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## Nata

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LumCAT: 1-1009-M	
Luminaire: BJB 47.360.1020	
Report No: NATA0100	Voltage(V): 34.5000
Test No: GC20191021010	Current(A): 0.2970
LampCAT: CITIZEN CLU028	Power (W): 10.2500
Lamp flux(lm): 1571.0	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 0	Width(mm): 0
Phm Type: C	Height(mm): 0

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## Photometric Results

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Lumens(lm): 1127.97  
Efficiency(%): 71.80%  
Lumens(lm)/Power(W): 110.05  
Central intensity(cd): 5813.578  
Maximum intensity(cd): 5813.578  
Angle of maximum intensity: C=0.0  $\gamma$ =0.0  
Beam Angle(50%Imax): [C0/180]Total=25.2  
                                  [C90/270]Total=25.2  
Field angle(10%Imax): [C0/180]Total=41.6  
                                  [C90/270]Total=41.6  
Maximum s/h(1/2): C0\_180=0.43 C90\_270=0.43  
Maximum s/h(1/4): C0\_180=0.42 C90\_270=0.42  
Up flux rate of lamp(%): 0.00%  
Down flux rate of lamp(%): 71.80%  
Up flux rate of LUM(%): - -  
Down flux rate of LUM(%): 100.00%  
CIE Type : Direct lighting  
Output flux ratio in  $\pi$  solid angle : 98.482%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	5813.578	0.000	0	.000%	.000%
1.0	5796.000	5.555	5.555	.354%	.492%
2.0	5734.266	16.549	22.104	1.053%	1.960%
3.0	5622.891	27.163	49.267	1.729%	4.368%
4.0	5479.523	37.163	86.43	2.366%	7.662%
5.0	5286.586	46.315	132.745	2.948%	11.769%
6.0	5039.578	54.267	187.012	3.454%	16.580%
7.0	4776.750	60.930	247.942	3.878%	21.981%
8.0	4487.906	66.305	314.247	4.221%	27.860%
9.0	4156.313	70.057	384.304	4.459%	34.070%
10.0	3819.516	72.178	456.482	4.594%	40.469%
11.0	3481.383	72.951	529.433	4.644%	46.937%
12.0	3131.930	72.293	601.726	4.602%	53.346%
13.0	2765.250	69.985	671.711	4.455%	59.551%
14.0	2415.586	66.314	738.025	4.221%	65.430%
15.0	2090.039	61.855	799.88	3.937%	70.913%
16.0	1789.242	56.842	856.723	3.618%	75.953%
17.0	1482.750	50.954	907.677	3.243%	80.470%
18.0	1170.893	43.753	951.429	2.785%	84.349%
19.0	980.409	37.428	988.858	2.382%	87.667%
20.0	745.678	31.592	1020.45	2.011%	90.468%
21.0	538.411	24.657	1045.107	1.570%	92.654%
22.0	373.366	18.323	1063.429	1.166%	94.278%
23.0	255.980	13.205	1076.635	.841%	95.449%
24.0	126.429	8.361	1084.996	.532%	96.190%
25.0	63.134	4.310	1089.306	.274%	96.572%
26.0	29.798	2.194	1091.5	.140%	96.767%
27.0	19.470	1.205	1092.705	.077%	96.874%
28.0	15.588	0.888	1093.592	.056%	96.952%
29.0	13.486	0.761	1094.353	.048%	97.020%
30.0	12.171	0.693	1095.046	.044%	97.081%
31.0	11.130	0.648	1095.694	.041%	97.139%
32.0	10.209	0.611	1096.306	.039%	97.193%
33.0	9.541	0.582	1096.888	.037%	97.245%
34.0	9.014	0.562	1097.449	.036%	97.294%
35.0	8.480	0.543	1097.992	.035%	97.342%
36.0	8.079	0.527	1098.52	.034%	97.389%
37.0	7.770	0.517	1099.037	.033%	97.435%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	7.474	0.509	1099.545	.032%	97.480%
39.0	7.256	0.503	1100.048	.032%	97.525%
40.0	7.052	0.499	1100.547	.032%	97.569%
41.0	6.905	0.497	1101.044	.032%	97.613%
42.0	6.750	0.496	1101.54	.032%	97.657%
43.0	6.630	0.496	1102.036	.032%	97.701%
44.0	6.518	0.496	1102.532	.032%	97.745%
45.0	6.434	0.498	1103.03	.032%	97.789%
46.0	6.356	0.500	1103.53	.032%	97.833%
47.0	6.293	0.503	1104.033	.032%	97.878%
48.0	6.216	0.506	1104.539	.032%	97.923%
49.0	6.145	0.508	1105.046	.032%	97.968%
50.0	6.089	0.510	1105.557	.032%	98.013%
51.0	6.061	0.514	1106.071	.033%	98.059%
52.0	5.998	0.517	1106.588	.033%	98.105%
53.0	5.963	0.520	1107.108	.033%	98.151%
54.0	5.920	0.524	1107.632	.033%	98.197%
55.0	5.885	0.527	1108.159	.034%	98.244%
56.0	5.836	0.530	1108.689	.034%	98.291%
57.0	5.829	0.533	1109.222	.034%	98.338%
58.0	5.787	0.537	1109.759	.034%	98.386%
59.0	5.780	0.541	1110.3	.034%	98.434%
60.0	5.723	0.543	1110.843	.035%	98.482%
61.0	5.723	0.546	1111.39	.035%	98.530%
62.0	5.702	0.551	1111.94	.035%	98.579%
63.0	5.681	0.554	1112.494	.035%	98.628%
64.0	5.660	0.557	1113.05	.035%	98.677%
65.0	5.625	0.558	1113.609	.036%	98.727%
66.0	5.625	0.561	1114.17	.036%	98.777%
67.0	5.604	0.565	1114.735	.036%	98.827%
68.0	5.611	0.568	1115.303	.036%	98.877%
69.0	5.590	0.571	1115.874	.036%	98.928%
70.0	5.562	0.573	1116.447	.036%	98.979%
71.0	5.555	0.575	1117.022	.037%	99.030%
72.0	5.534	0.577	1117.598	.037%	99.081%
73.0	5.534	0.579	1118.177	.037%	99.132%
74.0	5.541	0.582	1118.759	.037%	99.184%
75.0	5.505	0.584	1119.343	.037%	99.235%

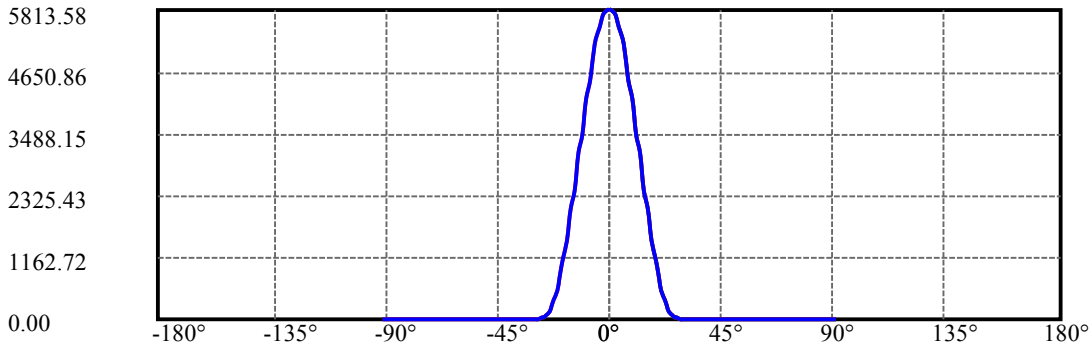
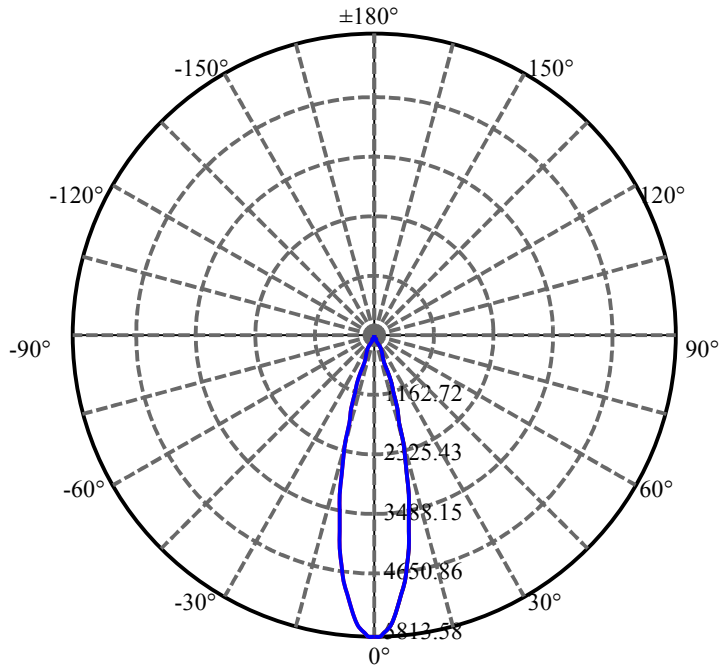
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	5.505	0.585	1119.927	.037%	99.287%
77.0	5.498	0.587	1120.514	.037%	99.339%
78.0	5.470	0.587	1121.101	.037%	99.391%
79.0	5.428	0.586	1121.687	.037%	99.443%
80.0	5.386	0.583	1122.27	.037%	99.495%
81.0	5.316	0.579	1122.848	.037%	99.546%
82.0	5.288	0.575	1123.423	.037%	99.597%
83.0	5.252	0.573	1123.996	.036%	99.648%
84.0	5.231	0.571	1124.567	.036%	99.698%
85.0	5.224	0.571	1125.138	.036%	99.749%
86.0	5.217	0.571	1125.709	.036%	99.800%
87.0	5.168	0.568	1126.277	.036%	99.850%
88.0	5.154	0.565	1126.843	.036%	99.900%
89.0	5.133	0.564	1127.406	.036%	99.950%
90.0	5.119	0.562	1127.968	.036%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1095.05	69.70%	97.08%
0-40	1100.55	70.05%	97.57%
0-60	1110.84	70.71%	98.48%
0-90	1127.41	71.76%	99.95%
0-120	1127.41	71.76%	99.95%
0-180	1127.97	71.80%	100.00%
60-90	17.11	1.09%	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%
0-16.90	902.37	57.44%	80.00%

ZONAL LUMEN SUMMARY

0-10	456.48
10-20	563.97
20-30	74.60
30-40	5.50
40-50	5.01
50-60	5.29
60-70	5.60
70-80	5.82
80-90	5.14
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: ———

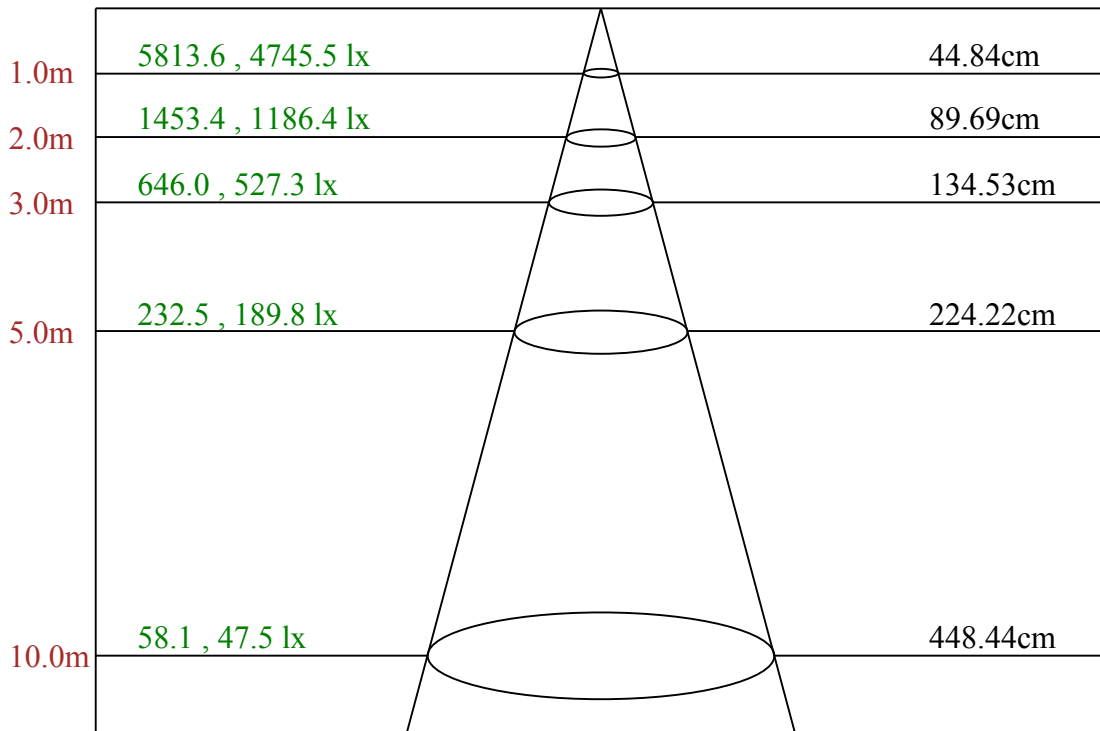
C90/C270: ———

Field angle(10%Imax):C0/180Left:20.8 Right:20.8

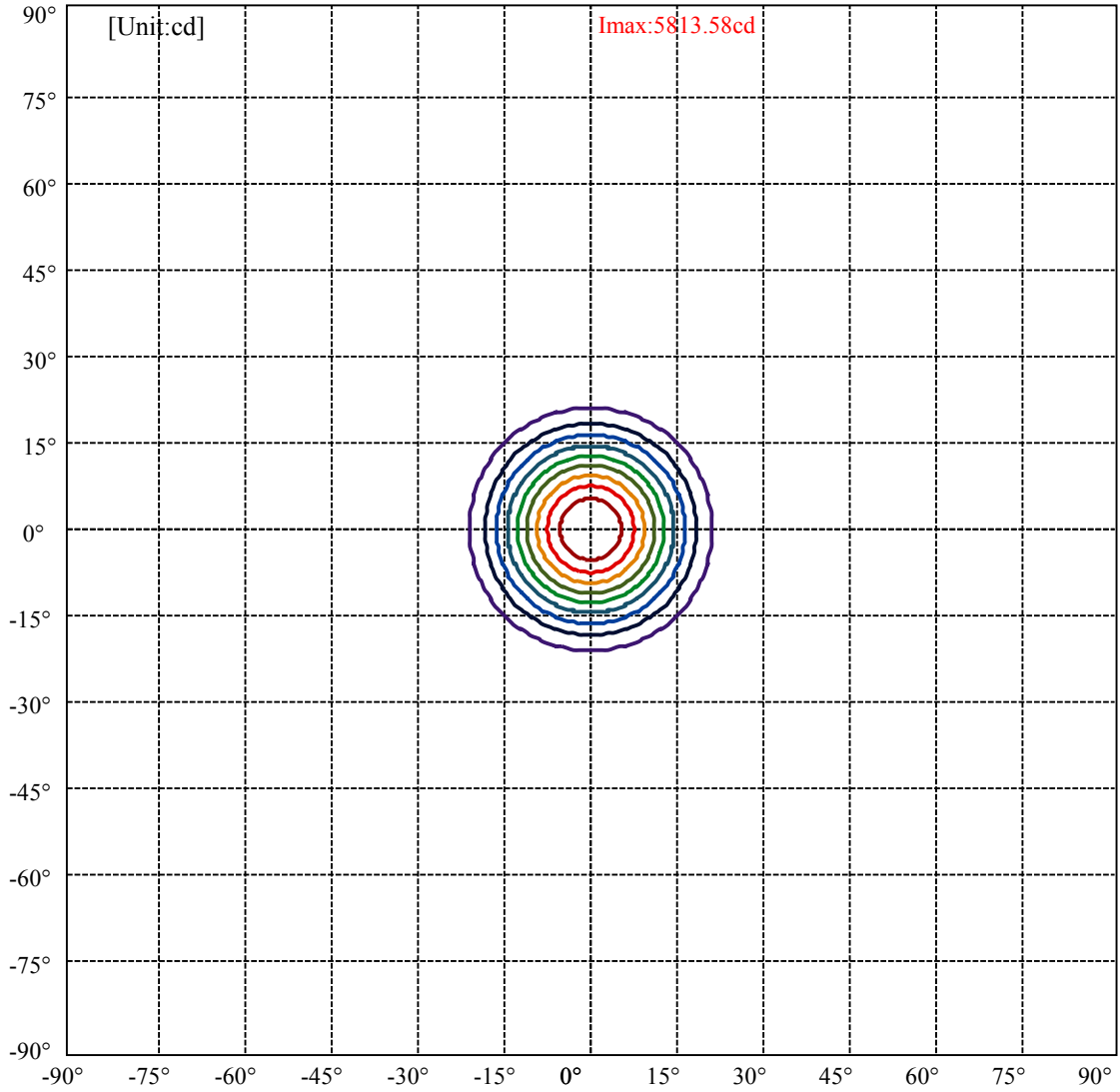
:C90/270Left:20.8 Right:20.8

Beam Angle(50%Imax):C0/180Left:12.6 Right:12.6

:C90/270Left:12.6 Right:12.6

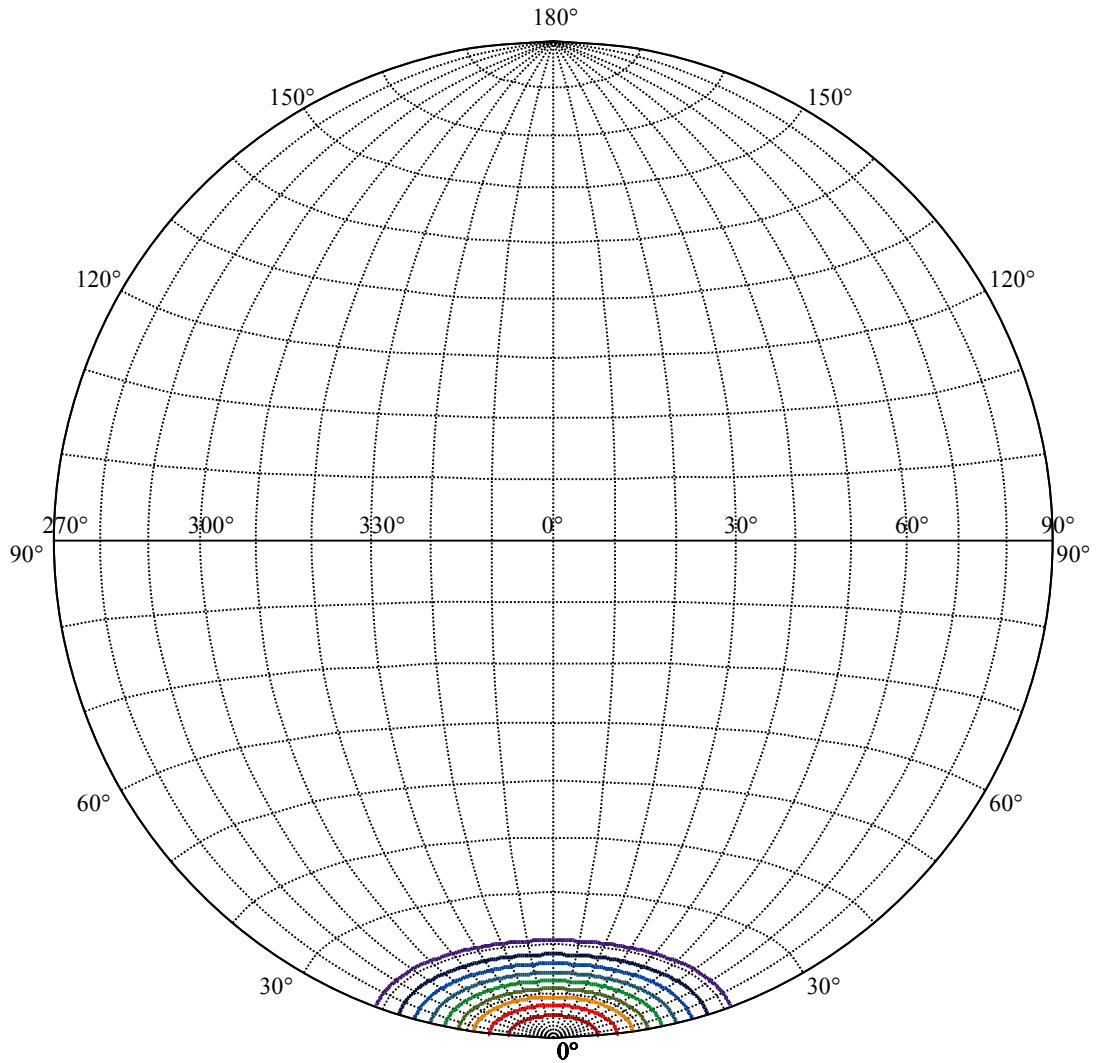


Max , Ave      Beam angle of C0 plane 25.28



(10%Imax) 581.358	—
(20%Imax) 1162.72	—
(30%Imax) 1744.07	—
(40%Imax) 2325.43	—
(50%Imax) 2906.79	—
(60%Imax) 3488.15	—
(70%Imax) 4069.5	—
(80%Imax) 4650.86	—
(90%Imax) 5232.22	—





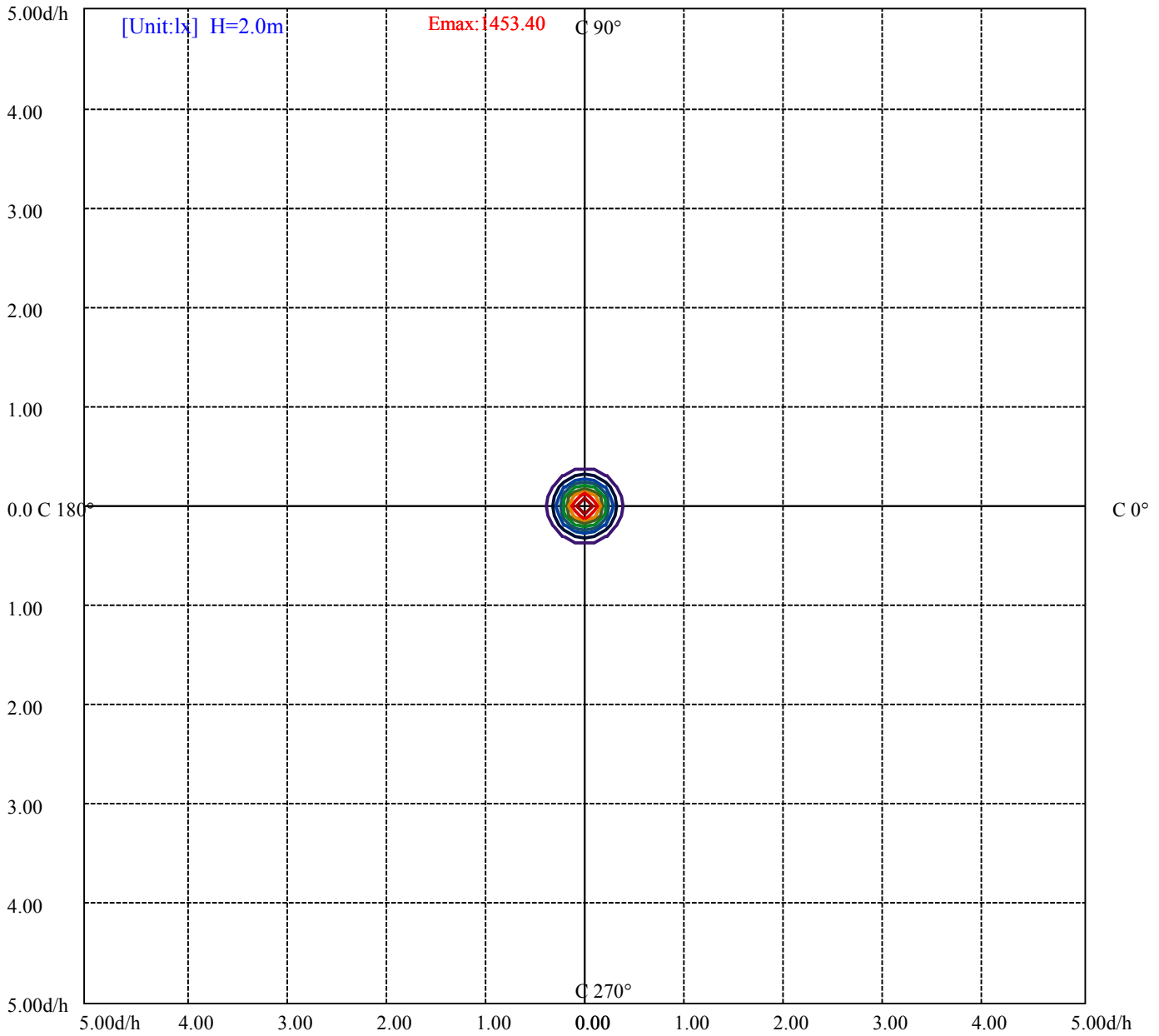
House

[Unit:cd]

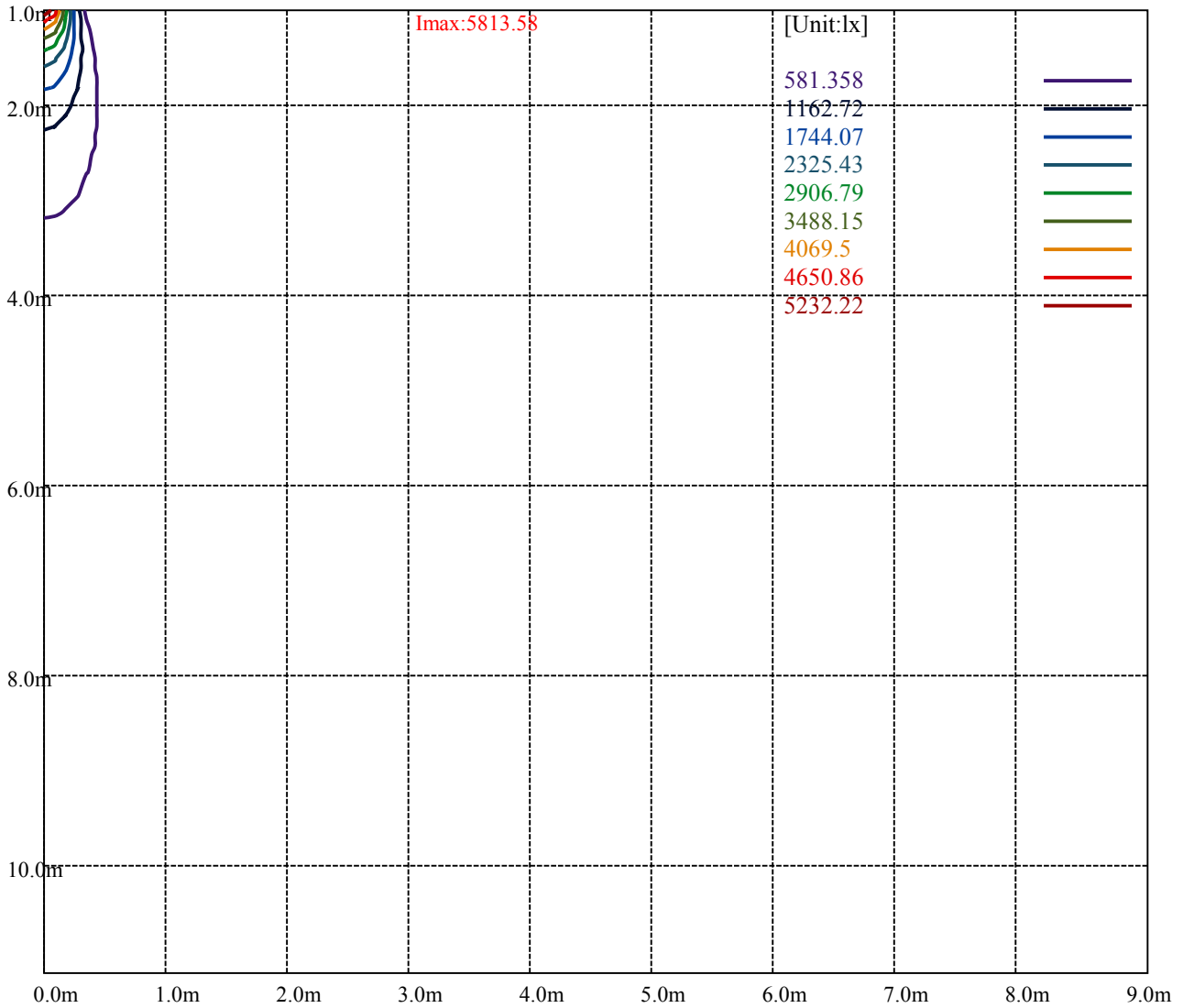
Road

**Imax:5813.58**

(10%Imax) 581.358	—
(20%Imax) 1162.72	—
(30%Imax) 1744.07	—
(40%Imax) 2325.43	—
(50%Imax) 2906.79	—
(60%Imax) 3488.15	—
(70%Imax) 4069.5	—
(80%Imax) 4650.86	—
(90%Imax) 5232.22	—



- (10%Emax) 145.3395
- (20%Emax) 290.68
- (30%Emax) 436.0175
- (40%Emax) 581.3575
- (50%Emax) 726.6975
- (60%Emax) 872.0375
- (70%Emax) 1017.375
- (80%Emax) 1162.715
- (90%Emax) 1308.055



Luminance Table

$\gamma$	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

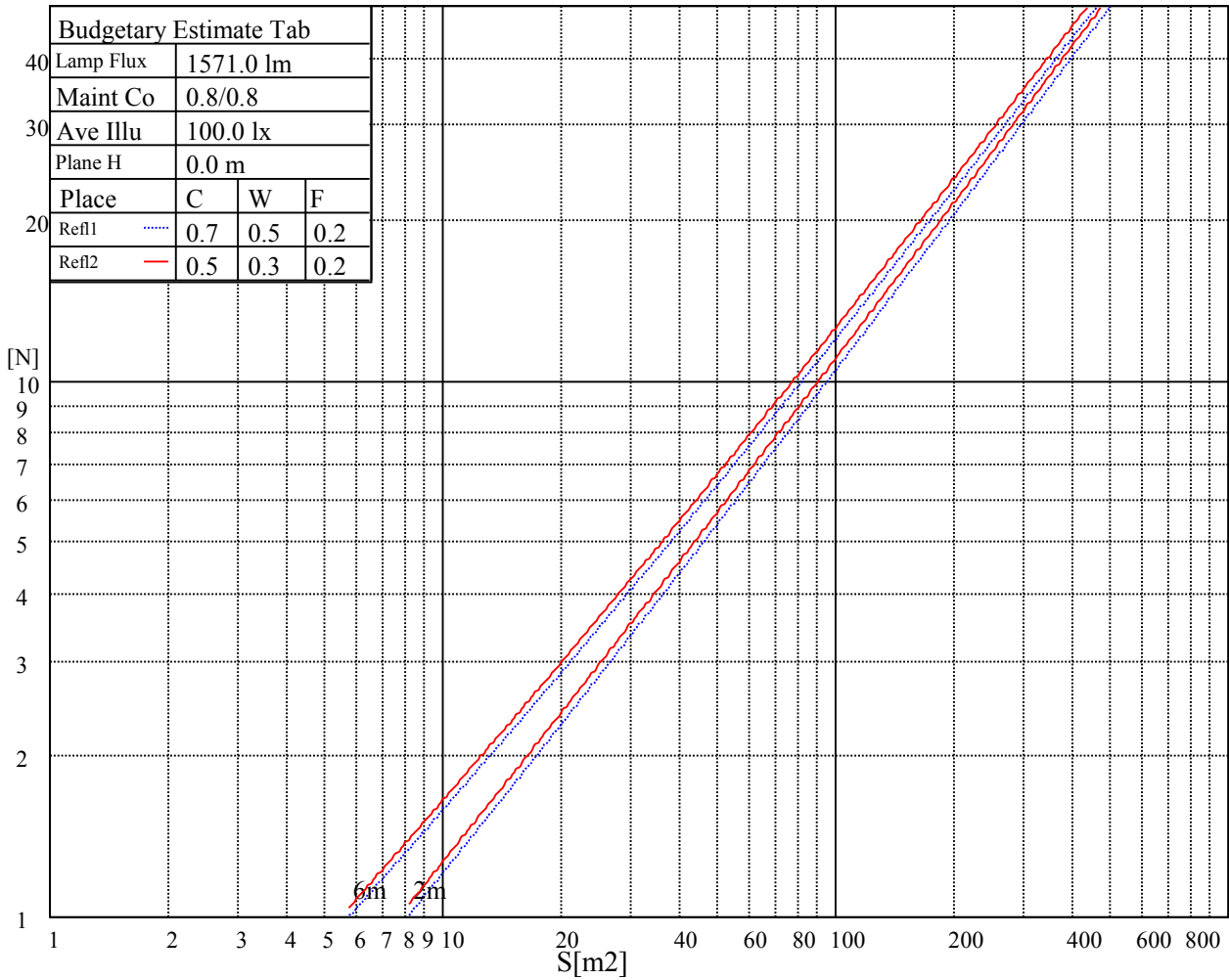
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

Glare Table

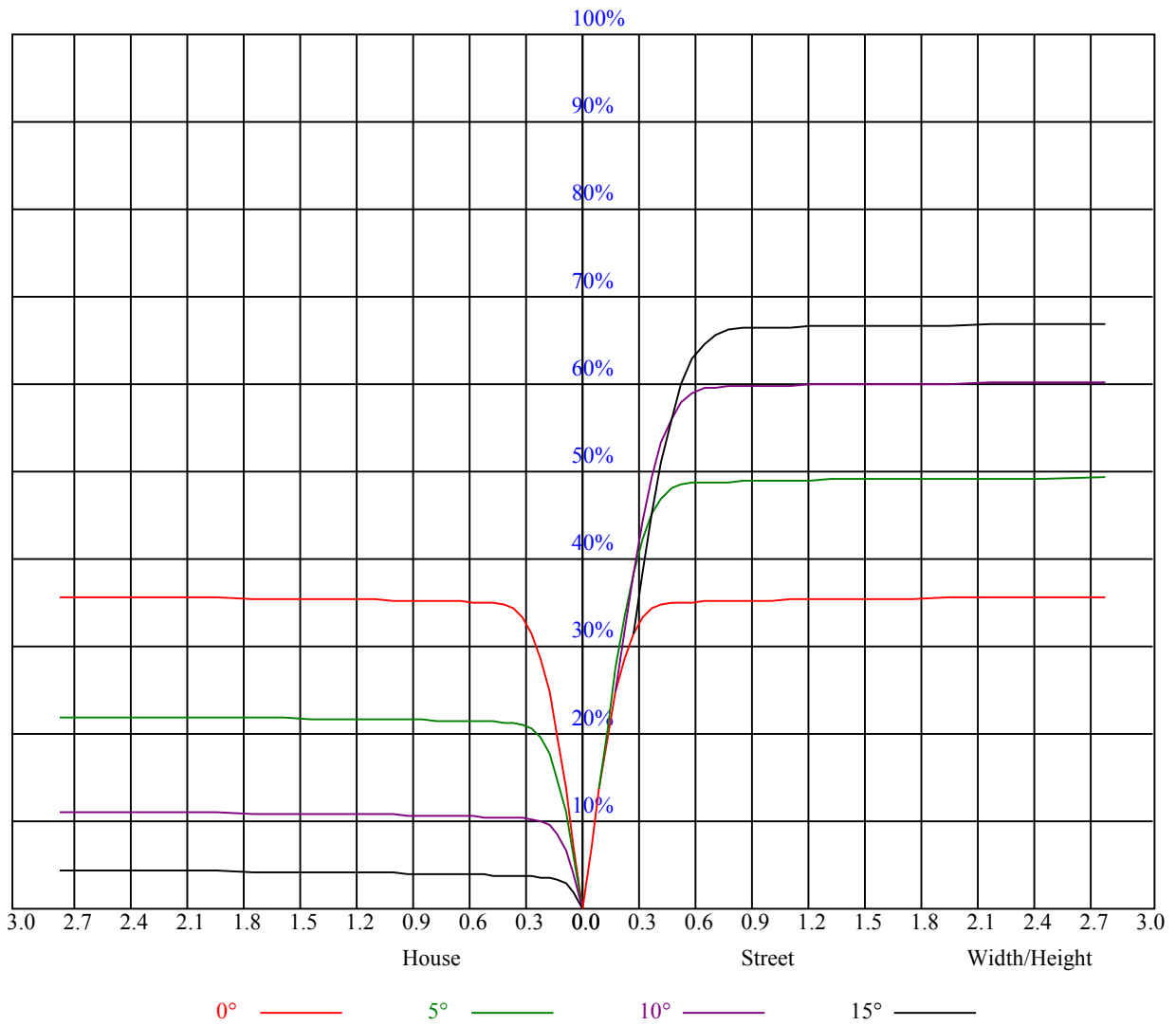
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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	0.85	0.85	0.85	0.83	0.83	0.83	0.80	0.80	0.80	0.76	0.76	0.76	0.73	0.73	0.73	0.72
1	0.81	0.80	0.78	0.79	0.78	0.77	0.77	0.76	0.75	0.74	0.73	0.73	0.72	0.71	0.71	0.69
2	0.77	0.75	0.74	0.76	0.74	0.73	0.74	0.73	0.71	0.72	0.71	0.70	0.70	0.69	0.68	0.67
3	0.74	0.72	0.70	0.74	0.71	0.69	0.72	0.70	0.68	0.70	0.69	0.67	0.69	0.67	0.66	0.65
4	0.72	0.69	0.67	0.71	0.69	0.67	0.70	0.68	0.66	0.68	0.67	0.65	0.67	0.66	0.65	0.64
5	0.70	0.67	0.65	0.69	0.66	0.65	0.68	0.66	0.64	0.67	0.65	0.63	0.66	0.64	0.63	0.62
6	0.68	0.65	0.63	0.67	0.64	0.63	0.66	0.64	0.62	0.65	0.63	0.62	0.64	0.63	0.61	0.61
7	0.66	0.63	0.61	0.65	0.63	0.61	0.65	0.62	0.61	0.64	0.62	0.60	0.63	0.61	0.60	0.59
8	0.64	0.61	0.59	0.64	0.61	0.59	0.63	0.61	0.59	0.62	0.60	0.59	0.62	0.60	0.59	0.58
9	0.62	0.60	0.58	0.62	0.60	0.58	0.62	0.59	0.58	0.61	0.59	0.58	0.61	0.59	0.57	0.57
10	0.61	0.58	0.57	0.61	0.58	0.57	0.60	0.58	0.56	0.60	0.58	0.56	0.59	0.58	0.56	0.56



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	5819.06	5790.38	5715.00	5604.19	5428.69	5233.50	4976.44	4686.75	4404.94
45.0	5816.81	5796.56	5708.81	5599.69	5470.31	5237.44	4982.06	4754.81	4402.69
90.0	5810.06	5781.38	5718.38	5572.69	5415.75	5225.06	4937.63	4673.81	4385.25
135.0	5808.38	5815.13	5776.88	5704.31	5575.50	5397.75	5202.56	4939.88	4680.00
180.0	5819.06	5808.94	5763.94	5657.63	5530.50	5363.44	5105.81	4860.00	4587.19
225.0	5816.81	5806.13	5751.00	5650.31	5518.69	5327.44	5096.25	4854.94	4554.00
270.0	5810.06	5802.75	5752.69	5662.13	5531.63	5346.56	5117.63	4843.69	4577.63
315.0	5808.38	5766.75	5687.44	5532.19	5365.13	5161.50	4898.25	4600.13	4311.56
360.0	5819.06	5790.38	5715.00	5604.19	5428.69	5233.50	4976.44	4686.75	4404.94
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	4072.50	3724.31	3404.25	3076.88	2667.94	2345.63	2041.88	1713.38	1407.94
45.0	4068.00	3790.69	3384.00	3053.25	2719.13	2315.25	2010.94	1725.19	1395.56
90.0	4041.56	3685.50	3362.63	2994.19	2624.63	2302.88	1968.19	1685.81	1383.19
135.0	4362.19	4015.69	3694.50	3366.00	2947.50	2615.06	2291.63	1917.56	1641.38
180.0	4213.69	3899.25	3576.94	3169.13	2838.94	2510.44	2122.88	1865.81	1549.13
225.0	4264.31	3917.25	3551.63	3219.19	2885.63	2478.38	2169.56	1871.44	1559.25
270.0	4258.13	3913.88	3597.19	3269.81	2858.63	2527.31	2216.81	1916.44	1569.38
315.0	3970.13	3609.56	3279.94	2907.00	2579.63	2229.75	1898.44	1618.31	1356.19
360.0	4072.50	3724.31	3404.25	3076.88	2667.94	2345.63	2041.88	1713.38	1407.94
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1165.50	918.00	691.31	510.19	334.69	284.63	106.76	47.53	24.13
45.0	1147.50	923.63	671.63	489.94	334.13	288.56	99.11	46.91	22.73
90.0	1104.86	883.13	681.08	458.61	311.74	197.16	93.66	44.10	23.96
135.0	1368.56	1123.31	848.25	646.88	453.94	290.81	171.62	95.68	38.31
180.0	1099.80	1014.86	798.08	555.30	388.97	253.91	130.11	68.01	33.58
225.0	1097.78	1040.74	799.31	581.79	413.78	259.26	155.25	75.09	35.10
270.0	1316.25	1088.44	821.25	626.06	454.50	293.06	166.39	88.93	38.93
315.0	1066.89	851.18	654.53	438.53	295.20	180.45	88.54	38.81	21.66
360.0	1165.50	918.00	691.31	510.19	334.69	284.63	106.76	47.53	24.13
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	17.89	14.40	12.94	11.81	10.63	9.90	9.28	8.78	8.21
45.0	17.04	14.18	12.60	11.59	10.58	9.79	9.17	8.72	8.21
90.0	16.93	14.06	12.71	11.48	10.63	9.84	9.23	8.72	8.27
135.0	21.49	16.93	13.73	12.32	11.31	10.24	9.56	9.00	8.44
180.0	21.21	15.58	13.50	12.15	11.03	10.13	9.51	8.94	8.44
225.0	22.44	17.78	14.79	13.28	12.15	10.97	10.18	9.62	9.06
270.0	22.44	17.38	14.85	13.33	12.09	10.97	10.29	9.68	9.00
315.0	16.31	14.40	12.77	11.42	10.63	9.84	9.11	8.66	8.21
360.0	17.89	14.40	12.94	11.81	10.63	9.90	9.28	8.78	8.21
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	7.88	7.54	7.20	7.03	6.81	6.69	6.58	6.47	6.30
45.0	7.88	7.59	7.31	7.14	6.92	6.81	6.64	6.53	6.41
90.0	7.88	7.65	7.37	7.14	6.98	6.86	6.69	6.58	6.53
135.0	8.10	7.76	7.43	7.26	7.09	6.86	6.69	6.58	6.47
180.0	8.10	7.71	7.48	7.26	7.03	6.86	6.69	6.58	6.47
225.0	8.49	8.16	7.82	7.54	7.31	7.14	6.98	6.81	6.69
270.0	8.55	8.21	7.88	7.59	7.37	7.26	7.09	6.98	6.86
315.0	7.76	7.54	7.31	7.09	6.92	6.75	6.64	6.53	6.41
360.0	7.88	7.54	7.20	7.03	6.81	6.69	6.58	6.47	6.30



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	6.24	6.13	6.13	6.02	5.96	5.91	5.85	5.79	5.74
45.0	6.36	6.30	6.24	6.13	6.08	6.02	6.02	5.96	5.91
90.0	6.41	6.36	6.30	6.24	6.19	6.08	6.08	5.96	6.02
135.0	6.41	6.30	6.24	6.19	6.08	6.02	6.02	5.96	5.91
180.0	6.36	6.30	6.19	6.13	6.08	6.02	5.96	5.91	5.85
225.0	6.64	6.53	6.47	6.41	6.30	6.24	6.19	6.13	6.13
270.0	6.69	6.64	6.58	6.47	6.41	6.41	6.36	6.30	6.24
315.0	6.36	6.30	6.19	6.13	6.08	6.02	6.02	5.96	5.91
360.0	6.24	6.13	6.13	6.02	5.96	5.91	5.85	5.79	5.74
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	5.74	5.68	5.63	5.63	5.57	5.57	5.51	5.51	5.51
45.0	5.85	5.85	5.79	5.79	5.74	5.74	5.68	5.68	5.63
90.0	5.96	5.91	5.91	5.85	5.85	5.85	5.79	5.79	5.79
135.0	5.85	5.85	5.79	5.79	5.74	5.74	5.68	5.68	5.68
180.0	5.79	5.74	5.68	5.68	5.63	5.63	5.57	5.57	5.51
225.0	6.08	6.02	5.96	5.96	5.91	5.91	5.85	5.85	5.85
270.0	6.19	6.19	6.13	6.13	6.13	6.08	6.02	6.02	6.02
315.0	5.91	5.85	5.79	5.79	5.74	5.74	5.68	5.68	5.63
360.0	5.74	5.68	5.63	5.63	5.57	5.57	5.51	5.51	5.51
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	5.46	5.46	5.46	5.40	5.40	5.40	5.40	5.34	5.34
45.0	5.63	5.63	5.57	5.57	5.57	5.57	5.57	5.51	5.51
90.0	5.79	5.79	5.74	5.79	5.74	5.79	5.74	5.74	5.79
135.0	5.63	5.63	5.57	5.57	5.51	5.51	5.51	5.51	5.46
180.0	5.51	5.46	5.40	5.40	5.40	5.40	5.34	5.34	5.29
225.0	5.79	5.74	5.74	5.74	5.68	5.68	5.68	5.63	5.63
270.0	6.02	5.96	5.96	5.96	5.96	5.96	5.96	5.91	5.91
315.0	5.63	5.63	5.57	5.57	5.57	5.57	5.51	5.51	5.51
360.0	5.46	5.46	5.46	5.40	5.40	5.40	5.40	5.34	5.34
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	5.34	5.34	5.34	5.29	5.29	5.29	5.29	5.29	5.23
45.0	5.51	5.46	5.51	5.46	5.46	5.46	5.46	5.46	5.46
90.0	5.74	5.74	5.79	5.74	5.79	5.79	5.68	5.51	5.34
135.0	5.46	5.46	5.46	5.40	5.40	5.40	5.34	5.34	5.34
180.0	5.29	5.29	5.29	5.23	5.23	5.23	5.23	5.23	5.23
225.0	5.57	5.57	5.57	5.57	5.57	5.51	5.51	5.46	5.46
270.0	5.91	5.91	5.91	5.91	5.85	5.85	5.79	5.74	5.57
315.0	5.46	5.51	5.46	5.46	5.46	5.46	5.46	5.40	5.46
360.0	5.34	5.34	5.34	5.29	5.29	5.29	5.29	5.29	5.23
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	5.23	5.23	5.23	5.23	5.18	5.18	5.12	5.12	5.12
45.0	5.40	5.40	5.34	5.29	5.29	5.29	5.18	5.18	5.12
90.0	5.23	5.23	5.23	5.23	5.23	5.23	5.18	5.18	5.18
135.0	5.34	5.29	5.23	5.23	5.23	5.18	5.18	5.12	5.12
180.0	5.18	5.18	5.12	5.12	5.12	5.12	5.12	5.12	5.12
225.0	5.40	5.34	5.34	5.23	5.23	5.23	5.18	5.18	5.12
270.0	5.34	5.23	5.23	5.29	5.29	5.29	5.23	5.18	5.18
315.0	5.40	5.40	5.29	5.23	5.23	5.23	5.18	5.18	5.12
360.0	5.23	5.23	5.23	5.23	5.18	5.18	5.12	5.12	5.12

Intensity data(cd)

<b>C/γ(°)</b>	<b>90.0</b>
<b>0.0</b>	<b>5.06</b>
<b>45.0</b>	<b>5.12</b>
<b>90.0</b>	<b>5.12</b>
<b>135.0</b>	<b>5.12</b>
<b>180.0</b>	<b>5.06</b>
<b>225.0</b>	<b>5.18</b>
<b>270.0</b>	<b>5.18</b>
<b>315.0</b>	<b>5.12</b>
<b>360.0</b>	<b>5.06</b>