
NATA

Client:

LumCAT: 3-2044-M

Luminaire: 92.70.135.00

Report No: NT2018010516

Test No: GC2018010516

LampCAT: BXRV-DR-1830-H-3000-A-13

Lamp flux(lm): 1355.0

Number of Lamps: 1

Length(mm): 85

Phm Type: C

Voltage(V): 220.3000

Current(A): 0.0950

Power (W): 19.2500

PF: 0.9190

Ballast type: DC

Width(mm): 85

Height(mm): 0

Photometric Results

Lumens(lm): 1207.95, Efficiency(%): 89.15% , Luminous Efficacy(lm/W): 62.75

Central intensity(cd): 4293.748, Maximum intensity(cd): 4293.748

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=25.8

[C90/270]Total=25.8

Field angle(10%Imax): [C0/180]Total=61.0

[C90/270]Total=61.0

Maximum s/h(1/2): C0_180=0.44 C90_270=0.44

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(%): 89.22%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 99.462%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	4293.748	1.027	1.027	.076%	.085%
1.0	4283.655	8.198	9.226	.605%	.764%
2.0	4254.769	16.283	25.509	1.202%	2.112%
3.0	4192.066	24.059	49.568	1.776%	4.103%
4.0	4109.469	31.436	81.004	2.320%	6.706%
5.0	3989.168	38.127	119.131	2.814%	9.862%
6.0	3833.253	43.939	163.07	3.243%	13.500%
7.0	3639.751	48.643	211.713	3.590%	17.527%
8.0	3414.810	52.116	263.829	3.846%	21.841%
9.0	3166.785	54.325	318.154	4.009%	26.338%
10.0	2910.928	55.431	373.585	4.091%	30.927%
11.0	2665.048	55.764	429.35	4.115%	35.544%
12.0	2375.782	54.167	483.517	3.998%	40.028%
13.0	2107.454	51.987	535.504	3.837%	44.332%
14.0	1847.074	49.002	584.506	3.616%	48.388%
15.0	1617.899	45.920	630.426	3.389%	52.190%
16.0	1375.163	41.567	671.992	3.068%	55.631%
17.0	1176.899	37.733	709.726	2.785%	58.755%
18.0	990.595	33.568	743.294	2.477%	61.534%
19.0	887.510	31.686	774.98	2.338%	64.157%
20.0	799.663	29.992	804.972	2.213%	66.640%
21.0	692.407	27.211	832.183	2.008%	68.892%
22.0	622.953	25.591	857.774	1.889%	71.011%
23.0	562.855	24.117	881.891	1.780%	73.007%
24.0	526.684	23.492	905.383	1.734%	74.952%
25.0	499.364	23.143	928.526	1.708%	76.868%
26.0	480.594	23.103	951.629	1.705%	78.781%
27.0	465.072	23.154	974.782	1.709%	80.697%
28.0	453.569	23.351	998.133	1.723%	82.630%
29.0	445.211	23.669	1021.803	1.747%	84.590%
30.0	435.803	23.895	1045.698	1.763%	86.568%
31.0	421.708	23.818	1069.516	1.758%	88.540%
32.0	401.894	23.355	1092.871	1.724%	90.473%
33.0	369.597	22.074	1114.945	1.629%	92.301%
34.0	325.688	19.972	1134.917	1.474%	93.954%
35.0	273.496	17.203	1152.119	1.270%	95.378%
36.0	228.287	14.715	1166.834	1.086%	96.596%
37.0	179.105	11.820	1178.654	.872%	97.575%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	117.586	7.939	1186.593	.586%	98.232%
39.0	62.679	4.326	1190.918	.319%	98.590%
40.0	37.018	2.609	1193.528	.193%	98.806%
41.0	17.854	1.284	1194.812	.095%	98.912%
42.0	12.123	0.890	1195.702	.066%	98.986%
43.0	8.921	0.667	1196.369	.049%	99.041%
44.0	7.094	0.540	1196.909	.040%	99.086%
45.0	5.806	0.450	1197.36	.033%	99.123%
46.0	5.249	0.414	1197.774	.031%	99.158%
47.0	4.913	0.394	1198.168	.029%	99.190%
48.0	4.722	0.385	1198.553	.028%	99.222%
49.0	4.519	0.374	1198.927	.028%	99.253%
50.0	4.339	0.364	1199.291	.027%	99.283%
51.0	4.130	0.352	1199.643	.026%	99.312%
52.0	3.991	0.345	1199.988	.025%	99.341%
53.0	3.857	0.338	1200.326	.025%	99.369%
54.0	3.683	0.327	1200.652	.024%	99.396%
55.0	3.515	0.316	1200.968	.023%	99.422%
56.0	3.393	0.308	1201.277	.023%	99.448%
57.0	3.254	0.299	1201.576	.022%	99.472%
58.0	3.138	0.292	1201.868	.022%	99.497%
59.0	2.993	0.281	1202.149	.021%	99.520%
60.0	2.900	0.275	1202.425	.020%	99.543%
61.0	2.761	0.265	1202.689	.020%	99.565%
62.0	2.651	0.257	1202.946	.019%	99.586%
63.0	2.575	0.252	1203.198	.019%	99.607%
64.0	2.500	0.246	1203.444	.018%	99.627%
65.0	2.367	0.235	1203.679	.017%	99.646%
66.0	2.262	0.227	1203.906	.017%	99.665%
67.0	2.187	0.221	1204.127	.016%	99.684%
68.0	2.129	0.216	1204.343	.016%	99.701%
69.0	2.030	0.208	1204.551	.015%	99.719%
70.0	1.949	0.201	1204.752	.015%	99.735%
71.0	1.903	0.197	1204.949	.015%	99.752%
72.0	1.833	0.191	1205.14	.014%	99.767%
73.0	1.769	0.186	1205.326	.014%	99.783%
74.0	1.729	0.182	1205.508	.013%	99.798%
75.0	1.682	0.178	1205.686	.013%	99.813%

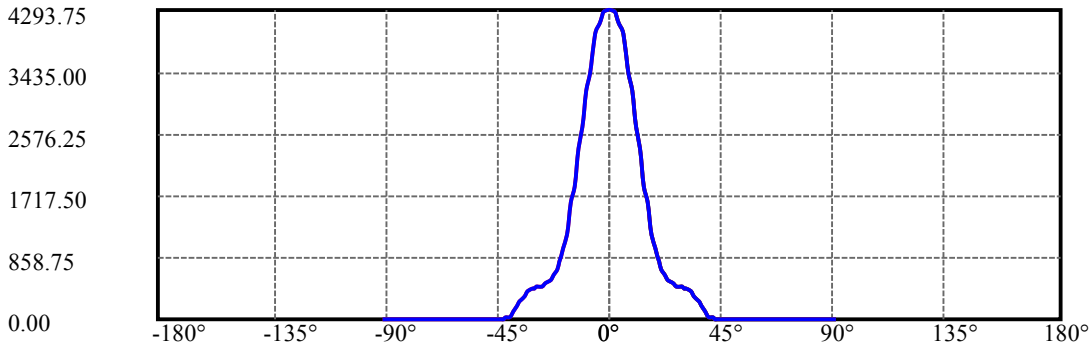
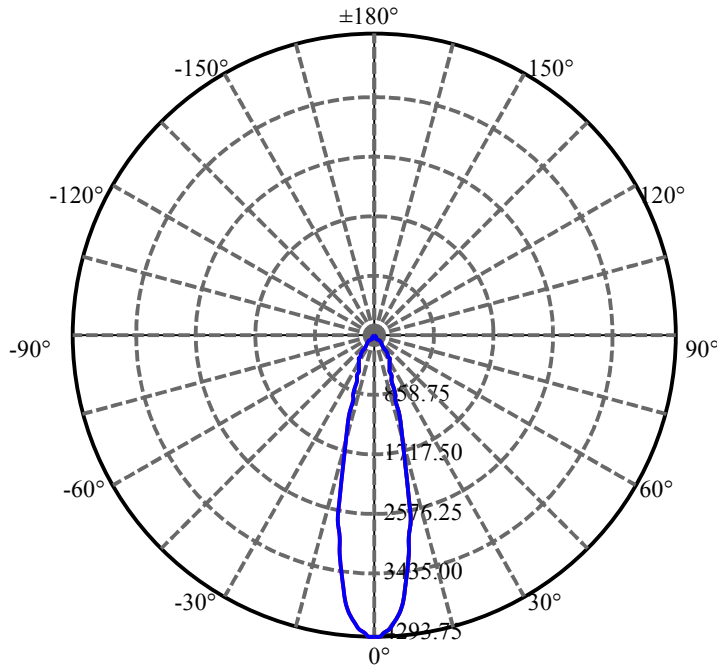
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	1.613	0.172	1205.858	.013%	99.827%
77.0	1.589	0.170	1206.027	.013%	99.841%
78.0	1.537	0.165	1206.192	.012%	99.855%
79.0	1.497	0.161	1206.353	.012%	99.868%
80.0	1.468	0.158	1206.512	.012%	99.881%
81.0	1.450	0.157	1206.669	.012%	99.894%
82.0	1.444	0.157	1206.826	.012%	99.907%
83.0	1.398	0.152	1206.978	.011%	99.920%
84.0	1.386	0.151	1207.129	.011%	99.932%
85.0	1.392	0.152	1207.281	.011%	99.945%
86.0	1.340	0.147	1207.428	.011%	99.957%
87.0	1.351	0.148	1207.576	.011%	99.969%
88.0	1.340	0.147	1207.723	.011%	99.981%
89.0	1.369	0.150	1207.873	.011%	99.994%
90.0	1.404	0.077	1207.95	.006%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1045.70	77.17%	86.57%
0-40	1193.53	88.08%	98.81%
0-60	1202.42	88.74%	99.54%
0-90	1207.87	89.14%	99.99%
0-120	1207.87	89.14%	99.99%
0-180	1207.95	89.15%	100.00%
60-90	5.72	0.42%	0.47%
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%
0-26.64	966.36	71.32%	80.00%

ZONAL LUMEN SUMMARY

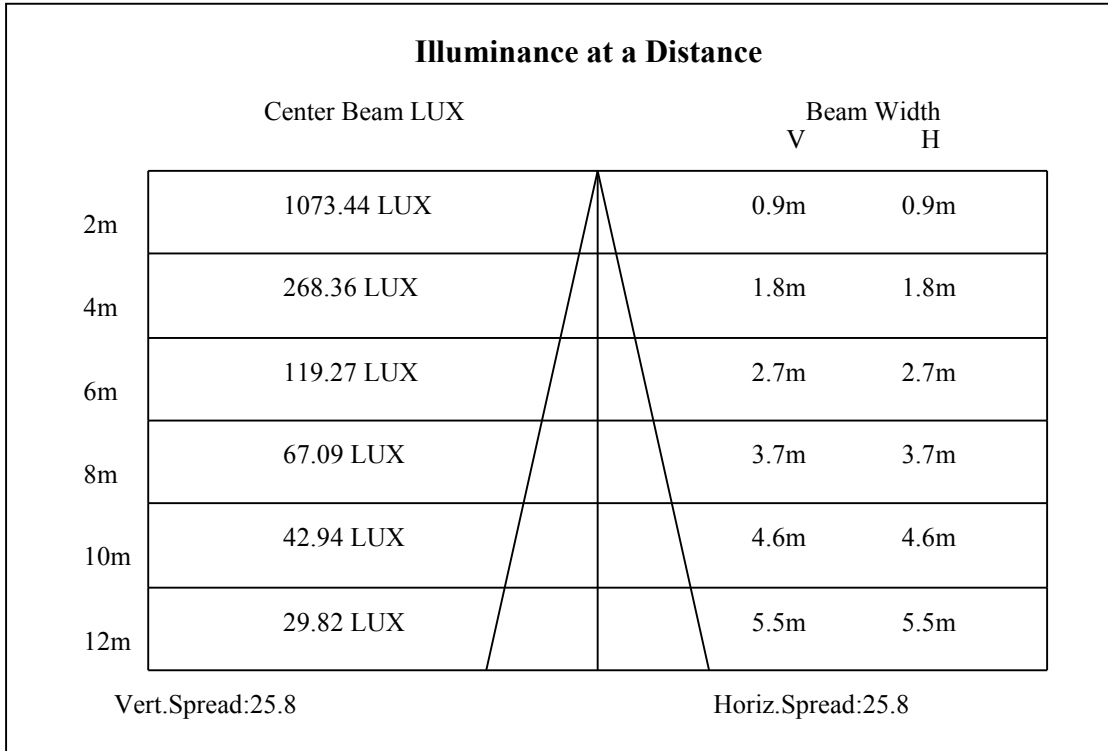
0-10	373.59
10-20	431.39
20-30	240.73
30-40	147.83
40-50	5.76
50-60	3.13
60-70	2.33
70-80	1.76
80-90	1.36
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

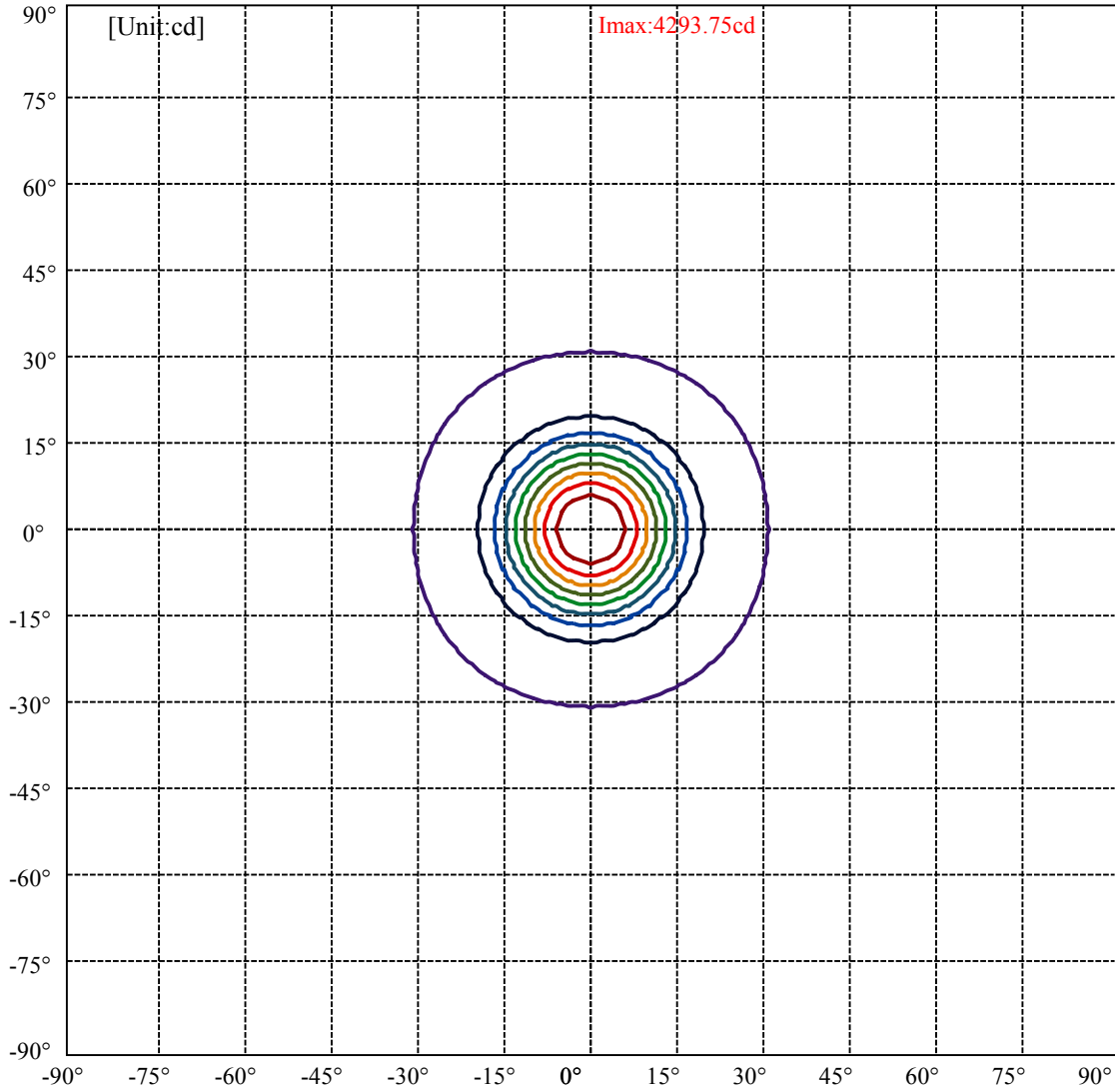


C0(Max): —————
C0/C180: —————
C90/C270: —————

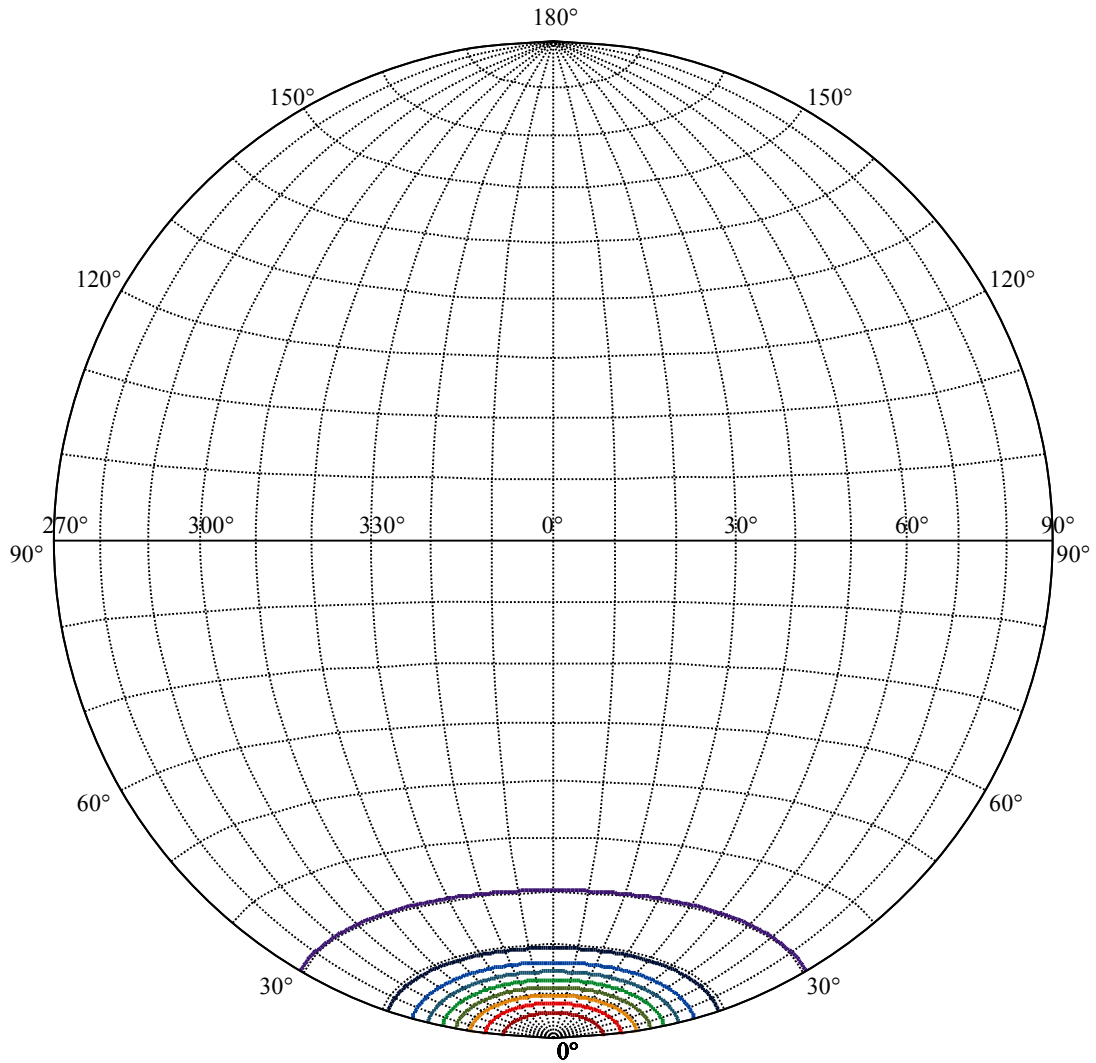
Field angle(10%Imax):C0/180Left:30.5 Right:30.5
:C90/270Left:30.5 Right:30.5

Beam Angle(50%Imax):C0/180Left:12.9 Right:12.9
:C90/270Left:12.9 Right:12.9





(10%Imax) 429.375	—
(20%Imax) 858.75	—
(30%Imax) 1288.12	—
(40%Imax) 1717.5	—
(50%Imax) 2146.87	—
(60%Imax) 2576.25	—
(70%Imax) 3005.62	—
(80%Imax) 3435	—
(90%Imax) 3864.37	—



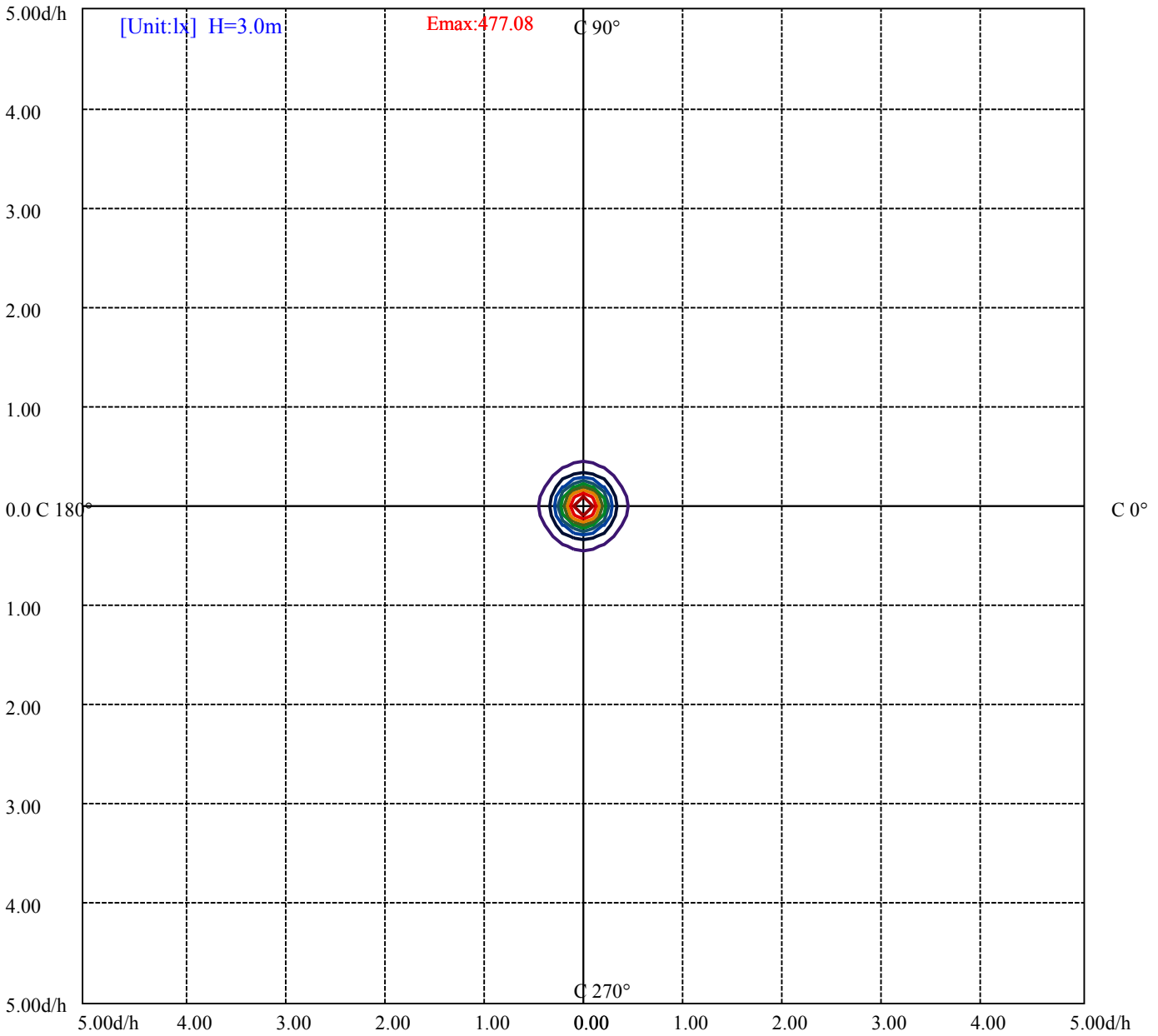
House

[Unit:cd]

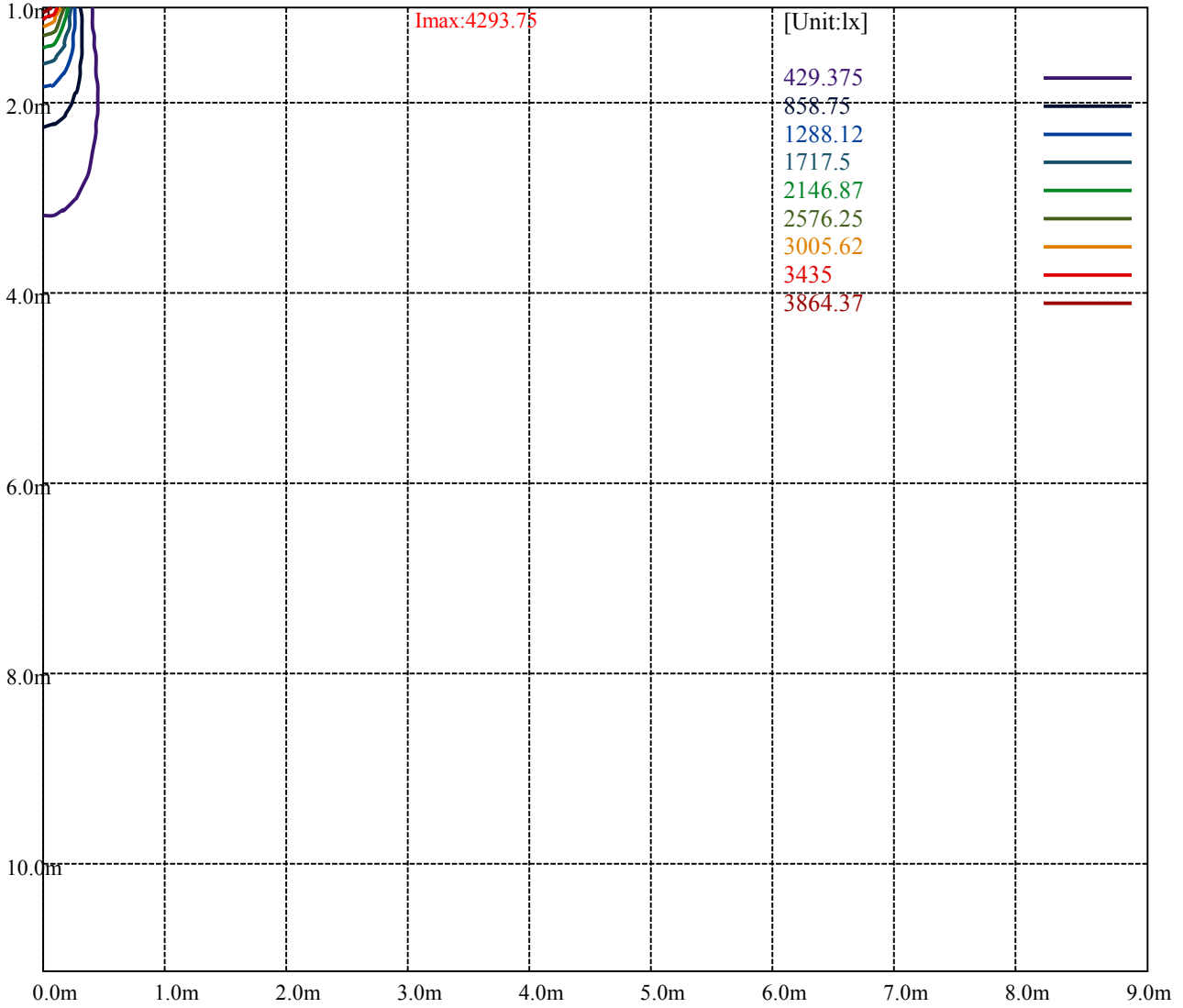
Road

Imax:4293.75

(10%Imax) 429.375	—
(20%Imax) 858.75	—
(30%Imax) 1288.12	—
(40%Imax) 1717.5	—
(50%Imax) 2146.87	—
(60%Imax) 2576.25	—
(70%Imax) 3005.62	—
(80%Imax) 3435	—
(90%Imax) 3864.37	—



- (10%Emax) 47.70833
- (20%Emax) 95.41656
- (30%Emax) 143.1245
- (40%Emax) 190.8333
- (50%Emax) 238.5411
- (60%Emax) 286.25
- (70%Emax) 333.9578
- (80%Emax) 381.6667
- (90%Emax) 429.3745



Luminance Table

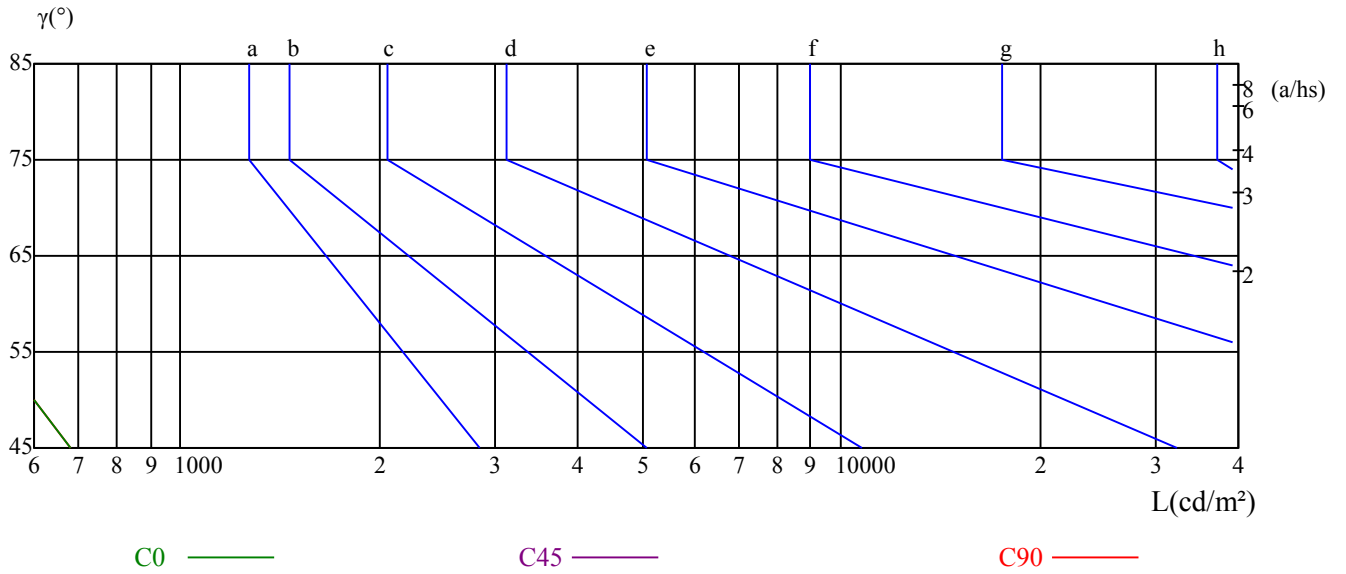
γ	45	50	55	60	65	70	75	80	85
C0	680	519	433	371	318	277	257	244	255
C45	583	439	360	304	255	219	198	183	187
C90	680	519	433	371	318	277	257	244	255

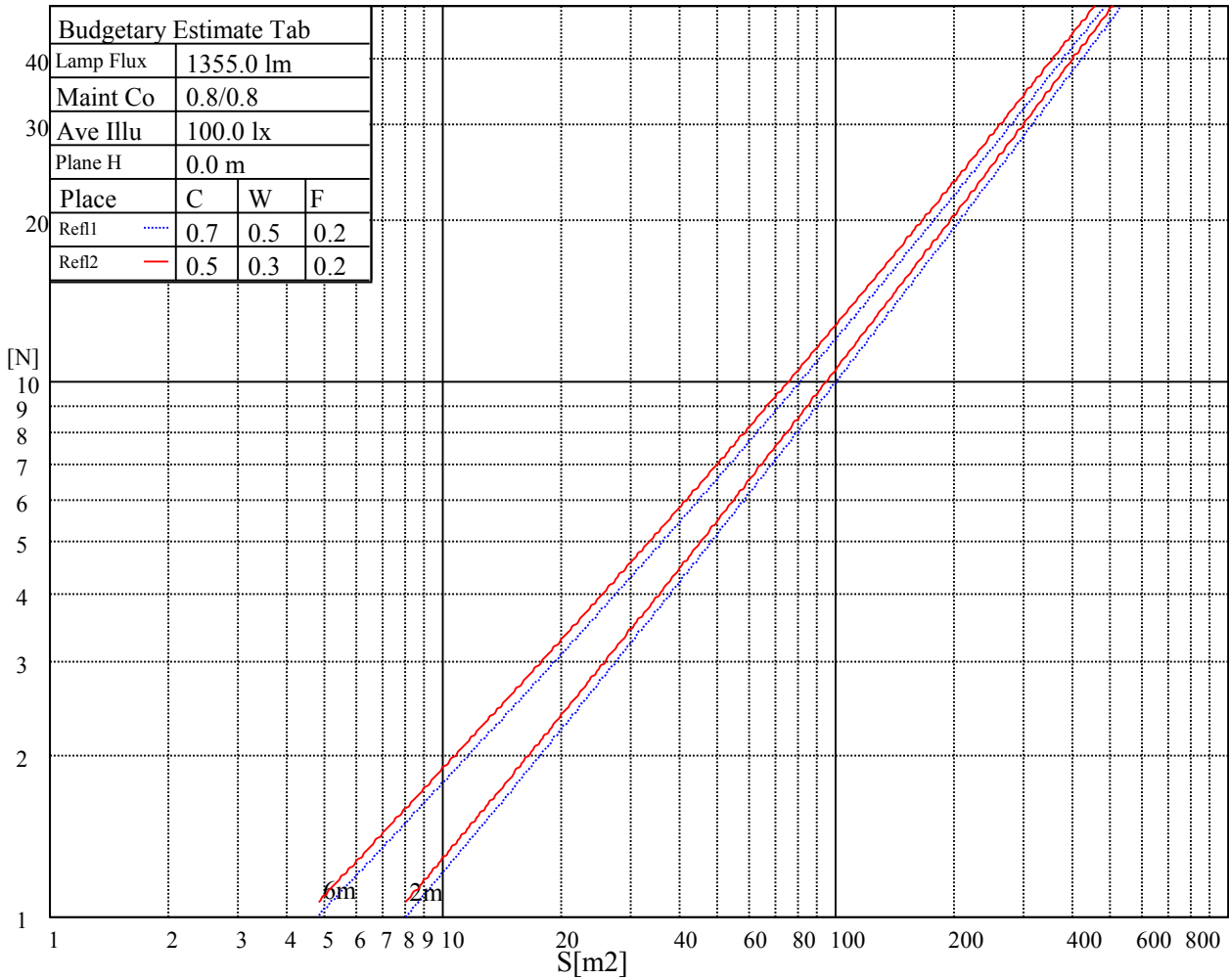
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
775	775	775	900	900	900	2211	2211	2211

Glare Table

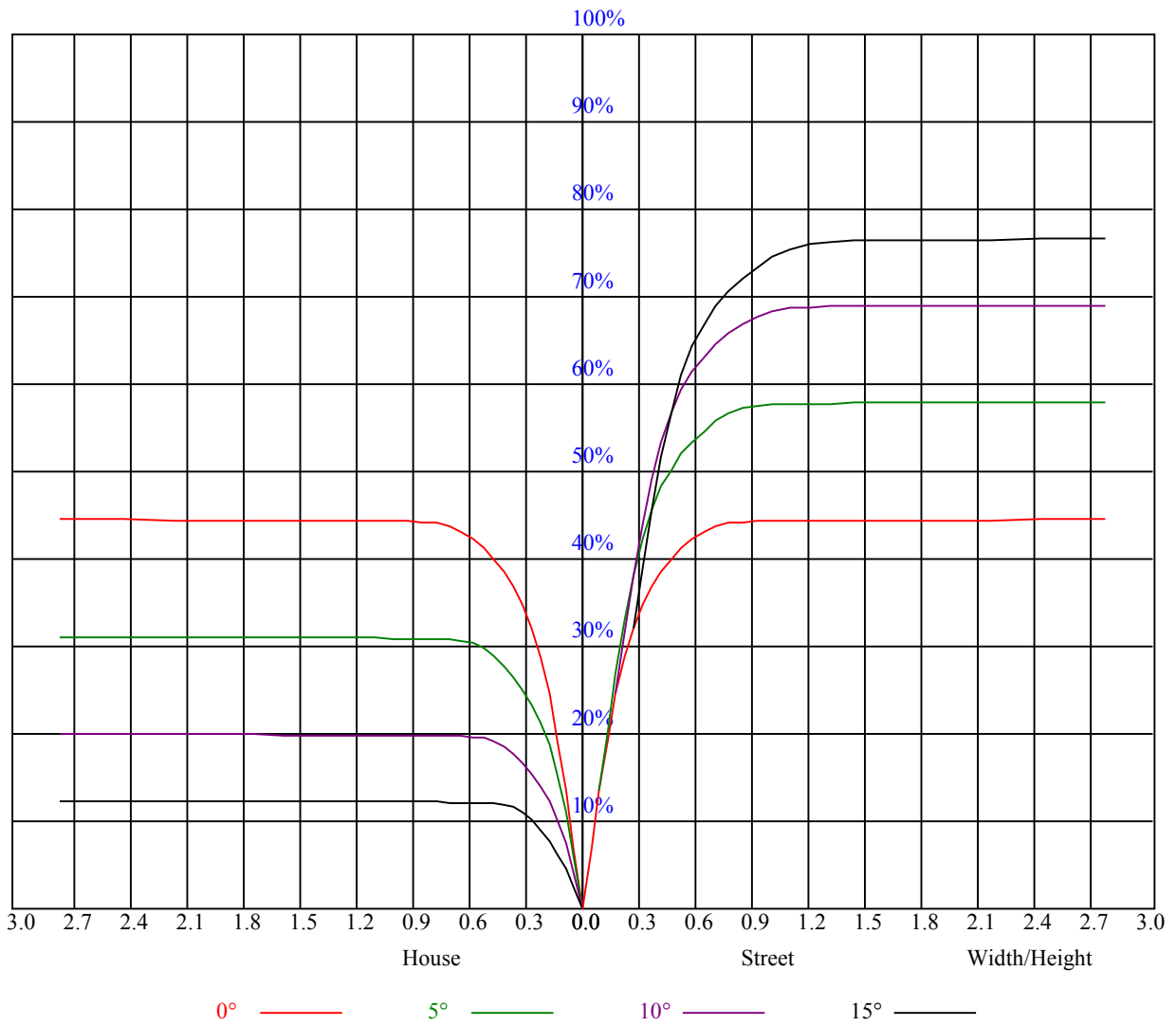
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

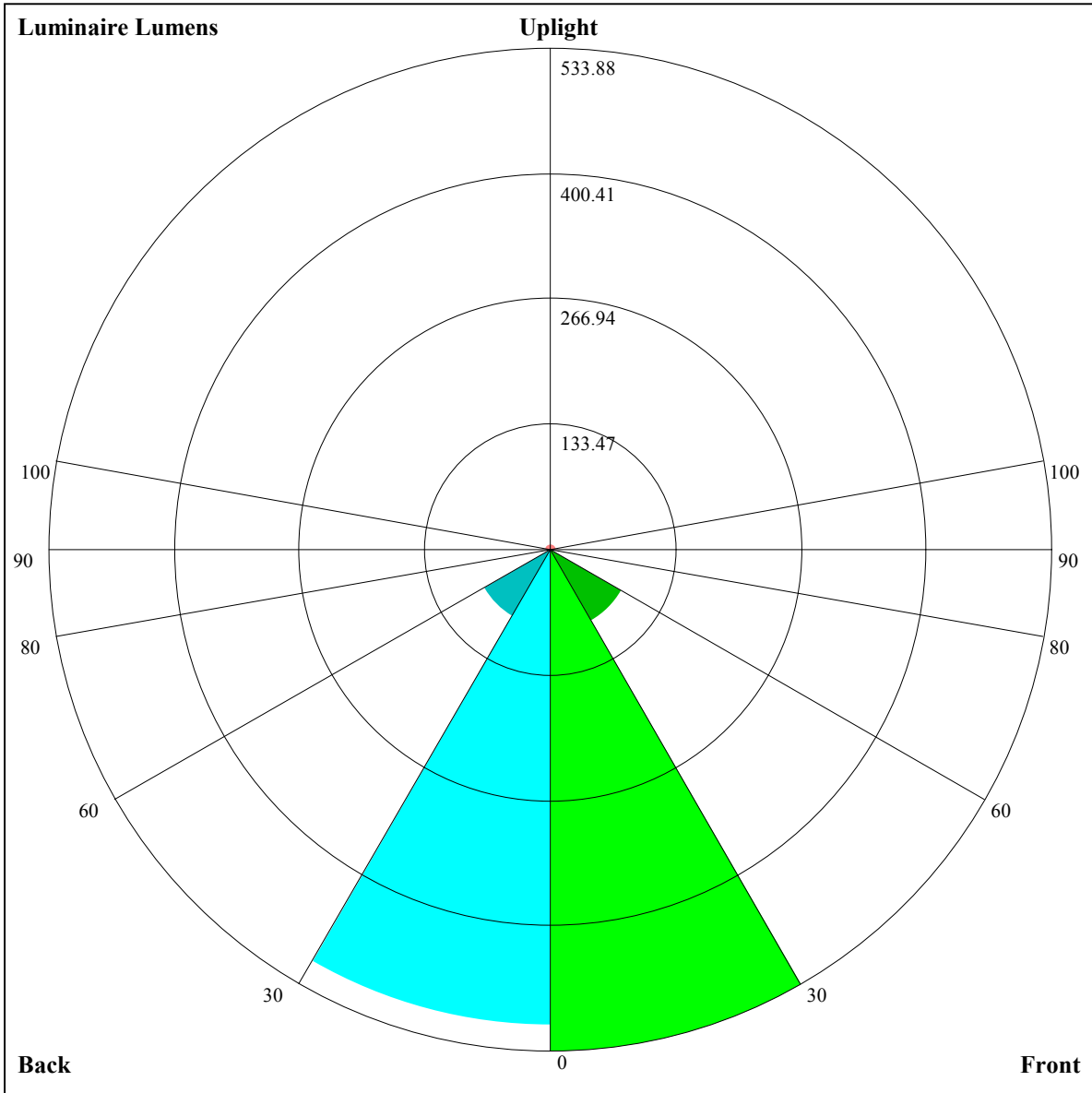
Luminance Limiting Curve





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	1.06	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	0.97	0.98	0.97	0.95	0.95	0.93	0.92	0.91	0.90	0.89	0.88	0.88	0.87	0.85
2	0.95	0.92	0.89	0.93	0.91	0.88	0.91	0.88	0.86	0.88	0.86	0.85	0.86	0.84	0.83	0.82
3	0.90	0.87	0.84	0.89	0.86	0.83	0.87	0.84	0.82	0.85	0.82	0.81	0.83	0.81	0.79	0.78
4	0.86	0.82	0.79	0.85	0.81	0.79	0.83	0.80	0.78	0.82	0.79	0.77	0.80	0.78	0.76	0.75
5	0.82	0.78	0.75	0.82	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	0.74	0.72	0.77	0.74	0.71	0.76	0.73	0.71	0.75	0.72	0.70	0.69
7	0.76	0.72	0.69	0.75	0.71	0.69	0.74	0.71	0.68	0.73	0.70	0.68	0.72	0.70	0.68	0.67
8	0.73	0.69	0.66	0.73	0.69	0.66	0.72	0.68	0.66	0.71	0.68	0.66	0.70	0.67	0.65	0.64
9	0.71	0.66	0.64	0.70	0.66	0.64	0.69	0.66	0.63	0.69	0.66	0.63	0.68	0.65	0.63	0.62
10	0.68	0.64	0.62	0.68	0.64	0.61	0.67	0.64	0.61	0.67	0.63	0.61	0.66	0.63	0.61	0.60





Luminaire Lumens:

FL=533.88,FM=87.57,FH=2.04,FVH=0.77

BL=506.15,BM=81.94,BH=2.11,BVH=0.76

UL=1.53,UH=7.29

BUG Rating:B2-U1-G0

NATA 3-2044-M

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	4294.21	4308.60	4300.24	4262.19	4195.84	4100.25	3964.75	3788.42	3573.10
45.0	4274.72	4286.79	4281.68	4250.59	4185.16	4090.97	3968.92	3807.90	3614.87
90.0	4288.18	4248.27	4176.81	4074.72	3941.08	3772.17	3569.39	3333.20	3070.09
135.0	4317.88	4292.82	4243.63	4161.50	4051.52	3905.82	3716.95	3484.47	3227.86
180.0	4294.21	4259.41	4198.62	4109.53	3995.84	3847.35	3661.27	3436.68	3184.24
225.0	4274.72	4242.70	4212.54	4100.25	4037.14	3903.50	3738.30	3542.01	3315.57
270.0	4288.18	4304.42	4308.60	4300.24	4266.37	4205.58	4117.42	3994.45	3827.86
315.0	4317.88	4326.23	4316.02	4277.51	4202.80	4087.72	3929.02	3730.88	3504.89
360.0	4294.21	4308.60	4300.24	4262.19	4195.84	4100.25	3964.75	3788.42	3573.10
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	3325.77	3060.35	2780.53	2550.37	2262.67	1982.40	1721.15	1485.88	1277.99
45.0	3389.35	3143.87	2874.73	2591.67	2303.04	2019.98	1749.45	1501.66	1284.95
90.0	2792.14	2507.68	2228.80	1960.59	1709.08	1483.56	1284.49	913.82	913.82
135.0	2961.04	2744.80	2471.95	2154.09	1949.91	1711.87	1494.70	1302.12	1131.36
180.0	2918.35	2650.14	2488.66	2120.22	1967.55	1728.57	1510.01	1313.26	1137.39
225.0	3063.13	2791.21	2510.93	2230.19	1955.48	1698.87	1464.07	1258.51	887.70
270.0	3626.47	3394.45	3135.06	2853.85	2561.51	2269.17	1987.04	1724.39	1487.27
315.0	3258.03	2994.92	2829.72	2545.27	2150.38	1882.17	1732.28	1501.66	1294.70
360.0	3325.77	3060.35	2780.53	2550.37	2262.67	1982.40	1721.15	1485.88	1277.99
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	888.35	888.35	812.29	705.19	622.13	562.64	521.57	493.69	481.57
45.0	1134.61	949.46	847.84	738.32	651.09	585.66	537.86	505.84	484.50
90.0	865.42	758.88	670.11	600.32	550.58	516.24	493.08	476.01	462.22
135.0	983.33	858.97	753.64	666.40	598.65	551.78	518.84	497.03	480.32
180.0	984.26	856.65	749.92	663.15	595.40	548.07	516.52	494.71	478.93
225.0	887.70	839.11	734.84	637.07	587.70	541.99	510.20	489.42	473.04
270.0	1278.46	1098.88	1003.75	813.96	748.07	627.88	590.30	542.50	508.63
315.0	902.64	849.78	824.91	714.84	630.02	568.58	525.10	495.73	475.54
360.0	888.35	888.35	812.29	705.19	622.13	562.64	521.57	493.69	481.57
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	459.16	447.89	442.50	434.66	426.21	415.50	391.32	351.74	300.28
45.0	467.79	455.73	445.52	437.63	428.81	412.57	379.16	335.08	285.43
90.0	452.25	443.52	435.08	421.11	388.77	343.62	313.87	238.88	183.66
135.0	465.94	456.19	450.62	439.02	424.64	409.32	375.45	331.83	274.29
180.0	465.94	456.19	447.37	439.02	424.64	409.32	354.57	323.94	267.33
225.0	460.51	450.99	443.24	434.80	416.47	379.76	333.59	282.74	231.18
270.0	486.35	470.11	456.66	447.37	438.56	430.67	419.07	388.44	344.82
315.0	462.64	447.93	440.69	432.80	425.57	414.38	389.74	352.85	300.97
360.0	459.16	447.89	442.50	434.66	426.21	415.50	391.32	351.74	300.28
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	242.41	181.62	122.83	72.81	37.54	17.73	12.30	9.00	7.05
45.0	233.92	233.92	184.73	100.88	57.35	25.15	14.52	10.77	7.93
90.0	151.32	80.74	55.13	23.85	13.92	11.04	8.35	6.82	5.85
135.0	247.38	233.46	75.78	41.53	20.51	13.09	10.72	8.40	7.15
180.0	243.20	171.60	76.29	39.12	18.75	12.30	10.02	7.89	6.59
225.0	179.12	128.77	81.25	41.67	24.64	12.85	9.14	7.70	6.17
270.0	295.17	242.27	242.27	121.39	92.34	35.54	20.74	12.53	9.70
315.0	233.78	160.46	102.41	60.19	31.09	15.13	11.18	8.26	6.31
360.0	242.41	181.62	122.83	72.81	37.54	17.73	12.30	9.00	7.05

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	5.38	4.69	4.55	4.36	4.13	3.99	3.85	3.71	3.62
45.0	6.36	5.29	5.01	4.78	4.64	4.45	4.18	3.99	3.85
90.0	5.52	5.29	5.10	4.87	4.59	4.45	4.36	4.13	3.94
135.0	6.22	5.94	5.61	5.38	5.15	4.97	4.69	4.55	4.41
180.0	5.80	5.52	5.29	5.10	4.87	4.73	4.36	4.32	4.13
225.0	5.24	4.97	4.69	4.55	4.41	4.18	3.94	3.85	3.71
270.0	7.19	5.85	4.83	4.59	4.41	4.18	3.99	3.94	3.81
315.0	4.73	4.45	4.22	4.13	3.94	3.76	3.67	3.43	3.39
360.0	5.38	4.69	4.55	4.36	4.13	3.99	3.85	3.71	3.62
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	3.48	3.25	3.20	3.11	3.02	2.78	2.74	2.64	2.60
45.0	3.71	3.57	3.39	3.25	3.20	3.11	2.97	2.83	2.69
90.0	3.81	3.67	3.48	3.29	3.25	3.11	3.06	2.88	2.74
135.0	4.18	3.94	3.85	3.71	3.53	3.34	3.25	3.11	2.92
180.0	3.94	3.81	3.67	3.48	3.34	3.25	3.16	2.92	2.83
225.0	3.57	3.39	3.25	3.16	3.02	2.88	2.69	2.64	2.55
270.0	3.57	3.39	3.29	3.20	3.02	2.83	2.74	2.64	2.55
315.0	3.20	3.11	3.02	2.83	2.74	2.64	2.60	2.41	2.32
360.0	3.48	3.25	3.20	3.11	3.02	2.78	2.74	2.64	2.60
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	2.46	2.32	2.27	2.23	2.09	1.95	1.90	1.90	1.86
45.0	2.64	2.60	2.46	2.32	2.27	2.23	2.13	2.00	1.95
90.0	2.64	2.55	2.41	2.32	2.32	2.18	2.04	2.00	1.95
135.0	2.83	2.78	2.60	2.51	2.37	2.32	2.18	2.13	2.09
180.0	2.74	2.64	2.51	2.37	2.27	2.23	2.13	2.09	2.00
225.0	2.46	2.46	2.32	2.18	2.09	2.09	2.00	1.86	1.76
270.0	2.55	2.41	2.27	2.18	2.13	2.09	2.00	1.86	1.86
315.0	2.27	2.23	2.09	2.00	1.95	1.95	1.86	1.76	1.76
360.0	2.46	2.32	2.27	2.23	2.09	1.95	1.90	1.90	1.86
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	1.81	1.67	1.67	1.67	1.58	1.58	1.48	1.44	1.48
45.0	1.90	1.86	1.76	1.76	1.67	1.67	1.58	1.58	1.53
90.0	1.86	1.76	1.76	1.72	1.62	1.58	1.53	1.53	1.44
135.0	1.95	1.90	1.86	1.86	1.72	1.67	1.62	1.62	1.53
180.0	1.90	1.81	1.81	1.67	1.62	1.53	1.58	1.53	1.48
225.0	1.76	1.76	1.67	1.58	1.58	1.58	1.48	1.39	1.35
270.0	1.81	1.72	1.62	1.62	1.62	1.58	1.48	1.44	1.48
315.0	1.67	1.67	1.67	1.58	1.48	1.53	1.53	1.44	1.44
360.0	1.81	1.67	1.67	1.67	1.58	1.58	1.48	1.44	1.48
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	1.48	1.44	1.44	1.35	1.44	1.39	1.39	1.35	1.39
45.0	1.44	1.48	1.44	1.44	1.39	1.35	1.35	1.35	1.35
90.0	1.48	1.48	1.35	1.39	1.35	1.30	1.35	1.39	1.53
135.0	1.48	1.48	1.44	1.44	1.44	1.35	1.39	1.35	1.44
180.0	1.39	1.39	1.35	1.39	1.35	1.35	1.35	1.35	1.35
225.0	1.44	1.39	1.39	1.39	1.39	1.35	1.30	1.25	1.25
270.0	1.48	1.44	1.44	1.35	1.39	1.30	1.35	1.30	1.25
315.0	1.39	1.44	1.35	1.35	1.39	1.35	1.35	1.39	1.39
360.0	1.48	1.44	1.44	1.35	1.44	1.39	1.39	1.35	1.39

Intensity data(cd)

C/γ(°)	90.0
0.0	1.39
45.0	1.48
90.0	1.62
135.0	1.35
180.0	1.30
225.0	1.39
270.0	1.35
315.0	1.35
360.0	1.39