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Nata

Client:

LumCAT: 2-2006-M
Luminaire: 92.70.129.00
Report No: GC2019091909
Test No: NATA07
LampCAT: CREE CXA1830
Lamp flux(lm): 1602.0
Number of Lamps: 1
Length(mm): 70
Phm Type: C

Voltage(V): 220.4000
Current(A): 0.0700
Power (W): 14.2400
PF: 0.9180
Ballast type: AC
Width(mm): 70
Height(mm): 0

Photometric Results

Lumens(lm): 1413.18, Efficiency(%): 88.21% , Luminous Efficacy(lm/W): 99.24
Central intensity(cd): 4615.438, Maximum intensity(cd): 4615.438
Angle of maximum intensity: C=0.0 $\gamma=0.0$
Beam Angle(50%Imax): [C0/180]Total=26.8
 [C90/270]Total=26.8
Field angle(10%Imax): [C0/180]Total=65.4
 [C90/270]Total=65.4
Maximum s/h(1/2): C0_180=0.45 C90_270=0.45
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(%): 88.21%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 99.614%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	4615.439	0.000	0	.000%	.000%
1.0	4603.722	4.411	4.411	.275%	.312%
2.0	4565.961	13.161	17.572	.822%	1.243%
3.0	4502.795	21.689	39.262	1.354%	2.778%
4.0	4413.642	29.846	69.108	1.863%	4.890%
5.0	4294.966	37.464	106.572	2.339%	7.541%
6.0	4144.793	44.353	150.925	2.769%	10.680%
7.0	3969.446	50.365	201.29	3.144%	14.244%
8.0	3748.973	55.239	256.529	3.448%	18.153%
9.0	3542.478	59.093	315.623	3.689%	22.334%
10.0	3250.659	61.475	377.098	3.837%	26.684%
11.0	3013.480	62.592	439.69	3.907%	31.113%
12.0	2682.624	62.267	501.956	3.887%	35.520%
13.0	2421.605	60.574	562.53	3.781%	39.806%
14.0	2112.501	58.036	620.567	3.623%	43.913%
15.0	1846.145	54.346	674.913	3.392%	47.758%
16.0	1565.231	49.986	724.899	3.120%	51.295%
17.0	1305.071	44.698	769.597	2.790%	54.458%
18.0	1164.776	40.722	810.32	2.542%	57.340%
19.0	991.001	37.506	847.826	2.341%	59.994%
20.0	879.564	34.237	882.062	2.137%	62.417%
21.0	794.298	32.142	914.204	2.006%	64.691%
22.0	719.153	30.413	944.617	1.898%	66.843%
23.0	662.750	28.996	973.613	1.810%	68.895%
24.0	621.277	28.073	1001.687	1.752%	70.882%
25.0	589.990	27.542	1029.228	1.719%	72.830%
26.0	567.043	27.312	1056.54	1.705%	74.763%
27.0	550.976	27.353	1083.893	1.707%	76.699%
28.0	537.241	27.551	1111.444	1.720%	78.648%
29.0	525.866	27.814	1139.258	1.736%	80.616%
30.0	514.410	28.087	1167.345	1.753%	82.604%
31.0	500.791	28.252	1195.597	1.764%	84.603%
32.0	480.112	28.102	1223.698	1.754%	86.592%
33.0	453.587	27.507	1251.206	1.717%	88.538%
34.0	419.509	26.422	1277.628	1.649%	90.408%
35.0	375.983	24.705	1302.333	1.542%	92.156%
36.0	325.050	22.321	1324.654	1.393%	93.735%
37.0	274.134	19.542	1344.196	1.220%	95.118%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	226.704	16.717	1360.913	1.044%	96.301%
39.0	165.782	13.397	1374.31	.836%	97.249%
40.0	135.794	10.518	1384.828	.657%	97.993%
41.0	86.542	7.917	1392.745	.494%	98.554%
42.0	47.314	4.863	1397.608	.304%	98.898%
43.0	26.200	2.723	1400.332	.170%	99.090%
44.0	13.068	1.482	1401.814	.093%	99.195%
45.0	9.170	0.855	1402.668	.053%	99.256%
46.0	6.752	0.623	1403.291	.039%	99.300%
47.0	5.470	0.486	1403.777	.030%	99.334%
48.0	4.814	0.416	1404.193	.026%	99.364%
49.0	4.403	0.378	1404.571	.024%	99.390%
50.0	4.060	0.353	1404.924	.022%	99.415%
51.0	3.822	0.334	1405.258	.021%	99.439%
52.0	3.602	0.319	1405.576	.020%	99.462%
53.0	3.405	0.305	1405.881	.019%	99.483%
54.0	3.254	0.293	1406.175	.018%	99.504%
55.0	3.103	0.284	1406.458	.018%	99.524%
56.0	2.947	0.273	1406.732	.017%	99.543%
57.0	2.773	0.261	1406.993	.016%	99.562%
58.0	2.674	0.252	1407.245	.016%	99.580%
59.0	2.575	0.245	1407.49	.015%	99.597%
60.0	2.442	0.237	1407.727	.015%	99.614%
61.0	2.320	0.227	1407.955	.014%	99.630%
62.0	2.233	0.219	1408.174	.014%	99.645%
63.0	2.193	0.215	1408.389	.013%	99.661%
64.0	2.088	0.210	1408.599	.013%	99.676%
65.0	1.984	0.202	1408.801	.013%	99.690%
66.0	1.949	0.196	1408.997	.012%	99.704%
67.0	1.897	0.193	1409.191	.012%	99.717%
68.0	1.816	0.188	1409.379	.012%	99.731%
69.0	1.752	0.182	1409.561	.011%	99.744%
70.0	1.734	0.179	1409.74	.011%	99.756%
71.0	1.682	0.177	1409.916	.011%	99.769%
72.0	1.630	0.172	1410.088	.011%	99.781%
73.0	1.607	0.169	1410.258	.011%	99.793%
74.0	1.578	0.167	1410.425	.010%	99.805%
75.0	1.560	0.166	1410.591	.010%	99.816%

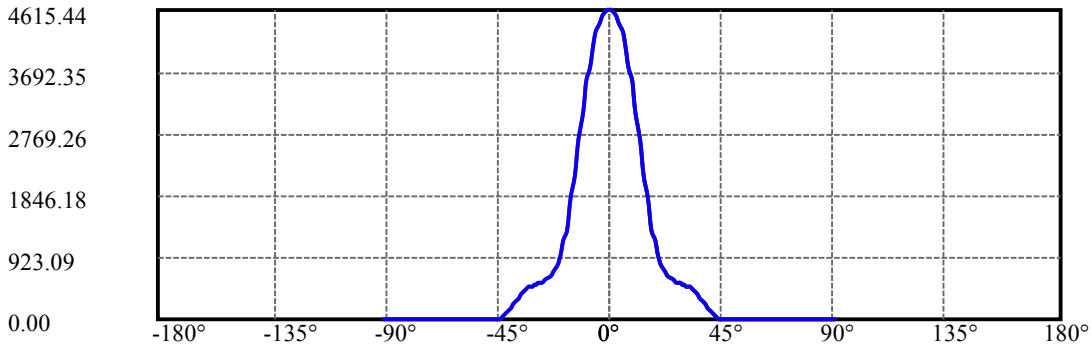
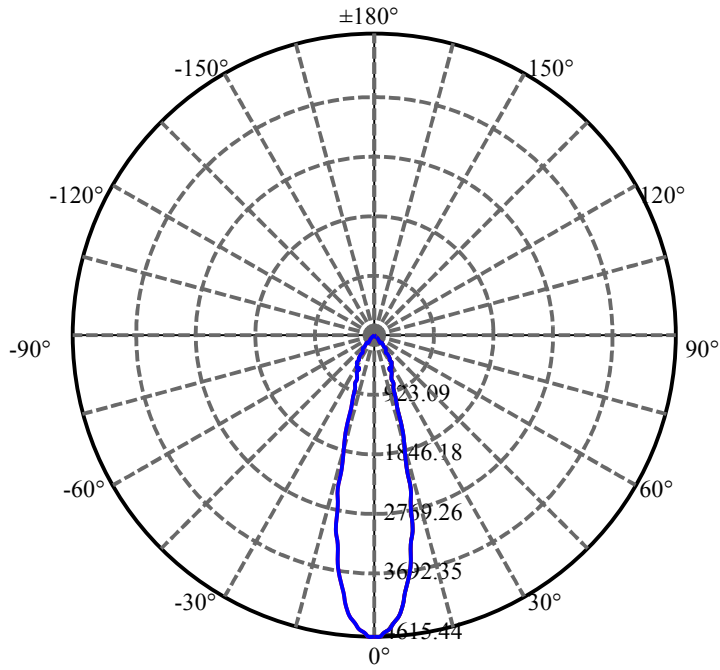
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	1.549	0.165	1410.756	.010%	99.828%
77.0	1.520	0.164	1410.92	.010%	99.840%
78.0	1.508	0.162	1411.082	.010%	99.851%
79.0	1.485	0.161	1411.242	.010%	99.863%
80.0	1.497	0.161	1411.403	.010%	99.874%
81.0	1.491	0.162	1411.565	.010%	99.885%
82.0	1.491	0.162	1411.726	.010%	99.897%
83.0	1.502	0.163	1411.889	.010%	99.908%
84.0	1.491	0.163	1412.052	.010%	99.920%
85.0	1.497	0.163	1412.215	.010%	99.931%
86.0	1.595	0.169	1412.384	.011%	99.943%
87.0	1.769	0.184	1412.568	.011%	99.956%
88.0	1.862	0.199	1412.767	.012%	99.970%
89.0	1.972	0.210	1412.977	.013%	99.985%
90.0	1.810	0.207	1413.185	.013%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1167.35	72.87%	82.60%
0-40	1384.83	86.44%	97.99%
0-60	1407.73	87.87%	99.61%
0-90	1412.98	88.20%	99.99%
0-120	1412.98	88.20%	99.99%
0-180	1413.18	88.21%	100.00%
60-90	5.49	0.34%	0.39%
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	1130.55	70.57%	80.00%

ZONAL LUMEN SUMMARY

0-10	377.10
10-20	504.96
20-30	285.28
30-40	217.48
40-50	20.10
50-60	2.80
60-70	2.01
70-80	1.66
80-90	1.57
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: —————

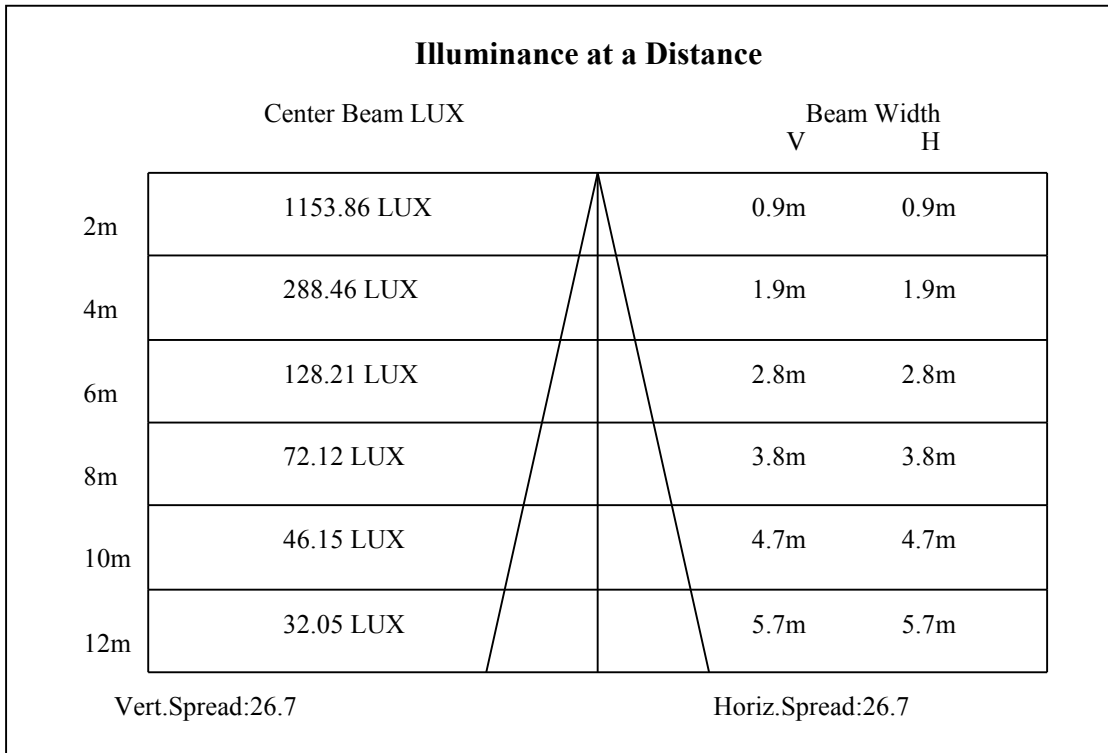
C90/C270: —————

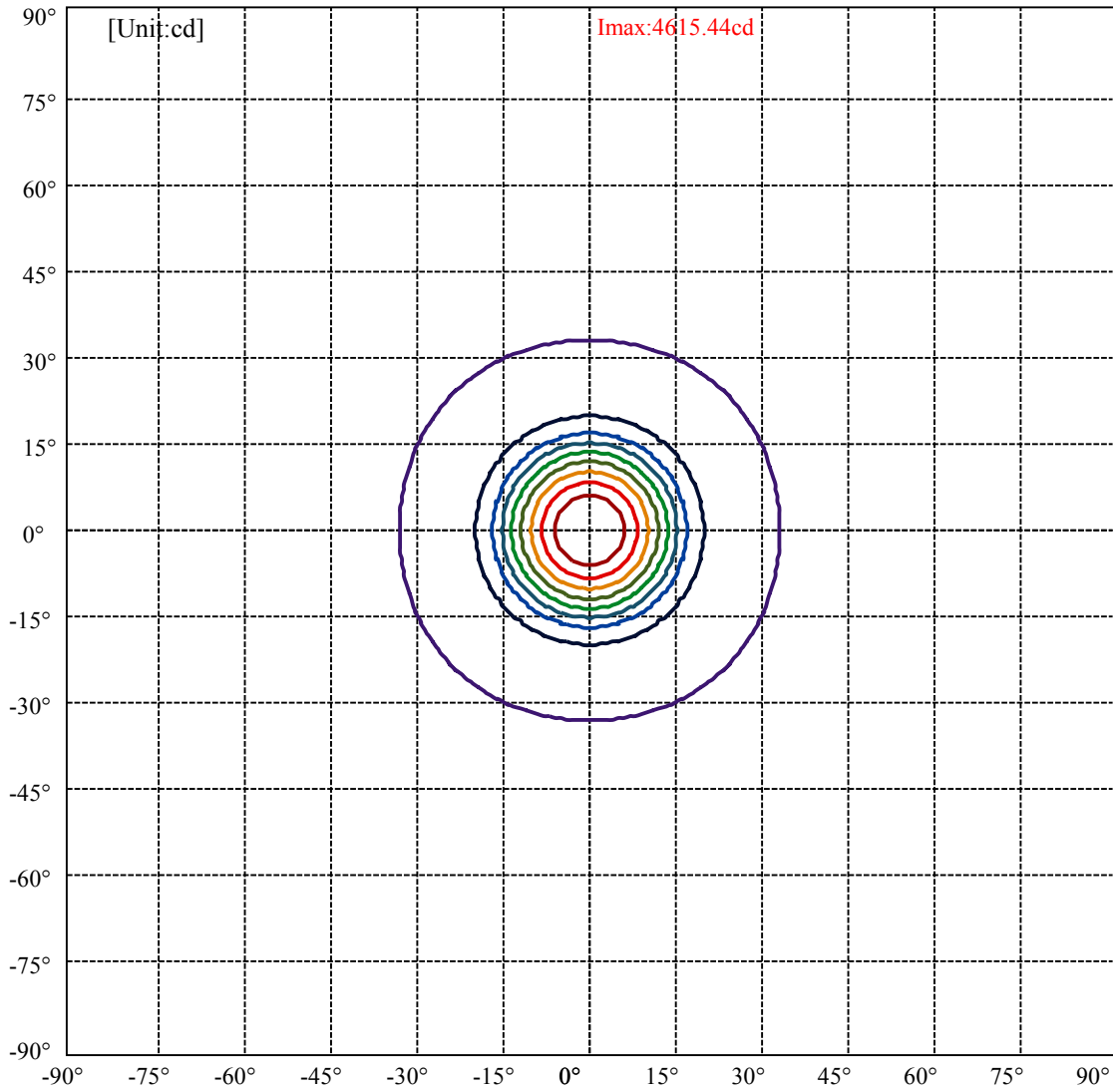
Field angle(10%Imax):C0/180Left:32.7 Right:32.7

:C90/270Left:32.7 Right:32.7

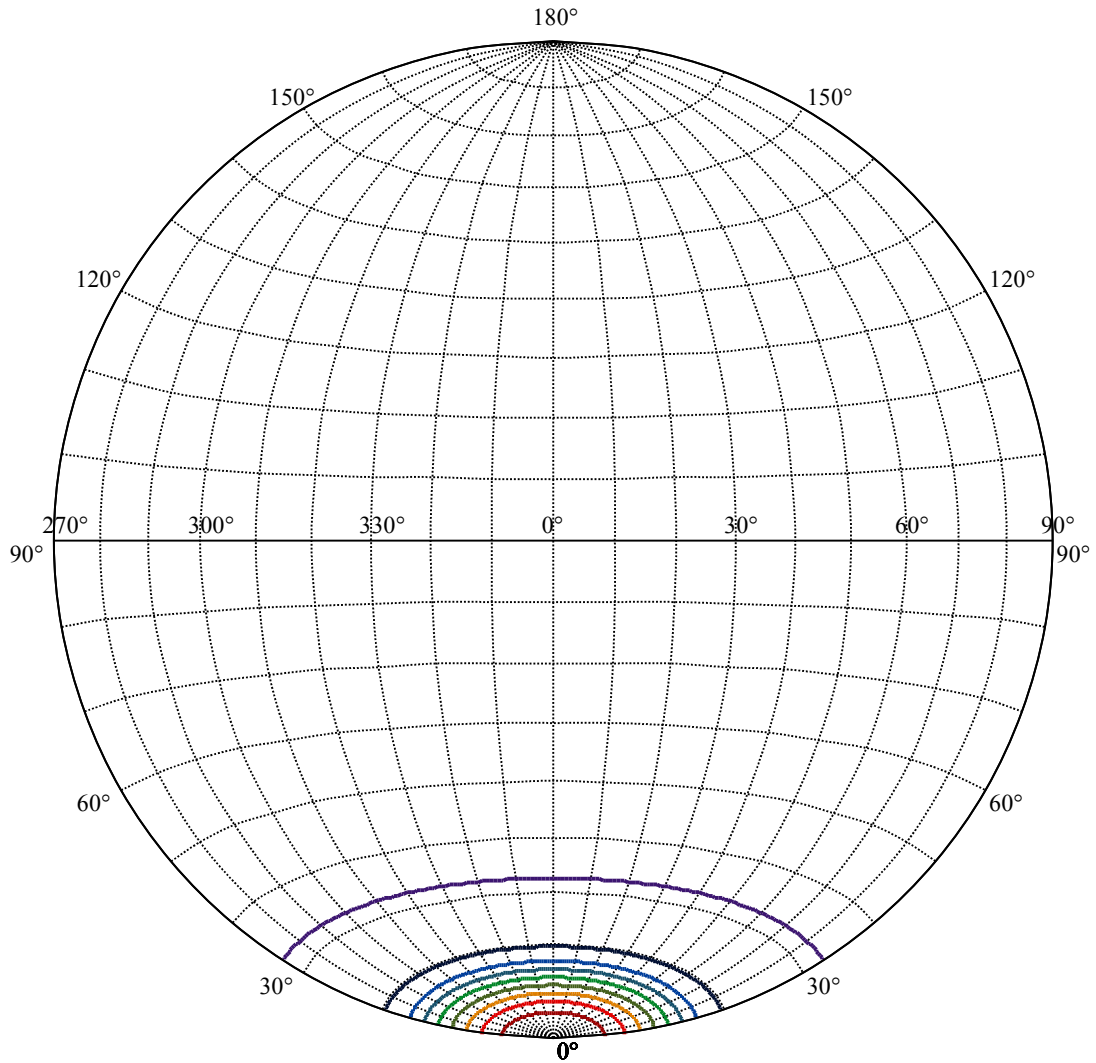
Beam Angle(50%Imax):C0/180Left:13.4 Right:13.4

:C90/270Left:13.4 Right:13.4





(10%Imax) 461.544	—
(20%Imax) 923.088	—
(30%Imax) 1384.63	—
(40%Imax) 1846.18	—
(50%Imax) 2307.72	—
(60%Imax) 2769.26	—
(70%Imax) 3230.81	—
(80%Imax) 3692.35	—
(90%Imax) 4153.89	—



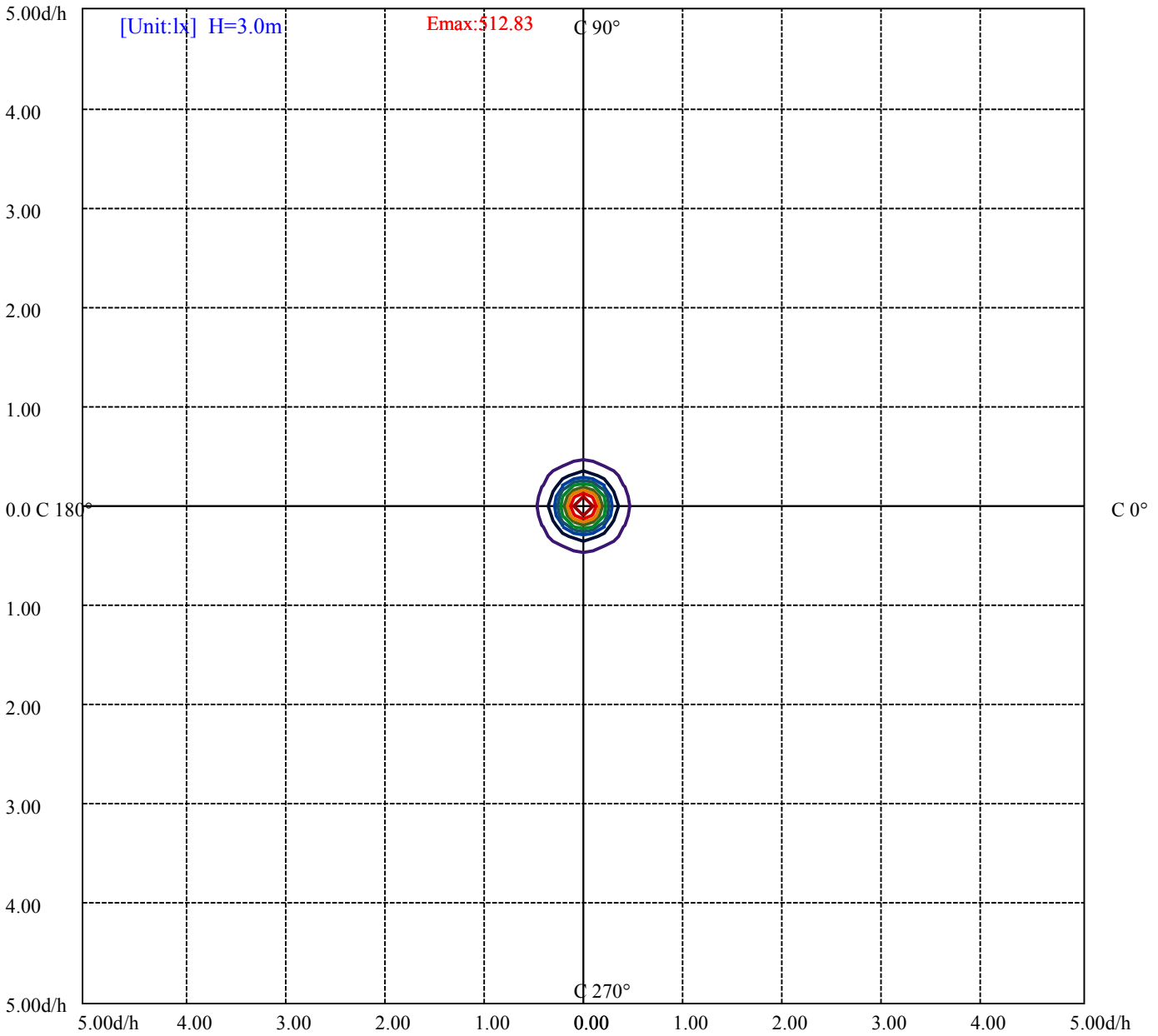
House

[Unit:cd]

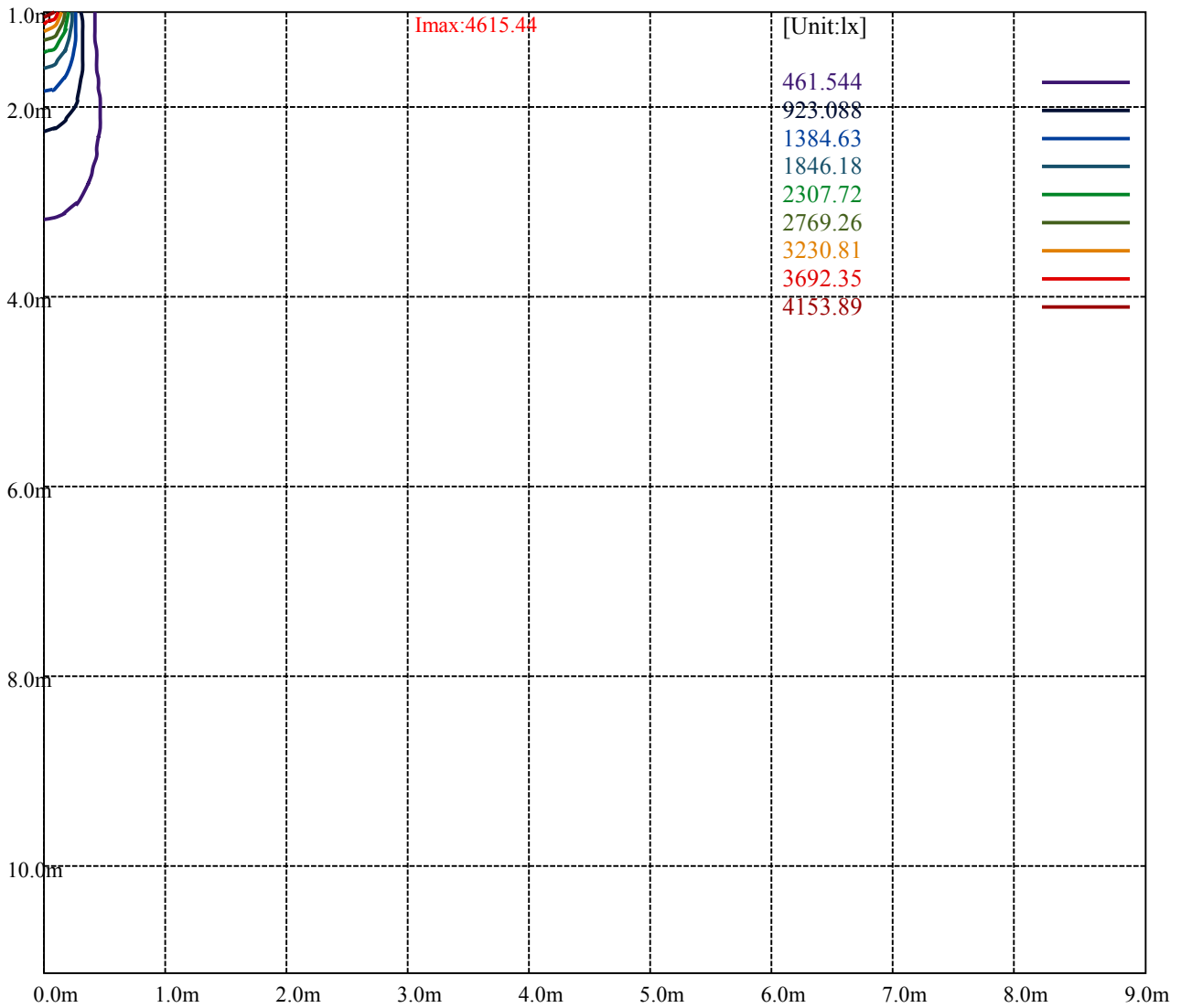
Road

Imax:4615.44

(10%Imax) 461.544	—
(20%Imax) 923.088	—
(30%Imax) 1384.63	—
(40%Imax) 1846.18	—
(50%Imax) 2307.72	—
(60%Imax) 2769.26	—
(70%Imax) 3230.81	—
(80%Imax) 3692.35	—
(90%Imax) 4153.89	—



- (10%Emax) 51.28267
- (20%Emax) 102.5652
- (30%Emax) 153.8478
- (40%Emax) 205.13
- (50%Emax) 256.4133
- (60%Emax) 307.6956
- (70%Emax) 358.9789
- (80%Emax) 410.2611
- (90%Emax) 461.5433



Luminance Table

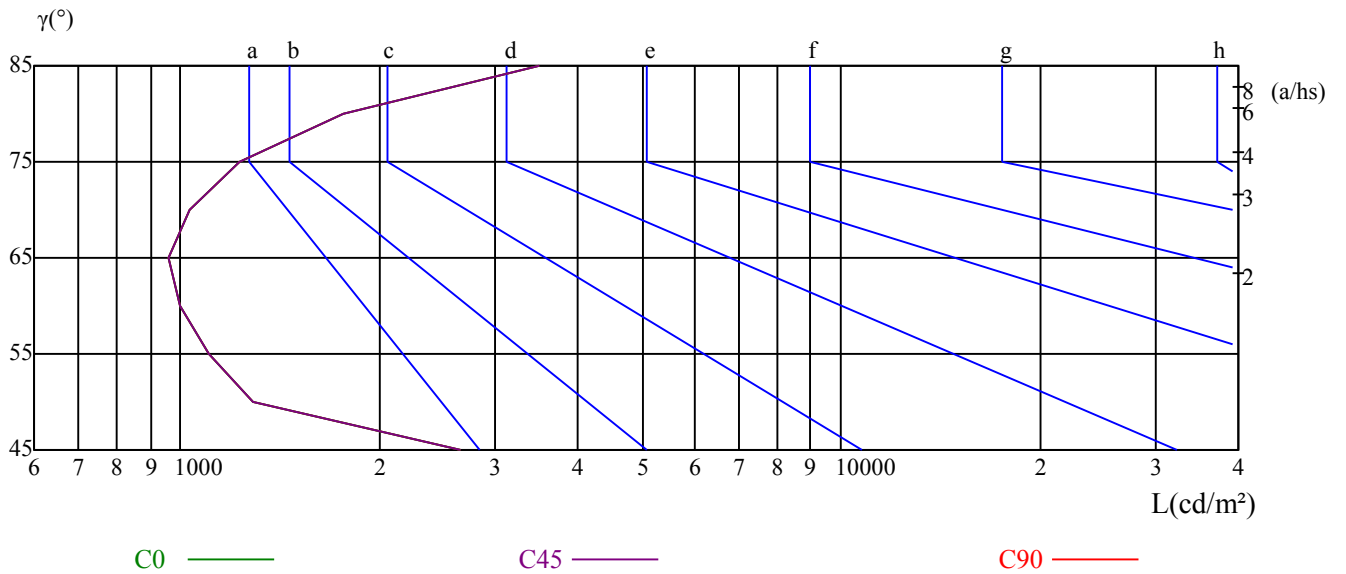
γ	45	50	55	60	65	70	75	80	85
C0	2647	1289	1104	997	958	1035	1230	1759	3504
C45	2647	1289	1104	997	958	1035	1230	1759	3504
C90	2647	1289	1104	997	958	1035	1230	1759	3504

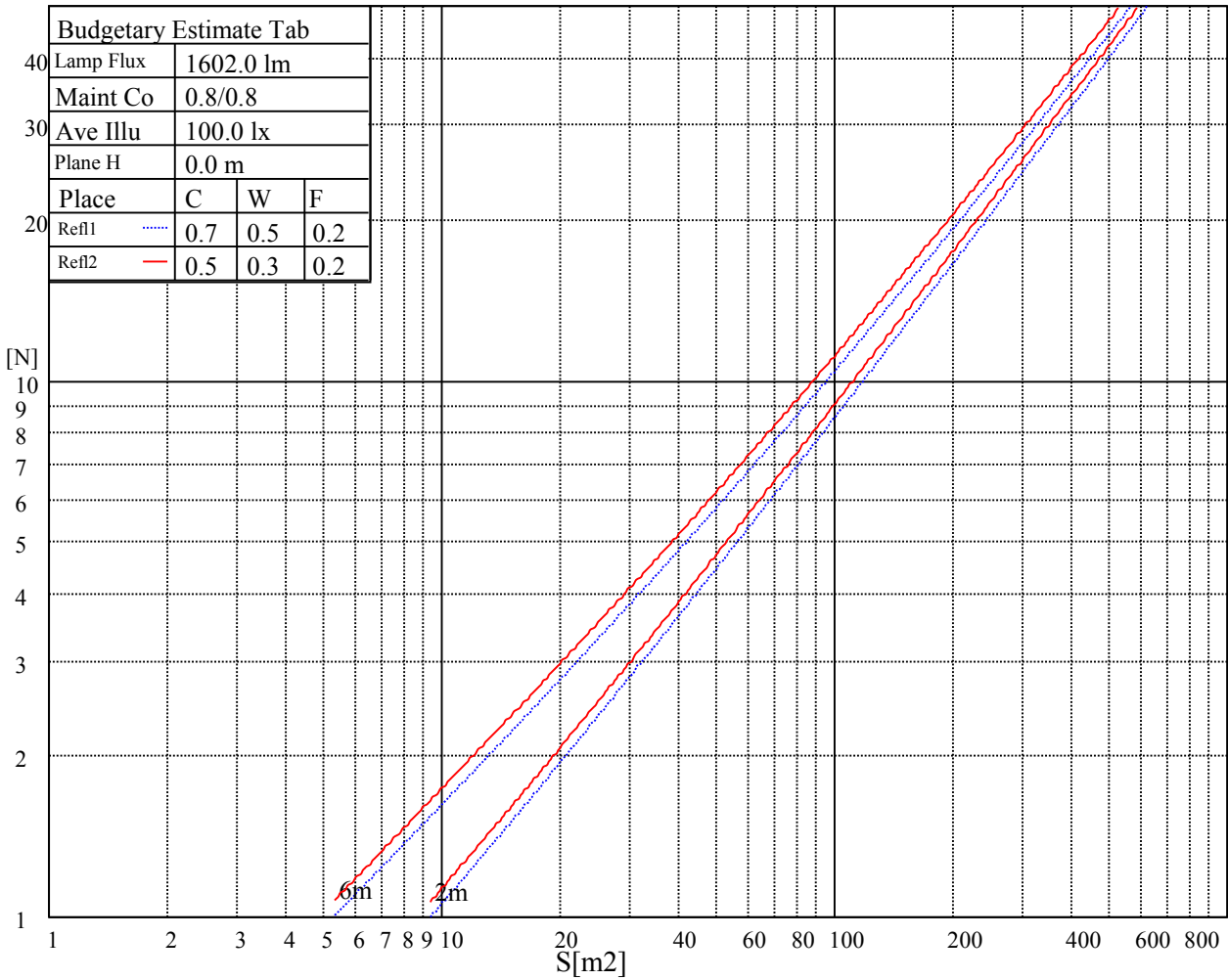
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
958	958	958	1230	1230	1230	3504	3504	3504

Glare Table

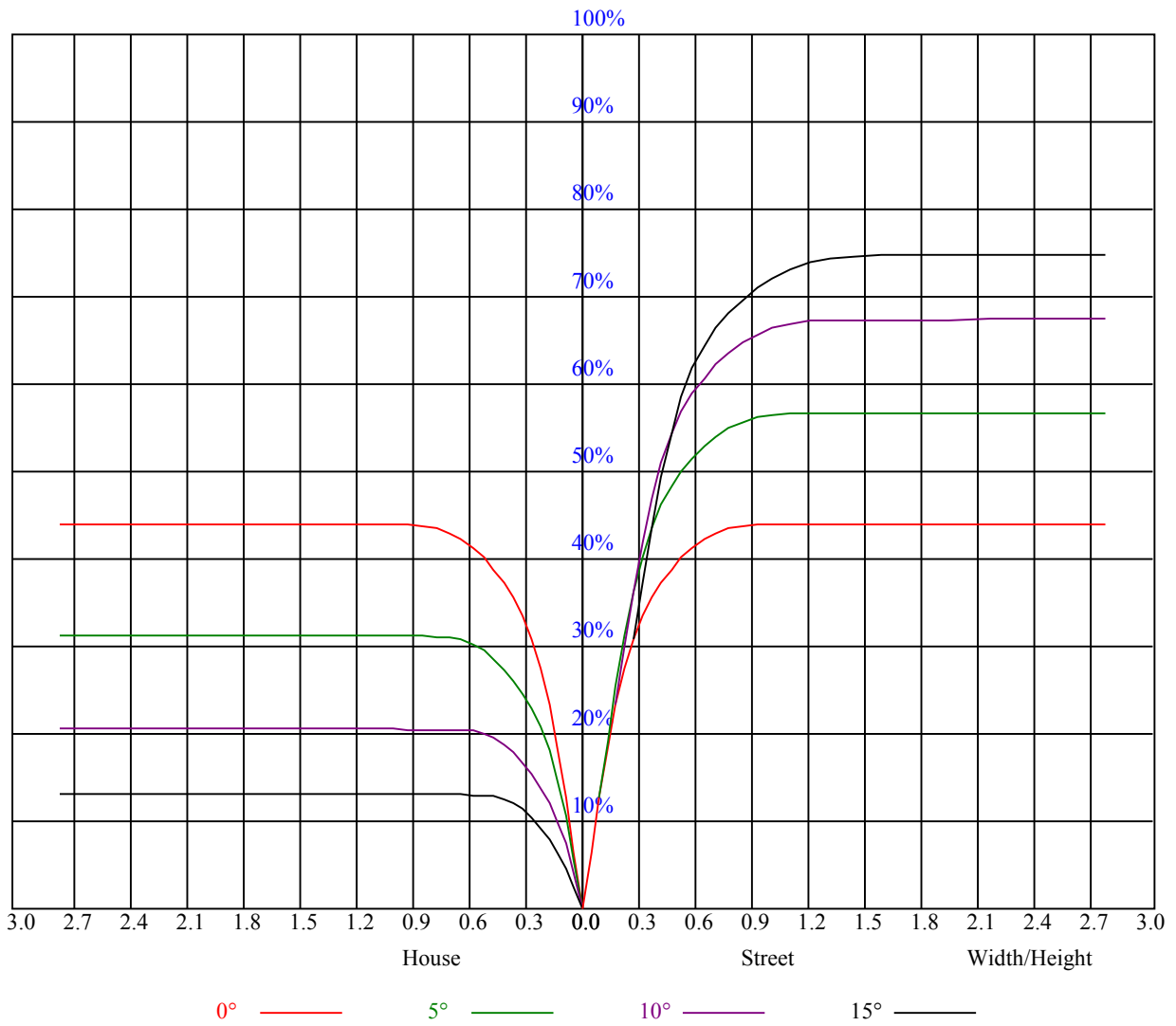
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

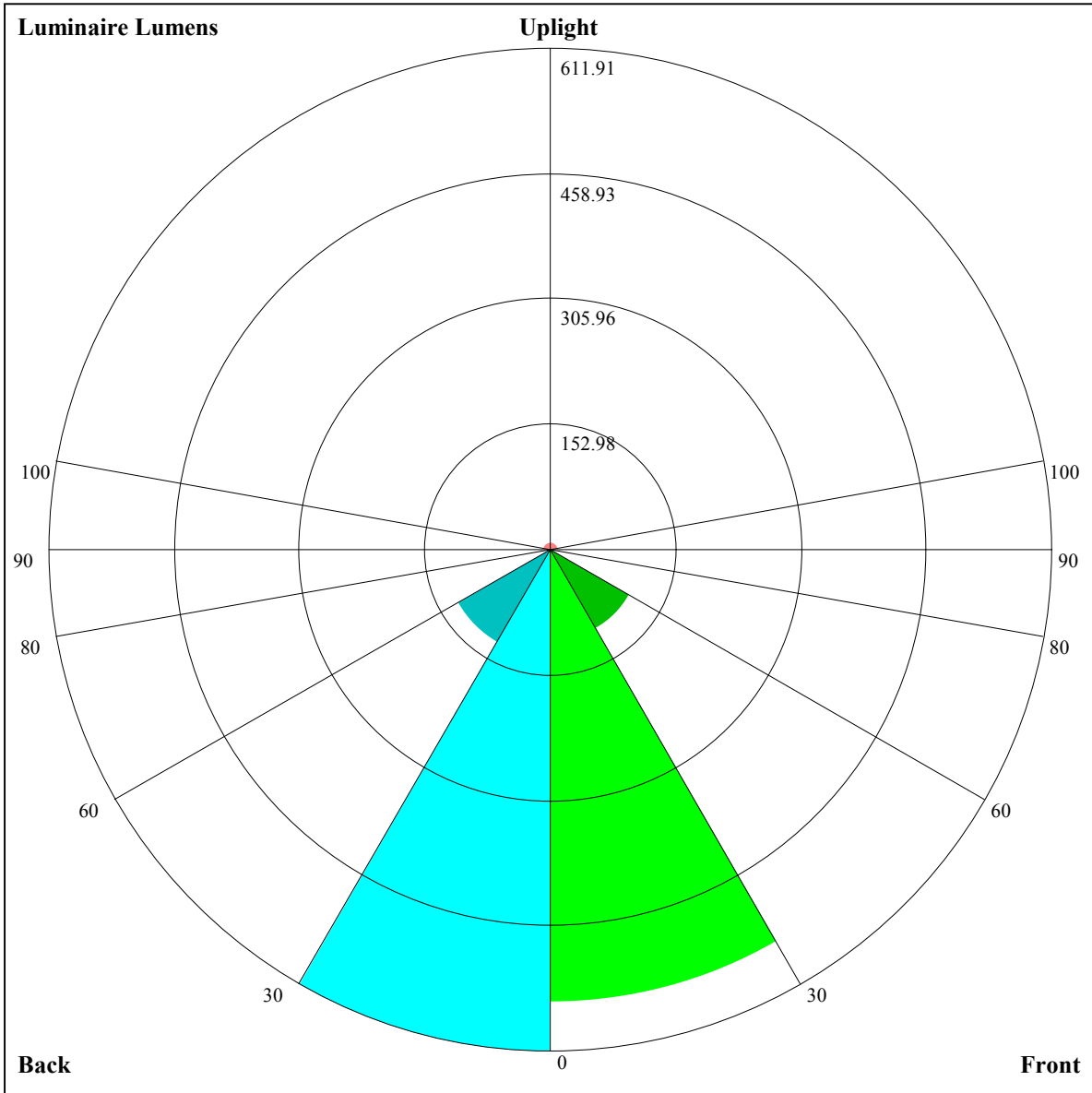
Luminance Limiting Curve





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	1.03	1.03	1.03	0.98	0.98	0.98	0.94	0.94	0.94	0.90	0.90	0.90	0.88
1	0.99	0.97	0.95	0.97	0.95	0.94	0.93	0.92	0.91	0.90	0.89	0.88	0.87	0.86	0.86	0.84
2	0.93	0.90	0.88	0.92	0.89	0.87	0.89	0.87	0.85	0.86	0.85	0.83	0.84	0.83	0.81	0.80
3	0.88	0.85	0.82	0.87	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	0.79	0.77	0.81	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	0.79	0.75	0.72	0.78	0.74	0.72	0.76	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	0.68	0.74	0.70	0.68	0.72	0.70	0.68	0.67
7	0.73	0.69	0.66	0.73	0.69	0.66	0.72	0.68	0.65	0.71	0.68	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	0.60	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=551.44,FM=111.76,FH=1.81,FVH=0.95

BL=611.91,BM=131.41,BH=1.88,BVH=0.84

UL=1.97,UH=9.4

BUG Rating:B2-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	4596.76	4544.33	4458.94	4345.26	4202.80	4033.43	3829.71	3599.55	3342.02
45.0	4608.36	4617.64	4604.65	4571.24	4512.77	4423.68	4306.74	4156.86	3976.81
90.0	4644.56	4658.94	4649.20	4619.50	4565.67	4482.15	4361.50	4205.12	4015.79
135.0	4612.07	4655.23	4674.72	4676.58	4659.87	4622.28	4555.00	4456.16	4316.95
180.0	4596.76	4629.71	4638.52	4620.89	4583.77	4521.59	4427.85	4310.92	4148.97
225.0	4608.36	4570.78	4508.13	4414.86	4294.21	4135.05	3945.26	3721.59	3465.45
270.0	4644.56	4609.29	4547.11	4457.09	4335.97	4183.31	3997.69	3823.68	3522.52
315.0	4612.07	4543.86	4446.41	4316.95	4154.07	3958.25	3734.59	3481.69	3203.27
360.0	4596.76	4544.33	4458.94	4345.26	4202.80	4033.43	3829.71	3599.55	3342.02
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	3058.49	2753.62	2561.51	2117.43	1935.99	1662.68	1425.56	1222.77	894.80
45.0	3851.52	3515.10	3351.30	3060.81	2748.52	2427.41	2106.76	1808.38	1545.28
90.0	3794.45	3540.16	3256.17	2942.02	2747.12	2284.48	2091.91	1792.61	1432.05
135.0	4217.18	4021.82	3690.97	3531.80	3250.14	2948.51	2631.58	2307.22	1996.32
180.0	4038.53	3735.98	3589.35	3320.21	3020.44	2699.79	2370.79	2049.22	1750.38
225.0	3181.92	2870.56	2613.02	2218.13	1902.58	1671.03	1418.13	1210.25	867.60
270.0	3299.32	2993.06	2666.85	2334.13	2005.60	1704.91	1445.51	1229.27	1052.01
315.0	2898.40	2574.97	2378.68	1936.46	1762.45	1501.19	1278.92	902.13	902.13
360.0	3058.49	2753.62	2561.51	2117.43	1935.99	1662.68	1425.56	1222.77	894.80
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	894.80	793.36	716.98	660.74	619.95	590.44	570.76	554.38	542.32
45.0	1322.54	1136.00	982.41	860.83	768.02	699.34	648.30	609.79	583.34
90.0	1303.52	922.45	875.68	854.10	762.36	694.84	645.42	607.79	581.71
135.0	1714.19	1466.86	1254.33	1075.68	930.90	818.60	732.29	668.25	621.39
180.0	1485.88	1263.61	1081.71	936.00	823.71	737.40	672.89	626.96	593.08
225.0	867.60	807.60	728.35	671.18	627.14	595.17	572.76	555.73	541.85
270.0	913.26	805.61	726.26	668.72	625.10	593.08	571.27	554.10	540.65
315.0	816.42	732.52	670.81	627.14	596.05	573.13	556.52	542.92	532.01
360.0	894.80	793.36	716.98	660.74	619.95	590.44	570.76	554.38	542.32
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	530.20	524.50	511.46	498.14	479.62	440.09	392.15	338.09	281.58
45.0	571.27	548.53	541.57	530.90	517.44	512.80	503.06	482.64	445.98
90.0	565.70	547.37	535.54	527.65	518.05	509.00	499.62	479.44	442.27
135.0	588.44	565.24	548.07	534.61	524.87	512.80	505.38	495.63	476.61
180.0	569.88	551.78	537.86	528.58	516.52	507.23	499.81	484.96	453.87
225.0	531.13	524.50	515.03	502.69	496.89	474.01	433.45	384.59	329.23
270.0	529.51	519.76	510.48	502.13	496.56	475.68	439.02	391.23	335.54
315.0	521.67	516.24	506.91	490.58	456.38	409.28	356.19	299.49	242.78
360.0	530.20	524.50	511.46	498.14	479.62	440.09	392.15	338.09	281.58
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	223.06	166.12	113.55	68.58	33.46	14.85	10.72	7.56	5.52
45.0	397.26	343.90	288.68	243.20	243.20	110.25	63.90	29.56	13.50
90.0	394.94	339.77	282.92	227.42	169.93	115.41	68.49	33.32	14.76
135.0	439.02	392.15	337.86	281.71	249.23	249.23	115.50	68.40	31.74
180.0	410.72	360.14	303.99	245.52	245.52	132.25	83.20	44.18	19.35
225.0	272.48	215.40	160.14	107.33	61.02	27.89	13.83	10.44	7.80
270.0	276.61	242.74	242.74	109.74	64.92	30.95	14.66	10.67	7.19
315.0	186.31	132.85	83.76	42.74	19.07	11.51	8.21	5.48	4.69
360.0	223.06	166.12	113.55	68.58	33.46	14.85	10.72	7.56	5.52

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	4.92	4.41	4.18	3.99	3.85	3.53	3.39	3.20	3.11
45.0	10.02	7.89	6.45	5.71	5.29	4.73	4.50	4.32	4.04
90.0	10.63	7.52	5.34	4.83	4.36	4.08	3.94	3.62	3.48
135.0	19.86	10.72	7.52	6.13	5.15	4.59	4.04	3.81	3.57
180.0	12.16	9.05	7.29	5.66	4.97	4.41	4.18	3.94	3.67
225.0	6.03	5.52	4.92	4.64	4.41	4.22	3.94	3.76	3.57
270.0	5.48	4.97	4.36	4.04	3.81	3.67	3.48	3.25	3.06
315.0	4.27	3.94	3.71	3.53	3.39	3.25	3.11	2.92	2.74
360.0	4.92	4.41	4.18	3.99	3.85	3.53	3.39	3.20	3.11
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	2.97	2.74	2.64	2.55	2.46	2.32	2.18	2.18	2.04
45.0	3.76	3.62	3.43	3.25	3.06	2.92	2.83	2.69	2.55
90.0	3.34	3.20	3.02	2.83	2.74	2.64	2.51	2.37	2.32
135.0	3.39	3.25	3.11	2.88	2.78	2.69	2.55	2.37	2.27
180.0	3.53	3.39	3.20	2.97	2.88	2.78	2.60	2.46	2.37
225.0	3.43	3.25	3.06	2.92	2.83	2.74	2.55	2.46	2.41
270.0	2.97	2.83	2.69	2.51	2.46	2.37	2.27	2.13	2.04
315.0	2.64	2.55	2.41	2.27	2.18	2.13	2.04	1.90	1.86
360.0	2.97	2.74	2.64	2.55	2.46	2.32	2.18	2.18	2.04
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	1.95	1.90	1.86	1.81	1.72	1.62	1.62	1.58	1.58
45.0	2.51	2.41	2.27	2.23	2.13	2.04	2.00	1.90	1.86
90.0	2.27	2.18	2.04	2.00	2.00	1.90	1.81	1.81	1.81
135.0	2.23	2.09	2.00	2.00	1.90	1.81	1.72	1.72	1.67
180.0	2.32	2.18	2.09	2.04	2.00	1.90	1.81	1.81	1.72
225.0	2.32	2.18	2.13	2.09	2.04	1.90	1.86	1.90	1.81
270.0	2.09	2.00	1.86	1.81	1.76	1.76	1.72	1.72	1.62
315.0	1.86	1.76	1.62	1.62	1.62	1.58	1.48	1.44	1.39
360.0	1.95	1.90	1.86	1.81	1.72	1.62	1.62	1.58	1.58
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	1.44	1.48	1.44	1.44	1.44	1.35	1.35	1.35	1.39
45.0	1.81	1.81	1.81	1.72	1.72	1.76	1.86	1.81	1.81
90.0	1.76	1.72	1.72	1.72	1.67	1.67	1.67	1.62	1.62
135.0	1.62	1.53	1.48	1.53	1.48	1.39	1.39	1.39	1.35
180.0	1.72	1.62	1.58	1.58	1.58	1.48	1.44	1.48	1.48
225.0	1.72	1.72	1.67	1.67	1.67	1.67	1.58	1.53	1.62
270.0	1.58	1.58	1.58	1.53	1.48	1.48	1.53	1.48	1.44
315.0	1.39	1.39	1.35	1.30	1.35	1.35	1.25	1.21	1.25
360.0	1.44	1.48	1.44	1.44	1.44	1.35	1.35	1.35	1.39
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	1.30	1.35	1.39	1.35	1.30	1.53	2.04	2.32	1.62
45.0	1.86	1.86	1.72	1.76	1.95	2.18	2.51	2.69	2.83
90.0	1.72	1.72	1.81	1.76	1.90	1.90	1.95	2.55	3.43
135.0	1.30	1.35	1.30	1.35	1.30	1.35	1.30	1.25	1.25
180.0	1.39	1.39	1.44	1.39	1.35	1.30	1.30	1.35	1.30
225.0	1.62	1.58	1.58	1.48	1.44	1.44	1.48	1.58	1.44
270.0	1.44	1.48	1.48	1.58	1.48	1.39	1.35	1.48	1.58
315.0	1.30	1.21	1.30	1.25	1.25	1.67	2.23	1.67	2.32
360.0	1.30	1.35	1.39	1.35	1.30	1.53	2.04	2.32	1.62

Intensity data(cd)

C/γ(°)	90.0
0.0	1.86
45.0	2.69
90.0	3.02
135.0	1.30
180.0	1.30
225.0	1.35
270.0	1.58
315.0	1.39
360.0	1.86