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## NATA

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LumCAT: 3-1547-A3  
Luminaire: 99.02.73.172+92.76.365.00  
Report No: NATA0100  
Test No: GC2019011521  
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): 1823.17  
Efficiency(%): 91.39%  
Lumens(lm)/Power(W): 105.44  
Central intensity(cd): 3978.984  
Maximum intensity(cd): 3978.984  
Angle of maximum intensity: C=0.0  $\gamma$ =0.0  
Beam Angle(50%Imax): [C0/180]Total=37.8  
                                  [C90/270]Total=37.8  
Field angle(10%Imax): [C0/180]Total=69.8  
                                  [C90/270]Total=69.8  
Maximum s/h(1/2): C0\_180=0.62 C90\_270=0.62  
Maximum s/h(1/4): C0\_180=0.62 C90\_270=0.62  
Up flux rate of lamp(%): 0.00%  
Down flux rate of lamp(%): 92.49%  
Up flux rate of LUM(%): - -  
Down flux rate of LUM(%): 100.00%  
CIE Type : Direct lighting  
Output flux ratio in  $\pi$  solid angle : 97.579%

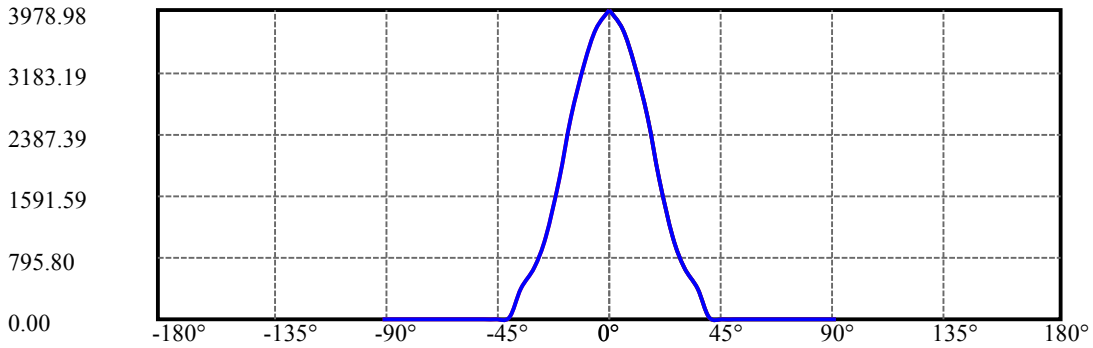
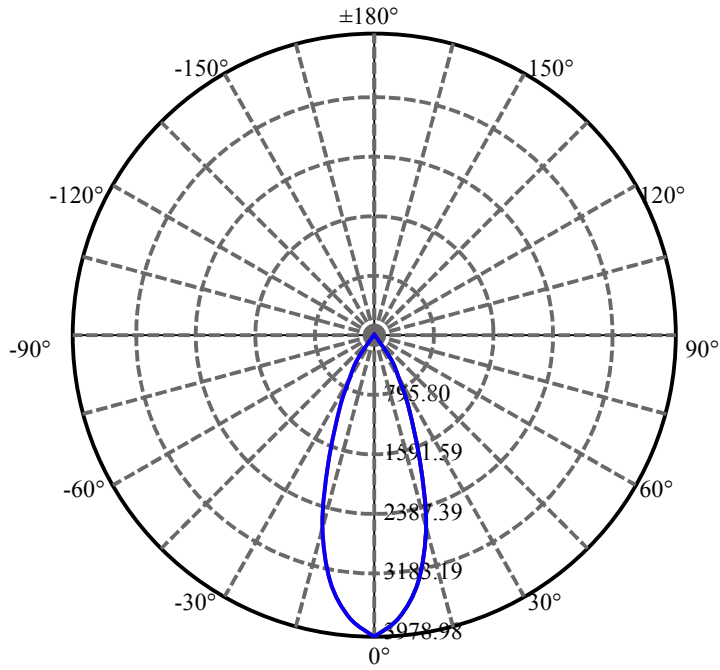
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	3978.984	23.795	23.795	1.193%	1.305%
5.0	3733.453	178.359	202.155	8.940%	11.088%
10.0	3293.719	313.506	515.661	15.715%	28.284%
15.0	2598.117	368.591	884.252	18.476%	48.501%
20.0	1813.922	340.063	1224.315	17.046%	67.153%
25.0	1053.886	244.136	1468.45	12.237%	80.544%
30.0	672.398	184.283	1652.734	9.237%	90.652%
35.0	391.507	123.089	1775.823	6.170%	97.403%
40.0	25.270	8.904	1784.727	.446%	97.891%
45.0	10.343	4.009	1788.736	.201%	98.111%
50.0	9.302	3.906	1792.642	.196%	98.326%
55.0	8.761	3.934	1796.575	.197%	98.541%
60.0	8.395	3.985	1800.561	.200%	98.760%
65.0	8.128	4.038	1804.599	.202%	98.981%
70.0	7.931	4.085	1808.684	.205%	99.205%
75.0	7.777	4.117	1812.801	.206%	99.431%
80.0	7.692	4.152	1816.953	.208%	99.659%
85.0	7.601	4.150	1821.104	.208%	99.887%
90.0	7.538	2.066	1823.17	.104%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1652.73	82.84%	90.65%
0-40	1784.73	89.46%	97.89%
0-60	1800.56	90.25%	98.76%
0-90	1821.10	91.28%	99.89%
0-120	1821.10	91.28%	99.89%
0-180	1823.17	91.39%	100.00%
60-90	24.53	1.23%	1.35%
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%
0-24.80	1458.54	73.11%	80.00%

ZONAL LUMEN SUMMARY

0-10	515.66
10-20	708.65
20-30	428.42
30-40	131.99
40-50	7.91
50-60	7.92
60-70	8.12
70-80	8.27
80-90	4.15
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

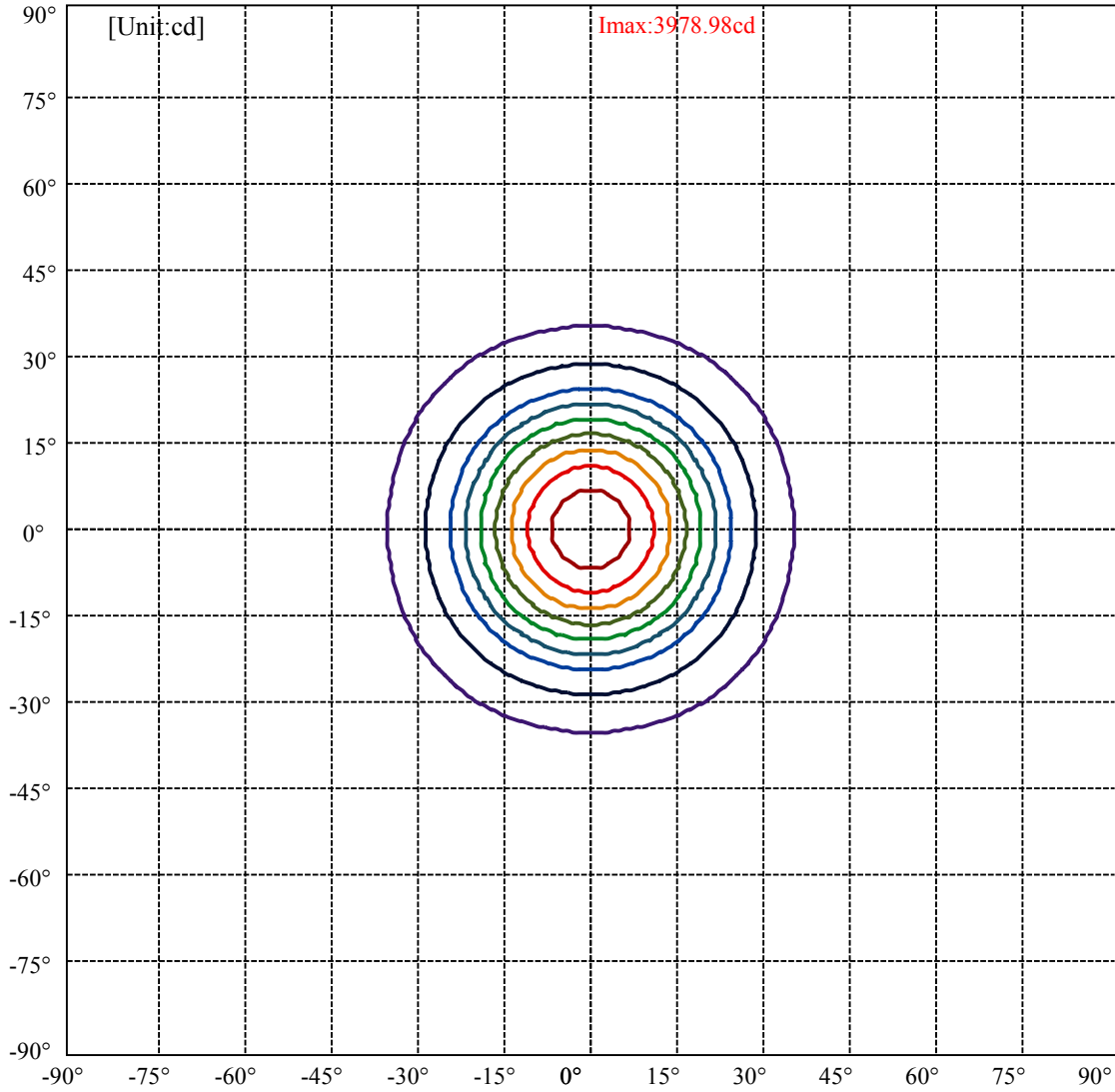


C0(Max): ———  
 C0/C180: ———  
 C90/C270: ———

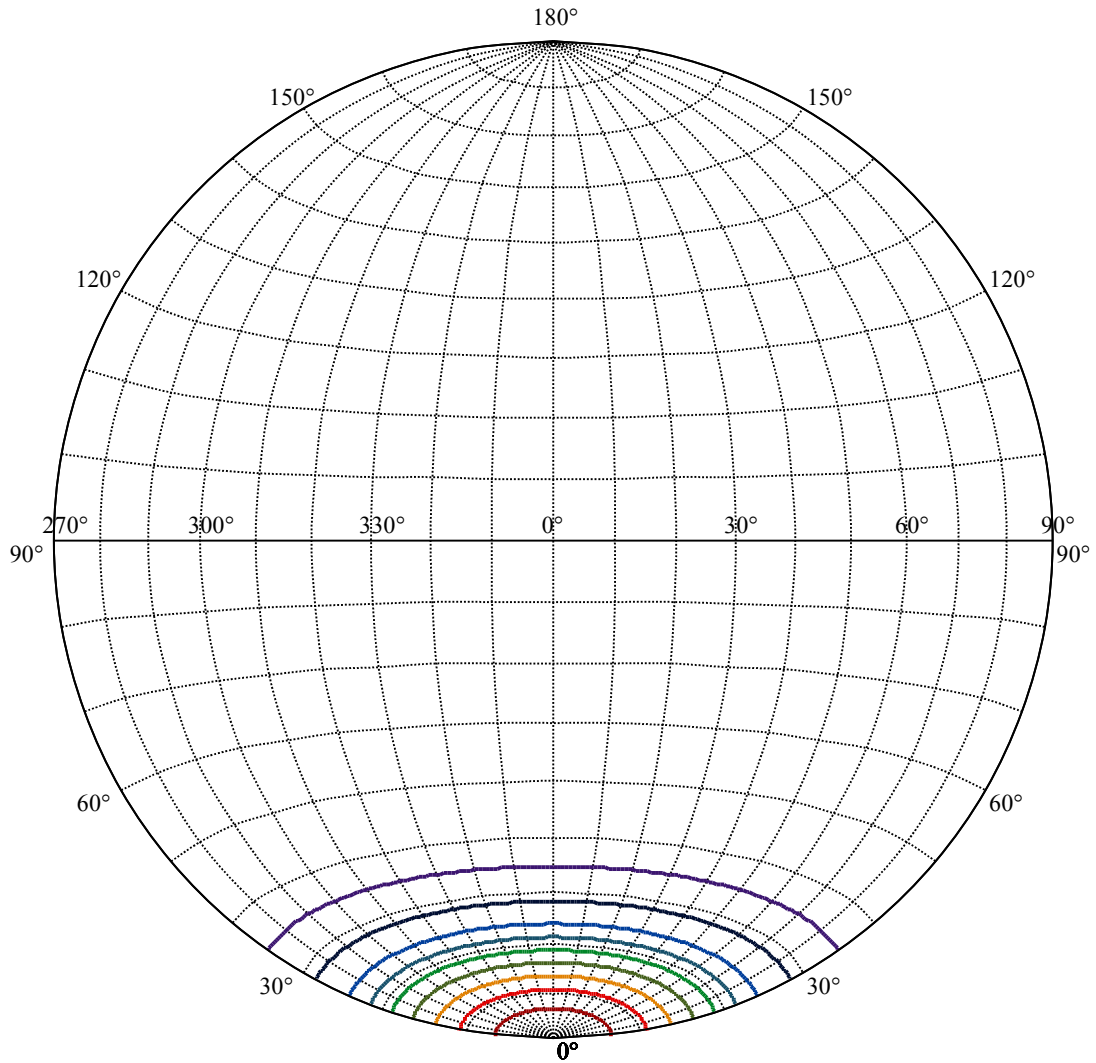
Field angle(10%Imax):C0/180Left:34.9 Right:34.9  
 :C90/270Left:34.9 Right:34.9

Beam Angle(50%Imax):C0/180Left:18.9 Right:18.9  
 :C90/270Left:18.9 Right:18.9





(10%Imax) 397.898	—
(20%Imax) 795.797	—
(30%Imax) 1193.7	—
(40%Imax) 1591.59	—
(50%Imax) 1989.49	—
(60%Imax) 2387.39	—
(70%Imax) 2785.29	—
(80%Imax) 3183.19	—
(90%Imax) 3581.09	—



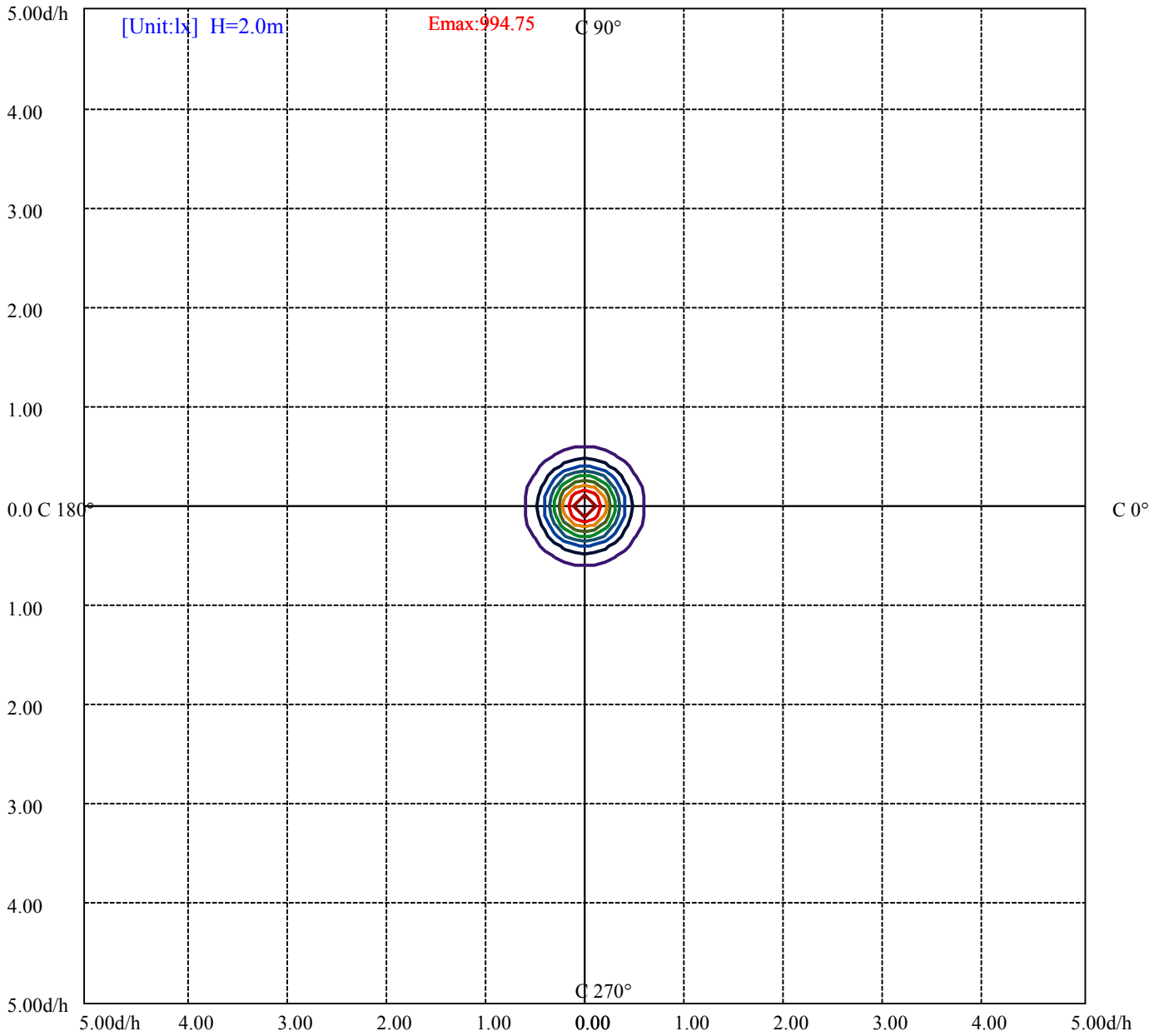
House

[Unit:cd]

Road

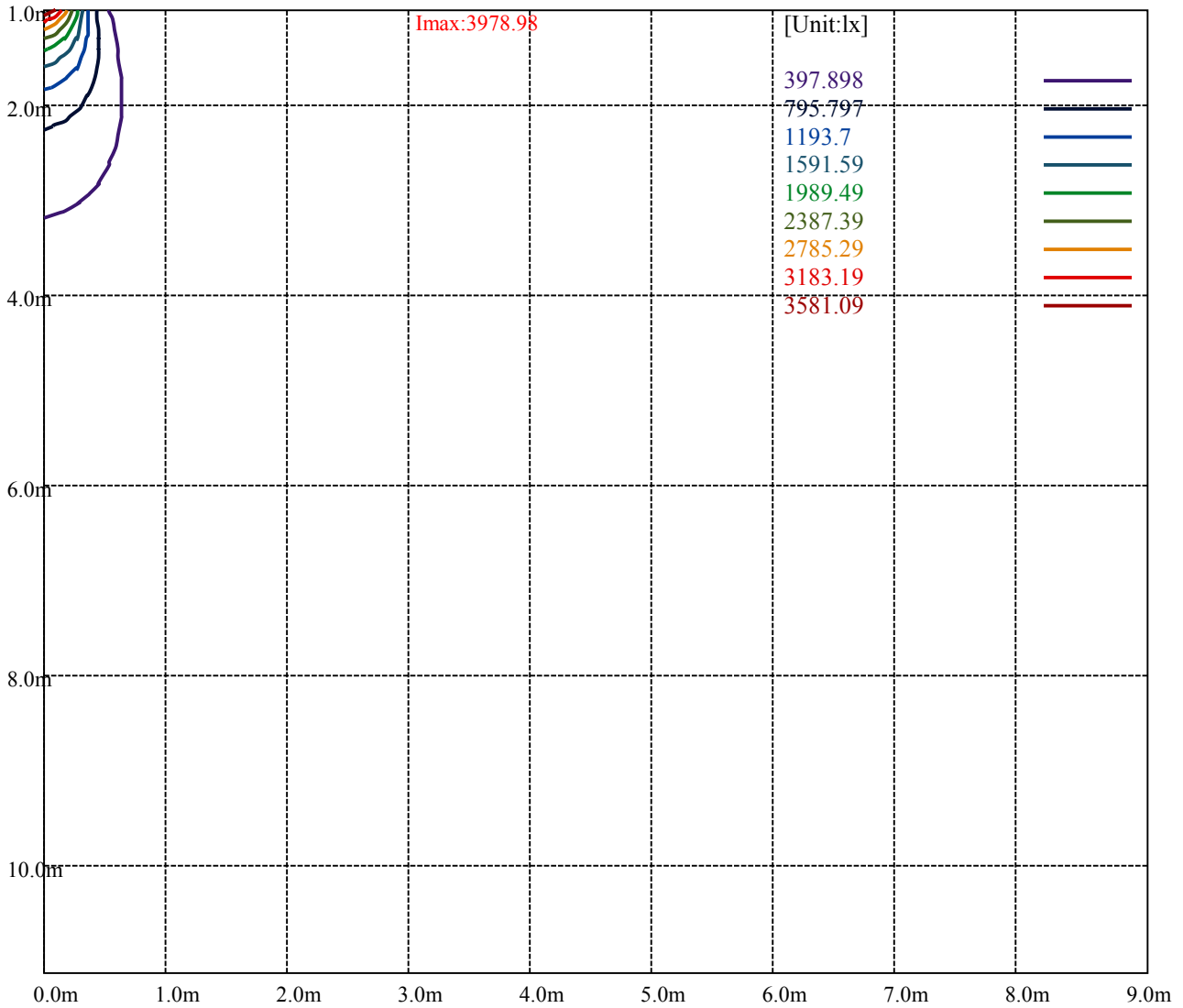
Imax:3978.98

(10%Imax)	397.898	—
(20%Imax)	795.797	—
(30%Imax)	1193.7	—
(40%Imax)	1591.59	—
(50%Imax)	1989.49	—
(60%Imax)	2387.39	—
(70%Imax)	2785.29	—
(80%Imax)	3183.19	—
(90%Imax)	3581.09	—



- (10%Emax) 99.4745
- (20%Emax) 198.9487
- (30%Emax) 298.4225
- (40%Emax) 397.8975
- (50%Emax) 497.3725
- (60%Emax) 596.8475
- (70%Emax) 696.32
- (80%Emax) 795.795
- (90%Emax) 895.27





Luminance Table

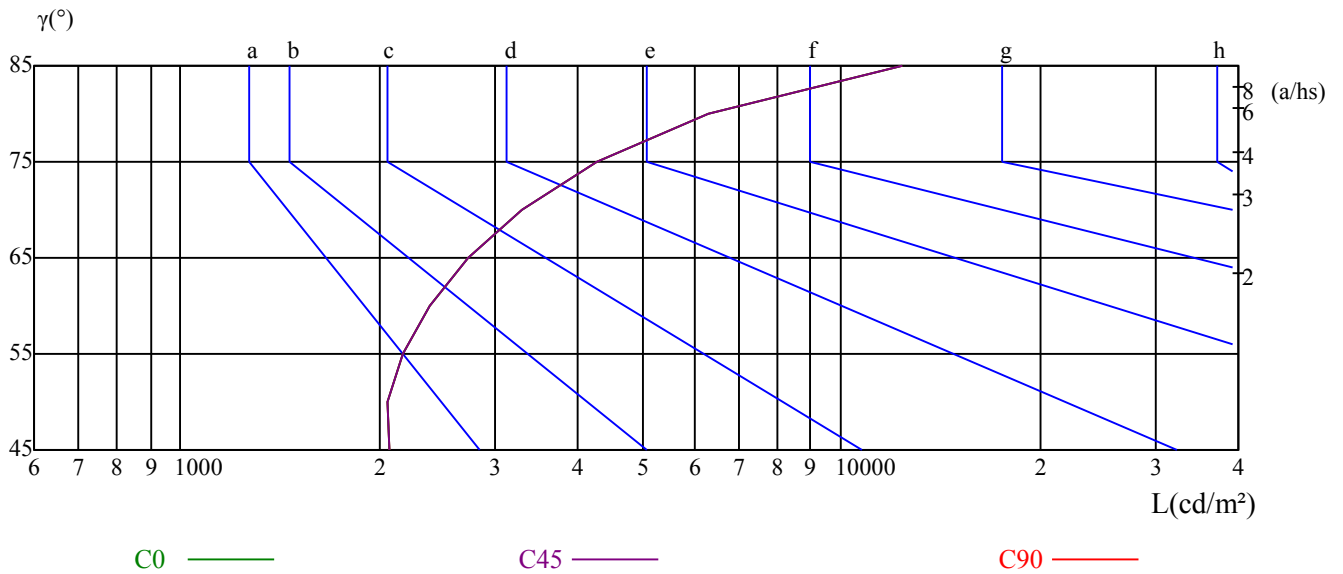
$\gamma$	45	50	55	60	65	70	75	80	85
C0	2073	2051	2165	2380	2726	3286	4258	6278	12360
C45	2073	2051	2165	2380	2726	3286	4258	6278	12360
C90	2073	2051	2165	2380	2726	3286	4258	6278	12360

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
2726	2726	2726	4258	4258	4258	12360	12360	12360

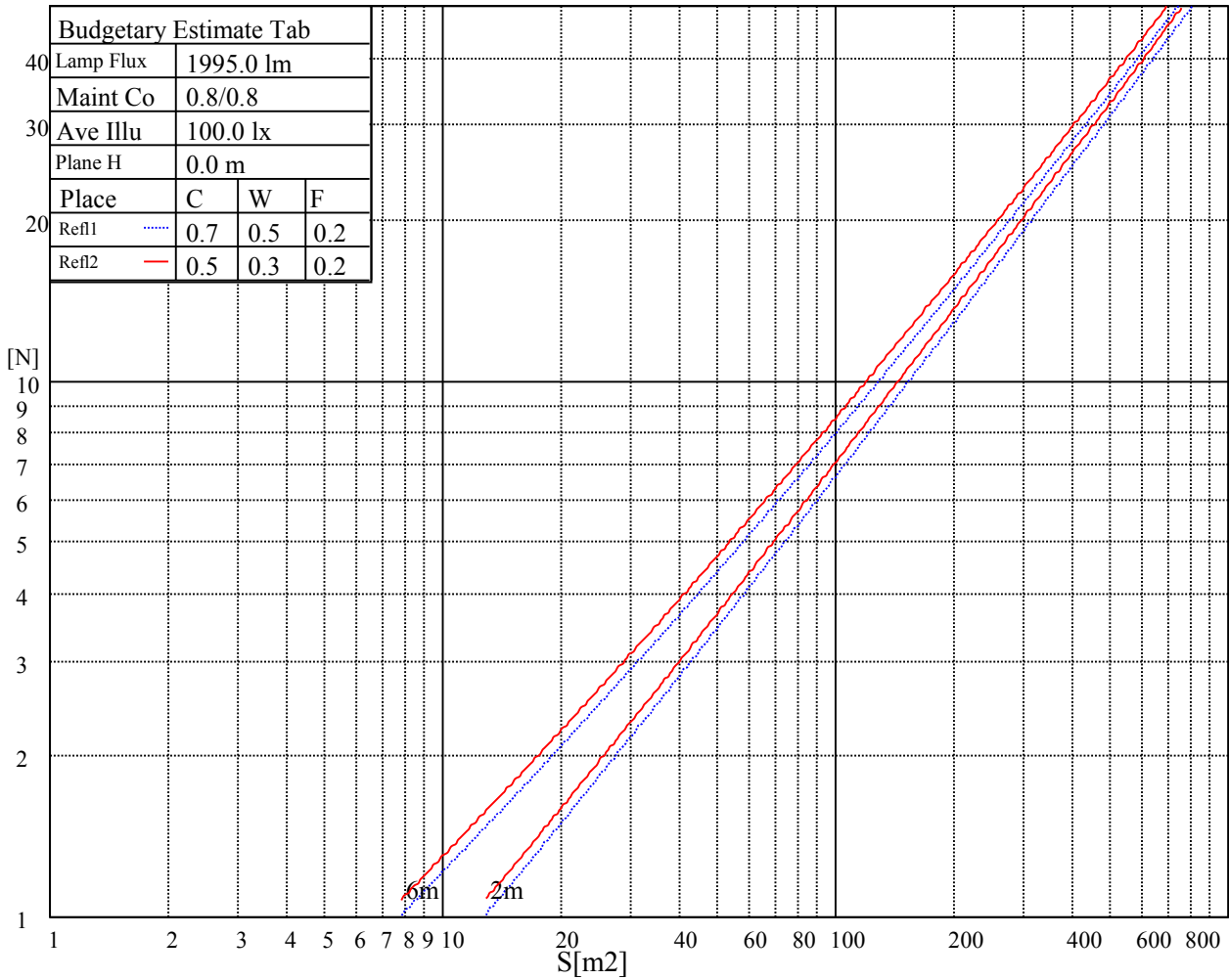
Glare Table

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

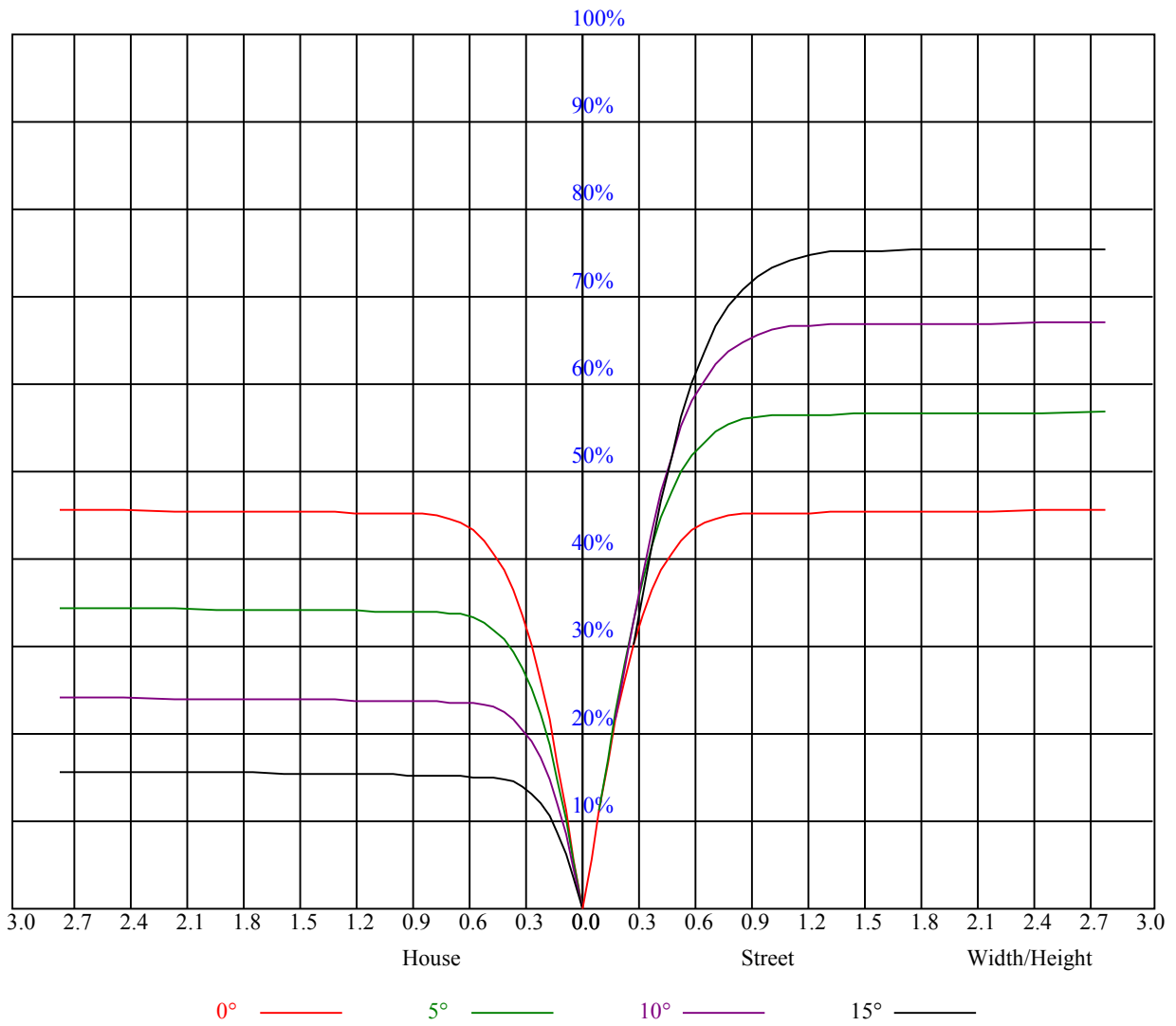
Luminance Limiting Curve



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	1.54	2.45	1.90	2.76	3.08	1.47	2.38	1.83	2.69	3.00
	3H	4.75	5.55	5.13	5.89	6.25	4.68	5.48	5.06	5.81	6.18
	4H	6.47	7.22	6.88	7.57	7.96	6.41	7.15	6.81	7.50	7.89
	6H	8.42	9.10	8.84	9.47	9.87	8.36	9.04	8.78	9.41	9.81
	8H	9.50	10.13	9.93	10.52	10.94	9.44	10.07	9.87	10.47	10.88
	12H	11.25	11.86	11.68	12.24	12.67	11.19	11.79	11.62	12.18	12.61
4H	2H	2.44	3.18	2.85	3.54	3.93	2.39	3.13	2.80	3.49	3.88
	3H	5.88	6.49	6.30	6.90	7.31	5.83	6.44	6.25	6.85	7.26
	4H	7.78	8.33	8.22	8.75	9.20	7.73	8.27	8.16	8.70	9.15
	6H	9.88	10.35	10.35	10.80	11.28	9.83	10.30	10.30	10.75	11.22
	8H	11.06	11.49	11.54	11.95	12.42	11.01	11.44	11.49	11.89	12.37
8H	12H	12.71	13.09	13.21	13.58	14.06	12.66	13.03	13.15	13.52	14.00
	4H	8.50	8.93	8.98	9.38	9.86	8.46	8.89	8.93	9.34	9.82
	6H	10.87	11.22	11.39	11.72	12.21	10.83	11.18	11.35	11.68	12.17
	8H	12.24	12.55	12.78	13.07	13.57	12.20	12.50	12.74	13.03	13.53
12H	12H	14.04	14.30	14.56	14.80	15.38	13.99	14.25	14.51	14.75	15.33
	4H	8.70	9.07	9.19	9.56	10.04	8.66	9.04	9.16	9.53	10.00
	6H	11.39	11.49	11.73	11.97	12.52	11.35	11.46	11.69	11.93	12.48
	8H	12.69	12.95	13.21	13.45	14.03	12.66	12.91	13.18	13.41	14.00
Variation with the observer position at spacings:											
S = 1.0H	5.6/-7.1					5.6/-7.1					
S = 1.5H	7.6/-5.2					7.6/-5.2					
S = 2.0H	8.9/-3.8					8.9/-3.8					
Standard tables:	BK3					BK3					
Uncorrected UGR	-0.9					-0.9					



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	1.10	1.10	1.10	1.08	1.08	1.08	1.03	1.03	1.03	0.98	0.98	0.98	0.94	0.94	0.94	0.92
1	1.02	1.00	0.98	1.00	0.98	0.96	0.96	0.95	0.93	0.93	0.92	0.90	0.90	0.89	0.88	0.86
2	0.97	0.93	0.90	0.95	0.92	0.89	0.92	0.89	0.87	0.89	0.87	0.85	0.87	0.85	0.84	0.82
3	0.92	0.88	0.84	0.90	0.87	0.84	0.88	0.85	0.82	0.86	0.83	0.81	0.84	0.82	0.80	0.79
4	0.87	0.83	0.80	0.86	0.82	0.79	0.85	0.81	0.78	0.83	0.80	0.77	0.81	0.79	0.77	0.75
5	0.84	0.79	0.76	0.83	0.79	0.75	0.81	0.78	0.75	0.80	0.77	0.74	0.78	0.76	0.74	0.72
6	0.80	0.76	0.72	0.79	0.75	0.72	0.78	0.74	0.72	0.77	0.74	0.71	0.76	0.73	0.71	0.70
7	0.77	0.72	0.69	0.76	0.72	0.69	0.75	0.72	0.69	0.74	0.71	0.68	0.73	0.70	0.68	0.67
8	0.74	0.70	0.67	0.74	0.69	0.66	0.73	0.69	0.66	0.72	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	0.66	0.64	0.69	0.66	0.64	0.69	0.66	0.63	0.62
10	0.69	0.65	0.62	0.69	0.64	0.62	0.68	0.64	0.62	0.67	0.64	0.61	0.67	0.64	0.61	0.60



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	3993.19	3684.94	3236.06	2531.81	1826.44	1054.13	677.25	335.81	20.19
45.0	3995.44	3635.44	3218.63	2490.75	1722.38	981.56	641.81	335.81	18.84
90.0	3952.69	3677.63	3196.13	2424.94	1685.81	975.38	645.69	329.91	20.31
135.0	3974.63	3831.19	3456.56	2833.31	2009.81	1162.69	720.00	504.00	51.30
180.0	3993.19	3848.06	3434.06	2722.50	1884.94	1070.27	673.37	413.49	23.40
225.0	3995.44	3829.50	3364.31	2756.25	1891.13	1089.39	684.28	473.01	24.75
270.0	3952.69	3763.69	3313.13	2577.38	1835.44	1139.06	685.13	471.94	25.59
315.0	3974.63	3597.19	3130.88	2448.00	1655.44	958.61	651.66	268.09	17.78
360.0	3993.19	3684.94	3236.06	2531.81	1826.44	1054.13	677.25	335.81	20.19
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	10.07	9.11	8.61	8.27	7.99	7.82	7.71	7.65	7.54
45.0	10.07	9.23	8.78	8.44	8.16	7.93	7.82	7.71	7.65
90.0	10.18	9.39	8.78	8.44	8.16	7.93	7.76	7.71	7.59
135.0	10.91	9.45	8.89	8.49	8.16	7.99	7.76	7.71	7.59
180.0	10.18	9.28	8.72	8.33	8.10	7.93	7.76	7.65	7.54
225.0	10.74	9.45	8.89	8.49	8.21	8.04	7.82	7.76	7.65
270.0	10.58	9.51	8.83	8.49	8.21	7.99	7.82	7.71	7.65
315.0	10.01	9.00	8.61	8.21	8.04	7.82	7.76	7.65	7.59
360.0	10.07	9.11	8.61	8.27	7.99	7.82	7.71	7.65	7.54
C/γ(°)	90.0								
0.0	7.48								
45.0	7.59								
90.0	7.59								
135.0	7.54								
180.0	7.48								
225.0	7.59								
270.0	7.54								
315.0	7.48								
360.0	7.48								