.562	3008.999	.050%	99.396%
79.0	14.652	1.577	3010.576	.051%	99.448%
80.0	14.803	1.599	3012.175	.051%	99.501%
81.0	15.079	1.633	3013.808	.053%	99.554%
82.0	15.326	1.664	3015.472	.054%	99.609%
83.0	15.333	1.669	3017.141	.054%	99.665%
84.0	14.542	1.586	3018.727	.051%	99.717%
85.0	14.542	1.589	3020.316	.051%	99.769%
86.0	14.583	1.595	3021.911	.051%	99.822%
87.0	14.205	1.556	3023.467	.050%	99.874%
88.0	14.032	1.538	3025.004	.050%	99.924%
89.0	13.943	1.529	3026.533	.049%	99.975%
90.0	13.888	0.761	3027.295	.025%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	2703.66	87.07%	89.31%
0-40	2947.41	94.92%	97.36%
0-60	2980.44	95.99%	98.45%
0-90	3026.53	97.47%	99.97%
0-120	3026.53	97.47%	99.97%
0-180	3027.29	97.50%	100.00%
60-90	47.68	1.54%	1.57%
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%
0-24.69	2421.84	78.00%	80.00%

ZONAL LUMEN SUMMARY

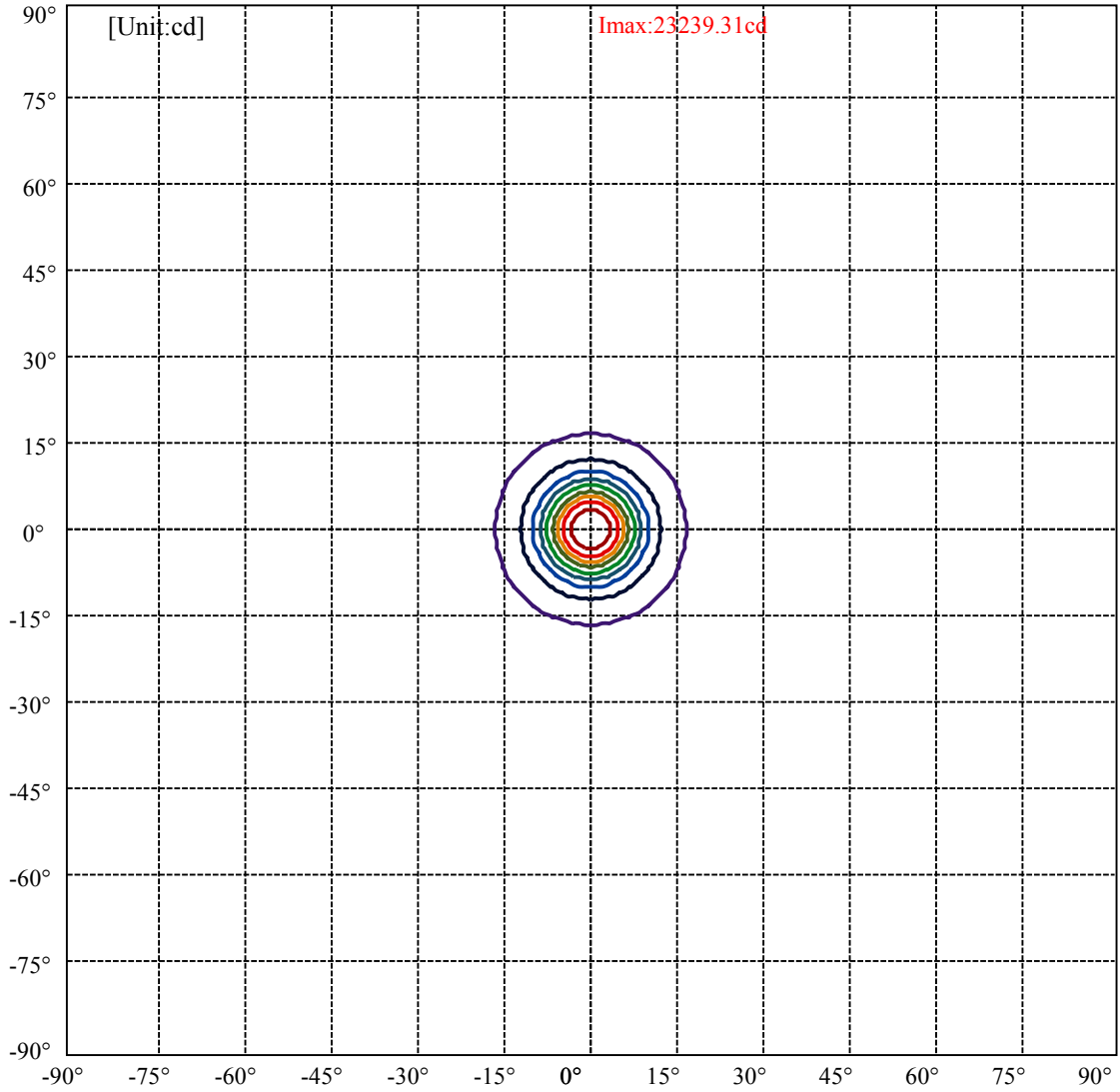
0-10	1359.13
10-20	806.36
20-30	538.17
30-40	243.75
40-50	17.29
50-60	15.75
60-70	15.96
70-80	15.77
80-90	14.36
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00



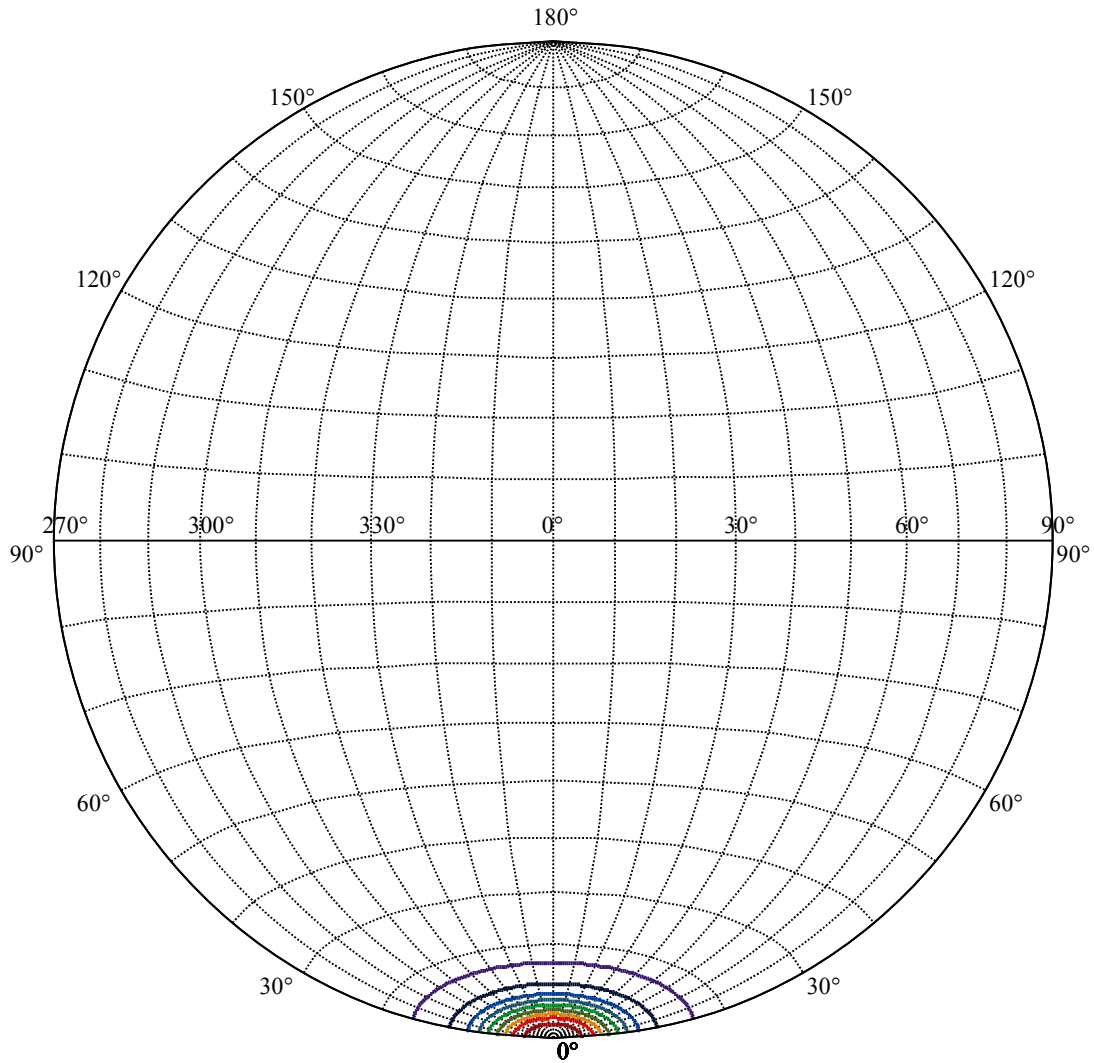
C0(Max): —————
C0/C180: —————
C90/C270: —————

Field angle(10%Imax):C0/180Left:16.4 Right:16.4
:C90/270Left:16.4 Right:16.4

Beam Angle(50%Imax):C0/180Left:7.5 Right:7.5
:C90/270Left:7.5 Right:7.5



(10%Imax) 2323.93	—
(20%Imax) 4647.86	—
(30%Imax) 6971.79	—
(40%Imax) 9295.72	—
(50%Imax) 11619.7	—
(60%Imax) 13943.6	—
(70%Imax) 16267.5	—
(80%Imax) 18591.4	—
(90%Imax) 20915.4	—



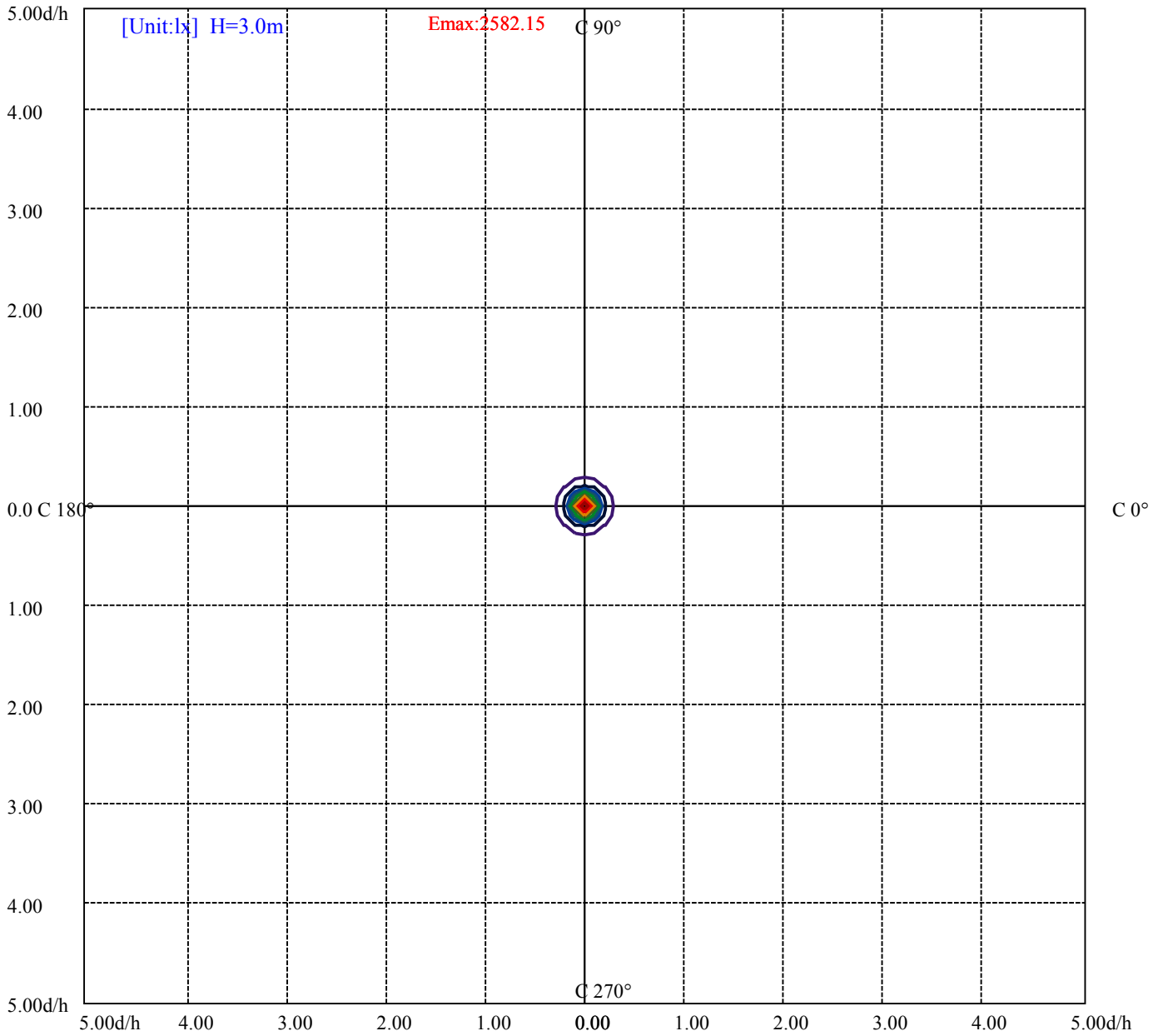
House

[Unit:cd]

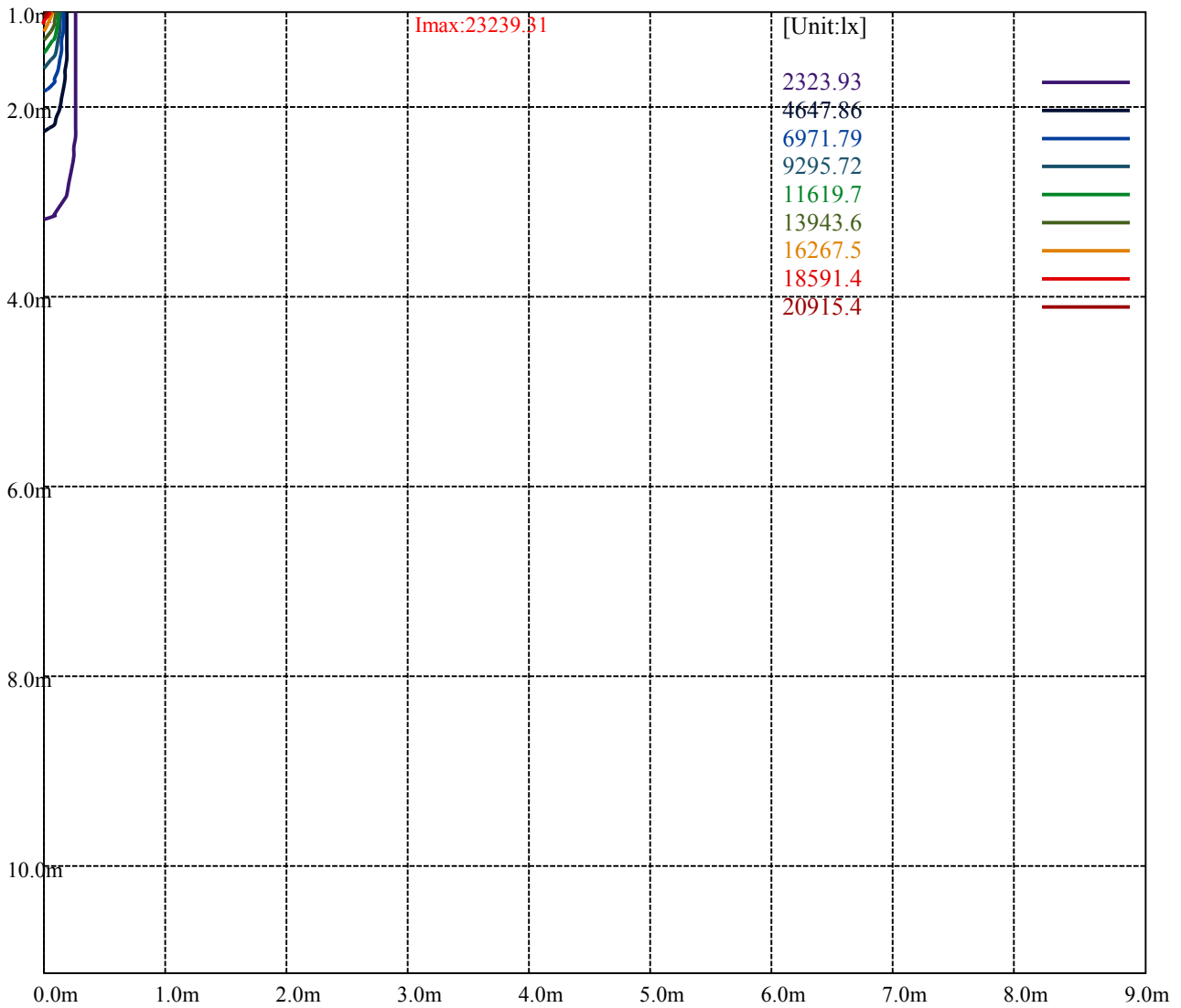
Road

Imax:23239.31

(10%Imax) 2323.93	—
(20%Imax) 4647.86	—
(30%Imax) 6971.79	—
(40%Imax) 9295.72	—
(50%Imax) 11619.7	—
(60%Imax) 13943.6	—
(70%Imax) 16267.5	—
(80%Imax) 18591.4	—
(90%Imax) 20915.4	—



(10%Emax) 258.2144	—
(20%Emax) 516.4278	—
(30%Emax) 774.6422	—
(40%Emax) 1032.857	—
(50%Emax) 1291.067	—
(60%Emax) 1549.289	—
(70%Emax) 1807.5	—
(80%Emax) 2065.711	—
(90%Emax) 2323.922	—



Luminance Table

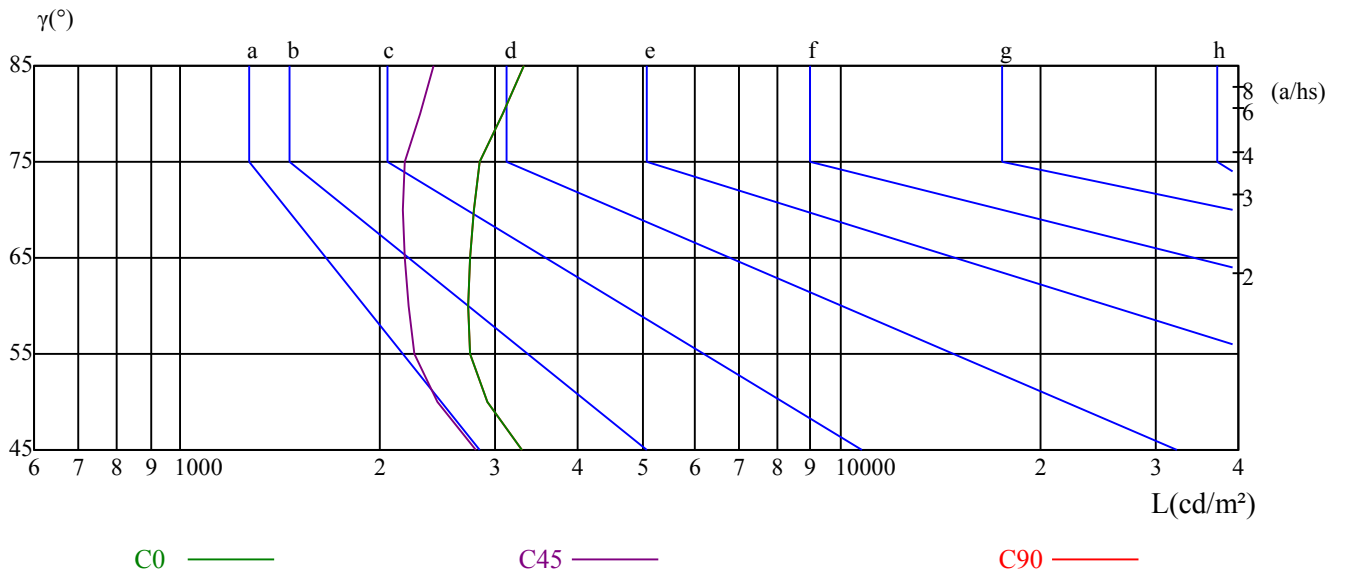
γ	45	50	55	60	65	70	75	80	85
C0	3291	2911	2738	2728	2740	2775	2841	3075	3317
C45	2806	2445	2264	2219	2191	2177	2183	2308	2423
C90	3291	2911	2738	2728	2740	2775	2841	3075	3317

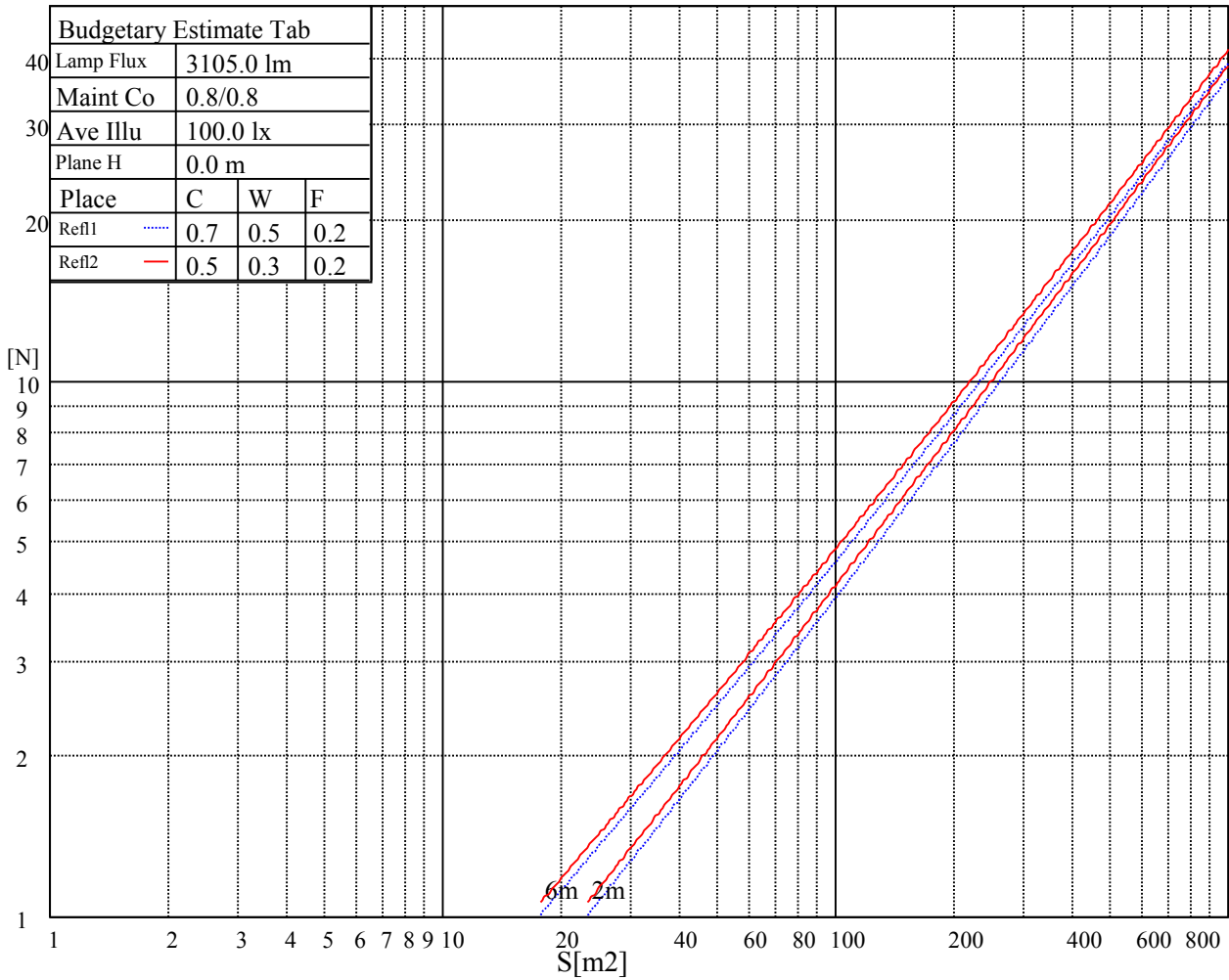
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
6950	6950	6950	10435	10435	10435	30469	30469	30469

Glare Table

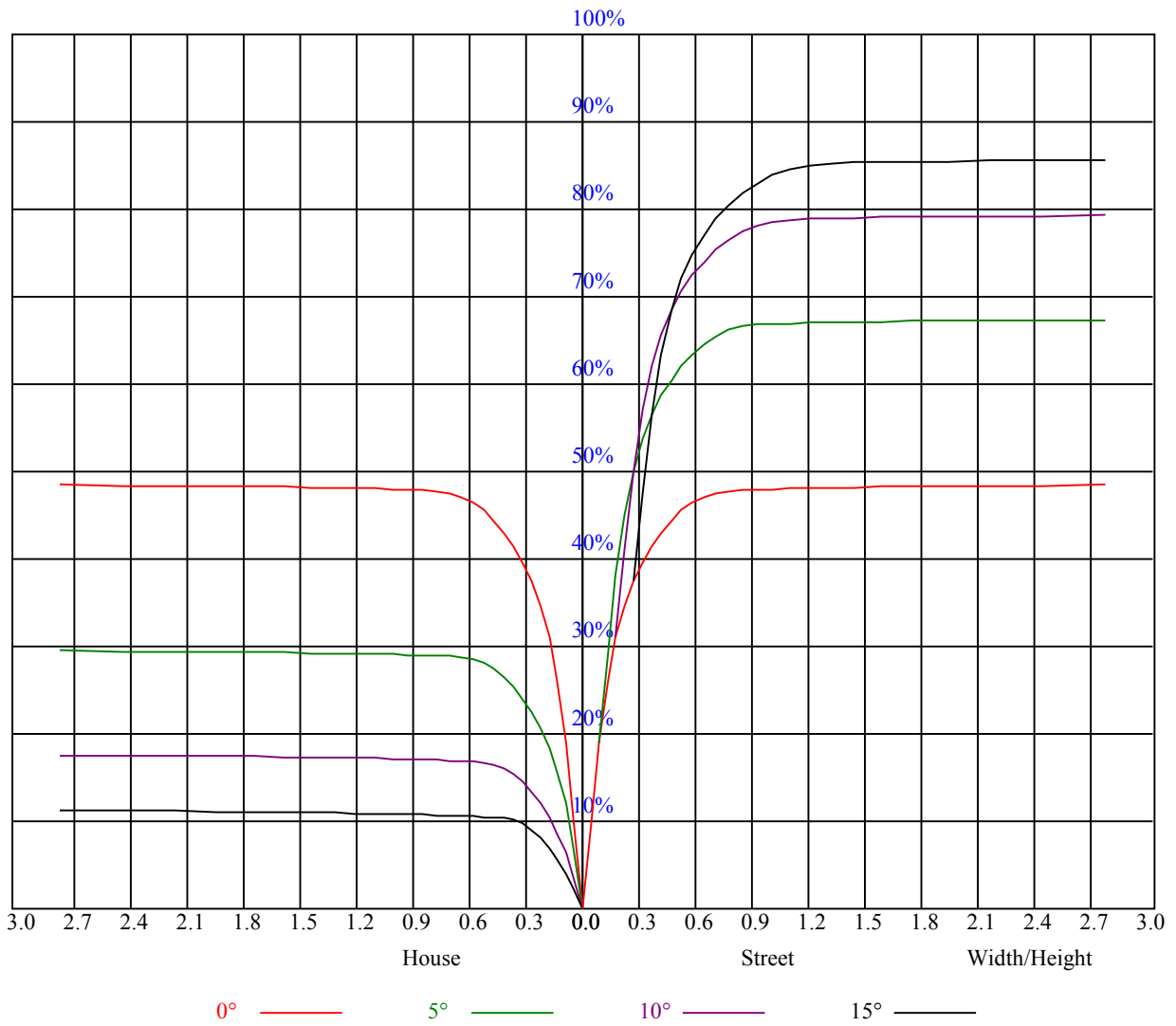
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

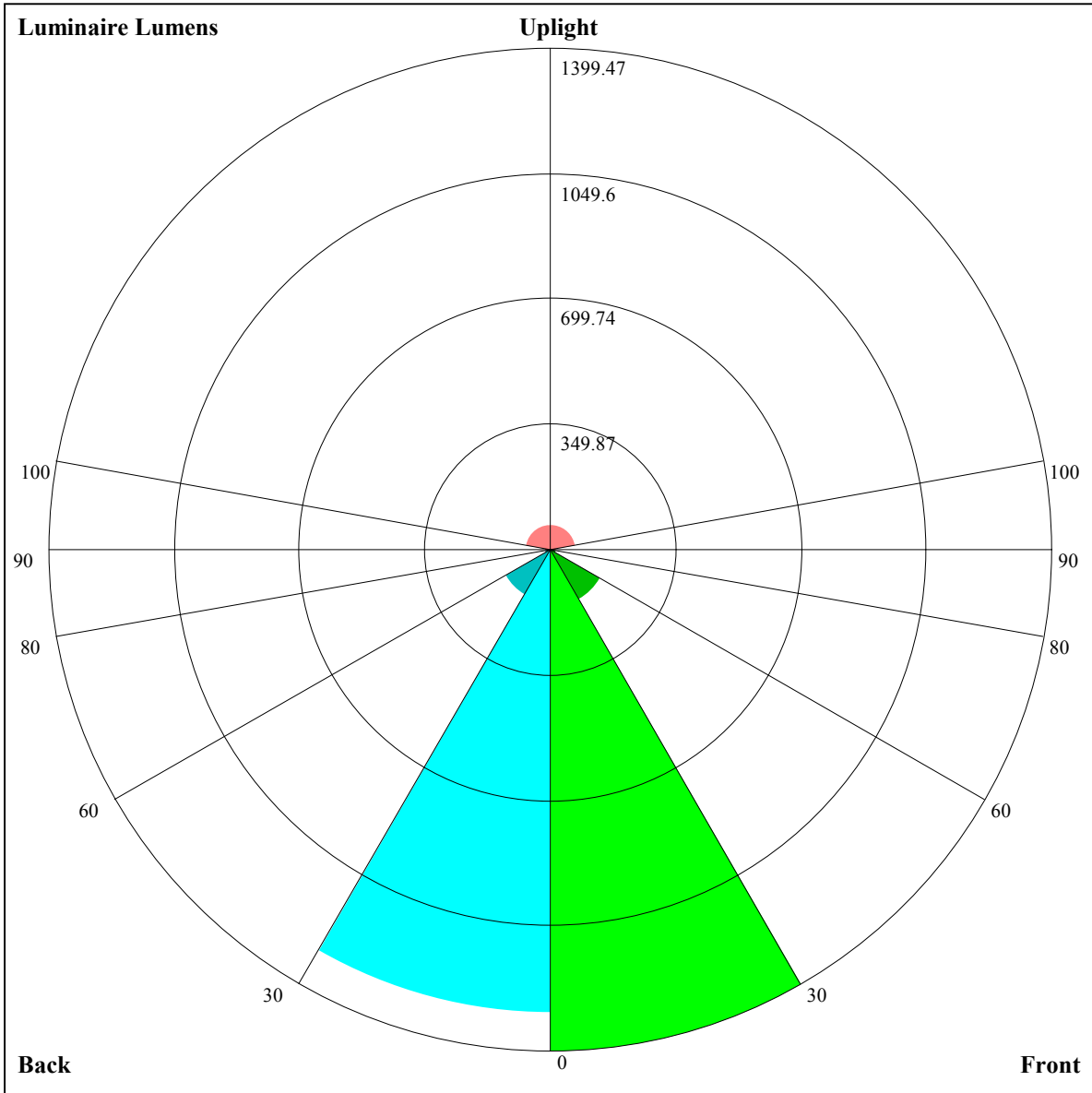
Luminance Limiting Curve





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	1.16	1.16	1.16	1.14	1.14	1.14	1.09	1.09	1.09	1.04	1.04	1.04	1.00	1.00	1.00	0.98
1	1.10	1.08	1.06	1.08	1.06	1.04	1.04	1.02	1.01	1.00	0.99	0.98	0.97	0.96	0.95	0.93
2	1.04	1.01	0.99	1.03	1.00	0.97	1.00	0.97	0.95	0.97	0.95	0.93	0.94	0.93	0.91	0.90
3	1.00	0.96	0.93	0.98	0.95	0.92	0.96	0.93	0.91	0.94	0.91	0.89	0.92	0.90	0.88	0.87
4	0.96	0.92	0.89	0.95	0.91	0.88	0.93	0.90	0.87	0.91	0.88	0.86	0.89	0.87	0.85	0.84
5	0.92	0.88	0.85	0.91	0.88	0.85	0.90	0.86	0.84	0.88	0.85	0.83	0.87	0.85	0.83	0.81
6	0.89	0.85	0.82	0.88	0.84	0.82	0.87	0.84	0.81	0.86	0.83	0.81	0.85	0.82	0.80	0.79
7	0.86	0.82	0.79	0.86	0.82	0.79	0.85	0.81	0.79	0.84	0.81	0.78	0.83	0.80	0.78	0.77
8	0.84	0.80	0.77	0.83	0.79	0.77	0.82	0.79	0.76	0.81	0.78	0.76	0.81	0.78	0.76	0.75
9	0.81	0.77	0.75	0.81	0.77	0.75	0.80	0.77	0.74	0.79	0.76	0.74	0.79	0.76	0.74	0.73
10	0.79	0.75	0.73	0.79	0.75	0.73	0.78	0.75	0.72	0.78	0.75	0.72	0.77	0.74	0.72	0.71





Luminaire Lumens:

FL=1399.47,FM=159.14,FH=16,FVH=8.02

BL=1294.12,BM=146.83,BH=16.02,BVH=8

UL=15.15,UH=72.11

BUG Rating:B3-U2-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	22980.54	23151.22	22908.97	22507.06	21675.70	20436.94	18185.13	15542.42	13086.91
45.0	23294.36	23415.49	23167.73	22716.27	21851.89	20635.14	18245.69	15746.13	13136.46
90.0	23448.52	23443.02	23173.24	22429.98	21229.75	19726.71	17150.07	14204.55	10751.96
135.0	23233.80	23222.79	22666.72	21813.35	20613.12	18895.36	16137.03	13582.41	11259.03
180.0	22980.54	22429.98	21301.32	19578.06	17662.09	15366.24	10760.77	9977.32	8183.58
225.0	23294.36	22710.77	21956.49	20343.34	18041.98	15647.03	10969.99	10710.67	8625.69
270.0	23448.52	22991.55	22330.88	21037.05	19066.03	16748.16	13615.45	11308.58	9370.60
315.0	23233.80	22804.36	22187.73	21235.25	19242.21	16973.89	14215.56	10764.63	9529.16
360.0	22980.54	23151.22	22908.97	22507.06	21675.70	20436.94	18185.13	15542.42	13086.91
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	10444.20	8192.39	6672.84	5665.30	4470.58	3809.90	3325.41	2824.39	2370.73
45.0	10185.43	8164.86	6595.76	5252.38	4277.88	3677.77	3017.09	2796.87	2214.92
90.0	9454.84	7150.17	6030.33	5002.42	4002.05	3385.97	2886.61	2457.72	2131.23
135.0	8825.54	7223.40	5924.07	4905.53	3925.52	3325.41	2857.43	2602.52	2145.55
180.0	6700.91	5256.23	4397.35	3749.89	3117.29	2715.93	2392.75	2108.66	1877.97
225.0	7112.74	5725.32	4691.36	3998.75	3367.25	2837.61	2477.54	2198.40	1917.61
270.0	7355.54	6116.77	5180.81	4388.00	3732.82	3187.77	2802.37	2362.47	2062.96
315.0	7847.19	6207.61	5202.83	4425.98	3634.82	3109.59	2672.44	2288.69	1998.55
360.0	10444.20	8192.39	6672.84	5665.30	4470.58	3809.90	3325.41	2824.39	2370.73
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	2088.29	1844.94	1658.30	1529.47	1413.30	1330.16	1254.18	1191.97	1144.07
45.0	1934.13	1737.58	1576.26	1454.59	1364.30	1283.92	1210.69	1158.94	1115.99
90.0	1909.36	1714.46	1581.22	1460.65	1372.56	1291.07	1226.11	1170.50	1096.78
135.0	1955.60	1727.12	1572.96	1477.71	1367.05	1291.07	1228.31	1163.89	1120.95
180.0	1711.70	1561.95	1452.94	1352.19	1271.25	1211.79	1156.18	1095.51	1070.85
225.0	1746.94	1608.75	1481.02	1378.61	1305.39	1235.47	1178.76	1136.36	1094.19
270.0	1832.28	1671.51	1531.12	1429.26	1336.77	1270.70	1207.39	1155.08	1118.75
315.0	1799.79	1624.16	1503.59	1394.03	1307.04	1243.72	1182.61	1135.26	1093.97
360.0	2088.29	1844.94	1658.30	1529.47	1413.30	1330.16	1254.18	1191.97	1144.07
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	1104.43	1060.39	1028.45	997.62	932.10	845.67	755.92	638.65	518.08
45.0	1076.90	1041.12	1009.18	970.64	918.34	837.41	732.25	613.88	499.91
90.0	1084.01	1049.60	1008.80	975.71	918.34	811.09	713.26	610.08	471.17
135.0	1085.16	1048.82	1013.59	980.00	905.13	808.78	712.98	596.26	486.70
180.0	1039.41	999.33	956.88	879.58	777.34	665.91	562.51	426.80	325.77
225.0	1061.49	1024.49	975.05	921.53	828.54	700.76	581.23	461.70	322.47
270.0	1084.06	1043.87	1006.98	948.07	838.51	736.65	633.70	503.22	380.99
315.0	1061.16	1023.22	984.85	915.81	827.77	707.25	607.16	480.37	362.93
360.0	1104.43	1060.39	1028.45	997.62	932.10	845.67	755.92	638.65	518.08
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	411.27	294.55	281.89	103.12	47.18	30.67	27.20	23.89	22.57
45.0	371.63	286.29	164.12	81.76	43.71	29.57	25.27	22.24	21.25
90.0	367.39	271.10	165.61	87.81	49.50	36.50	32.65	28.79	27.31
135.0	380.99	285.74	177.83	94.64	40.74	29.73	25.16	21.42	20.48
180.0	230.47	124.48	65.46	32.10	26.76	24.67	22.13	21.58	21.20
225.0	219.18	127.24	63.37	31.71	27.97	23.78	21.42	20.70	20.21
270.0	278.59	167.76	84.95	46.30	36.39	32.21	28.68	27.31	26.65
315.0	269.45	177.06	92.38	41.07	29.62	25.33	21.64	20.43	19.82
360.0	411.27	294.55	281.89	103.12	47.18	30.67	27.20	23.89	22.57

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	22.13	21.53	21.03	20.32	19.60	18.83	18.28	17.84	17.34
45.0	20.65	20.26	19.93	19.43	18.72	18.28	17.89	17.45	17.12
90.0	26.43	25.82	25.00	24.17	23.34	22.52	21.91	21.31	20.70
135.0	19.88	19.38	18.94	18.44	17.95	17.62	17.29	17.01	16.79
180.0	20.76	19.93	19.43	18.88	18.50	18.11	17.84	17.62	17.34
225.0	19.77	19.10	18.44	18.11	17.73	17.40	17.07	16.85	16.63
270.0	25.99	25.00	24.22	23.40	22.63	21.97	21.47	20.98	20.48
315.0	19.38	18.88	18.39	17.89	17.62	17.23	16.96	16.79	16.57
360.0	22.13	21.53	21.03	20.32	19.60	18.83	18.28	17.84	17.34
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	17.12	16.85	16.63	16.52	16.41	16.30	16.24	16.19	16.13
45.0	16.90	16.63	16.52	16.41	16.30	16.24	16.13	16.13	16.13
90.0	20.21	19.82	19.43	19.10	18.83	18.50	18.28	17.95	17.62
135.0	16.57	16.41	16.30	16.19	16.08	16.02	15.97	15.97	15.91
180.0	17.07	17.01	17.12	17.01	17.07	16.90	16.74	16.57	16.35
225.0	16.46	16.41	16.30	16.24	16.19	16.13	16.08	16.02	15.97
270.0	20.10	19.77	19.55	19.27	19.05	18.77	18.55	18.28	18.06
315.0	16.41	16.30	16.19	16.13	16.08	15.97	15.91	15.91	15.80
360.0	17.12	16.85	16.63	16.52	16.41	16.30	16.24	16.19	16.13
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	16.02	15.91	15.69	15.53	15.47	15.31	15.14	15.09	15.09
45.0	16.08	15.97	15.80	15.69	15.64	15.42	15.36	15.25	15.20
90.0	17.40	17.12	16.85	16.57	16.35	16.13	15.97	15.80	15.64
135.0	15.80	15.75	15.64	15.58	15.47	15.42	15.36	15.31	15.25
180.0	16.30	16.13	16.13	16.02	15.91	15.75	15.64	15.47	15.36
225.0	15.86	15.80	15.69	15.58	15.42	15.36	15.25	15.03	14.92
270.0	17.84	17.56	17.29	17.01	16.79	16.57	16.46	16.24	16.08
315.0	15.75	15.64	15.58	15.53	15.42	15.36	15.25	15.20	15.14
360.0	16.02	15.91	15.69	15.53	15.47	15.31	15.14	15.09	15.09
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	15.03	14.92	14.81	14.70	14.65	14.59	14.48	14.48	14.42
45.0	15.14	15.14	14.98	14.81	14.65	14.59	14.53	14.42	14.42
90.0	15.47	15.31	15.20	15.03	14.87	14.76	14.59	14.53	14.48
135.0	15.25	15.20	15.09	14.98	14.81	14.76	14.70	14.65	14.59
180.0	15.31	15.09	14.81	14.53	14.48	14.48	14.42	14.37	14.37
225.0	14.76	14.70	14.59	14.42	14.37	14.37	14.31	14.26	14.37
270.0	15.86	15.69	15.42	15.14	15.03	14.92	14.92	15.97	16.96
315.0	15.14	15.03	14.87	14.70	14.59	14.53	14.53	14.53	14.81
360.0	15.03	14.92	14.81	14.70	14.65	14.59	14.48	14.48	14.42
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	14.37	14.31	14.31	14.26	14.31	14.31	14.31	14.04	13.98
45.0	14.37	14.37	14.31	14.31	14.26	14.20	14.15	14.09	14.04
90.0	14.42	14.37	14.31	14.20	14.15	14.15	14.04	13.98	13.93
135.0	14.59	14.59	14.59	14.59	14.59	14.53	14.04	14.04	13.93
180.0	14.37	14.31	14.42	14.53	14.59	14.65	14.09	14.04	13.93
225.0	14.59	14.53	15.42	14.53	14.65	14.76	14.81	14.04	13.98
270.0	18.17	19.55	18.77	15.03	15.03	15.25	14.15	14.04	13.93
315.0	15.75	16.57	16.52	14.87	14.76	14.81	14.04	13.98	13.82
360.0	14.37	14.31	14.31	14.26	14.31	14.31	14.31	14.04	13.98

Intensity data(cd)

C/ γ (°)	90.0
0.0	13.93
45.0	13.93
90.0	13.87
135.0	13.87
180.0	13.82
225.0	13.98
270.0	13.87
315.0	13.82
360.0	13.93