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## Nata

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LumCAT: 2-2182-M  
Luminaire: BJB 47.360.1010  
Report No: NATA0100  
Test No: GC2020021309  
LampCAT: CITIZEN CLU038  
Lamp flux(lm): 2617.0  
Number of Lamps: 1  
Length(mm): 0  
Phm Type: C

Voltage(V): 35.6900  
Current(A): 0.5970  
Power (W): 21.3000  
PF: 0.0000  
Ballast type: DC  
Width(mm): 0  
Height(mm): 0

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## Photometric Results

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Lumens(lm): 2049.34  
Efficiency(%): 78.31%  
Lumens(lm)/Power(W): 96.21  
Central intensity(cd): 5888.813  
Maximum intensity(cd): 5888.813  
Angle of maximum intensity: C=0.0  $\gamma$ =0.0  
Beam Angle(50%Imax): [C0/180]Total=35.4  
                                  [C90/270]Total=35.4  
Field angle(10%Imax): [C0/180]Total=54.0  
                                  [C90/270]Total=54.0  
Maximum s/h(1/2): C0\_180=0.59 C90\_270=0.59  
Maximum s/h(1/4): C0\_180=0.56 C90\_270=0.56  
Up flux rate of lamp(%): 0.00%  
Down flux rate of lamp(%): 78.31%  
Up flux rate of LUM(%): - -  
Down flux rate of LUM(%): 100.00%  
CIE Type : Direct lighting  
Output flux ratio in  $\pi$  solid angle : 98.293%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	5888.813	0.000	0	.000%	.000%
1.0	5875.875	5.629	5.629	.215%	.275%
2.0	5840.227	16.816	22.445	.643%	1.095%
3.0	5776.594	27.784	50.229	1.062%	2.451%
4.0	5693.555	38.394	88.623	1.467%	4.324%
5.0	5596.734	48.570	137.193	1.856%	6.695%
6.0	5456.039	58.085	195.279	2.220%	9.529%
7.0	5307.750	66.811	262.089	2.553%	12.789%
8.0	5155.945	74.887	336.976	2.862%	16.443%
9.0	4964.695	82.022	418.998	3.134%	20.446%
10.0	4758.188	87.989	506.987	3.362%	24.739%
11.0	4568.555	93.193	600.18	3.561%	29.287%
12.0	4353.539	97.531	697.711	3.727%	34.046%
13.0	4113.000	100.476	798.188	3.839%	38.949%
14.0	3900.586	102.573	900.761	3.919%	43.954%
15.0	3662.156	103.825	1004.586	3.967%	49.020%
16.0	3417.117	103.731	1108.317	3.964%	54.082%
17.0	3140.016	102.112	1210.429	3.902%	59.064%
18.0	2862.000	98.960	1309.389	3.781%	63.893%
19.0	2589.750	94.849	1404.239	3.624%	68.522%
20.0	2318.414	89.833	1494.072	3.433%	72.905%
21.0	2031.117	83.520	1577.591	3.191%	76.981%
22.0	1758.656	76.157	1653.749	2.910%	80.697%
23.0	1508.020	68.544	1722.292	2.619%	84.041%
24.0	1248.743	60.273	1782.565	2.303%	86.983%
25.0	1002.544	51.189	1833.754	1.956%	89.480%
26.0	798.377	42.511	1876.265	1.624%	91.555%
27.0	583.973	33.820	1910.085	1.292%	93.205%
28.0	408.628	25.131	1935.215	.960%	94.431%
29.0	265.247	17.630	1952.846	.674%	95.292%
30.0	186.666	12.202	1965.047	.466%	95.887%
31.0	112.556	8.327	1973.374	.318%	96.293%
32.0	65.883	5.112	1978.486	.195%	96.543%
33.0	46.709	3.317	1981.803	.127%	96.705%
34.0	34.418	2.455	1984.258	.094%	96.824%
35.0	25.453	1.859	1986.118	.071%	96.915%
36.0	20.468	1.462	1987.58	.056%	96.987%
37.0	17.761	1.247	1988.827	.048%	97.047%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	16.045	1.128	1989.955	.043%	97.102%
39.0	14.913	1.057	1991.012	.040%	97.154%
40.0	14.330	1.020	1992.032	.039%	97.204%
41.0	13.915	1.006	1993.038	.038%	97.253%
42.0	13.620	1.000	1994.038	.038%	97.302%
43.0	13.437	1.002	1995.04	.038%	97.351%
44.0	13.289	1.009	1996.049	.039%	97.400%
45.0	13.212	1.018	1997.067	.039%	97.449%
46.0	13.148	1.031	1998.098	.039%	97.500%
47.0	13.120	1.045	1999.143	.040%	97.551%
48.0	13.092	1.060	2000.203	.040%	97.602%
49.0	13.078	1.075	2001.277	.041%	97.655%
50.0	13.092	1.091	2002.368	.042%	97.708%
51.0	13.106	1.108	2003.477	.042%	97.762%
52.0	13.170	1.128	2004.604	.043%	97.817%
53.0	13.212	1.148	2005.752	.044%	97.873%
54.0	13.275	1.167	2006.919	.045%	97.930%
55.0	13.338	1.188	2008.107	.045%	97.988%
56.0	13.388	1.208	2009.315	.046%	98.047%
57.0	13.479	1.228	2010.543	.047%	98.107%
58.0	13.556	1.250	2011.794	.048%	98.168%
59.0	13.648	1.272	2013.065	.049%	98.230%
60.0	13.711	1.293	2014.358	.049%	98.293%
61.0	13.852	1.315	2015.673	.050%	98.357%
62.0	13.894	1.337	2017.01	.051%	98.423%
63.0	13.929	1.353	2018.363	.052%	98.489%
64.0	13.908	1.366	2019.729	.052%	98.555%
65.0	13.873	1.375	2021.104	.053%	98.622%
66.0	13.795	1.380	2022.485	.053%	98.690%
67.0	13.697	1.382	2023.867	.053%	98.757%
68.0	13.479	1.377	2025.244	.053%	98.824%
69.0	13.275	1.365	2026.608	.052%	98.891%
70.0	12.938	1.346	2027.955	.051%	98.957%
71.0	12.431	1.311	2029.266	.050%	99.021%
72.0	11.904	1.265	2030.531	.048%	99.082%
73.0	11.524	1.225	2031.756	.047%	99.142%
74.0	11.243	1.197	2032.953	.046%	99.201%
75.0	11.018	1.176	2034.129	.045%	99.258%

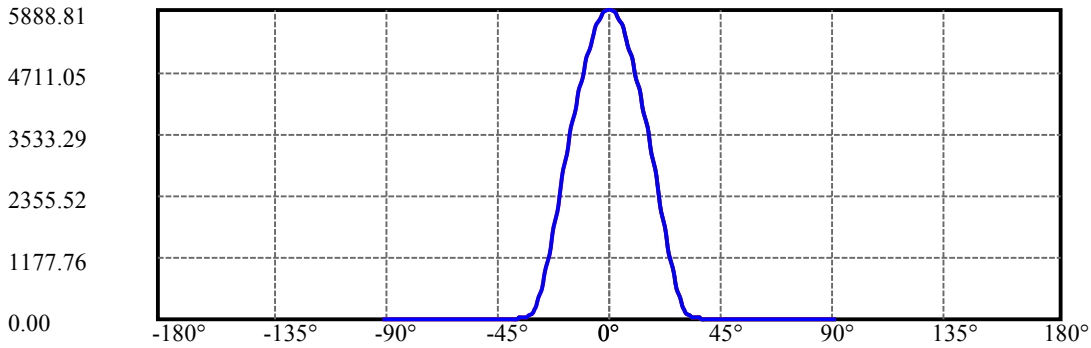
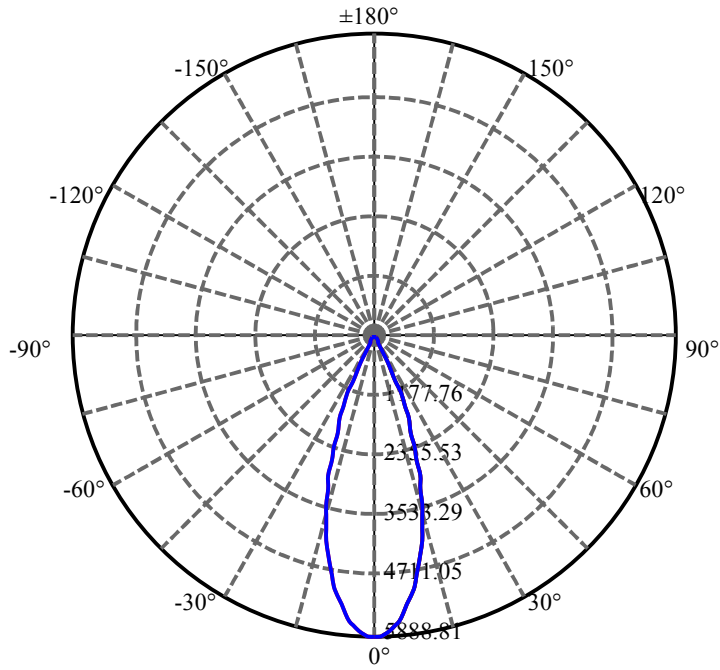
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	10.730	1.154	2035.284	.044%	99.314%
77.0	10.399	1.126	2036.41	.043%	99.369%
78.0	10.111	1.098	2037.508	.042%	99.423%
79.0	9.837	1.072	2038.58	.041%	99.475%
80.0	9.633	1.050	2039.63	.040%	99.526%
81.0	9.464	1.033	2040.663	.039%	99.577%
82.0	9.267	1.016	2041.678	.039%	99.626%
83.0	9.105	0.999	2042.677	.038%	99.675%
84.0	9.021	0.987	2043.665	.038%	99.723%
85.0	8.965	0.982	2044.646	.038%	99.771%
86.0	8.880	0.975	2045.622	.037%	99.819%
87.0	8.641	0.959	2046.581	.037%	99.866%
88.0	8.409	0.934	2047.515	.036%	99.911%
89.0	8.283	0.915	2048.43	.035%	99.956%
90.0	8.248	0.906	2049.336	.035%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1965.05	75.09%	95.89%
0-40	1992.03	76.12%	97.20%
0-60	2014.36	76.97%	98.29%
0-90	2048.43	78.27%	99.96%
0-120	2048.43	78.27%	99.96%
0-180	2049.34	78.31%	100.00%
60-90	35.36	1.35%	1.73%
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%
0-21.81	1639.47	62.65%	80.00%

ZONAL LUMEN SUMMARY

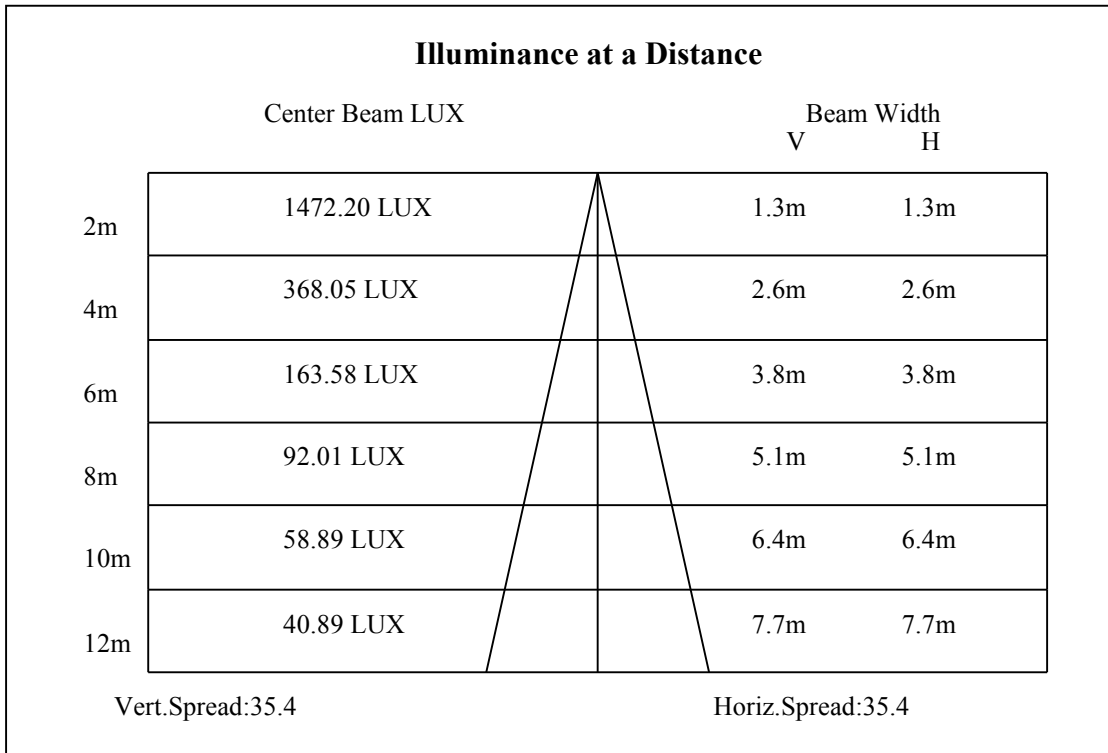
0-10	506.99
10-20	987.08
20-30	470.98
30-40	26.98
40-50	10.34
50-60	11.99
60-70	13.60
70-80	11.68
80-90	8.80
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

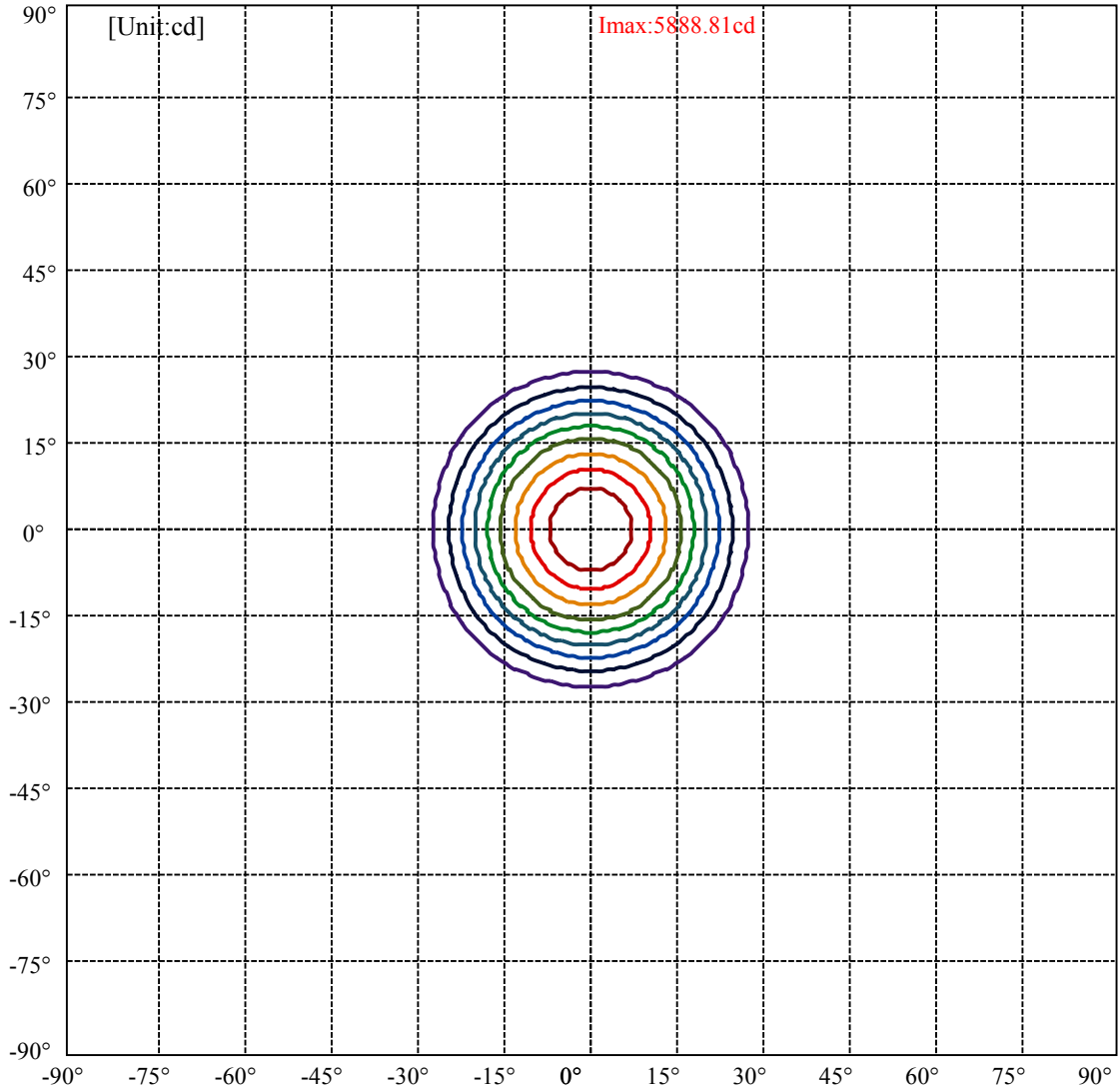


C0(Max): —————  
C0/C180: —————  
C90/C270: —————

Field angle(10%Imax):C0/180Left:27.0 Right:27.0  
:C90/270Left:27.0 Right:27.0

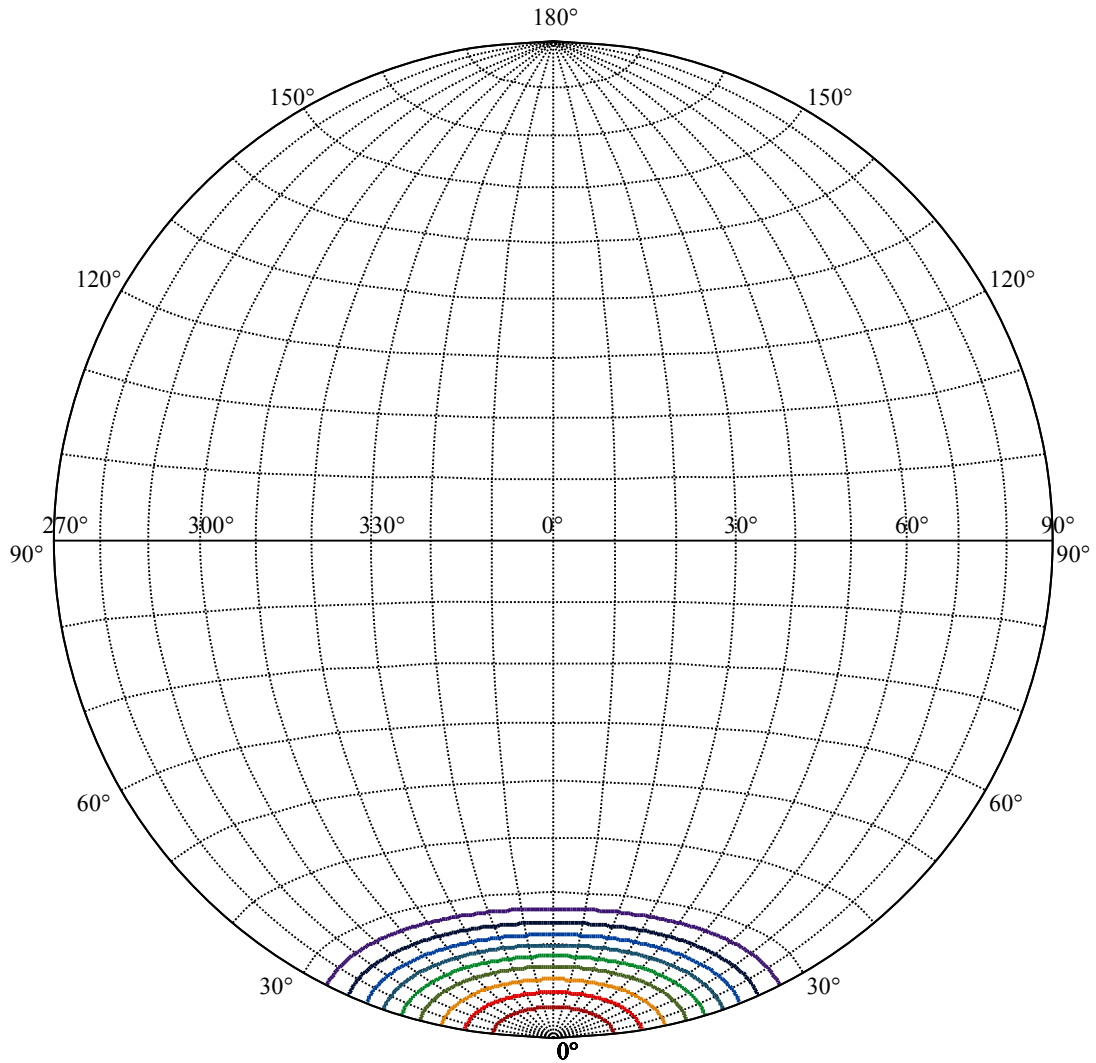
Beam Angle(50%Imax):C0/180Left:17.7 Right:17.7  
:C90/270Left:17.7 Right:17.7





(10%Imax) 588.881	—
(20%Imax) 1177.76	—
(30%Imax) 1766.64	—
(40%Imax) 2355.52	—
(50%Imax) 2944.41	—
(60%Imax) 3533.29	—
(70%Imax) 4122.17	—
(80%Imax) 4711.05	—
(90%Imax) 5299.93	—





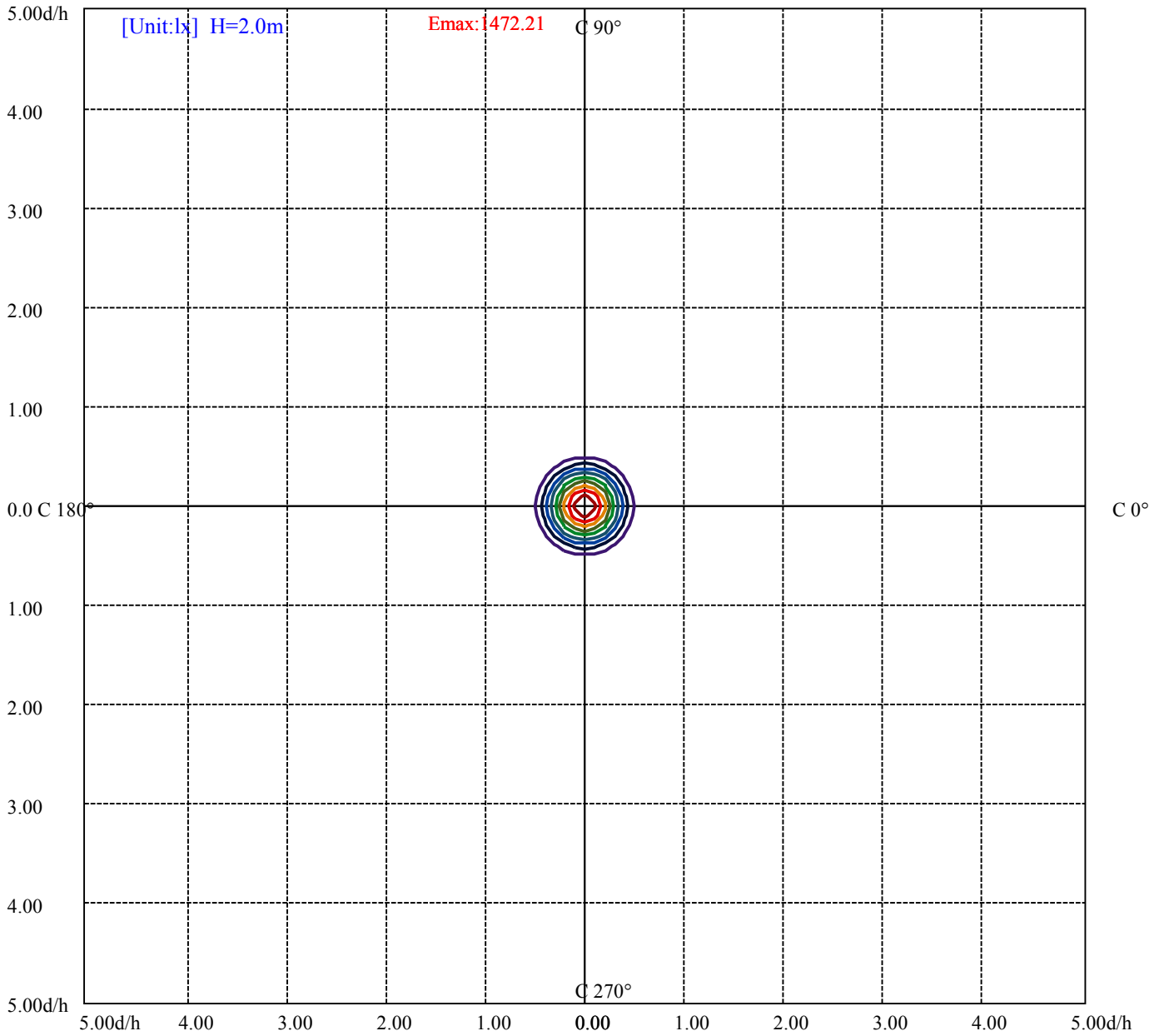
House

[Unit:cd]

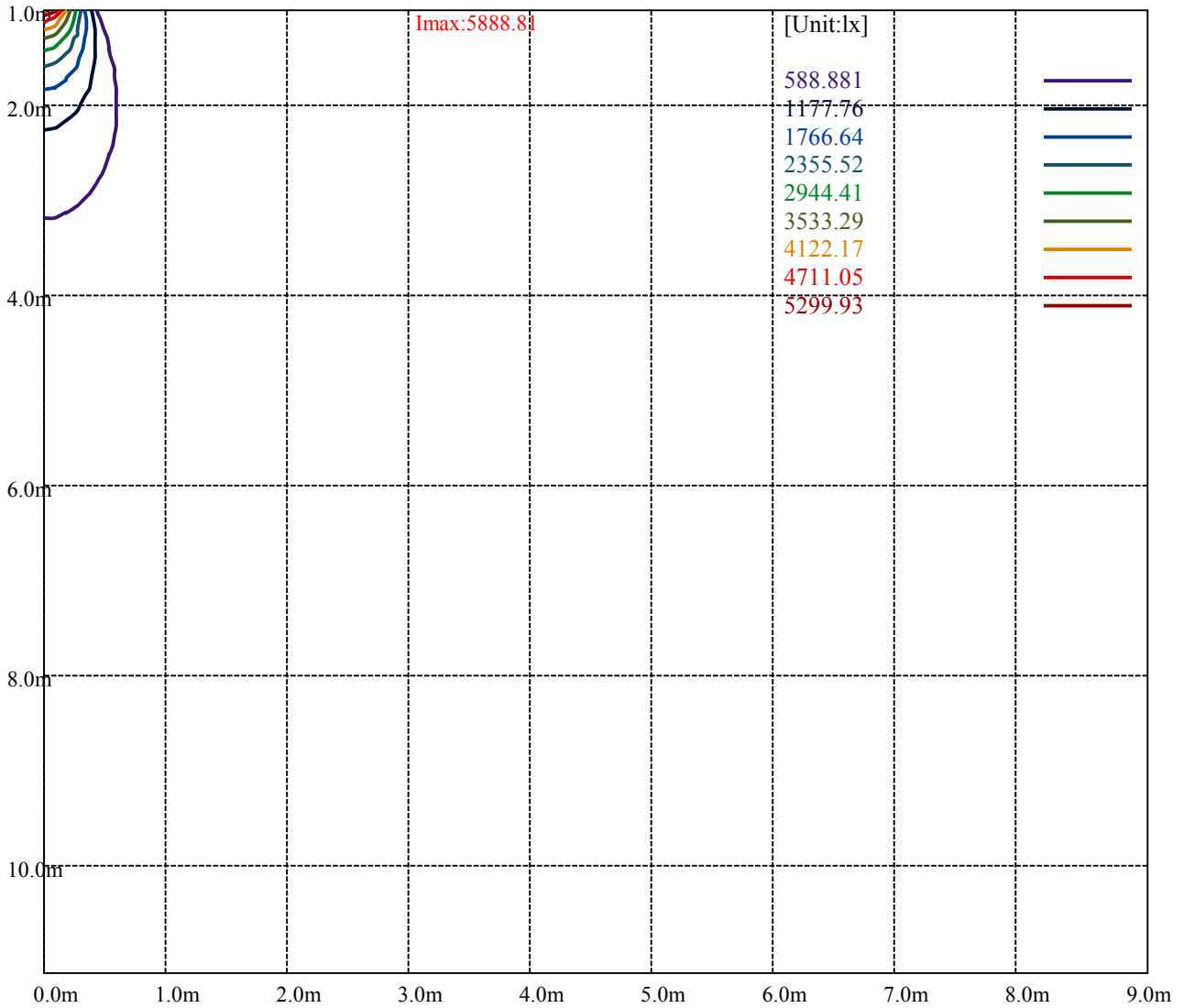
Road

**I<sub>max</sub>:5888.81**

(10%I <sub>max</sub> ) 588.881	—
(20%I <sub>max</sub> ) 1177.76	—
(30%I <sub>max</sub> ) 1766.64	—
(40%I <sub>max</sub> ) 2355.52	—
(50%I <sub>max</sub> ) 2944.41	—
(60%I <sub>max</sub> ) 3533.29	—
(70%I <sub>max</sub> ) 4122.17	—
(80%I <sub>max</sub> ) 4711.05	—
(90%I <sub>max</sub> ) 5299.93	—



(10%Emax) 147.2202	—
(20%Emax) 294.44	—
(30%Emax) 441.66	—
(40%Emax) 588.88	—
(50%Emax) 736.1025	—
(60%Emax) 883.3225	—
(70%Emax) 1030.542	—
(80%Emax) 1177.762	—
(90%Emax) 1324.983	—



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

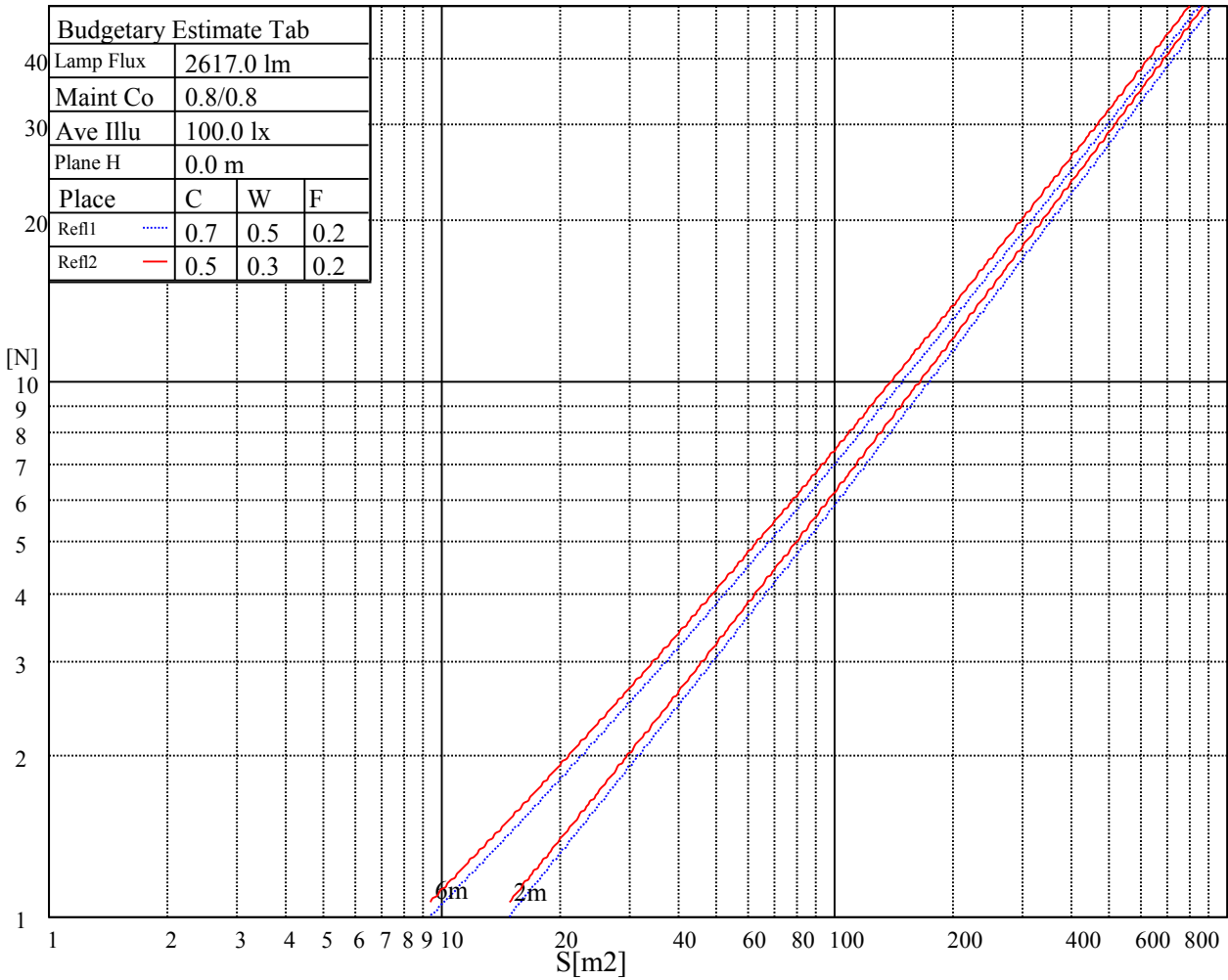
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

Glare Table

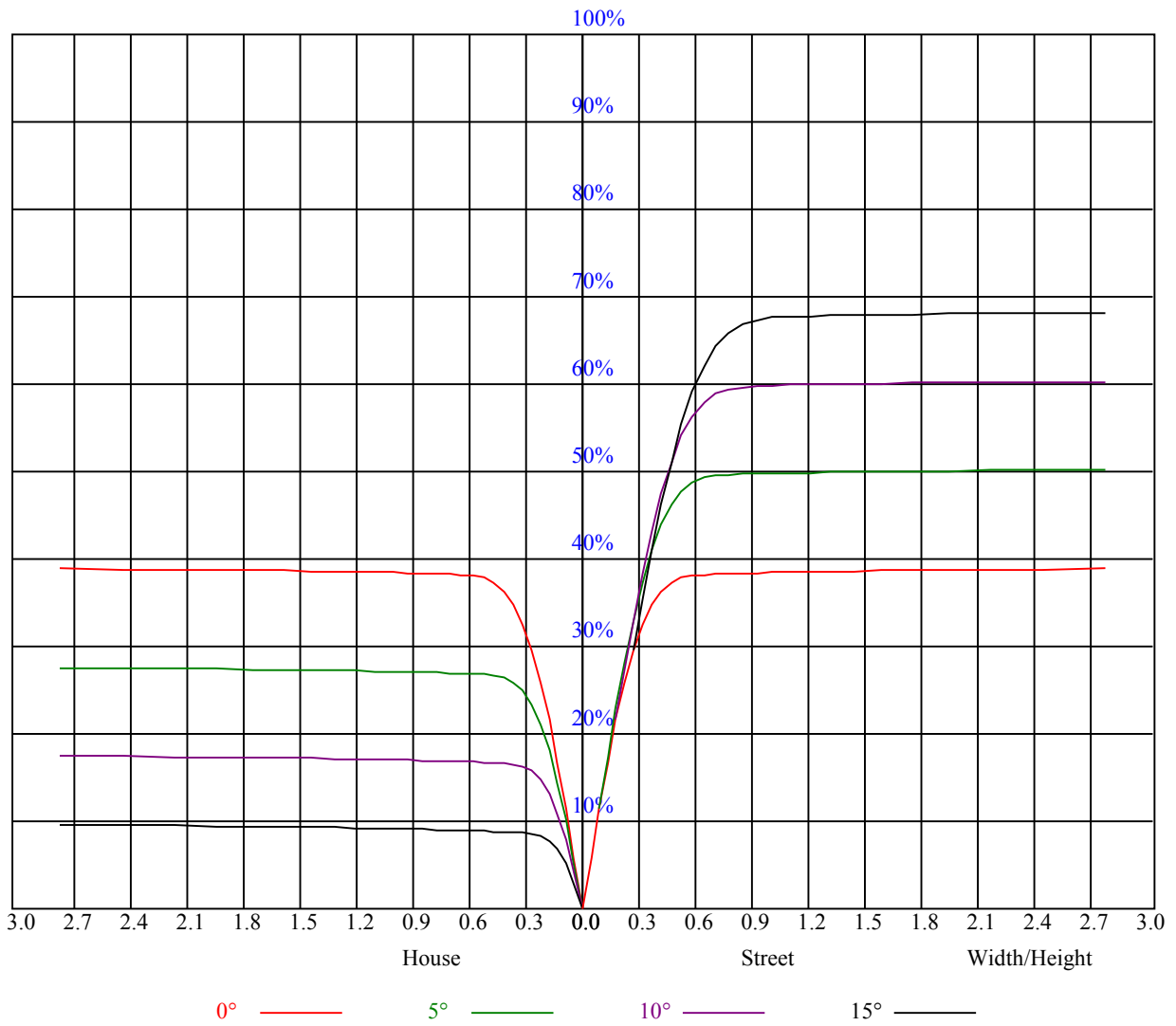
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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	0.93	0.93	0.93	0.91	0.91	0.91	0.87	0.87	0.87	0.83	0.83	0.83	0.80	0.80	0.80	0.78
1	0.88	0.86	0.85	0.86	0.85	0.83	0.83	0.82	0.81	0.80	0.79	0.78	0.77	0.77	0.76	0.75
2	0.83	0.81	0.78	0.82	0.79	0.77	0.79	0.77	0.76	0.77	0.76	0.74	0.75	0.74	0.73	0.71
3	0.79	0.76	0.74	0.78	0.75	0.73	0.76	0.74	0.72	0.74	0.72	0.71	0.73	0.71	0.70	0.69
4	0.76	0.72	0.70	0.75	0.72	0.69	0.73	0.71	0.68	0.72	0.70	0.68	0.70	0.69	0.67	0.66
5	0.73	0.69	0.66	0.72	0.69	0.66	0.71	0.68	0.66	0.69	0.67	0.65	0.68	0.66	0.64	0.64
6	0.70	0.66	0.64	0.69	0.66	0.63	0.68	0.65	0.63	0.67	0.64	0.63	0.66	0.64	0.62	0.61
7	0.67	0.63	0.61	0.67	0.63	0.61	0.66	0.63	0.61	0.65	0.62	0.60	0.64	0.62	0.60	0.59
8	0.65	0.61	0.59	0.64	0.61	0.59	0.64	0.61	0.58	0.63	0.60	0.58	0.62	0.60	0.58	0.57
9	0.62	0.59	0.57	0.62	0.59	0.57	0.61	0.58	0.56	0.61	0.58	0.56	0.60	0.58	0.56	0.55
10	0.60	0.57	0.55	0.60	0.57	0.55	0.60	0.57	0.54	0.59	0.56	0.54	0.59	0.56	0.54	0.53



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	5883.75	5910.75	5912.44	5883.19	5833.13	5754.94	5654.81	5546.81	5419.69
45.0	5885.44	5889.94	5864.06	5814.00	5750.44	5668.88	5539.50	5411.81	5269.50
90.0	5885.44	5847.75	5802.75	5725.13	5609.25	5511.38	5362.31	5172.19	5025.38
135.0	5900.63	5866.31	5806.69	5722.31	5627.81	5528.81	5344.88	5189.63	5043.38
180.0	5883.75	5836.50	5761.69	5664.94	5555.25	5410.13	5241.38	5072.63	4867.88
225.0	5885.44	5852.81	5803.88	5729.63	5630.63	5518.69	5367.94	5195.81	5030.44
270.0	5885.44	5891.63	5874.19	5823.00	5760.56	5679.56	5549.63	5423.06	5281.31
315.0	5900.63	5911.31	5896.13	5850.56	5781.38	5701.50	5587.88	5450.06	5310.00
360.0	5883.75	5910.75	5912.44	5883.19	5833.13	5754.94	5654.81	5546.81	5419.69
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	5239.13	5078.81	4904.44	4693.50	4470.75	4264.88	4028.06	3814.88	3569.06
45.0	5071.50	4893.75	4701.38	4475.81	4245.19	4037.63	3803.63	3591.00	3335.06
90.0	4846.50	4582.69	4410.00	4208.06	3950.44	3738.94	3513.38	3241.13	2950.31
135.0	4799.25	4607.44	4431.94	4174.88	3941.44	3753.56	3461.63	3210.19	2949.75
180.0	4677.75	4453.31	4223.81	4017.94	3781.13	3521.81	3271.50	3008.25	2674.69
225.0	4848.19	4606.88	4404.94	4197.38	3935.25	3721.50	3494.25	3181.50	2914.88
270.0	5082.19	4906.69	4721.63	4502.81	4275.00	4065.75	3828.94	3607.88	3336.75
315.0	5153.06	4935.94	4750.31	4557.94	4304.81	4100.63	3895.88	3682.13	3389.63
360.0	5239.13	5078.81	4904.44	4693.50	4470.75	4264.88	4028.06	3814.88	3569.06
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	3304.13	3055.50	2767.50	2476.13	2220.75	2001.38	1670.63	1425.94	1216.13
45.0	3051.00	2793.38	2508.75	2219.63	1956.38	1723.50	1434.38	1196.44	965.81
90.0	2685.38	2388.38	2130.19	1852.31	1584.56	1257.75	1084.11	865.41	638.83
135.0	2610.56	2341.69	2087.44	1775.81	1519.31	1275.75	1000.69	776.25	575.44
180.0	2403.00	2138.06	1860.75	1593.00	1261.69	1086.41	840.26	638.55	440.44
225.0	2652.19	2329.31	2106.56	1831.50	1536.75	1244.25	1064.14	838.80	609.02
270.0	3047.63	2787.75	2494.13	2202.19	1950.75	1714.50	1413.00	1179.00	952.31
315.0	3142.13	2883.94	2592.00	2298.38	2039.06	1760.63	1482.75	1099.97	989.04
360.0	3304.13	3055.50	2767.50	2476.13	2220.75	2001.38	1670.63	1425.94	1216.13
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	900.00	690.75	529.31	331.31	297.56	126.39	85.73	61.48	41.96
45.0	719.44	509.06	346.50	291.38	116.61	79.93	56.64	38.31	27.00
90.0	458.21	285.53	156.94	95.06	64.01	41.34	30.09	23.57	19.41
135.0	386.44	296.44	127.24	70.09	45.51	31.84	23.01	18.90	16.65
180.0	290.42	161.78	90.73	61.09	42.47	27.73	20.93	16.99	14.29
225.0	430.65	263.81	152.61	96.64	68.34	45.62	33.53	25.71	20.03
270.0	709.88	501.75	340.31	304.88	118.69	83.53	58.95	43.82	32.51
315.0	776.76	559.91	378.34	242.89	147.26	90.68	64.80	46.58	31.78
360.0	900.00	690.75	529.31	331.31	297.56	126.39	85.73	61.48	41.96
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	28.97	21.83	17.61	14.74	13.44	12.66	11.98	11.64	11.31
45.0	20.81	17.94	16.37	15.36	14.79	14.46	14.12	13.89	13.73
90.0	17.83	16.93	16.31	15.92	15.69	15.58	15.53	15.58	15.69
135.0	15.47	14.91	14.46	14.06	13.78	13.50	13.33	13.16	12.99
180.0	13.16	12.49	11.87	11.53	11.25	10.97	10.80	10.63	10.52
225.0	17.44	16.03	15.02	14.34	13.95	13.61	13.50	13.28	13.16
270.0	25.31	21.43	19.01	17.33	16.54	16.03	15.64	15.58	15.53
315.0	24.75	20.53	17.72	16.03	15.19	14.51	14.06	13.73	13.39
360.0	28.97	21.83	17.61	14.74	13.44	12.66	11.98	11.64	11.31



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	11.08	10.91	10.80	10.63	10.58	10.52	10.41	10.41	10.41
45.0	13.61	13.44	13.33	13.22	13.16	13.11	13.11	13.05	13.05
90.0	15.75	15.92	16.03	16.20	16.31	16.54	16.71	16.93	17.16
135.0	12.88	12.77	12.71	12.66	12.54	12.54	12.49	12.49	12.38
180.0	10.46	10.35	10.29	10.29	10.24	10.18	10.18	10.18	10.13
225.0	13.11	12.99	12.99	12.94	12.88	12.88	12.88	12.94	13.05
270.0	15.64	15.81	15.92	16.03	16.20	16.37	16.59	16.88	17.10
315.0	13.16	12.99	12.88	12.77	12.71	12.60	12.49	12.49	12.43
360.0	11.08	10.91	10.80	10.63	10.58	10.52	10.41	10.41	10.41
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	10.35	10.35	10.29	10.29	10.29	10.29	10.29	10.29	10.29
45.0	12.99	12.99	12.94	12.94	12.88	12.88	12.77	12.71	12.60
90.0	17.38	17.66	17.83	18.17	18.45	18.84	19.24	19.86	20.19
135.0	12.38	12.38	12.38	12.38	12.38	12.38	12.38	12.43	12.38
180.0	10.18	10.18	10.18	10.13	10.13	10.13	10.13	10.18	10.18
225.0	13.16	13.16	13.22	13.22	13.22	13.22	13.16	13.16	13.05
270.0	17.38	17.66	17.94	18.39	18.73	19.07	19.41	19.86	20.19
315.0	12.38	12.32	12.32	12.32	12.38	12.38	12.32	12.32	12.26
360.0	10.35	10.35	10.29	10.29	10.29	10.29	10.29	10.29	10.29
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	10.29	10.24	10.24	10.24	10.29	10.29	10.29	10.35	10.46
45.0	12.54	12.38	12.26	12.21	12.09	12.04	11.93	11.76	11.70
90.0	20.36	20.31	20.08	19.69	18.96	17.61	16.43	15.02	12.94
135.0	12.43	12.66	12.77	13.05	13.44	14.06	14.57	14.57	13.89
180.0	10.18	10.24	10.35	10.46	10.74	11.14	11.59	11.98	12.15
225.0	12.94	12.83	12.77	12.60	12.49	12.26	12.09	11.93	11.64
270.0	20.42	20.42	20.31	19.97	19.35	18.23	16.99	15.47	13.89
315.0	12.26	12.21	12.21	12.15	12.21	12.21	12.32	12.43	12.77
360.0	10.29	10.24	10.24	10.24	10.29	10.29	10.29	10.35	10.46
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	10.69	10.91	11.14	11.36	11.31	10.97	10.29	9.79	9.62
45.0	11.59	11.42	11.14	10.91	10.69	10.52	10.29	10.01	9.79
90.0	11.31	11.08	10.80	10.52	10.24	10.01	9.84	9.68	9.51
135.0	13.05	12.09	11.31	10.97	10.74	10.41	10.29	10.01	9.73
180.0	11.81	11.19	10.46	9.96	9.73	9.45	9.23	9.06	8.94
225.0	11.36	11.14	10.86	10.63	10.46	10.24	9.96	9.73	9.45
270.0	12.60	11.53	11.31	11.14	10.86	10.58	10.35	10.01	9.84
315.0	12.83	12.83	12.94	12.66	11.81	11.03	10.63	10.41	10.18
360.0	10.69	10.91	11.14	11.36	11.31	10.97	10.29	9.79	9.62
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	9.45	9.23	9.06	9.00	8.94	8.83	8.78	8.72	8.61
45.0	9.56	9.34	9.17	9.00	8.89	8.78	8.72	8.61	8.27
90.0	9.34	9.17	9.06	9.06	8.94	8.89	8.72	8.27	8.16
135.0	9.51	9.34	9.28	9.34	9.39	9.51	8.66	8.38	8.21
180.0	8.94	8.89	8.83	8.83	8.89	8.61	8.49	8.44	8.44
225.0	9.28	9.11	8.94	8.78	8.66	8.61	8.27	8.21	8.16
270.0	9.68	9.39	9.17	9.00	8.94	8.89	8.72	8.21	8.16
315.0	9.96	9.68	9.34	9.17	9.06	8.94	8.78	8.44	8.27
360.0	9.45	9.23	9.06	9.00	8.94	8.83	8.78	8.72	8.61

Intensity data(cd)

<b>C/γ(°)</b>	<b>90.0</b>
<b>0.0</b>	<b>8.44</b>
<b>45.0</b>	<b>8.21</b>
<b>90.0</b>	<b>8.16</b>
<b>135.0</b>	<b>8.21</b>
<b>180.0</b>	<b>8.38</b>
<b>225.0</b>	<b>8.21</b>
<b>270.0</b>	<b>8.16</b>
<b>315.0</b>	<b>8.21</b>
<b>360.0</b>	<b>8.44</b>