



NATA LIGHTING CO.,LTD.
www.nata.cn
Email:info@nata.com
Tel:+86-750-3770000 Fax:+86-750-3771111
Address:380JinOu Road,GaoXin Zone,Jiang Men City,Guangdong,China

Nata

LumCAT: 2-2186-M	
Luminaire: 92.70.131.00	
Report No: NATA0100	Voltage(V): 35.9900
Test No: GC20200211721	Current(A): 0.6000
LampCAT: CITIZEN CLU038	Power (W): 21.6000
Lamp flux(lm): 2507.0	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 0	Width(mm): 0
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 1995.48
Efficiency(%): 79.60%
Lumens(lm)/Power(W): 92.38
Central intensity(cd): 14041.410
Maximum intensity(cd): 14041.410
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=16.9
 [C90/270]Total=16.9
Field angle(10%Imax): [C0/180]Total=40.8
 [C90/270]Total=40.8
Maximum s/h(1/2): C0_180=0.29 C90_270=0.29
Maximum s/h(1/4): C0_180=0.33 C90_270=0.33
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 79.60%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.744%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	14041.406	0.000	0	.000%	.000%
1.0	13913.438	13.376	13.376	.534%	.670%
2.0	13409.297	39.216	52.592	1.564%	2.636%
3.0	12487.359	61.936	114.528	2.471%	5.739%
4.0	11647.125	80.786	195.314	3.222%	9.788%
5.0	10696.359	96.121	291.435	3.834%	14.605%
6.0	9492.680	106.099	397.533	4.232%	19.922%
7.0	8478.000	111.544	509.077	4.449%	25.512%
8.0	7454.180	114.024	623.101	4.548%	31.226%
9.0	6534.563	113.371	736.472	4.522%	36.907%
10.0	5738.977	111.071	847.543	4.430%	42.473%
11.0	5041.406	107.718	955.261	4.297%	47.871%
12.0	4459.781	103.862	1059.123	4.143%	53.076%
13.0	3897.773	99.183	1158.306	3.956%	58.047%
14.0	3423.094	93.706	1252.012	3.738%	62.743%
15.0	3028.711	88.573	1340.586	3.533%	67.181%
16.0	2724.680	84.303	1424.889	3.363%	71.406%
17.0	2355.539	79.113	1504.001	3.156%	75.371%
18.0	2037.445	72.431	1576.432	2.889%	79.000%
19.0	1781.859	66.448	1642.88	2.651%	82.330%
20.0	1509.469	60.240	1703.121	2.403%	85.349%
21.0	1238.555	52.768	1755.888	2.105%	87.993%
22.0	1083.874	46.670	1802.559	1.862%	90.332%
23.0	875.918	41.122	1843.68	1.640%	92.393%
24.0	654.497	33.460	1877.141	1.335%	94.070%
25.0	485.740	25.926	1903.067	1.034%	95.369%
26.0	328.458	19.219	1922.286	.767%	96.332%
27.0	222.131	13.470	1935.757	.537%	97.007%
28.0	93.670	7.995	1943.752	.319%	97.408%
29.0	38.377	3.455	1947.207	.138%	97.581%
30.0	17.782	1.516	1948.723	.060%	97.657%
31.0	14.491	0.898	1949.621	.036%	97.702%
32.0	13.430	0.800	1950.421	.032%	97.742%
33.0	12.572	0.766	1951.187	.031%	97.781%
34.0	11.918	0.741	1951.928	.030%	97.818%
35.0	11.292	0.721	1952.649	.029%	97.854%
36.0	10.821	0.704	1953.353	.028%	97.889%
37.0	10.455	0.694	1954.047	.028%	97.924%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	10.160	0.688	1954.735	.027%	97.958%
39.0	9.830	0.682	1955.418	.027%	97.993%
40.0	9.605	0.678	1956.095	.027%	98.027%
41.0	9.422	0.678	1956.773	.027%	98.060%
42.0	9.239	0.678	1957.451	.027%	98.094%
43.0	9.084	0.679	1958.13	.027%	98.128%
44.0	8.979	0.682	1958.811	.027%	98.163%
45.0	8.880	0.686	1959.498	.027%	98.197%
46.0	8.768	0.690	1960.188	.028%	98.232%
47.0	8.691	0.694	1960.882	.028%	98.266%
48.0	8.634	0.700	1961.583	.028%	98.302%
49.0	8.564	0.706	1962.289	.028%	98.337%
50.0	8.501	0.711	1963	.028%	98.373%
51.0	8.430	0.716	1963.717	.029%	98.408%
52.0	8.381	0.721	1964.438	.029%	98.445%
53.0	8.325	0.727	1965.165	.029%	98.481%
54.0	8.290	0.732	1965.897	.029%	98.518%
55.0	8.262	0.739	1966.636	.029%	98.555%
56.0	8.227	0.745	1967.381	.030%	98.592%
57.0	8.177	0.750	1968.131	.030%	98.630%
58.0	8.149	0.755	1968.886	.030%	98.668%
59.0	8.156	0.762	1969.648	.030%	98.706%
60.0	8.114	0.769	1970.417	.031%	98.744%
61.0	8.093	0.773	1971.19	.031%	98.783%
62.0	8.100	0.780	1971.971	.031%	98.822%
63.0	8.051	0.785	1972.756	.031%	98.861%
64.0	8.037	0.789	1973.546	.031%	98.901%
65.0	8.037	0.795	1974.341	.032%	98.941%
66.0	8.037	0.802	1975.143	.032%	98.981%
67.0	8.023	0.808	1975.951	.032%	99.022%
68.0	7.988	0.811	1976.762	.032%	99.062%
69.0	7.980	0.815	1977.576	.032%	99.103%
70.0	7.980	0.820	1978.396	.033%	99.144%
71.0	7.995	0.826	1979.222	.033%	99.185%
72.0	7.980	0.831	1980.052	.033%	99.227%
73.0	7.966	0.834	1980.886	.033%	99.269%
74.0	7.980	0.838	1981.725	.033%	99.311%
75.0	7.973	0.843	1982.567	.034%	99.353%

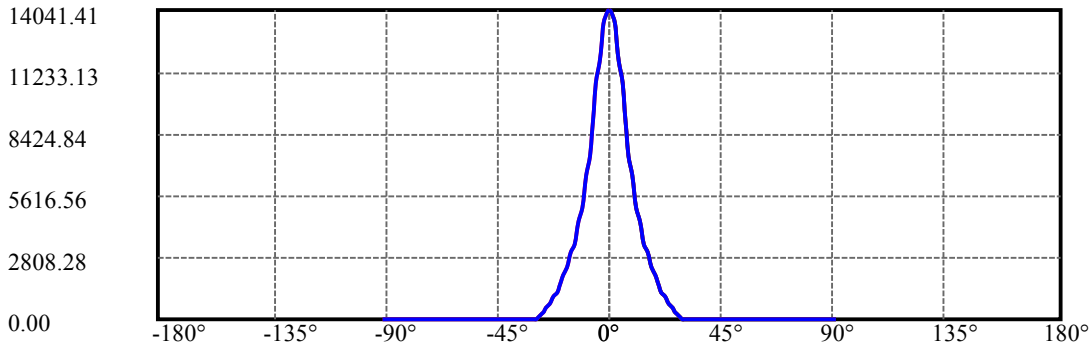
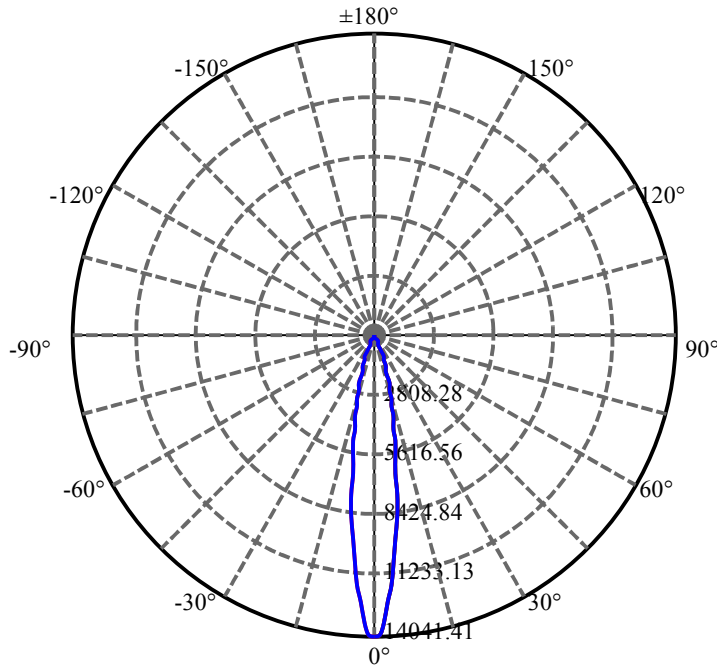
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	7.973	0.847	1983.414	.034%	99.396%
77.0	7.966	0.850	1984.264	.034%	99.438%
78.0	7.966	0.853	1985.117	.034%	99.481%
79.0	7.966	0.856	1985.973	.034%	99.524%
80.0	7.959	0.859	1986.831	.034%	99.567%
81.0	7.959	0.861	1987.692	.034%	99.610%
82.0	7.966	0.864	1988.556	.034%	99.653%
83.0	7.995	0.868	1989.424	.035%	99.697%
84.0	8.023	0.873	1990.296	.035%	99.740%
85.0	7.938	0.871	1991.167	.035%	99.784%
86.0	7.896	0.866	1992.033	.035%	99.827%
87.0	7.854	0.862	1992.895	.034%	99.871%
88.0	7.847	0.860	1993.755	.034%	99.914%
89.0	7.840	0.860	1994.615	.034%	99.957%
90.0	7.861	0.861	1995.475	.034%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1948.72	77.73%	97.66%
0-40	1956.10	78.03%	98.03%
0-60	1970.42	78.60%	98.74%
0-90	1994.61	79.56%	99.96%
0-120	1994.61	79.56%	99.96%
0-180	1995.48	79.60%	100.00%
60-90	24.97	1.00%	1.25%
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%
0-18.30	1596.38	63.68%	80.00%

ZONAL LUMEN SUMMARY

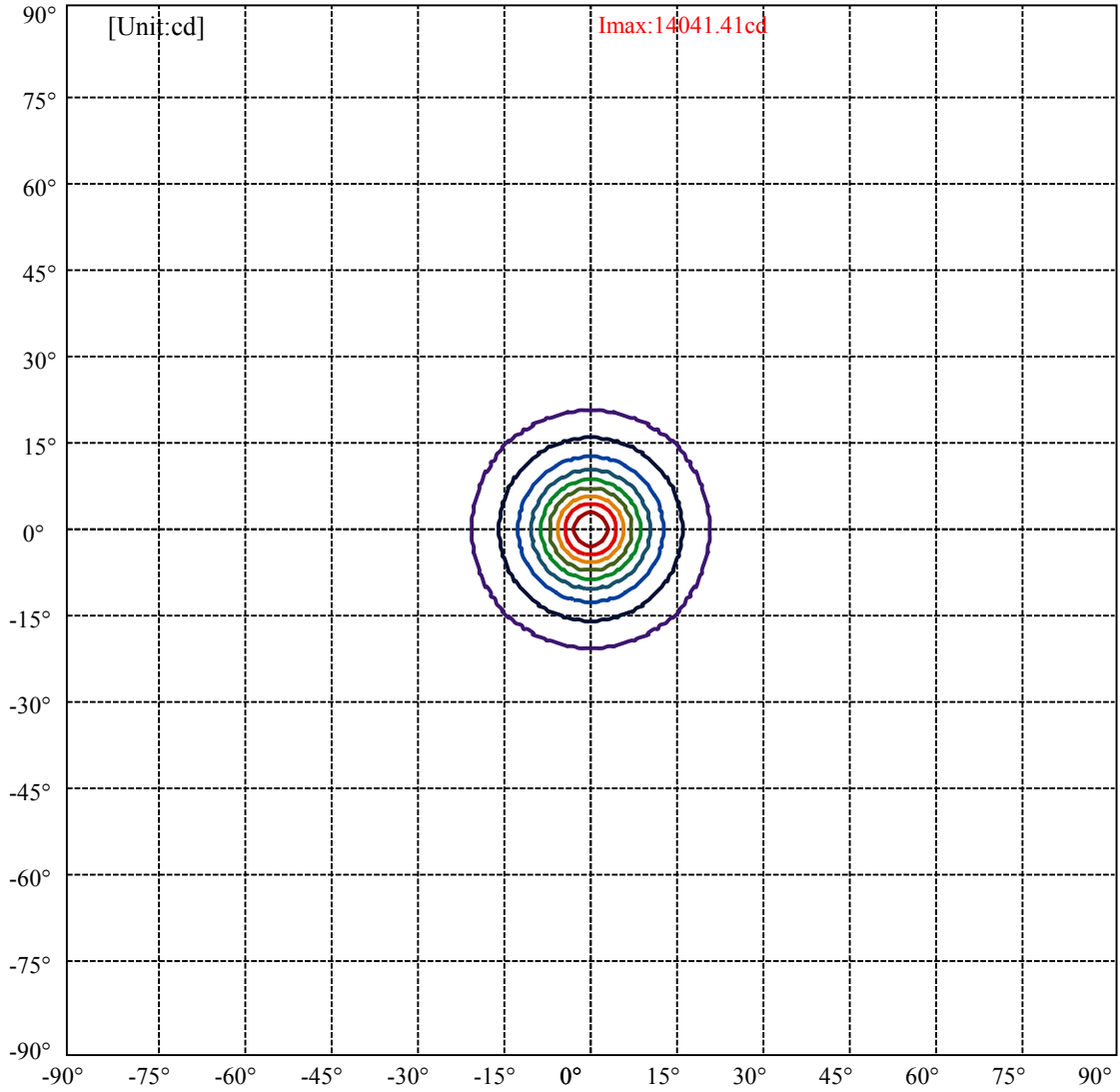
0-10	847.54
10-20	855.58
20-30	245.60
30-40	7.37
40-50	6.91
50-60	7.42
60-70	7.98
70-80	8.44
80-90	7.78
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00



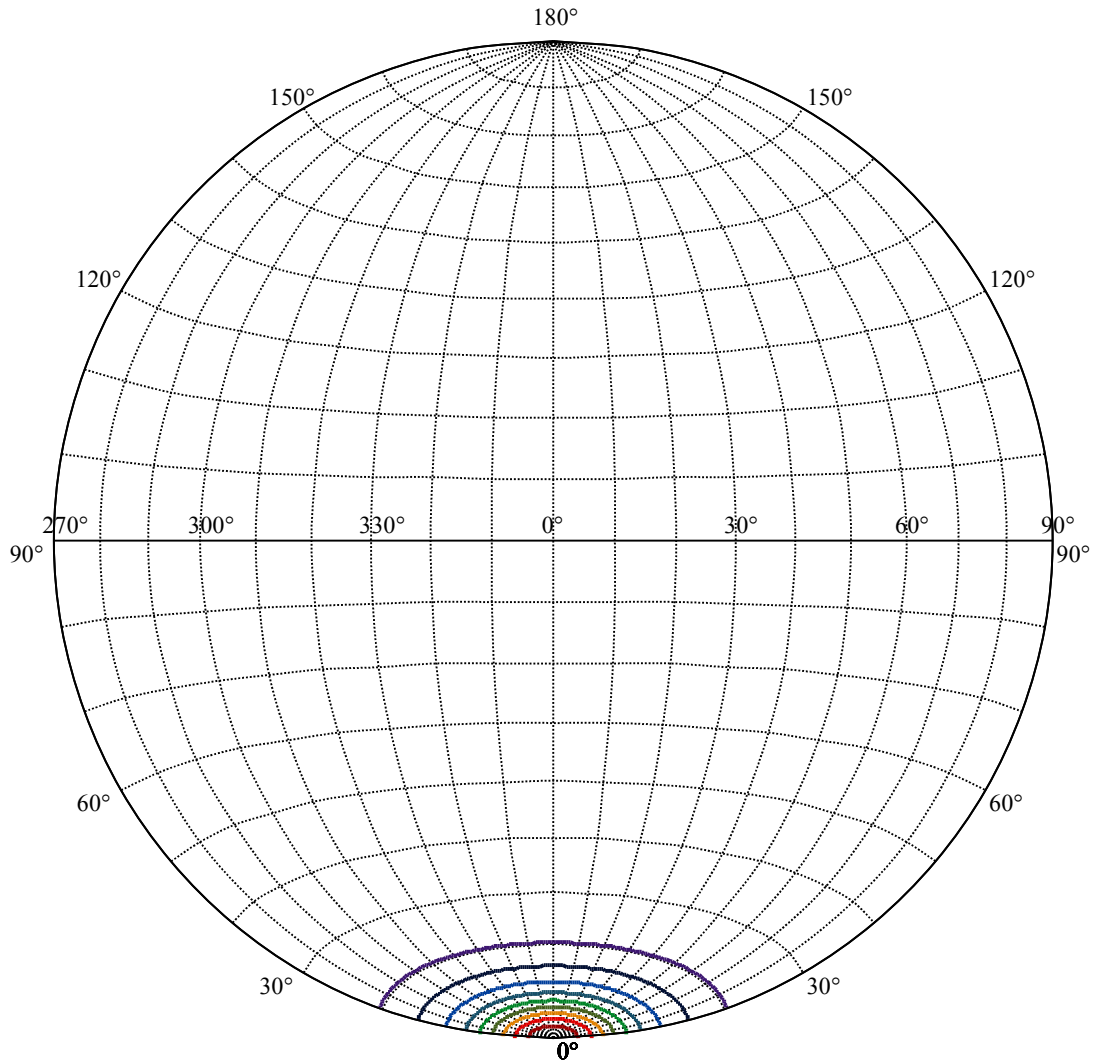
C0(Max): —————
 C0/C180: —————
 C90/C270: —————

Field angle(10%Imax):C0/180Left:20.4 Right:20.4
 :C90/270Left:20.4 Right:20.4

Beam Angle(50%Imax):C0/180Left:8.5 Right:8.5
 :C90/270Left:8.5 Right:8.5



(10%Imax) 1404.14	—
(20%Imax) 2808.28	—
(30%Imax) 4212.42	—
(40%Imax) 5616.56	—
(50%Imax) 7020.7	—
(60%Imax) 8424.84	—
(70%Imax) 9828.98	—
(80%Imax) 11233.1	—
(90%Imax) 12637.3	—



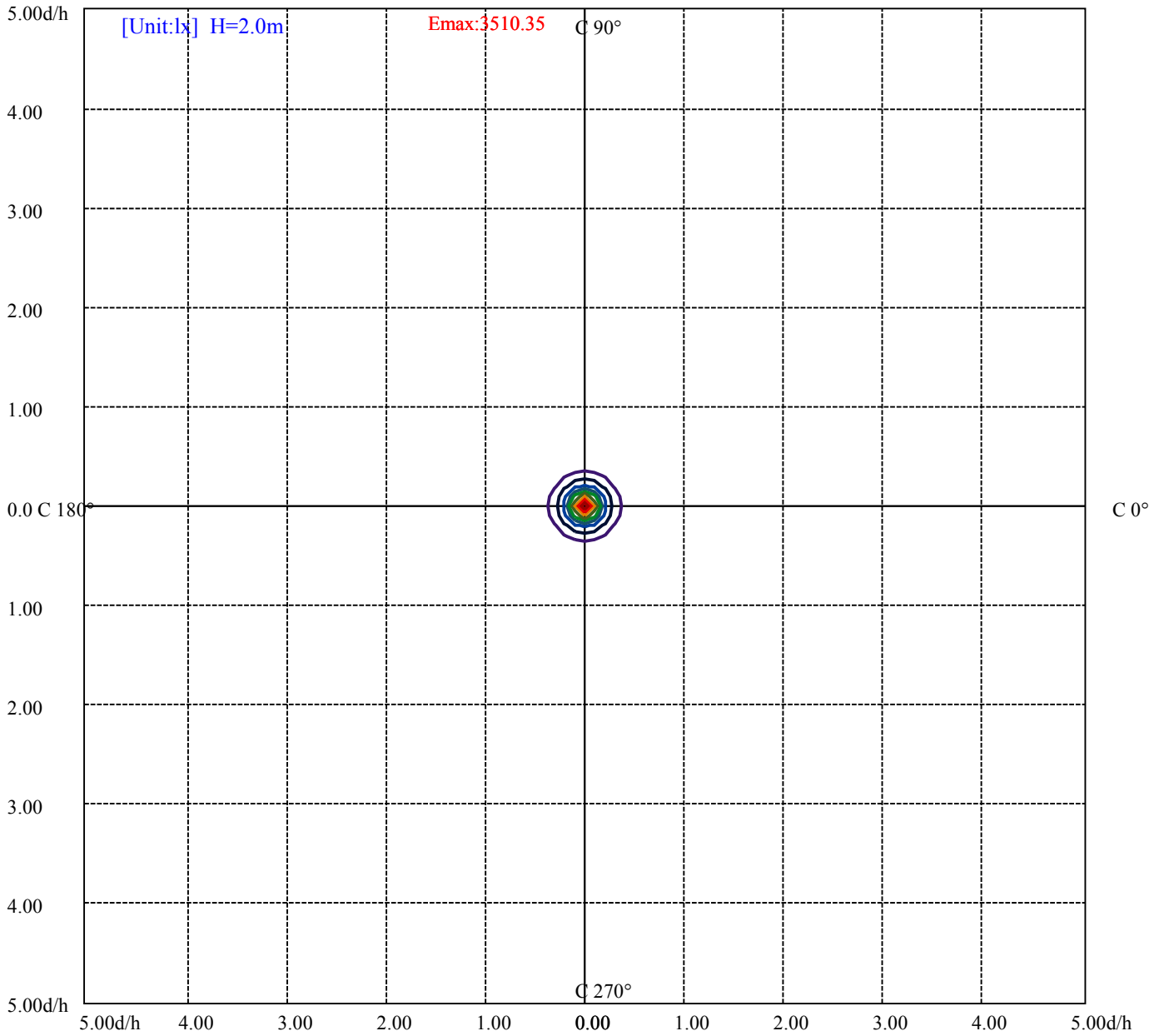
House

[Unit:cd]

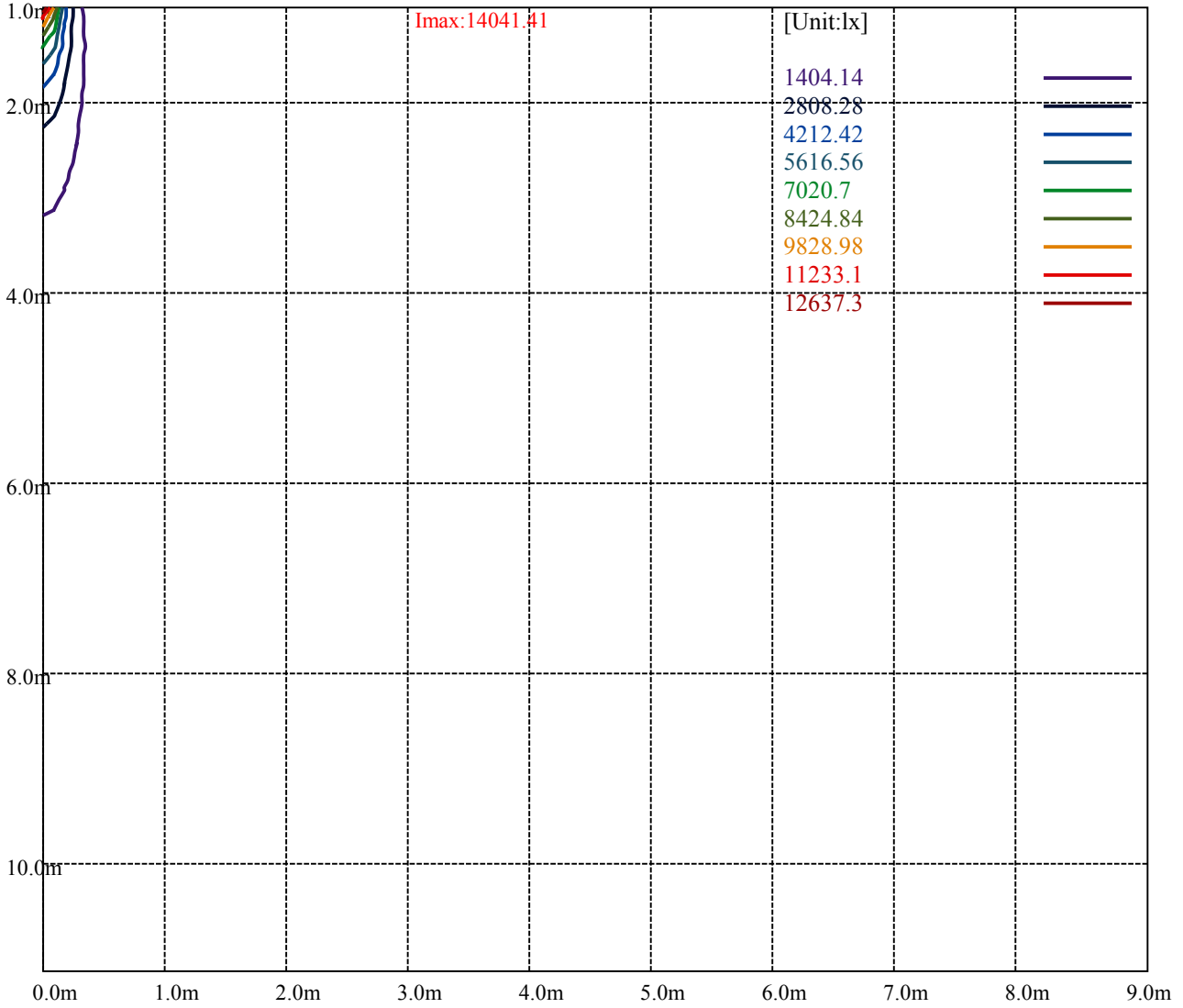
Road

Imax:14041.41

(10%Imax) 1404.14	—
(20%Imax) 2808.28	—
(30%Imax) 4212.42	—
(40%Imax) 5616.56	—
(50%Imax) 7020.7	—
(60%Imax) 8424.84	—
(70%Imax) 9828.98	—
(80%Imax) 11233.1	—
(90%Imax) 12637.3	—



- (10%Emax) 351.035
- (20%Emax) 702.07
- (30%Emax) 1053.105
- (40%Emax) 1404.137
- (50%Emax) 1755.172
- (60%Emax) 2106.208
- (70%Emax) 2457.242
- (80%Emax) 2808.275
- (90%Emax) 3159.3



Luminance Table

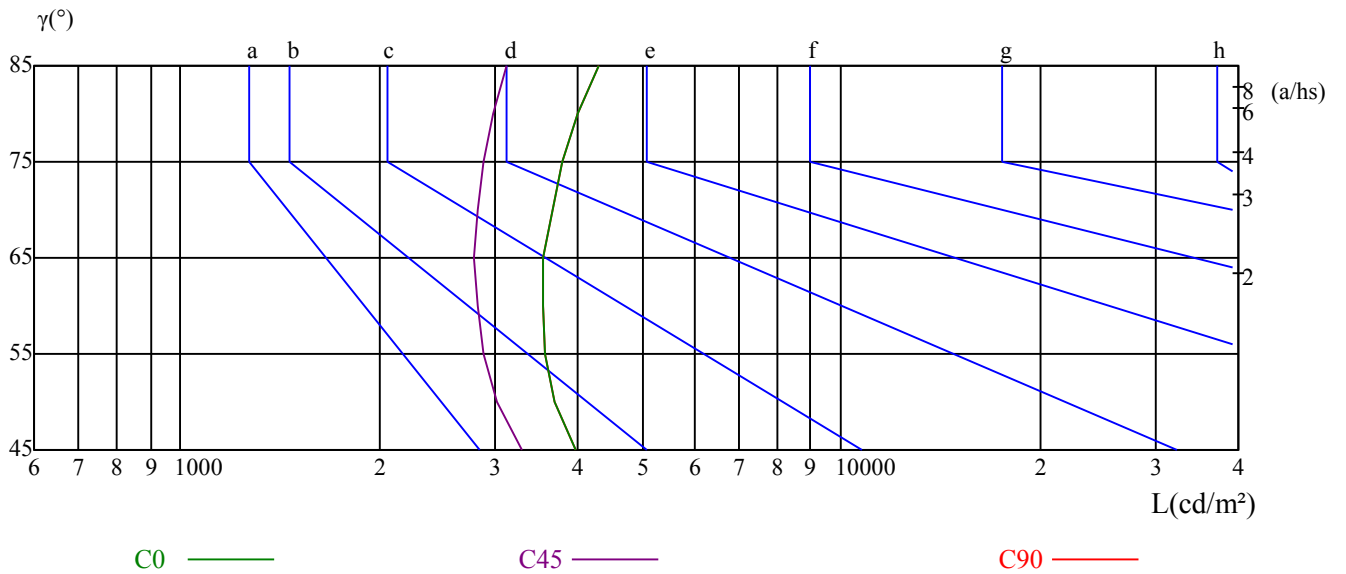
γ	45	50	55	60	65	70	75	80	85
C0	3955	3683	3556	3535	3547	3659	3797	4003	4302
C45	3296	3023	2875	2815	2780	2819	2873	2969	3120
C90	3955	3683	3556	3535	3547	3659	3797	4003	4302

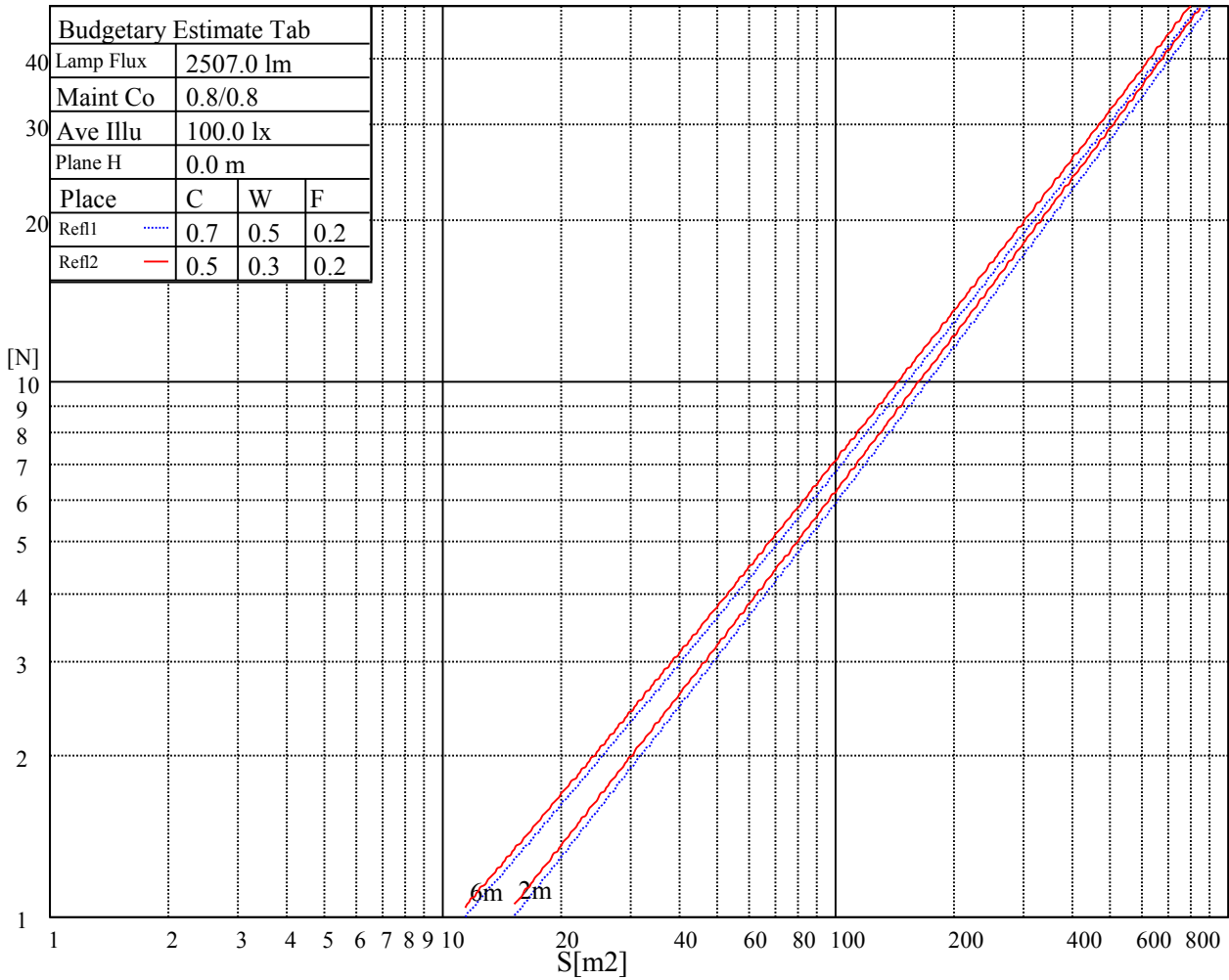
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
10648	10648	10648	17024	17024	17024	50197	50197	50197

Glare Table

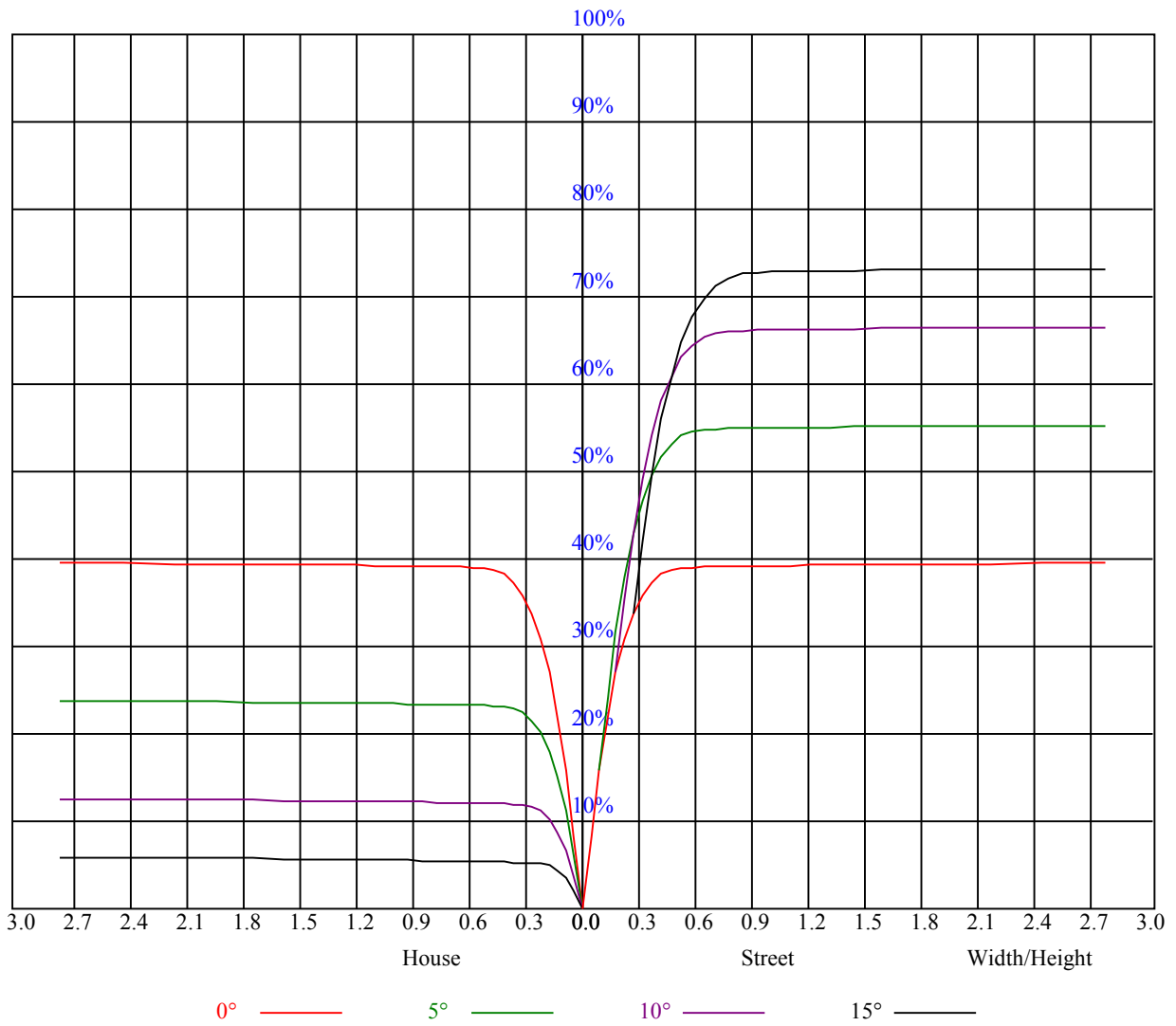
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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	0.95	0.95	0.95	0.93	0.93	0.93	0.88	0.88	0.88	0.85	0.85	0.85	0.81	0.81	0.81	0.80
1	0.90	0.88	0.87	0.88	0.87	0.86	0.85	0.84	0.83	0.82	0.81	0.81	0.79	0.79	0.78	0.77
2	0.86	0.84	0.82	0.85	0.83	0.81	0.82	0.80	0.79	0.80	0.79	0.77	0.78	0.77	0.76	0.75
3	0.83	0.80	0.78	0.82	0.79	0.77	0.80	0.78	0.76	0.78	0.76	0.75	0.76	0.75	0.74	0.73
4	0.80	0.77	0.74	0.79	0.76	0.74	0.77	0.75	0.73	0.76	0.74	0.72	0.75	0.73	0.72	0.71
5	0.77	0.74	0.72	0.76	0.74	0.71	0.75	0.73	0.71	0.74	0.72	0.70	0.73	0.71	0.70	0.69
6	0.75	0.72	0.69	0.74	0.71	0.69	0.73	0.71	0.69	0.72	0.70	0.68	0.71	0.69	0.68	0.67
7	0.73	0.70	0.68	0.72	0.69	0.67	0.71	0.69	0.67	0.71	0.68	0.67	0.70	0.68	0.66	0.66
8	0.71	0.68	0.66	0.70	0.68	0.66	0.70	0.67	0.65	0.69	0.67	0.65	0.68	0.66	0.65	0.64
9	0.69	0.66	0.64	0.69	0.66	0.64	0.68	0.66	0.64	0.68	0.65	0.64	0.67	0.65	0.63	0.63
10	0.67	0.65	0.63	0.67	0.64	0.63	0.67	0.64	0.62	0.66	0.64	0.62	0.66	0.64	0.62	0.61



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	13961.25	14113.13	13893.75	13404.38	12673.13	11745.00	10468.13	9444.38	8448.75
45.0	14051.25	14118.75	13843.13	13303.13	12645.00	11503.13	10350.00	9292.50	8161.88
90.0	14079.38	13938.75	13455.00	12656.25	11144.81	10630.13	9442.69	8404.88	7329.94
135.0	14073.75	13916.25	13353.75	12611.25	11716.88	10591.88	9438.75	8415.00	7363.13
180.0	13961.25	13578.75	12718.13	11204.44	10820.81	9662.06	8506.69	7545.94	6586.88
225.0	14051.25	13719.38	13033.13	11221.31	11090.81	10024.88	8720.44	7753.50	6887.81
270.0	14079.38	13966.88	13477.50	12768.75	11874.38	10721.25	9511.88	8482.50	7430.63
315.0	14073.75	13955.63	13500.00	12729.38	11211.19	10692.56	9502.88	8485.31	7424.44
360.0	13961.25	14113.13	13893.75	13404.38	12673.13	11745.00	10468.13	9444.38	8448.75
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	7284.38	6440.63	5709.38	4989.38	4348.13	3853.13	3352.50	2975.63	2840.63
45.0	7126.88	6300.00	5478.75	4843.13	4218.75	3684.38	3268.13	2902.50	2501.44
90.0	6486.75	5654.81	4937.63	4381.88	3836.25	3354.75	2976.19	2640.38	2264.06
135.0	6446.25	5715.00	4989.38	4438.13	3881.25	3397.50	3026.25	2846.25	2353.50
180.0	5839.88	5032.13	4469.63	3975.75	3483.56	3051.00	2710.13	2401.88	2053.69
225.0	6023.81	5272.31	4687.88	4108.50	3599.44	3204.00	2815.31	2500.88	2178.56
270.0	6496.88	5765.63	5056.88	4505.63	3943.13	3453.75	3071.25	2857.50	2358.00
315.0	6571.69	5731.31	5001.75	4435.88	3871.69	3386.25	3009.94	2672.44	2294.44
360.0	7284.38	6440.63	5709.38	4989.38	4348.13	3853.13	3352.50	2975.63	2840.63
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	2263.50	1999.13	1726.31	1472.06	1263.94	1065.38	822.38	636.19	460.69
45.0	2203.31	1918.13	1616.63	1410.19	1208.81	972.00	763.31	591.75	405.56
90.0	1989.00	1737.00	1507.50	1117.80	1043.21	851.79	628.14	461.42	316.97
135.0	2043.56	1772.44	1511.44	1282.50	1081.69	892.13	636.75	473.06	338.63
180.0	1793.81	1553.63	1235.25	1080.96	884.48	650.08	478.41	326.25	176.74
225.0	1891.13	1654.31	1433.81	1098.00	973.18	776.93	551.93	389.87	253.69
270.0	2088.56	1839.94	1551.94	1343.25	1137.38	916.88	705.94	529.31	348.19
315.0	2026.69	1780.31	1492.88	1103.68	1078.31	882.17	649.13	478.07	327.21
360.0	2263.50	1999.13	1726.31	1472.06	1263.94	1065.38	822.38	636.19	460.69
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	288.56	153.84	75.60	27.84	16.26	15.02	13.84	12.99	12.21
45.0	298.13	140.63	56.08	21.77	14.96	13.78	12.99	12.26	11.59
90.0	183.83	86.23	31.33	15.08	13.89	12.88	12.09	11.53	10.97
135.0	285.19	79.99	30.04	15.08	13.78	12.88	12.09	11.53	10.97
180.0	100.01	38.98	15.58	14.46	13.50	12.43	11.87	11.36	10.80
225.0	133.31	52.14	20.03	15.36	14.18	13.22	12.32	11.76	11.14
270.0	296.44	106.76	42.30	16.37	14.57	13.61	12.71	11.98	11.36
315.0	191.59	90.79	36.06	16.31	14.79	13.61	12.66	11.93	11.31
360.0	288.56	153.84	75.60	27.84	16.26	15.02	13.84	12.99	12.21
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	11.59	11.08	10.74	10.29	10.01	9.73	9.51	9.28	9.23
45.0	11.14	10.69	10.46	10.07	9.79	9.68	9.45	9.28	9.17
90.0	10.58	10.24	9.96	9.68	9.45	9.34	9.17	8.94	8.89
135.0	10.52	10.24	9.90	9.68	9.51	9.28	9.11	9.06	8.89
180.0	10.46	10.18	9.90	9.68	9.45	9.28	9.17	9.00	8.89
225.0	10.63	10.29	10.01	9.68	9.51	9.34	9.17	9.00	8.89
270.0	10.80	10.46	10.18	9.79	9.56	9.39	9.17	9.06	8.94
315.0	10.86	10.46	10.13	9.79	9.56	9.34	9.17	9.06	8.94
360.0	11.59	11.08	10.74	10.29	10.01	9.73	9.51	9.28	9.23

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	9.11	8.89	8.83	8.78	8.72	8.61	8.55	8.49	8.38
45.0	9.00	8.94	8.83	8.72	8.66	8.61	8.55	8.49	8.44
90.0	8.83	8.72	8.66	8.61	8.55	8.49	8.38	8.33	8.27
135.0	8.78	8.72	8.61	8.55	8.49	8.44	8.38	8.38	8.33
180.0	8.83	8.66	8.66	8.61	8.55	8.44	8.38	8.33	8.27
225.0	8.83	8.72	8.66	8.61	8.49	8.49	8.44	8.38	8.33
270.0	8.83	8.78	8.66	8.61	8.49	8.49	8.38	8.33	8.33
315.0	8.83	8.72	8.61	8.61	8.55	8.44	8.38	8.33	8.27
360.0	9.11	8.89	8.83	8.78	8.72	8.61	8.55	8.49	8.38
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	8.33	8.33	8.27	8.21	8.16	8.21	8.10	8.16	8.10
45.0	8.44	8.33	8.33	8.27	8.27	8.27	8.16	8.16	8.16
90.0	8.33	8.21	8.21	8.16	8.16	8.10	8.10	8.10	8.16
135.0	8.21	8.27	8.16	8.16	8.16	8.16	8.04	8.10	8.10
180.0	8.27	8.21	8.21	8.10	8.10	8.10	8.10	7.99	8.04
225.0	8.21	8.27	8.21	8.16	8.16	8.16	8.16	8.10	8.10
270.0	8.27	8.27	8.27	8.21	8.10	8.16	8.16	8.10	8.10
315.0	8.27	8.21	8.16	8.16	8.10	8.10	8.10	8.04	8.04
360.0	8.33	8.33	8.27	8.21	8.16	8.21	8.10	8.16	8.10
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	8.04	8.04	8.04	8.04	8.04	7.99	7.99	7.93	7.93
45.0	8.10	8.10	8.10	8.10	8.04	8.04	7.99	8.04	7.99
90.0	8.10	8.10	8.04	8.10	8.04	7.99	8.04	8.04	8.04
135.0	8.04	7.93	7.99	7.99	7.99	7.93	7.93	7.88	7.99
180.0	8.04	7.99	7.99	7.99	7.99	7.93	7.93	7.93	7.93
225.0	8.04	8.04	8.04	7.99	8.04	7.99	7.99	7.99	7.99
270.0	8.04	8.10	8.10	8.10	8.04	8.10	8.10	8.16	8.16
315.0	7.99	7.99	7.99	7.99	7.99	7.93	7.88	7.88	7.93
360.0	8.04	8.04	8.04	8.04	8.04	7.99	7.99	7.93	7.93
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	7.88	7.88	7.93	7.93	7.93	7.88	7.82	7.93	7.88
45.0	7.99	7.99	7.99	7.93	7.99	7.93	7.93	7.93	7.93
90.0	8.10	8.04	8.10	8.10	8.04	8.10	8.10	8.10	8.04
135.0	7.93	7.88	7.88	7.93	7.88	7.88	7.88	7.88	7.82
180.0	7.88	7.88	7.88	7.88	7.88	7.88	7.88	7.88	7.88
225.0	7.93	7.93	7.93	7.93	7.88	7.88	7.93	7.88	7.93
270.0	8.21	8.27	8.27	8.27	8.33	8.27	8.33	8.33	8.33
315.0	7.93	7.88	7.88	7.82	7.88	7.93	7.88	7.82	7.88
360.0	7.88	7.88	7.93	7.93	7.93	7.88	7.82	7.93	7.88
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	7.82	7.88	7.88	7.88	7.88	7.82	7.82	7.82	7.88
45.0	7.93	7.93	7.99	7.99	7.93	7.99	7.93	7.88	7.88
90.0	8.10	8.10	8.21	8.27	8.16	8.16	7.88	7.82	7.82
135.0	7.88	7.82	7.88	7.82	7.82	7.76	7.82	7.82	7.82
180.0	7.82	7.88	7.88	7.88	7.88	7.82	7.82	7.82	7.82
225.0	7.93	7.93	7.93	7.99	7.88	7.88	7.88	7.93	7.88
270.0	8.33	8.33	8.38	8.49	8.10	7.88	7.88	7.88	7.82
315.0	7.88	7.88	7.82	7.88	7.88	7.88	7.82	7.82	7.82
360.0	7.82	7.88	7.88	7.88	7.88	7.82	7.82	7.82	7.88

Intensity data(cd)

C/γ(°)	90.0
0.0	7.82
45.0	7.93
90.0	7.82
135.0	7.88
180.0	7.76
225.0	7.93
270.0	7.88
315.0	7.88
360.0	7.82