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## Nata

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### Client:

LumCAT: 1657-S

Luminaire: 92.70.123.00

Report No: nata0100

Test No: GC2018050301

LampCAT: CREE CXA1310

Lamp flux(lm): 633.0

Number of Lamps: 1

Length(mm): 47

Phm Type: C

Voltage(V): 18.1000

Current(A): 0.3500

Power (W): 6.3350

PF: 0.0000

Ballast type: DC

Width(mm): 47

Height(mm): 0

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## Photometric Results

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Lumens(lm): 554.96, Efficiency(%): 87.67% , Luminous Efficacy(lm/W): 87.60

Central intensity(cd): 3129.268, Maximum intensity(cd): 3129.268

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

Beam Angle(50%Imax): [C0/180]Total=18.6

[C90/270]Total=18.6

Field angle(10%Imax): [C0/180]Total=36.0

[C90/270]Total=36.0

Maximum s/h(1/2): C0\_180=0.32 C90\_270=0.32

Maximum s/h(1/4): C0\_180=0.33 C90\_270=0.33

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 88.13%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in  $\pi$  solid angle : 98.097%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	3129.268	2.995	2.995	.473%	.540%
2.0	3046.133	23.315	26.309	3.683%	4.741%
4.0	2798.586	42.814	69.124	6.764%	12.456%
6.0	2388.828	54.763	123.886	8.651%	22.324%
8.0	1924.703	58.747	182.633	9.281%	32.909%
10.0	1389.665	52.923	235.556	8.361%	42.446%
12.0	1016.995	46.373	281.929	7.326%	50.802%
14.0	674.888	35.807	317.736	5.657%	57.254%
16.0	445.627	26.939	344.675	4.256%	62.108%
18.0	311.034	21.079	365.754	3.330%	65.907%
20.0	252.310	18.926	384.68	2.990%	69.317%
22.0	226.385	18.599	403.279	2.938%	72.669%
24.0	215.456	19.219	422.498	3.036%	76.132%
26.0	207.996	19.997	442.495	3.159%	79.735%
28.0	201.451	20.742	463.237	3.277%	83.473%
30.0	194.253	21.301	484.538	3.365%	87.311%
32.0	182.498	21.210	505.748	3.351%	91.133%
34.0	144.736	17.750	523.498	2.804%	94.331%
36.0	81.779	10.542	534.04	1.665%	96.231%
38.0	29.435	3.974	538.014	.628%	96.947%
40.0	9.731	1.372	539.386	.217%	97.194%
42.0	7.453	1.094	540.48	.173%	97.391%
44.0	5.981	0.911	541.391	.144%	97.556%
46.0	5.375	0.848	542.239	.134%	97.708%
48.0	5.010	0.817	543.055	.129%	97.856%
50.0	4.673	0.785	543.841	.124%	97.997%
52.0	4.343	0.750	544.591	.119%	98.132%
54.0	4.033	0.716	545.307	.113%	98.261%
56.0	3.744	0.681	545.987	.108%	98.384%
58.0	3.475	0.646	546.634	.102%	98.500%
60.0	3.241	0.616	547.249	.097%	98.611%
62.0	3.056	0.592	547.841	.093%	98.718%
64.0	2.918	0.575	548.416	.091%	98.822%
66.0	2.787	0.558	548.975	.088%	98.922%
68.0	2.691	0.547	549.522	.086%	99.021%
70.0	2.622	0.540	550.062	.085%	99.118%
72.0	2.574	0.537	550.599	.085%	99.215%
74.0	2.519	0.531	551.13	.084%	99.311%

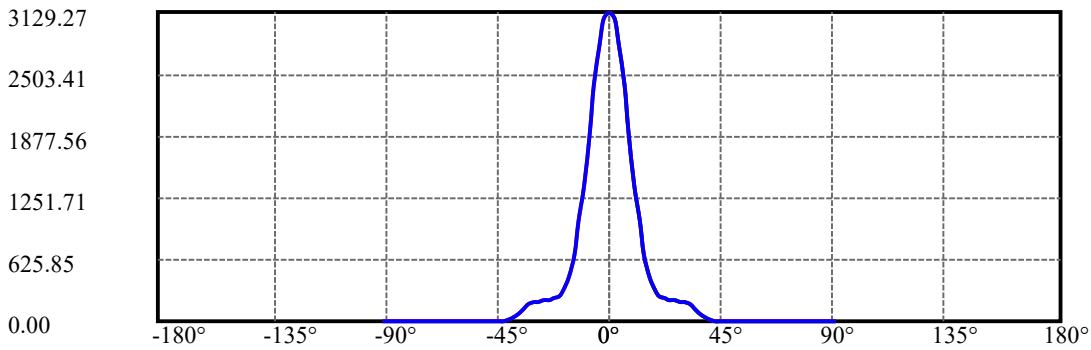
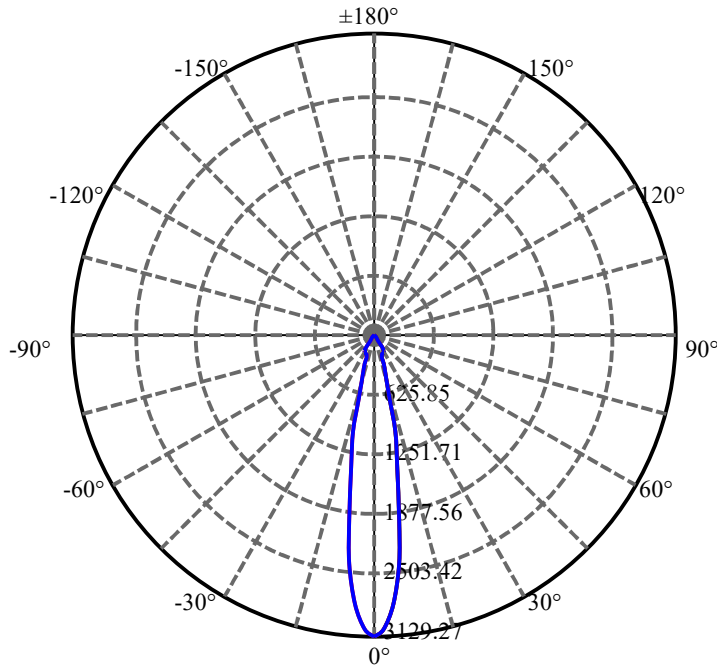
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	2.471	0.526	551.656	.083%	99.405%
78.0	2.443	0.524	552.18	.083%	99.500%
80.0	2.409	0.520	552.7	.082%	99.593%
82.0	2.361	0.513	553.213	.081%	99.686%
84.0	2.333	0.509	553.722	.080%	99.778%
86.0	2.278	0.498	554.22	.079%	99.867%
88.0	2.250	0.493	554.713	.078%	99.956%
90.0	2.216	0.243	554.956	.038%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	484.54	76.55%	87.31%
0-40	539.39	85.21%	97.19%
0-60	547.25	86.45%	98.61%
0-90	554.71	87.63%	99.96%
0-120	554.71	87.63%	99.96%
0-180	554.96	87.67%	100.00%
60-90	8.08	1.28%	1.46%
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%
0-26.14	443.97	70.14%	80.00%

ZONAL LUMEN SUMMARY

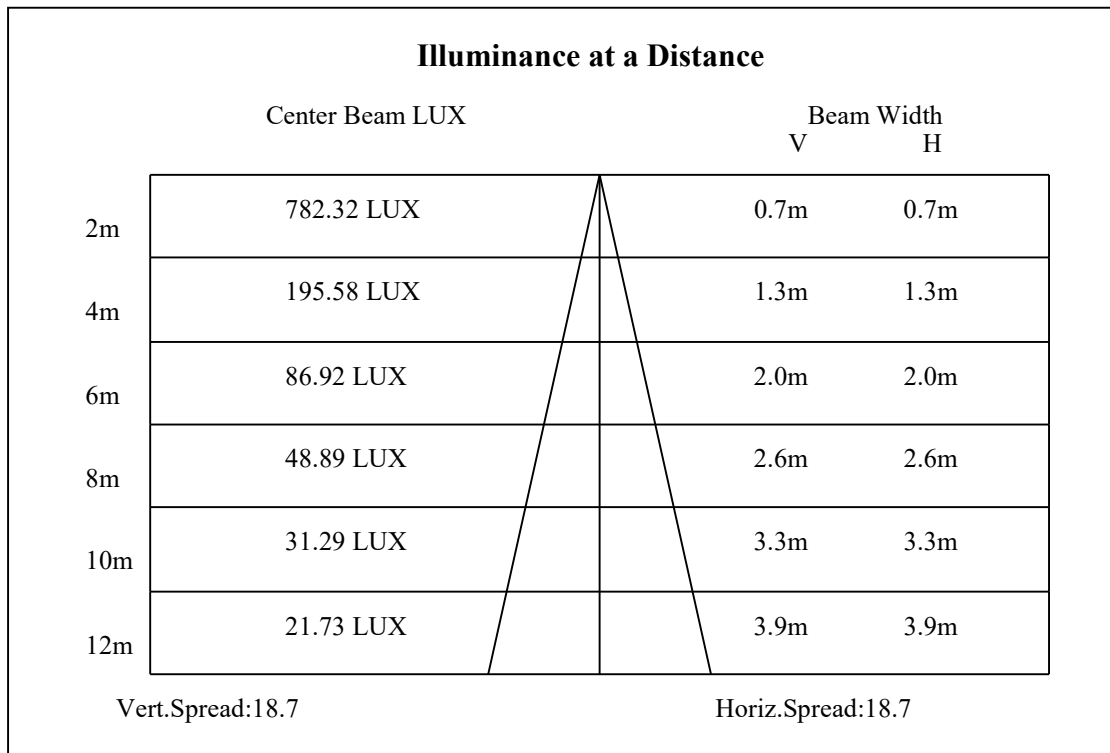
0-10	235.56
10-20	149.12
20-30	99.86
30-40	54.85
40-50	4.45
50-60	3.41
60-70	2.81
70-80	2.64
80-90	2.01
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

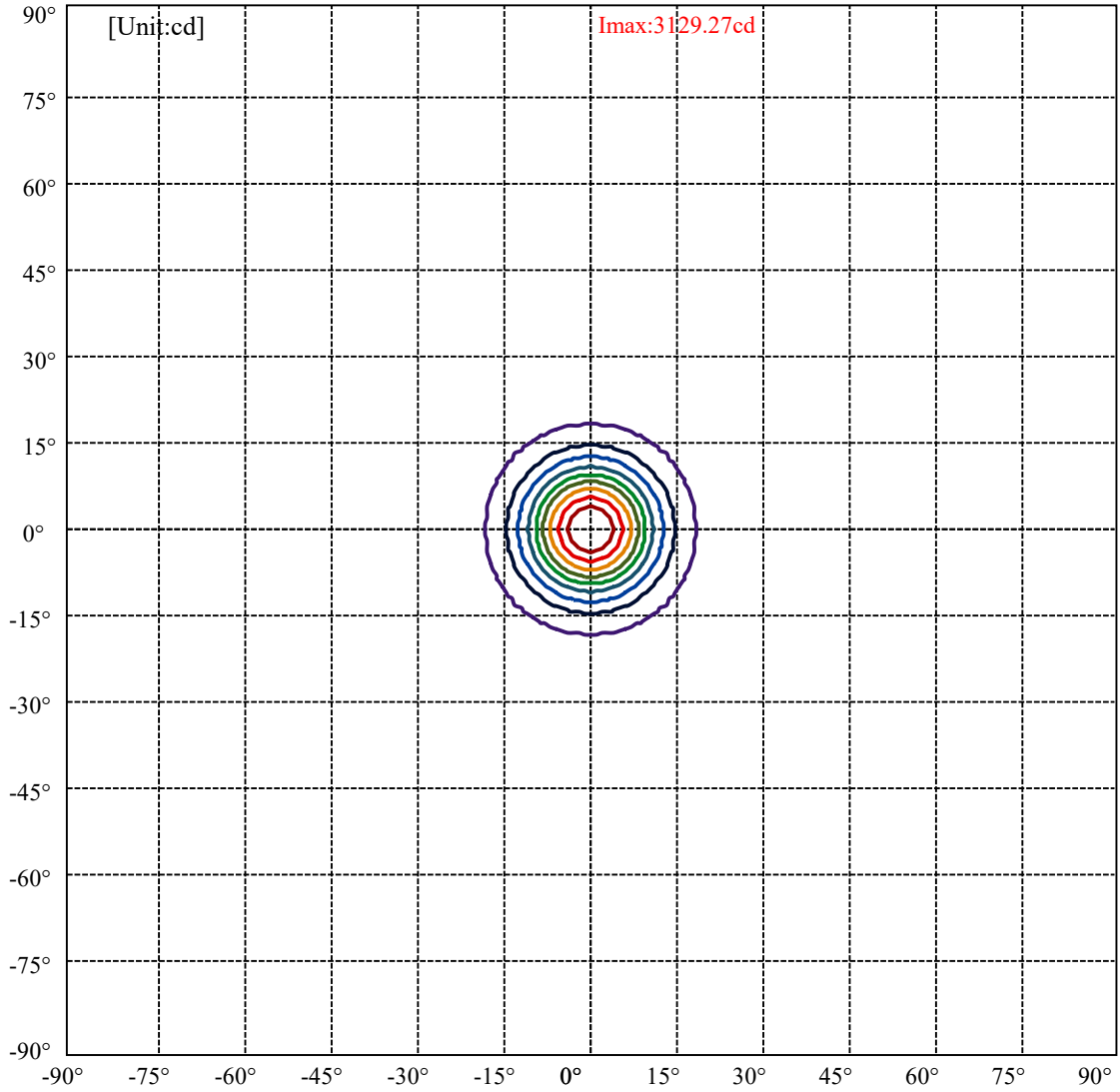


C0(Max): —————  
C0/C180: —————  
C90/C270: —————

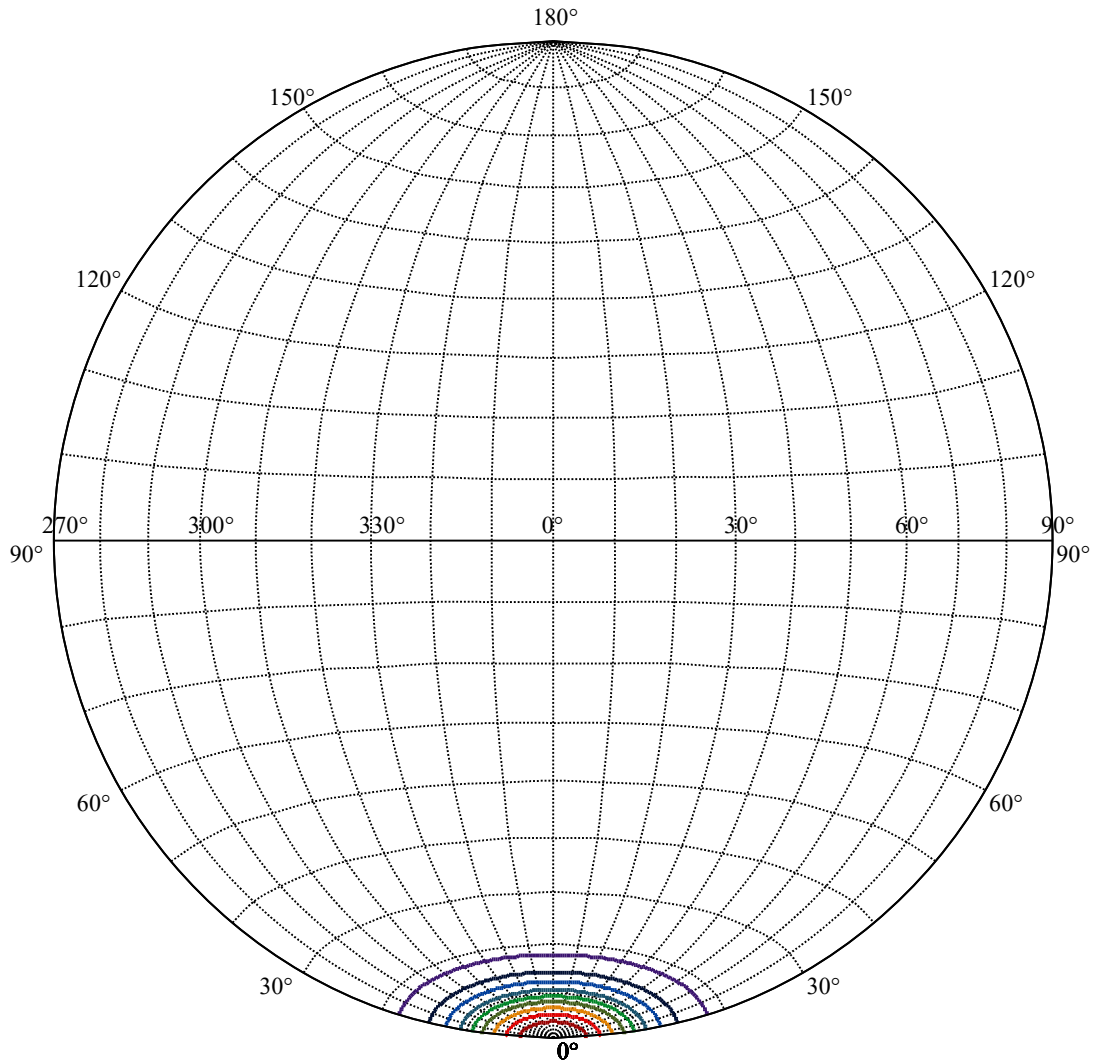
Field angle(10%Imax):C0/180Left:18.0 Right:18.0  
:C90/270Left:18.0 Right:18.0

Beam Angle(50%Imax):C0/180Left:9.3 Right:9.3  
:C90/270Left:9.3 Right:9.3





(10%Imax) 312.927	—
(20%Imax) 625.854	—
(30%Imax) 938.781	—
(40%Imax) 1251.71	—
(50%Imax) 1564.63	—
(60%Imax) 1877.56	—
(70%Imax) 2190.49	—
(80%Imax) 2503.41	—
(90%Imax) 2816.34	—



House

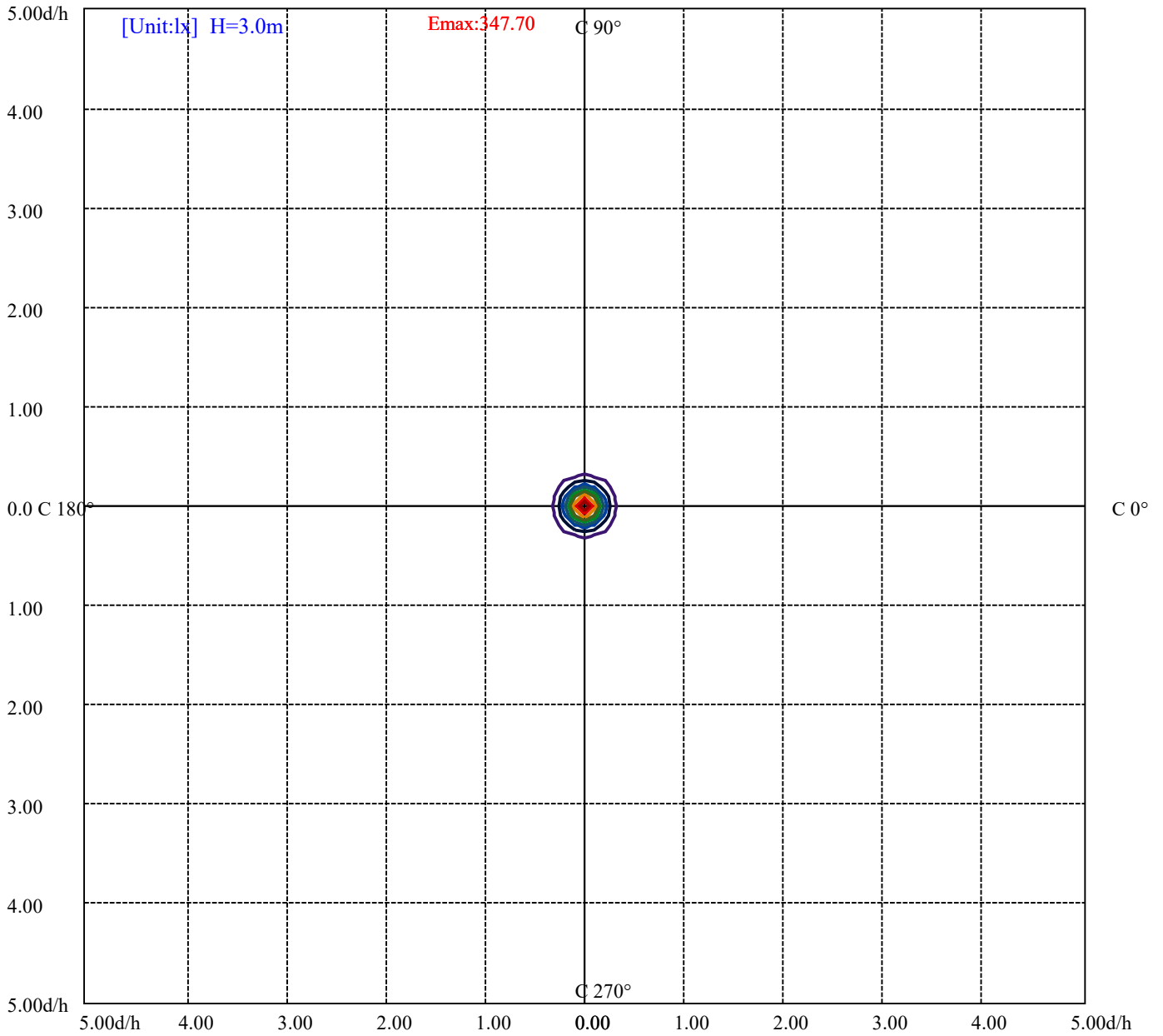
[Unit:cd]

Road

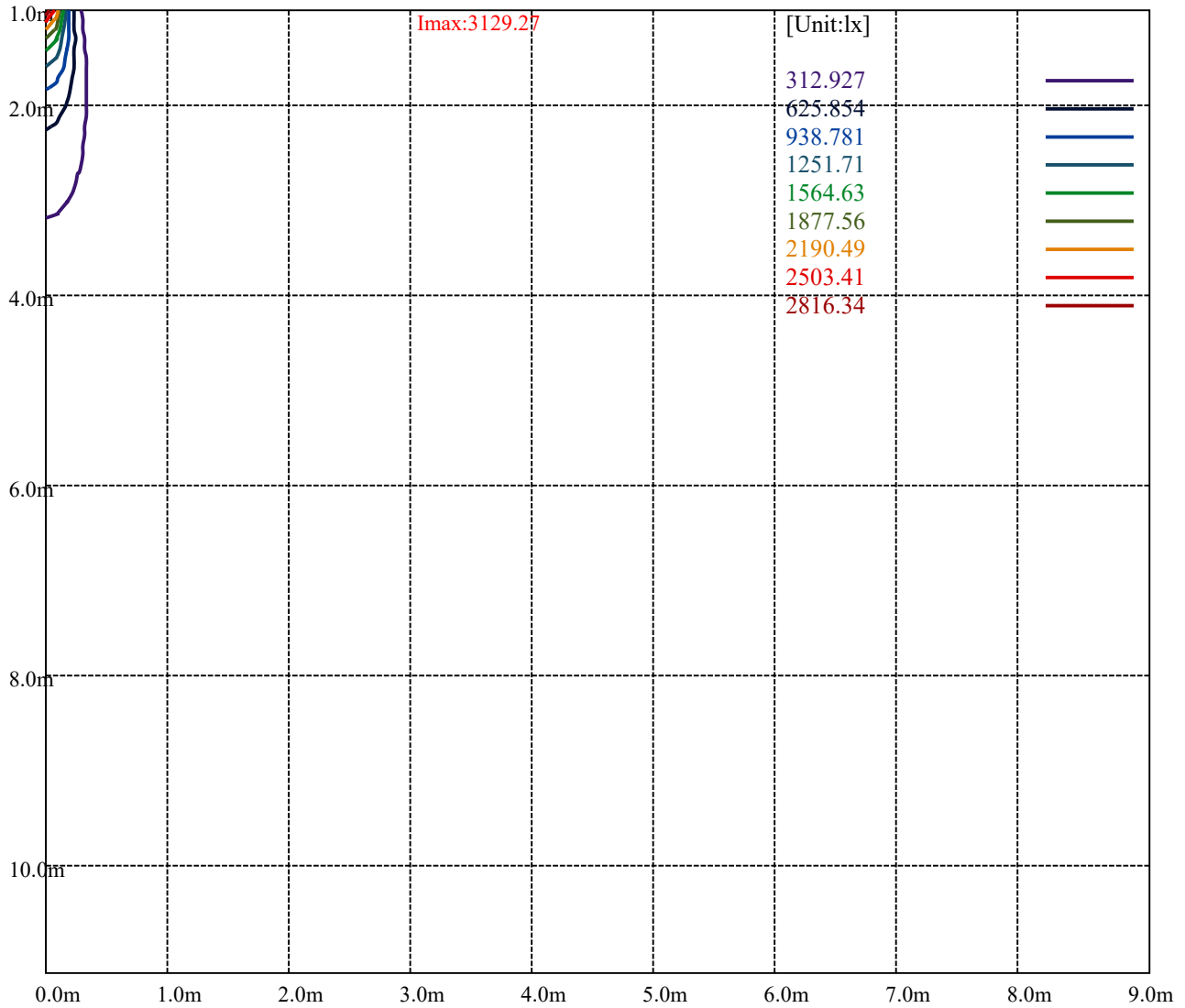
Imax:3129.27

(10%Imax)	312.927	—
(20%Imax)	625.854	—
(30%Imax)	938.781	—
(40%Imax)	1251.71	—
(50%Imax)	1564.63	—
(60%Imax)	1877.56	—
(70%Imax)	2190.49	—
(80%Imax)	2503.41	—
(90%Imax)	2816.34	—





(10%Emax) 34.76955	—
(20%Emax) 69.53911	—
(30%Emax) 104.3088	—
(40%Emax) 139.0778	—
(50%Emax) 173.8478	—
(60%Emax) 208.6178	—
(70%Emax) 243.3867	—
(80%Emax) 278.1566	—
(90%Emax) 312.9267	—



Luminance Table

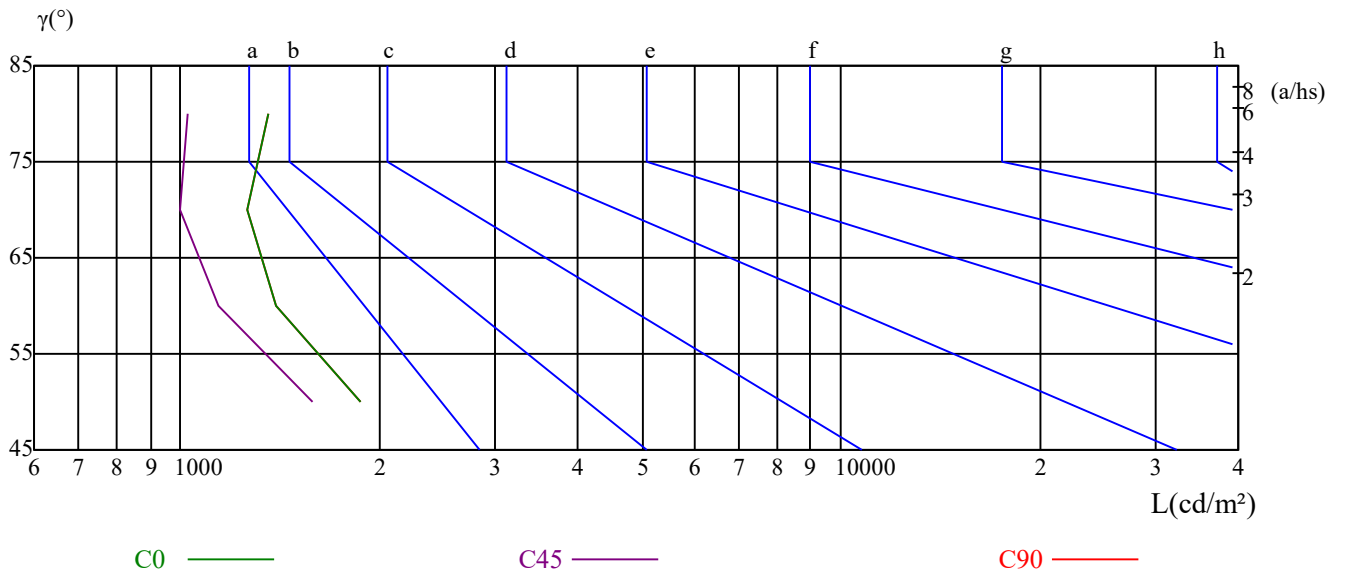
$\gamma$	45	50	55	60	65	70	75	80	85
C0	0	1869	0	1394	0	1260	0	1359	0
C45	0	1585	0	1145	0	997	0	1026	0
C90	0	1869	0	1394	0	1260	0	1359	0

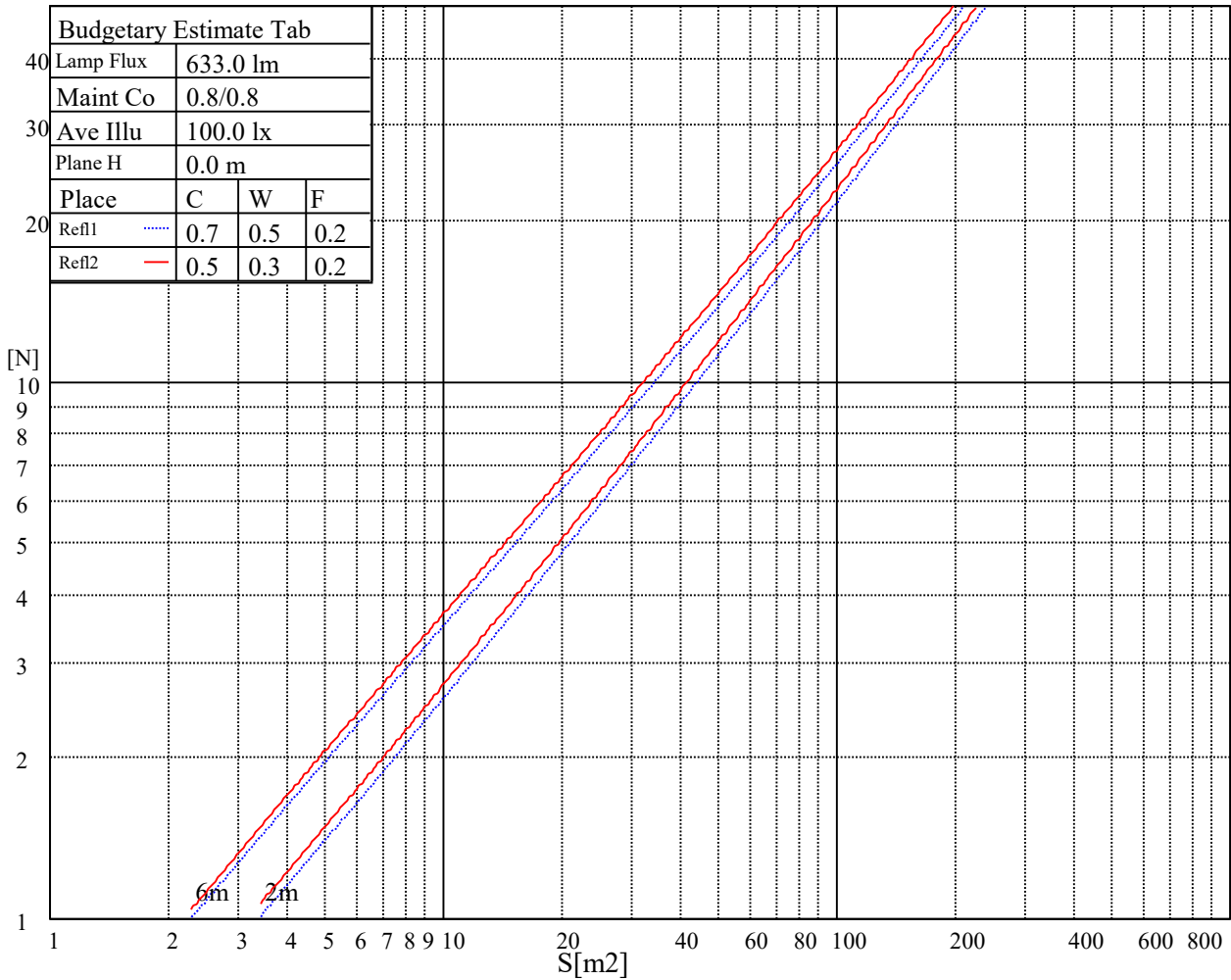
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
2440	2440	2440	3948	3948	3948	11617	11617	11617

Glare Table

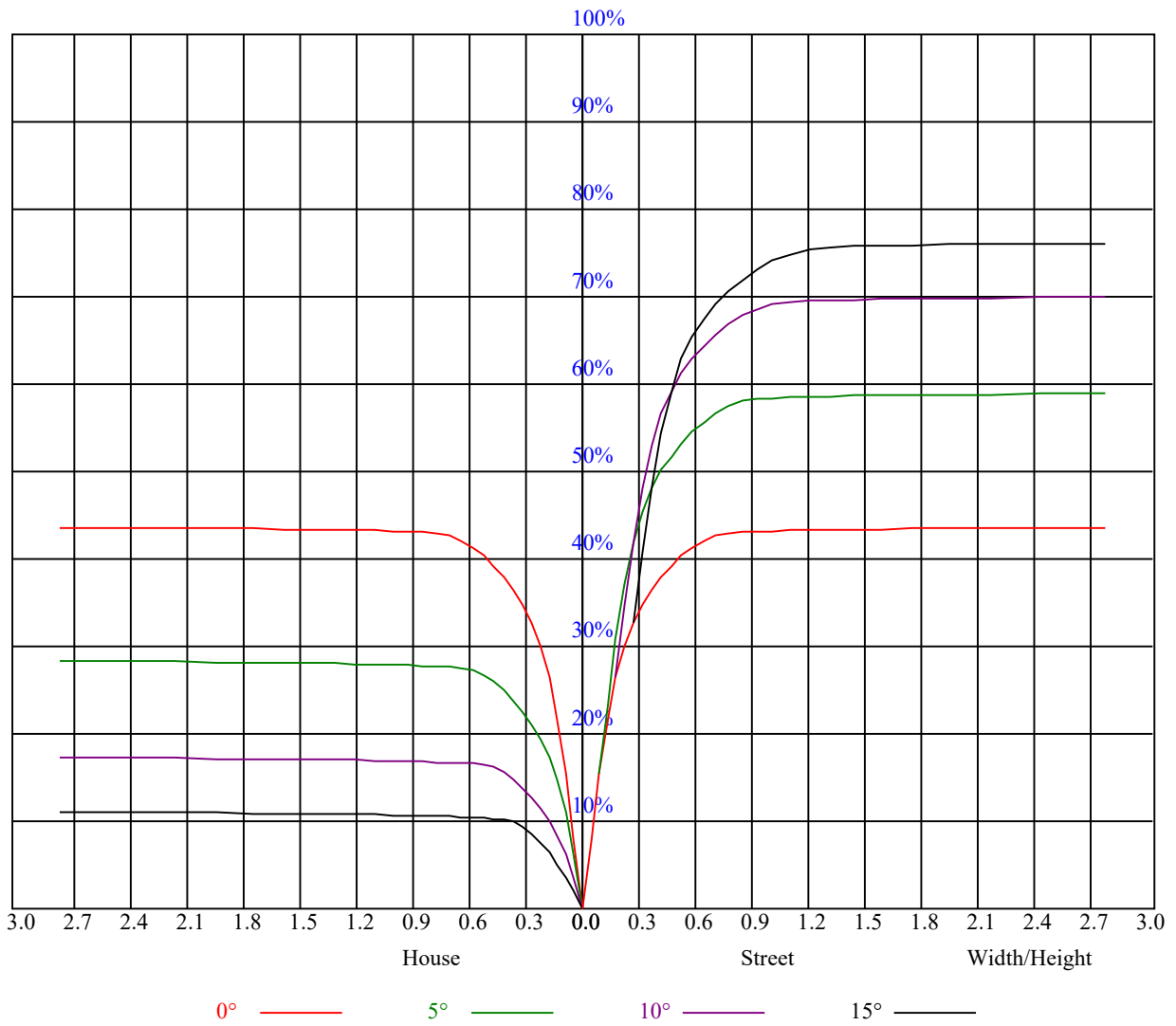
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

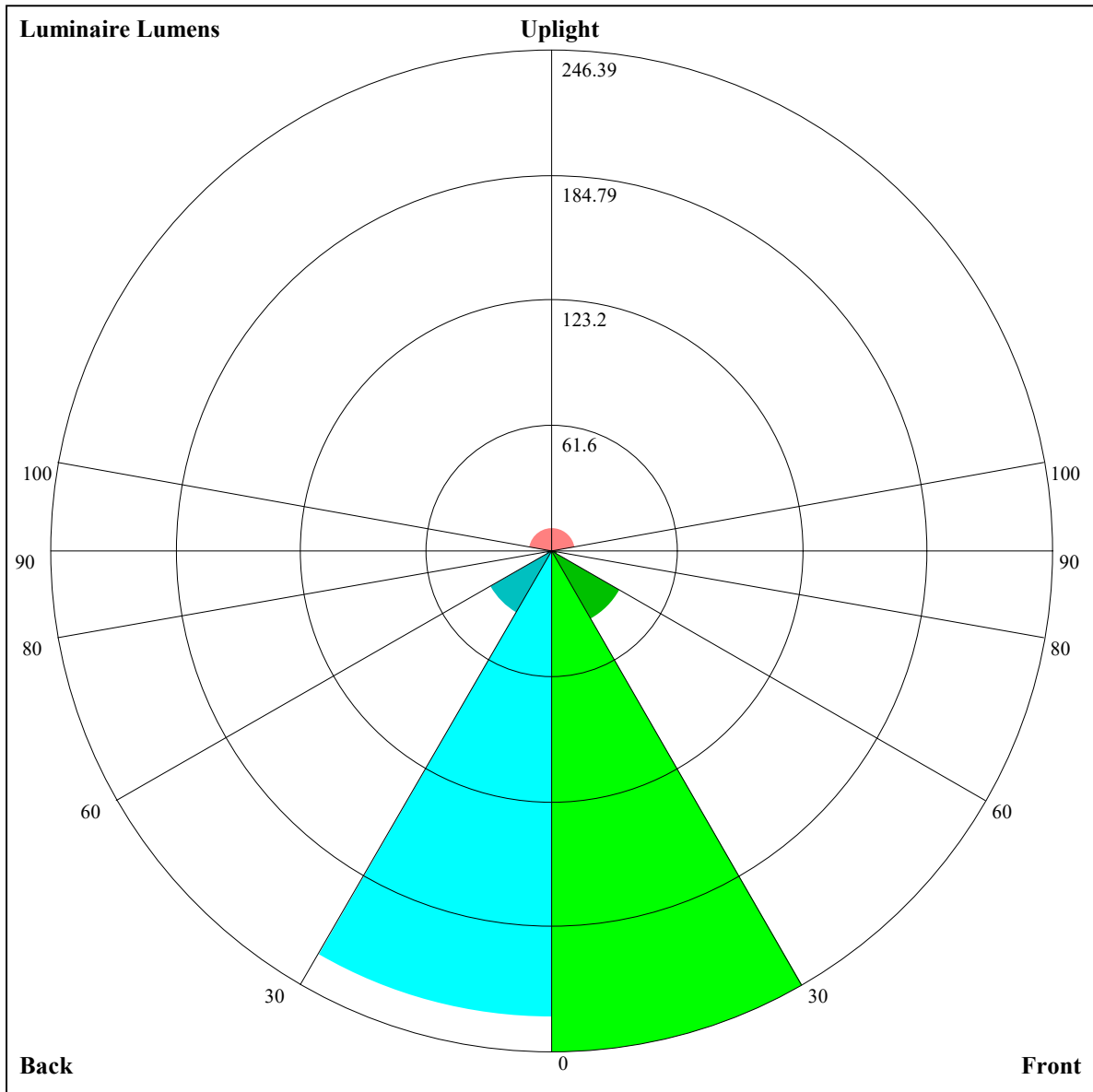
Luminance Limiting Curve





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	1.05	1.05	1.05	1.02	1.02	1.02	0.98	0.98	0.98	0.94	0.94	0.94	0.90	0.90	0.90	0.88
1	0.98	0.96	0.95	0.97	0.95	0.93	0.93	0.92	0.90	0.90	0.89	0.88	0.87	0.86	0.85	0.84
2	0.93	0.90	0.88	0.92	0.89	0.87	0.89	0.87	0.85	0.87	0.85	0.83	0.84	0.83	0.82	0.80
3	0.89	0.86	0.83	0.88	0.85	0.82	0.86	0.83	0.81	0.84	0.82	0.80	0.82	0.80	0.78	0.77
4	0.85	0.82	0.79	0.84	0.81	0.78	0.83	0.80	0.77	0.81	0.79	0.76	0.79	0.77	0.76	0.75
5	0.82	0.78	0.75	0.81	0.78	0.75	0.80	0.77	0.74	0.79	0.76	0.74	0.77	0.75	0.73	0.72
6	0.79	0.75	0.72	0.78	0.75	0.72	0.77	0.74	0.72	0.76	0.73	0.71	0.75	0.73	0.71	0.70
7	0.76	0.73	0.70	0.76	0.72	0.70	0.75	0.72	0.69	0.74	0.71	0.69	0.73	0.71	0.69	0.68
8	0.74	0.70	0.68	0.74	0.70	0.67	0.73	0.69	0.67	0.72	0.69	0.67	0.71	0.69	0.67	0.66
9	0.72	0.68	0.65	0.71	0.68	0.65	0.71	0.67	0.65	0.70	0.67	0.65	0.69	0.67	0.65	0.64
10	0.70	0.66	0.64	0.69	0.66	0.64	0.69	0.66	0.63	0.68	0.65	0.63	0.68	0.65	0.63	0.62





Luminaire Lumens:

FL=246.39,FM=38.69,FH=2.75,FVH=1.26

BL=229.43,BM=34.87,BH=2.76,BVH=1.26

UL=2.42,UH=11.51

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	3119.50	3091.97	2904.23	2561.22	2112.51	1606.00	1195.27	807.13	519.73
45.0	3122.80	3132.71	2978.55	2655.37	2237.49	1724.37	1263.54	880.35	582.50
90.0	3142.62	3120.60	2936.16	2555.72	2080.58	1558.10	1084.34	746.84	496.88
135.0	3132.16	3104.63	2909.18	2518.83	2042.04	1549.84	1095.07	708.03	455.32
180.0	3119.50	2986.26	2659.22	2189.04	1719.96	1080.92	859.82	551.06	368.38
225.0	3122.80	2951.57	2600.31	2153.81	1670.96	1072.66	835.15	535.26	366.29
270.0	3142.62	2990.66	2701.62	2239.69	1784.38	1306.49	907.33	588.55	387.05
315.0	3132.16	2990.66	2699.42	2236.94	1749.69	1218.95	895.44	581.89	388.86
360.0	3119.50	3091.97	2904.23	2561.22	2112.51	1606.00	1195.27	807.13	519.73
C/γ(°)	18.0	20.0	22.0	24.0	26.0	28.0	30.0	32.0	34.0
0.0	354.56	281.34	234.60	224.58	215.93	209.82	204.26	196.66	172.66
45.0	393.65	292.35	248.58	231.13	222.04	214.33	207.01	198.53	181.14
90.0	325.71	254.97	231.29	224.24	218.13	211.47	204.15	195.89	173.92
135.0	307.77	241.31	215.93	202.28	196.00	190.61	183.83	176.46	148.32
180.0	278.70	240.65	222.76	214.22	207.40	200.85	194.29	180.25	125.64
225.0	276.11	241.97	225.73	214.94	205.86	197.27	188.84	166.33	111.49
270.0	283.54	242.96	226.50	215.27	207.84	200.57	192.64	180.36	124.81
315.0	268.23	222.92	205.69	196.99	190.77	186.70	178.99	165.50	119.91
360.0	354.56	281.34	234.60	224.58	215.93	209.82	204.26	196.66	172.66
C/γ(°)	36.0	38.0	40.0	42.0	44.0	46.0	48.0	50.0	52.0
0.0	111.98	42.78	10.46	8.26	6.77	5.67	5.29	4.84	4.46
45.0	122.17	54.45	12.00	7.65	5.73	4.40	3.96	3.74	3.47
90.0	109.51	46.14	11.67	9.25	7.16	6.22	5.67	5.18	4.62
135.0	93.16	37.11	11.51	9.14	7.43	6.72	6.28	5.67	5.18
180.0	58.47	13.82	7.32	5.51	4.40	4.35	4.18	4.13	4.02
225.0	44.43	9.63	6.50	4.62	3.47	3.25	3.08	2.97	2.97
270.0	57.09	15.03	8.20	6.61	5.51	5.40	5.23	5.01	4.79
315.0	57.42	16.52	10.19	8.59	7.38	6.99	6.39	5.84	5.23
360.0	111.98	42.78	10.46	8.26	6.77	5.67	5.29	4.84	4.46
C/γ(°)	54.0	56.0	58.0	60.0	62.0	64.0	66.0	68.0	70.0
0.0	4.02	3.74	3.47	3.19	2.97	2.86	2.75	2.64	2.59
45.0	3.30	3.19	3.08	3.03	2.97	2.86	2.75	2.70	2.64
90.0	4.24	3.80	3.47	3.19	2.97	2.86	2.75	2.64	2.59
135.0	4.68	4.18	3.80	3.47	3.14	2.97	2.81	2.70	2.64
180.0	3.85	3.69	3.41	3.19	3.03	2.92	2.81	2.64	2.59
225.0	2.97	2.97	3.03	2.97	2.92	2.86	2.75	2.70	2.64
270.0	4.46	4.13	3.80	3.47	3.25	3.03	2.86	2.81	2.64
315.0	4.73	4.24	3.74	3.41	3.19	2.97	2.81	2.70	2.64
360.0	4.02	3.74	3.47	3.19	2.97	2.86	2.75	2.64	2.59
C/γ(°)	72.0	74.0	76.0	78.0	80.0	82.0	84.0	86.0	88.0
0.0	2.53	2.48	2.42	2.37	2.37	2.31	2.31	2.26	2.26
45.0	2.59	2.53	2.48	2.48	2.42	2.37	2.37	2.37	2.31
90.0	2.53	2.48	2.42	2.37	2.37	2.31	2.31	2.26	2.26
135.0	2.59	2.53	2.53	2.48	2.48	2.42	2.31	2.26	2.20
180.0	2.59	2.48	2.48	2.42	2.37	2.31	2.31	2.26	2.20
225.0	2.59	2.53	2.48	2.48	2.42	2.37	2.37	2.31	2.31
270.0	2.59	2.59	2.48	2.48	2.42	2.42	2.37	2.26	2.26
315.0	2.59	2.53	2.48	2.48	2.42	2.37	2.31	2.26	2.20
360.0	2.53	2.48	2.42	2.37	2.37	2.31	2.31	2.26	2.26



Intensity data(cd)

C/ $\gamma$ (°)	90.0
0.0	2.26
45.0	2.31
90.0	2.26
135.0	2.15
180.0	2.20
225.0	2.20
270.0	2.20
315.0	2.15
360.0	2.26