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## NATA

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LumCAT: 3-1546-A3  
Luminaire: 99.02.73.172+92.76.365.00  
Report No: NATA0100  
Test No: GC2019011520  
LampCAT: CITIZEN CLU720  
Lamp flux(lm): 1995.0  
Number of Lamps: 1  
Length(mm): 84  
Phm Type: C

Voltage(V): 35.0000  
Current(A): 0.5000  
Power (W): 17.5000  
PF: 0.0000  
Ballast type: DC  
Width(mm): 84  
Height(mm): 0

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## Photometric Results

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Lumens(lm): 1838.71  
Efficiency(%): 92.17%  
Lumens(lm)/Power(W): 107.55  
Central intensity(cd): 7539.468  
Maximum intensity(cd): 7539.468  
Angle of maximum intensity: C=0.0  $\gamma$ =0.0  
Beam Angle(50%Imax): [C0/180]Total=23.3  
                                  [C90/270]Total=23.3  
Field angle(10%Imax): [C0/180]Total=49.0  
                                  [C90/270]Total=49.0  
Maximum s/h(1/2): C0\_180=0.40 C90\_270=0.40  
Maximum s/h(1/4): C0\_180=0.40 C90\_270=0.40  
Up flux rate of lamp(%): 0.00%  
Down flux rate of lamp(%): 94.34%  
Up flux rate of LUM(%): - -  
Down flux rate of LUM(%): 100.00%  
CIE Type : Direct lighting  
Output flux ratio in  $\pi$  solid angle : 96.546%

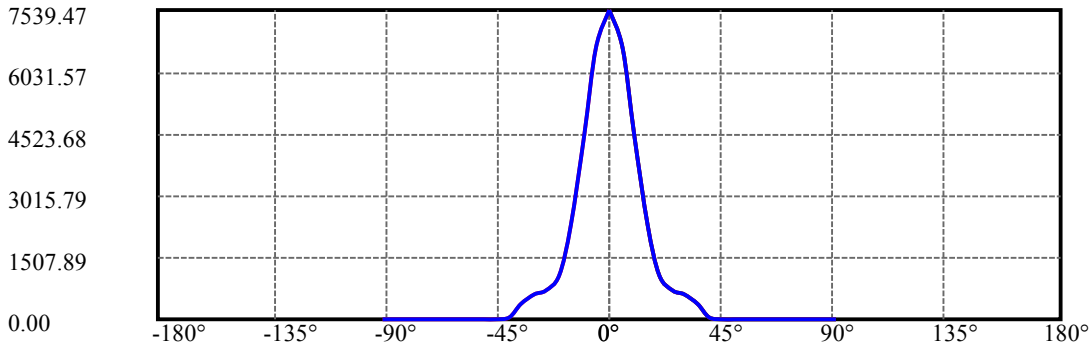
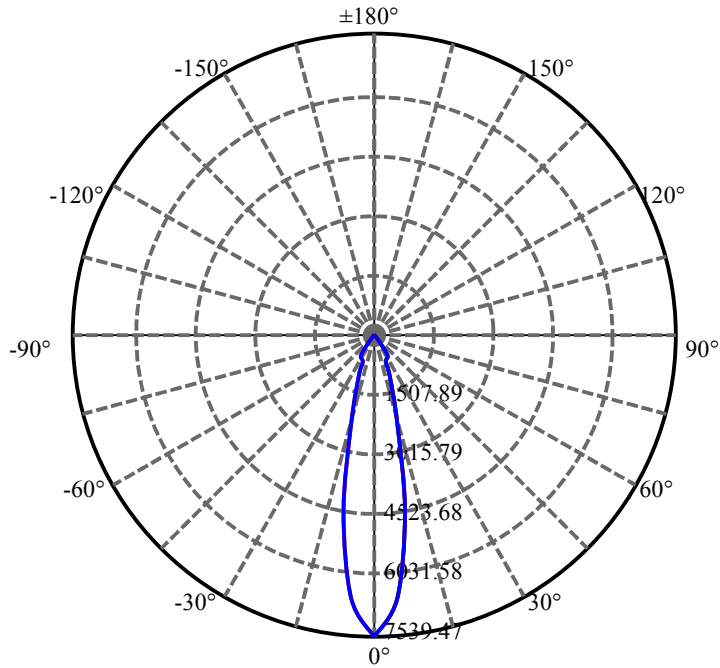
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	7539.469	45.088	45.088	2.260%	2.452%
5.0	6609.656	315.765	360.853	15.828%	19.625%
10.0	4507.031	428.993	789.846	21.503%	42.956%
15.0	2281.430	323.663	1113.509	16.224%	60.559%
20.0	1094.829	205.252	1318.761	10.288%	71.722%
25.0	715.978	165.858	1484.619	8.314%	80.742%
30.0	631.617	173.106	1657.725	8.677%	90.157%
35.0	388.406	122.114	1779.84	6.121%	96.798%
40.0	59.850	21.087	1800.927	1.057%	97.945%
45.0	12.790	4.957	1805.884	.248%	98.215%
50.0	8.796	3.693	1809.578	.185%	98.415%
55.0	8.255	3.706	1813.284	.186%	98.617%
60.0	7.931	3.765	1817.049	.189%	98.822%
65.0	7.720	3.835	1820.885	.192%	99.030%
70.0	7.559	3.893	1824.778	.195%	99.242%
75.0	7.467	3.954	1828.731	.198%	99.457%
80.0	7.369	3.978	1832.709	.199%	99.673%
85.0	7.341	4.008	1836.717	.201%	99.891%
90.0	7.284	1.996	1838.714	.100%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1657.73	83.09%	90.16%
0-40	1800.93	90.27%	97.94%
0-60	1817.05	91.08%	98.82%
0-90	1836.72	92.07%	99.89%
0-120	1836.72	92.07%	99.89%
0-180	1838.71	92.17%	100.00%
60-90	23.43	1.17%	1.27%
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%
0-24.59	1470.97	73.73%	80.00%

ZONAL LUMEN SUMMARY

0-10	789.85
10-20	528.91
20-30	338.96
30-40	143.20
40-50	8.65
50-60	7.47
60-70	7.73
70-80	7.93
80-90	4.01
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: —————

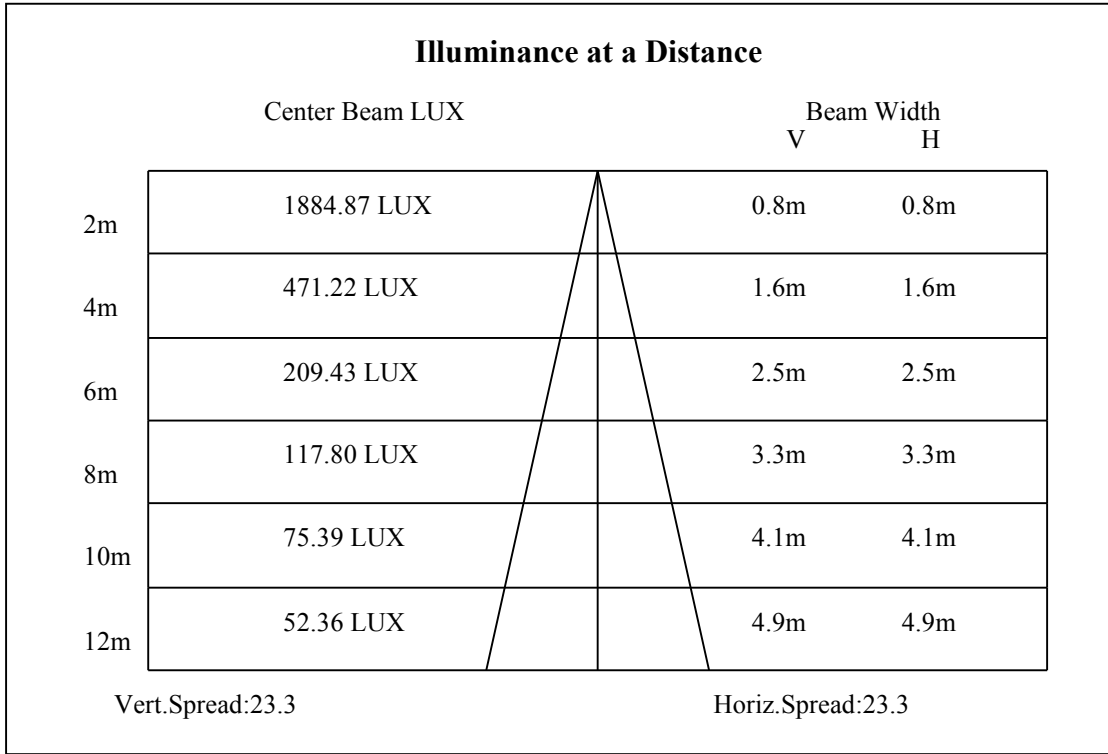
C90/C270: —————

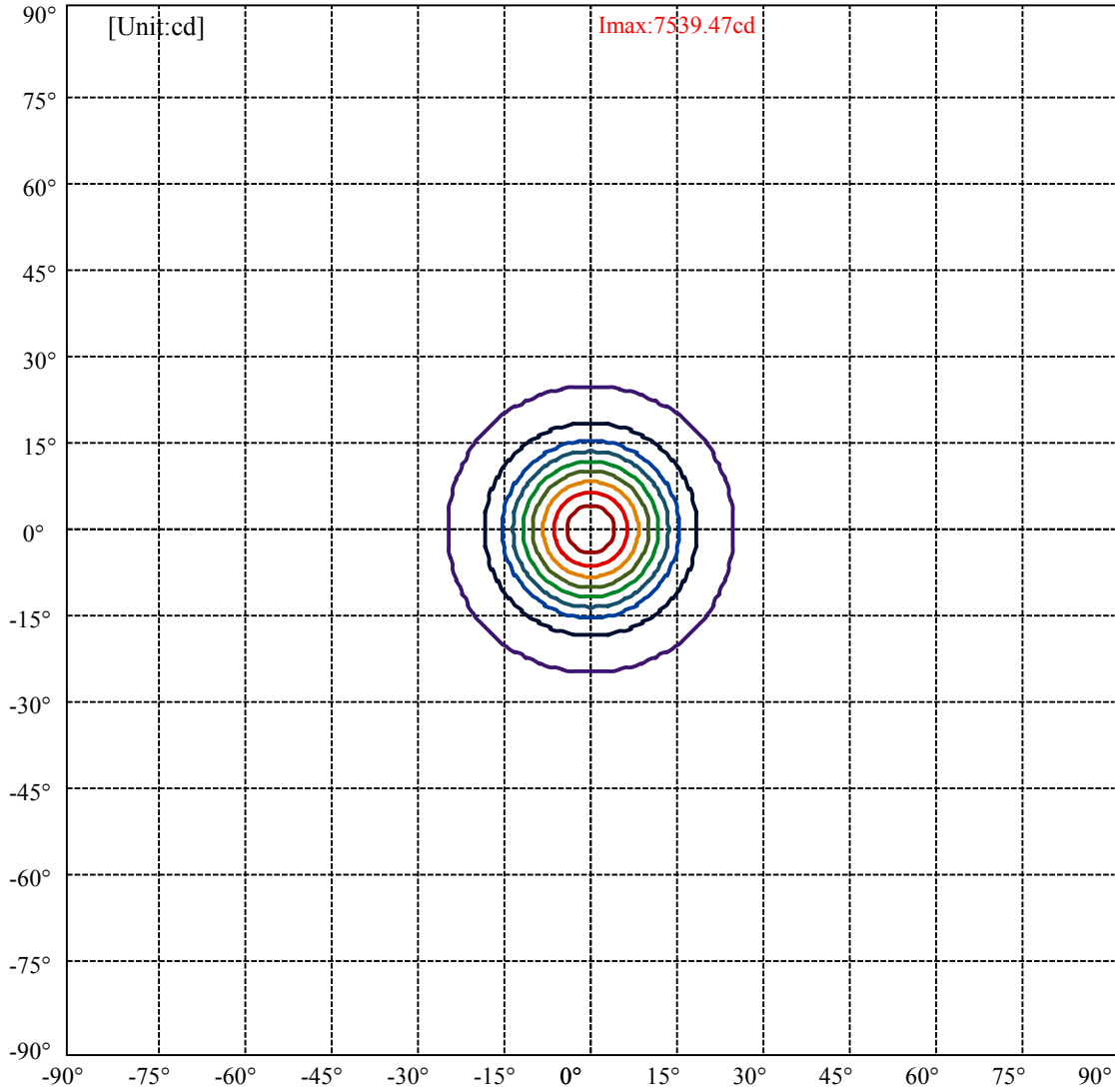
Field angle(10%Imax):C0/180Left:24.5 Right:24.5

:C90/270Left:24.5 Right:24.5

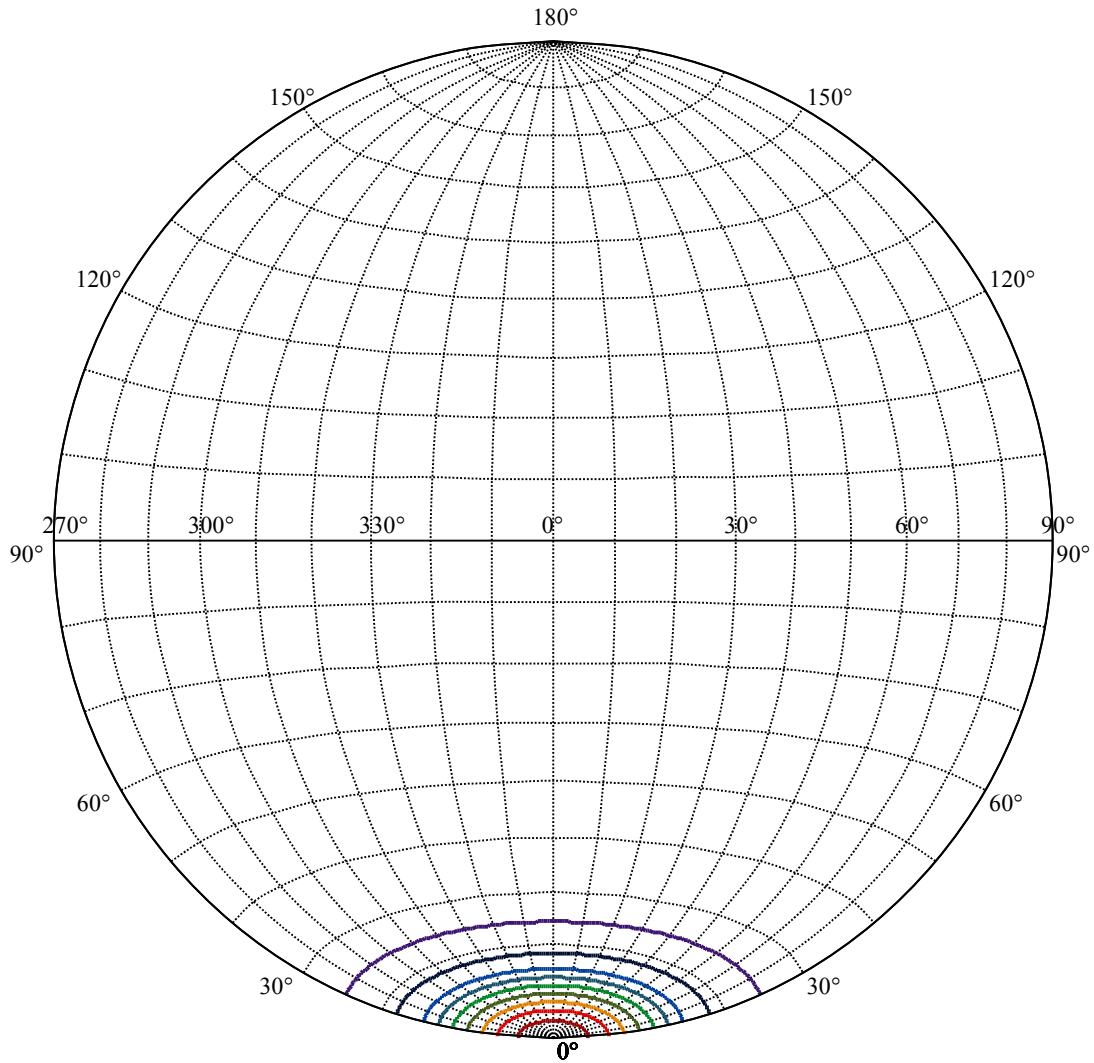
Beam Angle(50%Imax):C0/180Left:11.7 Right:11.7

:C90/270Left:11.7 Right:11.7





(10%Imax) 753.947	—
(20%Imax) 1507.89	—
(30%Imax) 2261.84	—
(40%Imax) 3015.79	—
(50%Imax) 3769.73	—
(60%Imax) 4523.68	—
(70%Imax) 5277.63	—
(80%Imax) 6031.57	—
(90%Imax) 6785.52	—



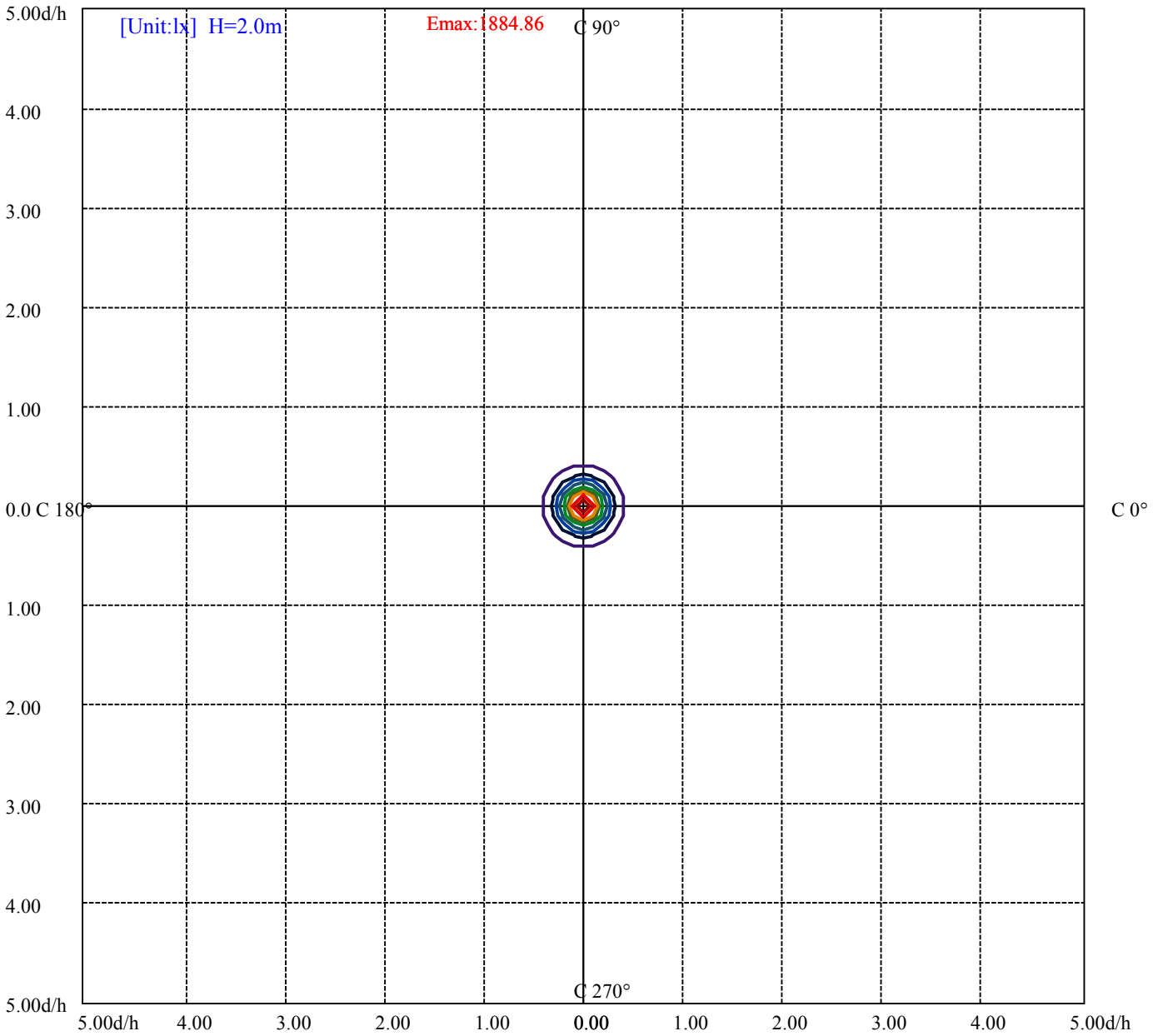
House

[Unit:cd]

Road

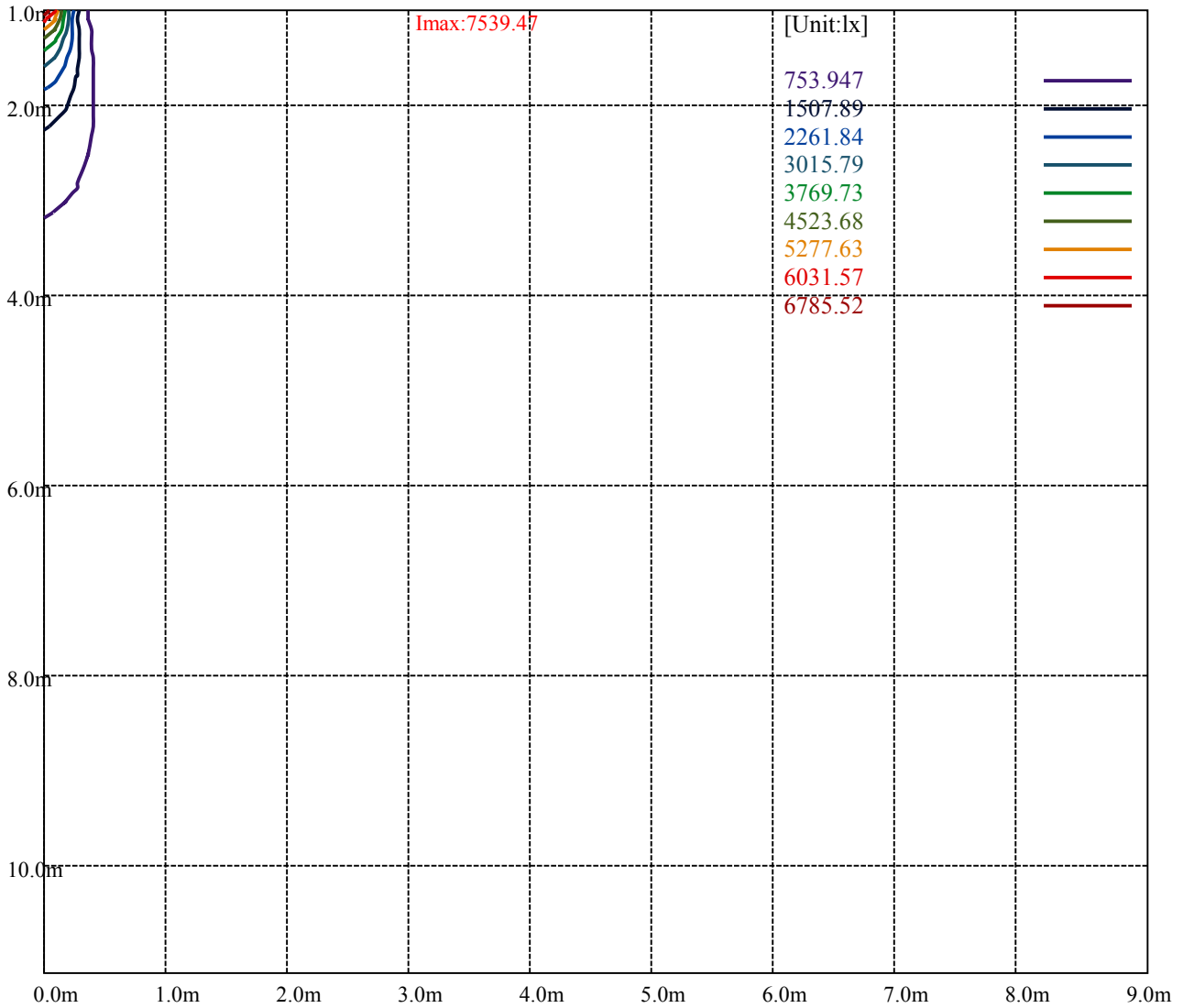
I<sub>max</sub>:7539.47

(10%I <sub>max</sub> ) 753.947	—
(20%I <sub>max</sub> ) 1507.89	—
(30%I <sub>max</sub> ) 2261.84	—
(40%I <sub>max</sub> ) 3015.79	—
(50%I <sub>max</sub> ) 3769.73	—
(60%I <sub>max</sub> ) 4523.68	—
(70%I <sub>max</sub> ) 5277.63	—
(80%I <sub>max</sub> ) 6031.57	—
(90%I <sub>max</sub> ) 6785.52	—



(10%Emax) 188.486	—
(20%Emax) 376.9725	—
(30%Emax) 565.4575	—
(40%Emax) 753.945	—
(50%Emax) 942.43	—
(60%Emax) 1130.915	—
(70%Emax) 1319.402	—
(80%Emax) 1507.887	—
(90%Emax) 1696.375	—





Luminance Table

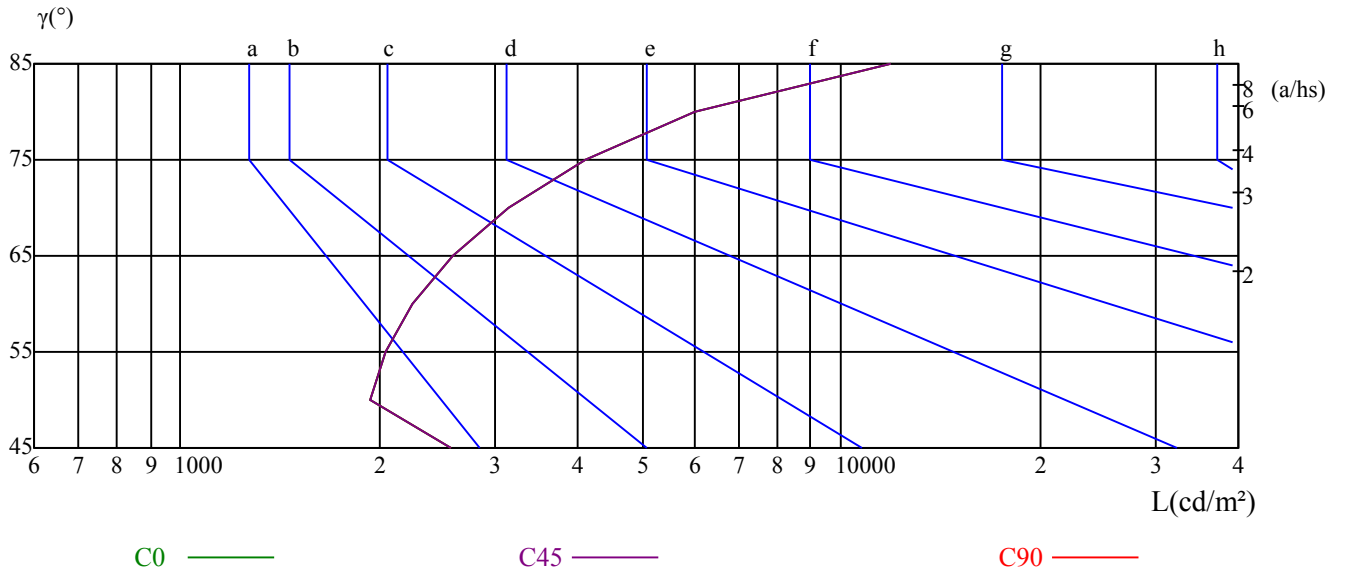
$\gamma$	45	50	55	60	65	70	75	80	85
C0	2563	1939	2040	2248	2589	3132	4089	6014	11937
C45	2563	1939	2040	2248	2589	3132	4089	6014	11937
C90	2563	1939	2040	2248	2589	3132	4089	6014	11937

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
2589	2589	2589	4089	4089	4089	11937	11937	11937

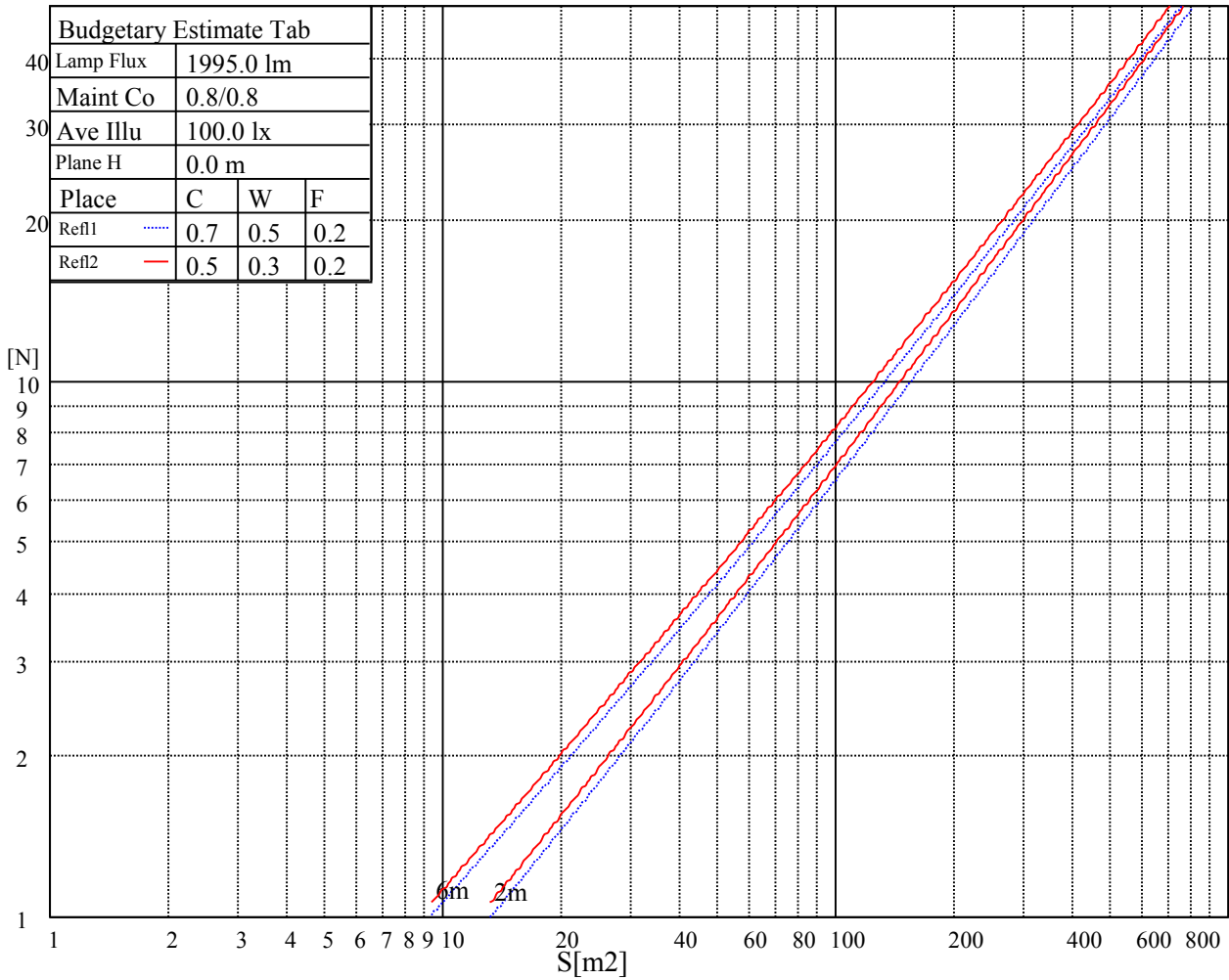
Glare Table

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

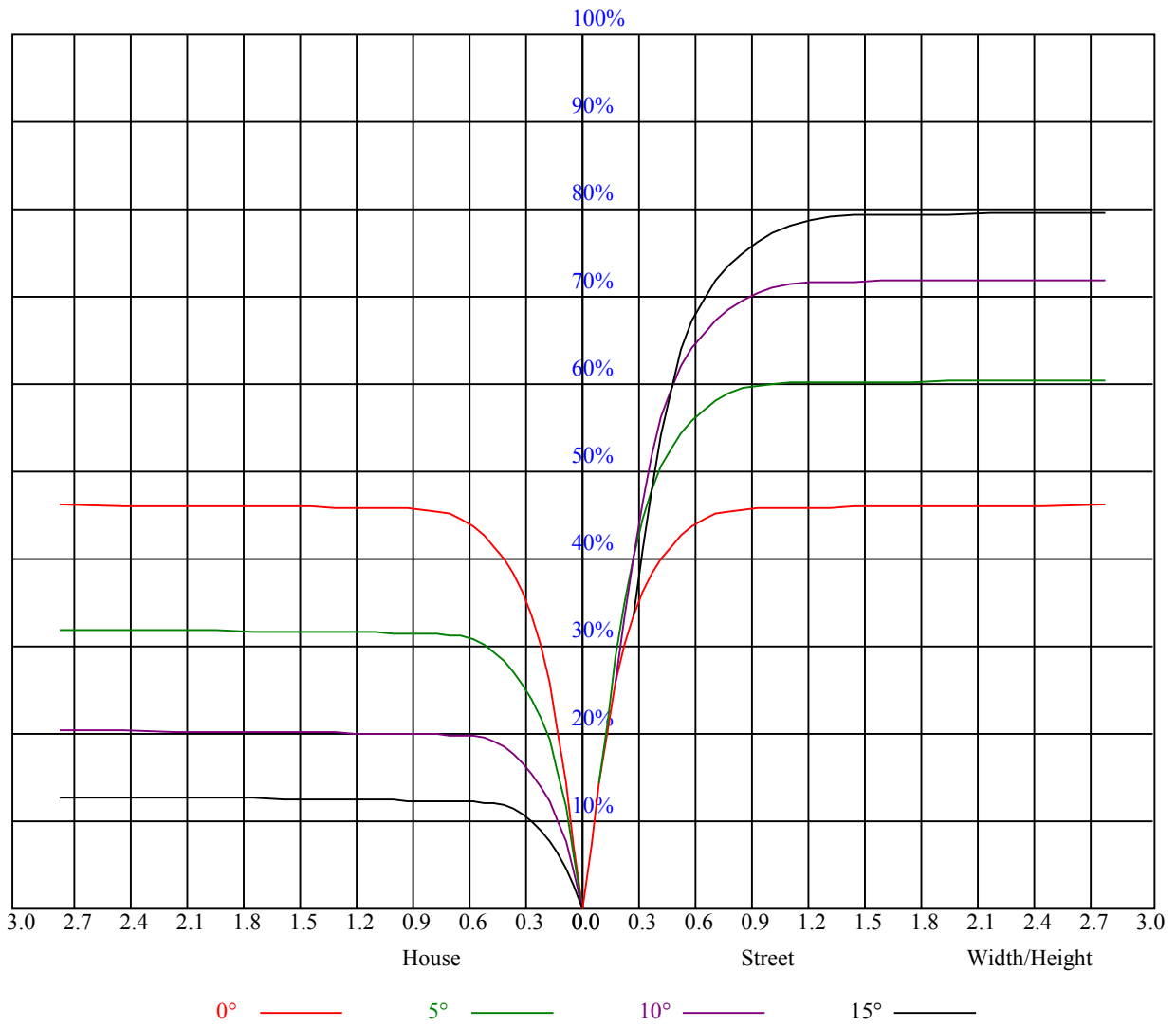
Luminance Limiting Curve



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	0.99	1.90	1.36	2.21	2.53	1.09	2.00	1.45	2.31	2.62
	3H	4.25	5.05	4.63	5.39	5.76	4.33	5.14	4.72	5.47	5.84
	4H	6.01	6.75	6.42	7.11	7.50	6.10	6.84	6.50	7.19	7.58
	6H	7.99	8.67	8.41	9.04	9.44	8.06	8.74	8.48	9.12	9.51
	8H	9.08	9.72	9.52	10.11	10.52	9.15	9.79	9.59	10.18	10.59
	12H	10.86	11.47	11.29	11.85	12.28	10.92	11.53	11.35	11.91	12.34
4H	2H	1.93	2.67	2.33	3.02	3.41	1.99	2.74	2.40	3.09	3.48
	3H	5.41	6.02	5.83	6.43	6.84	5.47	6.08	5.89	6.49	6.90
	4H	7.33	7.88	7.77	8.30	8.75	7.40	7.95	7.84	8.37	8.82
	6H	9.47	9.94	9.95	10.39	10.87	9.53	10.00	10.00	10.45	10.92
	8H	10.66	11.10	11.14	11.55	12.03	10.72	11.15	11.19	11.60	12.08
	12H	12.33	12.71	12.83	13.20	13.68	12.38	12.76	12.88	13.25	13.72
8H	4H	8.07	8.50	8.54	8.95	9.43	8.12	8.55	8.60	9.01	9.48
	6H	10.48	10.82	10.99	11.32	11.81	10.52	10.86	11.03	11.37	11.85
	8H	11.86	12.16	12.39	12.68	13.18	11.90	12.20	12.43	12.72	13.22
	12H	13.66	13.92	14.19	14.42	15.00	13.70	13.96	14.23	14.46	15.04
12H	4H	8.28	8.65	8.77	9.14	9.62	8.33	8.70	8.82	9.19	9.67
	6H	10.99	11.10	11.34	11.57	12.12	11.03	11.14	11.37	11.61	12.16
	8H	12.31	12.57	12.83	13.07	13.65	12.34	12.60	12.87	13.10	13.68
Variation with the observer position at spacings:											
S = 1.0H	5.4/-7.1					5.4/-7.1					
S = 1.5H	7.5/-5.3					7.5/-5.3					
S = 2.0H	8.8/-3.9					8.8/-3.9					
Standard tables:	BK3					BK3					
Uncorrected UGR	-1.1					-1.1					



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	1.12	1.12	1.12	1.10	1.10	1.10	1.05	1.05	1.05	1.00	1.00	1.00	0.96	0.96	0.96	0.94
1	1.03	1.00	0.98	1.01	0.99	0.97	0.97	0.95	0.94	0.94	0.92	0.91	0.90	0.89	0.88	0.86
2	0.98	0.94	0.91	0.96	0.93	0.90	0.93	0.91	0.88	0.91	0.88	0.86	0.88	0.86	0.85	0.83
3	0.93	0.89	0.86	0.92	0.88	0.85	0.90	0.87	0.84	0.88	0.85	0.83	0.86	0.83	0.82	0.80
4	0.90	0.85	0.82	0.89	0.85	0.81	0.87	0.83	0.80	0.85	0.82	0.80	0.83	0.81	0.79	0.77
5	0.86	0.82	0.78	0.85	0.81	0.78	0.84	0.80	0.77	0.82	0.79	0.77	0.81	0.78	0.76	0.75
6	0.83	0.79	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
7	0.80	0.76	0.73	0.80	0.76	0.73	0.79	0.75	0.72	0.78	0.74	0.72	0.77	0.74	0.72	0.70
8	0.78	0.73	0.70	0.77	0.73	0.70	0.76	0.73	0.70	0.75	0.72	0.70	0.75	0.72	0.70	0.69
9	0.75	0.71	0.68	0.75	0.71	0.68	0.74	0.71	0.68	0.74	0.70	0.68	0.73	0.70	0.68	0.67
10	0.73	0.69	0.66	0.73	0.69	0.66	0.72	0.69	0.66	0.72	0.68	0.66	0.71	0.68	0.66	0.65



Intensity data(cd)

C/γ(°)	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0
0.0	7458.75	7385.63	5623.88	3046.50	1528.88	798.19	664.88	596.81	286.31
45.0	7547.63	7097.06	5031.56	2631.94	1254.38	731.81	636.75	500.06	43.93
90.0	7560.56	6359.06	4037.06	2008.69	931.89	689.23	613.52	315.34	22.67
135.0	7590.94	6292.13	4113.56	1974.94	953.44	689.63	622.13	284.63	22.16
180.0	7458.75	5814.00	3360.38	1619.44	842.01	661.61	599.06	156.94	16.93
225.0	7547.63	6217.88	3906.56	1949.06	932.91	689.34	627.64	290.53	23.51
270.0	7560.56	6845.63	5071.50	2527.88	1200.38	738.00	648.00	487.69	32.74
315.0	7590.94	6865.88	4911.75	2493.00	1114.76	730.01	640.97	475.26	30.54
360.0	7458.75	7385.63	5623.88	3046.50	1528.88	798.19	664.88	596.81	286.31

C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	17.61	9.39	8.55	8.10	7.88	7.65	7.54	7.43	7.37
45.0	13.84	8.89	8.33	7.99	7.76	7.59	7.48	7.37	7.31
90.0	9.39	8.61	8.10	7.82	7.65	7.48	7.37	7.31	7.31
135.0	9.56	8.66	8.21	7.93	7.71	7.54	7.48	7.37	7.31
180.0	9.11	8.55	8.16	7.88	7.65	7.54	7.48	7.43	7.37
225.0	9.34	8.49	8.10	7.82	7.65	7.54	7.43	7.31	7.43
270.0	17.72	8.78	8.21	7.88	7.71	7.54	7.48	7.37	7.31
315.0	15.75	9.00	8.38	8.04	7.76	7.59	7.48	7.37	7.31
360.0	17.61	9.39	8.55	8.10	7.88	7.65	7.54	7.43	7.37

C/γ(°)	90.0
0.0	7.31
45.0	7.26
90.0	7.26
135.0	7.26
180.0	7.31
225.0	7.31
270.0	7.26
315.0	7.31
360.0	7.31