



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  
Test No: GC20200211709  
LampCAT: OSRAM OPTO SOLERIQ S15  
Lamp flux(lm): 2836.0  
Number of Lamps: 1  
Length(mm): 0  
Phm Type: C

Voltage(V): 35.6000  
Current(A): 0.6000  
Power (W): 21.3600  
PF: 0.0000  
Ballast type: DC  
Width(mm): 0  
Height(mm): 0

---

## Photometric Results

---

Lumens(lm): 2289.45  
Efficiency(%): 80.73%  
Lumens(lm)/Power(W): 107.18  
Central intensity(cd): 16107.190  
Maximum intensity(cd): 16107.190  
Angle of maximum intensity: C=0.0  $\gamma$ =0.0  
Beam Angle(50%Imax): [C0/180]Total=17.0  
                                  [C90/270]Total=17.0  
Field angle(10%Imax): [C0/180]Total=40.9  
                                  [C90/270]Total=40.9  
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(%): 80.73%  
Up flux rate of LUM(%): - -  
Down flux rate of LUM(%): 100.00%  
CIE Type : Direct lighting  
Output flux ratio in  $\pi$  solid angle : 98.743%

---

Equipment: GMS1980  
Temperature(°C): 25.0

Date: 2020/2/17  
Humidity(%): 65.0%

Operator: NT07  
Distance(m): 7.50

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	16107.188	0.000	0	.000%	.000%
1.0	15959.531	15.343	15.343	.541%	.670%
2.0	15472.266	45.114	60.457	1.591%	2.641%
3.0	14569.453	71.850	132.307	2.533%	5.779%
4.0	13492.266	93.932	226.239	3.312%	9.882%
5.0	12181.078	110.445	336.684	3.894%	14.706%
6.0	10943.789	121.527	458.211	4.285%	20.014%
7.0	9666.914	127.930	586.142	4.511%	25.602%
8.0	8591.484	130.672	716.814	4.608%	31.309%
9.0	7556.063	130.867	847.681	4.614%	37.025%
10.0	6561.773	127.761	975.442	4.505%	42.606%
11.0	5819.414	123.714	1099.155	4.362%	48.010%
12.0	5178.586	120.224	1219.379	4.239%	53.261%
13.0	4456.406	114.343	1333.722	4.032%	58.255%
14.0	3944.461	107.530	1441.253	3.792%	62.952%
15.0	3506.555	102.291	1543.544	3.607%	67.420%
16.0	3049.805	96.069	1639.613	3.387%	71.616%
17.0	2742.117	90.196	1729.808	3.180%	75.556%
18.0	2387.531	84.577	1814.385	2.982%	79.250%
19.0	2025.703	76.781	1891.166	2.707%	82.603%
20.0	1736.438	68.858	1960.024	2.428%	85.611%
21.0	1455.863	61.299	2021.323	2.161%	88.288%
22.0	1166.723	52.702	2074.025	1.858%	90.590%
23.0	984.038	45.129	2119.153	1.591%	92.562%
24.0	750.396	37.921	2157.074	1.337%	94.218%
25.0	526.598	29.036	2186.11	1.024%	95.486%
26.0	360.851	20.948	2207.059	.739%	96.401%
27.0	249.497	14.932	2221.991	.527%	97.053%
28.0	96.947	8.771	2230.762	.309%	97.437%
29.0	38.721	3.549	2234.312	.125%	97.592%
30.0	19.814	1.580	2235.892	.056%	97.661%
31.0	16.355	1.007	2236.899	.035%	97.705%
32.0	15.216	0.904	2237.803	.032%	97.744%
33.0	14.323	0.870	2238.673	.031%	97.782%
34.0	13.493	0.842	2239.515	.030%	97.819%
35.0	12.881	0.819	2240.334	.029%	97.855%
36.0	12.382	0.804	2241.139	.028%	97.890%
37.0	11.904	0.792	2241.931	.028%	97.924%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	11.545	0.783	2242.713	.028%	97.959%
39.0	11.229	0.777	2243.491	.027%	97.992%
40.0	10.955	0.774	2244.264	.027%	98.026%
41.0	10.744	0.773	2245.037	.027%	98.060%
42.0	10.561	0.774	2245.811	.027%	98.094%
43.0	10.399	0.776	2246.588	.027%	98.128%
44.0	10.266	0.780	2247.368	.028%	98.162%
45.0	10.146	0.784	2248.152	.028%	98.196%
46.0	10.034	0.789	2248.941	.028%	98.231%
47.0	9.928	0.794	2249.735	.028%	98.265%
48.0	9.886	0.801	2250.536	.028%	98.300%
49.0	9.802	0.808	2251.345	.029%	98.336%
50.0	9.724	0.814	2252.159	.029%	98.371%
51.0	9.675	0.821	2252.979	.029%	98.407%
52.0	9.612	0.828	2253.807	.029%	98.443%
53.0	9.563	0.834	2254.641	.029%	98.480%
54.0	9.527	0.841	2255.482	.030%	98.516%
55.0	9.471	0.848	2256.331	.030%	98.553%
56.0	9.457	0.855	2257.186	.030%	98.591%
57.0	9.408	0.863	2258.048	.030%	98.628%
58.0	9.359	0.868	2258.916	.031%	98.666%
59.0	9.338	0.874	2259.79	.031%	98.704%
60.0	9.323	0.882	2260.672	.031%	98.743%
61.0	9.295	0.889	2261.56	.031%	98.782%
62.0	9.281	0.895	2262.456	.032%	98.821%
63.0	9.267	0.902	2263.358	.032%	98.860%
64.0	9.232	0.908	2264.265	.032%	98.900%
65.0	9.225	0.913	2265.179	.032%	98.940%
66.0	9.218	0.920	2266.099	.032%	98.980%
67.0	9.197	0.926	2267.025	.033%	99.020%
68.0	9.190	0.931	2267.956	.033%	99.061%
69.0	9.183	0.937	2268.894	.033%	99.102%
70.0	9.176	0.943	2269.836	.033%	99.143%
71.0	9.169	0.948	2270.785	.033%	99.185%
72.0	9.162	0.953	2271.738	.034%	99.226%
73.0	9.141	0.957	2272.695	.034%	99.268%
74.0	9.141	0.961	2273.656	.034%	99.310%
75.0	9.155	0.967	2274.623	.034%	99.352%

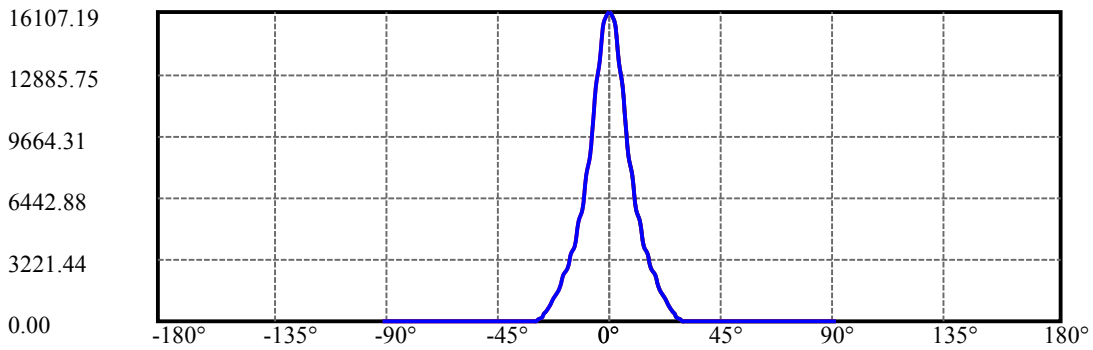
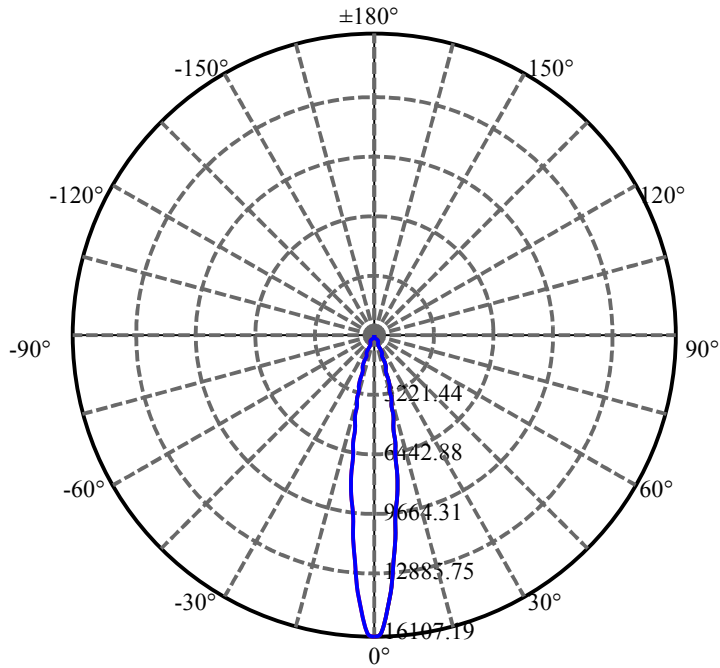
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	9.155	0.972	2275.595	.034%	99.395%
77.0	9.155	0.976	2276.571	.034%	99.437%
78.0	9.155	0.980	2277.551	.035%	99.480%
79.0	9.169	0.985	2278.535	.035%	99.523%
80.0	9.148	0.987	2279.523	.035%	99.566%
81.0	9.169	0.991	2280.513	.035%	99.610%
82.0	9.183	0.995	2281.509	.035%	99.653%
83.0	9.169	0.998	2282.506	.035%	99.697%
84.0	9.162	0.999	2283.505	.035%	99.740%
85.0	9.141	0.999	2284.504	.035%	99.784%
86.0	9.077	0.996	2285.499	.035%	99.827%
87.0	9.021	0.990	2286.49	.035%	99.871%
88.0	9.007	0.988	2287.477	.035%	99.914%
89.0	9.000	0.987	2288.464	.035%	99.957%
90.0	9.014	0.988	2289.452	.035%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	2235.89	78.84%	97.66%
0-40	2244.26	79.13%	98.03%
0-60	2260.67	79.71%	98.74%
0-90	2288.46	80.69%	99.96%
0-120	2288.46	80.69%	99.96%
0-180	2289.45	80.73%	100.00%
60-90	28.67	1.01%	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%
0-18.22	1831.56	64.58%	80.00%

ZONAL LUMEN SUMMARY

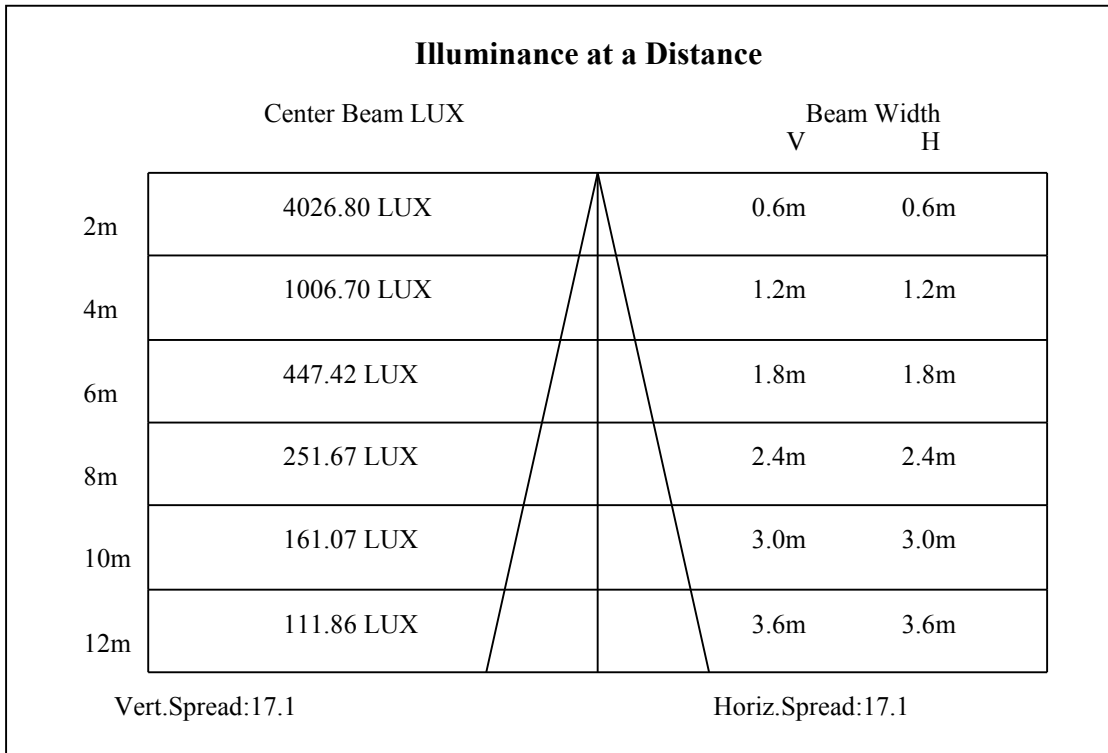
0-10	975.44
10-20	984.58
20-30	275.87
30-40	8.37
40-50	7.89
50-60	8.51
60-70	9.16
70-80	9.69
80-90	8.94
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

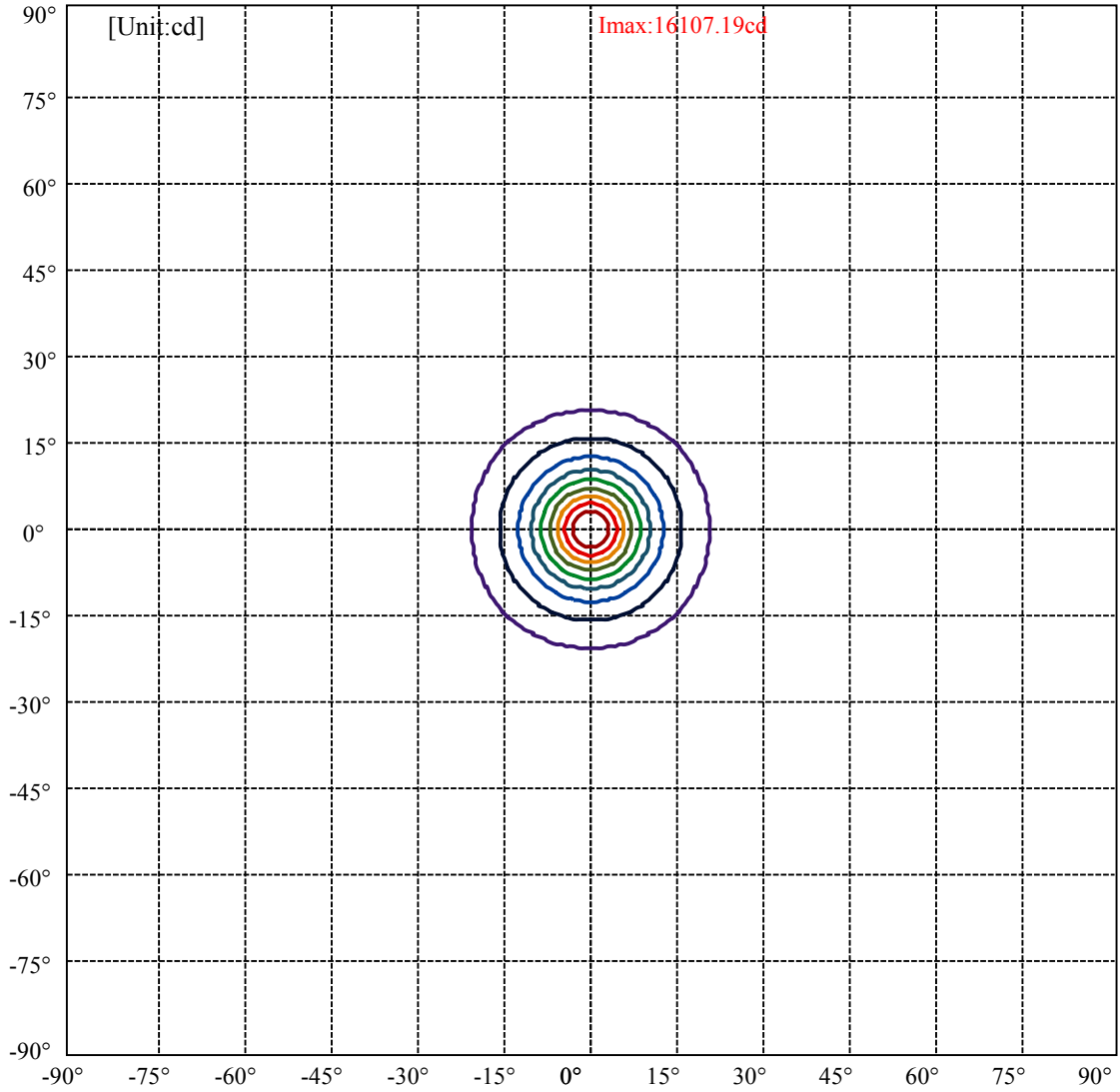


C0(Max): —————  
C0/C180: —————  
C90/C270: —————

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

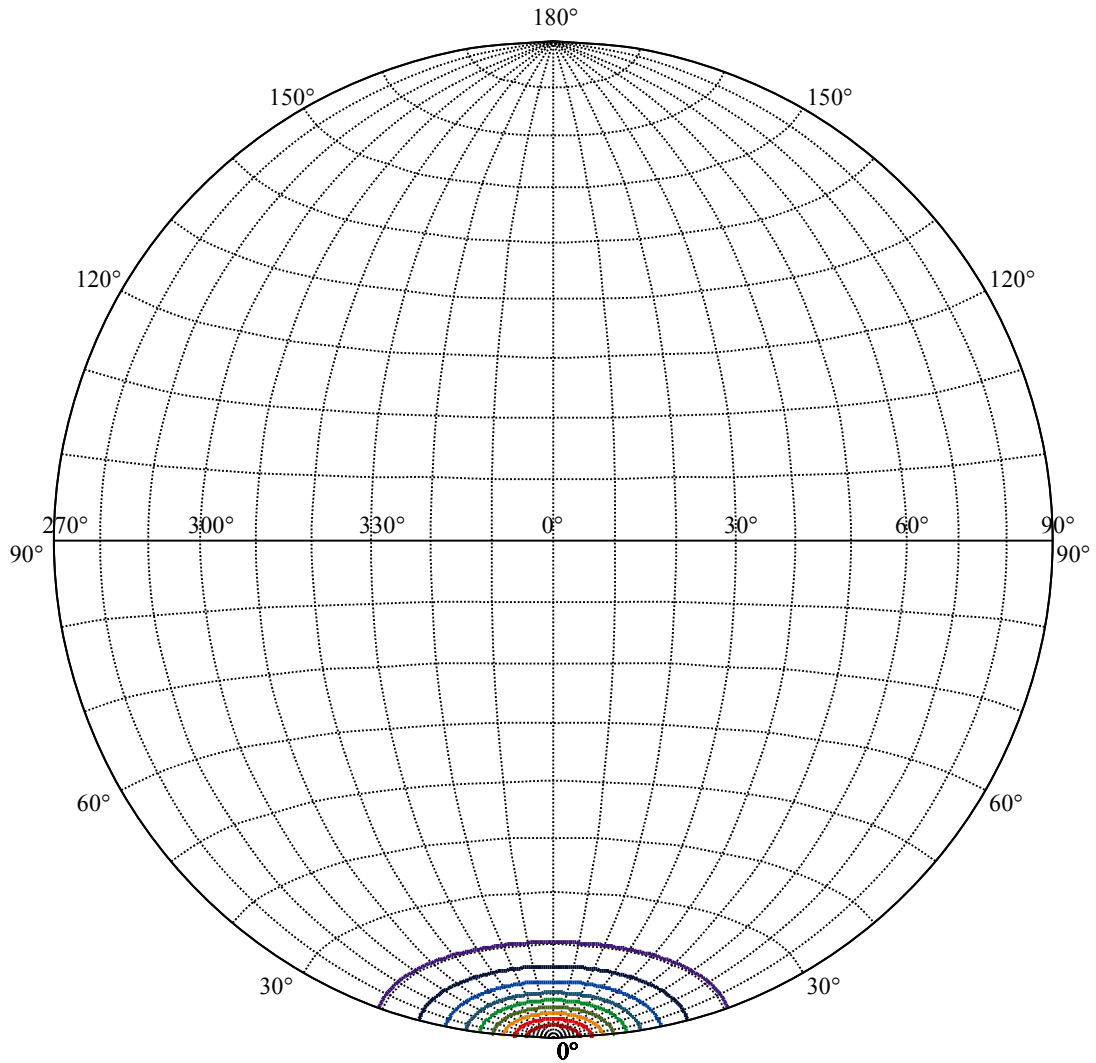
Beam Angle(50%Imax):C0/180Left:8.5 Right:8.5  
:C90/270Left:8.5 Right:8.5





(10%Imax) 1610.72	—
(20%Imax) 3221.44	—
(30%Imax) 4832.16	—
(40%Imax) 6442.88	—
(50%Imax) 8053.59	—
(60%Imax) 9664.31	—
(70%Imax) 11275	—
(80%Imax) 12885.8	—
(90%Imax) 14496.5	—





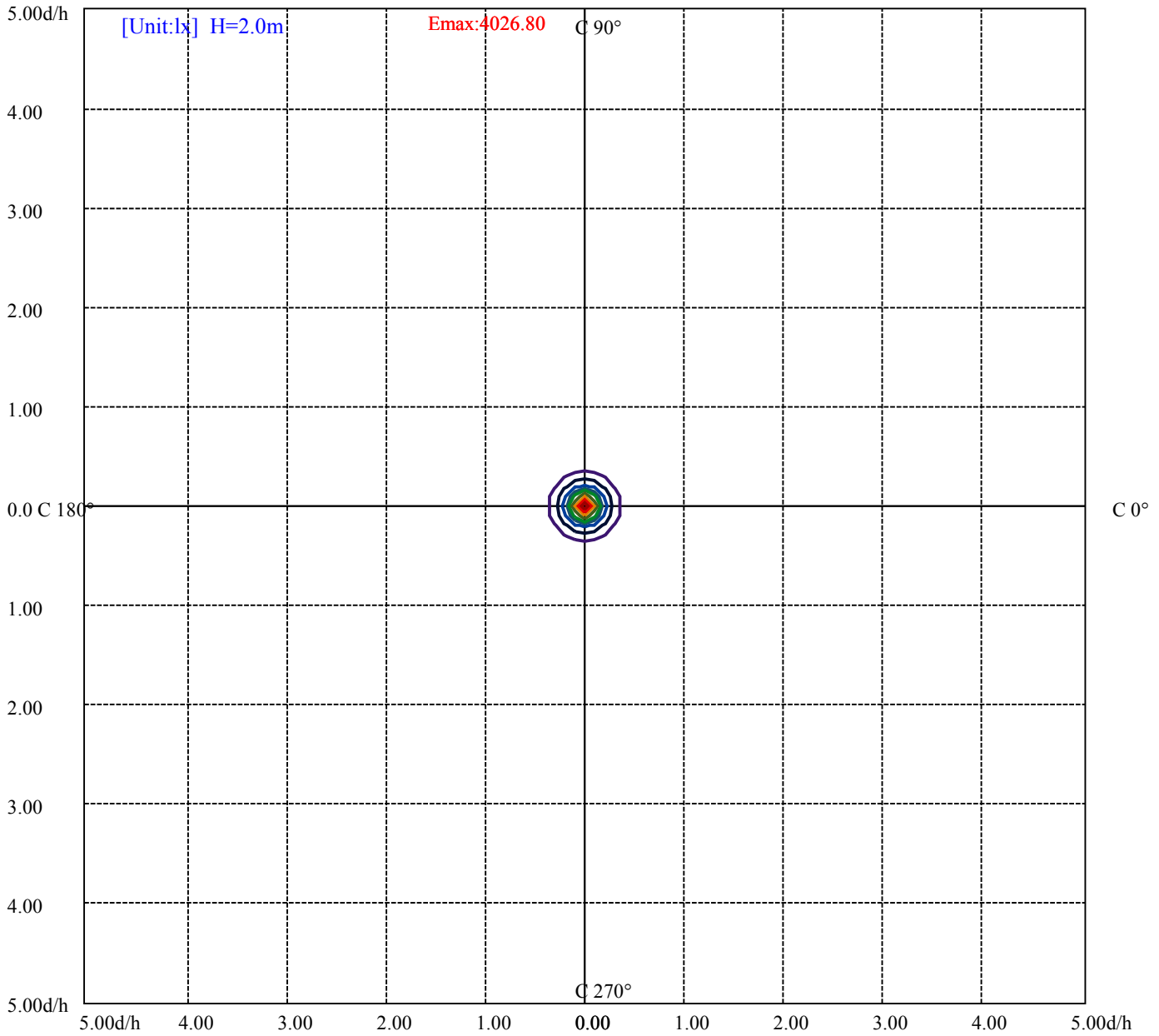
House

[Unit:cd]

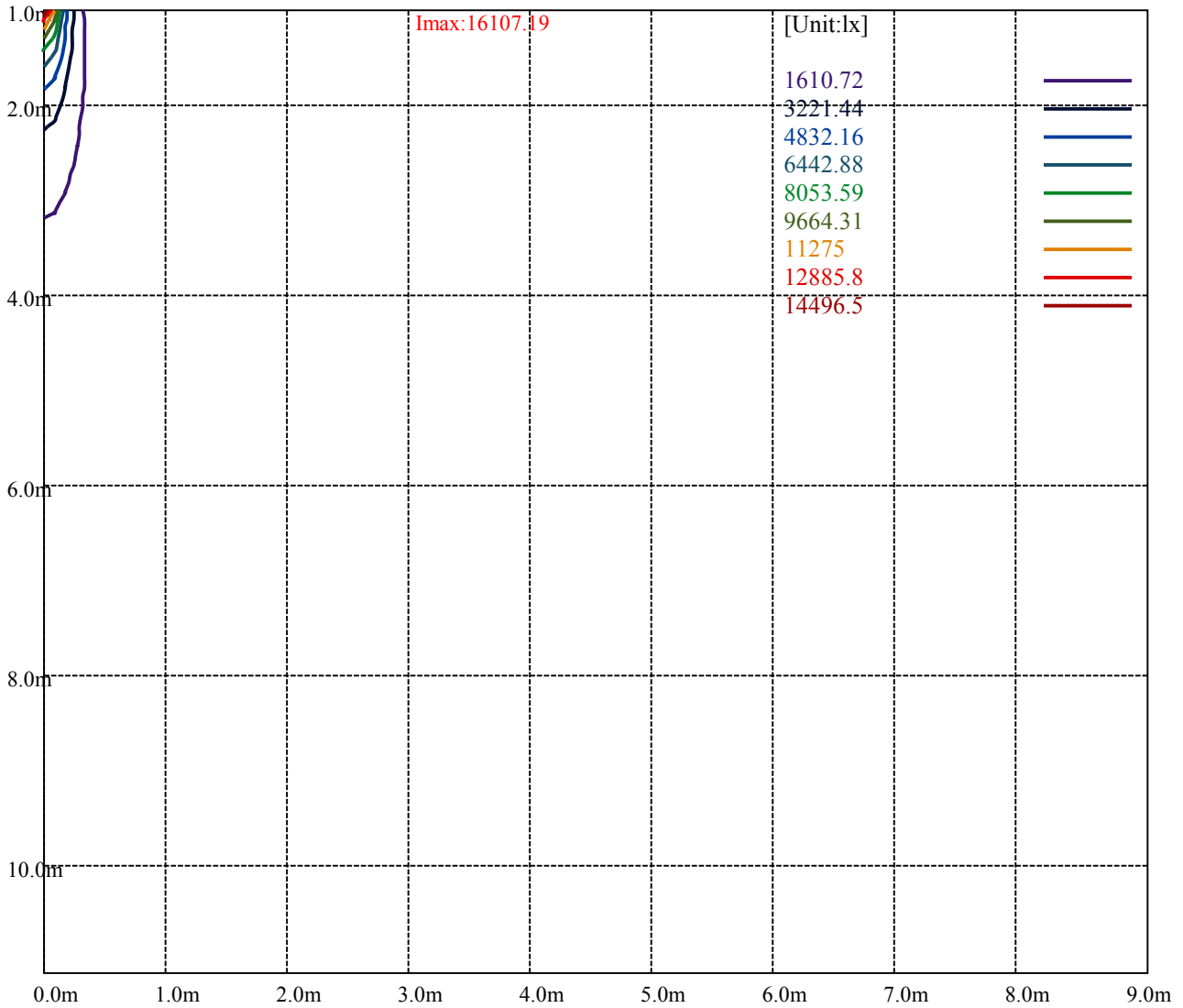
Road

**Imax:16107.19**

(10%Imax)	1610.72	—
(20%Imax)	3221.44	—
(30%Imax)	4832.16	—
(40%Imax)	6442.88	—
(50%Imax)	8053.59	—
(60%Imax)	9664.31	—
(70%Imax)	11275	—
(80%Imax)	12885.8	—
(90%Imax)	14496.5	—



(10%Emax) 402.68	—
(20%Emax) 805.3575	—
(30%Emax) 1208.037	—
(40%Emax) 1610.718	—
(50%Emax) 2013.395	—
(60%Emax) 2416.075	—
(70%Emax) 2818.75	—
(80%Emax) 3221.425	—
(90%Emax) 3624.1	—



Luminance Table

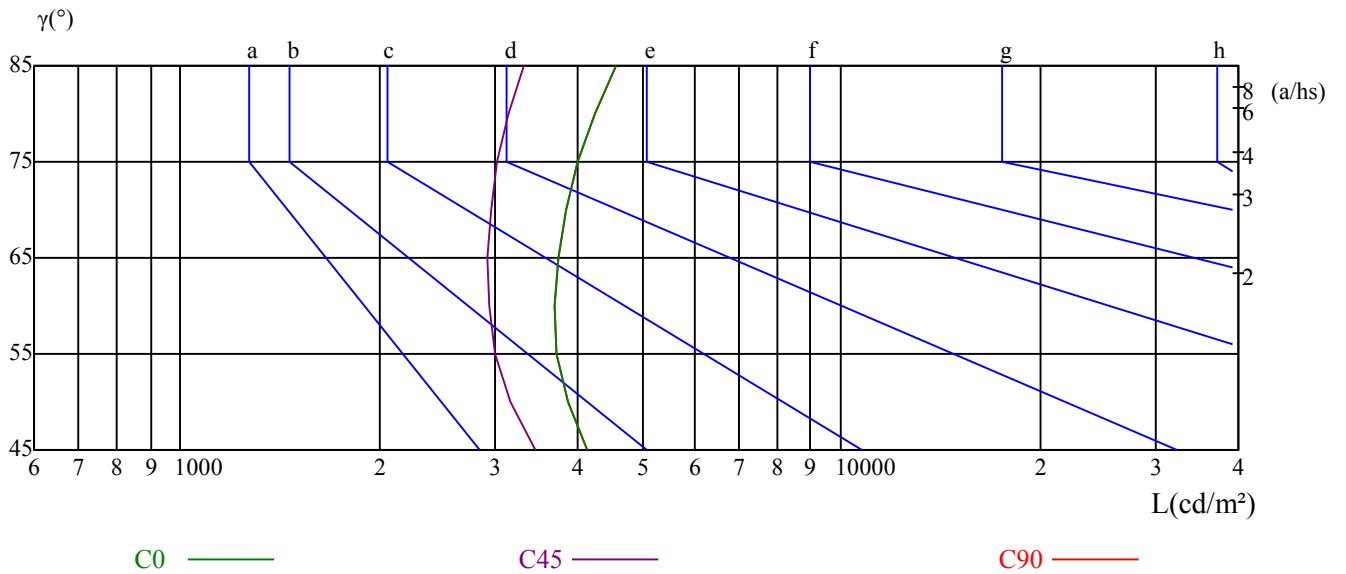
$\gamma$	45	50	55	60	65	70	75	80	85
C0	4126	3855	3707	3678	3726	3839	3986	4232	4579
C45	3438	3165	2998	2929	2920	2957	3015	3139	3321
C90	4126	3855	3707	3678	3726	3839	3986	4232	4579

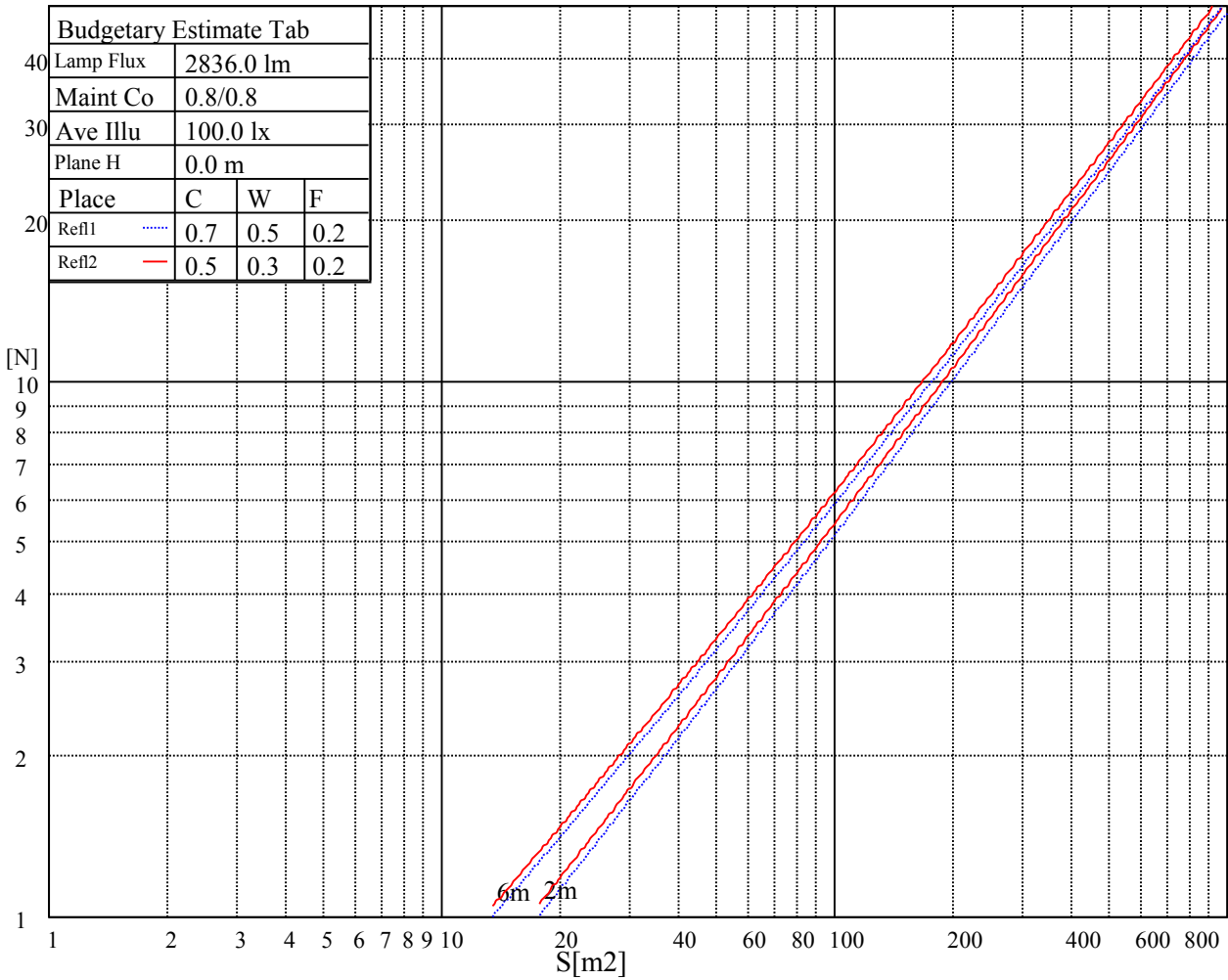
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
11184	11184	11184	17870	17870	17870	53424	53424	53424

Glare Table

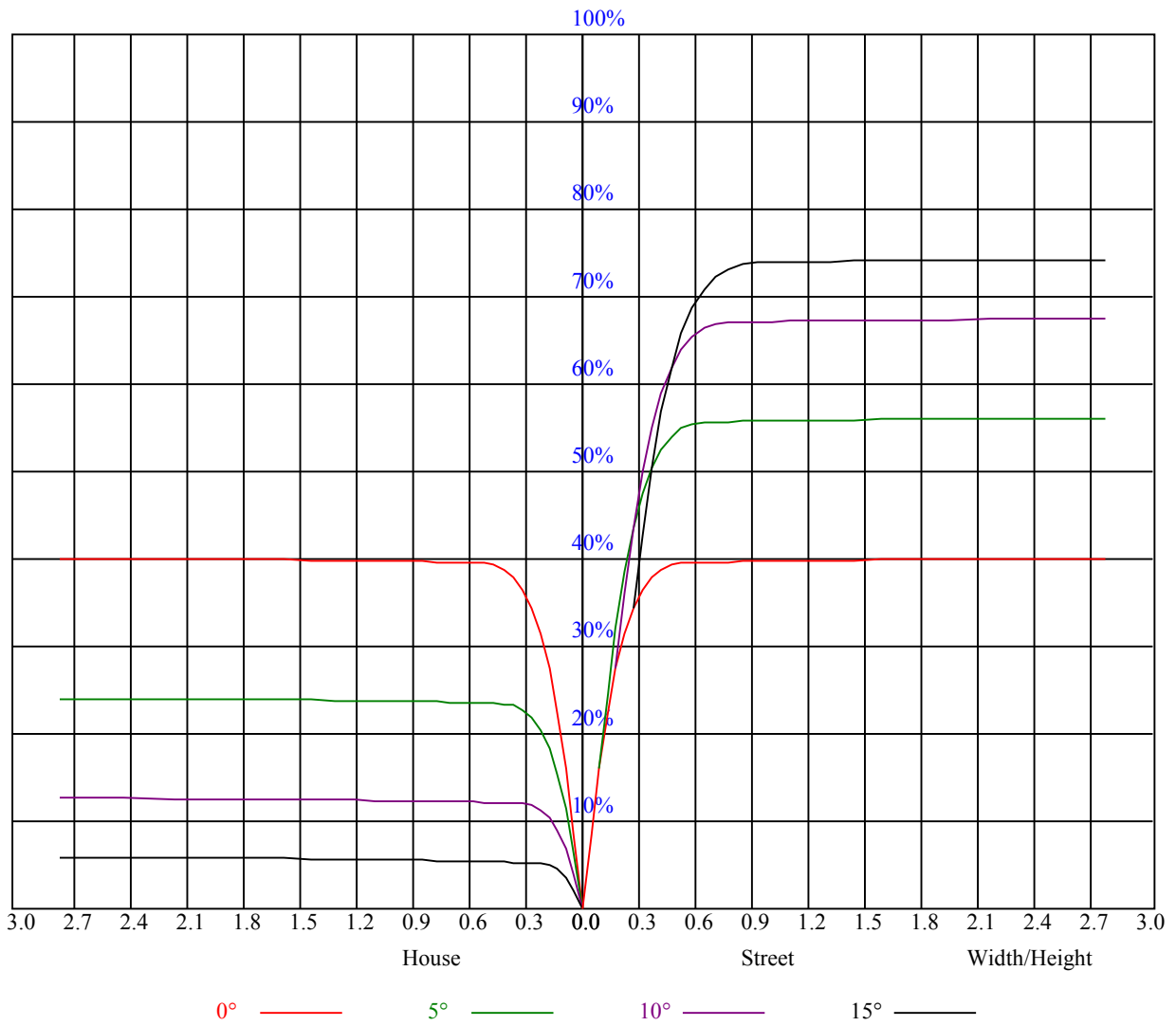
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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	0.96	0.96	0.96	0.94	0.94	0.94	0.90	0.90	0.90	0.86	0.86	0.86	0.82	0.82	0.82	0.81
1	0.91	0.90	0.88	0.89	0.88	0.87	0.86	0.85	0.84	0.83	0.82	0.82	0.81	0.80	0.79	0.78
2	0.87	0.85	0.83	0.86	0.84	0.82	0.83	0.82	0.80	0.81	0.80	0.78	0.79	0.78	0.77	0.76
3	0.84	0.81	0.79	0.83	0.80	0.78	0.81	0.79	0.77	0.79	0.77	0.76	0.77	0.76	0.75	0.74
4	0.81	0.78	0.76	0.80	0.77	0.75	0.78	0.76	0.74	0.77	0.75	0.73	0.76	0.74	0.73	0.72
5	0.78	0.75	0.73	0.78	0.75	0.73	0.76	0.74	0.72	0.75	0.73	0.71	0.74	0.72	0.71	0.70
6	0.76	0.73	0.71	0.75	0.72	0.70	0.74	0.72	0.70	0.73	0.71	0.69	0.72	0.71	0.69	0.68
7	0.74	0.71	0.69	0.73	0.70	0.68	0.73	0.70	0.68	0.72	0.69	0.68	0.71	0.69	0.67	0.67
8	0.72	0.69	0.67	0.72	0.69	0.67	0.71	0.68	0.66	0.70	0.68	0.66	0.70	0.67	0.66	0.65
9	0.70	0.67	0.65	0.70	0.67	0.65	0.69	0.67	0.65	0.69	0.66	0.65	0.68	0.66	0.64	0.64
10	0.69	0.66	0.64	0.68	0.65	0.64	0.68	0.65	0.63	0.67	0.65	0.63	0.67	0.65	0.63	0.62



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	16104.38	16031.25	15581.25	14866.88	13753.13	12605.63	11266.88	9956.25	8881.88
45.0	16149.38	15901.88	15288.75	14276.25	13190.63	12026.25	10546.88	9382.50	8325.00
90.0	16025.63	15654.38	14956.88	13561.88	12543.75	11205.00	10017.56	8766.56	7774.31
135.0	16143.75	15963.75	15418.13	14473.13	13421.25	12116.25	10760.63	9590.63	8516.25
180.0	16115.63	15890.63	15367.50	14293.13	13224.38	11116.13	10655.44	9315.56	8245.13
225.0	16149.38	16087.50	15716.25	14934.38	13820.63	12661.88	11134.69	9945.56	8830.69
270.0	16025.63	16155.00	15896.25	15440.63	14388.75	13275.00	12076.88	10597.50	9461.25
315.0	16143.75	15991.88	15553.13	14709.38	13595.63	12442.50	11091.38	9780.75	8697.38
360.0	16104.38	16031.25	15581.25	14866.88	13753.13	12605.63	11266.88	9956.25	8881.88
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	7773.75	6789.38	6030.00	5445.00	4618.13	4089.38	3684.38	3166.88	2846.25
45.0	7177.50	6361.88	5641.88	4995.00	4297.50	3813.75	3375.00	2947.50	2857.50
90.0	6898.50	5939.44	5275.13	4690.13	4044.94	3587.63	3180.38	2772.00	2407.50
135.0	7351.88	6519.38	5771.25	5124.38	4404.38	3909.38	3465.00	2981.25	2851.88
180.0	7305.19	6286.50	5584.50	4968.00	4288.50	3814.31	3391.31	2967.19	2589.75
225.0	7825.50	6727.50	5961.38	5288.63	4540.50	4028.63	3579.75	3130.88	2733.75
270.0	8403.75	7233.75	6412.50	5703.75	4905.00	4336.88	3847.50	3352.50	2925.00
315.0	7712.44	6636.38	5878.69	5213.81	4552.31	3975.75	3529.13	3080.25	2725.31
360.0	7773.75	6789.38	6030.00	5445.00	4618.13	4089.38	3684.38	3166.88	2846.25
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	2444.63	2116.69	1810.13	1556.44	1297.13	1070.44	824.63	591.75	405.00
45.0	2259.00	1934.44	1614.38	1388.81	1122.75	901.13	669.94	467.44	312.19
90.0	2107.69	1789.88	1533.38	1093.84	1008.68	791.27	561.88	365.06	226.74
135.0	2329.31	1983.38	1673.44	1439.44	1177.31	918.00	711.00	501.19	341.44
180.0	2279.81	1958.06	1689.19	1419.75	1101.99	936.28	701.66	485.38	320.57
225.0	2424.38	2106.00	1835.44	1554.75	1113.24	1054.41	804.49	555.69	404.44
270.0	2880.00	2263.50	1949.63	1683.00	1418.63	1191.94	942.19	701.44	497.25
315.0	2375.44	2053.69	1785.94	1510.88	1094.06	1008.84	787.39	544.84	379.18
360.0	2444.63	2116.69	1810.13	1556.44	1297.13	1070.44	824.63	591.75	405.00
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	288.56	114.47	47.25	19.91	16.88	15.69	14.74	13.78	13.11
45.0	293.06	60.41	24.92	16.65	15.19	14.29	13.56	12.88	12.32
90.0	123.02	40.89	18.62	16.37	15.13	14.18	13.44	12.83	12.26
135.0	285.75	74.25	29.70	17.78	16.14	15.13	14.29	13.44	12.94
180.0	190.01	78.75	30.26	17.21	15.64	14.68	13.89	13.11	12.60
225.0	257.40	101.98	42.30	20.31	16.82	15.47	14.51	13.73	12.94
270.0	321.75	207.23	79.14	31.05	17.94	16.37	15.24	14.29	13.56
315.0	236.42	97.59	37.58	19.24	17.10	15.92	14.91	13.89	13.33
360.0	288.56	114.47	47.25	19.91	16.88	15.69	14.74	13.78	13.11
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	12.60	12.09	11.70	11.31	11.03	10.80	10.58	10.46	10.24
45.0	11.93	11.53	11.19	10.97	10.69	10.52	10.35	10.24	10.13
90.0	11.87	11.53	11.25	11.03	10.74	10.52	10.41	10.29	10.18
135.0	12.43	11.98	11.59	11.31	11.08	10.91	10.69	10.52	10.35
180.0	12.21	11.76	11.42	11.14	10.86	10.69	10.52	10.35	10.24
225.0	12.43	11.87	11.53	11.14	10.91	10.69	10.46	10.29	10.18
270.0	12.88	12.32	11.87	11.48	11.19	10.91	10.74	10.52	10.41
315.0	12.71	12.15	11.81	11.48	11.14	10.91	10.74	10.52	10.41
360.0	12.60	12.09	11.70	11.31	11.03	10.80	10.58	10.46	10.24



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	10.18	10.07	9.90	9.90	9.84	9.73	9.68	9.62	9.56
45.0	10.01	9.90	9.84	9.79	9.68	9.62	9.62	9.51	9.51
90.0	10.07	9.96	9.84	9.84	9.79	9.68	9.62	9.56	9.56
135.0	10.24	10.13	10.01	9.96	9.90	9.84	9.73	9.68	9.56
180.0	10.13	10.01	9.96	9.90	9.79	9.73	9.68	9.62	9.56
225.0	10.07	9.96	9.84	9.79	9.73	9.62	9.62	9.56	9.51
270.0	10.24	10.07	10.01	9.96	9.84	9.79	9.73	9.68	9.62
315.0	10.24	10.18	10.01	9.96	9.84	9.79	9.73	9.68	9.62
360.0	10.18	10.07	9.90	9.90	9.84	9.73	9.68	9.62	9.56
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	9.51	9.45	9.45	9.39	9.39	9.34	9.34	9.28	9.28
45.0	9.45	9.39	9.39	9.34	9.28	9.23	9.28	9.28	9.23
90.0	9.51	9.51	9.45	9.45	9.39	9.34	9.34	9.34	9.28
135.0	9.62	9.56	9.51	9.45	9.39	9.39	9.39	9.34	9.39
180.0	9.56	9.45	9.45	9.39	9.34	9.39	9.34	9.28	9.28
225.0	9.45	9.39	9.39	9.34	9.28	9.23	9.23	9.23	9.17
270.0	9.56	9.51	9.51	9.45	9.39	9.39	9.34	9.34	9.34
315.0	9.56	9.51	9.51	9.45	9.39	9.39	9.34	9.28	9.28
360.0	9.51	9.45	9.45	9.39	9.39	9.34	9.34	9.28	9.28
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	9.28	9.23	9.23	9.17	9.11	9.17	9.17	9.17	9.17
45.0	9.23	9.17	9.17	9.17	9.17	9.11	9.11	9.06	9.11
90.0	9.28	9.28	9.28	9.34	9.28	9.28	9.28	9.28	9.28
135.0	9.28	9.23	9.28	9.28	9.23	9.23	9.23	9.17	9.17
180.0	9.28	9.23	9.23	9.23	9.17	9.17	9.17	9.17	9.11
225.0	9.17	9.17	9.11	9.11	9.11	9.11	9.11	9.11	9.06
270.0	9.34	9.28	9.28	9.28	9.28	9.23	9.23	9.28	9.28
315.0	9.28	9.28	9.23	9.17	9.23	9.23	9.17	9.17	9.17
360.0	9.28	9.23	9.23	9.17	9.11	9.17	9.17	9.17	9.17
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	9.11	9.11	9.11	9.11	9.11	9.06	9.06	9.06	9.06
45.0	9.11	9.06	9.06	9.06	9.06	9.06	9.06	9.00	9.00
90.0	9.34	9.28	9.28	9.34	9.39	9.39	9.39	9.45	9.45
135.0	9.17	9.17	9.11	9.11	9.11	9.11	9.11	9.11	9.11
180.0	9.11	9.11	9.11	9.11	9.11	9.11	9.06	9.11	9.06
225.0	9.06	9.00	9.00	9.06	9.00	9.00	9.00	9.06	9.00
270.0	9.28	9.28	9.34	9.34	9.34	9.39	9.45	9.45	9.45
315.0	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.06
360.0	9.11	9.11	9.11	9.11	9.11	9.06	9.06	9.06	9.06
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	9.11	9.06	9.11	9.11	9.06	9.11	9.00	9.00	9.06
45.0	9.00	9.06	9.00	9.06	9.00	8.94	9.00	9.00	8.94
90.0	9.51	9.56	9.56	9.34	9.17	9.00	9.06	9.00	9.00
135.0	9.11	9.11	9.11	9.17	9.17	9.17	9.00	9.06	9.00
180.0	9.06	9.11	9.06	9.06	9.06	9.06	9.06	9.00	9.06
225.0	9.00	9.06	9.00	9.00	9.00	9.00	8.94	8.94	8.94
270.0	9.45	9.45	9.45	9.51	9.62	9.28	9.06	9.00	9.00
315.0	9.11	9.06	9.06	9.06	9.06	9.06	9.06	9.06	9.00
360.0	9.11	9.06	9.11	9.11	9.06	9.11	9.00	9.00	9.06

Intensity data(cd)

C/γ(°)	90.0
0.0	9.06
45.0	9.00
90.0	9.00
135.0	9.06
180.0	9.06
225.0	8.94
270.0	9.00
315.0	9.00
360.0	9.06