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Nata

Client:

LumCAT: 2-1102-E

Luminaire: 99.02.73.171

Report No:

Voltage(V): 34.2900

Test No: GC2019083006

Current(A): 0.3550

LampCAT: XICATO XOB LES 9.8MM

Power (W): 12.1700

Lamp flux(lm): 1120.0

PF: 0.0000

Number of Lamps: 1

Ballast type: DC

Length(mm): 35

Width(mm): 35

Phm Type: C

Height(mm): 0

Photometric Results

Lumens(lm): 1001.16, Efficiency(%): 89.39% , Luminous Efficacy(lm/W): 82.26

Central intensity(cd): 9485.931, Maximum intensity(cd): 9485.931

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=10.8

[C90/270]Total=10.8

Field angle(10%Imax): [C0/180]Total=23.8

[C90/270]Total=23.8

Maximum s/h(1/2): C0_180=0.19 C90_270=0.19

Maximum s/h(1/4): C0_180=0.19 C90_270=0.19

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 89.39%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 98.124%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	9485.930	0.000	0	.000%	.000%
1.0	9245.320	8.963	8.963	.800%	.895%
2.0	8637.820	25.668	34.63	2.292%	3.459%
3.0	7619.977	38.883	73.513	3.472%	7.343%
4.0	6424.453	47.011	120.525	4.197%	12.038%
5.0	5219.367	50.091	170.616	4.472%	17.042%
6.0	4010.977	48.508	219.124	4.331%	21.887%
7.0	2872.758	42.727	261.851	3.815%	26.155%
8.0	2134.898	35.839	297.69	3.200%	29.734%
9.0	1544.843	29.822	327.512	2.663%	32.713%
10.0	1211.456	24.943	352.455	2.227%	35.205%
11.0	1049.449	22.591	375.047	2.017%	37.461%
12.0	935.311	21.696	396.743	1.937%	39.628%
13.0	838.673	21.053	417.796	1.880%	41.731%
14.0	765.120	20.528	438.324	1.833%	43.782%
15.0	709.270	20.241	458.565	1.807%	45.803%
16.0	663.286	20.112	478.677	1.796%	47.812%
17.0	632.503	20.179	498.856	1.802%	49.828%
18.0	606.642	20.431	519.287	1.824%	51.868%
19.0	584.768	20.728	540.015	1.851%	53.939%
20.0	564.096	21.027	561.042	1.877%	56.039%
21.0	543.860	21.275	582.317	1.900%	58.164%
22.0	522.802	21.435	603.752	1.914%	60.305%
23.0	503.360	21.532	625.284	1.922%	62.456%
24.0	484.130	21.590	646.874	1.928%	64.612%
25.0	465.237	21.587	668.46	1.927%	66.768%
26.0	449.009	21.581	690.041	1.927%	68.924%
27.0	432.429	21.565	711.606	1.925%	71.078%
28.0	417.614	21.521	733.127	1.922%	73.228%
29.0	403.896	21.493	754.62	1.919%	75.374%
30.0	392.400	21.500	776.12	1.920%	77.522%
31.0	381.389	21.533	797.653	1.923%	79.673%
32.0	370.680	21.546	819.199	1.924%	81.825%
33.0	361.884	21.582	840.781	1.927%	83.980%
34.0	350.248	21.551	862.332	1.924%	86.133%
35.0	331.095	21.160	883.492	1.889%	88.247%
36.0	296.058	19.969	903.461	1.783%	90.241%
37.0	254.384	17.952	921.413	1.603%	92.034%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	193.352	14.945	936.358	1.334%	93.527%
39.0	138.038	11.311	947.669	1.010%	94.657%
40.0	89.670	7.942	955.611	.709%	95.450%
41.0	54.148	5.121	960.732	.457%	95.962%
42.0	33.680	3.191	963.923	.285%	96.280%
43.0	25.896	2.207	966.13	.197%	96.501%
44.0	21.066	1.772	967.902	.158%	96.678%
45.0	16.995	1.463	969.365	.131%	96.824%
46.0	13.746	1.202	970.567	.107%	96.944%
47.0	12.023	1.025	971.592	.092%	97.046%
48.0	11.355	0.945	972.537	.084%	97.141%
49.0	10.751	0.908	973.445	.081%	97.231%
50.0	10.294	0.877	974.322	.078%	97.319%
51.0	9.984	0.858	975.18	.077%	97.405%
52.0	9.710	0.845	976.025	.075%	97.489%
53.0	9.492	0.835	976.861	.075%	97.573%
54.0	9.239	0.826	977.686	.074%	97.655%
55.0	8.986	0.814	978.5	.073%	97.736%
56.0	8.761	0.802	979.302	.072%	97.816%
57.0	8.550	0.791	980.093	.071%	97.896%
58.0	8.283	0.778	980.872	.070%	97.973%
59.0	8.051	0.764	981.635	.068%	98.050%
60.0	7.805	0.749	982.384	.067%	98.124%
61.0	7.530	0.732	983.116	.065%	98.197%
62.0	7.327	0.716	983.832	.064%	98.269%
63.0	7.109	0.702	984.534	.063%	98.339%
64.0	6.912	0.688	985.222	.061%	98.408%
65.0	6.729	0.675	985.897	.060%	98.475%
66.0	6.595	0.665	986.562	.059%	98.542%
67.0	6.490	0.658	987.22	.059%	98.607%
68.0	6.448	0.655	987.875	.059%	98.673%
69.0	6.441	0.657	988.533	.059%	98.739%
70.0	6.398	0.659	989.192	.059%	98.804%
71.0	6.363	0.660	989.852	.059%	98.870%
72.0	6.321	0.660	990.511	.059%	98.936%
73.0	6.244	0.657	991.168	.059%	99.002%
74.0	6.166	0.652	991.821	.058%	99.067%
75.0	6.103	0.648	992.469	.058%	99.132%

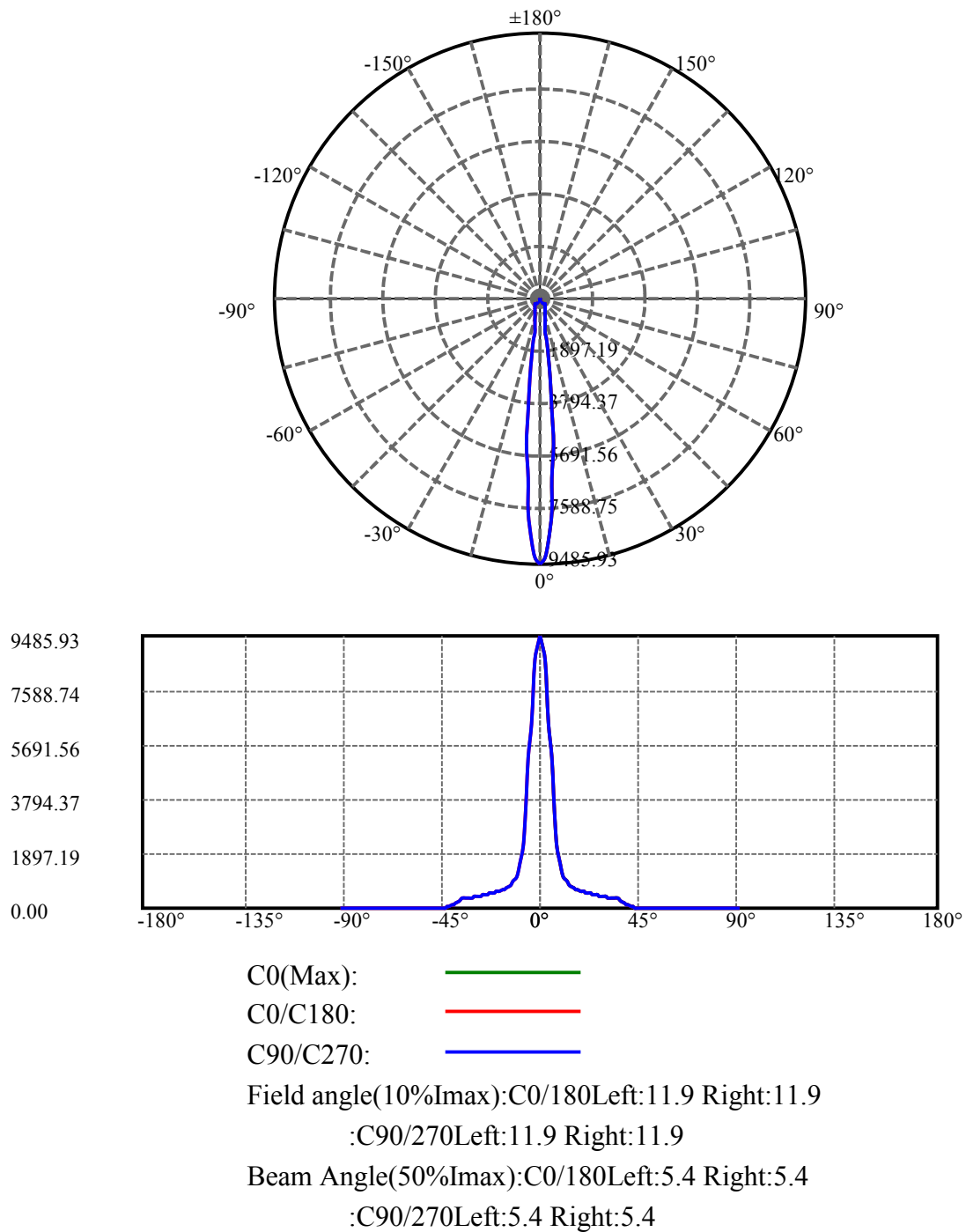
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	5.998	0.642	993.111	.057%	99.196%
77.0	5.899	0.634	993.746	.057%	99.259%
78.0	5.815	0.627	994.373	.056%	99.322%
79.0	5.723	0.620	994.993	.055%	99.384%
80.0	5.639	0.613	995.605	.055%	99.445%
81.0	5.498	0.602	996.208	.054%	99.505%
82.0	5.330	0.587	996.795	.052%	99.564%
83.0	5.245	0.575	997.37	.051%	99.621%
84.0	5.189	0.568	997.938	.051%	99.678%
85.0	5.147	0.564	998.502	.050%	99.734%
86.0	5.126	0.562	999.064	.050%	99.790%
87.0	5.013	0.555	999.619	.050%	99.846%
88.0	4.760	0.535	1000.154	.048%	99.899%
89.0	4.563	0.511	1000.665	.046%	99.950%
90.0	4.507	0.497	1001.162	.044%	100.000%

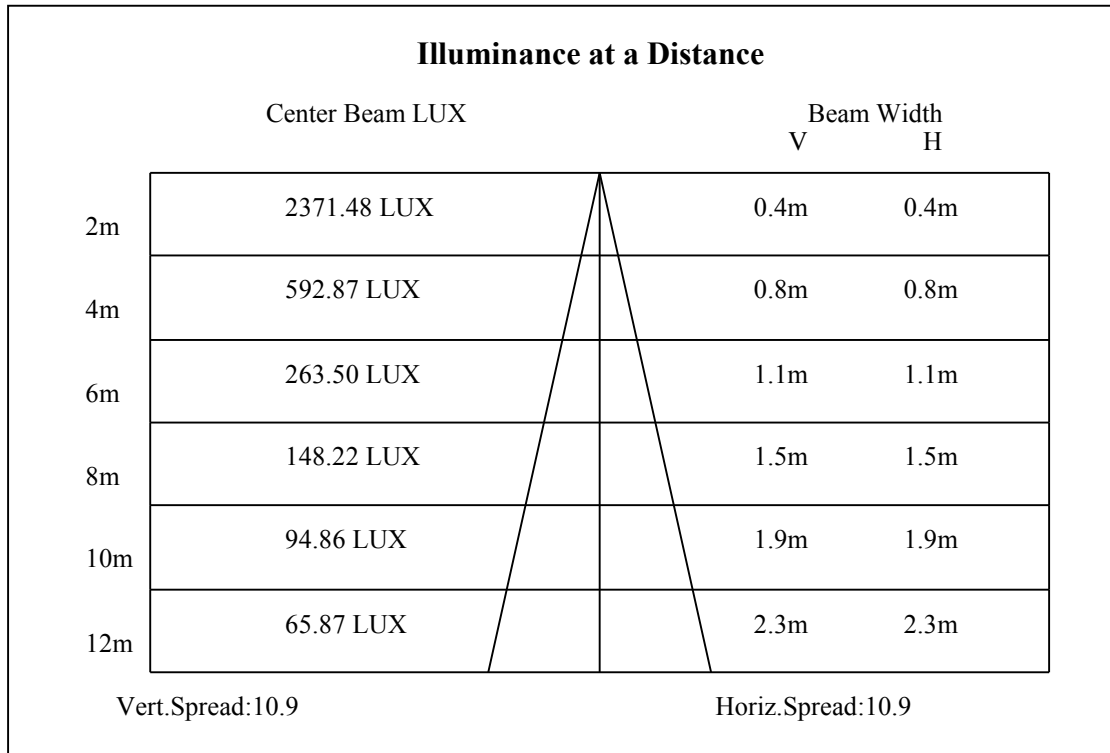
ZONAL LUMEN SUMMARY

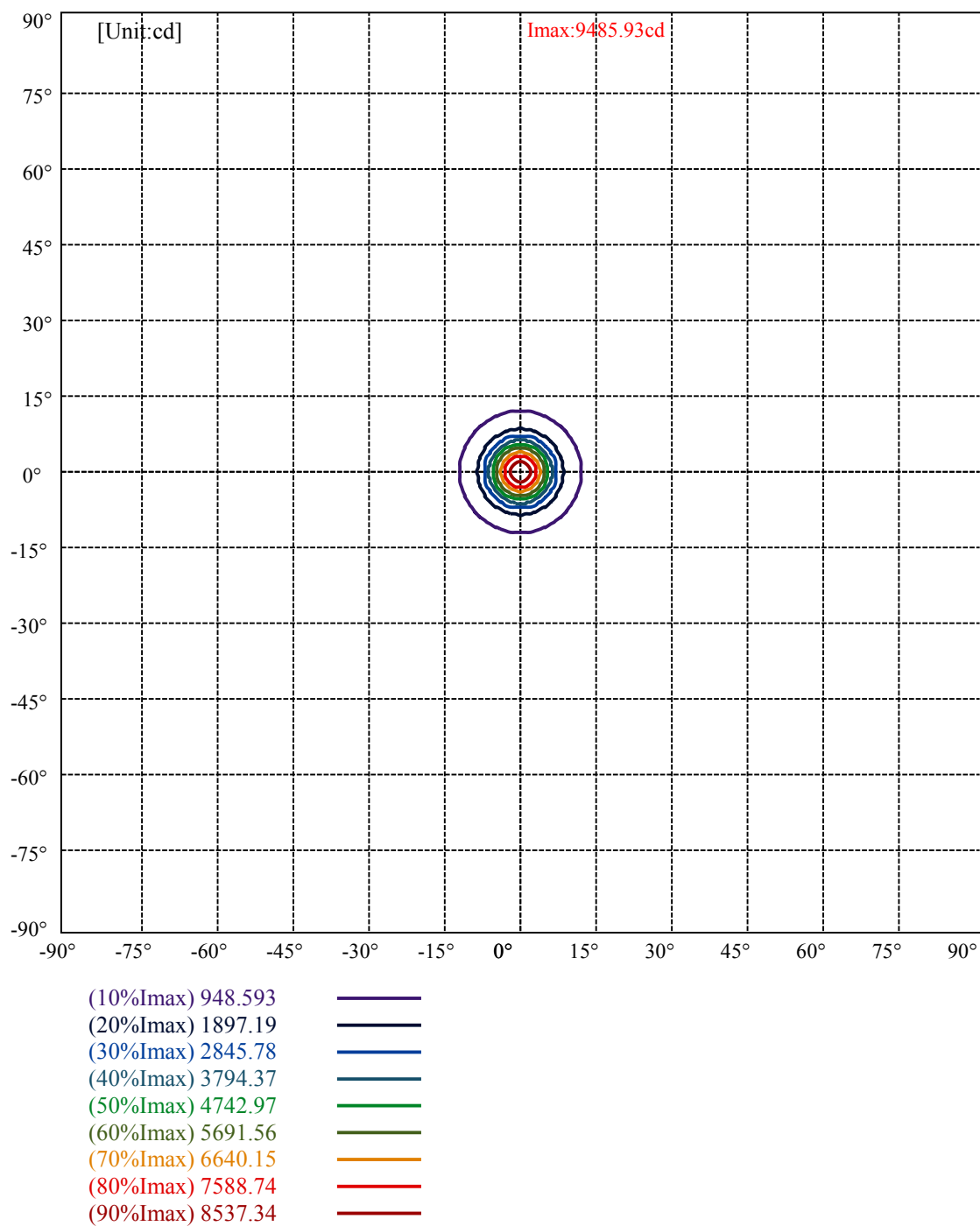
Zone	Lumens	%Lamp	%Fixt
0-30	776.12	69.30%	77.52%
0-40	955.61	85.32%	95.45%
0-60	982.38	87.71%	98.12%
0-90	1000.67	89.35%	99.95%
0-120	1000.67	89.35%	99.95%
0-180	1001.16	89.39%	100.00%
60-90	19.03	1.70%	1.90%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-31.15	800.93	71.51%	80.00%

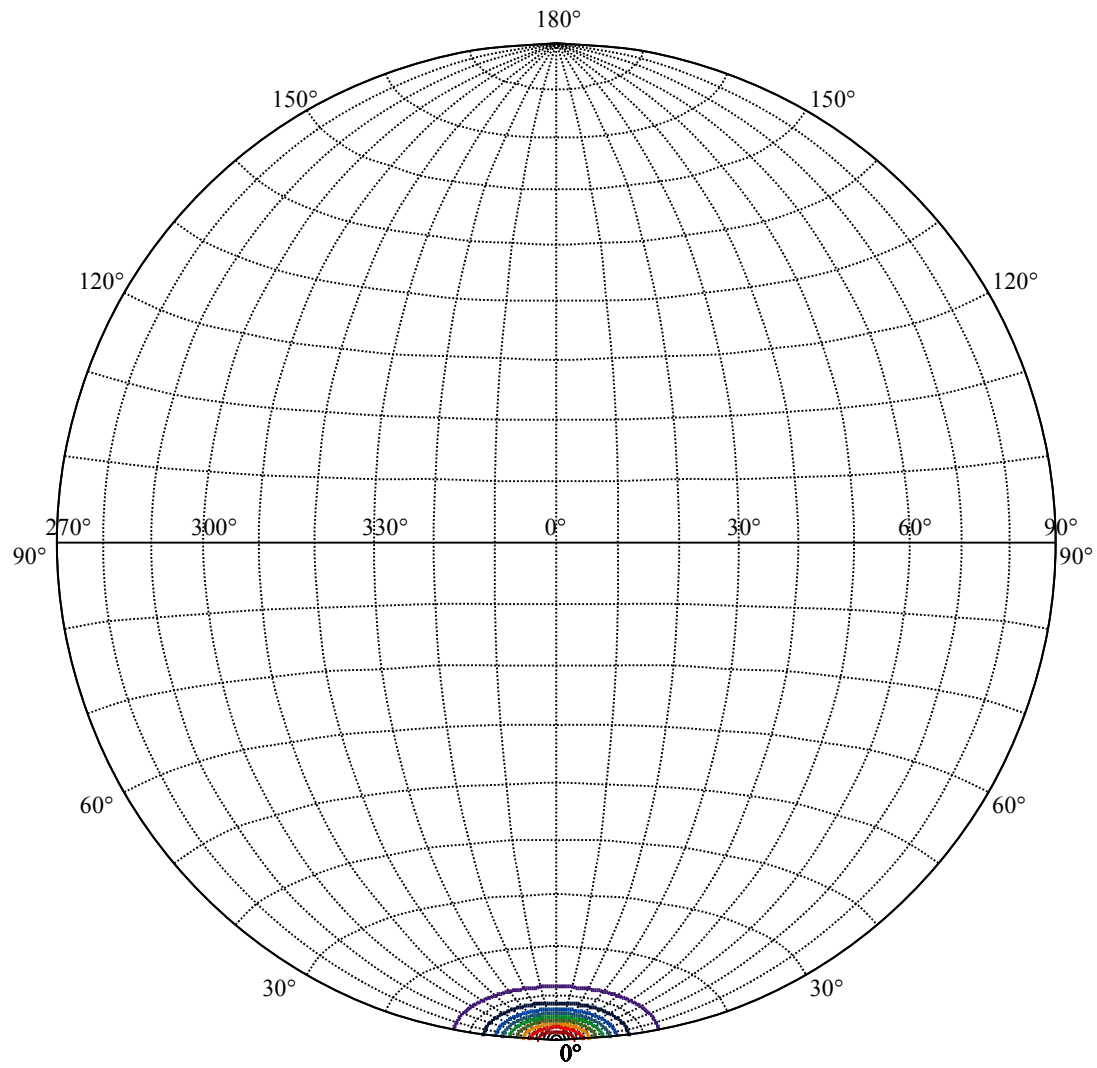
ZONAL LUMEN SUMMARY

0-10	352.46
10-20	208.59
20-30	215.08
30-40	179.49
40-50	18.71
50-60	8.06
60-70	6.81
70-80	6.41
80-90	5.06
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







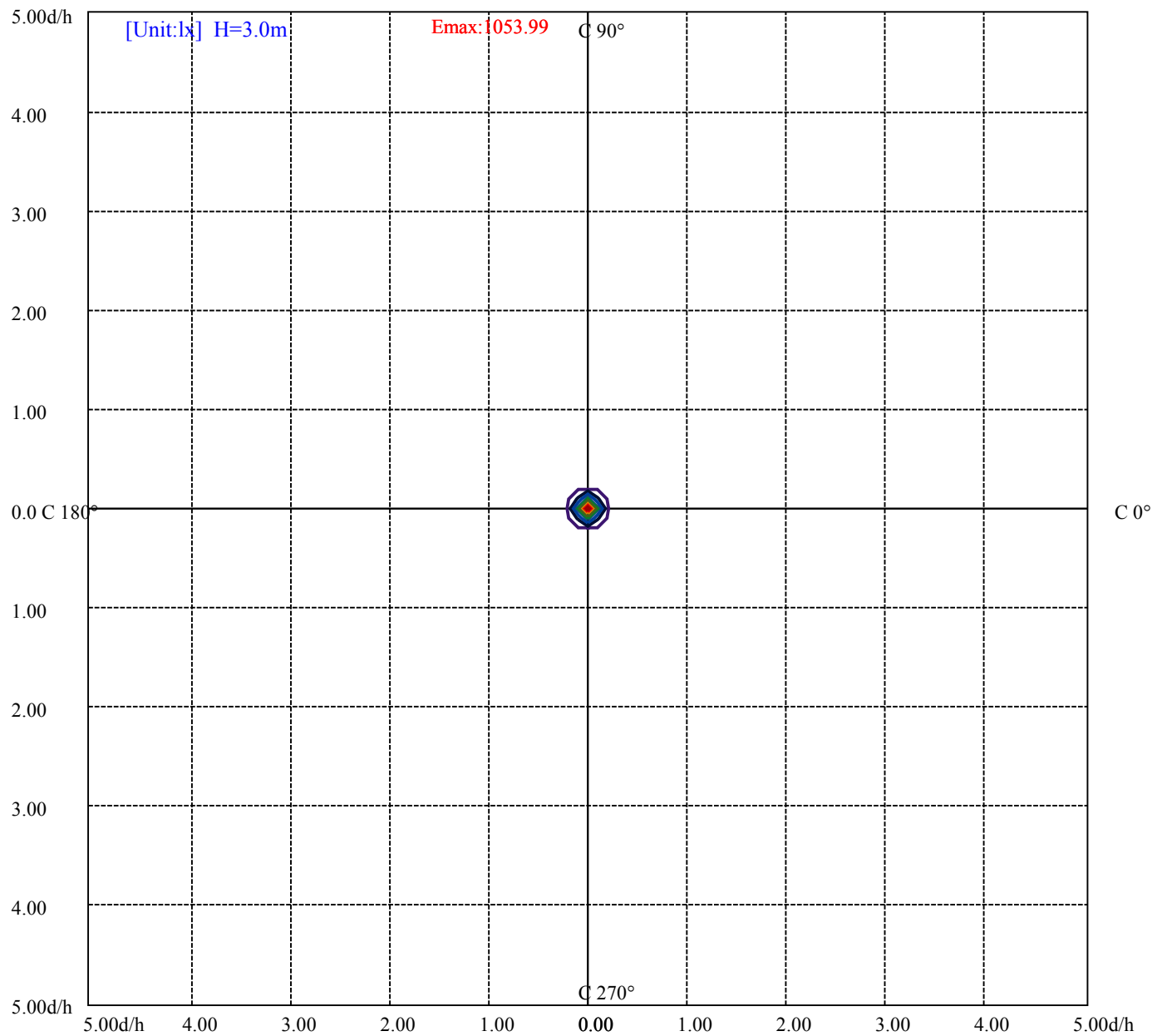


House

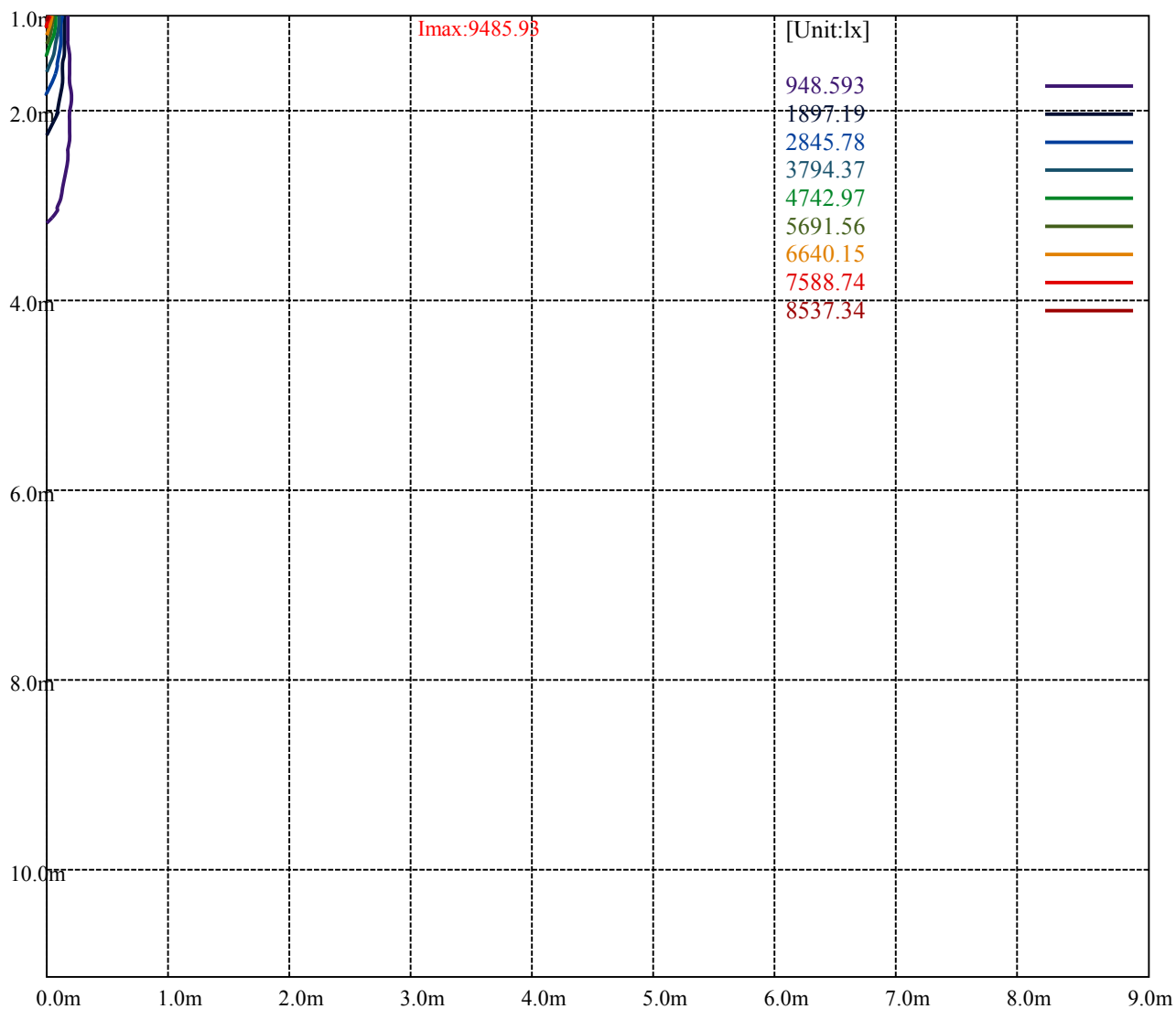
[Unit:cd]

Road

Imax:9485.93	
(10%Imax) 948.593	
(20%Imax) 1897.19	
(30%Imax) 2845.78	
(40%Imax) 3794.37	
(50%Imax) 4742.97	
(60%Imax) 5691.56	
(70%Imax) 6640.15	
(80%Imax) 7588.74	
(90%Imax) 8537.34	



(10%Emax)	105.3988	—
(20%Emax)	210.7978	—
(30%Emax)	316.1967	—
(40%Emax)	421.5956	—
(50%Emax)	526.9944	—
(60%Emax)	632.3933	—
(70%Emax)	737.7922	—
(80%Emax)	843.1912	—
(90%Emax)	948.5889	—



Luminance Table

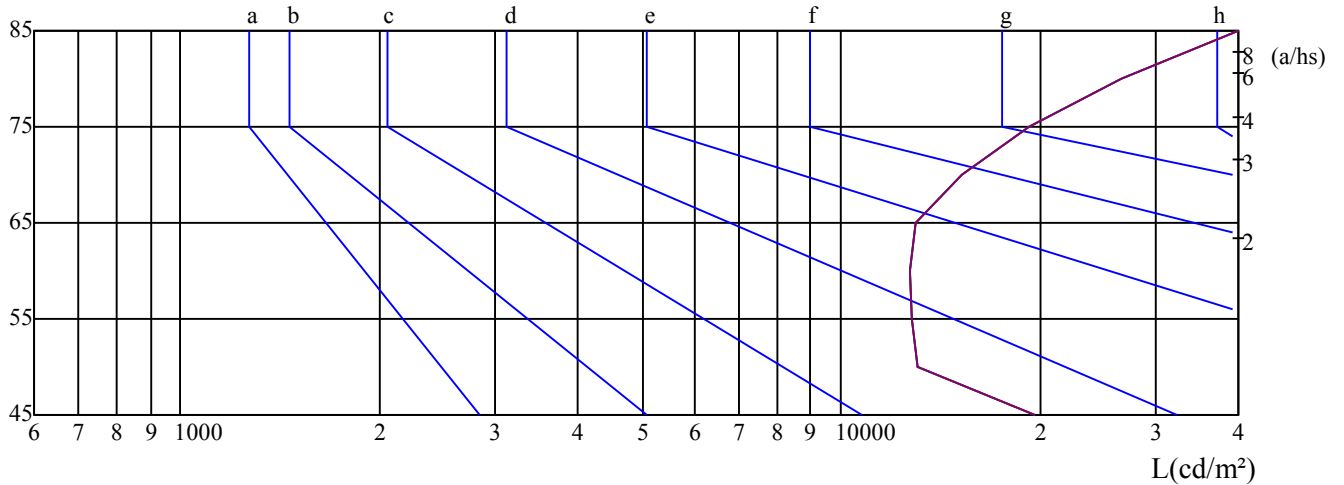
γ	45	50	55	60	65	70	75	80	85
C0	19620	13073	12789	12742	12998	15272	19250	26509	48207
C45	19620	13073	12789	12742	12998	15272	19250	26509	48207
C90	19620	13073	12789	12742	12998	15272	19250	26509	48207

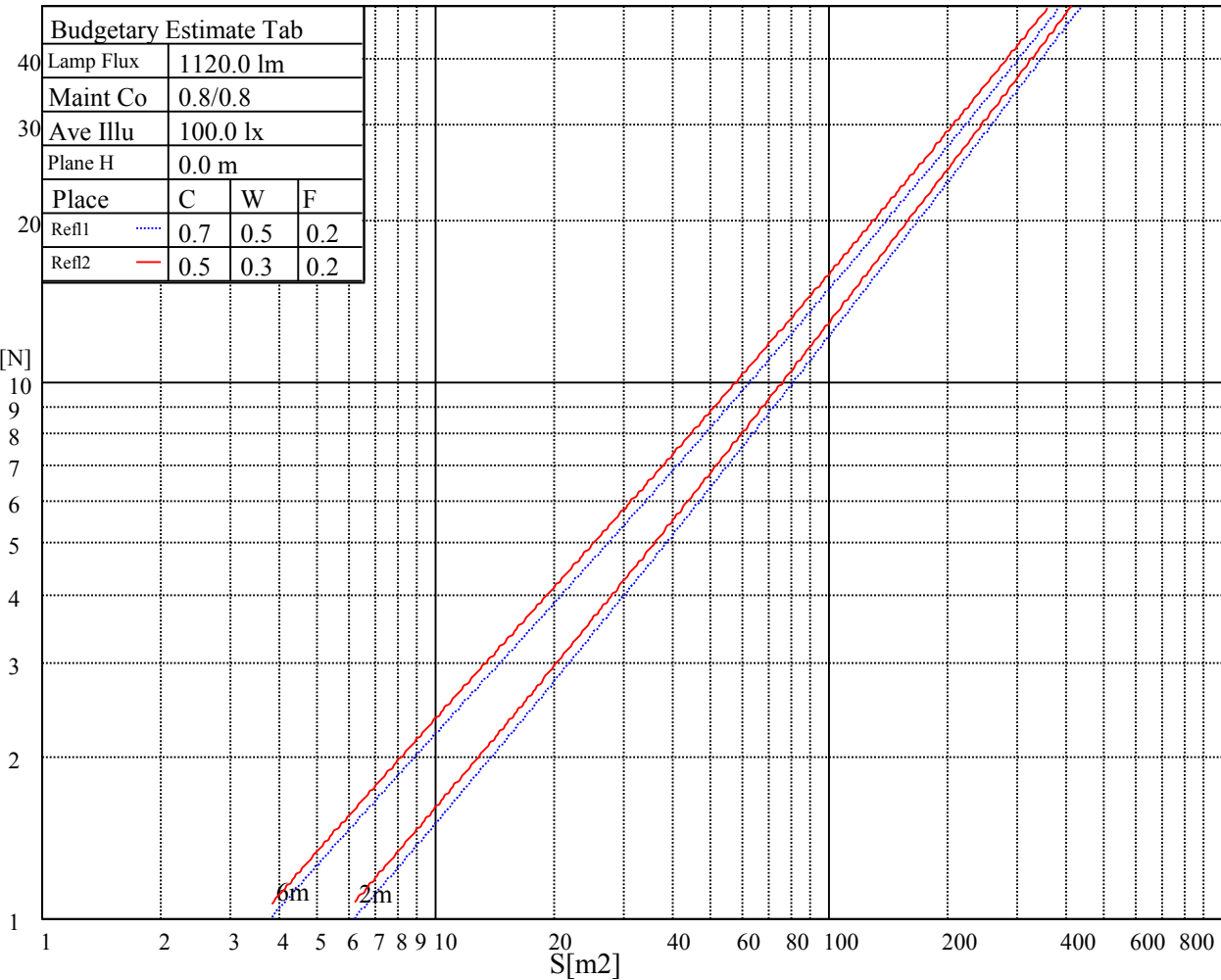
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
12998	12998	12998	19250	19250	19250	48207	48207	48207

Glare Table

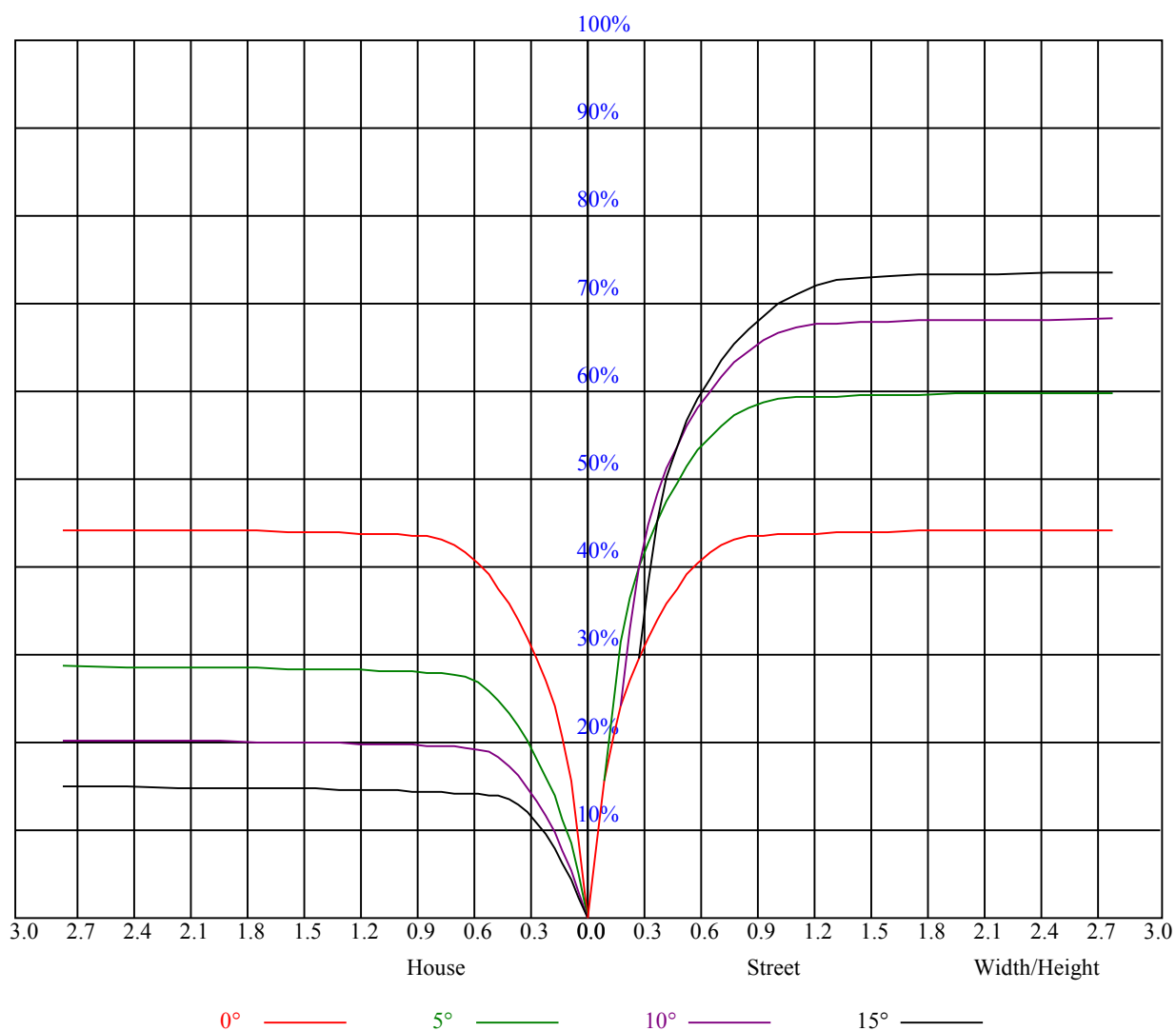
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

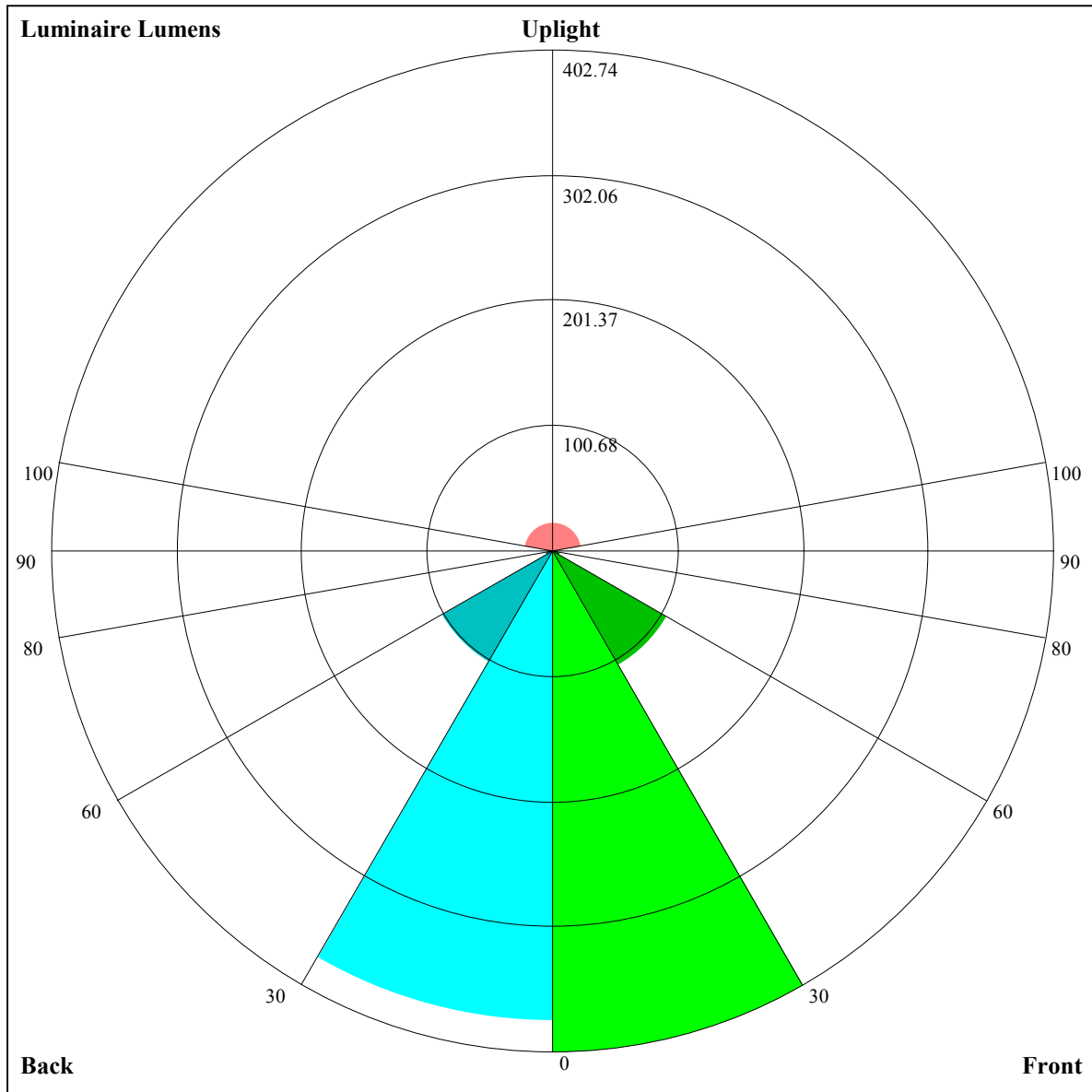
Luminance Limiting Curve

 $\gamma(^{\circ})$ 



RHOC	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	1.06	1.06	1.06	1.04	1.04	1.04	0.99	0.99	0.99	0.95	0.95	0.95	0.91	0.91	0.91	0.89
1	1.00	0.98	0.96	0.98	0.96	0.94	0.94	0.93	0.91	0.91	0.90	0.89	0.88	0.87	0.86	0.85
2	0.94	0.91	0.88	0.92	0.90	0.87	0.90	0.87	0.85	0.87	0.85	0.83	0.85	0.83	0.82	0.80
3	0.89	0.85	0.82	0.88	0.84	0.81	0.85	0.82	0.80	0.83	0.81	0.79	0.81	0.79	0.78	0.76
4	0.84	0.80	0.77	0.83	0.80	0.77	0.82	0.78	0.76	0.80	0.77	0.75	0.78	0.76	0.74	0.73
5	0.80	0.76	0.73	0.80	0.76	0.73	0.78	0.75	0.72	0.77	0.74	0.71	0.75	0.73	0.71	0.70
6	0.77	0.72	0.69	0.76	0.72	0.69	0.75	0.71	0.69	0.74	0.71	0.68	0.73	0.70	0.68	0.67
7	0.74	0.69	0.66	0.73	0.69	0.66	0.72	0.68	0.66	0.71	0.68	0.65	0.70	0.67	0.65	0.64
8	0.71	0.66	0.63	0.70	0.66	0.63	0.69	0.66	0.63	0.69	0.65	0.63	0.68	0.65	0.63	0.62
9	0.68	0.64	0.61	0.68	0.64	0.61	0.67	0.63	0.61	0.66	0.63	0.61	0.66	0.63	0.60	0.59
10	0.66	0.62	0.59	0.66	0.61	0.59	0.65	0.61	0.59	0.64	0.61	0.58	0.64	0.61	0.58	0.57





Luminaire Lumens:

FL=402.74,FM=105.51,FH=6.42,FVH=2.78

BL=377.45,BM=103.81,BH=6.48,BVH=2.74

UL=4.92,UH=23.4

BUG Rating:B1-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	9526.50	9608.06	9261.56	8266.50	7191.00	5988.38	4483.13	3395.25	2511.56
45.0	9361.13	9594.56	9389.81	8782.31	7766.44	6505.88	5294.81	3927.94	2889.00
90.0	9540.00	9376.31	8821.69	7876.13	6671.25	5506.31	4329.56	2993.63	2181.38
135.0	9545.06	9426.94	8848.69	7898.63	6857.44	5572.13	4272.19	3183.19	2318.63
180.0	9526.50	8894.81	8191.13	7033.50	5600.25	4579.88	3480.75	2256.75	1731.94
225.0	9303.19	8647.31	7718.06	6487.31	5151.94	3989.25	2975.06	2017.13	1537.88
270.0	9540.00	9254.25	8465.06	7334.44	6168.94	4819.50	3565.69	2656.13	1991.81
315.0	9545.06	9160.31	8406.56	7281.00	5988.38	4793.63	3686.63	2552.06	1917.00
360.0	9526.50	9608.06	9261.56	8266.50	7191.00	5988.38	4483.13	3395.25	2511.56
C/ γ (°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	1761.75	1401.19	1170.56	1049.63	951.19	860.06	784.13	721.69	672.19
45.0	2022.75	1464.75	1159.88	996.75	842.06	763.31	713.81	641.25	611.44
90.0	1636.31	1105.76	1022.79	910.07	832.39	775.01	733.84	695.87	668.76
135.0	1624.50	1301.63	1098.00	955.69	864.56	803.81	743.06	696.94	662.06
180.0	1248.75	1085.01	923.91	835.54	764.27	703.52	661.95	634.16	609.98
225.0	1104.81	1003.56	892.29	812.53	731.98	670.28	623.87	589.50	562.95
270.0	1460.81	1217.25	1072.69	960.75	858.94	774.00	705.38	660.38	633.38
315.0	1499.06	1112.51	1055.48	961.54	864.00	770.96	708.13	666.51	639.28
360.0	1761.75	1401.19	1170.56	1049.63	951.19	860.06	784.13	721.69	672.19
C/ γ (°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	642.94	621.00	599.63	583.31	564.75	544.50	522.00	502.31	485.44
45.0	592.31	561.38	534.94	505.69	469.13	438.75	412.88	380.25	358.88
90.0	644.29	619.99	596.93	573.13	551.87	532.63	516.60	499.89	482.96
135.0	629.44	605.81	585.56	565.31	547.31	529.31	507.38	492.19	477.00
180.0	586.52	569.14	552.60	536.79	523.07	506.76	492.36	476.72	461.70
225.0	535.61	514.58	493.65	474.36	452.36	436.33	419.79	401.85	388.01
270.0	608.06	591.19	574.88	556.88	539.44	522.00	501.75	485.44	470.81
315.0	613.97	595.07	574.59	555.41	534.49	516.60	500.29	483.24	467.27
360.0	642.94	621.00	599.63	583.31	564.75	544.50	522.00	502.31	485.44
C/ γ (°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	466.31	449.44	434.25	422.44	410.63	400.50	392.63	384.19	365.06
45.0	336.94	317.25	298.69	288.56	284.06	279.11	283.61	291.88	296.21
90.0	467.49	447.36	433.46	419.96	404.66	393.98	384.02	371.93	358.59
135.0	459.00	446.06	433.69	420.19	408.94	397.13	385.88	372.38	358.88
180.0	448.59	435.54	422.04	411.53	401.01	388.91	378.73	366.08	339.92
225.0	374.18	364.44	353.70	341.44	327.66	312.19	292.33	267.53	239.46
270.0	453.94	441.56	430.31	419.63	407.81	398.25	390.38	374.63	350.44
315.0	452.98	439.26	425.03	415.46	406.35	395.38	387.51	373.39	340.20
360.0	466.31	449.44	434.25	422.44	410.63	400.50	392.63	384.19	365.06
C/ γ (°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	326.25	285.19	219.15	147.88	95.79	54.28	26.78	21.66	16.88
45.0	288.73	258.30	213.86	170.66	120.94	81.73	49.33	34.59	28.80
90.0	327.77	279.79	228.88	167.18	108.06	64.07	35.83	26.38	22.11
135.0	329.06	286.88	224.49	169.65	110.59	65.70	33.81	25.03	20.31
180.0	294.86	245.03	182.53	122.29	76.39	42.53	32.68	27.79	22.84
225.0	200.03	157.05	119.93	85.73	63.56	51.41	42.98	34.14	28.58
270.0	310.50	285.19	184.28	128.76	74.76	40.16	23.96	18.79	14.63
315.0	291.26	237.66	173.70	112.16	67.28	33.30	24.08	18.79	14.40
360.0	326.25	285.19	219.15	147.88	95.79	54.28	26.78	21.66	16.88

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	12.88	10.86	8.78	8.49	8.33	8.16	8.10	7.93	7.82
45.0	22.67	18.68	15.53	13.61	12.04	11.08	10.46	9.96	9.51
90.0	18.73	15.86	13.33	13.56	13.73	13.67	13.44	12.88	12.26
135.0	15.64	9.62	8.33	8.21	8.16	8.33	8.61	9.28	9.96
180.0	17.61	14.68	13.33	12.32	11.31	10.18	9.56	9.11	8.83
225.0	24.08	20.70	18.11	16.20	14.29	13.05	12.04	11.19	10.52
270.0	11.87	9.62	9.39	9.34	9.23	9.17	9.00	8.78	8.49
315.0	12.49	9.96	9.39	9.11	8.94	8.72	8.66	8.55	8.55
360.0	12.88	10.86	8.78	8.49	8.33	8.16	8.10	7.93	7.82
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	7.59	7.37	7.20	7.03	6.86	6.75	6.64	6.53	6.41
45.0	9.28	9.00	8.78	8.49	8.21	7.88	7.59	7.37	7.20
90.0	11.42	10.29	9.51	8.72	7.99	7.59	7.20	6.86	6.58
135.0	10.58	11.25	11.64	11.81	11.87	11.64	11.25	10.58	10.07
180.0	8.49	8.21	7.99	7.82	7.59	7.26	6.98	6.69	6.53
225.0	9.96	9.56	9.17	8.89	8.49	8.27	8.04	7.82	7.65
270.0	8.10	7.71	7.31	7.09	6.75	6.58	6.41	6.24	6.13
315.0	8.49	8.49	8.49	8.55	8.49	8.44	8.33	8.16	8.04
360.0	7.59	7.37	7.20	7.03	6.86	6.75	6.64	6.53	6.41
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	6.36	6.36	6.36	6.36	6.41	6.41	6.41	6.47	6.41
45.0	7.03	6.92	6.86	6.86	6.92	7.03	7.09	7.09	7.09
90.0	6.36	6.24	6.08	5.96	5.85	5.79	5.68	5.68	5.63
135.0	9.45	8.61	7.93	7.43	6.92	6.69	6.58	6.41	6.36
180.0	6.36	6.30	6.19	6.13	6.08	5.96	5.96	5.85	5.79
225.0	7.54	7.43	7.37	7.26	7.26	7.31	7.48	7.43	7.43
270.0	6.02	5.91	5.79	5.74	5.63	5.57	5.57	5.51	5.51
315.0	7.76	7.54	7.26	7.03	6.86	6.81	6.75	6.75	6.69
360.0	6.36	6.36	6.36	6.36	6.41	6.41	6.41	6.47	6.41
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	6.41	6.24	6.24	6.41	6.53	6.58	6.36	5.96	5.57
45.0	7.14	7.09	7.03	6.98	6.81	6.69	6.58	6.58	6.64
90.0	5.57	5.46	5.34	5.23	5.12	5.12	5.06	5.01	5.01
135.0	6.30	6.24	6.13	6.02	5.96	5.91	5.91	5.91	5.91
180.0	5.74	5.68	5.63	5.51	5.40	5.12	5.06	4.95	4.89
225.0	7.37	7.37	7.31	7.31	7.20	7.09	6.98	6.92	6.75
270.0	5.46	5.40	5.40	5.40	5.29	5.23	5.12	5.06	5.06
315.0	6.58	6.47	6.24	5.96	5.68	5.46	5.46	5.40	5.29
360.0	6.41	6.24	6.24	6.41	6.53	6.58	6.36	5.96	5.57
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	5.34	5.34	5.34	5.40	5.40	5.40	5.34	5.29	4.61
45.0	6.36	5.79	5.40	5.12	4.95	4.84	4.73	4.67	4.39
90.0	5.01	4.95	4.95	4.95	4.89	4.84	4.84	4.61	4.50
135.0	5.85	5.85	5.85	5.79	5.79	5.85	5.68	5.34	5.23
180.0	4.89	4.89	4.84	4.84	4.84	4.78	4.56	4.44	4.39
225.0	6.19	5.40	5.06	4.84	4.73	4.67	4.33	4.33	4.28
270.0	5.06	5.06	5.12	5.18	5.18	5.18	5.23	4.56	4.50
315.0	5.29	5.34	5.40	5.40	5.40	5.46	5.40	4.84	4.61
360.0	5.34	5.34	5.34	5.40	5.40	5.40	5.34	5.29	4.61

Intensity data(cd)

Appendix Page: 19 Total:19

C/ $\gamma(^{\circ})$	90.0
0.0	4.50
45.0	4.33
90.0	4.44
135.0	5.06
180.0	4.39
225.0	4.28
270.0	4.44
315.0	4.61
360.0	4.50