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## Nata

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Client:

LumCAT: 1654-S

Luminaire: 92.70.046.00

Report No: NT2018040601

Test No: nata-0100

LampCAT: CREE CXA1512

Lamp flux(lm): 1248.2

Number of Lamps: 1

Length(mm): 32

Phm Type: C

Voltage(V): 35.5000

Current(A): 0.3500

Power (W): 12.4250

PF: 0.0000

Ballast type: DC

Width(mm): 32

Height(mm): 0

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## Photometric Results

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Lumens(lm): 1092.87, Efficiency(%): 87.55% , Luminous Efficacy(lm/W): 87.96

Central intensity(cd): 4012.648, Maximum intensity(cd): 4012.648

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

Beam Angle(50%Imax): [C0/180]Total=24.8

[C90/270]Total=24.8

Field angle(10%Imax): [C0/180]Total=56.4

[C90/270]Total=56.4

Maximum s/h(1/2): C0\_180=0.42 C90\_270=0.42

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(%): 89.39%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in  $\pi$  solid angle : 95.793%

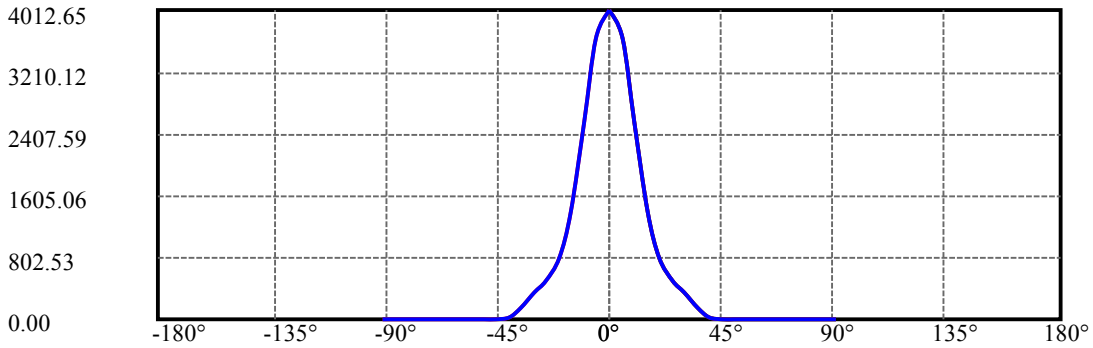
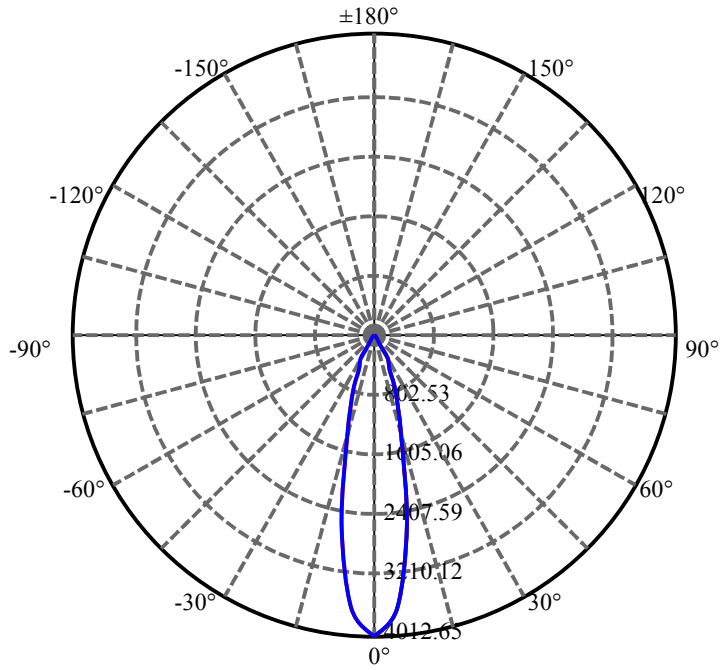
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	4012.648	23.996	23.996	1.922%	2.196%
5.0	3639.985	173.894	197.891	13.931%	18.107%
10.0	2574.850	245.082	442.973	19.634%	40.533%
15.0	1388.791	197.026	639.998	15.784%	58.561%
20.0	785.276	147.219	787.217	11.794%	72.032%
25.0	508.109	117.705	904.922	9.430%	82.802%
30.0	341.783	93.672	998.594	7.504%	91.373%
35.0	151.653	47.679	1046.274	3.820%	95.736%
40.0	29.311	10.327	1056.601	.827%	96.681%
45.0	8.155	3.161	1059.762	.253%	96.970%
50.0	6.910	2.901	1062.663	.232%	97.236%
55.0	6.751	3.031	1065.694	.243%	97.513%
60.0	6.731	3.195	1068.889	.256%	97.806%
65.0	6.799	3.378	1072.267	.271%	98.115%
70.0	7.729	3.981	1076.248	.319%	98.479%
75.0	10.557	5.590	1081.838	.448%	98.990%
80.0	10.998	5.937	1087.774	.476%	99.534%
85.0	6.930	3.784	1091.558	.303%	99.880%
90.0	4.790	1.313	1092.871	.105%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	998.59	80.00%	91.37%
0-40	1056.60	84.65%	96.68%
0-60	1068.89	85.63%	97.81%
0-90	1091.56	87.45%	99.88%
0-120	1091.56	87.45%	99.88%
0-180	1092.87	87.55%	100.00%
60-90	25.86	2.07%	2.37%
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%
0-23.70	874.30	70.04%	80.00%

ZONAL LUMEN SUMMARY

0-10	442.97
10-20	344.24
20-30	211.38
30-40	58.01
40-50	6.06
50-60	6.23
60-70	7.36
70-80	11.53
80-90	3.78
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): —————

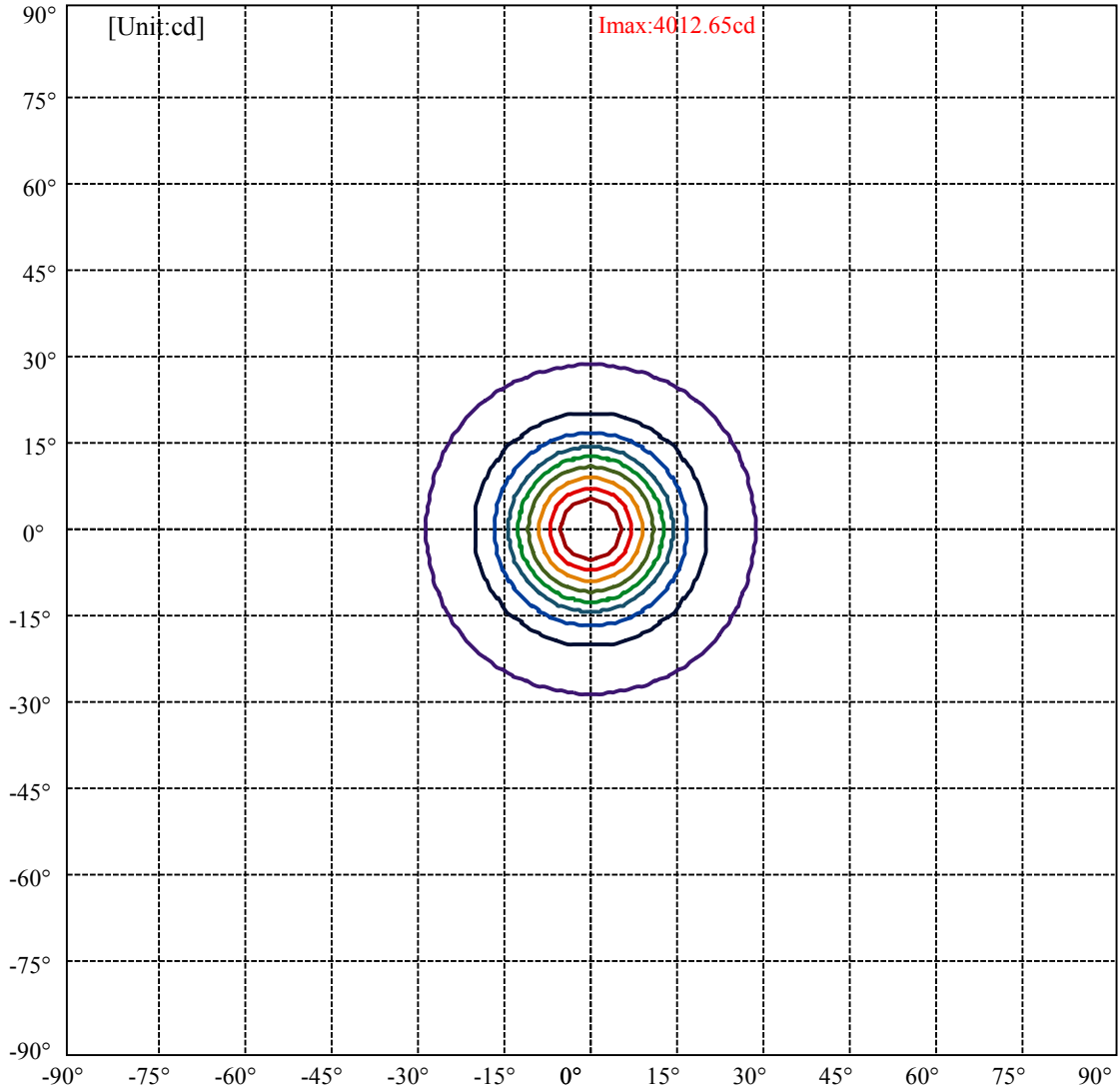
C0/C180: —————

C90/C270: —————

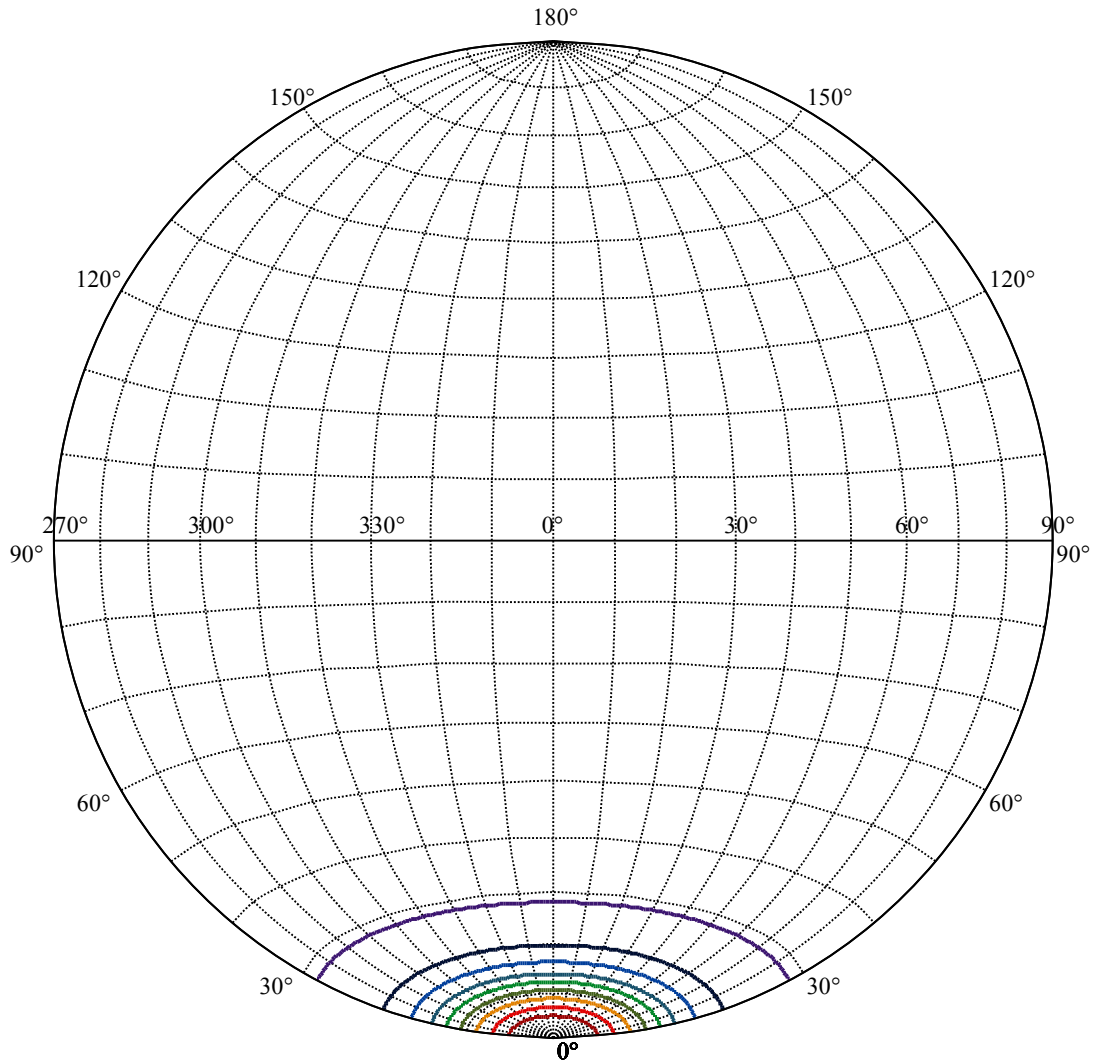
Field angle(10%Imax):C0/180Left:28.2 Right:28.2  
:C90/270Left:28.2 Right:28.2

Beam Angle(50%Imax):C0/180Left:12.4 Right:12.4  
:C90/270Left:12.4 Right:12.4





(10%Imax) 401.265	—
(20%Imax) 802.53	—
(30%Imax) 1203.79	—
(40%Imax) 1605.06	—
(50%Imax) 2006.32	—
(60%Imax) 2407.59	—
(70%Imax) 2808.85	—
(80%Imax) 3210.12	—
(90%Imax) 3611.38	—



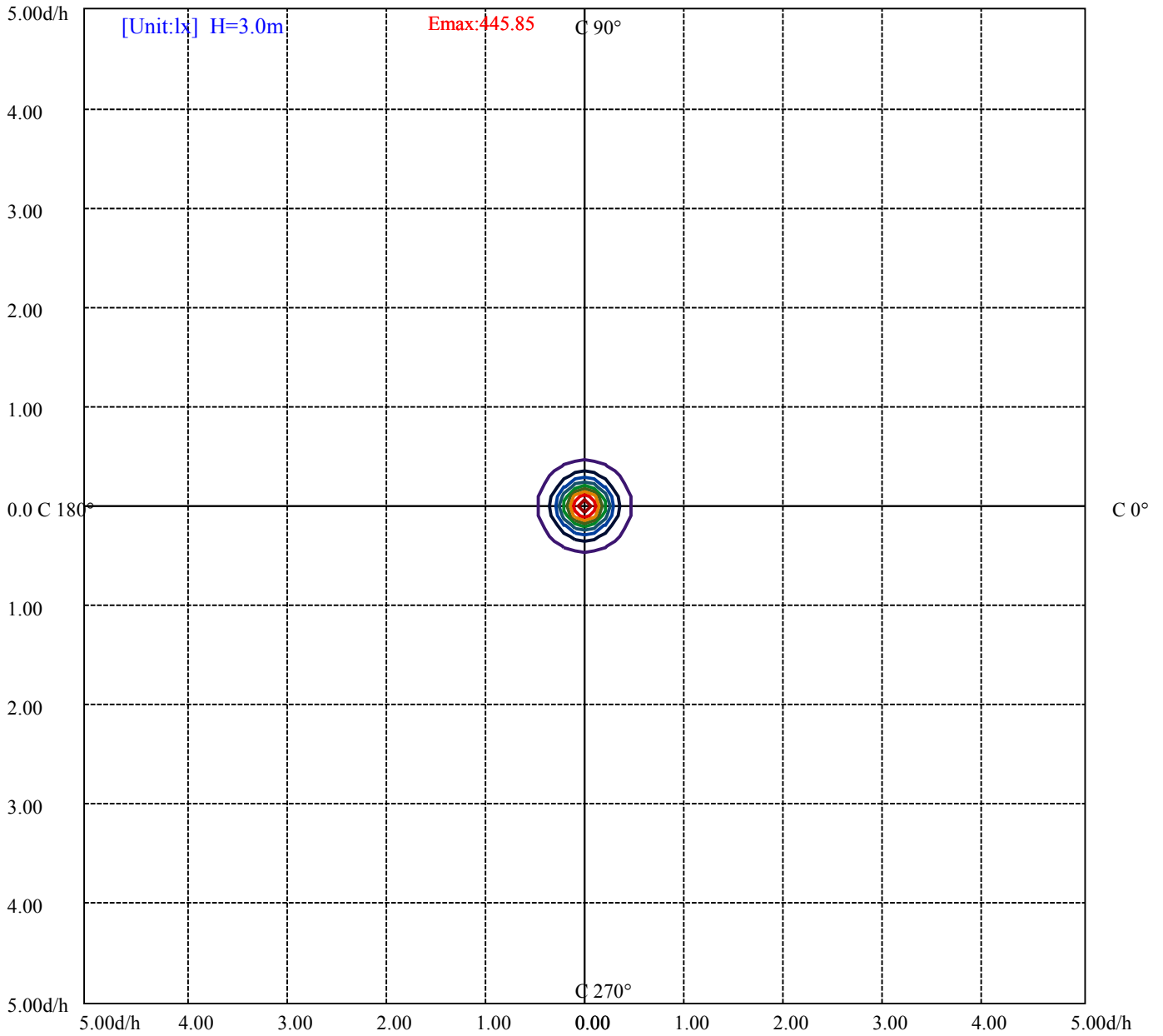
House

[Unit:cd]

Road

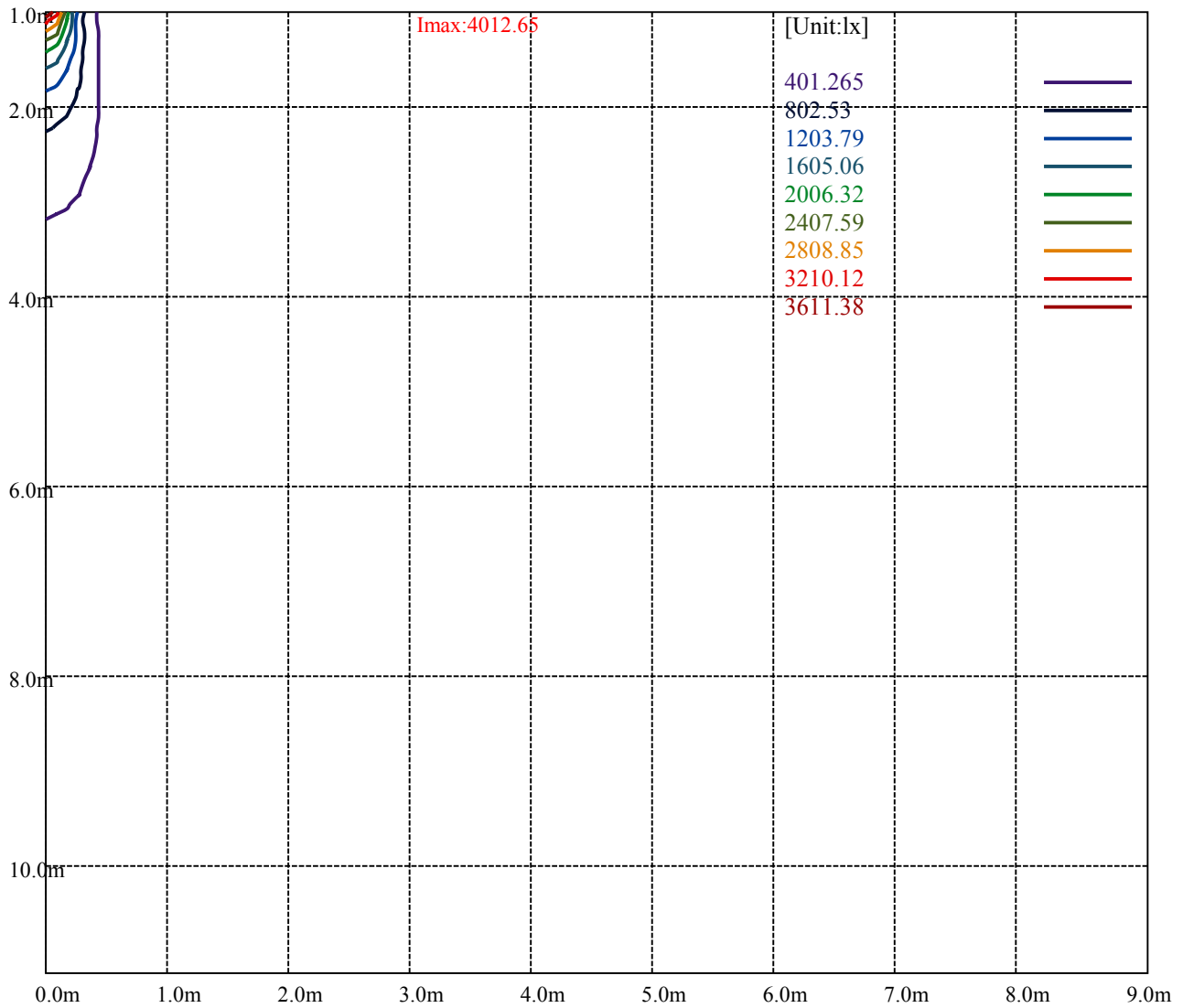
**Imax:4012.65**

(10%Imax) 401.265	—
(20%Imax) 802.53	—
(30%Imax) 1203.79	—
(40%Imax) 1605.06	—
(50%Imax) 2006.32	—
(60%Imax) 2407.59	—
(70%Imax) 2808.85	—
(80%Imax) 3210.12	—
(90%Imax) 3611.38	—



- (10%Emax) 44.58489
- (20%Emax) 89.16966
- (30%Emax) 133.7545
- (40%Emax) 178.3389
- (50%Emax) 222.9244
- (60%Emax) 267.5089
- (70%Emax) 312.0945
- (80%Emax) 356.6789
- (90%Emax) 401.2633





Luminance Table

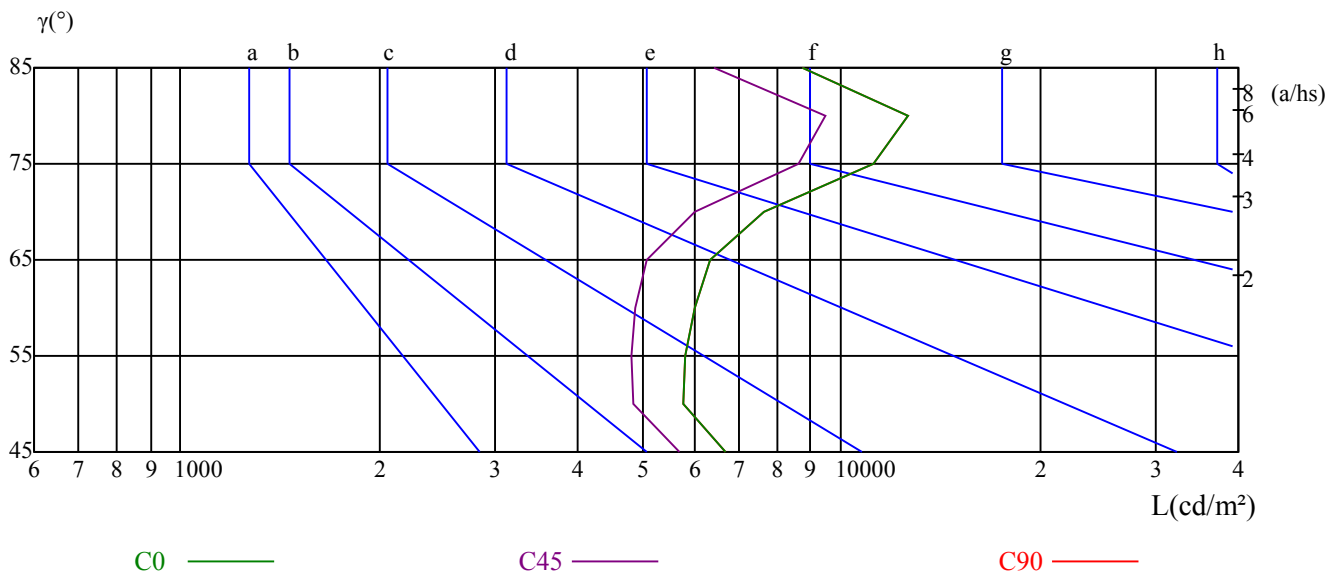
$\gamma$	45	50	55	60	65	70	75	80	85
C0	6674	5770	5800	6000	6350	7639	11171	12625	8766
C45	5711	4863	4812	4898	5093	6011	8606	9495	6411
C90	6674	5770	5800	6000	6350	7639	11171	12625	8766

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
15712	15712	15712	39833	39833	39833	77652	77652	77652

Glare Table

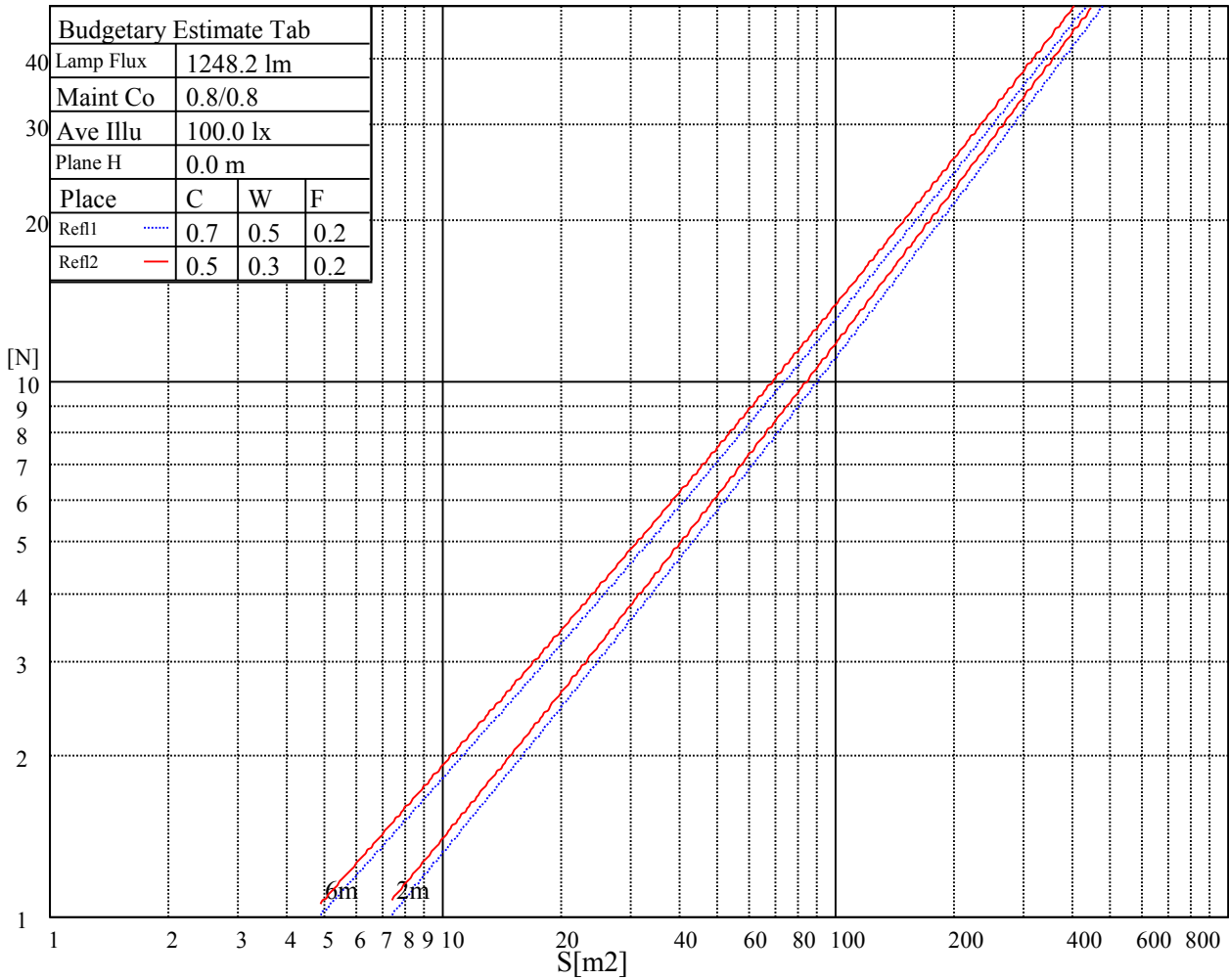
Glare	Quality	Service Values Illuminance(lx)							
		a	b	c	d	e	f	g	h
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

Luminance Limiting Curve

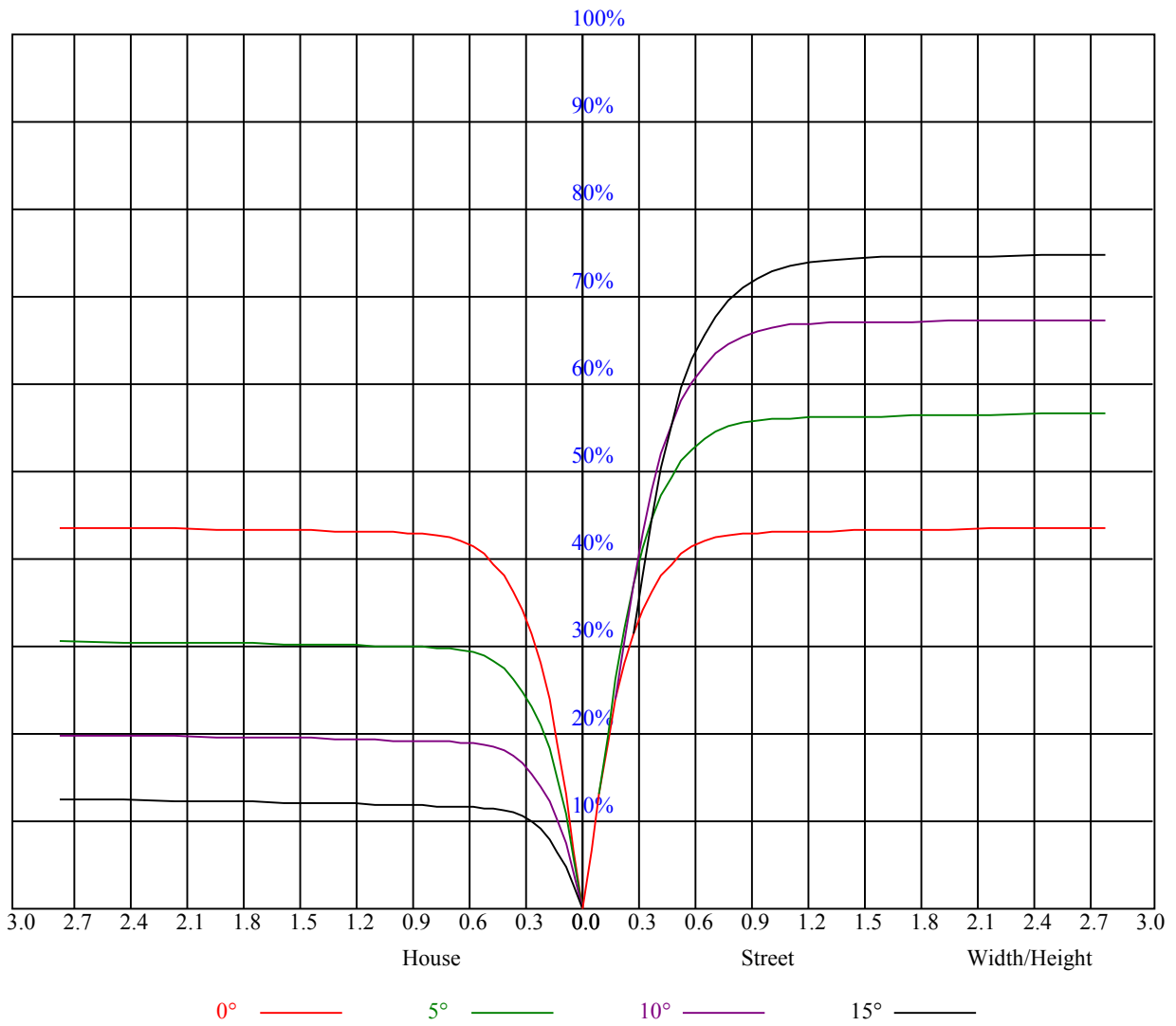


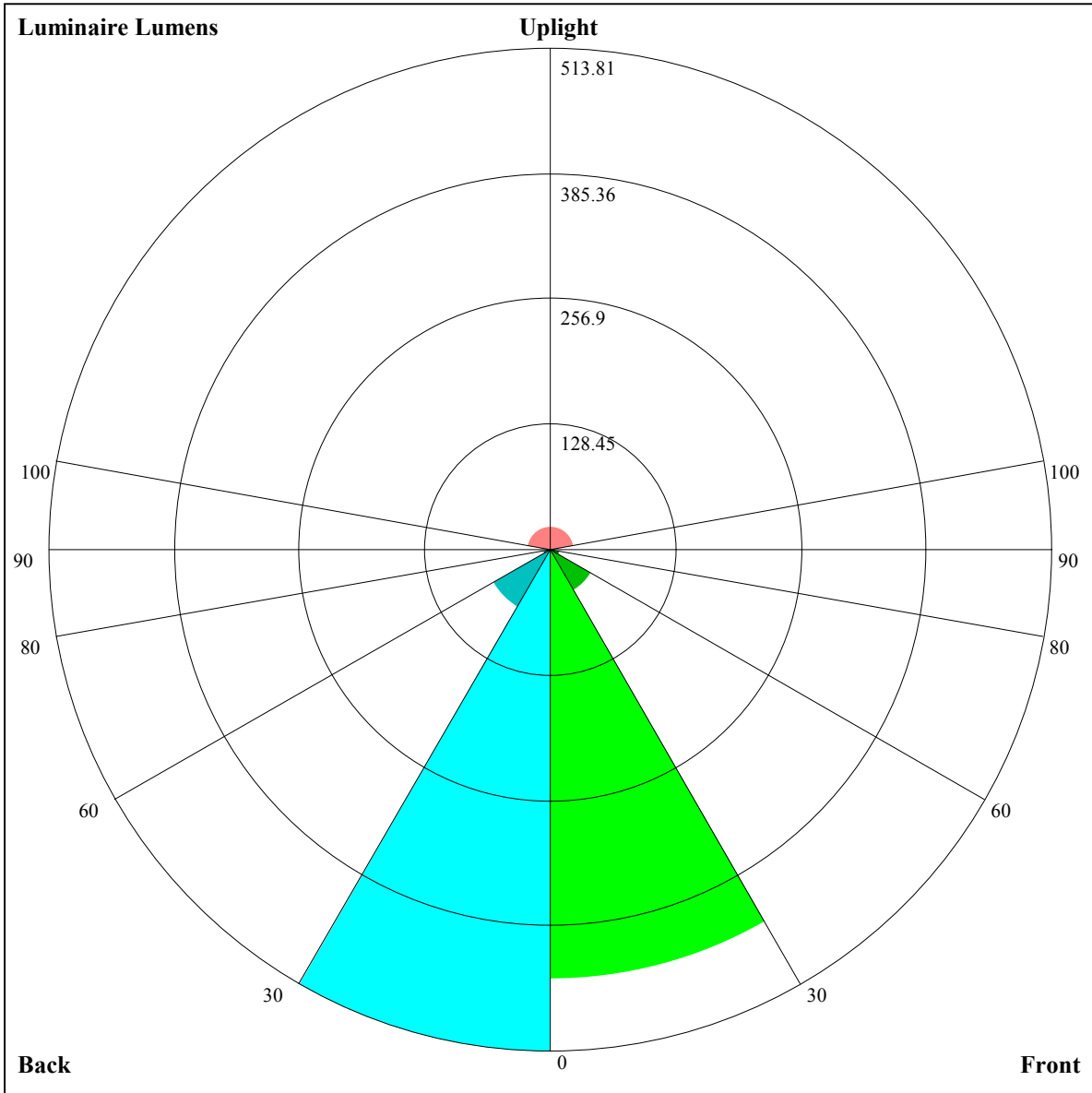
Illumination assessment according UGR											
Rf of Ceiling	70	70	50	50	30	70	70	50	50	30	
Rf of Wall	50	30	50	30	30	50	30	50	30	30	
Rf of Floor	20	20	20	20	20	20	20	20	20	20	
Room dimensions		Viewed crosswise					Viewed endwise				
X	Y										
2H	2H	14.66	15.59	15.02	15.90	16.22	14.87	15.80	15.23	16.11	16.43
	3H	15.43	16.26	15.81	16.59	16.94	15.61	16.44	16.00	16.78	17.13
	4H	16.92	17.69	17.32	18.04	18.41	16.87	17.64	17.27	18.00	18.36
	6H	18.63	19.33	19.05	19.71	20.11	18.21	18.92	18.63	19.29	19.69
	8H	19.21	19.89	19.64	20.27	20.68	18.69	19.36	19.11	19.75	20.16
	12H	19.54	20.17	19.96	20.57	20.99	18.99	19.63	19.42	20.02	20.44
4H	2H	14.58	15.35	14.98	15.70	16.07	14.77	15.54	15.17	15.90	16.27
	3H	15.79	16.44	16.22	16.84	17.26	15.95	16.60	16.37	16.99	17.41
	4H	17.69	18.25	18.13	18.68	19.12	17.59	18.15	18.03	18.58	19.03
	6H	19.53	20.03	20.00	20.48	20.94	19.07	19.57	19.55	20.02	20.48
	8H	20.21	20.67	20.70	21.13	21.61	19.65	20.11	20.14	20.57	21.05
	12H	20.63	21.05	21.12	21.51	22.03	20.05	20.47	20.54	20.93	21.45
8H	4H	18.01	18.47	18.49	18.93	19.40	17.92	18.38	18.40	18.84	19.31
	6H	19.91	20.29	20.42	20.77	21.28	19.47	19.85	19.98	20.33	20.84
	8H	20.72	21.03	21.25	21.56	22.05	20.18	20.49	20.71	21.02	21.51
	12H	21.24	21.48	21.79	22.00	22.52	20.69	20.93	21.23	21.44	21.97
12H	4H	18.04	18.47	18.53	18.92	19.44	17.97	18.39	18.46	18.84	19.37
	6H	19.99	20.30	20.52	20.83	21.32	19.57	19.89	20.11	20.41	20.91
	8H	20.79	21.03	21.34	21.55	22.07	20.28	20.52	20.82	21.03	21.56
Variation with the observer position at spacings:											
S = 1.0H	4.7/-4.1					4.7/-4.1					
S = 1.5H	5.7/-2.7					5.7/-2.7					
S = 2.0H	6.6/-1.6					6.6/-1.6					
Standard tables:	BK4					BK4					
Uncorrected UGR	1.3					1.3					

UGR calculation is based on CIE Publ. 117 ,S/H = 0.25



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	0.98	0.95	0.93	0.96	0.94	0.91	0.92	0.90	0.89	0.89	0.87	0.86	0.86	0.85	0.83	0.82
2	0.93	0.89	0.86	0.91	0.88	0.85	0.88	0.86	0.83	0.86	0.84	0.82	0.83	0.82	0.80	0.79
3	0.88	0.84	0.81	0.87	0.84	0.81	0.85	0.82	0.79	0.83	0.80	0.78	0.81	0.79	0.77	0.76
4	0.85	0.80	0.77	0.84	0.80	0.77	0.82	0.79	0.76	0.80	0.77	0.75	0.79	0.76	0.74	0.73
5	0.81	0.77	0.74	0.81	0.77	0.74	0.79	0.76	0.73	0.78	0.75	0.72	0.76	0.74	0.72	0.71
6	0.78	0.74	0.71	0.78	0.74	0.71	0.77	0.73	0.70	0.75	0.72	0.70	0.74	0.72	0.70	0.69
7	0.76	0.72	0.69	0.75	0.71	0.68	0.74	0.71	0.68	0.73	0.70	0.68	0.72	0.70	0.67	0.66
8	0.73	0.69	0.66	0.73	0.69	0.66	0.72	0.69	0.66	0.71	0.68	0.66	0.71	0.68	0.66	0.65
9	0.71	0.67	0.64	0.71	0.67	0.64	0.70	0.67	0.64	0.69	0.66	0.64	0.69	0.66	0.64	0.63
10	0.69	0.65	0.63	0.69	0.65	0.63	0.68	0.65	0.62	0.68	0.64	0.62	0.67	0.64	0.62	0.61





Luminaire Lumens:

FL=440.38,FM=48.64,FH=9.57,FVH=4.1

BL=513.81,BM=68.49,BH=7.96,BVH=3.99

UL=5.23,UH=24.87

BUG Rating:B2-U2-G0

Intensity data(cd)

C/ $\gamma$ (°)	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0
0.0	4018.57	3405.24	2187.94	1141.87	672.24	451.46	285.19	94.20	12.28
45.0	4041.14	3475.71	2200.60	1231.61	680.50	463.02	282.99	94.15	12.66
90.0	3994.34	3421.76	2233.64	1061.38	683.47	477.83	295.43	104.94	14.09
135.0	3996.54	3796.14	2971.94	1648.39	868.24	558.82	403.01	228.81	46.91
180.0	4018.57	3895.24	2951.02	1623.61	899.84	550.89	389.08	209.65	51.81
225.0	4041.14	3886.43	2975.80	1686.38	914.76	560.14	402.74	197.54	48.67
270.0	3994.34	3806.05	2904.78	1655.00	883.10	544.51	392.55	188.29	36.61
315.0	3996.54	3433.32	2173.08	1062.09	680.06	458.18	283.27	95.63	11.45
360.0	4018.57	3405.24	2187.94	1141.87	672.24	451.46	285.19	94.20	12.28
C/ $\gamma$ (°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	7.60	7.38	7.32	7.43	7.54	9.30	15.86	15.53	7.98
45.0	7.71	7.49	7.38	7.43	7.60	9.74	11.73	6.55	5.56
90.0	7.49	7.10	6.99	6.94	6.94	10.13	14.31	12.83	7.38
135.0	8.97	6.77	6.55	6.39	6.39	6.39	9.30	12.83	6.66
180.0	9.08	6.66	6.44	6.39	6.50	6.61	6.99	8.20	7.43
225.0	8.81	6.50	6.28	6.33	6.44	6.61	6.77	8.75	7.21
270.0	8.48	6.55	6.33	6.22	6.22	6.17	6.39	9.80	6.33
315.0	7.10	6.83	6.72	6.72	6.77	6.88	13.10	13.49	6.88
360.0	7.60	7.38	7.32	7.43	7.54	9.30	15.86	15.53	7.98
C/ $\gamma$ (°)	90.0								
0.0	4.73								
45.0	4.73								
90.0	4.79								
135.0	4.79								
180.0	4.79								
225.0	4.79								
270.0	4.90								
315.0	4.79								
360.0	4.73								