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## Nata

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### Client:

LumCAT: 2-1284-N

Luminaire: 92.70.064.00

Report No: nata-0100

Test No:

LampCAT: CITIZEN CLU028

Lamp flux(lm): 1022.1

Number of Lamps: 1

Length(mm): 57

Phm Type: C

Voltage(V): 35.6000

Current(A): 0.4000

Power (W): 14.2400

PF: 0.0000

Ballast type: DC

Width(mm): 57

Height(mm): 0

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## Photometric Results

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Lumens(lm): 841.94, Efficiency(%): 82.38% , Luminous Efficacy(lm/W): 59.13

Central intensity(cd): 2919.090, Maximum intensity(cd): 2919.090

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

Beam Angle(50%Imax): [C0/180]Total=22.8

[C90/270]Total=22.8

Field angle(10%Imax): [C0/180]Total=61.8

[C90/270]Total=61.8

Maximum s/h(1/2): C0\_180=0.38 C90\_270=0.38

Maximum s/h(1/4): C0\_180=0.43 C90\_270=0.43

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 82.64%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in  $\pi$  solid angle : 97.615%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	2919.090	2.793	2.793	.273%	.332%
2.0	2851.922	21.828	24.622	2.136%	2.924%
4.0	2676.223	40.942	65.564	4.006%	7.787%
6.0	2393.646	54.873	120.437	5.369%	14.305%
8.0	2047.960	62.509	182.946	6.116%	21.729%
10.0	1677.844	63.898	246.844	6.252%	29.318%
12.0	1355.661	61.815	308.659	6.048%	36.660%
14.0	1098.244	58.269	366.929	5.701%	43.581%
16.0	910.220	55.024	421.952	5.384%	50.116%
18.0	766.330	51.935	473.888	5.081%	56.285%
20.0	656.747	49.262	523.15	4.820%	62.136%
22.0	572.091	47.001	570.151	4.599%	67.718%
24.0	505.170	45.063	615.213	4.409%	73.071%
26.0	450.403	43.302	658.515	4.237%	78.214%
28.0	395.608	40.732	699.248	3.985%	83.051%
30.0	331.199	36.318	735.566	3.553%	87.365%
32.0	242.055	28.131	763.697	2.752%	90.706%
34.0	155.197	19.033	782.73	1.862%	92.967%
36.0	79.474	10.245	792.975	1.002%	94.184%
38.0	40.466	5.464	798.439	.535%	94.833%
40.0	24.610	3.469	801.908	.339%	95.245%
42.0	19.118	2.806	804.714	.275%	95.578%
44.0	16.372	2.494	807.208	.244%	95.874%
46.0	14.576	2.300	809.508	.225%	96.147%
48.0	13.454	2.193	811.701	.215%	96.408%
50.0	12.904	2.168	813.869	.212%	96.665%
52.0	12.656	2.187	816.056	.214%	96.925%
54.0	12.422	2.204	818.26	.216%	97.187%
56.0	11.913	2.166	820.426	.212%	97.444%
58.0	11.218	2.086	822.512	.204%	97.692%
60.0	10.296	1.955	824.468	.191%	97.924%
62.0	9.435	1.827	826.295	.179%	98.141%
64.0	8.644	1.704	827.999	.167%	98.344%
66.0	7.921	1.587	829.586	.155%	98.532%
68.0	7.343	1.493	831.079	.146%	98.709%
70.0	6.524	1.345	832.423	.132%	98.869%
72.0	5.753	1.200	833.623	.117%	99.012%
74.0	5.389	1.136	834.759	.111%	99.147%

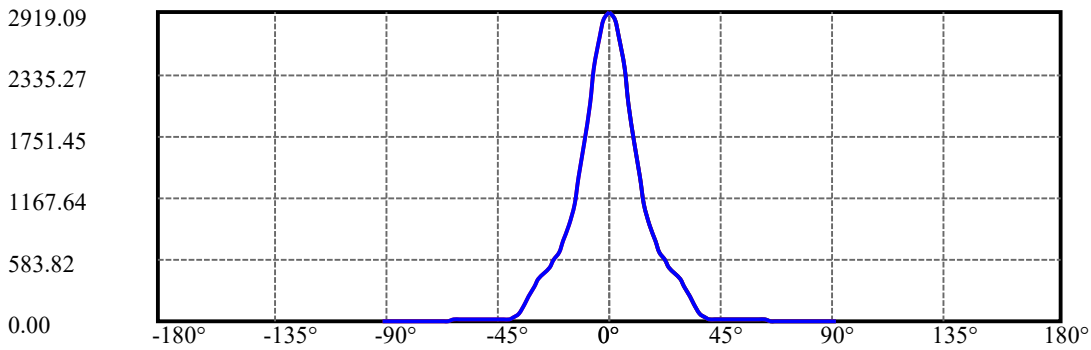
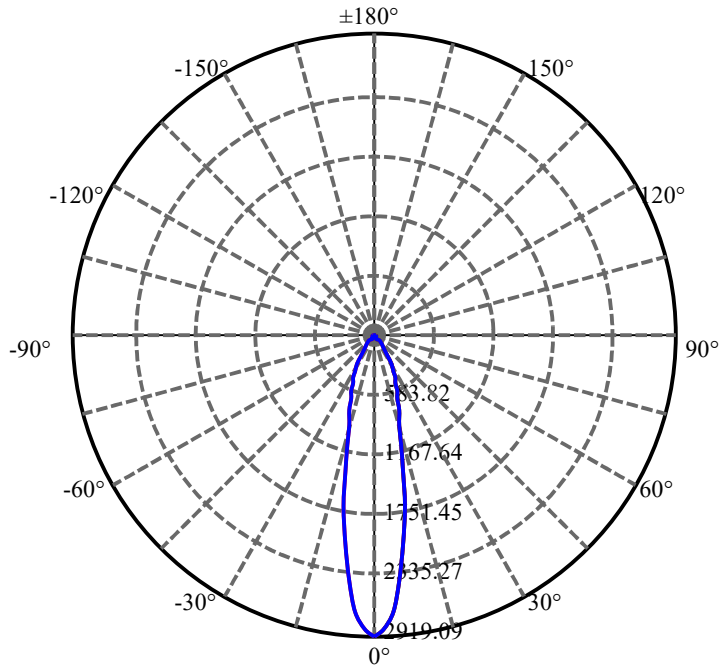
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	5.141	1.094	835.853	.107%	99.277%
78.0	4.928	1.057	836.911	.103%	99.402%
80.0	4.728	1.021	837.932	.100%	99.523%
82.0	4.508	0.979	838.911	.096%	99.640%
84.0	4.322	0.943	839.853	.092%	99.752%
86.0	4.102	0.897	840.751	.088%	99.858%
88.0	3.682	0.807	841.558	.079%	99.954%
90.0	3.530	0.387	841.945	.038%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	735.57	71.97%	87.37%
0-40	801.91	78.46%	95.24%
0-60	824.47	80.67%	97.92%
0-90	841.56	82.34%	99.95%
0-120	841.56	82.34%	99.95%
0-180	841.94	82.38%	100.00%
60-90	19.05	1.86%	2.26%
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%
0-26.74	673.56	65.90%	80.00%

ZONAL LUMEN SUMMARY

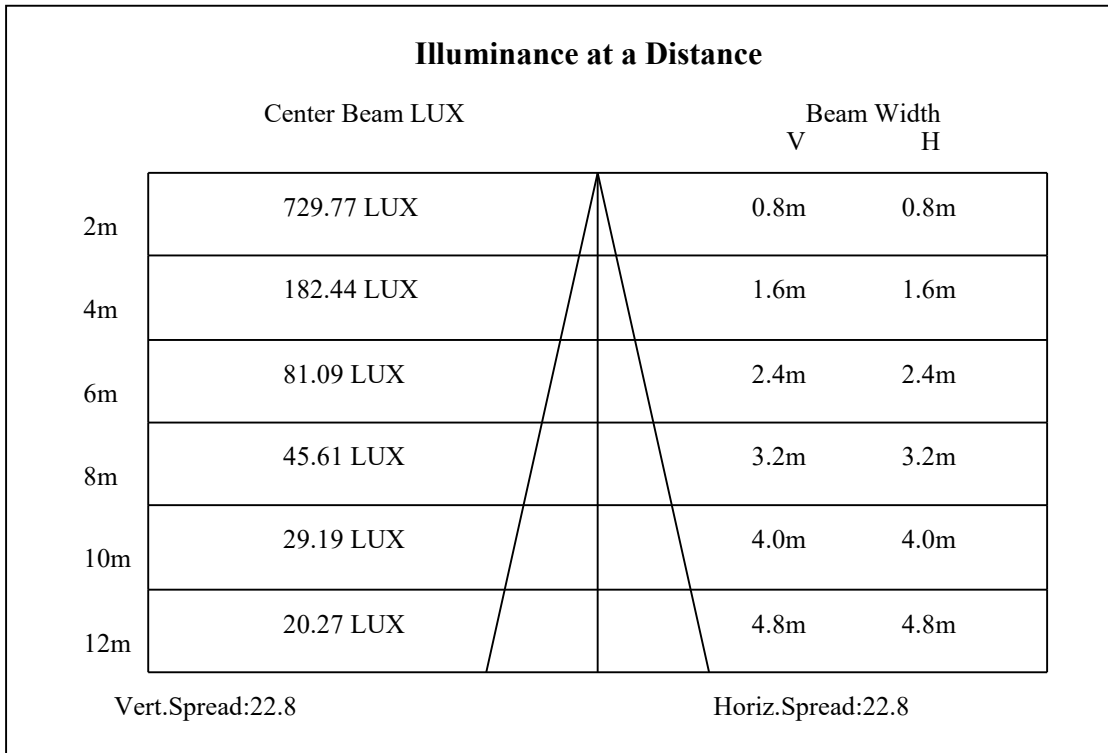
0-10	246.84
10-20	276.31
20-30	212.42
30-40	66.34
40-50	11.96
50-60	10.60
60-70	7.96
70-80	5.51
80-90	3.63
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

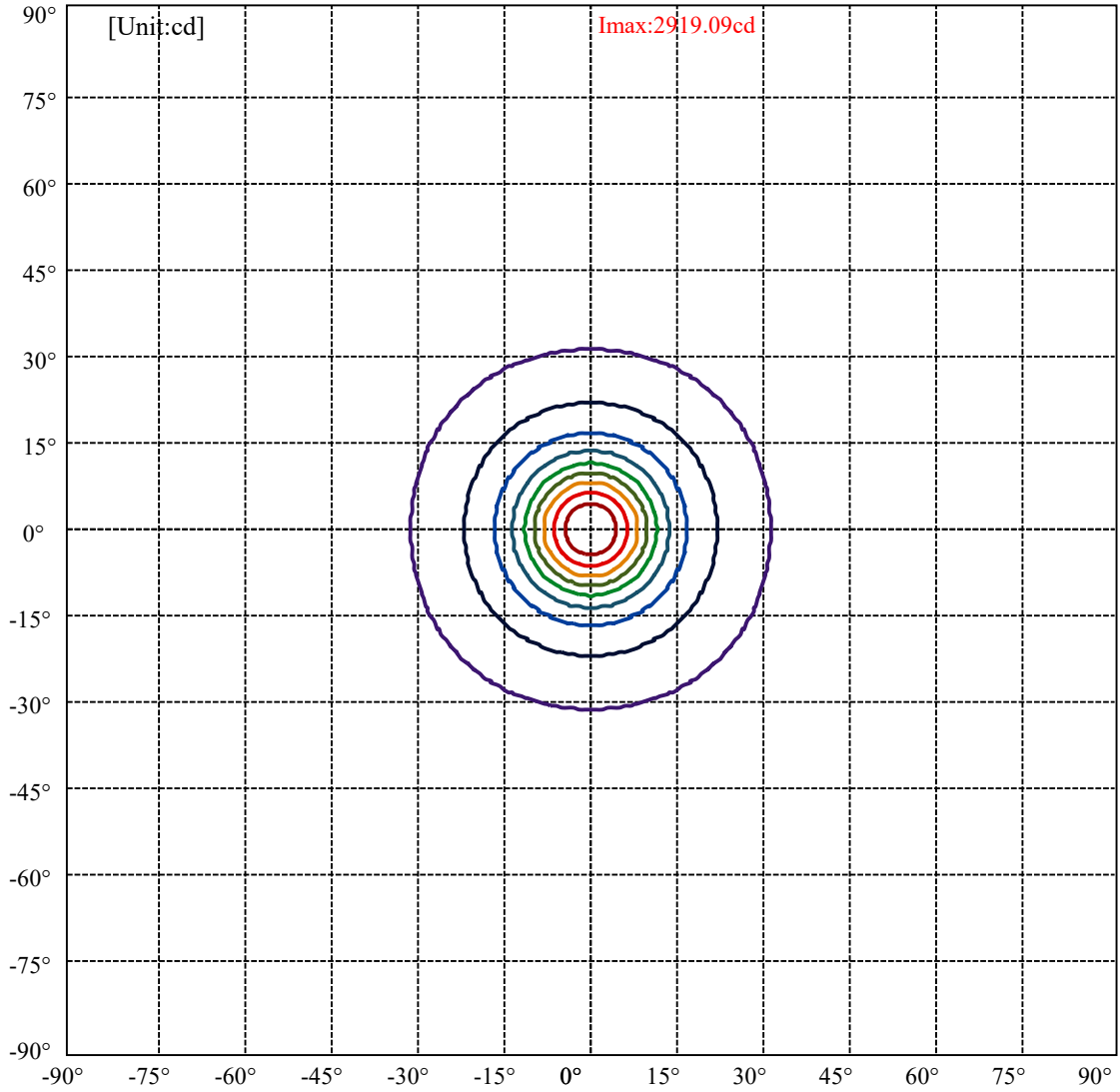


C0(Max): —————  
C0/C180: —————  
C90/C270: —————

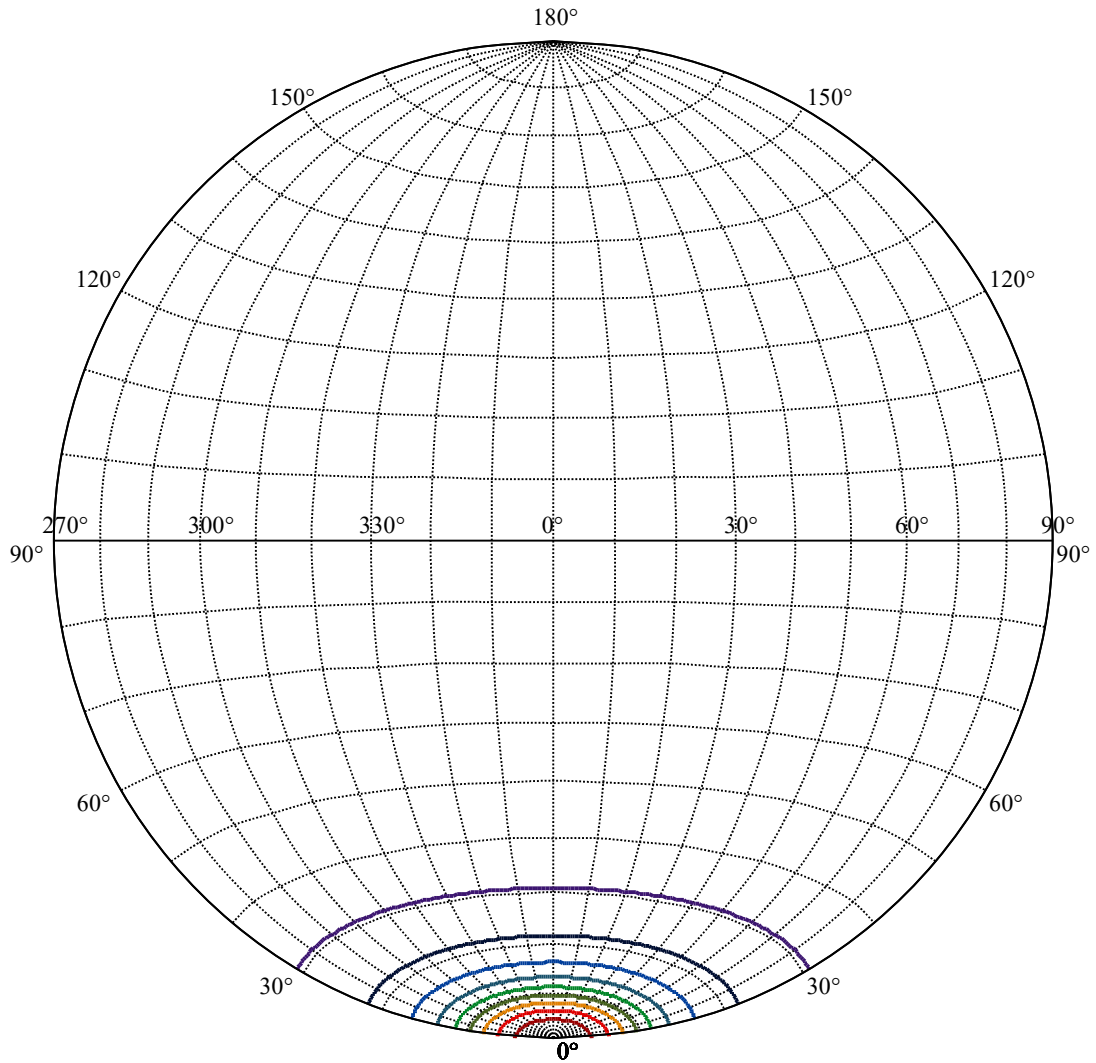
Field angle(10%Imax):C0/180Left:30.9 Right:30.9  
:C90/270Left:30.9 Right:30.9

Beam Angle(50%Imax):C0/180Left:11.4 Right:11.4  
:C90/270Left:11.4 Right:11.4





(10%Imax) 291.909	—
(20%Imax) 583.818	—
(30%Imax) 875.727	—
(40%Imax) 1167.64	—
(50%Imax) 1459.55	—
(60%Imax) 1751.45	—
(70%Imax) 2043.36	—
(80%Imax) 2335.27	—
(90%Imax) 2627.18	—



House

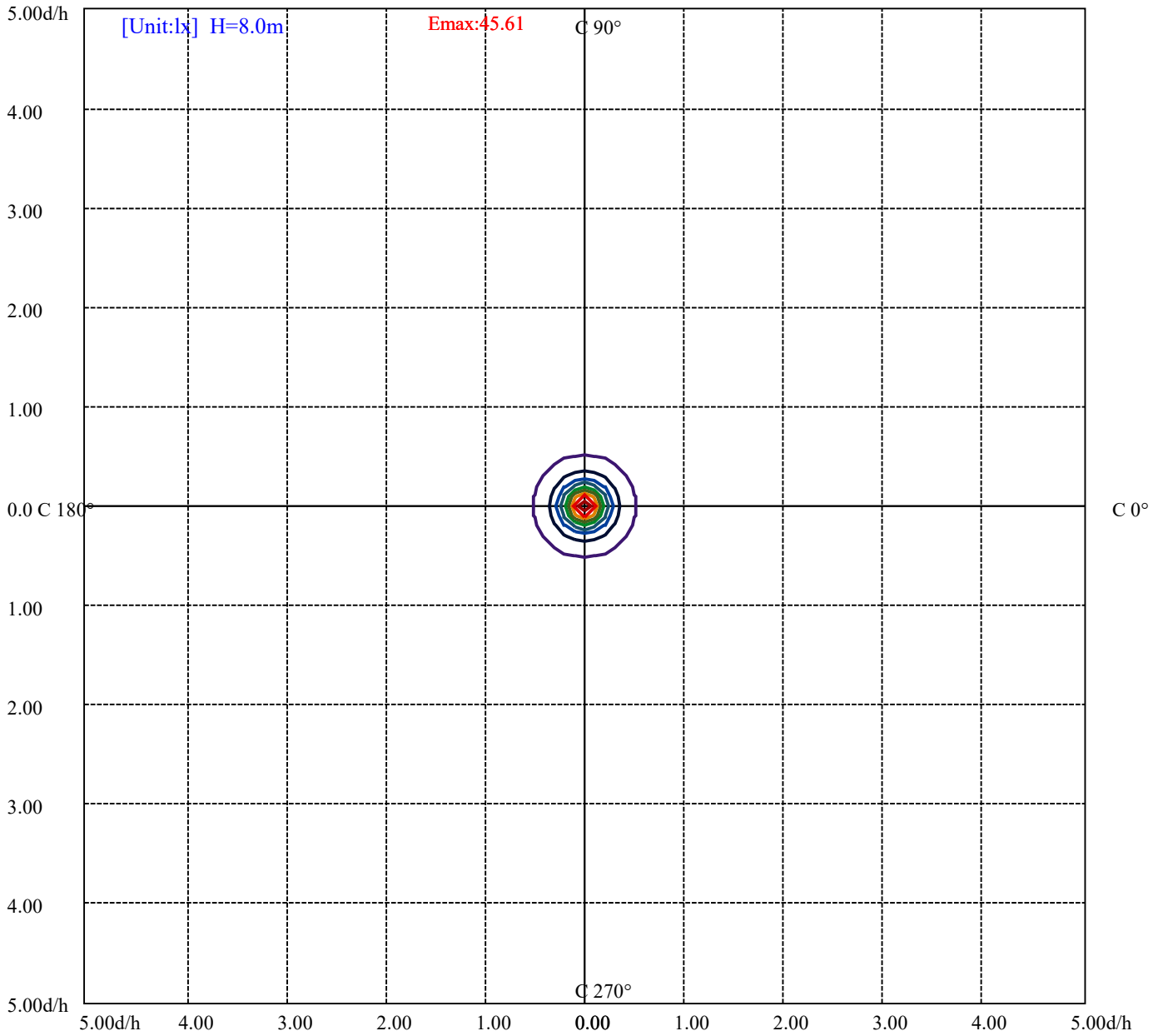
[Unit:cd]

Road

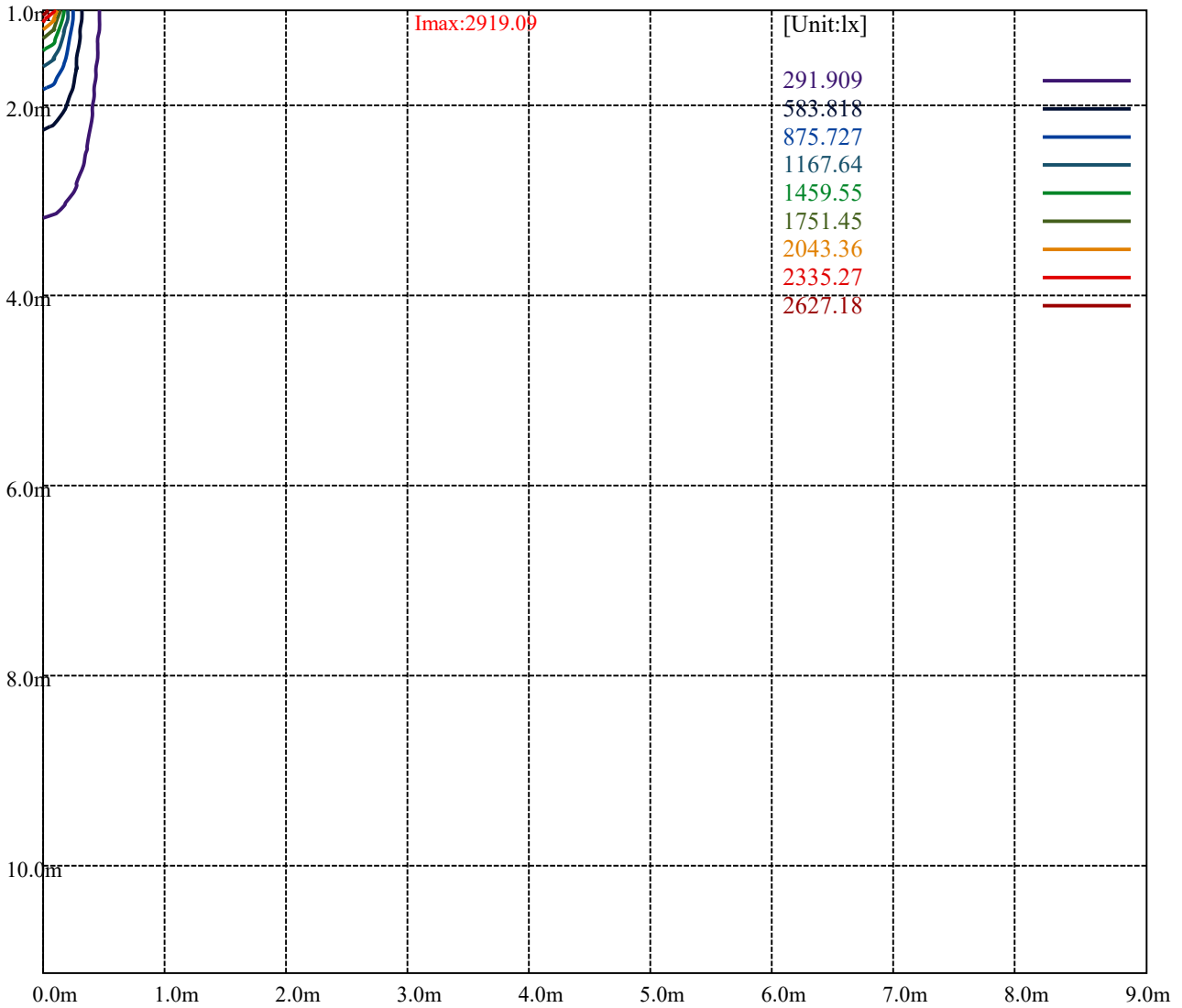
Imax:2919.09

(10%Imax) 291.909	—
(20%Imax) 583.818	—
(30%Imax) 875.727	—
(40%Imax) 1167.64	—
(50%Imax) 1459.55	—
(60%Imax) 1751.45	—
(70%Imax) 2043.36	—
(80%Imax) 2335.27	—
(90%Imax) 2627.18	—





- (10%Emax) 4.561078
- (20%Emax) 9.122141
- (30%Emax) 13.68322
- (40%Emax) 18.24422
- (50%Emax) 22.80531
- (60%Emax) 27.36641
- (70%Emax) 31.9275
- (80%Emax) 36.48859
- (90%Emax) 41.04969



Luminance Table

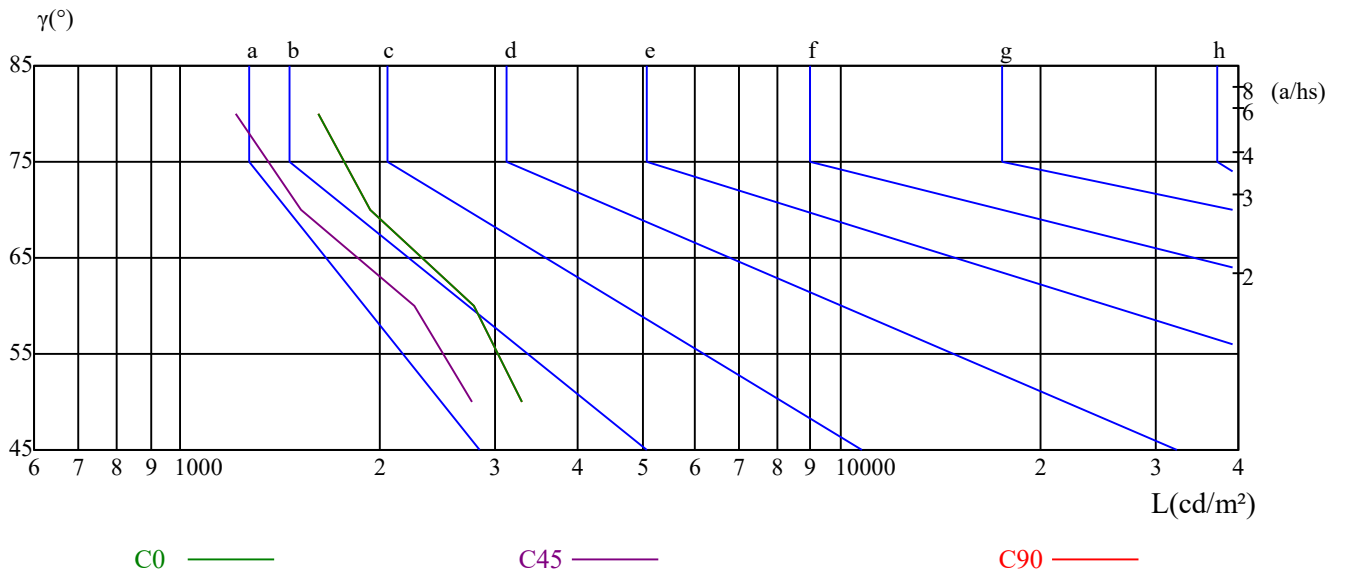
$\gamma$	45	50	55	60	65	70	75	80	85
C0	0	3290	0	2784	0	1941	0	1618	0
C45	0	2756	0	2260	0	1520	0	1213	0
C90	0	3290	0	2784	0	1941	0	1618	0

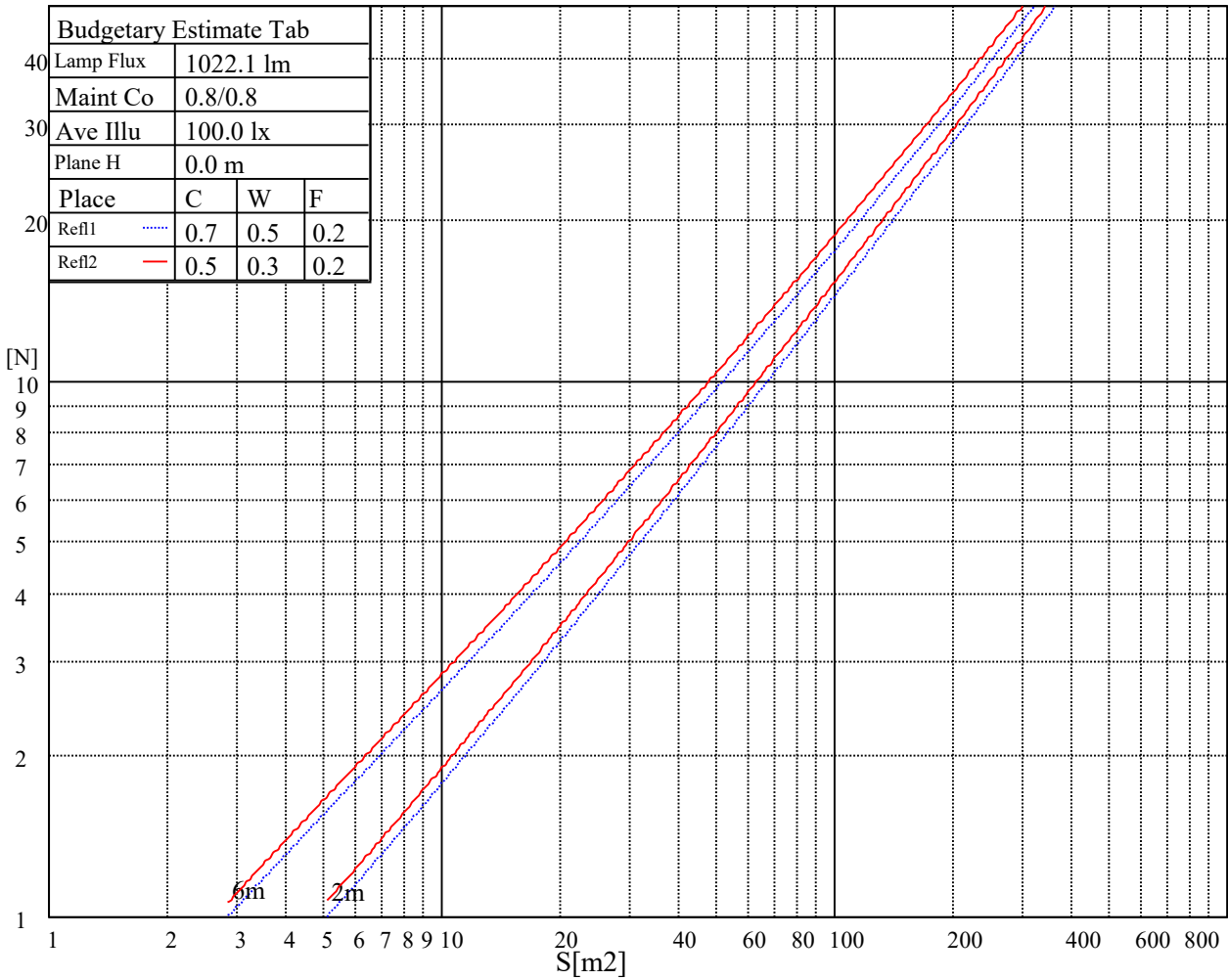
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
5478	5478	5478	5622	5622	5622	14145	14145	14145

Glare Table

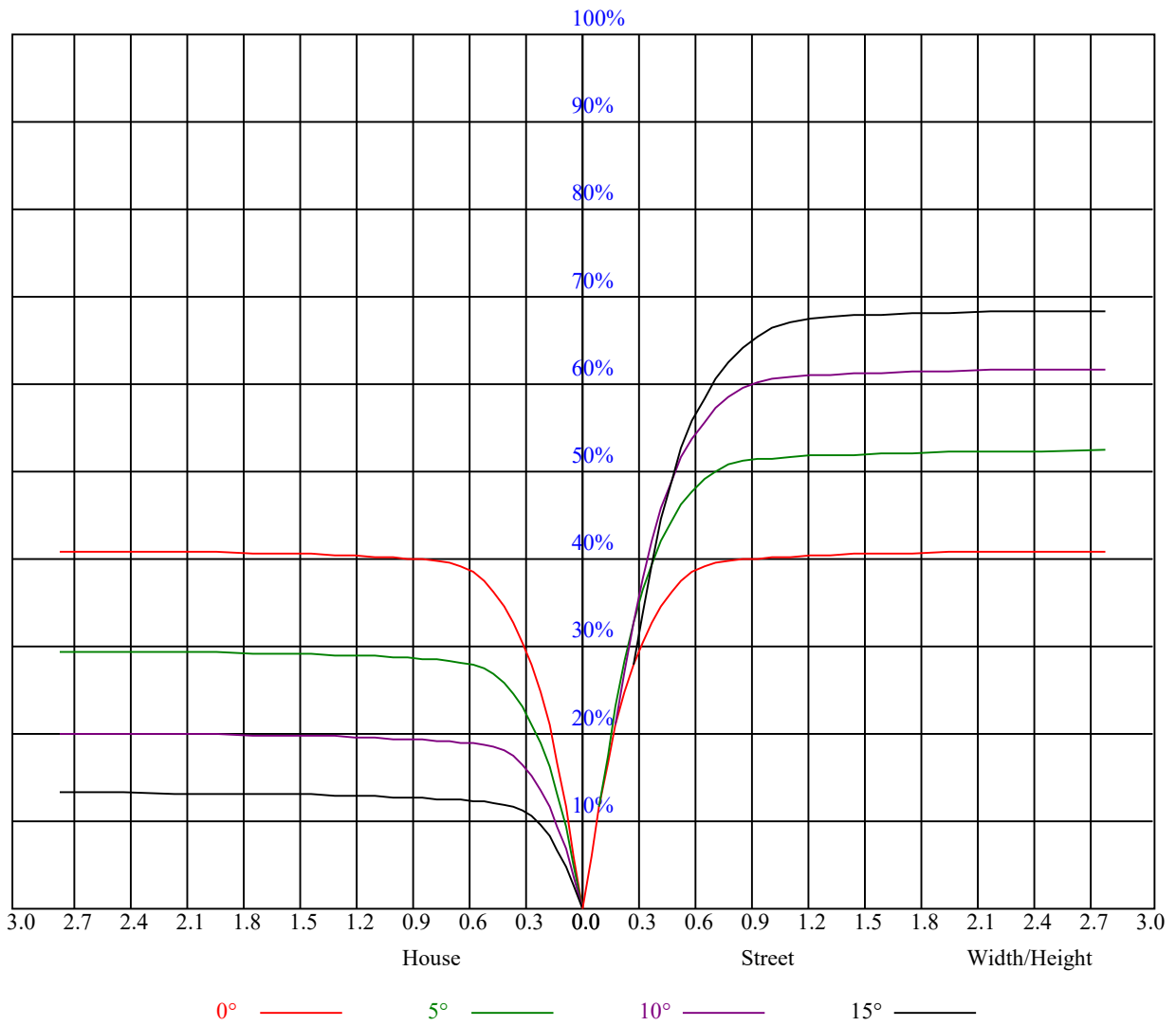
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

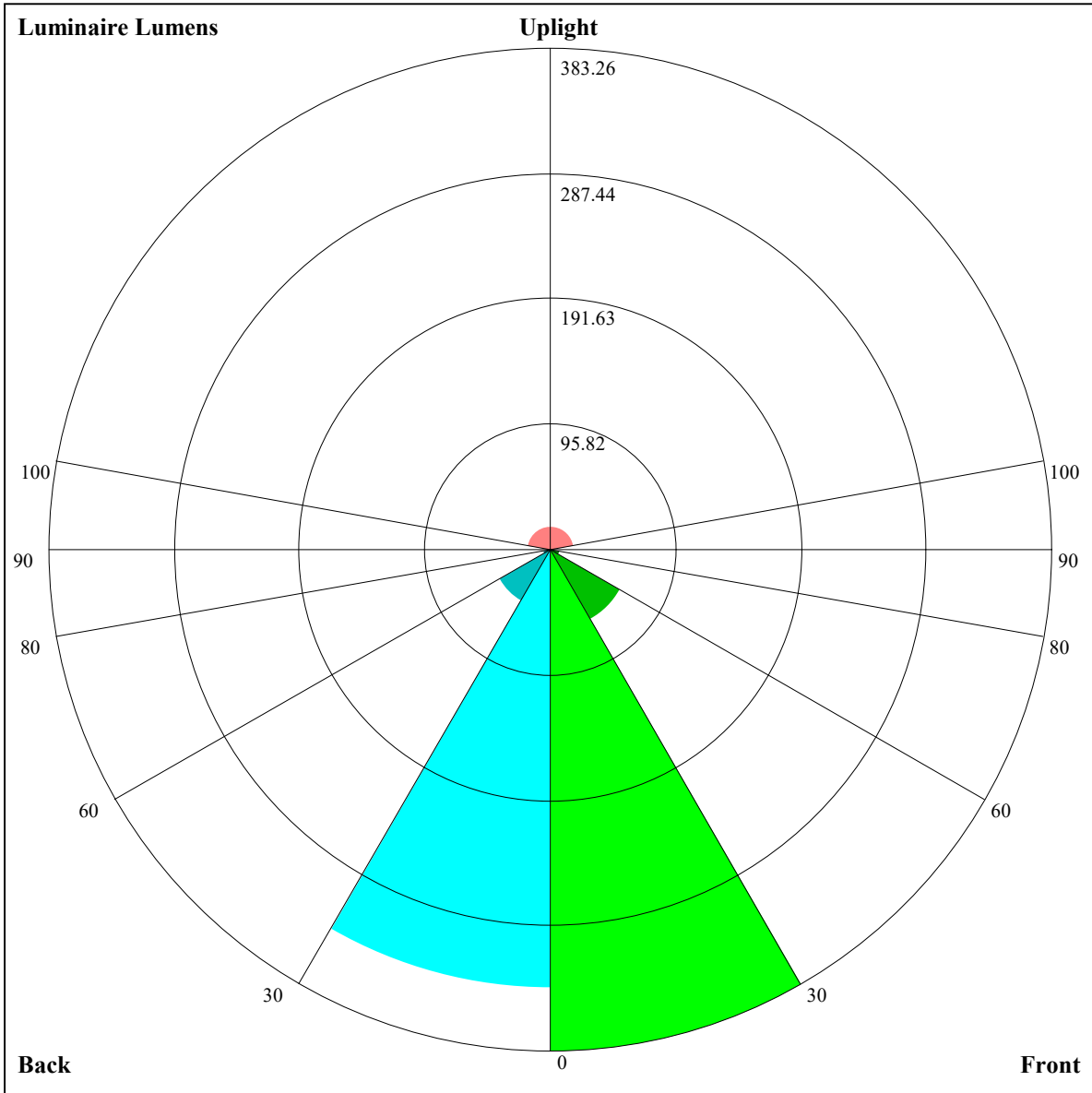
Luminance Limiting Curve





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	0.98	0.98	0.98	0.96	0.96	0.96	0.92	0.92	0.92	0.88	0.88	0.88	0.84	0.84	0.84	0.83
1	0.92	0.90	0.88	0.90	0.88	0.87	0.87	0.85	0.84	0.84	0.83	0.82	0.81	0.80	0.79	0.78
2	0.87	0.84	0.81	0.85	0.83	0.80	0.83	0.80	0.79	0.80	0.78	0.77	0.78	0.77	0.75	0.74
3	0.82	0.79	0.76	0.81	0.78	0.75	0.79	0.76	0.74	0.77	0.75	0.73	0.75	0.73	0.72	0.71
4	0.78	0.74	0.71	0.77	0.74	0.71	0.76	0.73	0.70	0.74	0.71	0.69	0.73	0.70	0.69	0.67
5	0.75	0.71	0.68	0.74	0.70	0.67	0.73	0.69	0.67	0.71	0.68	0.66	0.70	0.68	0.66	0.65
6	0.71	0.67	0.64	0.71	0.67	0.64	0.70	0.66	0.64	0.69	0.66	0.63	0.68	0.65	0.63	0.62
7	0.69	0.65	0.62	0.68	0.64	0.62	0.67	0.64	0.61	0.66	0.63	0.61	0.65	0.63	0.61	0.60
8	0.66	0.62	0.59	0.66	0.62	0.59	0.65	0.61	0.59	0.64	0.61	0.59	0.63	0.60	0.58	0.57
9	0.64	0.60	0.57	0.63	0.59	0.57	0.62	0.59	0.57	0.62	0.59	0.57	0.61	0.58	0.56	0.55
10	0.61	0.57	0.55	0.61	0.57	0.55	0.60	0.57	0.55	0.60	0.57	0.55	0.59	0.56	0.54	0.54





Luminaire Lumens:

FL=383.26,FM=61.82,FH=7.25,FVH=2.31

BL=334.96,BM=45.52,BH=6.71,BVH=2.22

UL=3.85,UH=18.33

BUG Rating:B1-U2-G0

Intensity data(cd)

C/γ(°)	0.0	2.0	4.0	6.0	8.0	10.0	12.0	14.0	16.0
0.0	2910.28	2962.58	2902.57	2699.97	2392.75	2057.46	1673.16	1331.26	1086.26
45.0	2925.15	2884.96	2713.18	2427.99	2101.50	1716.66	1391.83	1130.86	929.90
90.0	2908.08	2748.97	2472.58	2137.84	1723.82	1365.95	1095.40	921.04	781.64
135.0	2932.85	2752.27	2484.70	2093.24	1740.33	1358.79	1096.72	920.54	771.34
180.0	2910.28	2707.12	2448.91	2075.63	1680.32	1335.12	1060.88	871.43	750.20
225.0	2925.15	2833.20	2612.98	2339.35	1962.21	1570.21	1270.15	1024.27	857.67
270.0	2908.08	2942.76	2859.63	2644.91	2363.57	1979.28	1602.69	1282.26	1034.51
315.0	2932.85	2983.51	2915.24	2730.25	2419.18	2039.29	1654.44	1304.29	1070.24
360.0	2910.28	2962.58	2902.57	2699.97	2392.75	2057.46	1673.16	1331.26	1086.26
C/γ(°)	18.0	20.0	22.0	24.0	26.0	28.0	30.0	32.0	34.0
0.0	881.45	746.01	637.55	556.07	491.65	444.86	395.86	327.59	281.34
45.0	787.31	676.09	590.76	523.04	471.83	416.78	353.46	278.03	145.18
90.0	672.95	588.11	520.34	466.60	411.33	353.24	261.19	156.75	81.21
135.0	665.08	581.95	510.37	450.36	401.91	334.19	280.24	155.04	72.62
180.0	646.20	549.90	497.16	441.99	392.06	330.17	243.02	146.51	76.20
225.0	728.12	630.34	553.15	500.68	448.71	396.24	325.22	222.37	127.73
270.0	869.34	741.06	637.55	554.42	495.51	438.80	385.95	316.57	213.18
315.0	880.19	740.51	629.85	548.20	490.22	450.58	404.66	333.59	244.12
360.0	881.45	746.01	637.55	556.07	491.65	444.86	395.86	327.59	281.34
C/γ(°)	36.0	38.0	40.0	42.0	44.0	46.0	48.0	50.0	52.0
0.0	136.76	68.66	31.88	22.30	18.61	16.13	14.53	13.76	13.65
45.0	74.27	33.97	22.19	18.17	15.69	13.98	13.05	12.77	12.61
90.0	36.72	24.06	19.16	16.30	14.31	13.21	12.61	12.39	12.28
135.0	37.00	24.83	19.88	16.85	15.09	13.87	13.32	12.99	12.55
180.0	36.28	24.33	19.71	16.52	14.70	13.32	12.50	12.22	11.95
225.0	59.90	29.90	21.36	18.17	15.53	13.93	12.77	12.28	12.17
270.0	118.26	54.07	29.01	21.03	17.89	15.36	13.82	12.61	12.11
315.0	136.59	63.92	33.69	23.62	19.16	16.79	15.03	14.20	13.93
360.0	136.76	68.66	31.88	22.30	18.61	16.13	14.53	13.76	13.65
C/γ(°)	54.0	56.0	58.0	60.0	62.0	64.0	66.0	68.0	70.0
0.0	13.65	13.38	12.50	11.51	10.35	9.41	8.48	7.71	7.32
45.0	12.50	11.89	11.23	10.30	9.47	8.64	7.93	7.43	6.33
90.0	11.89	10.96	10.24	9.36	8.48	7.76	7.16	6.72	5.62
135.0	11.95	11.12	10.30	9.19	8.53	7.71	7.10	6.61	5.67
180.0	11.51	10.90	10.13	9.14	8.48	7.71	7.16	6.61	5.67
225.0	12.00	11.62	10.90	10.08	9.19	8.42	7.82	7.49	6.33
270.0	12.00	11.84	11.56	10.90	10.19	9.47	8.75	8.15	7.65
315.0	13.87	13.60	12.88	11.89	10.79	10.02	8.97	8.04	7.60
360.0	13.65	13.38	12.50	11.51	10.35	9.41	8.48	7.71	7.32
C/γ(°)	72.0	74.0	76.0	78.0	80.0	82.0	84.0	86.0	88.0
0.0	6.17	5.62	5.34	5.12	4.96	4.68	4.46	4.29	3.91
45.0	5.67	5.29	5.01	4.79	4.57	4.35	4.13	3.85	3.63
90.0	5.23	4.96	4.73	4.57	4.35	4.13	3.96	3.69	3.47
135.0	5.29	5.07	4.84	4.57	4.35	4.13	3.96	3.74	3.47
180.0	5.23	5.07	4.79	4.62	4.40	4.18	4.02	3.74	3.52
225.0	5.67	5.45	5.23	5.01	4.84	4.62	4.46	4.29	3.63
270.0	6.39	5.84	5.56	5.40	5.23	5.01	4.84	4.68	3.91
315.0	6.39	5.84	5.62	5.34	5.12	4.96	4.73	4.51	3.91
360.0	6.17	5.62	5.34	5.12	4.96	4.68	4.46	4.29	3.91



Intensity data(cd)

<b>C/γ(°)</b>	<b>90.0</b>
<b>0.0</b>	<b>3.69</b>
<b>45.0</b>	<b>3.47</b>
<b>90.0</b>	<b>3.41</b>
<b>135.0</b>	<b>3.47</b>
<b>180.0</b>	<b>3.47</b>
<b>225.0</b>	<b>3.41</b>
<b>270.0</b>	<b>3.63</b>
<b>315.0</b>	<b>3.69</b>
<b>360.0</b>	<b>3.69</b>