



NATA LIGHTING CO.,LTD.
www.nata.cn
Email:info@nata.com
Tel:+86-750-3770000 Fax:+86-750-3771111
Address:380JinOu Road,GaoXin Zone,Jiang Men City,Guangdong,China

Nata

Client:

LumCAT: 2-2006-M

Luminaire: 92.70.131.00

Report No: GC2019091909

Test No: NATA07

LampCAT: OSRAM OPTO SOLERIQ S13

Lamp flux(lm): 1209.0

Number of Lamps: 1

Length(mm): 70

Phm Type: C

Voltage(V): 220.4000

Current(A): 0.0720

Power (W): 14.6600

PF: 0.9220

Ballast type: AC

Width(mm): 70

Height(mm): 0

Photometric Results

Lumens(lm): 1055.55, Efficiency(%): 87.31% , Luminous Efficacy(lm/W): 72.00

Central intensity(cd): 3942.358, Maximum intensity(cd): 3942.358

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=24.2

[C90/270]Total=24.2

Field angle(10%Imax): [C0/180]Total=57.4

[C90/270]Total=57.4

Maximum s/h(1/2): C0_180=0.41 C90_270=0.41

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(%): 87.31%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 99.574%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	3942.359	0.000	0	.000%	.000%
1.0	3927.103	3.765	3.765	.311%	.357%
2.0	3882.846	11.210	14.975	.927%	1.419%
3.0	3803.671	18.384	33.359	1.521%	3.160%
4.0	3697.291	25.108	58.467	2.077%	5.539%
5.0	3573.858	31.280	89.747	2.587%	8.502%
6.0	3404.312	36.672	126.419	3.033%	11.977%
7.0	3205.821	41.029	167.448	3.394%	15.864%
8.0	3007.969	44.471	211.919	3.678%	20.077%
9.0	2773.632	46.857	258.776	3.876%	24.516%
10.0	2508.669	47.803	306.578	3.954%	29.045%
11.0	2252.349	47.572	354.151	3.935%	33.551%
12.0	1994.230	46.421	400.572	3.840%	37.949%
13.0	1726.715	44.158	444.73	3.652%	42.133%
14.0	1460.626	40.798	485.528	3.374%	45.998%
15.0	1260.239	37.353	522.881	3.090%	49.537%
16.0	1016.981	33.368	556.249	2.760%	52.698%
17.0	900.979	29.868	586.117	2.470%	55.527%
18.0	796.838	27.993	614.11	2.315%	58.179%
19.0	694.264	25.942	640.052	2.146%	60.637%
20.0	615.784	23.978	664.03	1.983%	62.909%
21.0	555.877	22.498	686.528	1.861%	65.040%
22.0	510.976	21.439	707.967	1.773%	67.071%
23.0	477.467	20.740	728.707	1.715%	69.036%
24.0	451.986	20.321	749.028	1.681%	70.961%
25.0	433.169	20.126	769.155	1.665%	72.868%
26.0	420.664	20.155	789.309	1.667%	74.777%
27.0	408.651	20.289	809.599	1.678%	76.699%
28.0	400.246	20.480	830.078	1.694%	78.640%
29.0	391.847	20.723	850.802	1.714%	80.603%
30.0	383.402	20.932	871.733	1.731%	82.586%
31.0	374.701	21.097	892.83	1.745%	84.585%
32.0	366.146	21.224	914.055	1.756%	86.595%
33.0	346.743	21.002	935.057	1.737%	88.585%
34.0	324.963	20.328	955.384	1.681%	90.511%
35.0	291.848	19.156	974.54	1.584%	92.326%
36.0	259.203	17.546	992.086	1.451%	93.988%
37.0	222.388	15.707	1007.793	1.299%	95.476%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	162.354	12.842	1020.635	1.062%	96.693%
39.0	118.584	9.589	1030.224	.793%	97.601%
40.0	81.786	6.988	1037.212	.578%	98.263%
41.0	44.953	4.513	1041.725	.373%	98.691%
42.0	22.975	2.468	1044.193	.204%	98.924%
43.0	13.724	1.359	1045.553	.112%	99.053%
44.0	8.817	0.851	1046.403	.070%	99.134%
45.0	6.543	0.590	1046.994	.049%	99.190%
46.0	5.458	0.469	1047.463	.039%	99.234%
47.0	4.559	0.398	1047.861	.033%	99.272%
48.0	3.875	0.341	1048.202	.028%	99.304%
49.0	3.445	0.301	1048.503	.025%	99.333%
50.0	3.213	0.278	1048.781	.023%	99.359%
51.0	3.022	0.264	1049.044	.022%	99.384%
52.0	2.871	0.253	1049.297	.021%	99.408%
53.0	2.732	0.244	1049.541	.020%	99.431%
54.0	2.639	0.237	1049.778	.020%	99.453%
55.0	2.500	0.229	1050.007	.019%	99.475%
56.0	2.396	0.221	1050.228	.018%	99.496%
57.0	2.285	0.214	1050.442	.018%	99.516%
58.0	2.193	0.207	1050.649	.017%	99.536%
59.0	2.129	0.202	1050.851	.017%	99.555%
60.0	2.042	0.197	1051.048	.016%	99.574%
61.0	1.943	0.190	1051.239	.016%	99.592%
62.0	1.897	0.185	1051.424	.015%	99.609%
63.0	1.833	0.181	1051.605	.015%	99.627%
64.0	1.763	0.176	1051.782	.015%	99.643%
65.0	1.711	0.172	1051.953	.014%	99.660%
66.0	1.659	0.168	1052.122	.014%	99.676%
67.0	1.624	0.165	1052.287	.014%	99.691%
68.0	1.560	0.161	1052.448	.013%	99.706%
69.0	1.508	0.157	1052.605	.013%	99.721%
70.0	1.497	0.154	1052.759	.013%	99.736%
71.0	1.473	0.153	1052.912	.013%	99.750%
72.0	1.404	0.150	1053.062	.012%	99.765%
73.0	1.375	0.145	1053.207	.012%	99.778%
74.0	1.375	0.145	1053.352	.012%	99.792%
75.0	1.363	0.145	1053.496	.012%	99.806%

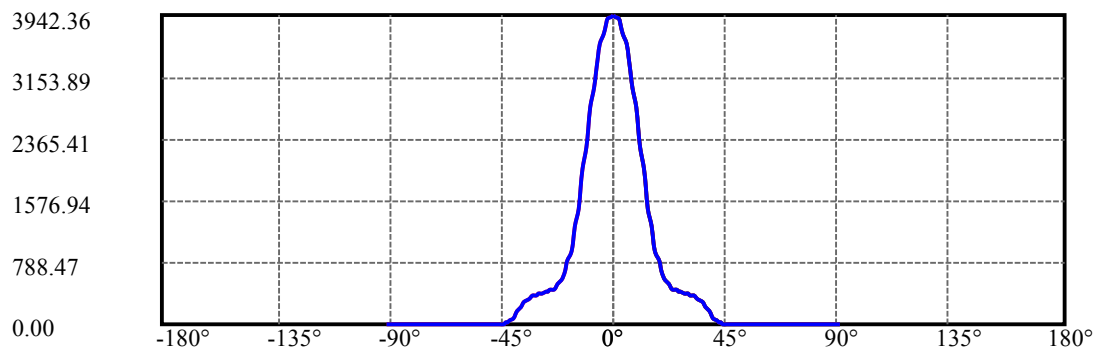
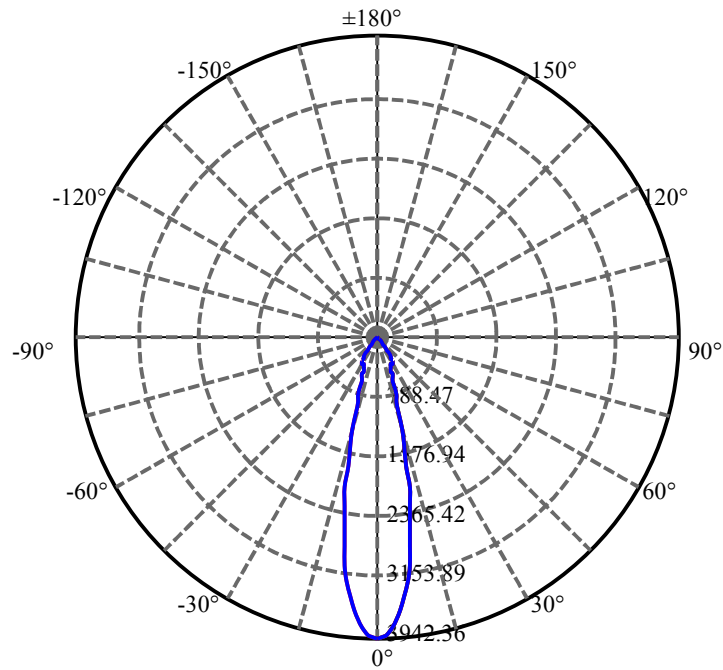
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	1.317	0.142	1053.639	.012%	99.819%
77.0	1.311	0.140	1053.779	.012%	99.833%
78.0	1.288	0.139	1053.918	.012%	99.846%
79.0	1.282	0.138	1054.056	.011%	99.859%
80.0	1.270	0.138	1054.194	.011%	99.872%
81.0	1.241	0.136	1054.329	.011%	99.885%
82.0	1.259	0.136	1054.465	.011%	99.898%
83.0	1.241	0.136	1054.601	.011%	99.910%
84.0	1.241	0.135	1054.736	.011%	99.923%
85.0	1.230	0.135	1054.871	.011%	99.936%
86.0	1.224	0.134	1055.005	.011%	99.949%
87.0	1.224	0.134	1055.139	.011%	99.961%
88.0	1.235	0.135	1055.274	.011%	99.974%
89.0	1.241	0.136	1055.41	.011%	99.987%
90.0	1.259	0.137	1055.547	.011%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	871.73	72.10%	82.59%
0-40	1037.21	85.79%	98.26%
0-60	1051.05	86.94%	99.57%
0-90	1055.41	87.30%	99.99%
0-120	1055.41	87.30%	99.99%
0-180	1055.55	87.31%	100.00%
60-90	4.56	0.38%	0.43%
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%
0-28.69	844.44	69.85%	80.00%

ZONAL LUMEN SUMMARY

0-10	306.58
10-20	357.45
20-30	207.70
30-40	165.48
40-50	11.57
50-60	2.27
60-70	1.71
70-80	1.43
80-90	1.22
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:

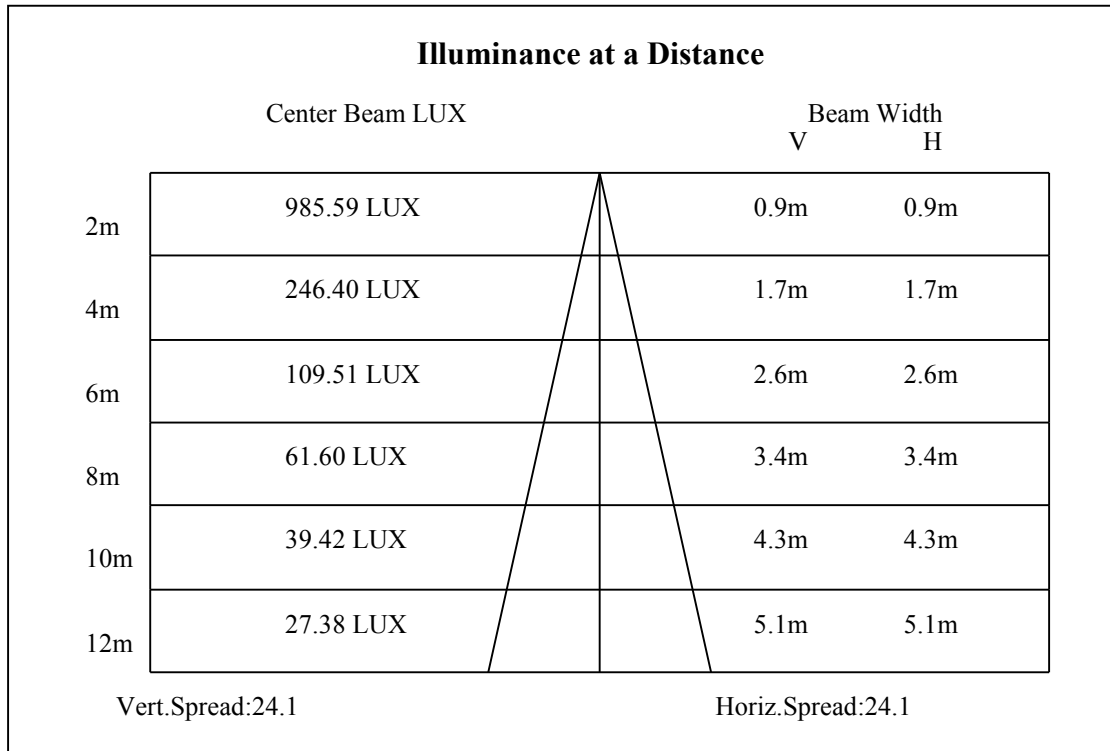
C90/C270:

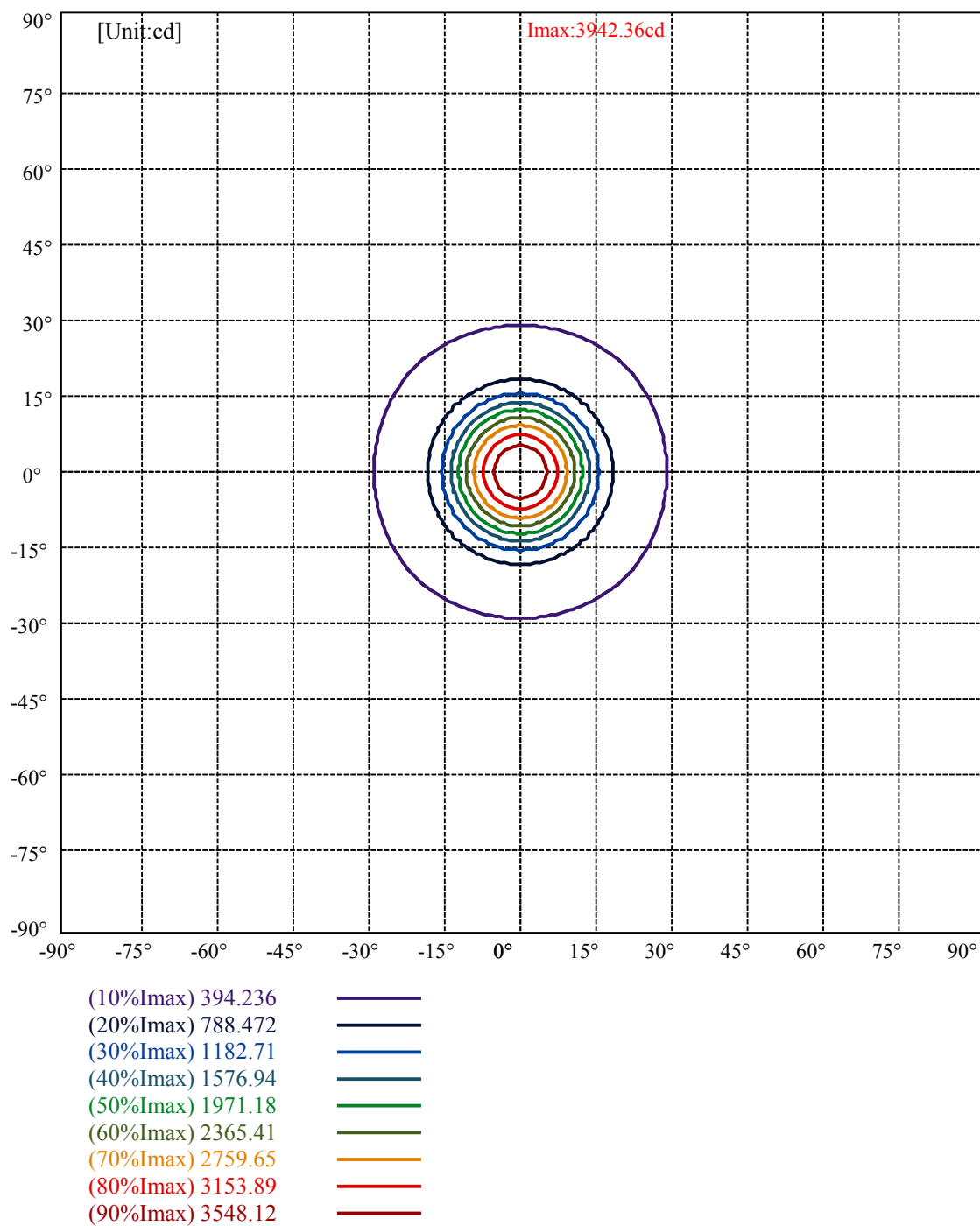
Field angle(10%Imax):C0/180Left:28.7 Right:28.7

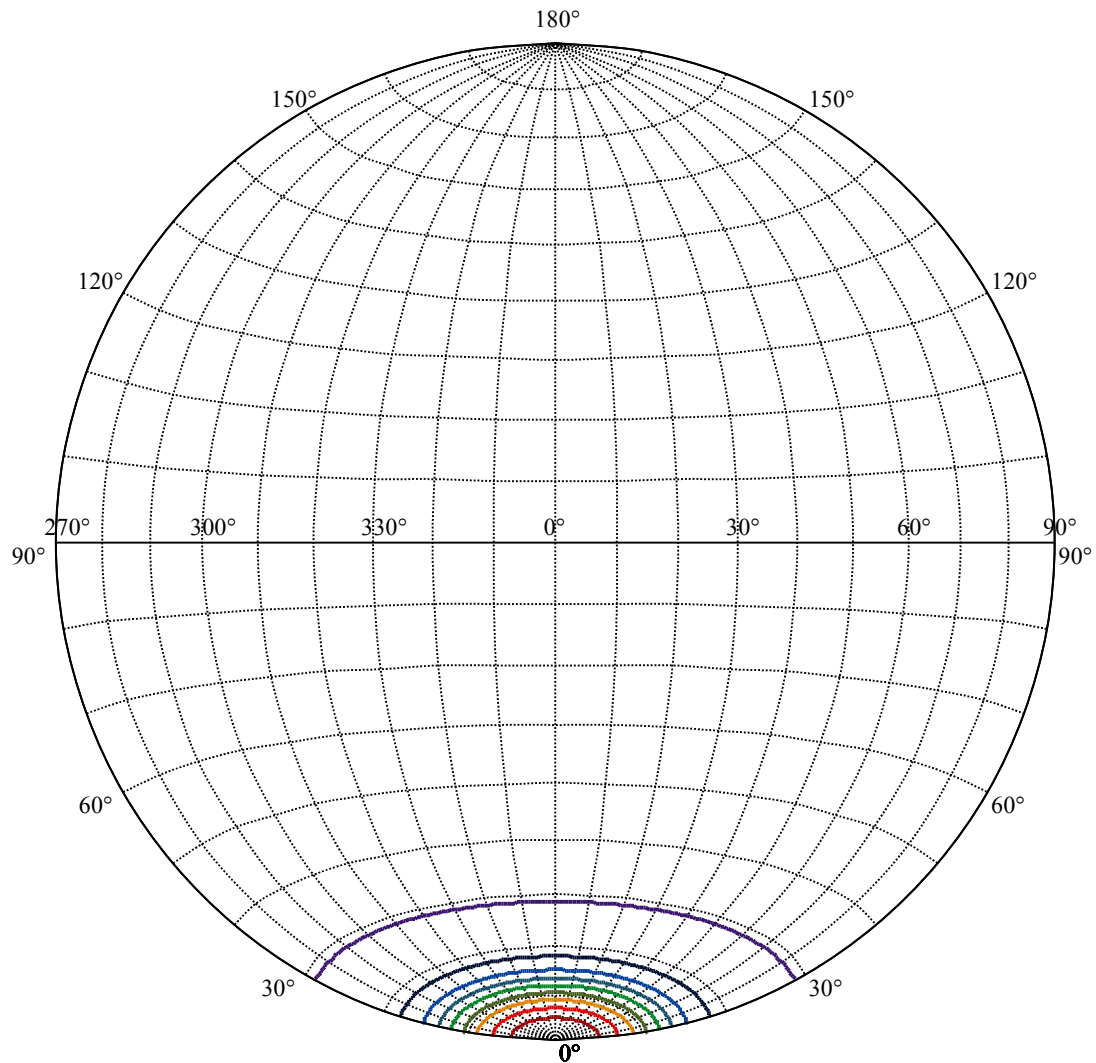
:C90/270Left:28.7 Right:28.7

Beam Angle(50%Imax):C0/180Left:12.1 Right:12.1

:C90/270Left:12.1 Right:12.1







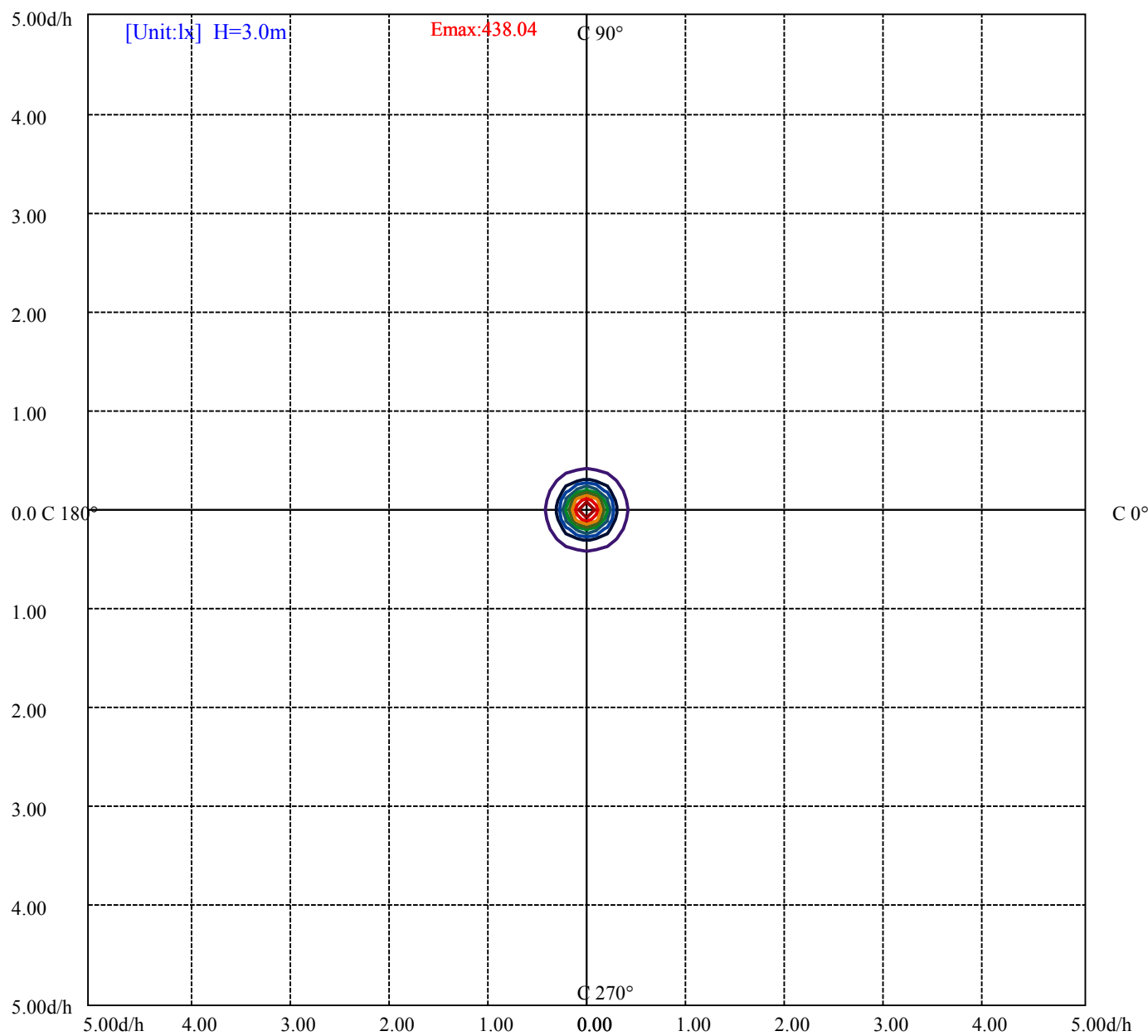
House

[Unit:cd]

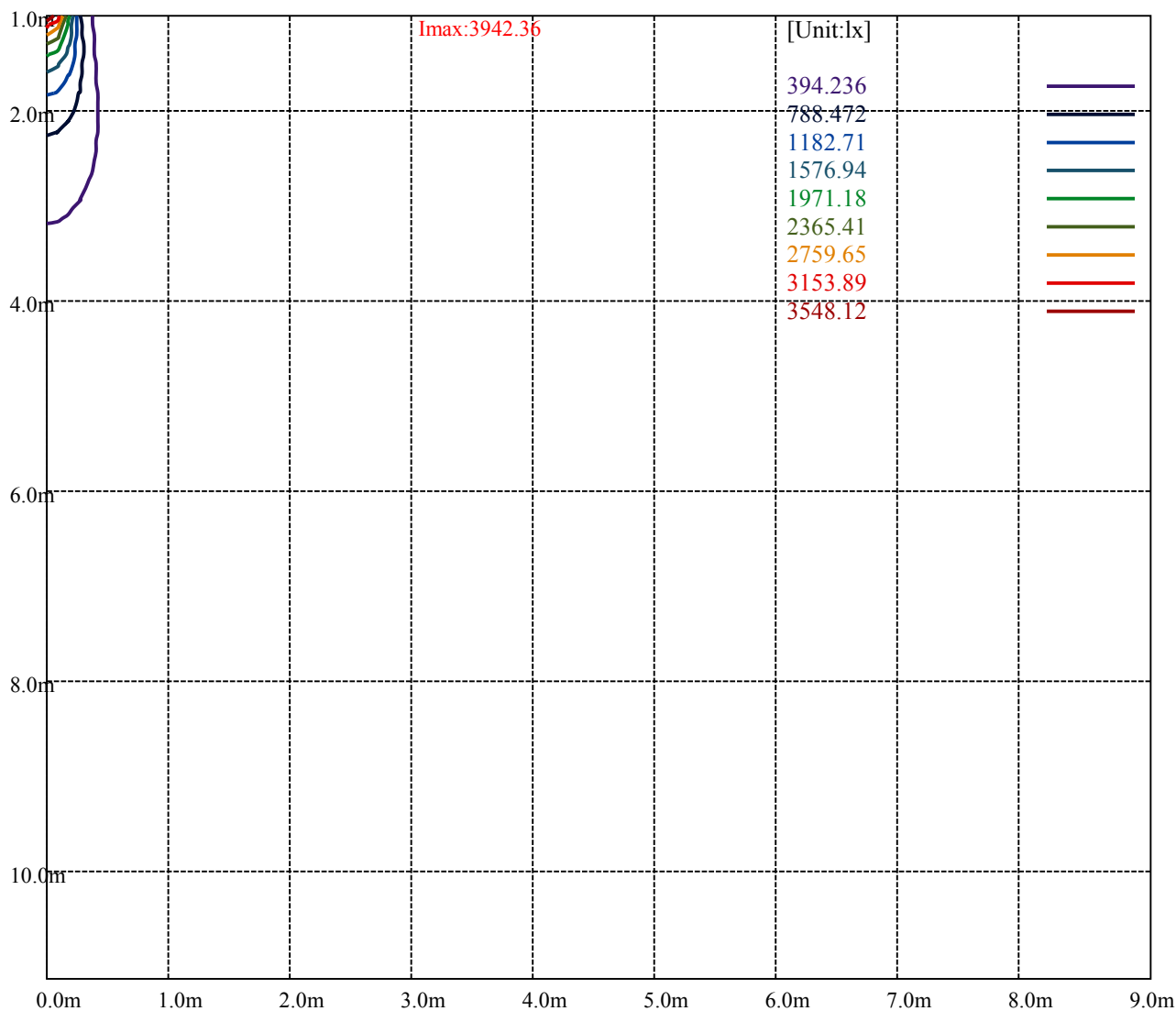
Road

Imax:3942.36

(10%Imax)	394.236	—
(20%Imax)	788.472	—
(30%Imax)	1182.71	—
(40%Imax)	1576.94	—
(50%Imax)	1971.18	—
(60%Imax)	2365.41	—
(70%Imax)	2759.65	—
(80%Imax)	3153.89	—
(90%Imax)	3548.12	—



(10%Emax)	43.804	
(20%Emax)	87.60789	
(30%Emax)	131.4122	
(40%Emax)	175.2155	
(50%Emax)	219.02	
(60%Emax)	262.8233	
(70%Emax)	306.6278	
(80%Emax)	350.4311	
(90%Emax)	394.2356	



Luminance Table

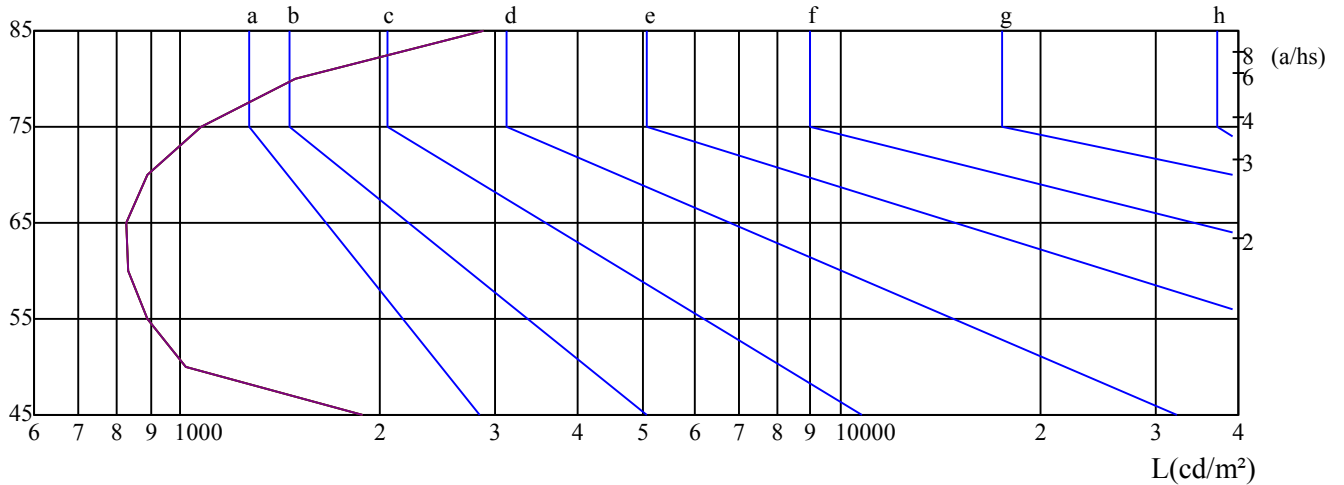
γ	45	50	55	60	65	70	75	80	85
C0	1888	1020	890	833	826	893	1075	1493	2879
C45	1888	1020	890	833	826	893	1075	1493	2879
C90	1888	1020	890	833	826	893	1075	1493	2879

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
826	826	826	1075	1075	1075	2879	2879	2879

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

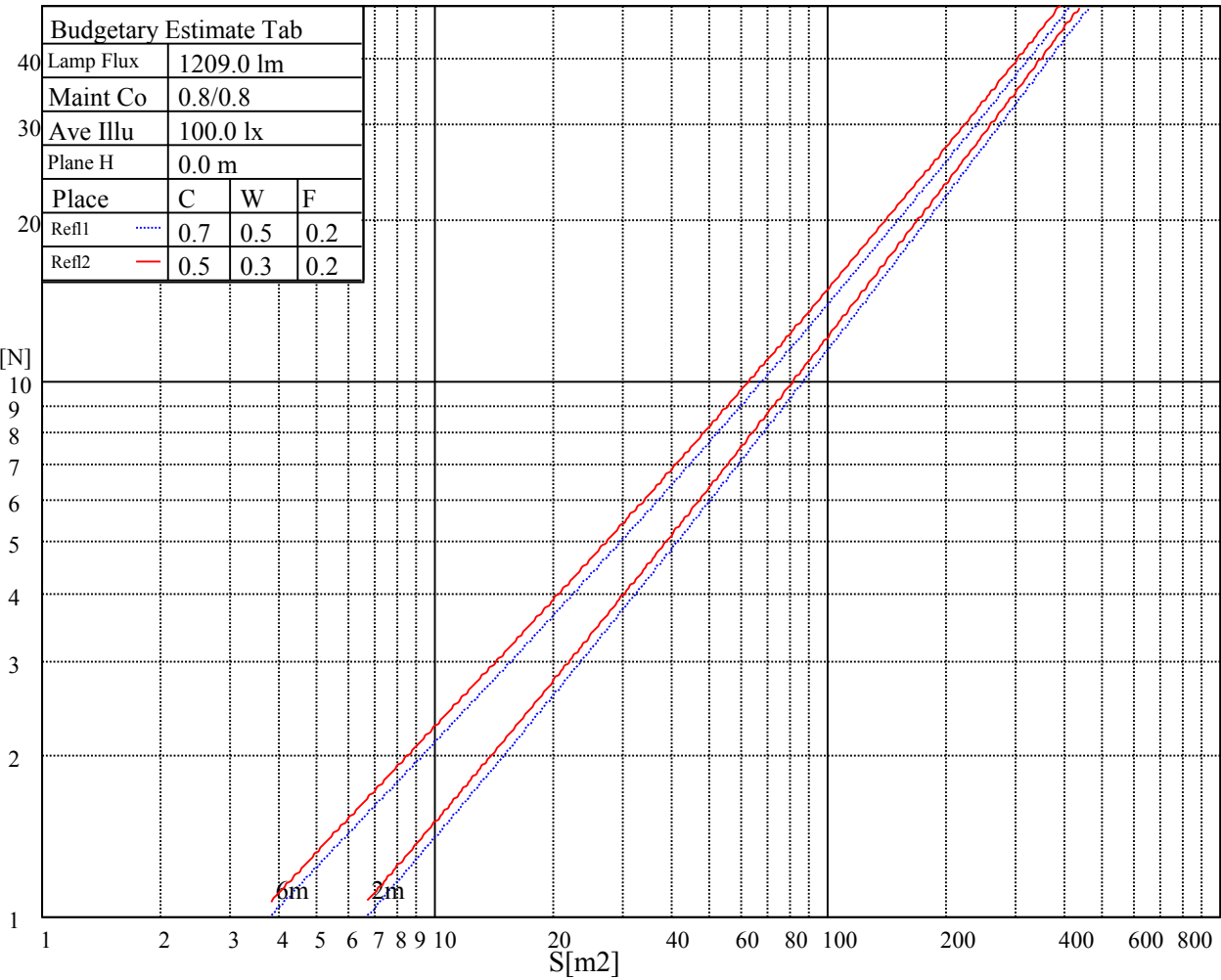
Luminance Limiting Curve

 $\gamma(^{\circ})$ 

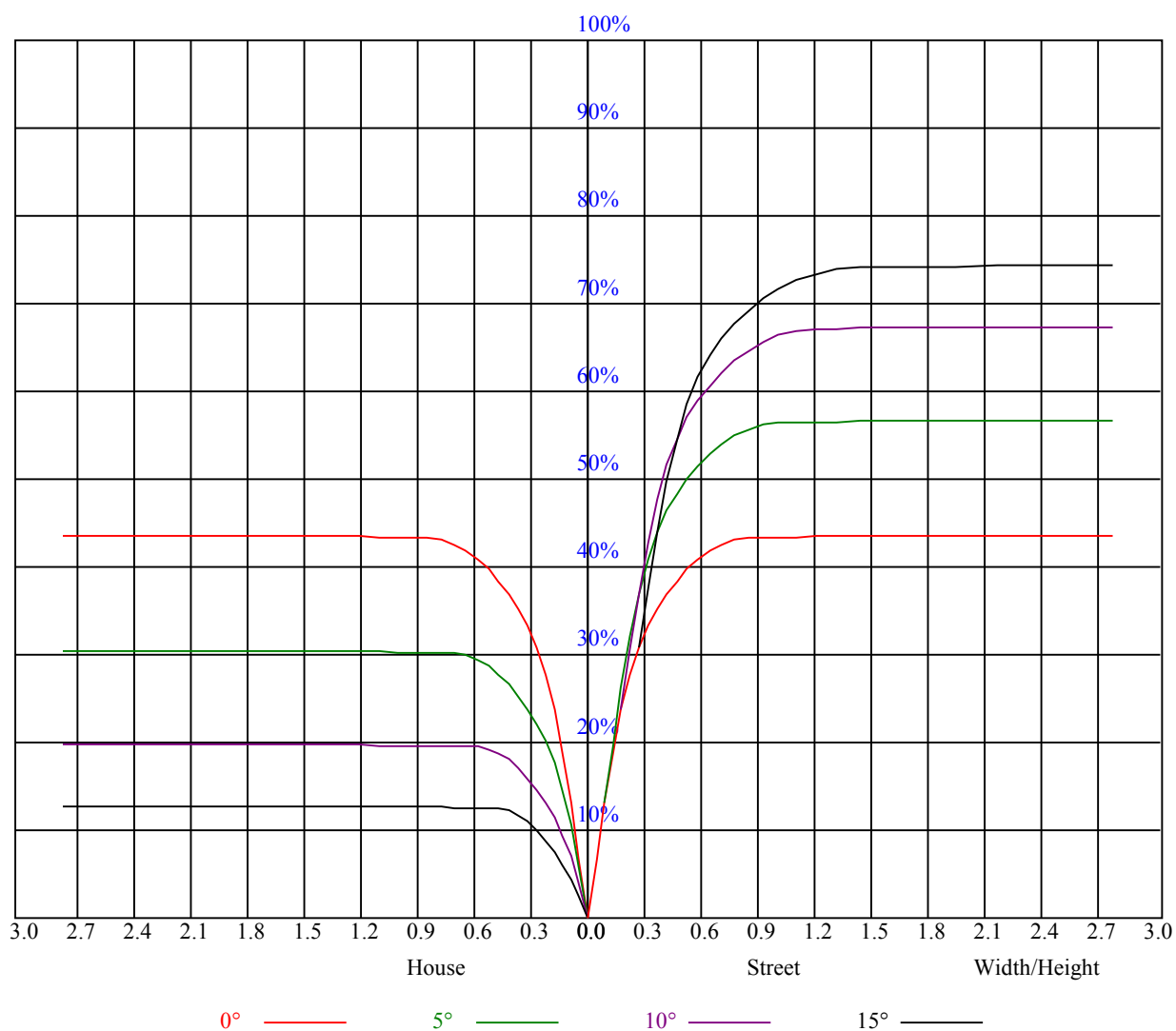
C0 ———

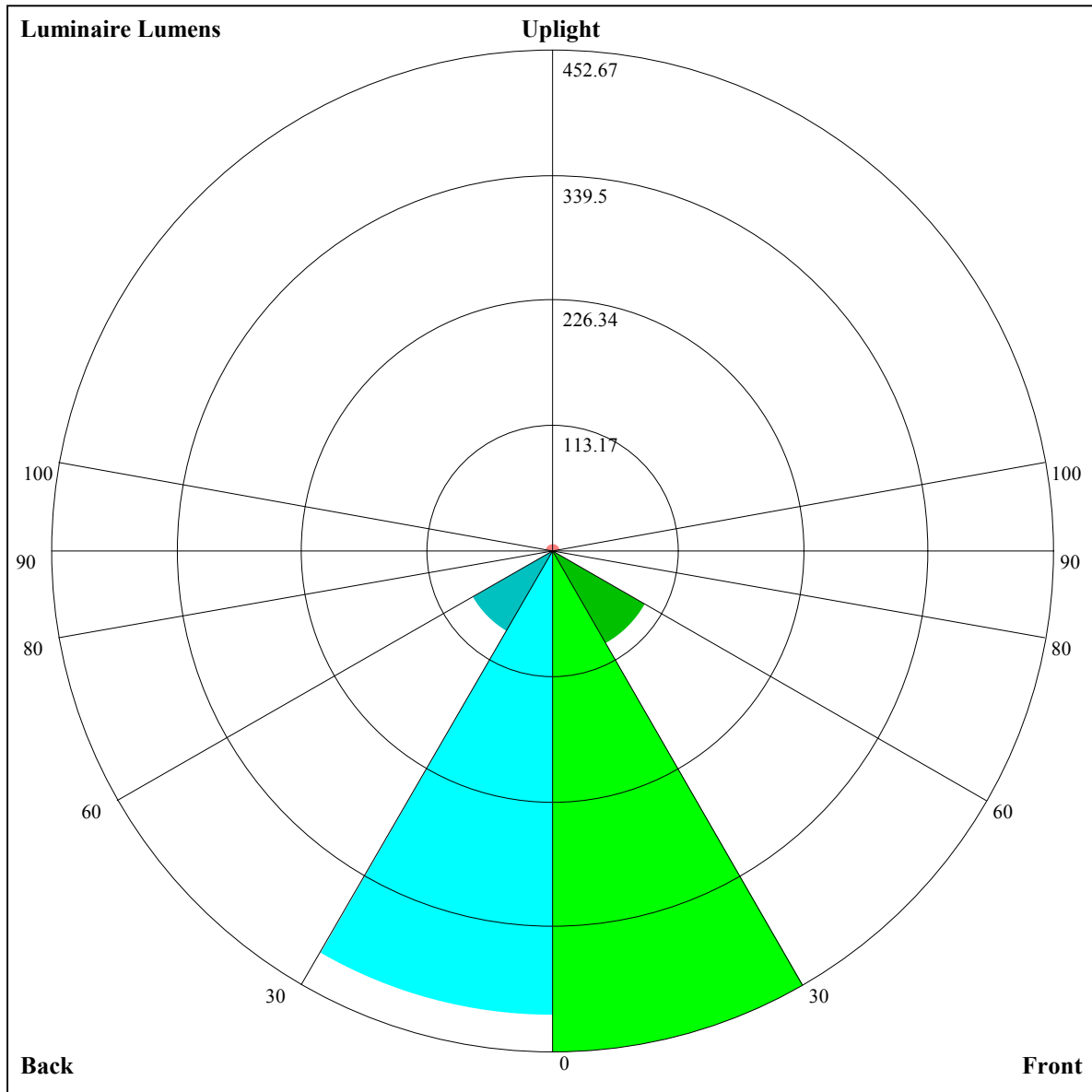
C45 ———

C90 ———



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	1.04	1.04	1.04	1.02	1.02	1.02	0.97	0.97	0.97	0.93	0.93	0.93	0.89	0.89	0.89	0.87
1	0.98	0.96	0.94	0.96	0.94	0.93	0.92	0.91	0.90	0.89	0.88	0.87	0.86	0.86	0.85	0.83
2	0.92	0.90	0.87	0.91	0.88	0.86	0.88	0.86	0.84	0.86	0.84	0.82	0.83	0.82	0.81	0.79
3	0.88	0.84	0.81	0.87	0.83	0.81	0.84	0.82	0.79	0.82	0.80	0.78	0.80	0.79	0.77	0.76
4	0.83	0.80	0.77	0.83	0.79	0.76	0.81	0.78	0.75	0.79	0.76	0.74	0.78	0.75	0.74	0.72
5	0.80	0.76	0.72	0.79	0.75	0.72	0.77	0.74	0.72	0.76	0.73	0.71	0.75	0.72	0.70	0.69
6	0.76	0.72	0.69	0.76	0.72	0.69	0.74	0.71	0.68	0.73	0.70	0.68	0.72	0.70	0.67	0.66
7	0.73	0.69	0.66	0.73	0.69	0.66	0.72	0.68	0.65	0.71	0.67	0.65	0.70	0.67	0.65	0.64
8	0.70	0.66	0.63	0.70	0.66	0.63	0.69	0.65	0.63	0.68	0.65	0.63	0.67	0.64	0.62	0.61
9	0.68	0.63	0.61	0.67	0.63	0.61	0.66	0.63	0.60	0.66	0.62	0.60	0.65	0.62	0.60	0.59
10	0.65	0.61	0.58	0.65	0.61	0.58	0.64	0.61	0.58	0.64	0.60	0.58	0.63	0.60	0.58	0.57





Luminaire Lumens:

FL=452.67,FM=96.11,FH=1.61,FVH=0.69

BL=419.79,BM=84.12,BH=1.58,BVH=0.68

UL=1.37,UH=6.54

BUG Rating:B1-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	3963.36	3967.07	3949.90	3896.07	3811.62	3695.61	3555.47	3381.92	3181.00
45.0	3911.85	3970.78	3999.09	3999.09	3973.56	3942.47	3871.01	3712.31	3625.08
90.0	3963.82	3974.49	3958.25	3908.14	3830.64	3719.74	3575.42	3403.73	3204.20
135.0	3930.41	3943.87	3922.99	3873.33	3790.27	3673.34	3587.49	3348.51	3142.48
180.0	3963.36	3928.09	3866.84	3763.36	3639.92	3544.33	3288.65	3081.23	2942.48
225.0	3911.85	3819.97	3698.86	3540.62	3356.40	3146.19	2916.50	2669.63	2406.52
270.0	3963.82	3920.66	3846.42	3734.59	3598.63	3464.06	3230.18	3057.56	2819.05
315.0	3930.41	3891.89	3820.43	3714.17	3577.28	3405.12	3209.77	2991.67	2742.95
360.0	3963.36	3967.07	3949.90	3896.07	3811.62	3695.61	3555.47	3381.92	3181.00

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	2952.69	2691.44	2412.56	2234.37	1818.13	1546.67	1400.96	882.92	882.92
45.0	3456.17	3257.56	3032.04	2778.68	2506.76	2218.59	1918.82	1629.73	1369.41
90.0	2975.43	2718.82	2437.15	2141.56	1842.72	1561.98	1409.32	884.73	884.73
135.0	3006.98	2655.71	2377.29	2204.67	1911.86	1632.52	1378.69	1161.99	983.80
180.0	2693.76	2424.16	2143.88	1865.92	1606.07	1375.91	1177.30	1007.46	863.15
225.0	2130.89	1857.11	1606.53	1382.40	1187.51	852.29	852.29	780.41	680.78
270.0	2502.11	2281.70	2000.49	1727.18	1474.74	1258.51	1074.28	918.37	792.15
315.0	2471.02	2182.86	2008.85	1619.06	1465.93	1238.55	870.25	870.25	750.90
360.0	2952.69	2691.44	2412.56	2234.37	1818.13	1546.67	1400.96	882.92	882.92

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	828.44	718.00	633.45	567.98	520.18	484.36	456.52	437.63	423.06
45.0	1148.53	966.63	820.92	709.55	624.64	561.99	514.66	480.32	463.62
90.0	858.00	743.01	654.52	588.53	537.77	499.21	469.60	446.96	430.30
135.0	840.87	728.11	641.80	575.91	527.65	491.46	462.69	440.41	424.64
180.0	745.28	652.94	583.80	531.36	490.07	460.83	439.49	422.78	412.11
225.0	603.20	544.54	501.30	467.19	444.45	427.89	414.52	404.17	396.05
270.0	690.99	612.11	553.64	508.63	474.75	449.23	430.21	417.21	409.79
315.0	659.39	588.77	536.84	497.86	468.30	444.78	428.21	415.87	405.75
360.0	828.44	718.00	633.45	567.98	520.18	484.36	456.52	437.63	423.06

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	411.09	402.92	393.83	386.63	380.14	375.40	364.45	352.02	320.93
45.0	441.81	426.49	414.43	404.68	397.26	388.44	381.95	374.52	368.02
90.0	417.91	408.44	400.23	392.20	384.92	378.98	372.06	359.07	336.75
135.0	413.04	403.76	395.87	389.83	381.02	374.06	368.49	360.14	333.22
180.0	402.36	394.01	387.51	379.16	372.67	365.70	342.04	307.24	262.69
225.0	387.75	380.28	372.85	365.38	340.97	319.26	257.07	228.86	180.83
270.0	397.72	393.08	384.73	374.52	369.88	363.38	342.50	307.70	265.94
315.0	397.54	392.99	385.33	374.80	370.76	363.94	345.38	310.16	266.40
360.0	411.09	402.92	393.83	386.63	380.14	375.40	364.45	352.02	320.93

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	279.21	231.23	183.25	135.68	88.91	48.72	20.42	9.37	8.35
45.0	349.93	316.05	271.04	234.38	234.38	136.29	71.65	47.89	18.51
90.0	300.28	255.64	205.15	154.20	104.92	63.06	29.33	10.95	9.14
135.0	293.78	248.77	239.49	184.96	103.85	61.67	27.47	10.30	8.63
180.0	252.48	232.99	117.12	73.09	37.22	14.15	8.82	8.21	7.19
225.0	132.48	86.68	46.45	18.00	9.19	8.17	7.05	5.89	4.69
270.0	246.91	237.17	113.69	70.81	36.43	13.46	9.70	8.91	7.29
315.0	218.56	170.58	122.64	77.54	39.40	14.11	9.37	8.26	6.73
360.0	279.21	231.23	183.25	135.68	88.91	48.72	20.42	9.37	8.35

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	7.05	5.57	4.64	3.48	3.11	3.02	2.88	2.69	2.55
45.0	9.23	8.03	6.73	5.52	4.50	3.81	3.34	3.11	3.02
90.0	8.03	6.45	5.01	4.36	3.85	3.62	3.43	3.29	3.16
135.0	7.61	6.22	5.43	4.45	3.43	3.25	3.11	2.97	2.78
180.0	5.38	4.64	3.71	3.25	3.06	2.88	2.78	2.69	2.51
225.0	3.90	3.39	3.20	3.02	2.92	2.78	2.60	2.46	2.41
270.0	5.85	5.01	4.36	3.71	3.57	3.43	3.20	3.02	2.92
315.0	5.29	4.36	3.39	3.20	3.11	2.92	2.83	2.74	2.51
360.0	7.05	5.57	4.64	3.48	3.11	3.02	2.88	2.69	2.55
C/ γ (°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	2.51	2.37	2.32	2.27	2.13	2.04	2.00	1.90	1.81
45.0	2.92	2.74	2.55	2.46	2.41	2.27	2.18	2.04	2.04
90.0	3.06	2.78	2.74	2.60	2.41	2.41	2.32	2.18	2.13
135.0	2.69	2.60	2.46	2.32	2.23	2.18	2.04	1.95	1.95
180.0	2.41	2.32	2.27	2.13	2.00	2.00	1.95	1.86	1.72
225.0	2.32	2.18	2.09	2.00	1.95	1.95	1.81	1.72	1.72
270.0	2.78	2.64	2.51	2.41	2.37	2.18	2.13	2.09	2.00
315.0	2.41	2.37	2.23	2.09	2.04	2.00	1.90	1.81	1.81
360.0	2.51	2.37	2.32	2.27	2.13	2.04	2.00	1.90	1.81
C/ γ (°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	1.76	1.76	1.67	1.58	1.58	1.58	1.48	1.44	1.48
45.0	1.95	1.86	1.86	1.76	1.67	1.62	1.67	1.58	1.48
90.0	2.09	1.95	1.86	1.86	1.81	1.67	1.62	1.62	1.62
135.0	1.86	1.76	1.72	1.72	1.62	1.58	1.48	1.53	1.44
180.0	1.67	1.67	1.67	1.53	1.53	1.48	1.44	1.44	1.35
225.0	1.67	1.58	1.53	1.53	1.53	1.39	1.39	1.39	1.39
270.0	1.90	1.90	1.81	1.72	1.72	1.67	1.53	1.58	1.58
315.0	1.76	1.62	1.58	1.58	1.53	1.48	1.44	1.39	1.44
360.0	1.76	1.76	1.67	1.58	1.58	1.58	1.48	1.44	1.48
C/ γ (°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	1.44	1.35	1.35	1.39	1.35	1.30	1.25	1.25	1.30
45.0	1.44	1.48	1.44	1.39	1.30	1.39	1.35	1.30	1.25
90.0	1.53	1.44	1.48	1.44	1.39	1.39	1.35	1.30	1.35
135.0	1.39	1.35	1.35	1.39	1.30	1.25	1.30	1.30	1.25
180.0	1.35	1.39	1.30	1.30	1.30	1.30	1.25	1.21	1.25
225.0	1.30	1.25	1.35	1.25	1.25	1.30	1.21	1.25	1.25
270.0	1.48	1.44	1.44	1.44	1.39	1.35	1.35	1.35	1.30
315.0	1.30	1.30	1.30	1.30	1.25	1.21	1.25	1.30	1.21
360.0	1.44	1.35	1.35	1.39	1.35	1.30	1.25	1.25	1.30
C/ γ (°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	1.21	1.25	1.25	1.25	1.21	1.25	1.21	1.21	1.21
45.0	1.25	1.30	1.25	1.21	1.25	1.16	1.21	1.21	1.21
90.0	1.35	1.30	1.35	1.35	1.30	1.25	1.30	1.25	1.25
135.0	1.21	1.25	1.21	1.25	1.21	1.21	1.21	1.25	1.21
180.0	1.25	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.30
225.0	1.25	1.21	1.25	1.16	1.16	1.21	1.25	1.21	1.16
270.0	1.25	1.35	1.25	1.30	1.30	1.35	1.25	1.35	1.35
315.0	1.16	1.21	1.16	1.21	1.21	1.16	1.16	1.21	1.25
360.0	1.21	1.25	1.25	1.25	1.21	1.25	1.21	1.21	1.21

Intensity data(cd)

Appendix Page: 19 Total:19

C/ γ (°)	90.0
0.0	1.30
45.0	1.21
90.0	1.30
135.0	1.21
180.0	1.21
225.0	1.16
270.0	1.44
315.0	1.25
360.0	1.30