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Nata

Client:

LumCAT: CR01D04424AK

Luminaire:

Report No: GC2019091909

Voltage(V): 220.6000

Test No: NATA07

Current(A): 0.0180

LampCAT: CREE CXA1304

Power (W): 2.9800

Lamp flux(lm): 231.0

PF: 0.7290

Number of Lamps: 1

Ballast type: AC

Length(mm): 43

Width(mm): 43

Phm Type: C

Height(mm): 0

Photometric Results

Lumens(lm): 203.74, Efficiency(%): 88.20% , Luminous Efficacy(lm/W): 68.37

Central intensity(cd): 878.044, Maximum intensity(cd): 878.044

Angle of maximum intensity: C=0.0 γ =0.0

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

[C90/270]Total=22.8

Field angle(10%Imax): [C0/180]Total=46.0

[C90/270]Total=46.0

Maximum s/h(1/2): C0_180=0.39 C90_270=0.39

Maximum s/h(1/4): C0_180=0.39 C90_270=0.39

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 88.20%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 91.781%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	878.044	0.000	0	.000%	.000%
1.0	875.138	0.839	0.839	.363%	.412%
2.0	861.055	2.492	3.331	1.079%	1.635%
3.0	837.575	4.063	7.393	1.759%	3.629%
4.0	811.449	5.520	12.913	2.390%	6.338%
5.0	769.350	6.801	19.714	2.944%	9.676%
6.0	731.032	7.885	27.599	3.413%	13.546%
7.0	684.716	8.788	36.386	3.804%	17.859%
8.0	630.981	9.416	45.802	4.076%	22.481%
9.0	575.883	9.781	55.583	4.234%	27.282%
10.0	519.329	9.911	65.495	4.291%	32.147%
11.0	459.498	9.780	75.275	4.234%	36.947%
12.0	404.649	9.446	84.721	4.089%	41.584%
13.0	354.098	9.004	93.726	3.898%	46.003%
14.0	297.411	8.339	102.065	3.610%	50.097%
15.0	258.385	7.630	109.695	3.303%	53.842%
16.0	220.491	7.017	116.712	3.038%	57.286%
17.0	190.190	6.395	123.108	2.769%	60.425%
18.0	166.426	5.880	128.987	2.545%	63.311%
19.0	146.577	5.446	134.433	2.357%	65.984%
20.0	129.871	5.060	139.493	2.190%	68.467%
21.0	114.506	4.693	144.185	2.031%	70.770%
22.0	100.707	4.325	148.51	1.872%	72.893%
23.0	87.998	3.960	152.47	1.714%	74.837%
24.0	76.821	3.604	156.073	1.560%	76.605%
25.0	66.473	3.258	159.331	1.410%	78.205%
26.0	57.175	2.919	162.25	1.264%	79.637%
27.0	47.952	2.572	164.822	1.113%	80.900%
28.0	40.626	2.243	167.065	.971%	82.000%
29.0	33.671	1.944	169.008	.841%	82.954%
30.0	27.395	1.649	170.657	.714%	83.764%
31.0	22.941	1.401	172.058	.606%	84.451%
32.0	18.927	1.199	173.257	.519%	85.040%
33.0	15.580	1.017	174.274	.440%	85.539%
34.0	12.952	0.863	175.138	.374%	85.963%
35.0	10.905	0.741	175.878	.321%	86.326%
36.0	9.373	0.646	176.524	.280%	86.643%
37.0	8.318	0.577	177.101	.250%	86.927%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	7.268	0.520	177.621	.225%	87.182%
39.0	6.636	0.475	178.096	.205%	87.415%
40.0	6.201	0.448	178.544	.194%	87.635%
41.0	5.864	0.430	178.973	.186%	87.845%
42.0	5.586	0.416	179.389	.180%	88.050%
43.0	5.348	0.405	179.794	.175%	88.248%
44.0	5.203	0.398	180.192	.172%	88.444%
45.0	5.116	0.397	180.589	.172%	88.639%
46.0	5.029	0.397	180.986	.172%	88.833%
47.0	4.959	0.397	181.383	.172%	89.028%
48.0	4.954	0.401	181.784	.173%	89.225%
49.0	4.954	0.407	182.191	.176%	89.425%
50.0	4.977	0.414	182.605	.179%	89.628%
51.0	5.006	0.422	183.027	.183%	89.835%
52.0	4.994	0.429	183.456	.186%	90.046%
53.0	5.017	0.436	183.892	.189%	90.260%
54.0	5.006	0.442	184.333	.191%	90.476%
55.0	4.971	0.445	184.779	.193%	90.695%
56.0	4.907	0.446	185.225	.193%	90.914%
57.0	4.838	0.446	185.671	.193%	91.133%
58.0	4.756	0.444	186.114	.192%	91.350%
59.0	4.669	0.441	186.555	.191%	91.567%
60.0	4.588	0.437	186.992	.189%	91.781%
61.0	4.478	0.433	187.425	.187%	91.994%
62.0	4.379	0.427	187.852	.185%	92.203%
63.0	4.281	0.421	188.273	.182%	92.410%
64.0	4.205	0.416	188.689	.180%	92.614%
65.0	4.141	0.413	189.102	.179%	92.817%
66.0	4.078	0.410	189.512	.178%	93.018%
67.0	4.060	0.409	189.922	.177%	93.219%
68.0	4.002	0.408	190.33	.177%	93.420%
69.0	4.002	0.408	190.738	.177%	93.620%
70.0	4.025	0.412	191.151	.178%	93.823%
71.0	4.078	0.419	191.57	.181%	94.028%
72.0	4.252	0.433	192.003	.187%	94.241%
73.0	4.432	0.454	192.457	.197%	94.464%
74.0	4.565	0.473	192.93	.205%	94.696%
75.0	4.675	0.488	193.418	.211%	94.935%

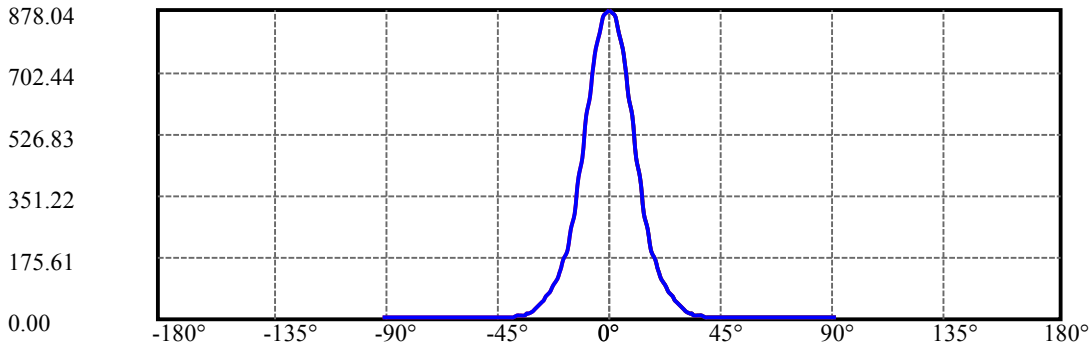
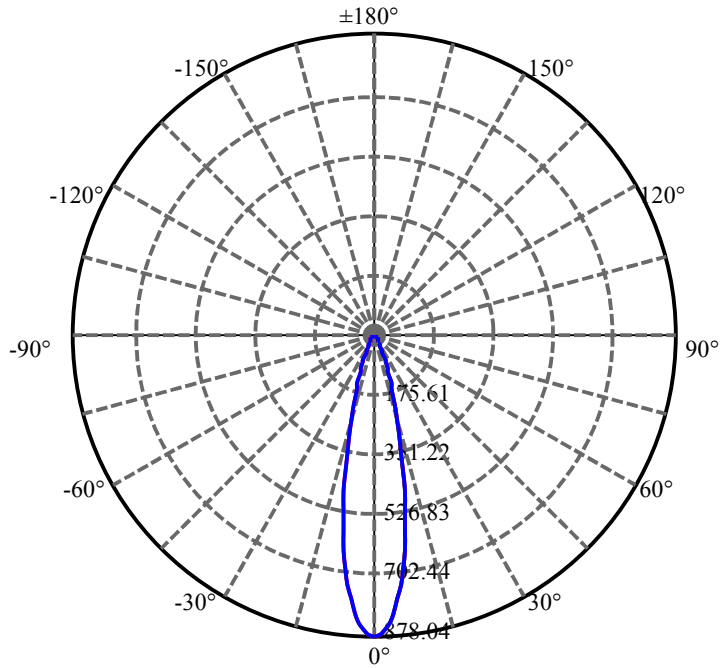
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	4.809	0.503	193.921	.218%	95.182%
77.0	4.930	0.519	194.441	.225%	95.437%
78.0	5.041	0.534	194.974	.231%	95.699%
79.0	5.464	0.564	195.539	.244%	95.976%
80.0	6.079	0.622	196.161	.269%	96.282%
81.0	6.462	0.678	196.839	.294%	96.615%
82.0	6.786	0.718	197.558	.311%	96.967%
83.0	7.065	0.753	198.311	.326%	97.337%
84.0	7.059	0.769	199.08	.333%	97.714%
85.0	7.274	0.782	199.862	.339%	98.098%
86.0	7.251	0.794	200.656	.344%	98.488%
87.0	7.013	0.781	201.437	.338%	98.871%
88.0	6.990	0.767	202.204	.332%	99.248%
89.0	7.013	0.767	202.971	.332%	99.624%
90.0	6.943	0.765	203.736	.331%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	170.66	73.88%	83.76%
0-40	178.54	77.29%	87.63%
0-60	186.99	80.95%	91.78%
0-90	202.97	87.87%	99.62%
0-120	202.97	87.87%	99.62%
0-180	203.74	88.20%	100.00%
60-90	16.42	7.11%	8.06%
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%
0-26.29	162.99	70.56%	80.00%

ZONAL LUMEN SUMMARY

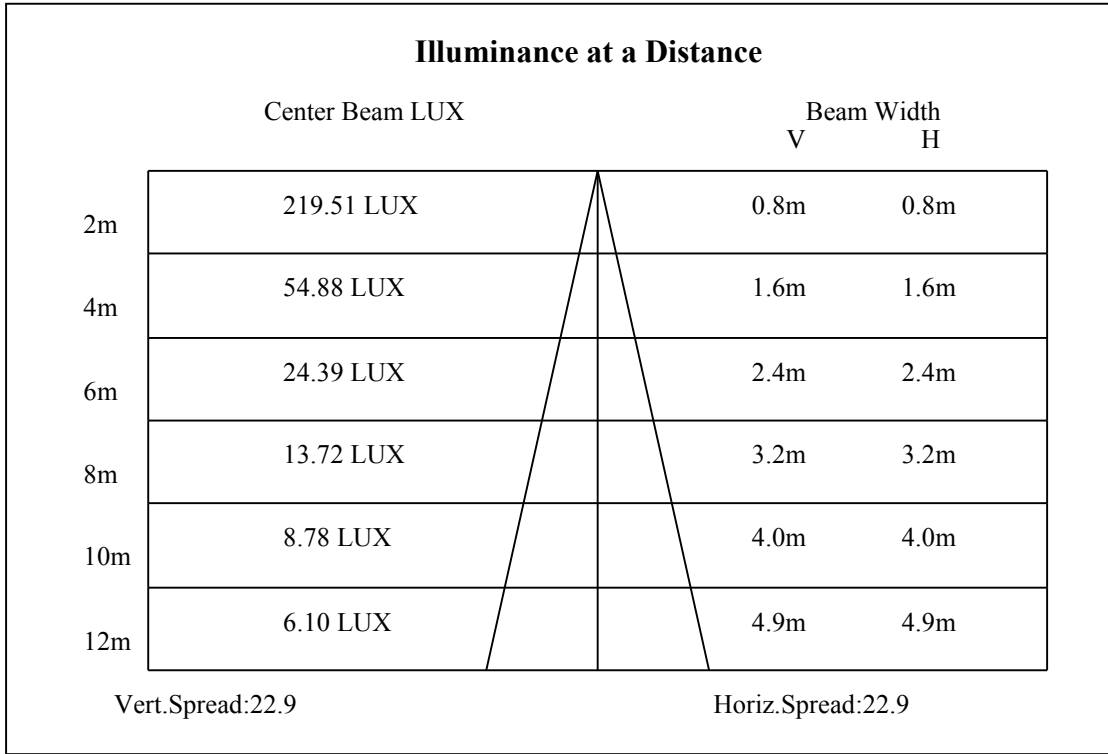
0-10	65.49
10-20	74.00
20-30	31.16
30-40	7.89
40-50	4.06
50-60	4.39
60-70	4.16
70-80	5.01
80-90	6.81
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

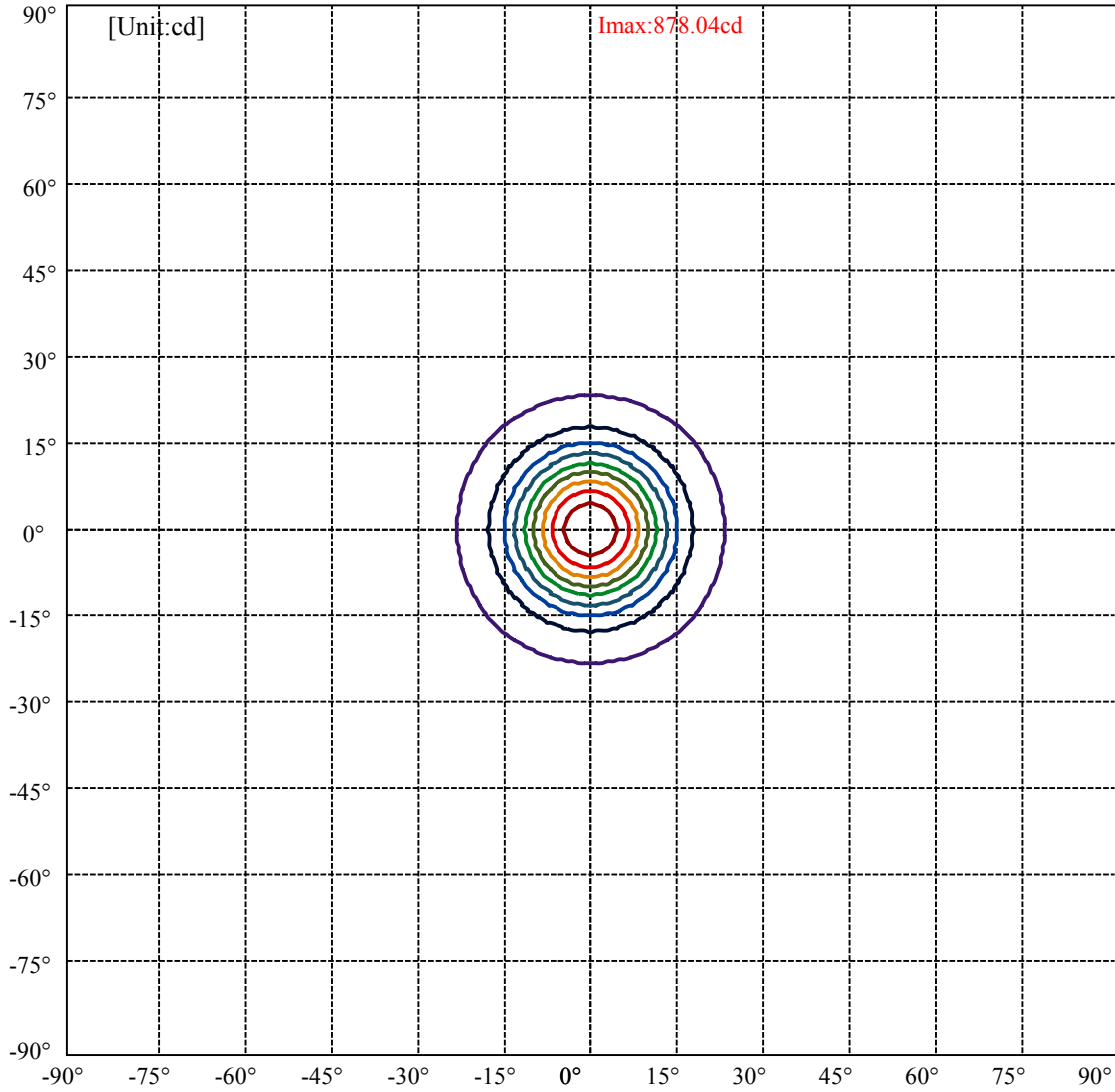


C0(Max): —————
 C0/C180: —————
 C90/C270: —————

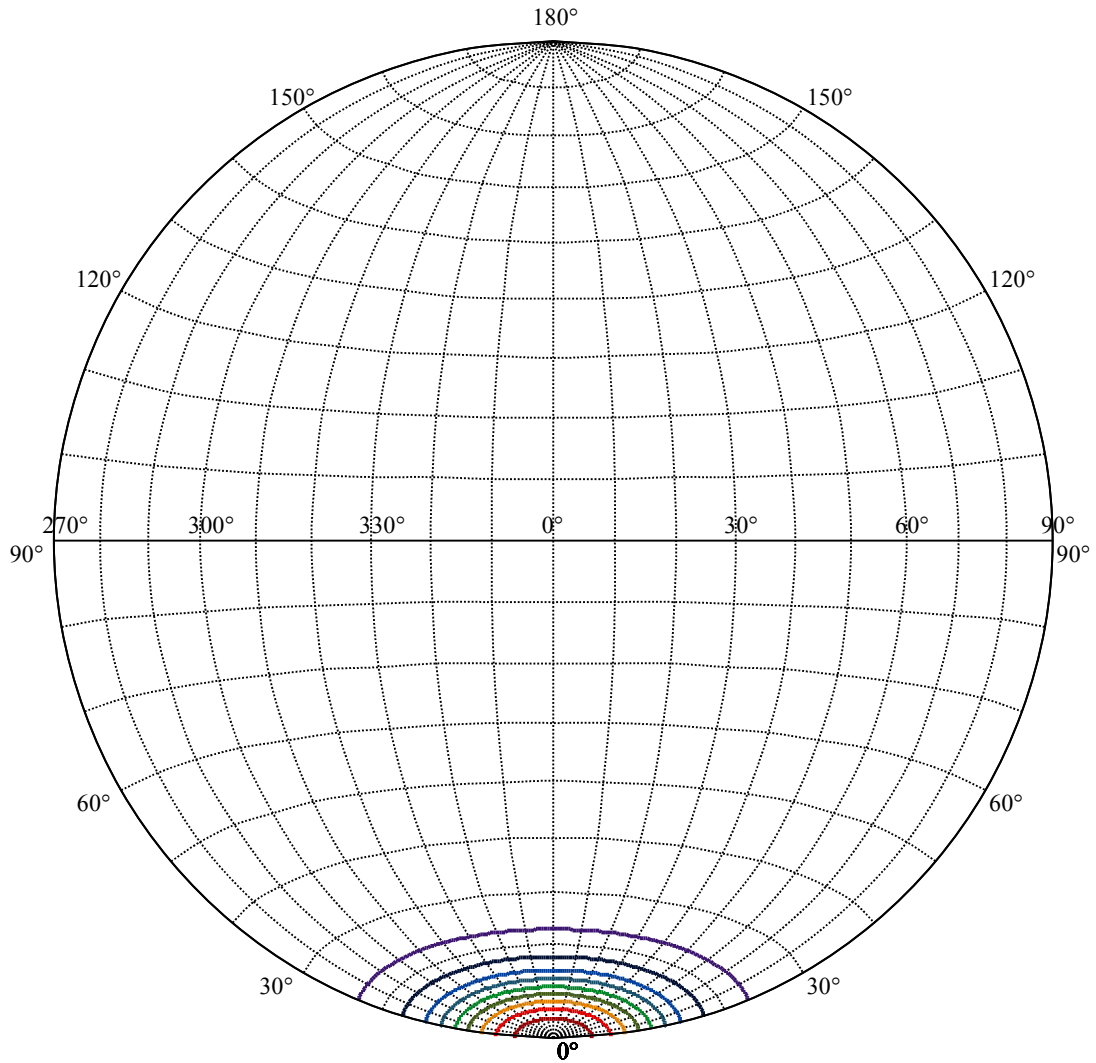
Field angle(10%Imax):C0/180Left:23.0 Right:23.0
 :C90/270Left:23.0 Right:23.0

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





(10%Imax) 87.8044	—
(20%Imax) 175.609	—
(30%Imax) 263.413	—
(40%Imax) 351.218	—
(50%Imax) 439.022	—
(60%Imax) 526.826	—
(70%Imax) 614.631	—
(80%Imax) 702.435	—
(90%Imax) 790.24	—



House

[Unit:cd]

Road

Imax:878.04

(10%Imax) 87.8044

(20%Imax) 175.609

(30%Imax) 263.413

(40%Imax) 351.218

(50%Imax) 439.022

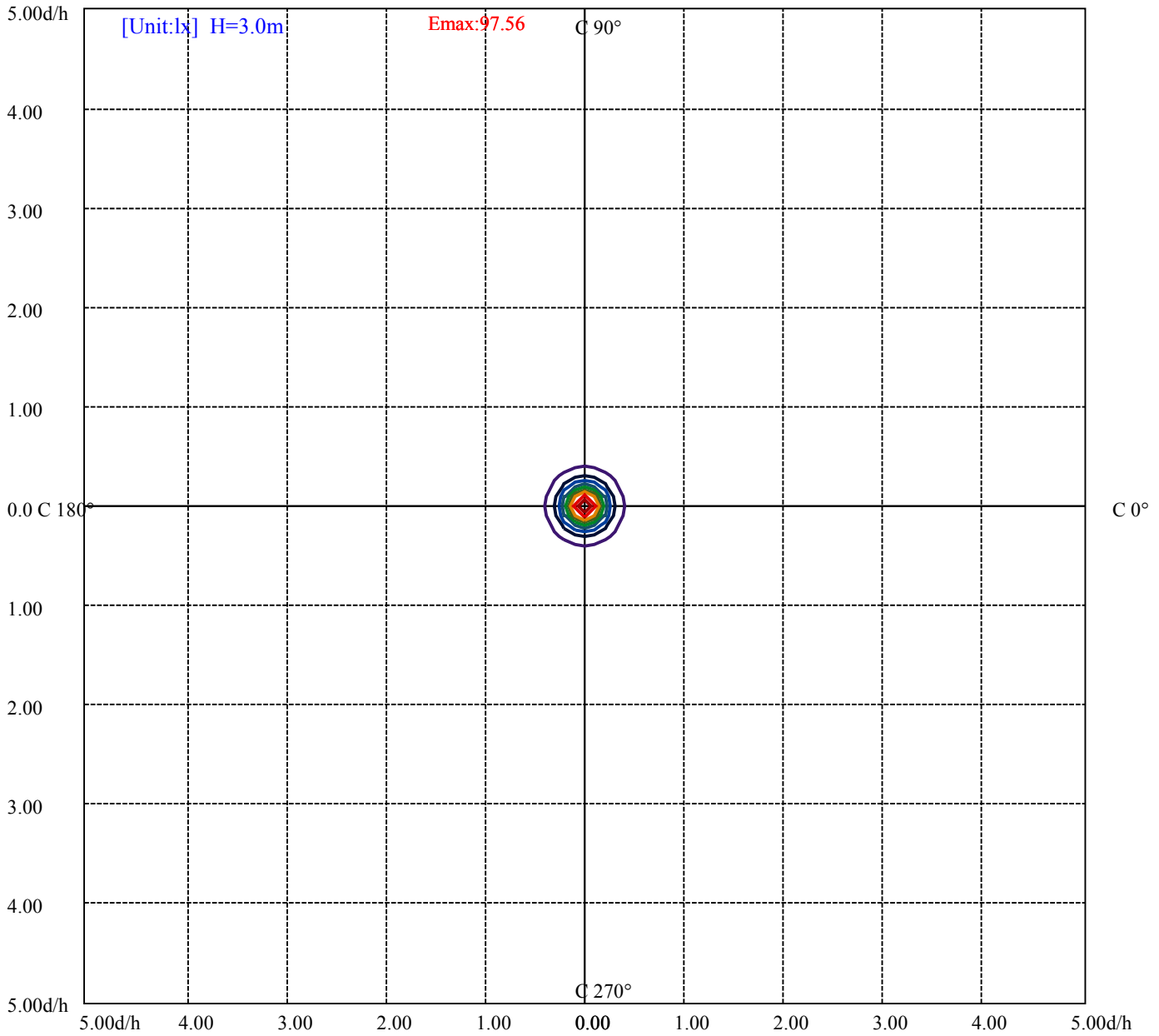
(60%Imax) 526.826

(70%Imax) 614.631

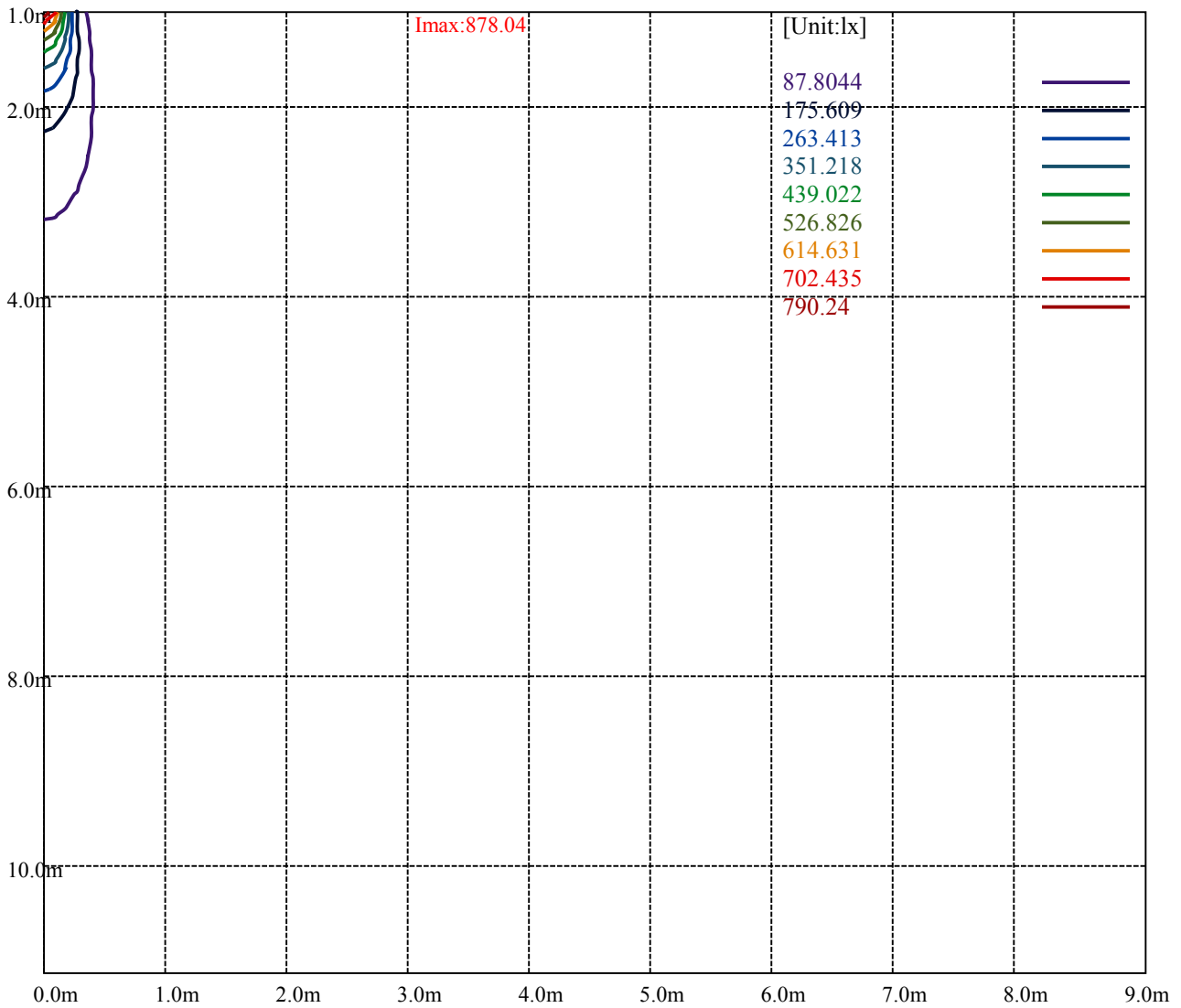
(80%Imax) 702.435

(90%Imax) 790.24





- (10%Emax) 9.756044
- (20%Emax) 19.51211
- (30%Emax) 29.26811
- (40%Emax) 39.02411
- (50%Emax) 48.78022
- (60%Emax) 58.53622
- (70%Emax) 68.29222
- (80%Emax) 78.04833
- (90%Emax) 87.80434



Luminance Table

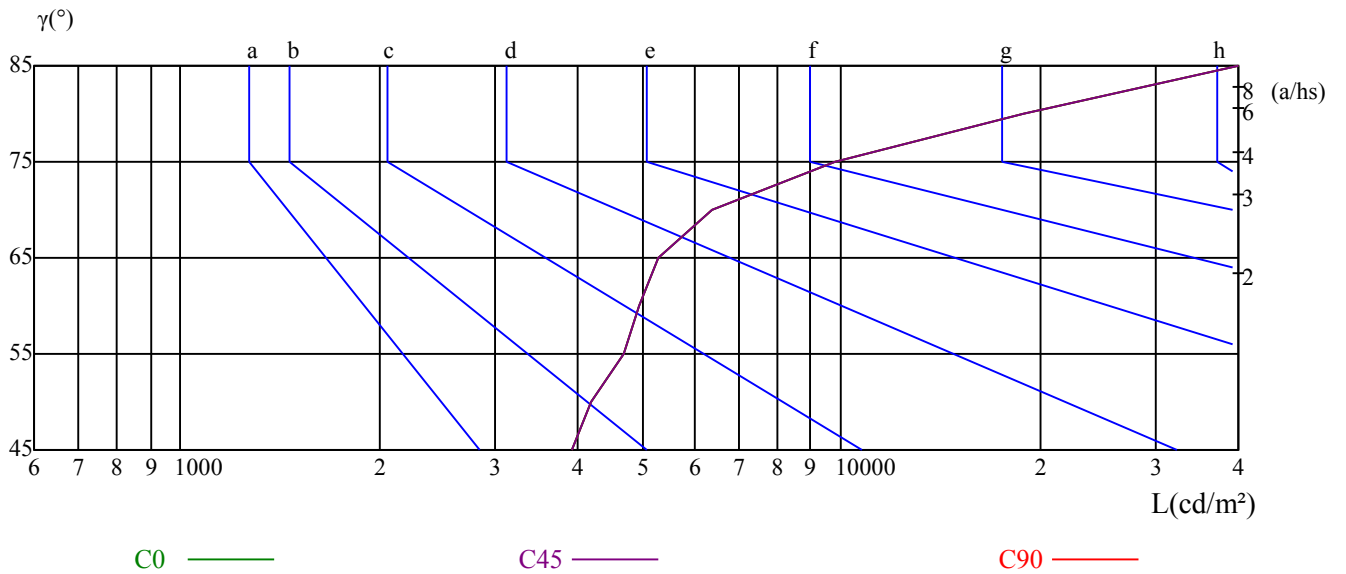
γ	45	50	55	60	65	70	75	80	85
C0	3913	4187	4687	4963	5300	6365	9769	18933	45136
C45	3913	4187	4687	4963	5300	6365	9769	18933	45136
C90	3913	4187	4687	4963	5300	6365	9769	18933	45136

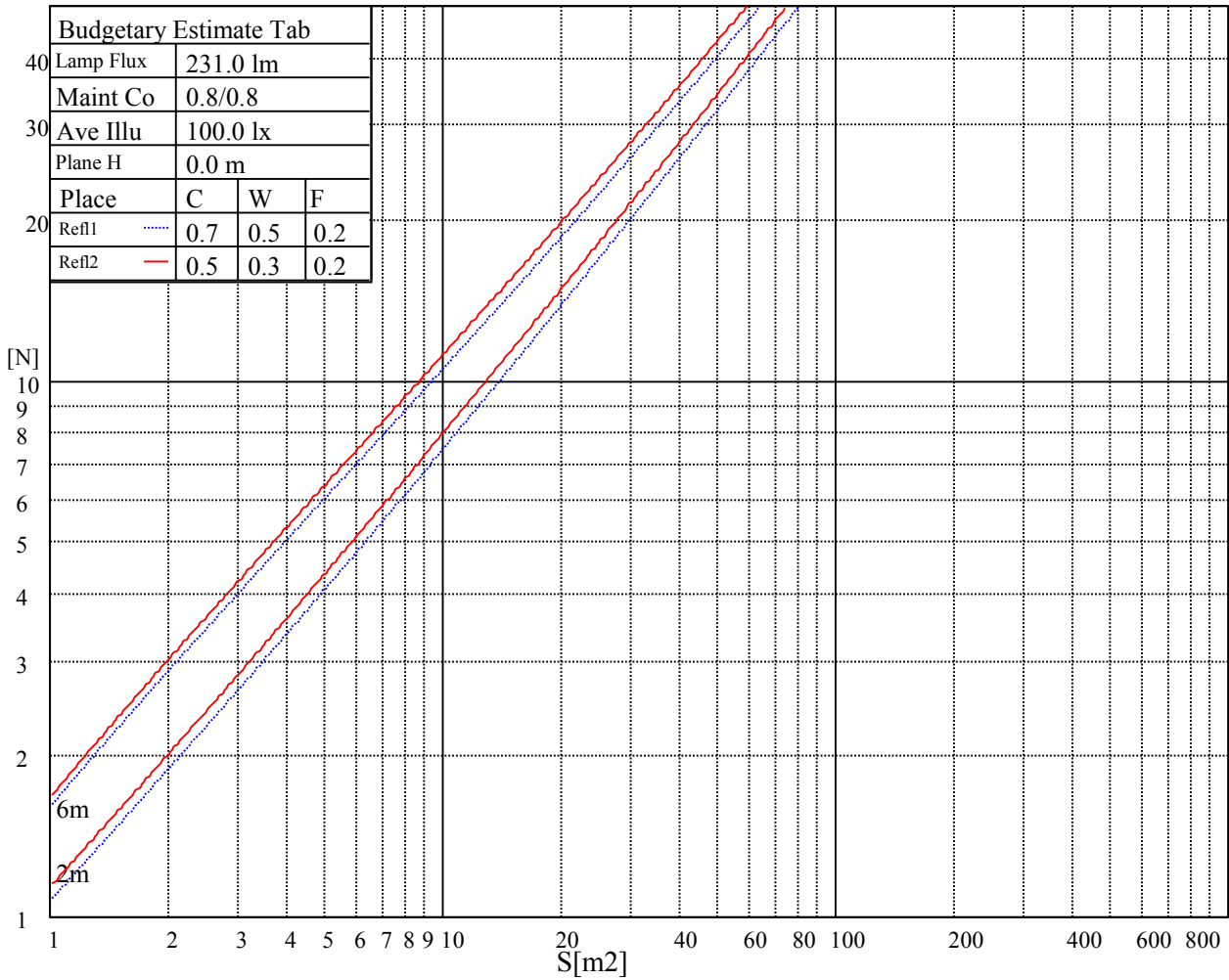
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
5300	5300	5300	9769	9769	9769	45136	45136	45136

Glare Table

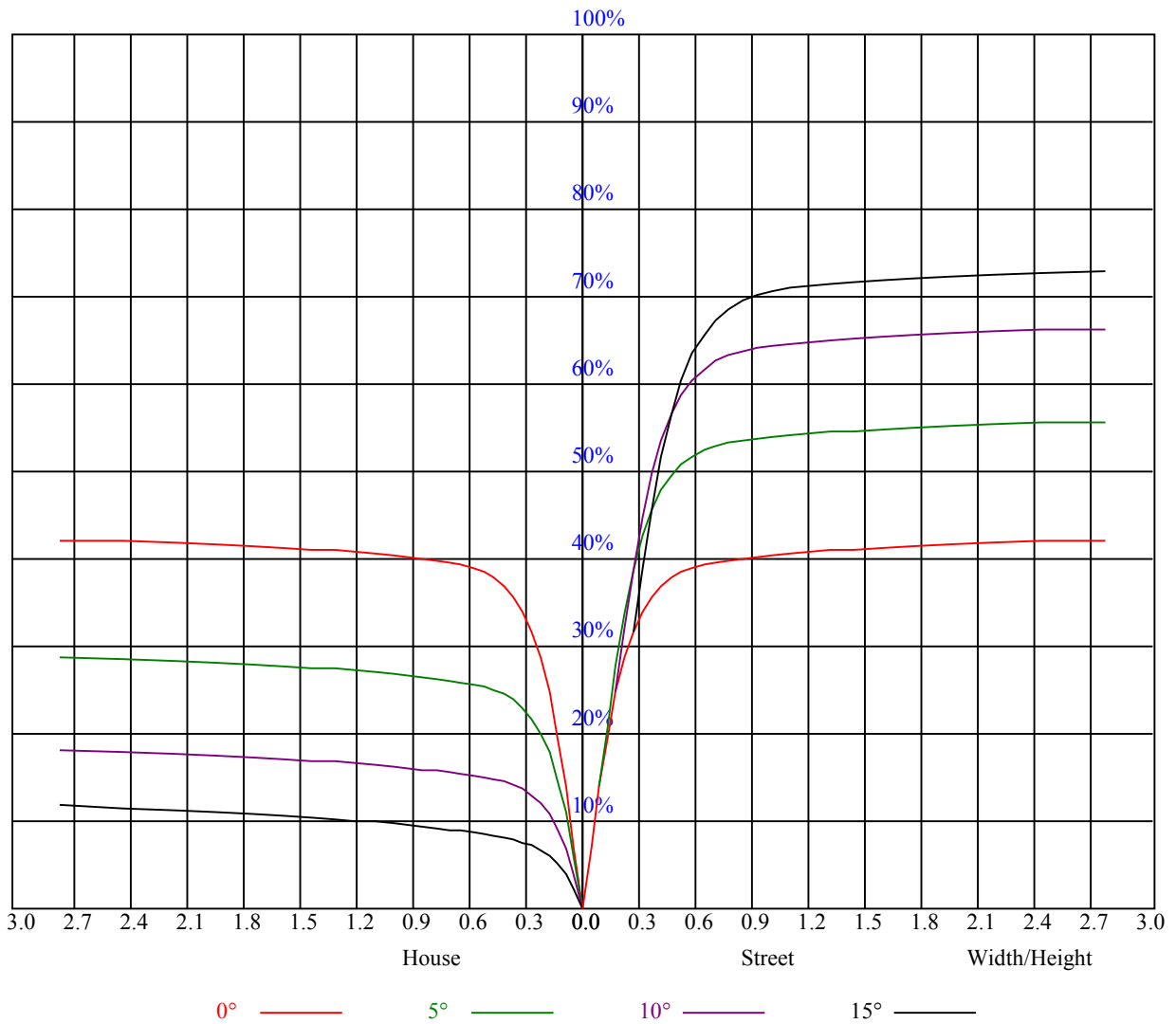
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

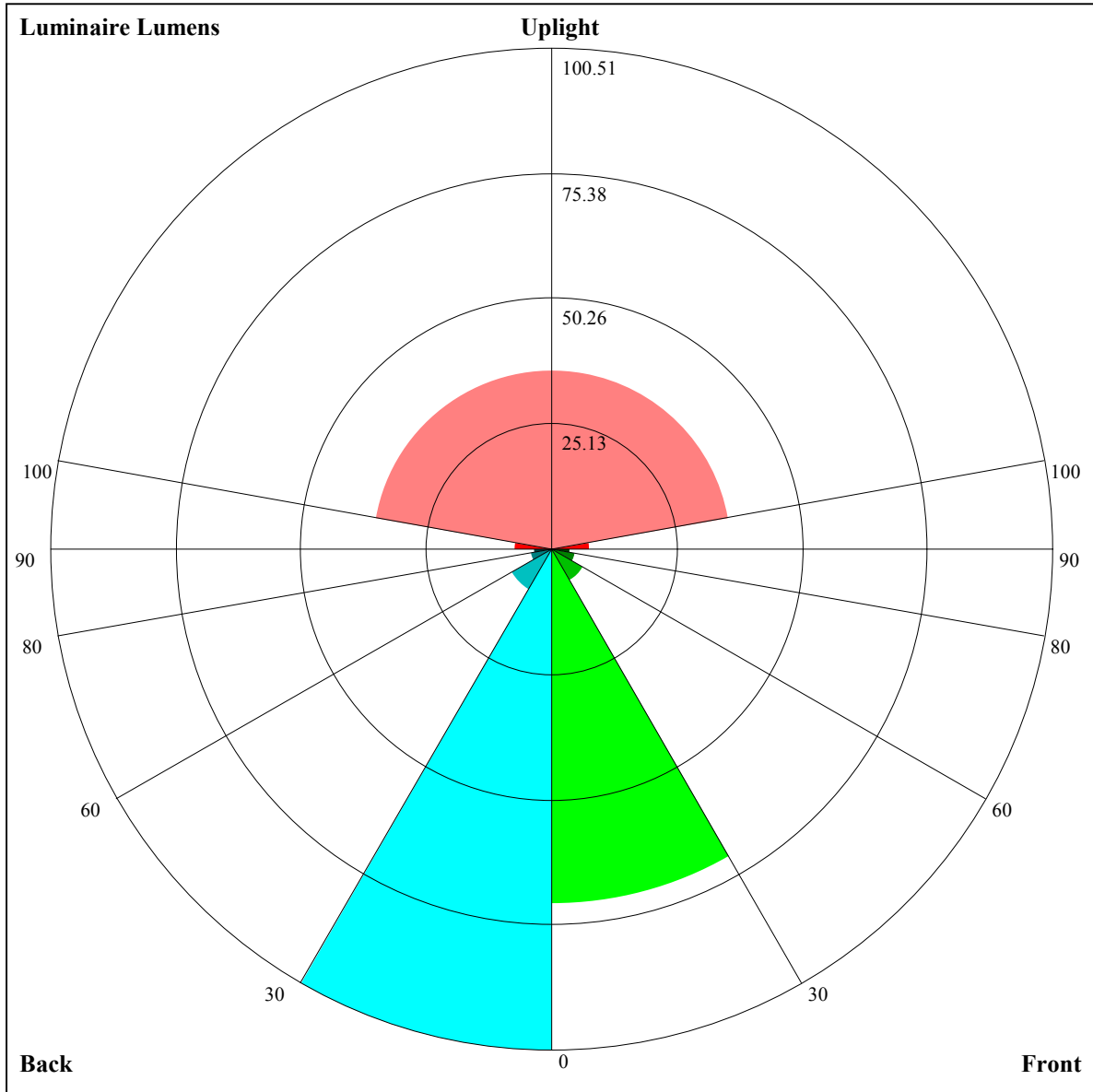
Luminance Limiting Curve





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





Luminaire Lumens:

FL=71.21,FM=7.35,FH=4.66,FVH=3.72

BL=100.51,BM=9.4,BH=4.51,BVH=3.82

UL=7.58,UH=36.05

BUG Rating:B0-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	865.47	832.57	788.44	736.84	700.64	605.80	562.22	486.77	387.42
45.0	893.77	872.43	832.99	769.41	719.30	649.23	578.23	503.52	432.06
90.0	871.97	841.52	799.11	747.60	687.00	619.44	548.21	475.68	408.07
135.0	880.97	881.43	870.48	852.89	824.77	789.00	746.26	695.68	637.95
180.0	865.47	886.77	897.90	901.25	897.95	892.61	882.55	865.93	836.33
225.0	893.77	917.44	929.97	941.11	943.43	925.70	921.76	913.17	886.58
270.0	871.97	895.03	908.72	912.34	910.62	906.26	890.80	873.68	859.85
315.0	880.97	873.91	860.83	839.16	807.88	766.77	718.23	663.29	599.58
360.0	865.47	832.57	788.44	736.84	700.64	605.80	562.22	486.77	387.42
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	350.67	296.70	252.53	217.12	189.19	166.40	146.50	129.23	113.46
45.0	366.63	307.24	257.58	248.77	248.77	163.85	144.82	133.83	110.72
90.0	345.24	291.32	246.77	211.18	182.69	159.49	144.64	128.31	110.21
135.0	575.17	505.70	435.82	370.21	313.18	266.82	229.46	200.37	176.98
180.0	789.51	732.71	666.54	592.62	517.58	444.40	376.01	329.05	272.85
225.0	847.37	792.34	721.99	638.74	551.13	465.98	417.31	323.85	291.41
270.0	804.26	773.78	711.41	636.79	558.65	480.46	406.12	340.41	286.54
315.0	528.21	454.85	383.34	321.76	271.60	231.88	202.23	178.88	159.35
360.0	350.67	296.70	252.53	217.12	189.19	166.40	146.50	129.23	113.46
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	98.56	85.06	72.16	60.32	49.93	40.97	33.32	29.28	21.53
45.0	101.86	88.77	76.24	64.36	54.01	44.41	35.73	28.35	22.41
90.0	99.12	86.03	73.83	62.64	52.16	42.69	34.90	28.12	22.60
135.0	157.68	140.23	131.00	109.98	96.01	88.07	75.68	64.41	54.01
180.0	236.98	213.87	190.53	171.51	154.01	137.54	122.04	107.84	93.87
225.0	249.05	217.45	193.78	174.52	158.10	143.06	127.84	113.60	99.67
270.0	245.94	215.31	191.14	171.00	153.50	137.17	121.90	107.70	99.63
315.0	142.23	125.89	110.30	101.72	87.93	70.07	63.15	52.48	43.67
360.0	98.56	85.06	72.16	60.32	49.93	40.97	33.32	29.28	21.53
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	18.89	15.17	11.42	10.26	8.86	7.93	7.19	6.73	6.26
45.0	17.73	14.06	11.32	9.37	8.07	7.33	6.68	6.22	5.80
90.0	18.14	14.57	12.06	10.12	8.68	7.80	7.10	6.59	6.13
135.0	44.32	35.82	28.77	22.83	18.05	14.39	11.65	9.70	8.40
180.0	80.79	68.58	57.35	47.15	38.38	30.86	24.59	19.63	15.73
225.0	86.50	73.97	62.55	51.83	42.51	34.66	27.75	22.09	17.68
270.0	81.62	74.11	62.83	48.86	43.62	35.78	29.00	23.48	19.03
315.0	35.64	28.72	23.06	18.75	15.36	12.67	10.67	9.19	8.21
360.0	18.89	15.17	11.42	10.26	8.86	7.93	7.19	6.73	6.26
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	5.94	5.66	5.34	5.10	4.92	4.78	4.55	4.69	4.73
45.0	5.57	5.38	5.15	4.92	4.78	4.73	4.69	4.59	4.55
90.0	5.75	5.66	5.38	5.24	5.20	5.01	4.87	4.78	4.83
135.0	7.52	6.87	6.26	5.94	5.61	5.48	5.20	5.01	4.92
180.0	12.58	11.09	8.63	7.56	7.05	6.50	6.13	5.75	5.34
225.0	14.43	11.83	9.79	8.68	7.75	7.10	6.59	6.13	5.85
270.0	15.73	13.13	11.00	9.42	8.35	7.70	7.15	6.68	6.40
315.0	7.47	6.91	6.59	6.22	5.94	5.61	5.52	5.15	5.01
360.0	5.94	5.66	5.34	5.10	4.92	4.78	4.55	4.69	4.73

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	4.73	4.83	4.83	4.78	4.78	4.73	4.69	4.64	4.59
45.0	4.59	4.55	4.55	4.50	4.55	4.59	4.55	4.55	4.55
90.0	4.83	4.83	4.78	4.83	4.83	4.78	4.73	4.73	4.73
135.0	4.87	4.87	4.87	4.83	4.87	4.92	4.92	4.92	4.97
180.0	5.15	5.01	4.92	4.92	4.87	4.97	5.20	5.06	5.06
225.0	5.66	5.38	5.20	5.20	5.20	5.24	5.29	5.38	5.43
270.0	6.13	5.80	5.57	5.48	5.38	5.38	5.43	5.43	5.57
315.0	4.97	4.97	4.97	5.10	5.15	5.20	5.24	5.24	5.24
360.0	4.73	4.83	4.83	4.78	4.78	4.73	4.69	4.64	4.59
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	4.55	4.50	4.45	4.32	4.27	4.27	4.18	4.04	3.99
45.0	4.50	4.45	4.36	4.32	4.18	4.18	4.13	4.08	4.08
90.0	4.69	4.59	4.50	4.45	4.36	4.22	4.18	4.08	3.94
135.0	4.92	4.83	4.87	4.83	4.69	4.55	4.50	4.36	4.22
180.0	5.10	5.15	5.06	5.01	5.01	4.92	4.83	4.78	4.69
225.0	5.43	5.38	5.38	5.29	5.15	5.01	4.97	4.78	4.69
270.0	5.66	5.71	5.61	5.57	5.52	5.38	5.24	5.10	5.01
315.0	5.20	5.15	5.01	4.92	4.87	4.83	4.69	4.59	4.41
360.0	4.55	4.50	4.45	4.32	4.27	4.27	4.18	4.04	3.99
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	3.90	3.85	3.81	3.76	3.94	3.90	3.94	4.04	4.27
45.0	4.13	4.18	4.22	4.22	4.27	4.32	4.22	4.32	4.41
90.0	3.90	3.85	3.76	3.71	3.76	3.81	3.81	3.85	4.04
135.0	4.13	4.04	3.99	3.90	3.81	3.76	3.81	3.81	3.81
180.0	4.50	4.41	4.36	4.22	4.18	4.04	4.04	3.99	3.94
225.0	4.55	4.41	4.27	4.27	4.13	4.04	4.13	4.18	4.18
270.0	4.83	4.69	4.59	4.50	4.36	4.22	4.13	4.08	4.04
315.0	4.32	4.22	4.13	4.04	4.04	3.94	3.94	3.94	3.94
360.0	3.90	3.85	3.81	3.76	3.94	3.90	3.94	4.04	4.27
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	5.10	5.71	5.94	5.38	5.34	5.52	5.71	6.73	8.49
45.0	4.45	4.64	4.87	5.15	5.10	5.15	5.10	5.29	6.13
90.0	4.22	4.36	4.64	5.10	5.29	5.10	4.87	5.01	5.48
135.0	3.90	4.08	4.18	4.32	4.55	4.87	5.48	6.08	6.26
180.0	3.94	4.04	4.08	4.18	4.27	4.41	4.73	5.48	5.99
225.0	4.27	4.36	4.45	4.55	4.59	4.73	4.73	4.97	5.38
270.0	3.99	4.04	3.99	4.04	4.18	4.32	4.45	4.83	5.34
315.0	4.13	4.22	4.36	4.69	5.15	5.34	5.24	5.34	5.57
360.0	5.10	5.71	5.94	5.38	5.34	5.52	5.71	6.73	8.49
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	9.05	9.10	9.10	8.58	7.98	7.75	7.70	7.75	7.84
45.0	7.29	7.66	7.61	7.42	7.29	6.96	6.91	6.91	6.87
90.0	6.13	6.87	7.33	7.05	6.91	6.77	6.77	6.82	6.73
135.0	5.89	6.26	7.42	8.17	8.58	8.96	8.68	8.21	8.17
180.0	6.08	6.17	5.99	5.89	6.96	8.03	8.72	8.54	8.54
225.0	5.52	5.71	5.75	5.80	6.31	6.87	6.82	7.29	7.52
270.0	5.52	5.48	5.57	5.75	6.68	7.93	8.77	8.77	8.40
315.0	6.22	7.05	7.75	7.80	7.47	4.73	1.72	1.62	2.04
360.0	9.05	9.10	9.10	8.58	7.98	7.75	7.70	7.75	7.84

Intensity data(cd)

C/ γ (°)	90.0
0.0	7.84
45.0	6.82
90.0	6.50
135.0	8.12
180.0	8.40
225.0	7.42
270.0	8.21
315.0	2.23
360.0	7.84