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## Nata

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### Client:

LumCAT: 2-1777-L

Luminaire: 92.70.131.00

Report No: NT2018011001

Test No: GC2018011001

LampCAT: CITIZEN CLU038

Lamp flux(lm): 2870.0

Number of Lamps: 1

Length(mm): 64

Phm Type: C

Voltage(V): 34.8000

Current(A): 0.6400

Power (W): 22.2720

PF: 0.0000

Ballast type: DC

Width(mm): 64

Height(mm): 0

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## Photometric Results

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Lumens(lm): 2783.01, Efficiency(%): 96.97% , Luminous Efficacy(lm/W): 124.96

Central intensity(cd): 18036.480, Maximum intensity(cd): 18036.480

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

Beam Angle(50%Imax): [C0/180]Total=16.4

[C90/270]Total=16.4

Field angle(10%Imax): [C0/180]Total=36.8

[C90/270]Total=36.8

Maximum s/h(1/2): C0\_180=0.28 C90\_270=0.28

Maximum s/h(1/4): C0\_180=0.29 C90\_270=0.29

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 97.12%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in  $\pi$  solid angle : 98.352%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	18036.477	4.315	4.315	.150%	.155%
1.0	17938.063	34.331	38.646	1.196%	1.389%
2.0	17599.467	67.355	106.001	2.347%	3.809%
3.0	16931.908	97.176	203.177	3.386%	7.301%
4.0	15973.238	122.188	325.365	4.257%	11.691%
5.0	14526.906	138.842	464.207	4.838%	16.680%
6.0	12978.376	148.767	612.974	5.184%	22.026%
7.0	10619.072	141.916	754.89	4.945%	27.125%
8.0	9300.540	141.943	896.834	4.946%	32.225%
9.0	7695.439	132.013	1028.847	4.600%	36.969%
10.0	6249.108	118.998	1147.845	4.146%	41.245%
11.0	5265.044	110.167	1258.012	3.839%	45.203%
12.0	4469.341	101.900	1359.912	3.551%	48.865%
13.0	3710.733	91.538	1451.45	3.189%	52.154%
14.0	3182.810	84.438	1535.888	2.942%	55.188%
15.0	2838.433	80.561	1616.449	2.807%	58.083%
16.0	2378.161	71.884	1688.333	2.505%	60.666%
17.0	2137.840	68.543	1756.876	2.388%	63.129%
18.0	1882.585	63.795	1820.671	2.223%	65.421%
19.0	1686.859	60.224	1880.895	2.098%	67.585%
20.0	1546.465	58.002	1938.898	2.021%	69.669%
21.0	1433.600	56.339	1995.237	1.963%	71.694%
22.0	1328.442	54.572	2049.809	1.901%	73.655%
23.0	1250.881	53.598	2103.406	1.868%	75.580%
24.0	1185.750	52.888	2156.294	1.843%	77.481%
25.0	1115.615	51.703	2207.997	1.801%	79.339%
26.0	1071.927	51.530	2259.527	1.795%	81.190%
27.0	1031.076	51.332	2310.859	1.789%	83.035%
28.0	986.569	50.791	2361.65	1.770%	84.860%
29.0	940.391	49.996	2411.646	1.742%	86.656%
30.0	887.144	48.643	2460.288	1.695%	88.404%
31.0	808.930	45.688	2505.976	1.592%	90.046%
32.0	723.455	42.041	2548.017	1.465%	91.556%
33.0	638.847	38.156	2586.173	1.329%	92.927%
34.0	534.357	32.768	2618.94	1.142%	94.105%
35.0	438.559	27.585	2646.525	.961%	95.096%
36.0	347.798	22.418	2668.943	.781%	95.901%
37.0	256.067	16.899	2685.843	.589%	96.509%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	172.265	11.630	2697.473	.405%	96.927%
39.0	114.029	7.869	2705.342	.274%	97.209%
40.0	64.485	4.545	2709.888	.158%	97.373%
41.0	41.519	2.987	2712.875	.104%	97.480%
42.0	29.579	2.170	2715.045	.076%	97.558%
43.0	24.314	1.818	2716.864	.063%	97.623%
44.0	21.926	1.670	2718.534	.058%	97.683%
45.0	20.151	1.563	2720.096	.054%	97.740%
46.0	19.050	1.503	2721.599	.052%	97.794%
47.0	18.320	1.469	2723.068	.051%	97.846%
48.0	17.783	1.449	2724.518	.050%	97.898%
49.0	17.301	1.432	2725.95	.050%	97.950%
50.0	16.882	1.418	2727.368	.049%	98.001%
51.0	16.579	1.413	2728.781	.049%	98.052%
52.0	16.297	1.408	2730.189	.049%	98.102%
53.0	16.008	1.402	2731.591	.049%	98.153%
54.0	15.719	1.395	2732.985	.049%	98.203%
55.0	15.485	1.391	2734.376	.048%	98.253%
56.0	15.244	1.386	2735.762	.048%	98.302%
57.0	15.037	1.383	2737.145	.048%	98.352%
58.0	14.865	1.382	2738.528	.048%	98.402%
59.0	14.693	1.381	2739.909	.048%	98.451%
60.0	14.569	1.384	2741.292	.048%	98.501%
61.0	14.445	1.385	2742.678	.048%	98.551%
62.0	14.356	1.390	2744.068	.048%	98.601%
63.0	14.266	1.394	2745.462	.049%	98.651%
64.0	14.177	1.397	2746.859	.049%	98.701%
65.0	14.081	1.399	2748.258	.049%	98.751%
66.0	13.991	1.402	2749.66	.049%	98.802%
67.0	13.895	1.403	2751.063	.049%	98.852%
68.0	13.812	1.404	2752.467	.049%	98.903%
69.0	13.737	1.406	2753.873	.049%	98.953%
70.0	13.675	1.409	2755.283	.049%	99.004%
71.0	13.585	1.409	2756.691	.049%	99.054%
72.0	13.544	1.413	2758.104	.049%	99.105%
73.0	13.482	1.414	2759.518	.049%	99.156%
74.0	13.434	1.416	2760.934	.049%	99.207%
75.0	13.392	1.419	2762.352	.049%	99.258%

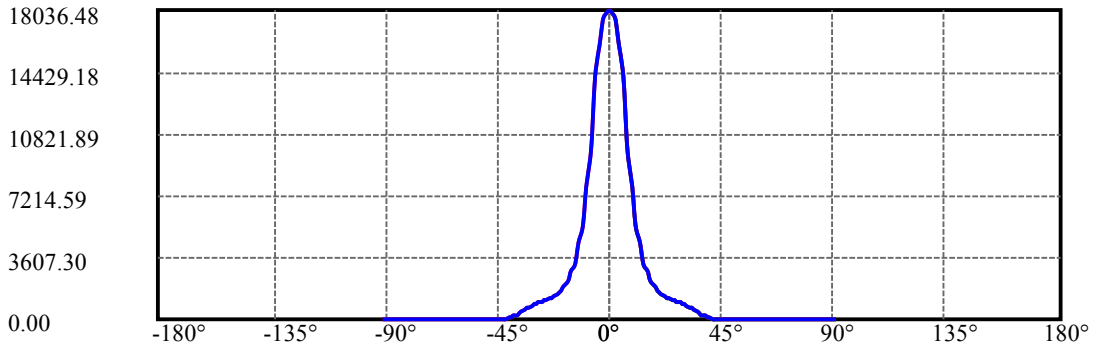
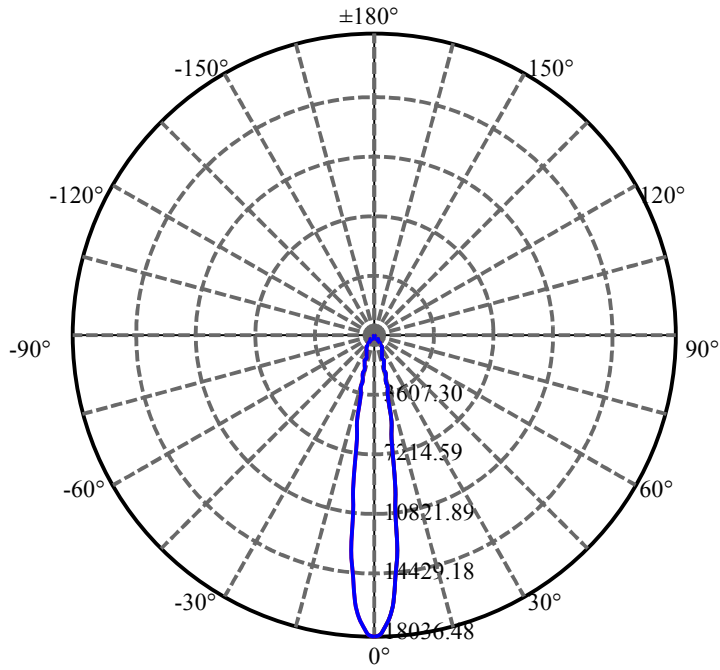
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	13.344	1.420	2763.772	.049%	99.309%
77.0	13.289	1.420	2765.192	.049%	99.360%
78.0	13.255	1.422	2766.614	.050%	99.411%
79.0	13.241	1.425	2768.039	.050%	99.462%
80.0	13.214	1.427	2769.466	.050%	99.514%
81.0	13.200	1.430	2770.896	.050%	99.565%
82.0	13.172	1.430	2772.326	.050%	99.616%
83.0	13.152	1.431	2773.758	.050%	99.668%
84.0	13.124	1.431	2775.189	.050%	99.719%
85.0	13.110	1.432	2776.621	.050%	99.771%
86.0	13.062	1.429	2778.05	.050%	99.822%
87.0	12.986	1.422	2779.472	.050%	99.873%
88.0	12.911	1.415	2780.887	.049%	99.924%
89.0	12.883	1.413	2782.3	.049%	99.975%
90.0	12.863	0.705	2783.005	.025%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	2460.29	85.72%	88.40%
0-40	2709.89	94.42%	97.37%
0-60	2741.29	95.52%	98.50%
0-90	2782.30	96.94%	99.97%
0-120	2782.30	96.94%	99.97%
0-180	2783.01	96.97%	100.00%
60-90	42.39	1.48%	1.52%
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%
0-25.36	2226.40	77.58%	80.00%

ZONAL LUMEN SUMMARY

0-10	1147.85
10-20	791.05
20-30	521.39
30-40	249.60
40-50	17.48
50-60	13.92
60-70	13.99
70-80	14.18
80-90	12.83
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



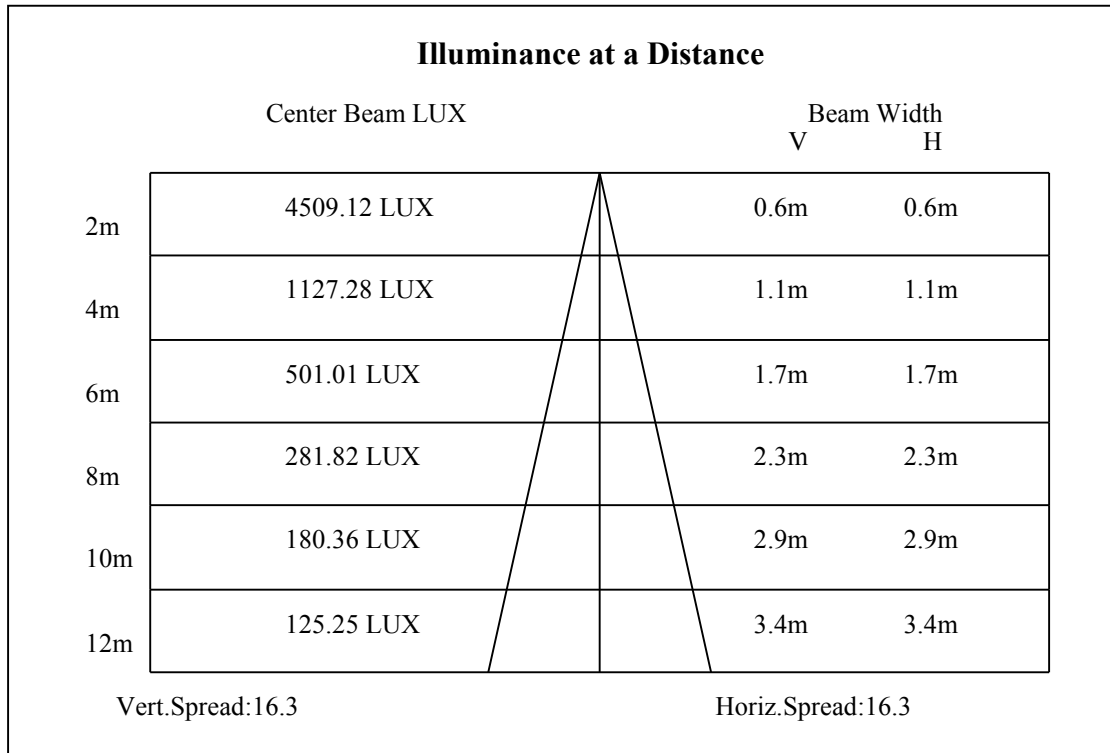
C0(Max): —————

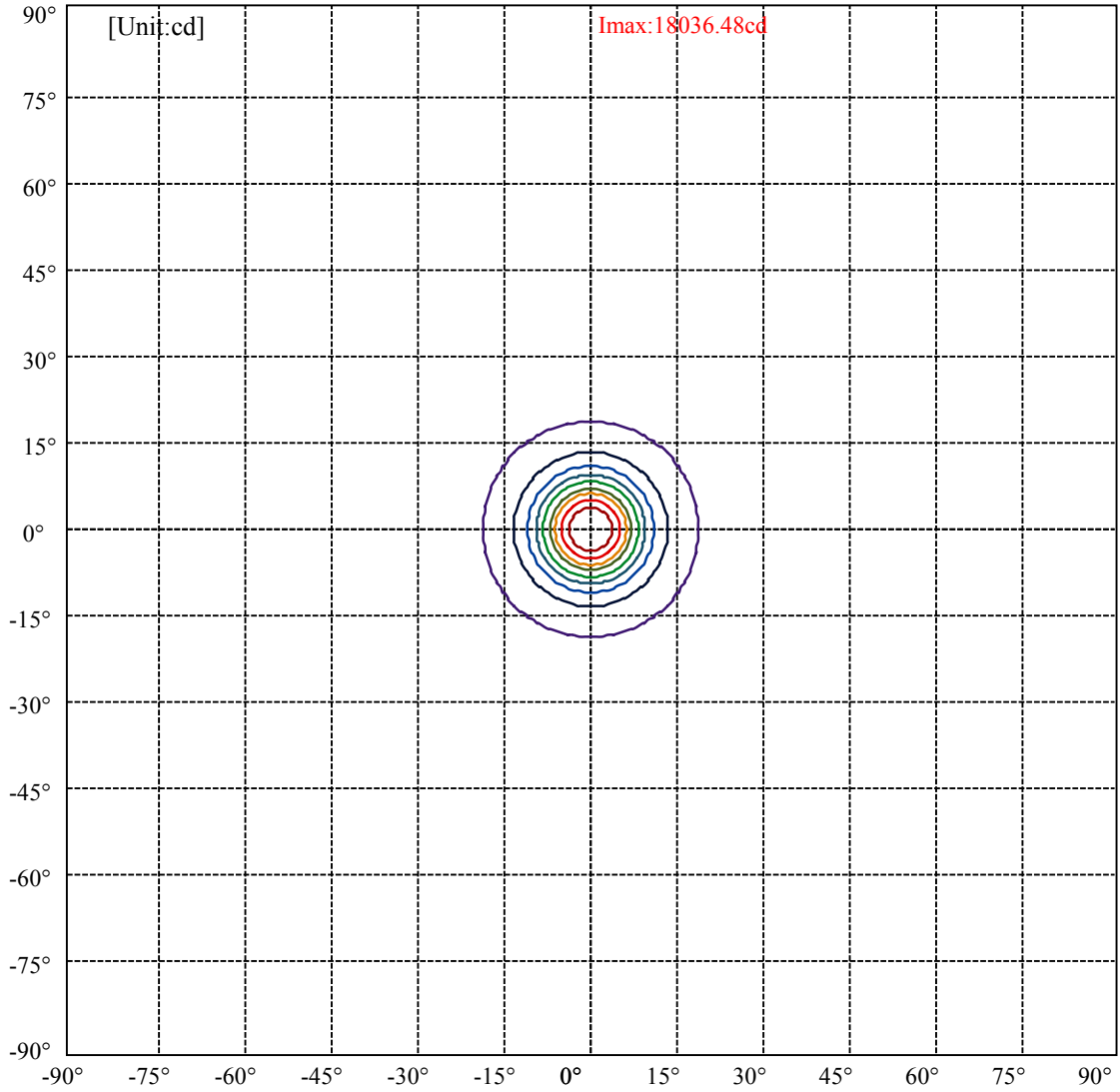
C0/C180: —————

C90/C270: —————

Field angle(10%Imax):C0/180Left:18.4 Right:18.4  
:C90/270Left:18.4 Right:18.4

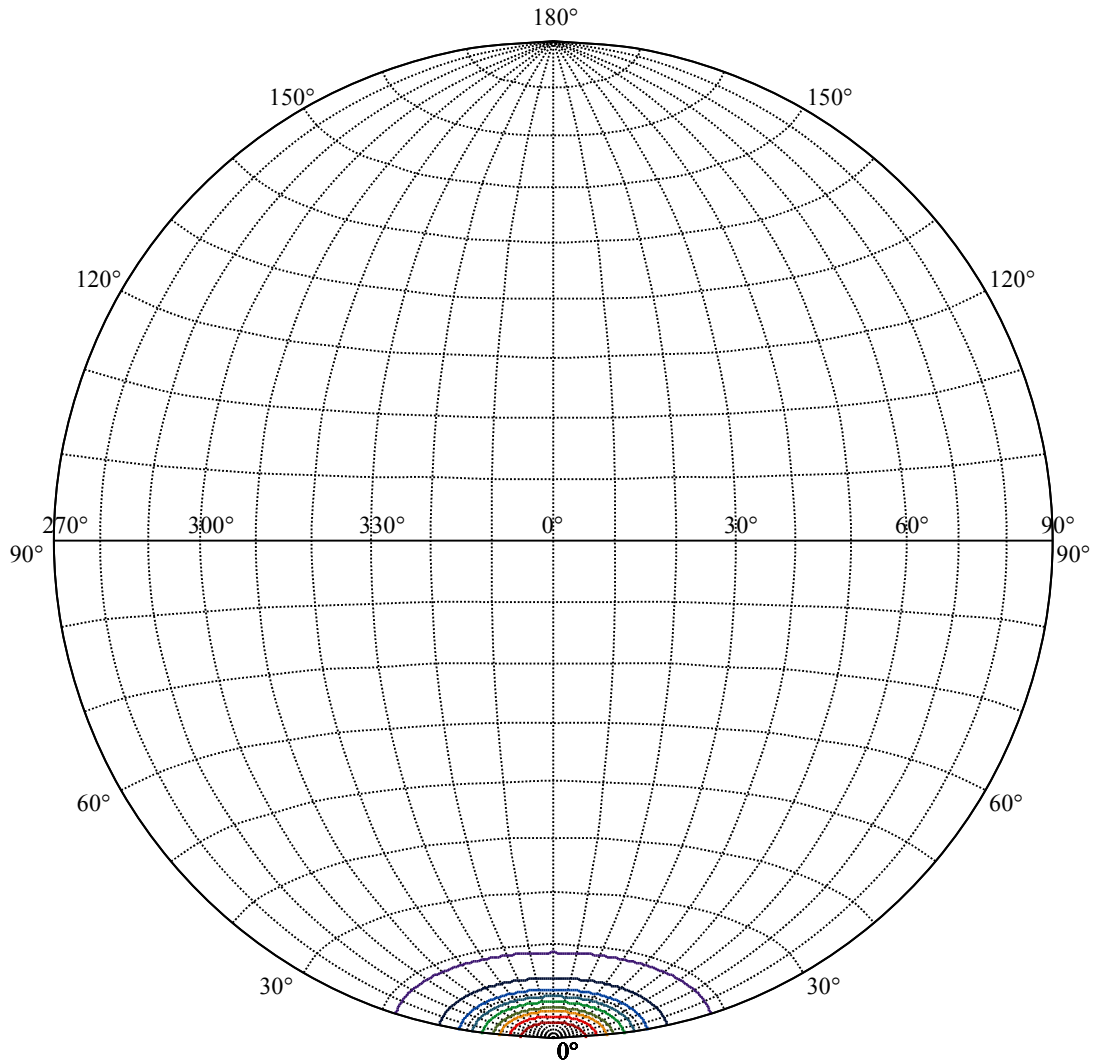
Beam Angle(50%Imax):C0/180Left:8.2 Right:8.2  
:C90/270Left:8.2 Right:8.2





(10%Imax) 1803.65	—
(20%Imax) 3607.3	—
(30%Imax) 5410.94	—
(40%Imax) 7214.59	—
(50%Imax) 9018.24	—
(60%Imax) 10821.9	—
(70%Imax) 12625.5	—
(80%Imax) 14429.2	—
(90%Imax) 16232.8	—





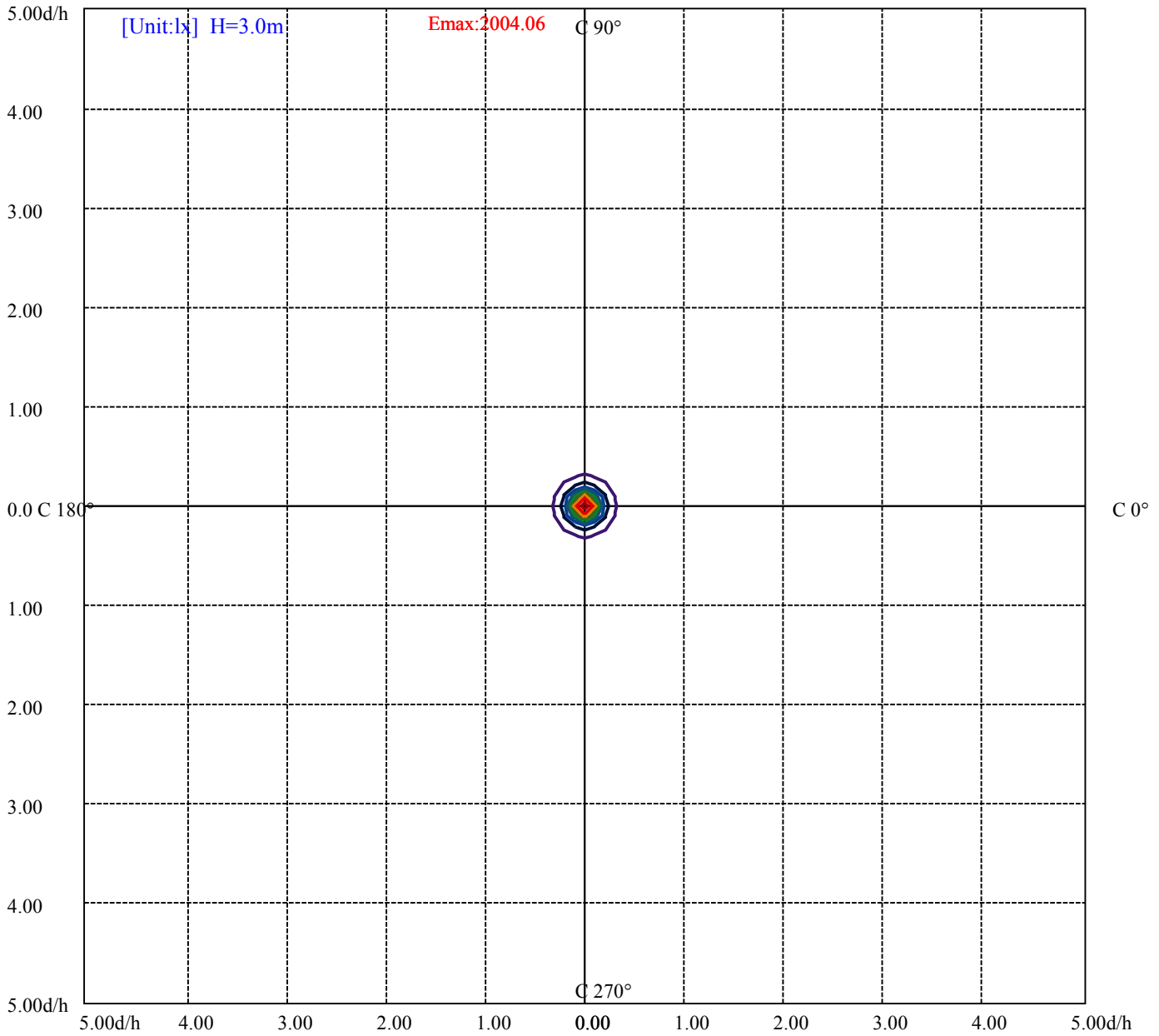
House

[Unit:cd]

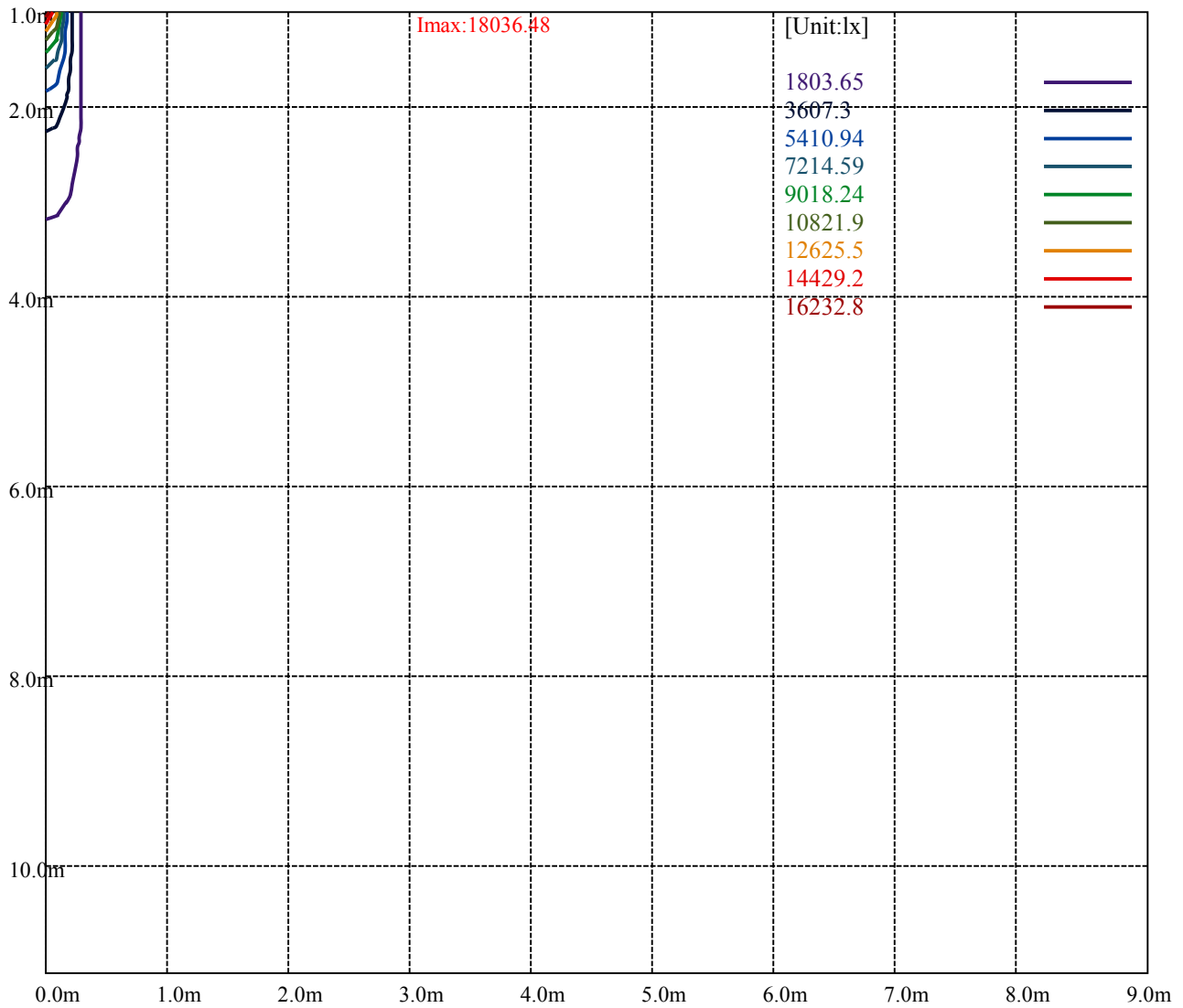
Road

**Imax:18036.48**

(10%Imax) 1803.65	—
(20%Imax) 3607.3	—
(30%Imax) 5410.94	—
(40%Imax) 7214.59	—
(50%Imax) 9018.24	—
(60%Imax) 10821.9	—
(70%Imax) 12625.5	—
(80%Imax) 14429.2	—
(90%Imax) 16232.8	—



- (10%Emax) 200.4056
- (20%Emax) 400.81
- (30%Emax) 601.2156
- (40%Emax) 801.62
- (50%Emax) 1002.026
- (60%Emax) 1202.433
- (70%Emax) 1402.833
- (80%Emax) 1603.245
- (90%Emax) 1803.644



Luminance Table

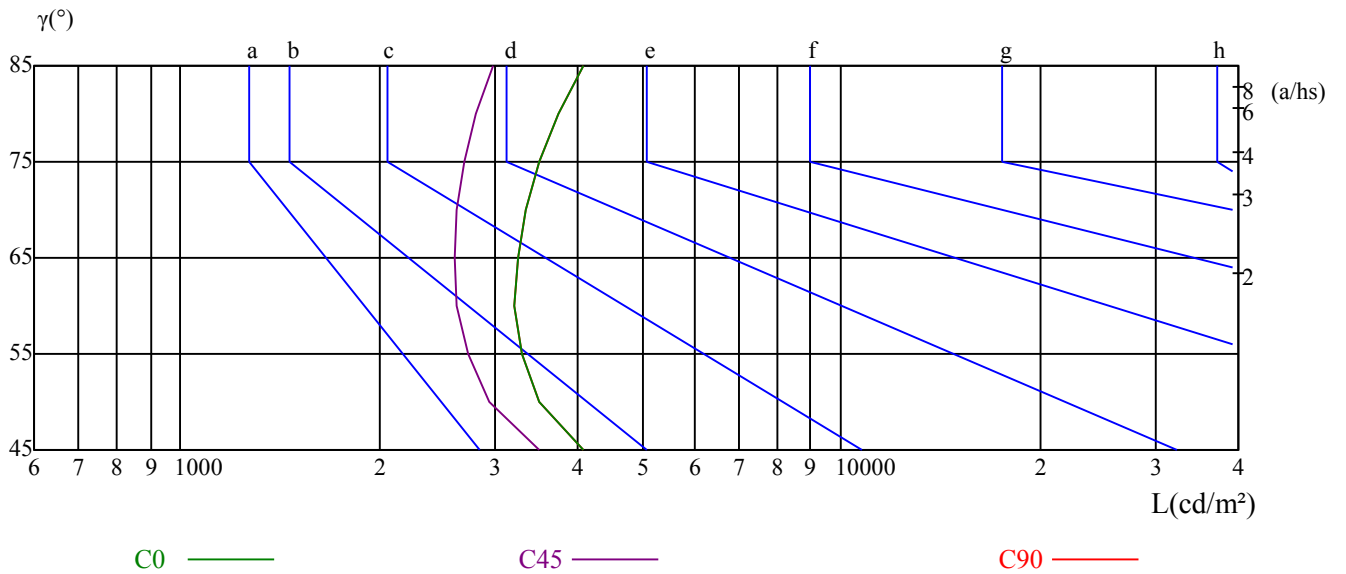
$\gamma$	45	50	55	60	65	70	75	80	85
C0	4085	3489	3289	3208	3243	3329	3486	3725	4064
C45	3488	2934	2723	2613	2597	2616	2682	2798	2970
C90	4085	3489	3289	3208	3243	3329	3486	3725	4064

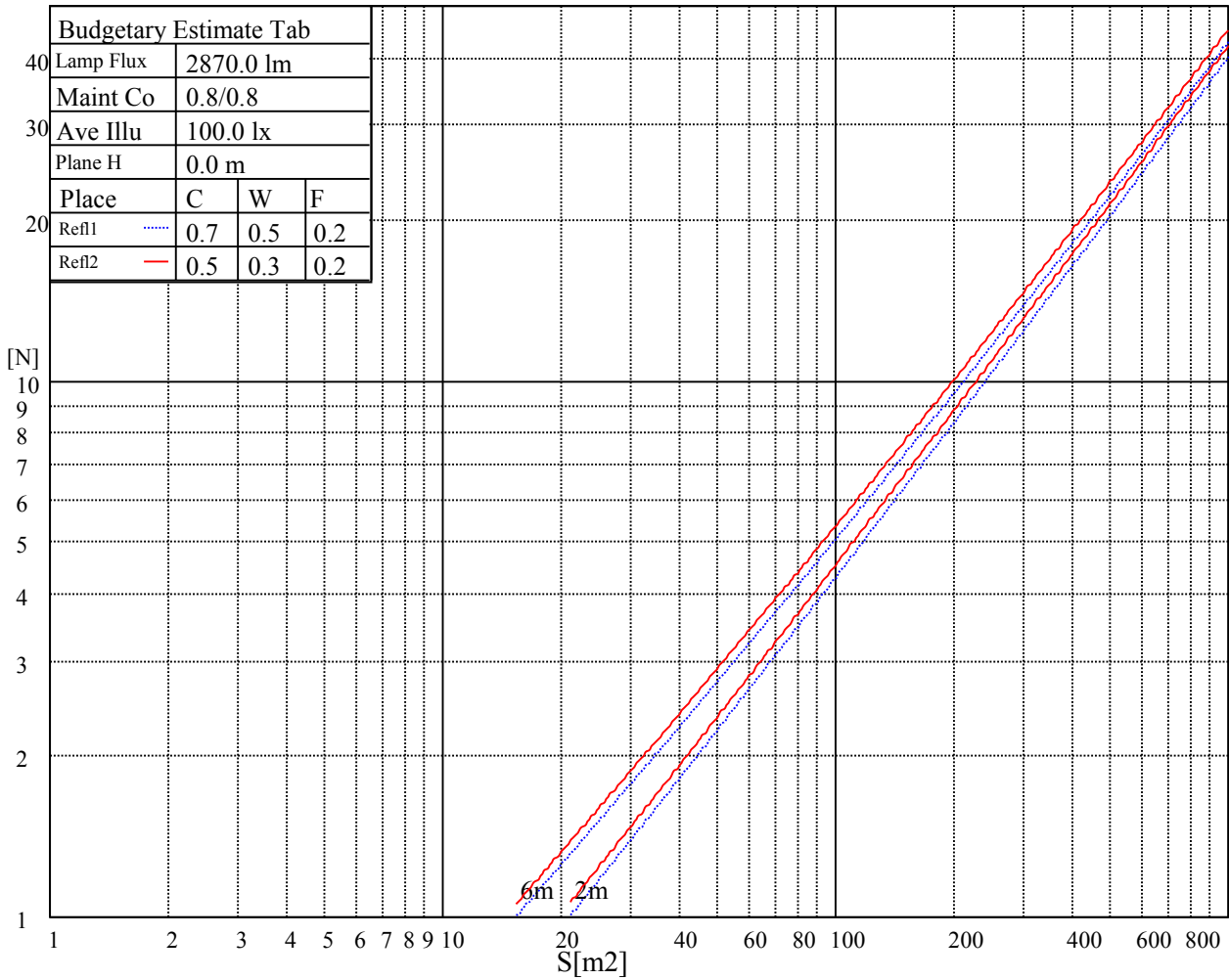
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
8134	8134	8134	12633	12633	12633	36725	36725	36725

Glare Table

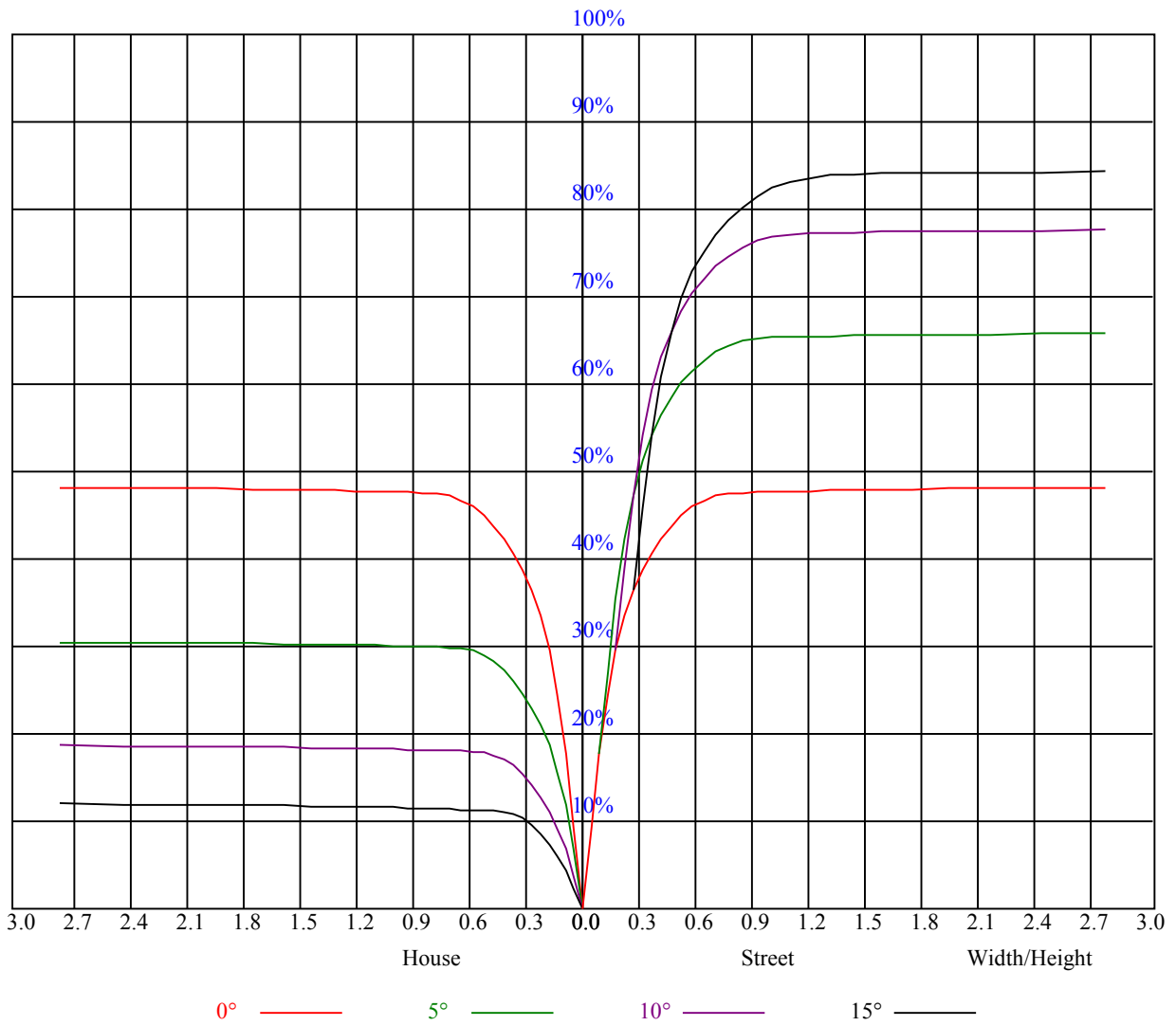
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

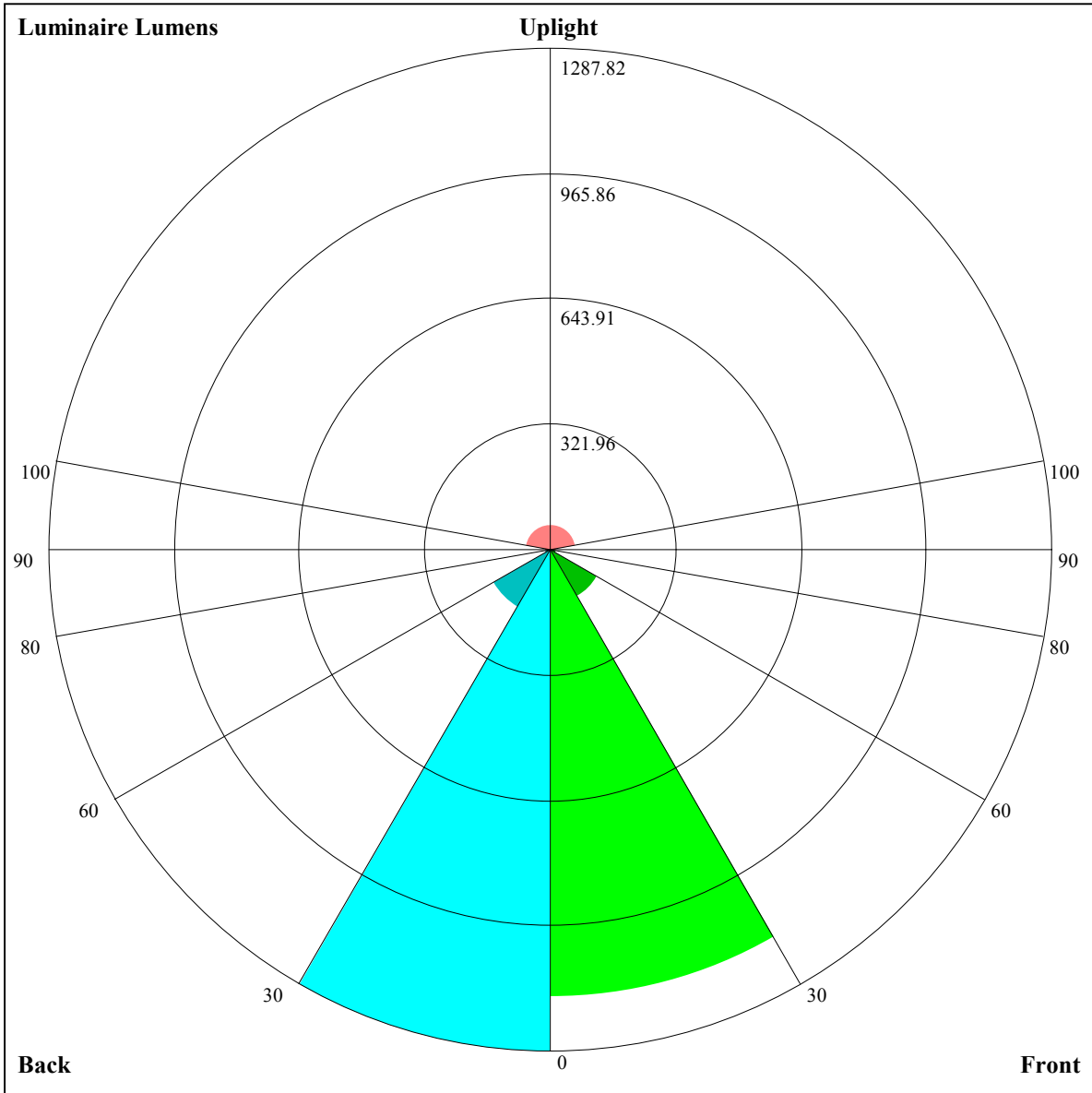
Luminance Limiting Curve





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	1.16	1.16	1.16	1.13	1.13	1.13	1.08	1.08	1.08	1.03	1.03	1.03	0.99	0.99	0.99	0.97
1	1.09	1.07	1.05	1.07	1.05	1.03	1.03	1.01	1.00	0.99	0.98	0.97	0.96	0.95	0.94	0.93
2	1.03	1.00	0.98	1.02	0.99	0.97	0.99	0.96	0.94	0.96	0.94	0.92	0.93	0.92	0.91	0.89
3	0.99	0.95	0.92	0.97	0.94	0.91	0.95	0.92	0.90	0.93	0.90	0.88	0.91	0.89	0.87	0.86
4	0.95	0.91	0.87	0.94	0.90	0.87	0.92	0.88	0.86	0.90	0.87	0.85	0.88	0.86	0.84	0.83
5	0.91	0.87	0.84	0.90	0.86	0.83	0.89	0.85	0.83	0.87	0.84	0.82	0.86	0.83	0.81	0.80
6	0.88	0.83	0.80	0.87	0.83	0.80	0.86	0.82	0.80	0.84	0.81	0.79	0.83	0.81	0.79	0.78
7	0.85	0.80	0.78	0.84	0.80	0.77	0.83	0.80	0.77	0.82	0.79	0.77	0.81	0.78	0.76	0.75
8	0.82	0.78	0.75	0.82	0.78	0.75	0.81	0.77	0.75	0.80	0.77	0.74	0.79	0.76	0.74	0.73
9	0.80	0.76	0.73	0.79	0.75	0.73	0.78	0.75	0.72	0.78	0.74	0.72	0.77	0.74	0.72	0.71
10	0.77	0.73	0.71	0.77	0.73	0.71	0.76	0.73	0.70	0.76	0.73	0.70	0.75	0.72	0.70	0.69





Luminaire Lumens:

FL=1150.11,FM=136.76,FH=14.02,FVH=7.12

BL=1287.82,BM=168.96,BH=14.1,BVH=7.13

UL=14.03,UH=66.78

BUG Rating:B3-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	18102.54	17843.78	17359.28	16726.13	15366.24	13609.94	12024.32	9739.48	8142.84
45.0	17959.40	17876.81	17502.43	16874.79	15971.86	14529.38	12558.36	10669.93	8886.10
90.0	18102.54	18223.67	18108.05	17761.19	17117.03	16241.64	14909.27	10949.62	10711.77
135.0	17981.42	18289.74	18399.85	18245.69	17898.84	17320.74	16153.55	14672.53	12910.73
180.0	18102.54	18075.02	17882.32	17331.75	16731.64	15702.09	14017.36	10782.80	10113.31
225.0	17959.40	17860.30	17546.47	16940.85	15933.32	14667.02	13009.83	10735.45	9056.23
270.0	18102.54	17838.27	17254.68	16302.20	15063.43	13230.05	11402.18	9425.66	7895.09
315.0	17981.42	17496.92	16742.65	15272.65	13703.54	10914.38	9752.14	7977.12	6688.25
360.0	18102.54	17843.78	17359.28	16726.13	15366.24	13609.94	12024.32	9739.48	8142.84
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	6843.51	5549.69	4729.34	4068.67	3419.00	2984.06	2785.85	2217.67	1971.02
45.0	7019.69	5852.50	4927.55	4145.75	3529.12	3077.65	2824.39	2288.69	2025.52
90.0	8874.54	6953.62	5780.92	4874.69	4035.08	3376.06	2916.34	2517.18	2223.73
135.0	10736.00	8715.43	7228.91	6001.15	4811.93	4052.15	3435.52	2934.51	2780.35
180.0	8461.62	6791.21	5717.61	4857.08	4037.29	3384.32	2927.90	2522.68	2227.58
225.0	7603.84	6128.88	5187.96	4427.64	3650.79	3161.89	2784.20	2397.71	2170.32
270.0	6375.53	5395.53	4580.69	3925.52	3286.87	2868.44	2780.35	2170.87	1945.69
315.0	5648.79	4606.62	3967.36	3454.24	2915.79	2557.92	2252.91	1975.97	1758.50
360.0	6843.51	5549.69	4729.34	4068.67	3419.00	2984.06	2785.85	2217.67	1971.02
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1772.82	1595.53	1455.69	1367.05	1264.09	1188.12	1133.61	1079.66	1038.91
45.0	1817.41	1630.22	1482.67	1375.31	1281.16	1203.53	1144.07	1091.22	1048.27
90.0	1950.65	1735.93	1589.48	1453.49	1344.48	1267.40	1201.33	1095.95	1078.39
135.0	2222.63	1961.66	1762.36	1623.06	1492.58	1393.48	1296.03	1220.60	1158.94
180.0	1962.76	1761.25	1617.01	1484.32	1374.21	1293.83	1224.45	1140.22	1096.56
225.0	1936.88	1730.97	1614.25	1489.83	1373.11	1303.18	1235.47	1156.18	1093.86
270.0	1786.03	1603.24	1474.96	1390.17	1288.32	1214.54	1162.79	1100.03	1057.08
315.0	1611.50	1476.06	1375.31	1285.57	1209.59	1142.97	1088.24	1041.06	1003.40
360.0	1772.82	1595.53	1455.69	1367.05	1264.09	1188.12	1133.61	1079.66	1038.91
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	998.17	956.88	907.33	837.41	731.15	647.46	558.82	447.61	359.52
45.0	1005.33	971.19	929.35	884.76	777.40	691.51	612.23	485.05	388.70
90.0	1037.37	996.08	960.40	924.23	868.57	779.54	693.88	594.77	504.37
135.0	1106.08	1052.68	1011.94	977.25	935.41	877.05	813.73	722.34	623.79
180.0	1054.05	1010.06	971.64	931.11	867.52	785.38	697.18	599.23	510.65
225.0	1068.09	1027.19	983.86	931.06	872.97	780.92	688.92	595.16	482.18
270.0	1011.94	972.85	926.05	857.23	760.33	667.83	579.19	466.33	373.28
315.0	967.56	905.62	832.56	754.11	658.09	557.94	466.82	364.36	265.98
360.0	998.17	956.88	907.33	837.41	731.15	647.46	558.82	447.61	359.52
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	282.99	186.48	99.98	53.07	33.25	26.43	23.56	21.14	19.38
45.0	308.32	235.81	127.40	79.01	45.26	33.20	29.68	26.10	23.73
90.0	401.91	303.14	221.27	148.05	75.76	43.44	30.17	25.33	22.02
135.0	533.50	428.89	342.45	278.59	161.81	97.95	48.89	30.39	26.92
180.0	411.99	313.27	227.93	151.52	74.49	43.11	30.12	25.66	22.96
225.0	369.26	277.76	187.14	111.65	66.40	38.59	30.89	27.42	23.89
270.0	285.74	188.95	108.90	56.65	32.76	26.32	23.01	19.93	18.39
315.0	188.68	114.24	63.04	33.69	26.15	23.12	20.32	18.55	18.11
360.0	282.99	186.48	99.98	53.07	33.25	26.43	23.56	21.14	19.38

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	18.66	18.17	17.56	17.01	16.57	16.24	16.02	15.80	15.47
45.0	22.63	21.80	21.20	20.48	19.66	19.16	18.72	18.22	17.73
90.0	19.60	18.55	17.95	17.51	17.12	16.68	16.46	16.30	16.02
135.0	22.90	19.32	17.78	17.12	16.74	16.35	16.02	15.75	15.58
180.0	20.15	19.16	18.39	17.78	17.12	16.46	16.13	15.86	15.64
225.0	21.75	20.87	19.99	19.38	18.72	18.11	17.67	17.34	16.96
270.0	17.89	17.34	16.90	16.46	16.13	15.91	15.69	15.47	15.25
315.0	17.62	17.18	16.79	16.52	16.35	16.13	15.91	15.64	15.42
360.0	18.66	18.17	17.56	17.01	16.57	16.24	16.02	15.80	15.47
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	15.20	14.98	14.70	14.53	14.37	14.20	14.09	13.98	13.93
45.0	17.23	16.85	16.35	16.08	15.75	15.47	15.31	15.09	14.92
90.0	15.75	15.53	15.31	15.14	14.92	14.70	14.59	14.48	14.37
135.0	15.42	15.25	15.03	14.87	14.70	14.48	14.37	14.26	14.15
180.0	15.36	15.14	14.98	14.76	14.59	14.48	14.37	14.26	14.20
225.0	16.63	16.35	16.08	15.86	15.64	15.47	15.31	15.20	15.03
270.0	15.03	14.81	14.70	14.48	14.42	14.31	14.20	14.09	14.09
315.0	15.14	14.98	14.81	14.59	14.53	14.42	14.31	14.20	14.15
360.0	15.20	14.98	14.70	14.53	14.37	14.20	14.09	13.98	13.93
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	13.82	13.71	13.60	13.54	13.49	13.43	13.38	13.38	13.32
45.0	14.76	14.65	14.53	14.42	14.26	14.20	14.09	13.98	13.93
90.0	14.26	14.20	14.09	13.98	13.87	13.76	13.71	13.60	13.49
135.0	14.09	14.04	13.98	13.87	13.87	13.76	13.71	13.65	13.60
180.0	14.09	13.93	13.87	13.82	13.71	13.60	13.54	13.49	13.43
225.0	14.98	14.87	14.76	14.65	14.53	14.42	14.31	14.20	14.04
270.0	13.98	13.98	13.87	13.82	13.71	13.65	13.60	13.54	13.43
315.0	14.15	14.04	13.93	13.82	13.71	13.65	13.54	13.54	13.43
360.0	13.82	13.71	13.60	13.54	13.49	13.43	13.38	13.38	13.32
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	13.32	13.27	13.21	13.21	13.16	13.10	13.10	13.10	13.05
45.0	13.82	13.76	13.71	13.60	13.54	13.49	13.43	13.43	13.38
90.0	13.43	13.38	13.38	13.32	13.27	13.21	13.21	13.21	13.16
135.0	13.54	13.49	13.49	13.43	13.43	13.32	13.32	13.32	13.32
180.0	13.43	13.38	13.32	13.27	13.21	13.16	13.10	13.10	13.05
225.0	13.98	13.87	13.76	13.71	13.60	13.54	13.49	13.43	13.43
270.0	13.43	13.38	13.32	13.32	13.27	13.27	13.16	13.16	13.16
315.0	13.38	13.32	13.27	13.27	13.27	13.21	13.21	13.16	13.16
360.0	13.32	13.27	13.21	13.21	13.16	13.10	13.10	13.10	13.05
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	13.05	13.05	12.99	12.94	12.99	12.88	12.88	12.72	12.72
45.0	13.38	13.32	13.32	13.27	13.27	13.21	13.10	13.10	13.05
90.0	13.10	13.10	13.10	13.10	13.05	13.05	13.05	12.94	12.94
135.0	13.32	13.32	13.27	13.27	13.21	13.05	12.99	12.88	12.83
180.0	13.05	12.99	12.99	12.94	12.88	12.88	12.77	12.77	12.66
225.0	13.38	13.32	13.32	13.27	13.27	13.27	13.27	13.10	13.10
270.0	13.16	13.16	13.10	13.10	13.16	13.16	12.99	12.94	12.99
315.0	13.16	13.10	13.10	13.10	13.05	12.99	12.83	12.83	12.77
360.0	13.05	13.05	12.99	12.94	12.99	12.88	12.88	12.72	12.72

Intensity data(cd)

C/ $\gamma$ (°)	90.0
0.0	12.66
45.0	13.05
90.0	12.94
135.0	12.77
180.0	12.66
225.0	13.05
270.0	12.94
315.0	12.83
360.0	12.66