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## Nata

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### Client:

LumCAT: 2-2184-M

Luminaire: BJB 47.360.5080

Report No: nt0100

Test No: GC2020031330

LampCAT: NICHIA NFCWJ108B-V3

Lamp flux(lm): 2445.0

Number of Lamps: 1

Length(mm): 0

Phm Type: C

Voltage(V): 220.4000

Current(A): 0.1080

Power (W): 22.9100

PF: 0.9570

Ballast type: AC

Width(mm): 0

Height(mm): 0

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## Photometric Results

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Lumens(lm): 1843.32, Efficiency(%): 75.39% , Luminous Efficacy(lm/W): 80.46

Central intensity(cd): 9865.954, Maximum intensity(cd): 9865.954

Angle of maximum intensity: C=0.0  $\gamma$ =0.0

Beam Angle(50%Imax): [C0/180]Total=23.6

[C90/270]Total=23.6

Field angle(10%Imax): [C0/180]Total=42.2

[C90/270]Total=42.2

Maximum s/h(1/2): C0\_180=0.40 C90\_270=0.40

Maximum s/h(1/4): C0\_180=0.40 C90\_270=0.40

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 75.39%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in  $\pi$  solid angle : 98.784%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	9865.954	0.000	0	.000%	.000%
1.0	9839.852	9.429	9.429	.386%	.512%
2.0	9619.819	27.930	37.359	1.142%	2.027%
3.0	9392.710	45.472	82.831	1.860%	4.494%
4.0	9159.765	62.101	144.932	2.540%	7.863%
5.0	8806.461	77.290	222.222	3.161%	12.056%
6.0	8369.226	90.263	312.485	3.692%	16.952%
7.0	7841.678	100.621	413.105	4.115%	22.411%
8.0	7264.246	108.110	521.216	4.422%	28.276%
9.0	6652.012	112.784	633.999	4.613%	34.395%
10.0	6026.495	114.736	748.735	4.693%	40.619%
11.0	5434.040	114.514	863.249	4.684%	46.831%
12.0	4805.739	111.935	975.185	4.578%	52.904%
13.0	4241.474	107.368	1082.552	4.391%	58.729%
14.0	3688.811	101.507	1184.059	4.152%	64.235%
15.0	3188.119	94.410	1278.469	3.861%	69.357%
16.0	2724.781	86.641	1365.109	3.544%	74.057%
17.0	2330.817	78.729	1443.839	3.220%	78.328%
18.0	2101.352	73.077	1516.916	2.989%	82.293%
19.0	1664.070	65.511	1582.426	2.679%	85.847%
20.0	1319.189	54.602	1637.028	2.233%	88.809%
21.0	1015.497	44.831	1681.859	1.834%	91.241%
22.0	796.392	36.411	1718.269	1.489%	93.216%
23.0	579.415	28.868	1747.138	1.181%	94.782%
24.0	391.041	21.218	1768.355	.868%	95.933%
25.0	252.196	14.626	1782.981	.598%	96.727%
26.0	181.396	10.235	1793.216	.419%	97.282%
27.0	73.897	6.246	1799.462	.255%	97.621%
28.0	41.995	2.934	1802.396	.120%	97.780%
29.0	13.376	1.449	1803.845	.059%	97.859%
30.0	10.882	0.655	1804.5	.027%	97.894%
31.0	10.000	0.581	1805.081	.024%	97.926%
32.0	9.472	0.558	1805.639	.023%	97.956%
33.0	9.089	0.547	1806.185	.022%	97.986%
34.0	8.718	0.539	1806.724	.022%	98.015%
35.0	8.463	0.534	1807.258	.022%	98.044%
36.0	8.225	0.531	1807.789	.022%	98.073%
37.0	7.999	0.529	1808.318	.022%	98.101%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	7.807	0.528	1808.846	.022%	98.130%
39.0	7.628	0.527	1809.373	.022%	98.159%
40.0	7.494	0.527	1809.9	.022%	98.187%
41.0	7.361	0.529	1810.429	.022%	98.216%
42.0	7.256	0.531	1810.96	.022%	98.245%
43.0	7.146	0.534	1811.494	.022%	98.274%
44.0	7.053	0.536	1812.03	.022%	98.303%
45.0	6.972	0.539	1812.569	.022%	98.332%
46.0	6.850	0.541	1813.109	.022%	98.361%
47.0	6.746	0.541	1813.65	.022%	98.391%
48.0	6.647	0.541	1814.191	.022%	98.420%
49.0	6.572	0.543	1814.734	.022%	98.449%
50.0	6.496	0.545	1815.279	.022%	98.479%
51.0	6.462	0.548	1815.827	.022%	98.509%
52.0	6.415	0.553	1816.38	.023%	98.539%
53.0	6.392	0.557	1816.937	.023%	98.569%
54.0	6.311	0.560	1817.497	.023%	98.599%
55.0	6.305	0.563	1818.06	.023%	98.630%
56.0	6.264	0.568	1818.628	.023%	98.661%
57.0	6.183	0.569	1819.197	.023%	98.692%
58.0	6.131	0.569	1819.767	.023%	98.722%
59.0	6.079	0.571	1820.337	.023%	98.753%
60.0	6.032	0.572	1820.91	.023%	98.784%
61.0	5.974	0.573	1821.483	.023%	98.816%
62.0	5.986	0.576	1822.059	.024%	98.847%
63.0	6.027	0.584	1822.643	.024%	98.879%
64.0	6.143	0.597	1823.24	.024%	98.911%
65.0	6.351	0.618	1823.859	.025%	98.944%
66.0	6.717	0.652	1824.511	.027%	98.980%
67.0	7.233	0.701	1825.212	.029%	99.018%
68.0	7.883	0.766	1825.978	.031%	99.059%
69.0	8.701	0.846	1826.824	.035%	99.105%
70.0	9.640	0.942	1827.766	.039%	99.156%
71.0	10.615	1.047	1828.813	.043%	99.213%
72.0	11.479	1.149	1829.961	.047%	99.276%
73.0	12.187	1.238	1831.199	.051%	99.343%
74.0	12.773	1.312	1832.511	.054%	99.414%
75.0	13.005	1.362	1833.873	.056%	99.488%

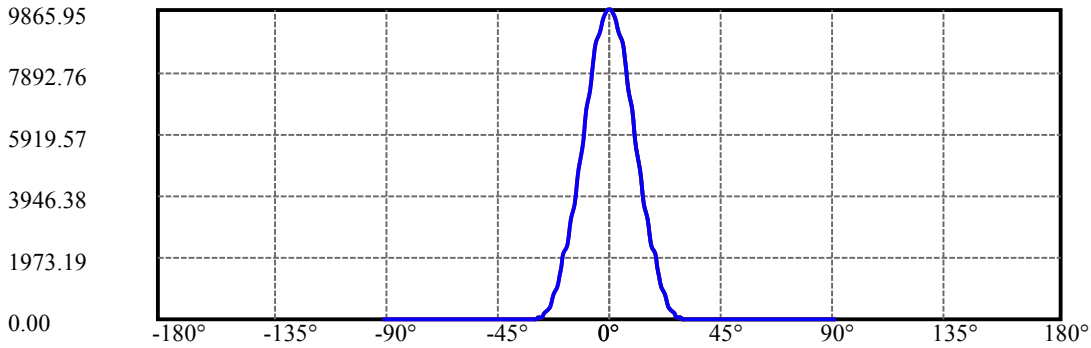
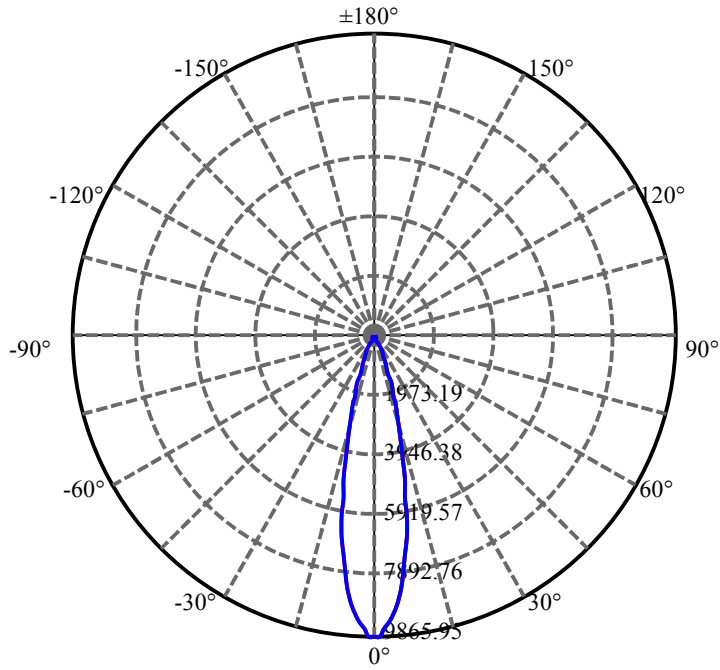
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	13.039	1.383	1835.256	.057%	99.563%
77.0	12.552	1.364	1836.62	.056%	99.637%
78.0	11.409	1.283	1837.903	.052%	99.706%
79.0	9.727	1.136	1839.038	.046%	99.768%
80.0	7.778	0.944	1839.982	.039%	99.819%
81.0	5.331	0.709	1840.691	.029%	99.858%
82.0	3.341	0.470	1841.161	.019%	99.883%
83.0	2.686	0.328	1841.489	.013%	99.901%
84.0	2.349	0.274	1841.763	.011%	99.916%
85.0	2.251	0.251	1842.014	.010%	99.929%
86.0	2.210	0.244	1842.258	.010%	99.943%
87.0	2.198	0.241	1842.499	.010%	99.956%
88.0	2.349	0.249	1842.749	.010%	99.969%
89.0	2.604	0.272	1843.02	.011%	99.984%
90.0	2.790	0.296	1843.316	.012%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1804.50	73.80%	97.89%
0-40	1809.90	74.02%	98.19%
0-60	1820.91	74.47%	98.78%
0-90	1843.02	75.38%	99.98%
0-120	1843.02	75.38%	99.98%
0-180	1843.32	75.39%	100.00%
60-90	22.68	0.93%	1.23%
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%
0-17.42	1474.65	60.31%	80.00%

ZONAL LUMEN SUMMARY

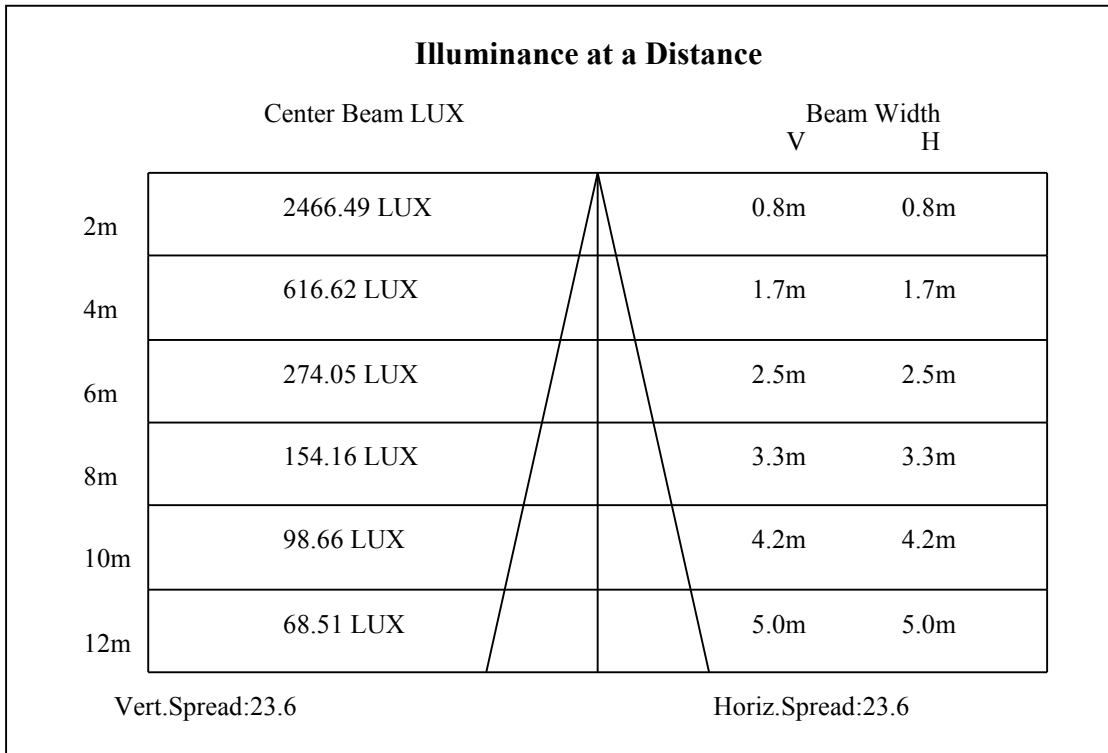
0-10	748.74
10-20	888.29
20-30	167.47
30-40	5.40
40-50	5.38
50-60	5.63
60-70	6.86
70-80	12.22
80-90	3.04
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

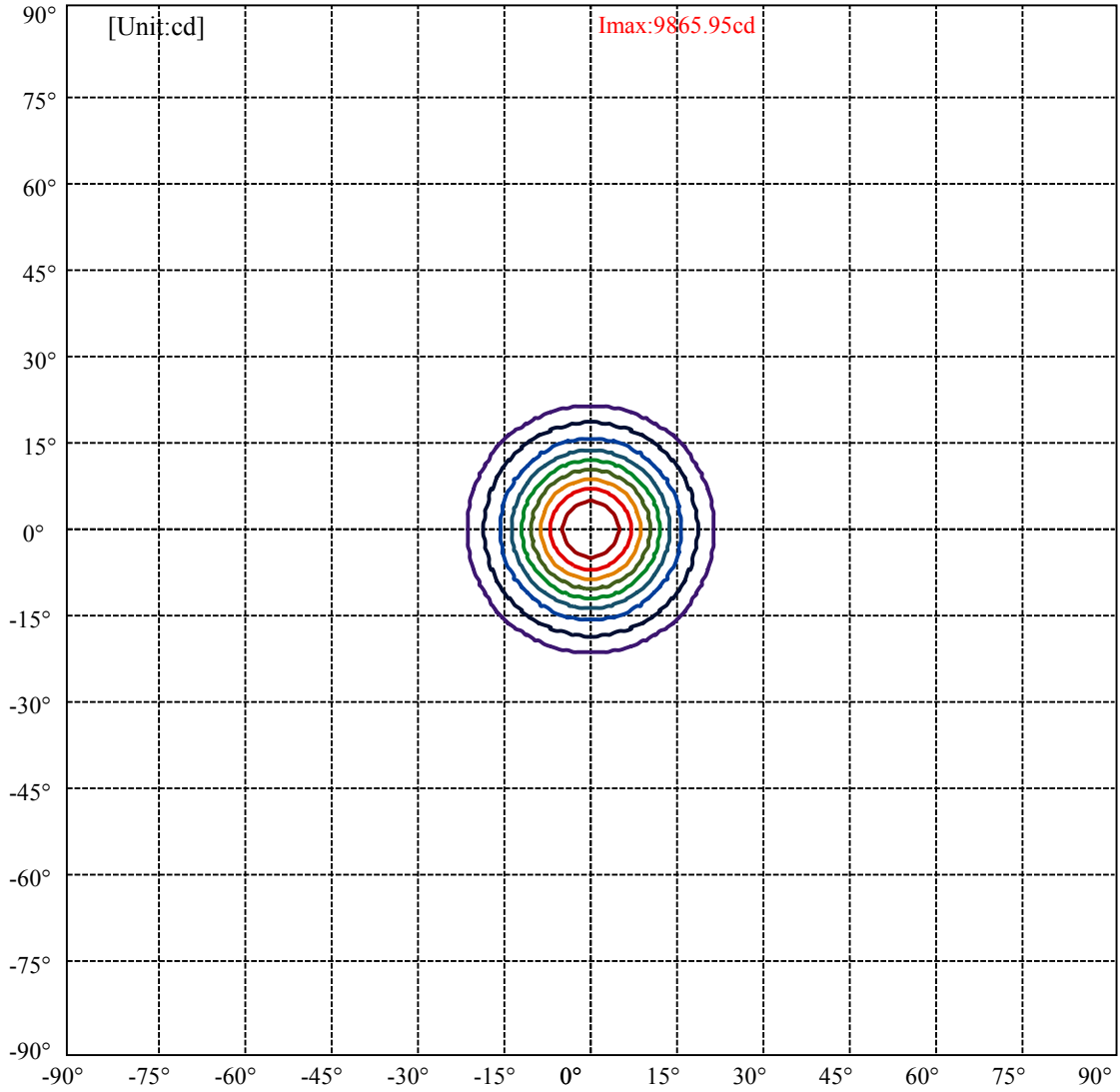


C0(Max): —————  
C0/C180: —————  
C90/C270: —————

Field angle(10%Imax):C0/180Left:21.1 Right:21.1  
:C90/270Left:21.1 Right:21.1

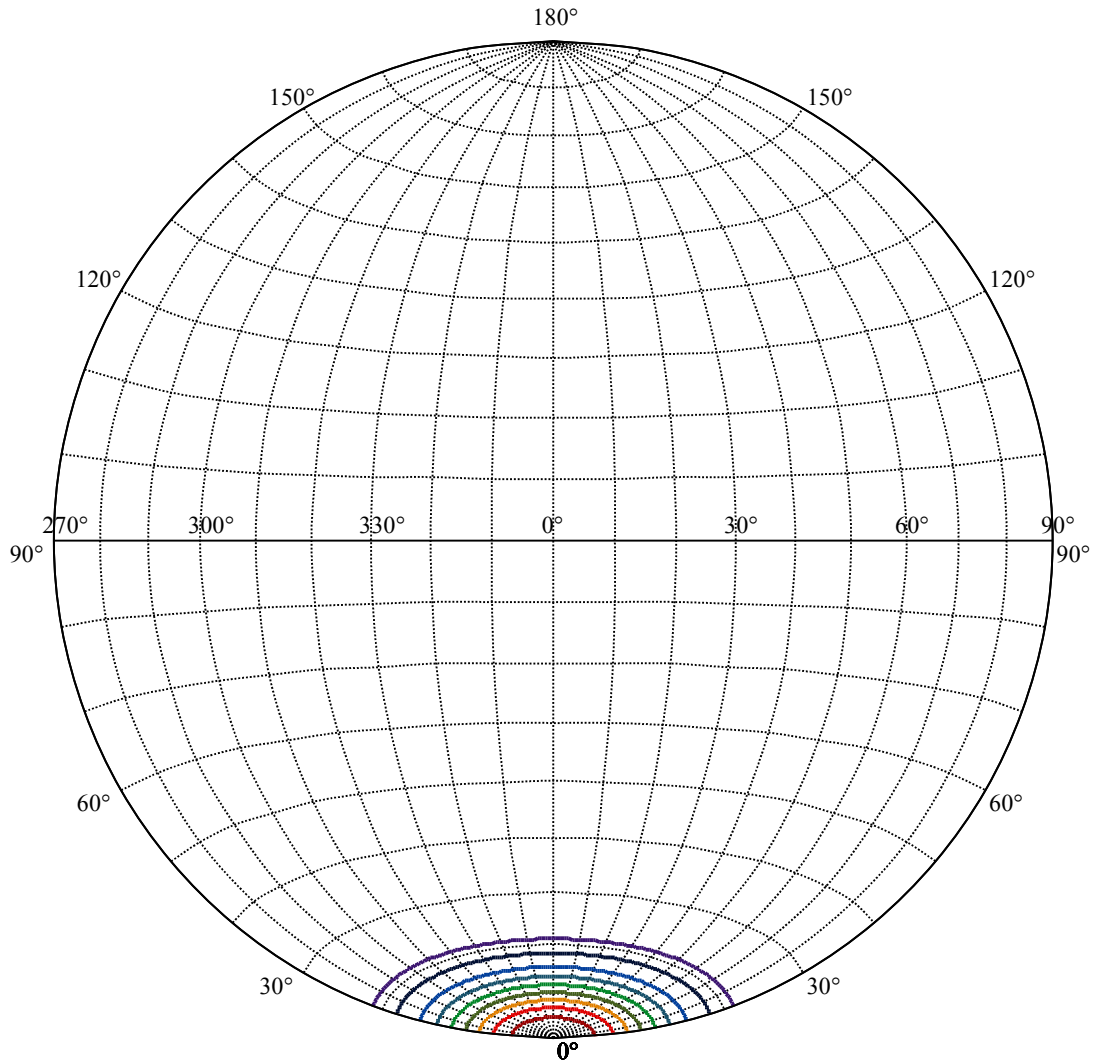
Beam Angle(50%Imax):C0/180Left:11.8 Right:11.8  
:C90/270Left:11.8 Right:11.8





(10%Imax) 986.595	—
(20%Imax) 1973.19	—
(30%Imax) 2959.79	—
(40%Imax) 3946.38	—
(50%Imax) 4932.98	—
(60%Imax) 5919.57	—
(70%Imax) 6906.17	—
(80%Imax) 7892.76	—
(90%Imax) 8879.36	—





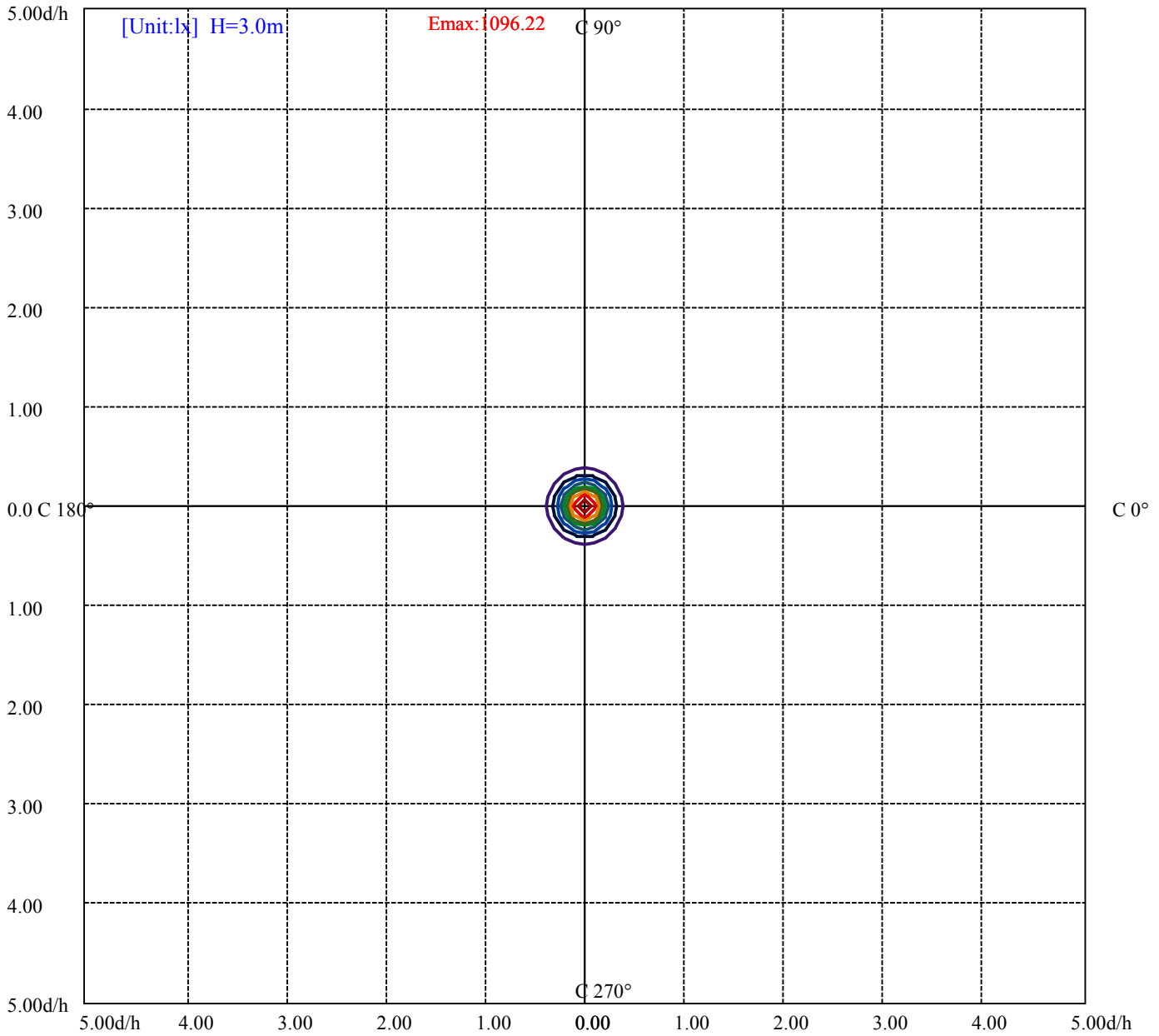
House

[Unit:cd]

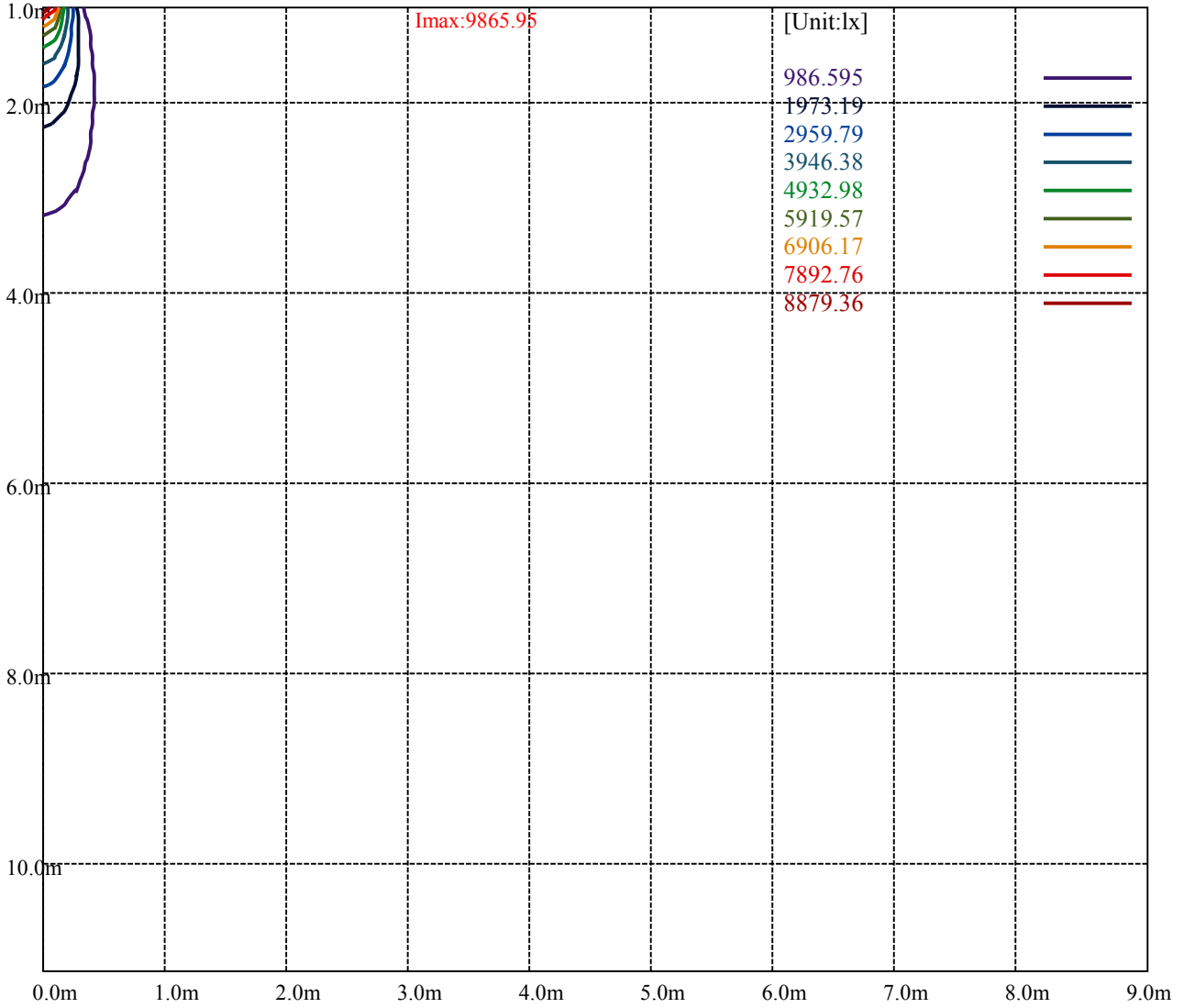
Road

**Imax:9865.95**

(10%Imax) 986.595	—
(20%Imax) 1973.19	—
(30%Imax) 2959.79	—
(40%Imax) 3946.38	—
(50%Imax) 4932.98	—
(60%Imax) 5919.57	—
(70%Imax) 6906.17	—
(80%Imax) 7892.76	—
(90%Imax) 8879.36	—



(10%Emax) 109.6217	—
(20%Emax) 219.2433	—
(30%Emax) 328.8656	—
(40%Emax) 438.4867	—
(50%Emax) 548.1089	—
(60%Emax) 657.73	—
(70%Emax) 767.3522	—
(80%Emax) 876.9733	—
(90%Emax) 986.5956	—



Luminance Table

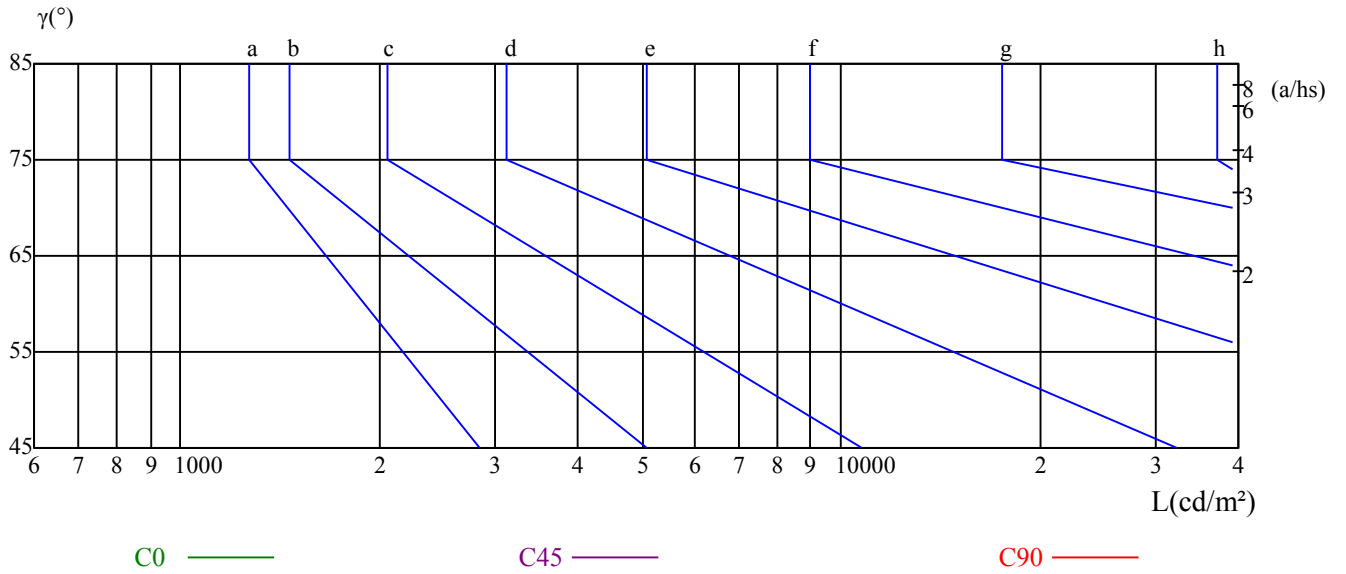
$\gamma$	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

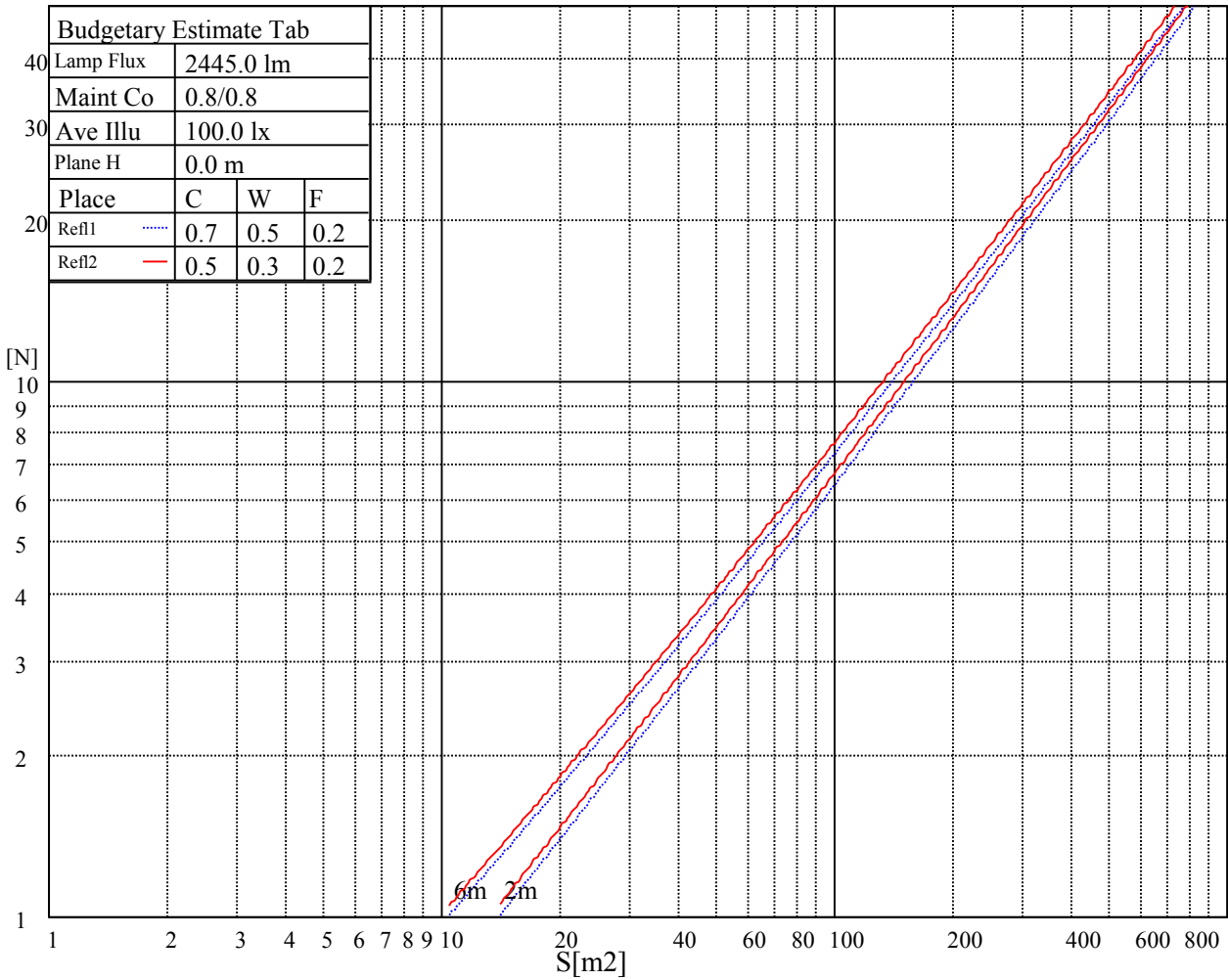
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

Glare Table

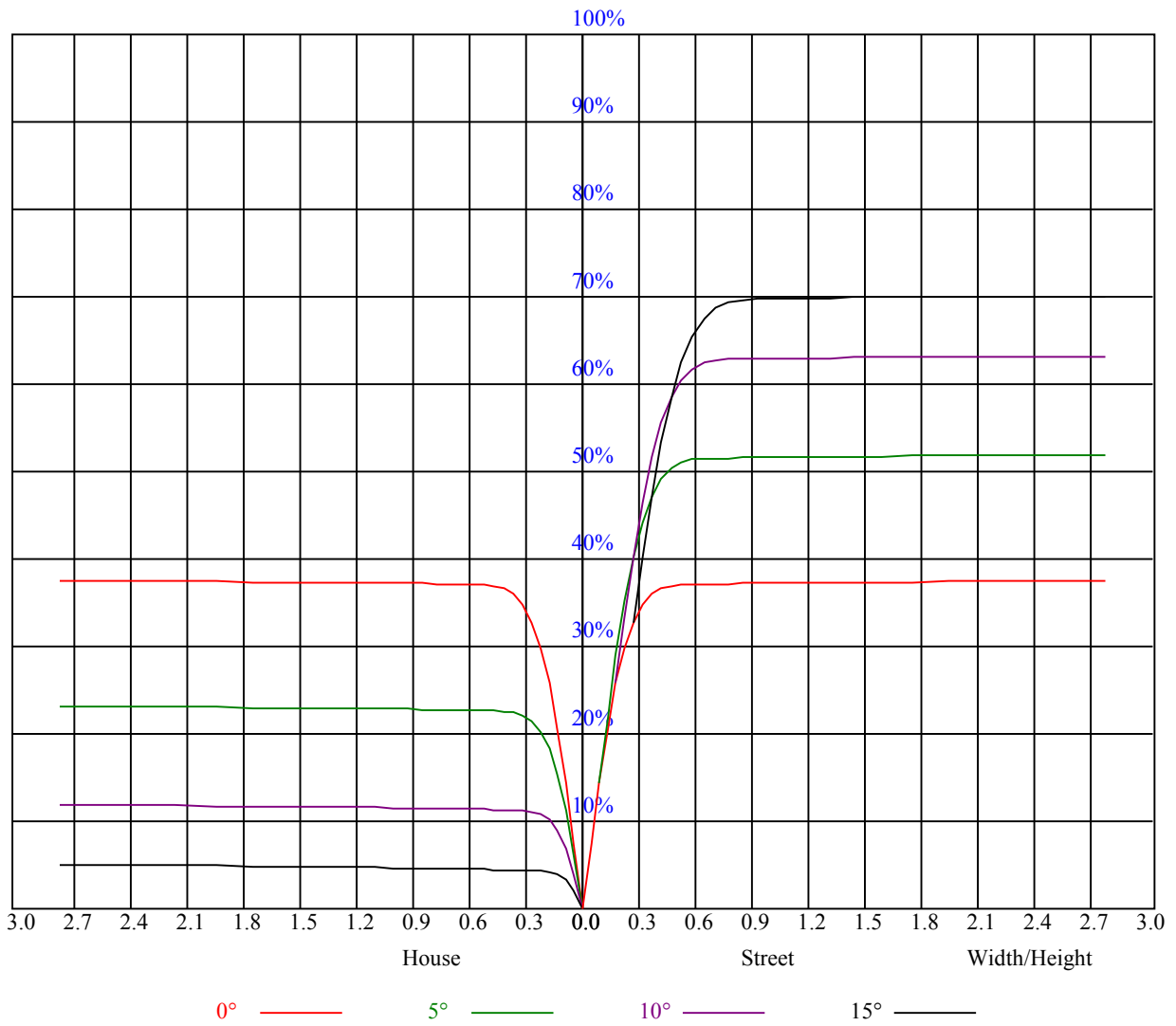
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

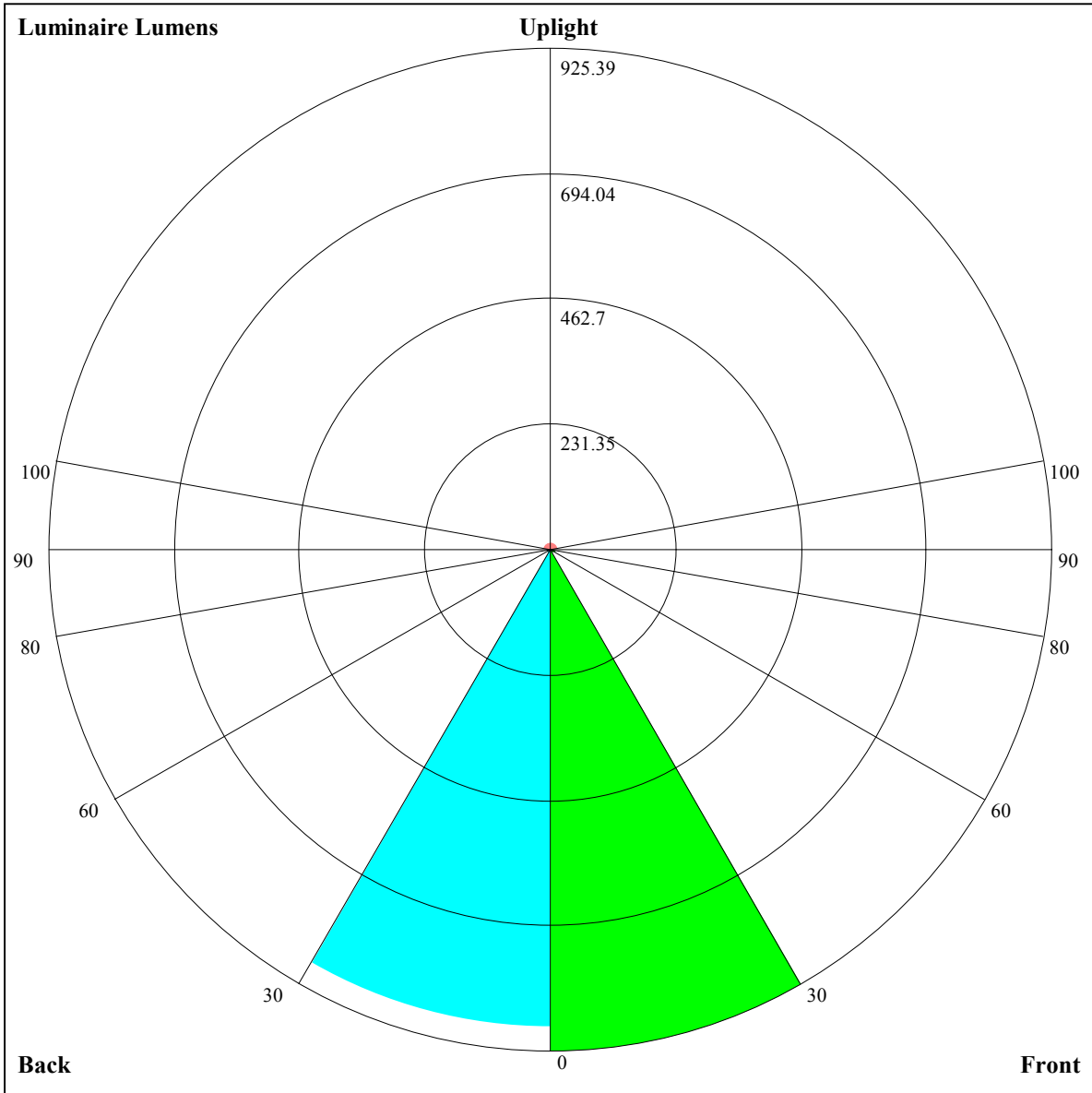
Luminance Limiting Curve





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	0.90	0.90	0.90	0.88	0.88	0.88	0.84	0.84	0.84	0.80	0.80	0.80	0.77	0.77	0.77	0.75
1	0.85	0.84	0.83	0.84	0.82	0.81	0.81	0.80	0.79	0.78	0.77	0.76	0.75	0.75	0.74	0.73
2	0.81	0.79	0.77	0.80	0.78	0.77	0.78	0.76	0.75	0.76	0.74	0.73	0.74	0.73	0.72	0.71
3	0.78	0.76	0.74	0.77	0.75	0.73	0.75	0.74	0.72	0.74	0.72	0.71	0.72	0.71	0.70	0.69
4	0.76	0.73	0.71	0.75	0.72	0.70	0.73	0.71	0.69	0.72	0.70	0.69	0.71	0.69	0.68	0.67
5	0.73	0.70	0.68	0.73	0.70	0.68	0.71	0.69	0.67	0.70	0.68	0.67	0.69	0.68	0.66	0.65
6	0.71	0.68	0.66	0.71	0.68	0.66	0.70	0.67	0.65	0.69	0.67	0.65	0.68	0.66	0.65	0.64
7	0.69	0.66	0.64	0.69	0.66	0.64	0.68	0.65	0.64	0.67	0.65	0.63	0.66	0.65	0.63	0.62
8	0.67	0.64	0.62	0.67	0.64	0.62	0.66	0.64	0.62	0.66	0.63	0.62	0.65	0.63	0.62	0.61
9	0.66	0.63	0.61	0.65	0.63	0.61	0.65	0.62	0.61	0.64	0.62	0.60	0.64	0.62	0.60	0.60
10	0.64	0.61	0.59	0.64	0.61	0.59	0.63	0.61	0.59	0.63	0.61	0.59	0.62	0.60	0.59	0.58





Luminaire Lumens:

FL=925.39,FM=8.97,FH=10.08,FVH=1.88

BL=880.42,BM=7.39,BH=8.41,BVH=1.56

UL=3.04,UH=14.49

BUG Rating:B2-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	9907.72	9842.75	9698.90	9164.71	9164.71	8934.55	8483.97	7959.15	7375.86
45.0	9819.55	9907.72	9903.08	9819.55	9657.14	9397.28	9049.26	8622.34	8111.91
90.0	9889.16	9828.83	9754.59	9130.83	9130.83	8891.86	8430.14	7897.90	7314.61
135.0	9847.39	9861.31	9791.71	9633.94	9388.00	9049.26	8613.06	8107.27	7559.71
180.0	9907.72	9884.52	9768.51	9559.69	9258.07	8868.28	8390.33	7856.69	7272.01
225.0	9819.55	9810.27	9115.06	9115.06	8477.01	7941.51	7596.27	6990.25	6361.02
270.0	9889.16	9861.31	9740.67	9531.85	9239.51	8854.36	8385.69	7856.69	7276.65
315.0	9847.39	9722.10	9186.05	9186.05	8962.85	8514.60	8005.09	7443.14	6842.22
360.0	9907.72	9842.75	9698.90	9164.71	9164.71	8934.55	8483.97	7959.15	7375.86
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	6762.41	6132.71	5498.84	4877.04	4284.00	3723.91	3210.23	2736.45	2308.61
45.0	7545.79	6933.26	6557.40	5661.81	5285.94	4668.78	3866.00	3541.18	3040.02
90.0	6700.23	6073.32	5444.55	4948.50	4240.85	3692.36	3284.01	2807.45	2291.44
135.0	6965.75	6343.94	5722.14	5095.69	4511.01	3944.89	3420.53	2933.29	2487.82
180.0	6645.56	6019.12	5392.67	4775.51	4200.11	3647.91	3142.11	2678.08	2339.33
225.0	5722.51	5091.89	4489.11	3920.20	3386.56	2894.22	2450.61	2053.39	1708.62
270.0	6659.48	6033.04	5401.95	4794.07	4209.39	3652.55	3142.11	2678.08	2339.33
315.0	6214.38	5584.69	4965.67	4373.10	3813.94	3285.87	2989.35	2370.33	2131.35
360.0	6762.41	6132.71	5498.84	4877.04	4284.00	3723.91	3210.23	2736.45	2308.61
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1988.43	1576.83	1158.74	895.17	795.26	570.99	384.31	230.86	109.84
45.0	2585.27	2418.22	2330.05	1484.03	1178.23	907.23	668.25	461.76	320.69
90.0	1983.33	1639.94	1152.71	891.18	793.59	567.98	378.84	225.20	106.54
135.0	2404.30	2404.30	1557.81	1247.83	972.66	730.90	520.23	342.97	280.32
180.0	2339.33	1632.05	1325.79	1042.73	790.76	567.10	377.31	281.25	281.25
225.0	1400.50	857.39	857.39	671.36	427.00	292.20	150.81	55.22	17.68
270.0	2339.33	1626.48	1322.08	1042.73	792.15	568.95	379.63	284.03	284.03
315.0	1770.33	1157.35	848.95	848.95	621.48	429.97	268.95	136.29	50.81
360.0	1988.43	1576.83	1158.74	895.17	795.26	570.99	384.31	230.86	109.84
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	39.21	17.96	14.39	12.90	12.20	11.69	11.28	10.90	10.58
45.0	289.14	230.67	24.45	13.69	11.18	9.93	9.28	8.82	8.45
90.0	36.29	14.43	10.86	9.47	8.77	8.26	8.03	7.70	7.42
135.0	129.05	21.39	13.50	11.23	10.21	9.84	9.23	8.63	8.45
180.0	33.87	14.06	11.46	9.88	9.28	8.82	8.31	7.93	7.66
225.0	10.86	8.96	8.21	7.80	7.33	7.01	6.82	6.59	6.36
270.0	33.74	13.92	11.28	10.07	9.51	9.14	8.86	8.63	8.45
315.0	19.03	14.57	12.85	12.02	11.51	11.09	10.90	10.53	10.35
360.0	39.21	17.96	14.39	12.90	12.20	11.69	11.28	10.90	10.58
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	10.44	10.12	9.98	9.79	9.61	9.37	9.14	9.00	8.86
45.0	8.07	7.80	7.56	7.38	7.10	7.01	6.96	6.82	6.73
90.0	7.24	7.05	6.82	6.64	6.54	6.50	6.36	6.22	6.17
135.0	8.12	7.84	7.56	7.38	7.19	7.01	6.77	6.73	6.64
180.0	7.29	7.01	6.87	6.68	6.45	6.22	6.13	5.94	5.75
225.0	6.22	6.08	5.94	5.71	5.71	5.52	5.43	5.38	5.24
270.0	8.26	8.17	8.03	7.89	7.80	7.75	7.80	7.70	7.66
315.0	10.16	9.93	9.70	9.56	9.56	9.51	9.47	9.37	9.37
360.0	10.44	10.12	9.98	9.79	9.61	9.37	9.14	9.00	8.86

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	8.68	8.49	8.35	8.21	8.07	7.93	7.84	7.84	7.80
45.0	6.64	6.45	6.36	6.31	6.13	5.94	5.89	5.85	5.75
90.0	6.13	6.03	5.89	5.80	5.71	5.61	5.57	5.52	5.57
135.0	6.50	6.36	6.26	6.17	6.13	6.08	6.08	6.08	6.22
180.0	5.66	5.61	5.48	5.34	5.34	5.29	5.24	5.10	5.06
225.0	5.10	5.01	5.01	4.92	4.83	4.78	4.78	4.73	4.59
270.0	7.70	7.61	7.47	7.33	7.33	7.33	7.24	7.19	7.19
315.0	9.37	9.23	9.14	9.10	9.05	9.00	9.05	9.00	8.96
360.0	8.68	8.49	8.35	8.21	8.07	7.93	7.84	7.84	7.80
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	7.66	7.61	7.61	7.52	7.52	7.52	7.56	7.66	7.80
45.0	5.66	5.57	5.57	5.43	5.34	5.29	5.20	5.10	5.01
90.0	5.52	5.52	5.52	5.48	5.52	5.38	5.34	5.24	5.15
135.0	6.17	6.26	6.22	6.17	6.08	6.03	5.99	5.85	5.85
180.0	4.97	4.92	4.92	4.87	4.83	4.87	4.87	4.87	4.97
225.0	4.55	4.55	4.45	4.36	4.27	4.27	4.22	4.13	4.13
270.0	7.19	7.24	7.19	7.10	7.05	6.96	6.91	6.73	6.59
315.0	8.77	8.77	8.63	8.54	8.45	8.31	8.17	8.21	8.40
360.0	7.66	7.61	7.61	7.52	7.52	7.52	7.56	7.66	7.80
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	7.93	8.07	8.40	9.10	10.07	11.32	12.81	14.52	16.29
45.0	4.92	4.87	4.73	4.64	4.59	4.55	4.45	4.32	4.32
90.0	5.06	4.92	4.83	4.87	5.01	5.38	5.89	6.59	7.38
135.0	5.80	6.03	6.26	7.01	8.07	9.61	11.32	13.32	15.22
180.0	5.15	5.34	5.66	5.99	6.36	6.59	7.29	8.45	9.74
225.0	4.04	3.99	3.94	3.90	3.81	3.71	3.67	3.62	3.48
270.0	6.50	6.54	6.73	7.01	7.52	8.07	8.77	9.42	10.16
315.0	8.82	9.37	10.26	11.23	12.44	13.83	15.41	16.89	18.33
360.0	7.93	8.07	8.40	9.10	10.07	11.32	12.81	14.52	16.29
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	17.82	18.89	19.58	20.00	19.86	18.51	15.73	11.79	9.47
45.0	4.27	4.18	4.08	4.04	3.99	3.85	3.85	3.71	3.67
90.0	8.12	8.68	9.10	9.37	9.56	9.47	8.96	7.89	6.08
135.0	17.12	18.47	19.86	20.37	20.46	19.77	17.40	14.06	10.53
180.0	10.53	11.69	13.04	13.36	13.50	12.81	11.65	10.16	7.24
225.0	3.39	3.39	3.34	3.20	3.11	3.06	3.02	2.78	2.51
270.0	10.95	11.55	11.97	12.16	12.34	12.30	12.02	11.32	9.84
315.0	19.63	20.65	21.21	21.53	21.48	20.65	18.65	16.10	12.90
360.0	17.82	18.89	19.58	20.00	19.86	18.51	15.73	11.79	9.47
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	5.52	3.29	2.69	2.88	3.11	3.16	3.25	3.57	3.90
45.0	3.43	3.16	2.88	2.46	2.27	2.23	2.18	2.23	2.46
90.0	3.81	2.78	2.37	2.09	1.95	1.90	1.90	1.90	2.13
135.0	6.87	3.48	2.74	2.23	2.23	2.23	2.18	2.27	2.64
180.0	4.08	2.51	2.41	2.23	2.04	2.00	2.09	2.27	2.69
225.0	2.27	2.13	1.90	1.72	1.67	1.53	1.53	1.67	1.76
270.0	7.47	4.36	3.16	2.37	2.00	1.90	1.72	1.67	1.72
315.0	9.19	5.01	3.34	2.83	2.74	2.74	2.74	3.20	3.53
360.0	5.52	3.29	2.69	2.88	3.11	3.16	3.25	3.57	3.90

Intensity data(cd)

<b>C/γ(°)</b>	<b>90.0</b>
<b>0.0</b>	<b>4.04</b>
<b>45.0</b>	<b>2.78</b>
<b>90.0</b>	<b>2.37</b>
<b>135.0</b>	<b>2.97</b>
<b>180.0</b>	<b>2.64</b>
<b>225.0</b>	<b>1.76</b>
<b>270.0</b>	<b>2.04</b>
<b>315.0</b>	<b>3.71</b>
<b>360.0</b>	<b>4.04</b>