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## NATA

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LumCAT: CR12L05070140AY

Luminaire:

Report No: NATA0100

Voltage(V): 18.4000

Test No: GC2018122906

Current(A): 0.4000

LampCAT: CREE XPE2

Power (W): 4.3600

Lamp flux(lm): 882.8

PF: 0.0000

Number of Lamps: 1

Ballast type:

Length(mm): 50

Width(mm): 50

Phm Type: C

Height(mm): 0

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## Photometric Results

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Lumens(lm): 848.51

Efficiency(%): 96.11%

Lumens(lm)/Power(W): 194.80

Central intensity(cd): 269.438

Maximum intensity(cd): 397.800

Angle of maximum intensity: C=0.0  $\gamma$ =60.0

Beam Angle(50%Imax): [C0/180]Total=136.8

[C90/270]Total=71.2

Field angle(10%Imax): [C0/180]Total=149.6

[C90/270]Total=117.8

Maximum s/h(1/2): C0\_180=1.89 C90\_270=1.57

Maximum s/h(1/4): C0\_180=2.08 C90\_270=1.35

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 96.21%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in  $\pi$  solid angle : 86.605%

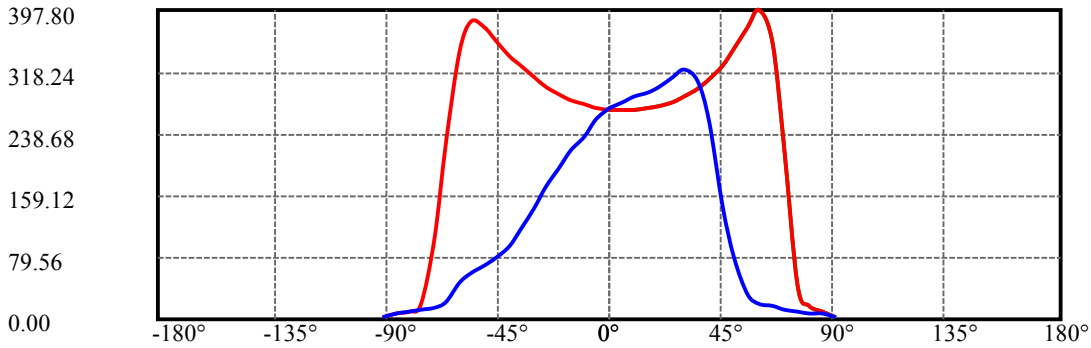
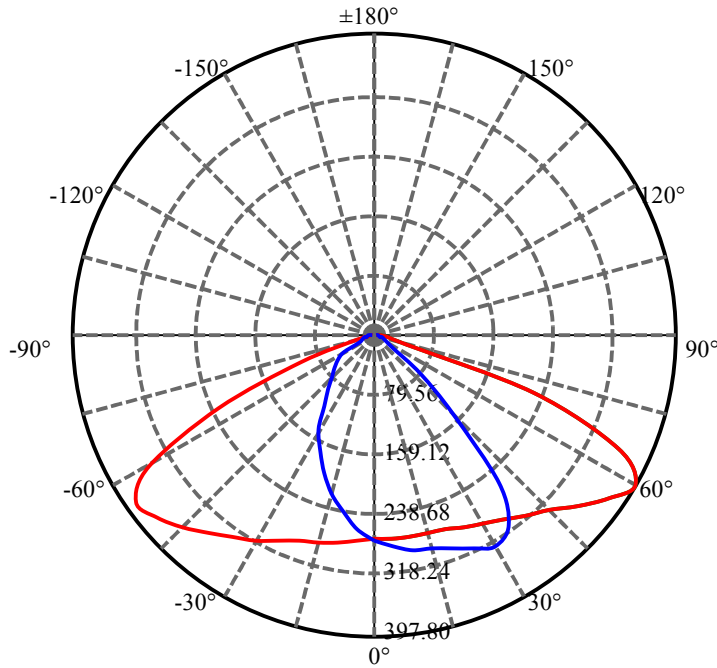
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	272.034	1.627	1.627	.184%	.192%
5.0	271.383	12.965	14.592	1.469%	1.720%
10.0	268.925	25.597	40.189	2.899%	4.736%
15.0	265.989	37.735	77.924	4.274%	9.184%
20.0	263.788	49.453	127.378	5.602%	15.012%
25.0	263.164	60.963	188.34	6.905%	22.197%
30.0	262.463	71.933	260.273	8.148%	30.674%
35.0	257.394	80.924	341.197	9.167%	40.212%
40.0	244.275	86.067	427.264	9.749%	50.355%
45.0	219.356	85.021	512.285	9.631%	60.375%
50.0	194.500	81.670	593.955	9.251%	70.000%
55.0	167.619	75.262	669.217	8.525%	78.870%
60.0	139.750	66.339	735.556	7.514%	86.688%
65.0	102.041	50.692	786.248	5.742%	92.663%
70.0	63.588	32.753	819.001	3.710%	96.523%
75.0	29.166	15.442	834.443	1.749%	98.343%
80.0	15.231	8.222	842.665	.931%	99.312%
85.0	8.983	4.905	847.57	.556%	99.890%
90.0	3.417	0.937	848.507	.106%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	260.27	29.48%	30.67%
0-40	427.26	48.40%	50.35%
0-60	735.56	83.32%	86.69%
0-90	847.57	96.01%	99.89%
0-120	847.57	96.01%	99.89%
0-180	848.51	96.11%	100.00%
60-90	178.35	20.20%	21.02%
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%
0-55.72	678.81	76.89%	80.00%

ZONAL LUMEN SUMMARY

0-10	40.19
10-20	87.19
20-30	132.90
30-40	166.99
40-50	166.69
50-60	141.60
60-70	83.44
70-80	23.66
80-90	4.91
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

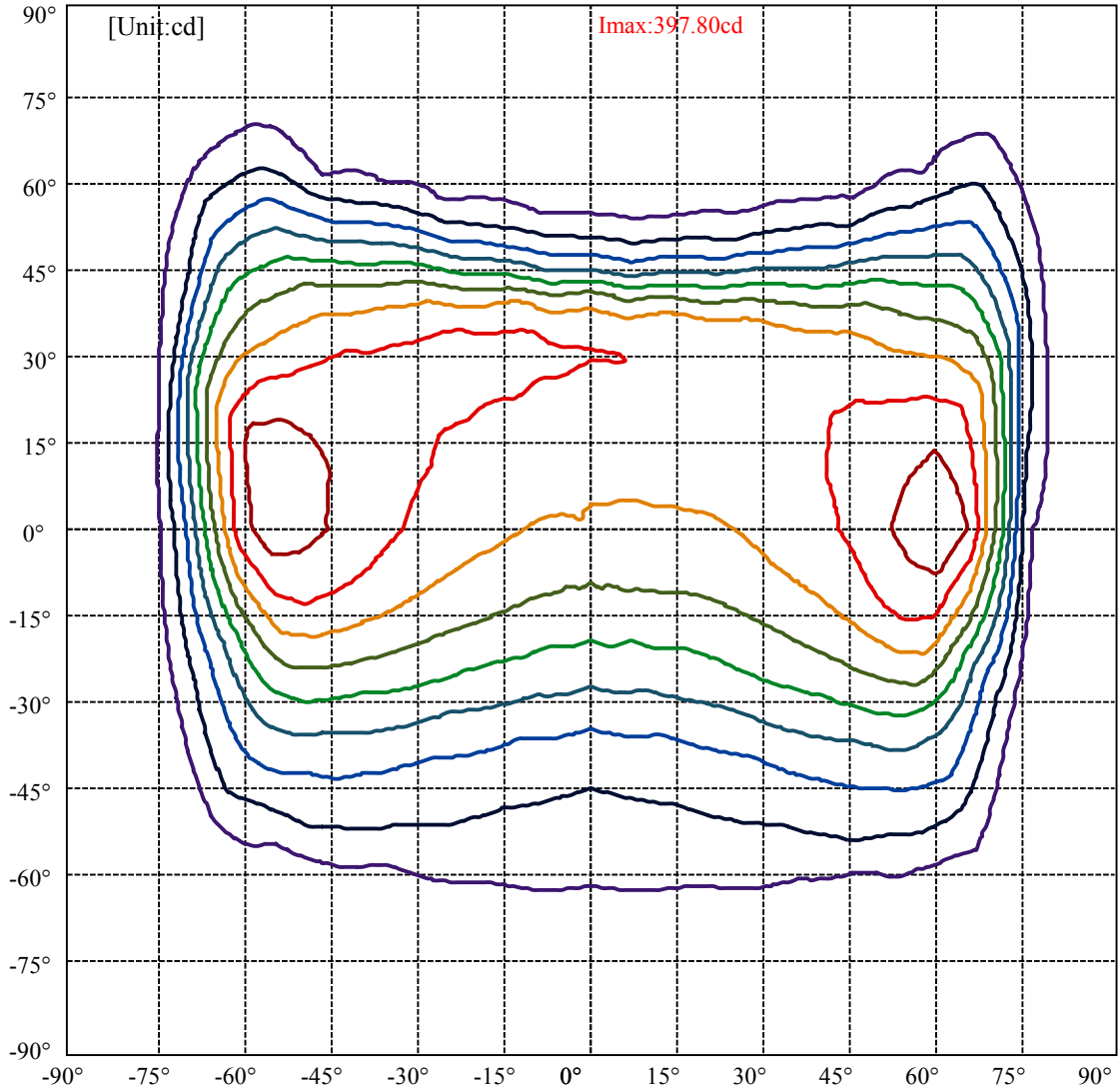


C0(Max): ———  
 C0/C180: ———  
 C90/C270: ———

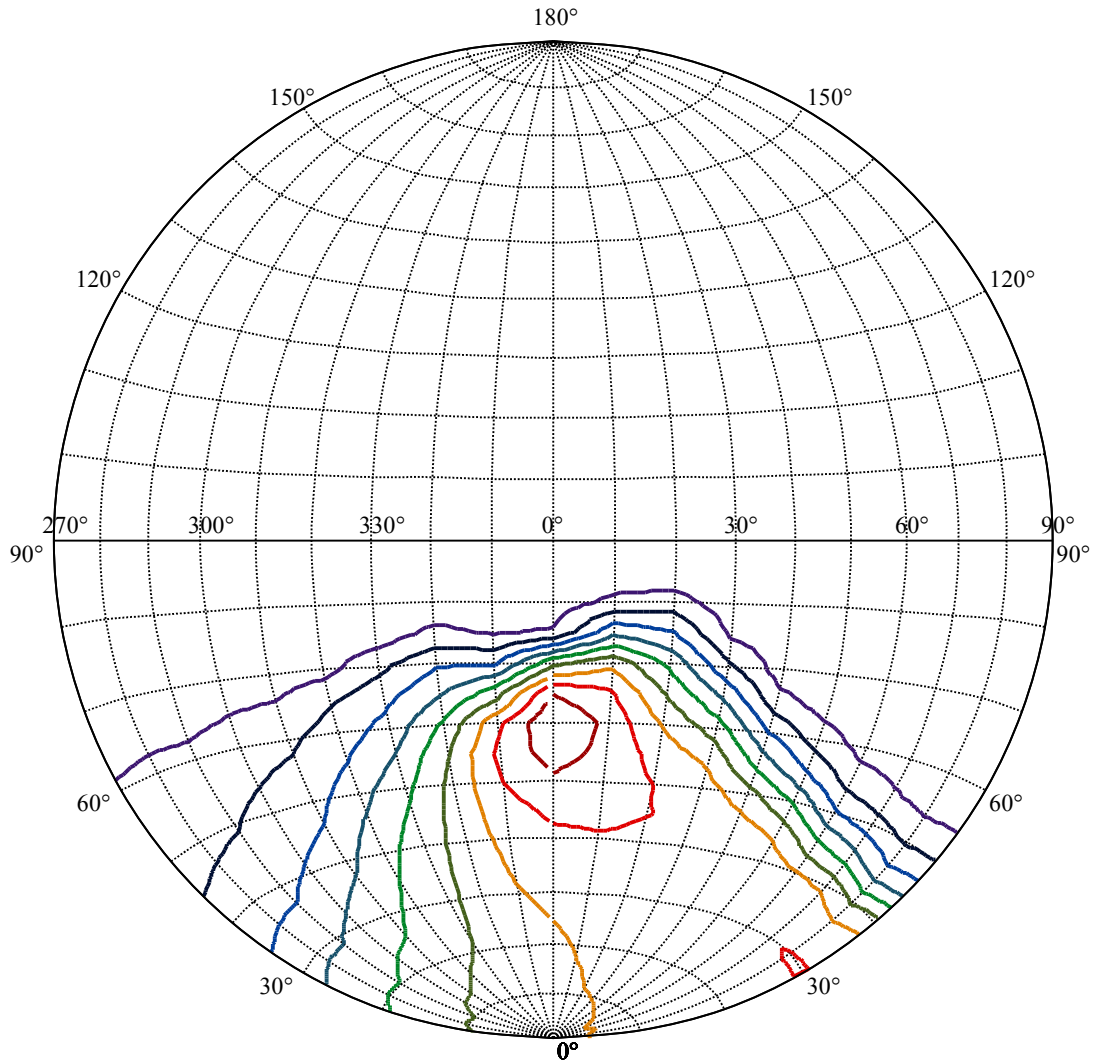
Field angle(10%Imax):C0/180Left:133.8 Right:15.8  
 :C90/270Left:92.8 Right:25.0

Beam Angle(50%Imax):C0/180Left:126.1 Right:10.7  
 :C90/270Left:56.9 Right:14.3





- (10%I<sub>max</sub>) 39.78
- (20%I<sub>max</sub>) 79.56
- (30%I<sub>max</sub>) 119.34
- (40%I<sub>max</sub>) 159.12
- (50%I<sub>max</sub>) 198.9
- (60%I<sub>max</sub>) 238.68
- (70%I<sub>max</sub>) 278.46
- (80%I<sub>max</sub>) 318.24
- (90%I<sub>max</sub>) 358.02



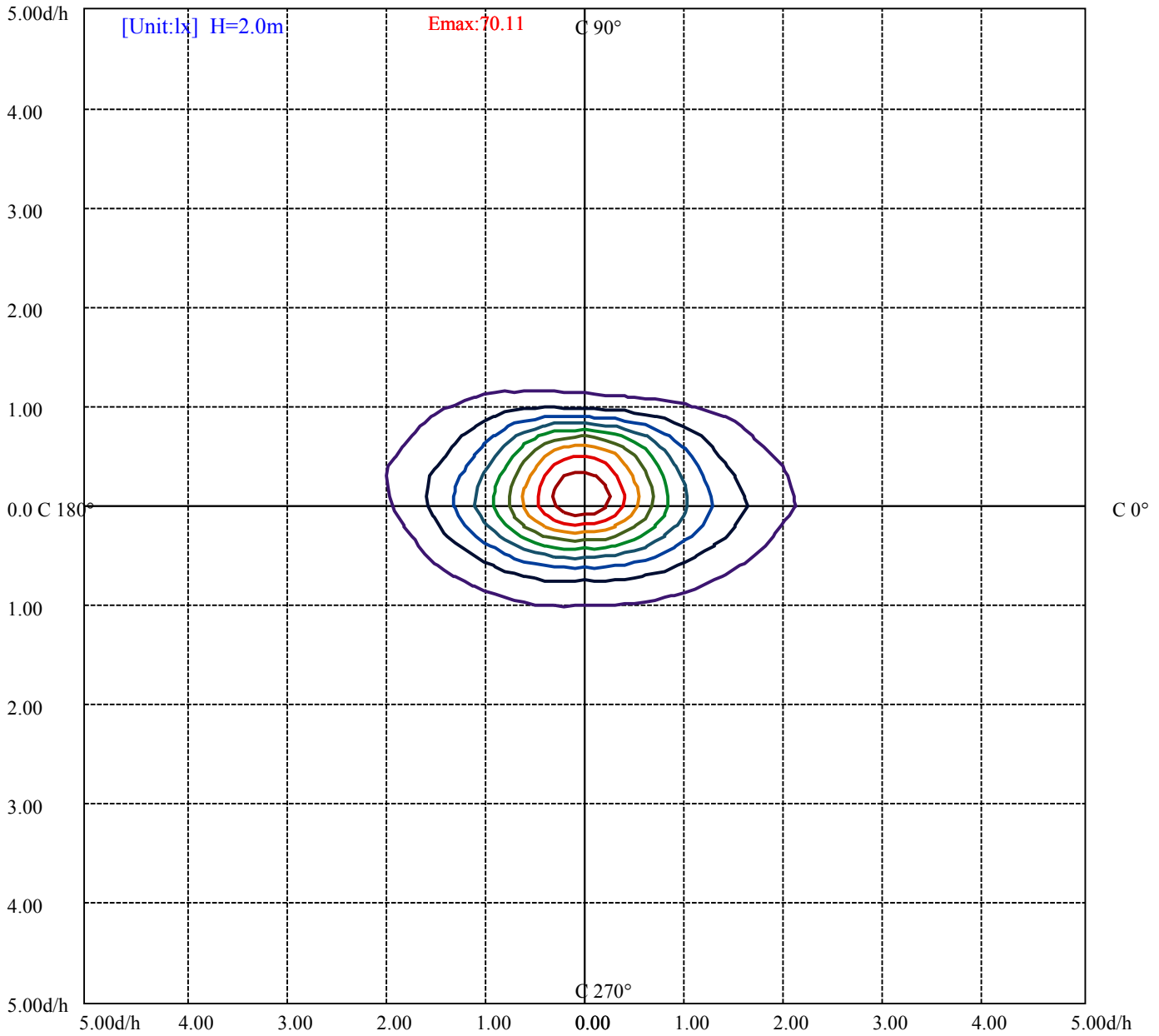
House

[Unit:cd]

Road

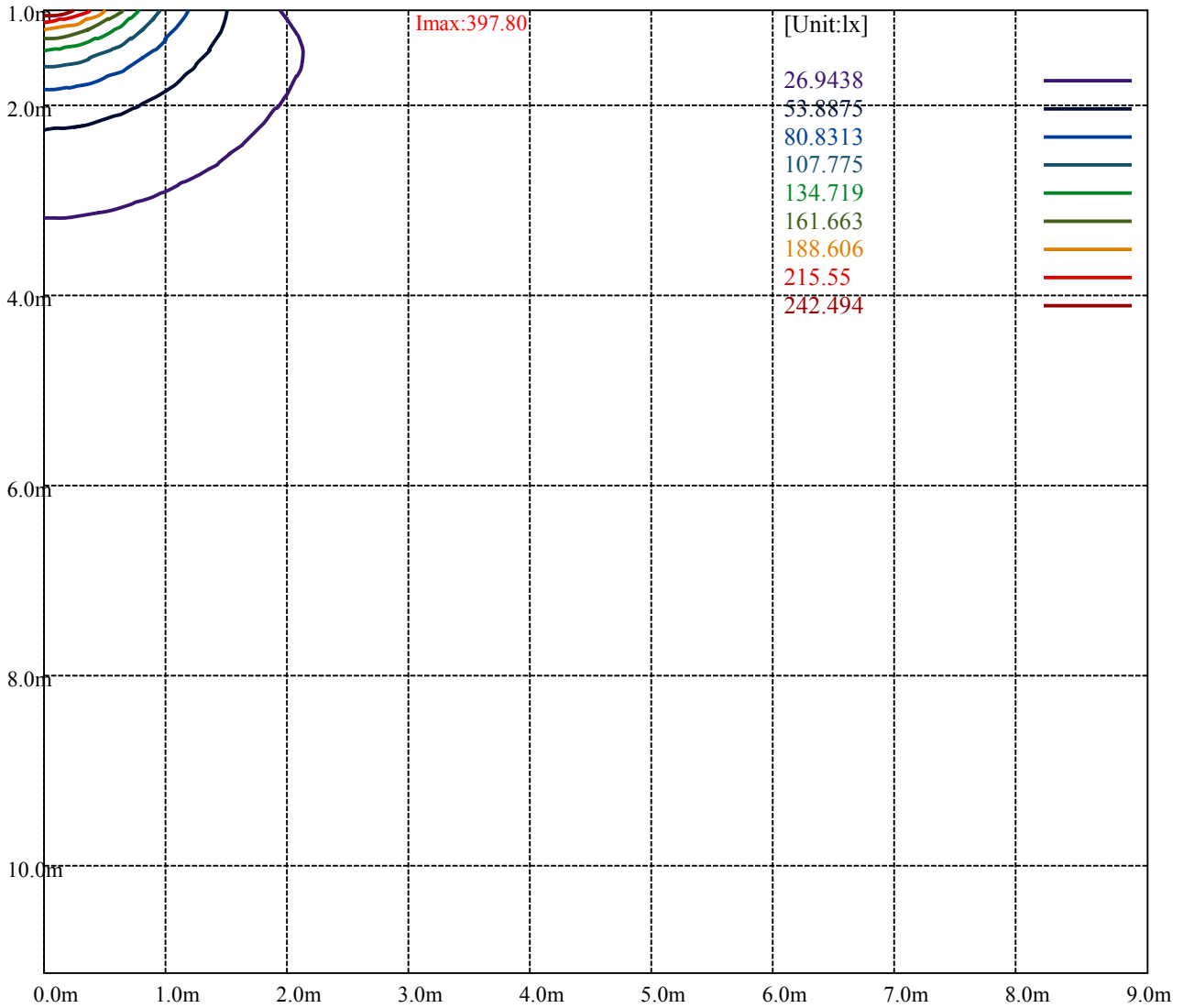
**Imax:397.80**

(10%Imax) 39.78	—
(20%Imax) 79.56	—
(30%Imax) 119.34	—
(40%Imax) 159.12	—
(50%Imax) 198.9	—
(60%Imax) 238.68	—
(70%Imax) 278.46	—
(80%Imax) 318.24	—
(90%Imax) 358.02	—



(10%Emax) 7.01055	—
(20%Emax) 14.0211	—
(30%Emax) 21.03168	—
(40%Emax) 28.04225	—
(50%Emax) 35.05275	—
(60%Emax) 42.06325	—
(70%Emax) 49.074	—
(80%Emax) 56.0845	—
(90%Emax) 63.095	—





Luminance Table

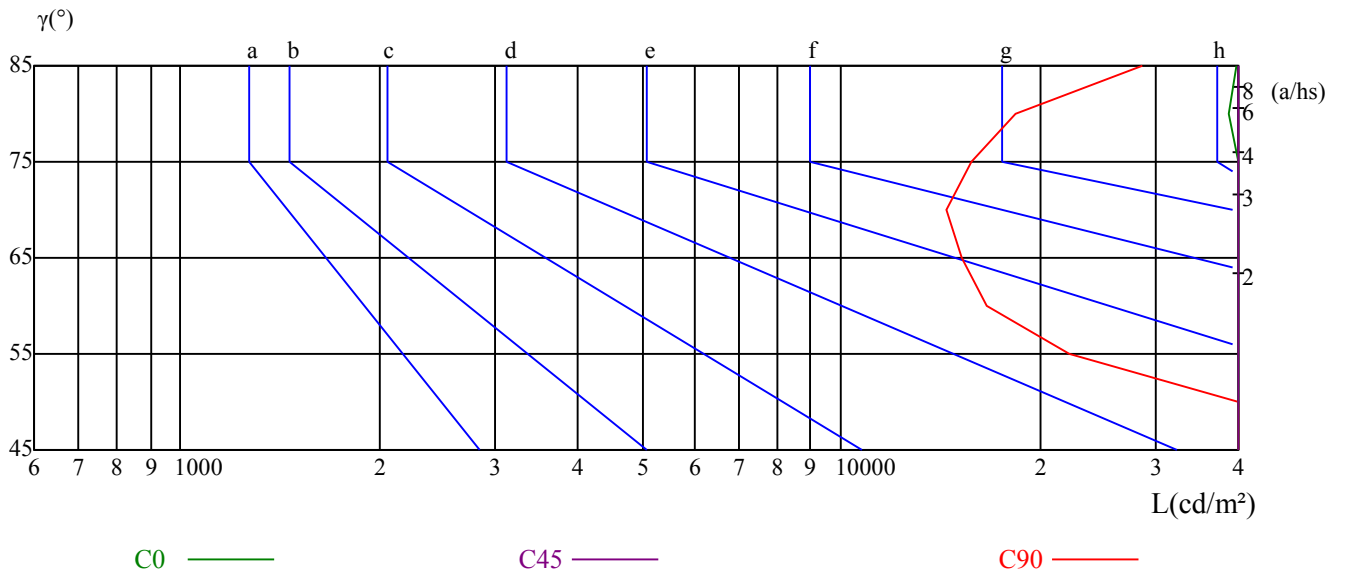
$\gamma$	45	50	55	60	65	70	75	80	85
C0	184714	217409	262746	318240	335675	261498	68243	38613	39756
C45	100499	116300	136889	161584	185393	194413	130780	53773	55730
C90	82413	49880	22164	16650	15227	14407	15735	18399	28656

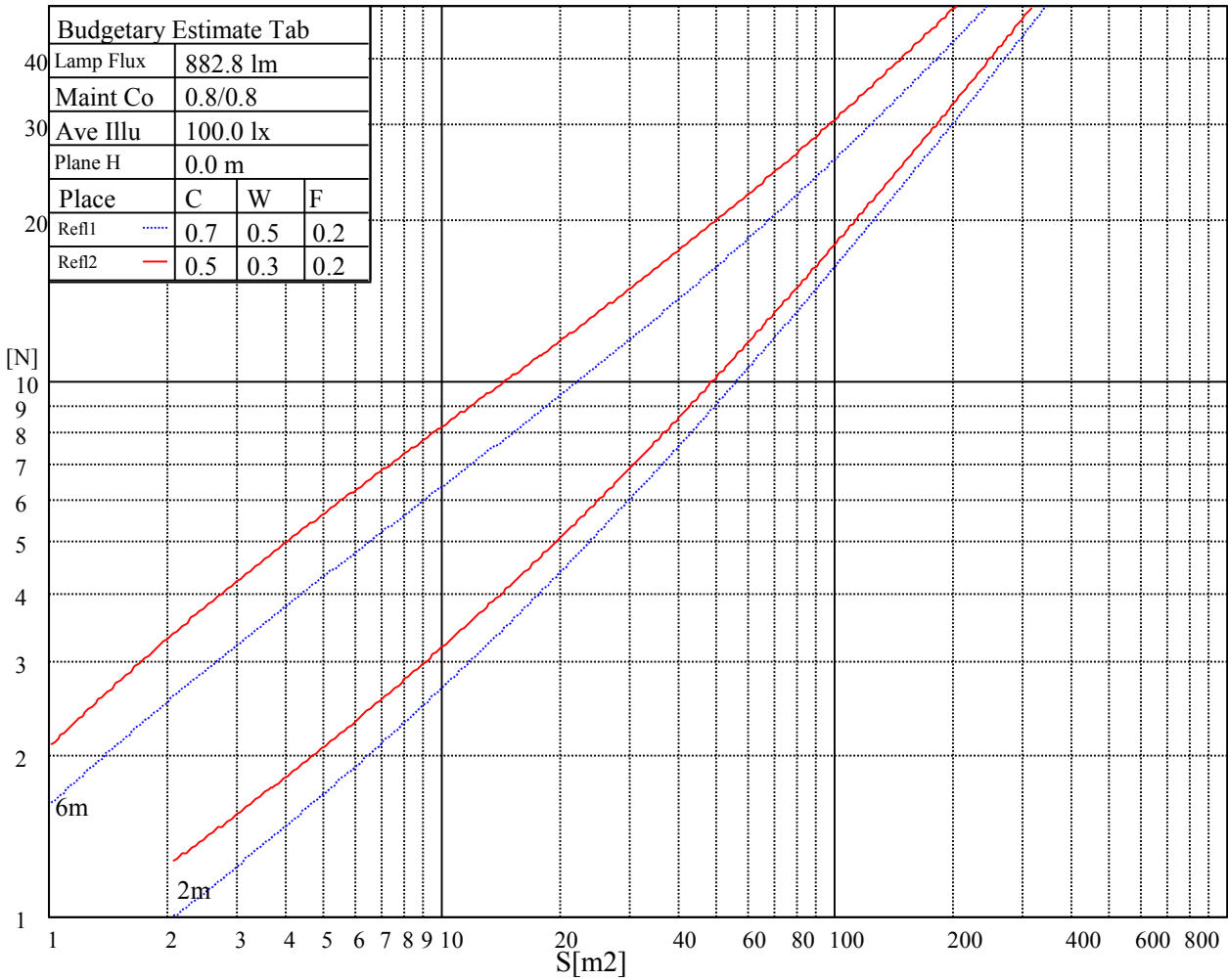
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
275275	17809	185393	49335	17517	130780	34335	33044	55730

Glare Table

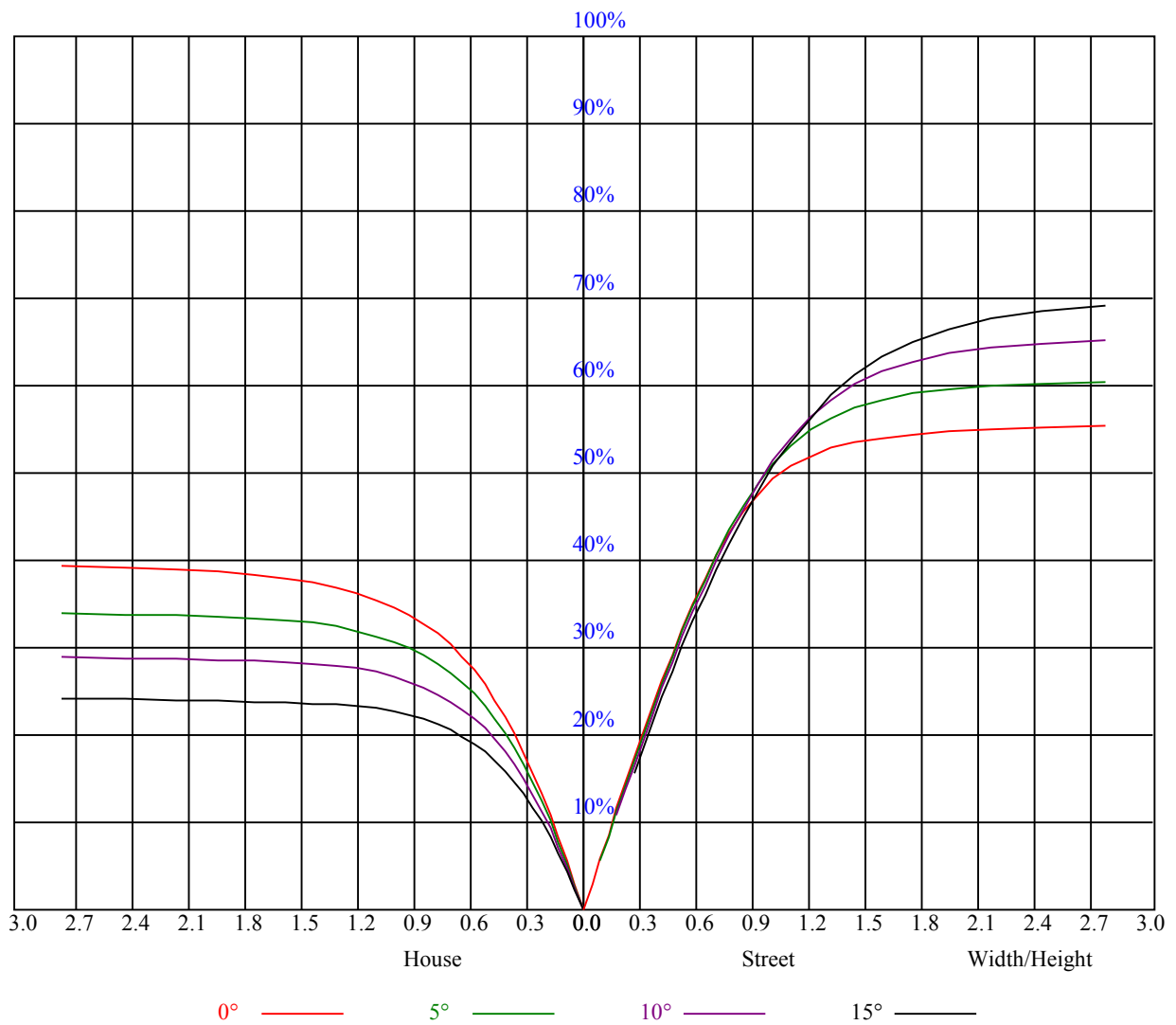
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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	1.15	1.15	1.15	1.12	1.12	1.12	1.07	1.07	1.07	1.02	1.02	1.02	0.98	0.98	0.98	0.96
1	1.02	0.98	0.95	1.00	0.96	0.93	0.96	0.93	0.90	0.92	0.90	0.88	0.88	0.87	0.85	0.83
2	0.90	0.84	0.79	0.88	0.83	0.78	0.85	0.80	0.76	0.82	0.78	0.75	0.79	0.76	0.73	0.71
3	0.80	0.72	0.67	0.78	0.71	0.66	0.75	0.70	0.65	0.73	0.68	0.64	0.70	0.66	0.63	0.61
4	0.71	0.63	0.57	0.70	0.62	0.57	0.67	0.61	0.56	0.65	0.60	0.55	0.63	0.58	0.54	0.52
5	0.64	0.56	0.49	0.63	0.55	0.49	0.61	0.54	0.49	0.59	0.53	0.48	0.57	0.52	0.48	0.46
6	0.58	0.49	0.43	0.57	0.49	0.43	0.55	0.48	0.43	0.53	0.47	0.42	0.52	0.46	0.42	0.40
7	0.52	0.44	0.38	0.52	0.44	0.38	0.50	0.43	0.38	0.49	0.42	0.38	0.47	0.42	0.38	0.36
8	0.48	0.40	0.34	0.47	0.40	0.34	0.46	0.39	0.34	0.45	0.38	0.34	0.44	0.38	0.34	0.32
9	0.44	0.36	0.31	0.43	0.36	0.31	0.42	0.36	0.31	0.41	0.35	0.31	0.40	0.35	0.31	0.29
10	0.41	0.33	0.28	0.40	0.33	0.28	0.39	0.33	0.28	0.38	0.32	0.28	0.37	0.32	0.28	0.26



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	269.44	268.54	269.44	270.90	273.15	278.89	287.04	297.28	309.54
10.0	272.36	273.15	274.89	276.86	280.13	285.92	294.47	304.82	314.61
20.0	272.31	274.84	277.48	280.46	284.63	289.74	296.89	304.54	312.19
30.0	272.25	275.46	278.78	281.87	285.19	288.96	295.54	305.83	312.02
40.0	272.87	276.98	280.01	282.38	284.85	291.49	301.11	311.12	312.92
50.0	271.86	277.37	281.70	284.46	286.82	294.13	306.06	313.31	307.29
60.0	272.48	279.73	284.40	286.31	292.05	303.36	313.31	312.19	280.46
70.0	269.78	278.04	284.29	287.55	294.75	306.28	316.41	310.50	269.94
80.0	272.08	280.07	285.81	289.86	299.36	312.08	319.67	301.33	233.27
90.0	271.01	279.96	287.04	290.42	299.08	311.12	320.40	307.58	255.60
100.0	273.38	282.49	288.84	292.61	302.79	315.90	323.33	309.38	246.66
110.0	271.29	280.80	288.79	293.23	302.18	314.27	323.78	322.88	293.85
120.0	275.06	284.96	292.50	297.11	304.71	316.97	326.98	329.51	306.39
130.0	274.84	283.84	292.44	297.96	303.19	313.31	322.88	329.74	326.87
140.0	275.12	283.56	291.94	297.79	304.09	313.14	321.86	327.15	329.01
150.0	270.90	277.65	285.81	293.29	299.76	308.31	317.53	325.86	330.47
160.0	270.23	276.08	283.05	290.70	299.03	309.21	319.61	328.16	336.49
170.0	269.38	273.94	279.11	285.69	293.01	303.64	316.52	329.51	342.00
180.0	269.44	272.93	276.98	282.21	289.07	299.93	312.47	325.24	339.47
190.0	272.36	273.15	274.67	277.65	282.32	289.80	298.80	308.42	317.08
200.0	272.31	271.07	269.16	268.82	269.04	271.86	275.01	276.47	275.06
210.0	272.25	268.82	264.26	259.71	256.28	252.45	247.61	240.47	228.88
220.0	272.87	268.20	260.55	251.89	243.39	234.73	223.20	209.53	189.68
230.0	271.86	263.14	250.48	238.89	226.91	211.84	196.93	174.83	151.14
240.0	272.48	262.52	247.11	231.64	216.39	199.18	179.89	154.18	130.56
250.0	269.78	256.33	239.18	223.37	204.19	182.25	159.02	131.96	108.34
260.0	272.08	258.75	240.69	222.02	200.64	178.65	152.49	124.54	102.15
270.0	271.01	255.83	235.86	217.07	194.63	169.65	144.51	115.82	94.16
280.0	273.38	261.23	240.36	221.12	200.36	176.51	150.81	123.08	102.71
290.0	271.29	258.53	238.22	221.96	200.25	177.41	154.29	127.80	106.03
300.0	275.06	264.38	246.71	229.78	212.12	192.32	172.01	148.39	125.49
310.0	274.84	263.25	248.18	233.66	218.25	201.38	187.37	169.43	148.56
320.0	275.12	266.46	255.99	242.55	230.91	219.77	209.19	199.74	186.92
330.0	270.90	263.87	257.01	248.79	240.98	235.58	231.08	226.58	220.05
340.0	270.23	266.79	263.53	259.26	255.49	253.86	254.76	255.77	255.83
350.0	269.38	267.13	266.06	265.78	266.40	270.06	275.85	283.28	292.22
360.0	269.44	268.54	269.44	270.90	273.15	278.89	287.04	297.28	309.54

Intensity data(cd)

C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	326.53	349.37	376.76	397.80	354.66	223.59	44.16	16.76	8.66
10.0	327.88	338.68	346.61	347.79	323.83	267.86	148.11	50.06	12.21
20.0	319.11	318.43	303.81	276.13	237.71	190.41	124.20	58.73	10.58
30.0	312.98	299.42	268.65	219.71	158.12	90.39	34.43	14.68	10.24
40.0	295.37	253.46	186.41	122.51	56.48	18.96	11.81	10.46	8.78
50.0	267.75	197.33	118.52	61.31	23.79	14.12	11.19	9.68	8.78
60.0	206.38	124.20	61.20	25.09	16.99	13.05	9.96	8.33	7.20
70.0	174.88	96.19	43.31	21.83	16.20	12.60	9.79	7.82	6.36
80.0	134.61	73.29	28.07	19.29	15.30	11.42	9.23	7.20	5.74
90.0	145.69	80.16	31.78	20.81	16.09	12.32	10.18	7.99	6.24
100.0	152.78	85.67	34.93	21.49	16.65	13.39	10.80	9.00	6.86
110.0	205.88	124.54	62.27	27.90	19.63	15.75	13.16	11.19	9.79
120.0	240.53	168.02	96.13	39.54	22.89	17.21	15.02	14.74	11.87
130.0	296.89	240.92	174.15	107.78	43.65	21.09	16.43	15.24	13.11
140.0	315.45	283.44	230.63	173.19	102.88	40.89	19.29	14.74	12.66
150.0	330.75	318.49	289.46	248.85	196.37	141.64	80.61	32.85	12.32
160.0	341.61	339.75	323.49	289.41	248.91	189.39	105.98	38.31	9.79
170.0	356.51	369.79	380.25	364.22	301.44	196.31	52.31	18.17	9.39
180.0	357.19	375.08	382.16	342.39	227.03	103.11	19.69	10.01	6.30
190.0	324.06	325.29	302.34	233.49	150.19	82.97	20.03	12.26	6.36
200.0	267.41	249.69	222.30	180.39	132.30	90.45	26.49	12.94	8.33
210.0	208.24	183.21	154.18	122.63	95.96	37.91	12.99	9.96	7.48
220.0	166.56	140.68	115.54	96.98	63.84	17.04	11.76	9.96	7.76
230.0	127.58	105.53	89.66	70.88	30.83	13.39	10.69	8.89	6.92
240.0	108.28	90.68	78.30	61.93	31.44	14.57	11.14	9.17	7.31
250.0	89.72	78.75	66.71	51.02	22.89	14.79	11.87	9.73	7.59
260.0	83.08	73.74	62.78	51.53	25.54	15.58	12.83	9.73	8.16
270.0	78.02	69.98	59.06	45.79	21.54	15.41	12.49	9.84	8.16
280.0	82.69	73.24	63.45	51.58	27.00	16.37	13.61	11.19	9.28
290.0	87.75	77.40	66.38	52.31	27.62	16.65	13.78	11.70	9.68
300.0	105.08	88.99	76.50	63.62	39.66	17.55	13.95	12.26	10.74
310.0	124.99	105.86	87.98	72.34	45.68	16.88	13.67	12.15	10.58
320.0	167.68	143.89	120.32	98.10	76.28	26.72	14.18	12.15	10.41
330.0	206.78	190.07	163.24	135.06	107.78	70.54	17.72	11.93	9.06
340.0	255.94	250.59	237.32	206.83	156.04	114.53	50.29	15.36	9.68
350.0	304.26	318.21	329.63	309.49	220.28	114.30	36.17	13.16	9.06
360.0	326.53	349.37	376.76	397.80	354.66	223.59	44.16	16.76	8.66

## Intensity data(cd)

C/ $\gamma$ ( $^{\circ}$ )	90.0
0.0	2.19
10.0	2.25
20.0	2.19
30.0	2.31
40.0	2.31
50.0	2.48
60.0	2.53
70.0	2.70
80.0	2.81
90.0	3.54
100.0	3.77
110.0	5.12
120.0	5.57
130.0	6.19
140.0	5.91
150.0	3.83
160.0	3.38
170.0	2.31
180.0	2.25
190.0	2.25
200.0	2.25
210.0	2.25
220.0	2.36
230.0	2.42
240.0	2.59
250.0	2.64
260.0	2.98
270.0	3.21
280.0	4.16
290.0	4.50
300.0	6.13
310.0	6.30
320.0	5.23
330.0	4.73
340.0	2.81
350.0	2.59
360.0	2.19