



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: 2-1701-A
Luminaire: 99.02.73.173+92.76.365.00
Report No: NATA0100
Test No: GC2018101208
LampCAT: LUMILEDS 1216
Lamp flux(lm): 3345.0
Number of Lamps: 1
Length(mm): 71
Phm Type: C

Voltage(V): 33.6000
Current(A): 0.6500
Power (W): 21.8400
PF: 0.0000
Ballast type: DC
Width(mm): 71
Height(mm): 0

Photometric Results

Lumens(lm): 2960.04
Efficiency(%): 88.49%
Lumens(lm)/Power(W): 135.53
Central intensity(cd): 8348.766
Maximum intensity(cd): 8348.766
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=26.7
 [C90/270]Total=26.7
Field angle(10%Imax): [C0/180]Total=67.9
 [C90/270]Total=67.9
Maximum s/h(1/2): C0_180=0.45 C90_270=0.45
Maximum s/h(1/4): C0_180=0.46 C90_270=0.46
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 88.55%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.240%

Equipment:
Temperature(°C): 25.0

Date: 2018/10/12
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.50

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	8348.766	1.997	1.997	.060%	.067%
1.0	8348.414	15.978	17.975	.478%	.607%
2.0	8345.039	31.937	49.912	.955%	1.686%
3.0	8336.531	47.845	97.757	1.430%	3.303%
4.0	8312.344	63.586	161.343	1.901%	5.451%
5.0	8220.727	78.570	239.913	2.349%	8.105%
6.0	8052.539	92.304	332.217	2.759%	11.223%
7.0	7766.156	103.789	436.006	3.103%	14.730%
8.0	7353.070	112.221	548.228	3.355%	18.521%
9.0	6844.359	117.413	665.641	3.510%	22.488%
10.0	6267.023	119.339	784.98	3.568%	26.519%
11.0	5612.484	117.437	902.417	3.511%	30.487%
12.0	4985.508	113.668	1016.086	3.398%	34.327%
13.0	4375.688	107.941	1124.027	3.227%	37.973%
14.0	3796.383	100.716	1224.742	3.011%	41.376%
15.0	3356.438	95.263	1320.006	2.848%	44.594%
16.0	2970.422	89.786	1409.792	2.684%	47.627%
17.0	2643.609	84.759	1494.55	2.534%	50.491%
18.0	2378.953	80.616	1575.166	2.410%	53.214%
19.0	2173.219	77.588	1652.755	2.320%	55.835%
20.0	1980.000	74.262	1727.017	2.220%	58.344%
21.0	1831.922	71.993	1799.01	2.152%	60.776%
22.0	1716.539	70.515	1869.525	2.108%	63.159%
23.0	1611.773	69.061	1938.586	2.065%	65.492%
24.0	1519.664	67.782	2006.367	2.026%	67.782%
25.0	1443.656	66.906	2073.273	2.000%	70.042%
26.0	1376.859	66.189	2139.462	1.979%	72.278%
27.0	1318.008	65.617	2205.079	1.962%	74.495%
28.0	1270.195	65.393	2270.472	1.955%	76.704%
29.0	1203.054	63.960	2334.432	1.912%	78.865%
30.0	1138.901	62.446	2396.878	1.867%	80.974%
31.0	1072.955	60.600	2457.478	1.812%	83.022%
32.0	993.586	57.739	2515.217	1.726%	84.972%
33.0	915.258	54.664	2569.881	1.634%	86.819%
34.0	832.648	51.059	2620.94	1.526%	88.544%
35.0	749.960	47.172	2668.112	1.410%	90.138%
36.0	662.140	42.680	2710.792	1.276%	91.579%
37.0	582.152	38.419	2749.211	1.149%	92.877%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	494.733	33.401	2782.613	.999%	94.006%
39.0	408.607	28.199	2810.811	.843%	94.958%
40.0	332.283	23.422	2834.233	.700%	95.750%
41.0	263.370	18.948	2853.181	.566%	96.390%
42.0	193.275	14.182	2867.363	.424%	96.869%
43.0	128.109	9.581	2876.944	.286%	97.193%
44.0	81.000	6.170	2883.115	.184%	97.401%
45.0	43.798	3.396	2886.511	.102%	97.516%
46.0	28.455	2.245	2888.756	.067%	97.592%
47.0	22.212	1.781	2890.537	.053%	97.652%
48.0	18.359	1.496	2892.033	.045%	97.702%
49.0	17.409	1.441	2893.474	.043%	97.751%
50.0	17.107	1.437	2894.911	.043%	97.800%
51.0	16.805	1.432	2896.343	.043%	97.848%
52.0	16.530	1.428	2897.772	.043%	97.896%
53.0	16.073	1.408	2899.179	.042%	97.944%
54.0	15.820	1.404	2900.583	.042%	97.991%
55.0	15.708	1.411	2901.994	.042%	98.039%
56.0	15.884	1.444	2903.438	.043%	98.088%
57.0	16.320	1.501	2904.939	.045%	98.138%
58.0	16.791	1.561	2906.5	.047%	98.191%
59.0	17.248	1.621	2908.122	.048%	98.246%
60.0	17.606	1.672	2909.794	.050%	98.302%
61.0	17.909	1.718	2911.511	.051%	98.360%
62.0	18.169	1.759	2913.27	.053%	98.420%
63.0	18.422	1.800	2915.07	.054%	98.481%
64.0	18.591	1.832	2916.903	.055%	98.543%
65.0	18.682	1.857	2918.759	.056%	98.605%
66.0	18.661	1.869	2920.629	.056%	98.668%
67.0	18.570	1.874	2922.503	.056%	98.732%
68.0	18.401	1.871	2924.374	.056%	98.795%
69.0	18.211	1.864	2926.239	.056%	98.858%
70.0	18.028	1.858	2928.096	.056%	98.921%
71.0	17.831	1.849	2929.945	.055%	98.983%
72.0	17.627	1.838	2931.784	.055%	99.045%
73.0	17.402	1.825	2933.609	.055%	99.107%
74.0	17.191	1.812	2935.421	.054%	99.168%
75.0	16.952	1.796	2937.217	.054%	99.229%

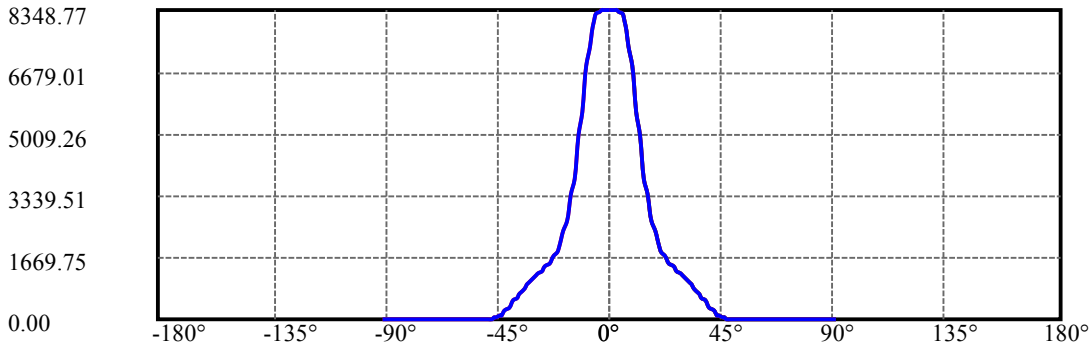
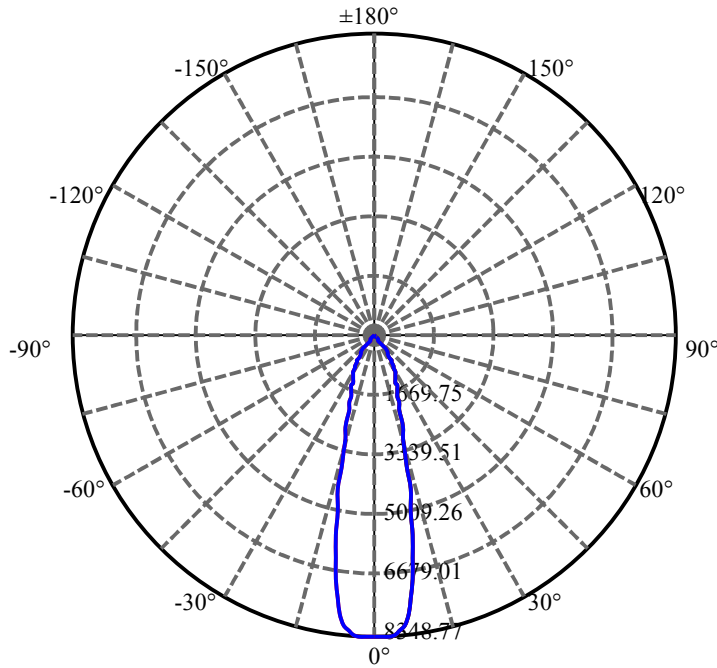
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	16.713	1.778	2938.995	.053%	99.289%
77.0	16.474	1.760	2940.755	.053%	99.348%
78.0	16.172	1.735	2942.49	.052%	99.407%
79.0	15.905	1.712	2944.202	.051%	99.465%
80.0	15.595	1.684	2945.886	.050%	99.522%
81.0	15.279	1.655	2947.541	.049%	99.578%
82.0	14.970	1.626	2949.167	.049%	99.633%
83.0	14.667	1.596	2950.763	.048%	99.686%
84.0	14.372	1.567	2952.33	.047%	99.739%
85.0	14.055	1.535	2953.866	.046%	99.791%
86.0	13.739	1.503	2955.369	.045%	99.842%
87.0	12.741	1.395	2956.764	.042%	99.889%
88.0	11.981	1.313	2958.077	.039%	99.934%
89.0	11.960	1.311	2959.389	.039%	99.978%
90.0	11.939	0.655	2960.043	.020%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	2396.88	71.66%	80.97%
0-40	2834.23	84.73%	95.75%
0-60	2909.79	86.99%	98.30%
0-90	2959.39	88.47%	99.98%
0-120	2959.39	88.47%	99.98%
0-180	2960.04	88.49%	100.00%
60-90	51.27	1.53%	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%
0-29.54	2368.03	70.79%	80.00%

ZONAL LUMEN SUMMARY

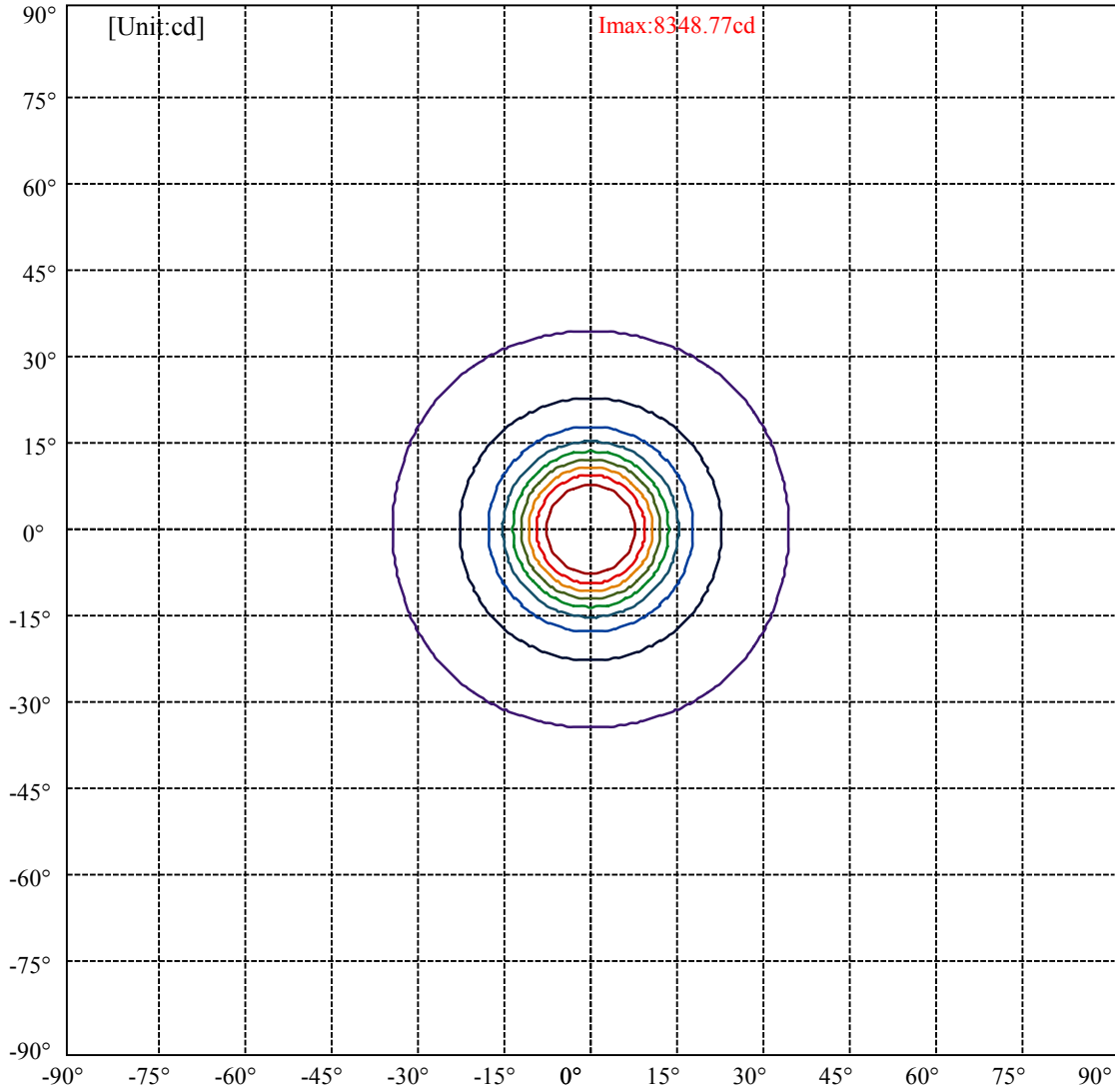
0-10	784.98
10-20	942.04
20-30	669.86
30-40	437.36
40-50	60.68
50-60	14.88
60-70	18.30
70-80	17.79
80-90	13.50
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00



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

Field angle(10%Imax):C0/180Left:34.0 Right:34.0
:C90/270Left:34.0 Right:34.0

Beam Angle(50%Imax):C0/180Left:13.3 Right:13.3
:C90/270Left:13.3 Right:13.3

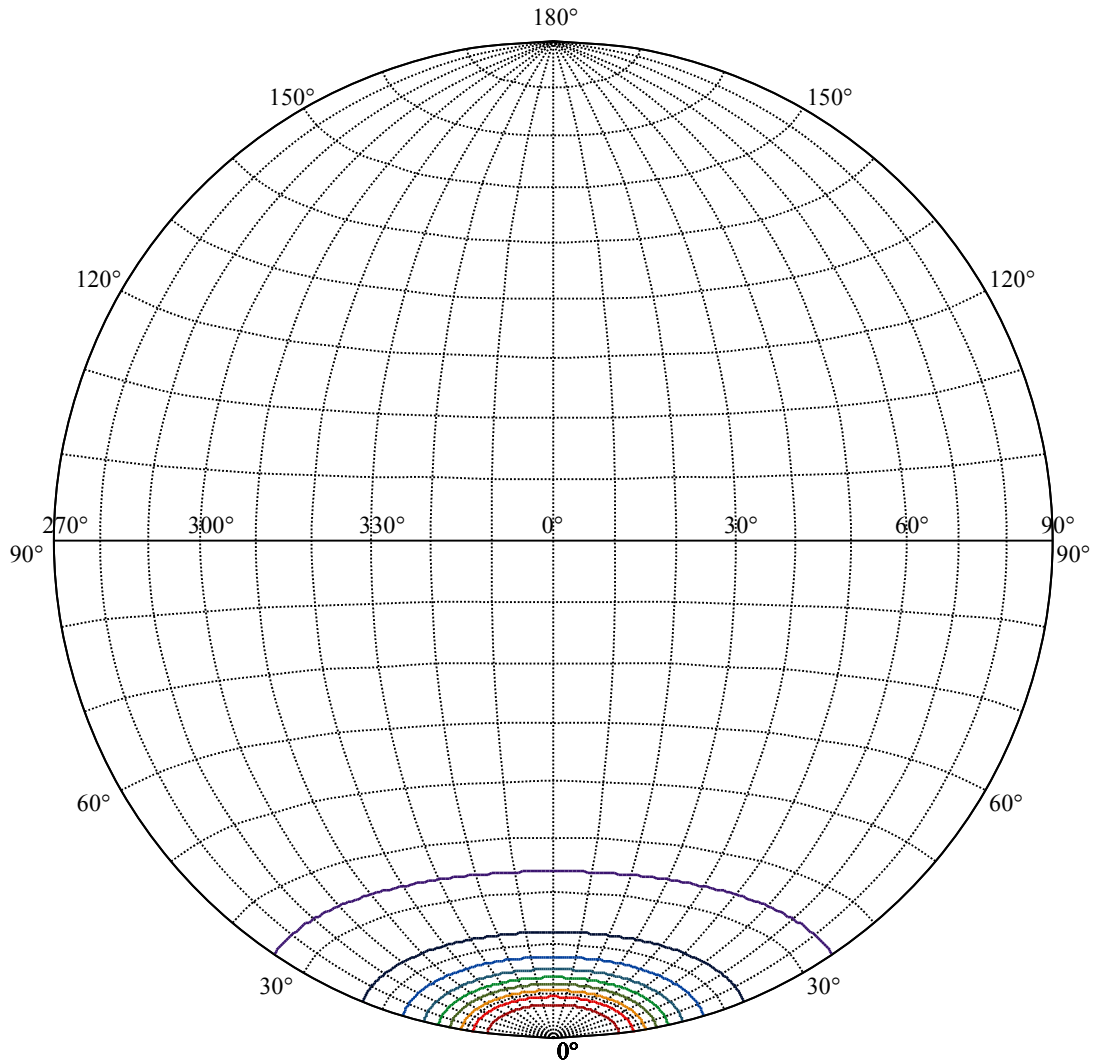


(10%Imax) 834.877	—
(20%Imax) 1669.75	—
(30%Imax) 2504.63	—
(40%Imax) 3339.51	—
(50%Imax) 4174.38	—
(60%Imax) 5009.26	—
(70%Imax) 5844.14	—
(80%Imax) 6679.01	—
(90%Imax) 7513.89	—

Equipment:
Temperature(°C): 25.0

Date: 2018/10/12
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.50



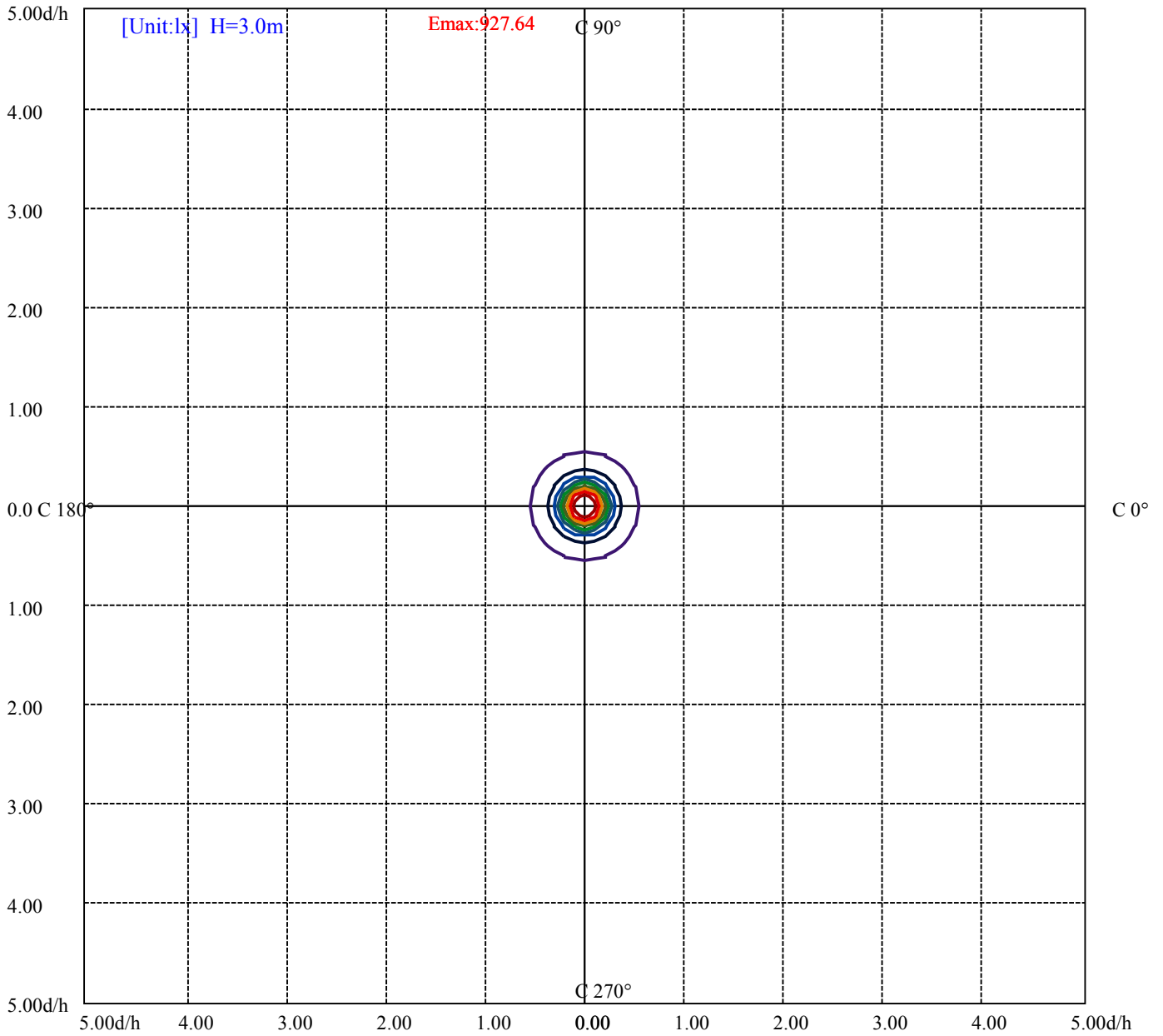
House

[Unit:cd]

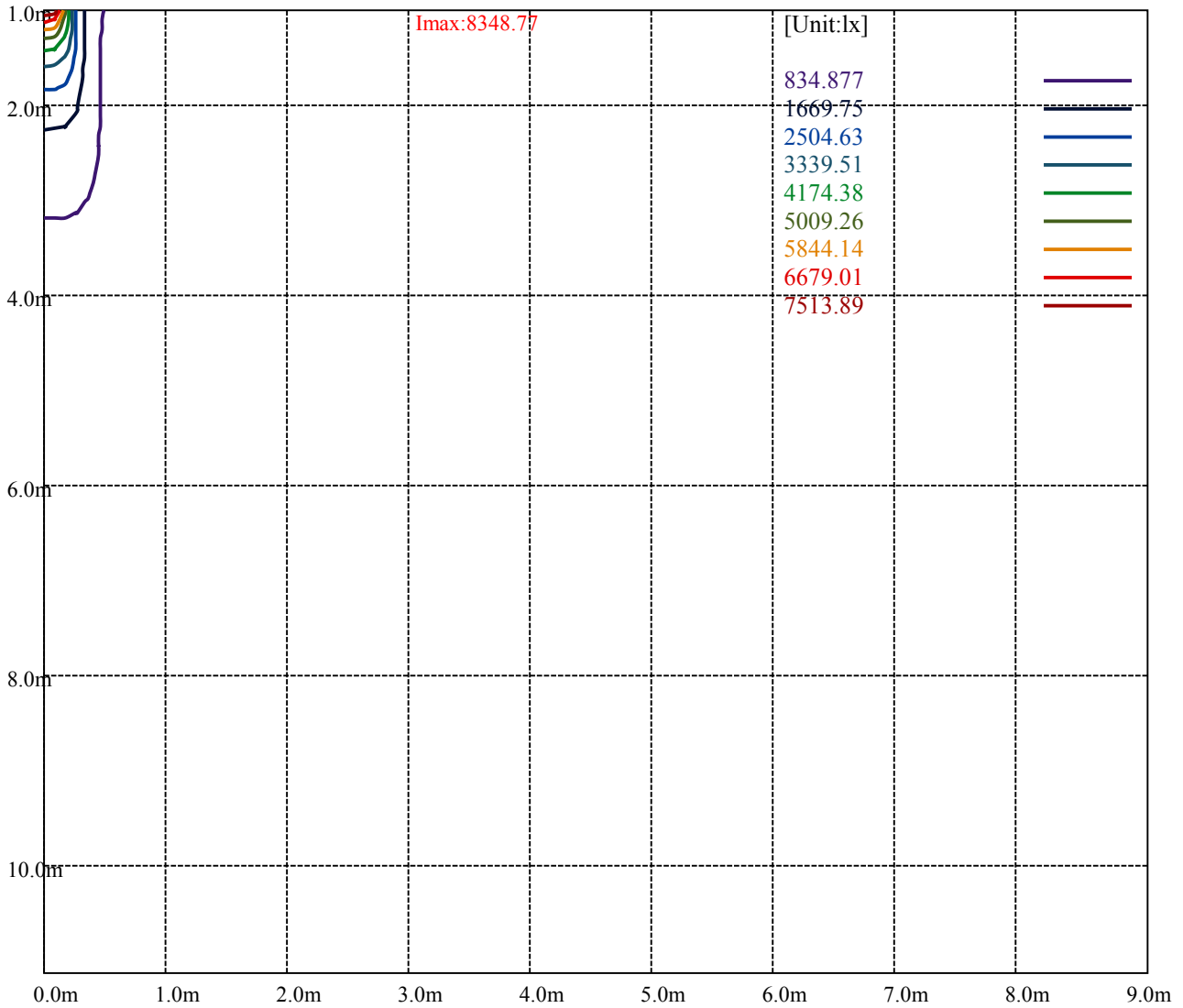
Road

Imax:8348.77

(10%Imax) 834.877	—
(20%Imax) 1669.75	—
(30%Imax) 2504.63	—
(40%Imax) 3339.51	—
(50%Imax) 4174.38	—
(60%Imax) 5009.26	—
(70%Imax) 5844.14	—
(80%Imax) 6679.01	—
(90%Imax) 7513.89	—



(10%Emax) 92.76411	—
(20%Emax) 185.5278	—
(30%Emax) 278.2922	—
(40%Emax) 371.0567	—
(50%Emax) 463.82	—
(60%Emax) 556.5844	—
(70%Emax) 649.3489	—
(80%Emax) 742.1122	—
(90%Emax) 834.8767	—



Luminance Table

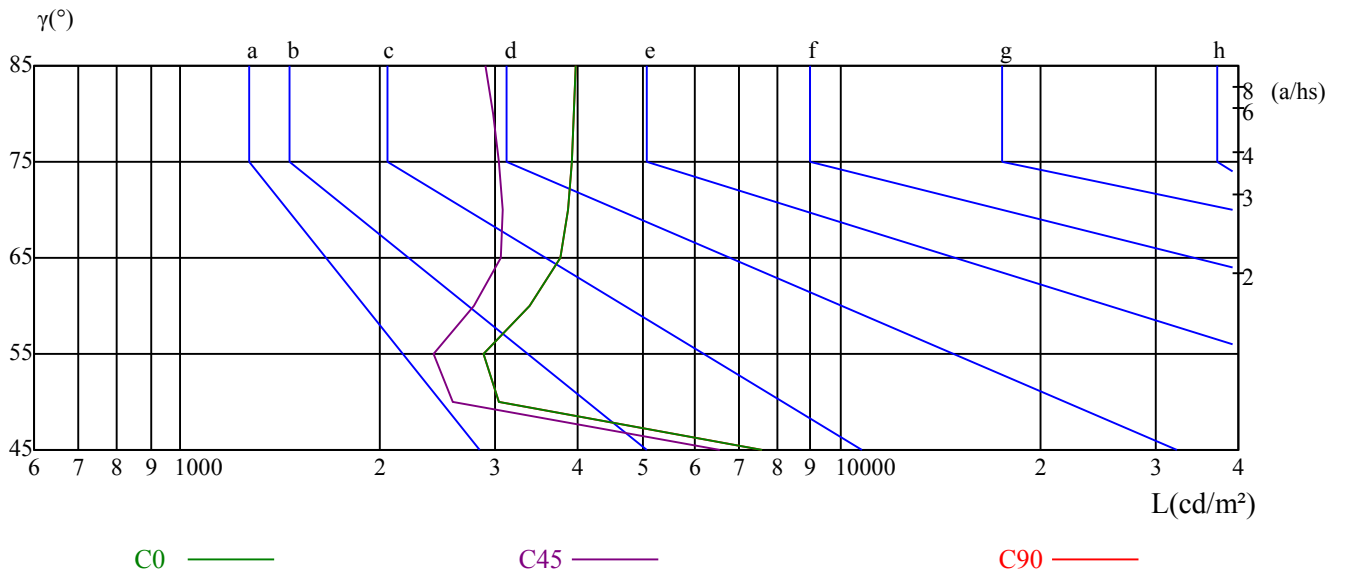
γ	45	50	55	60	65	70	75	80	85
C0	7586	3037	2882	3369	3765	3869	3922	3946	3958
C45	6548	2582	2413	2774	3045	3068	3042	2984	2904
C90	7586	3037	2882	3369	3765	3869	3922	3946	3958

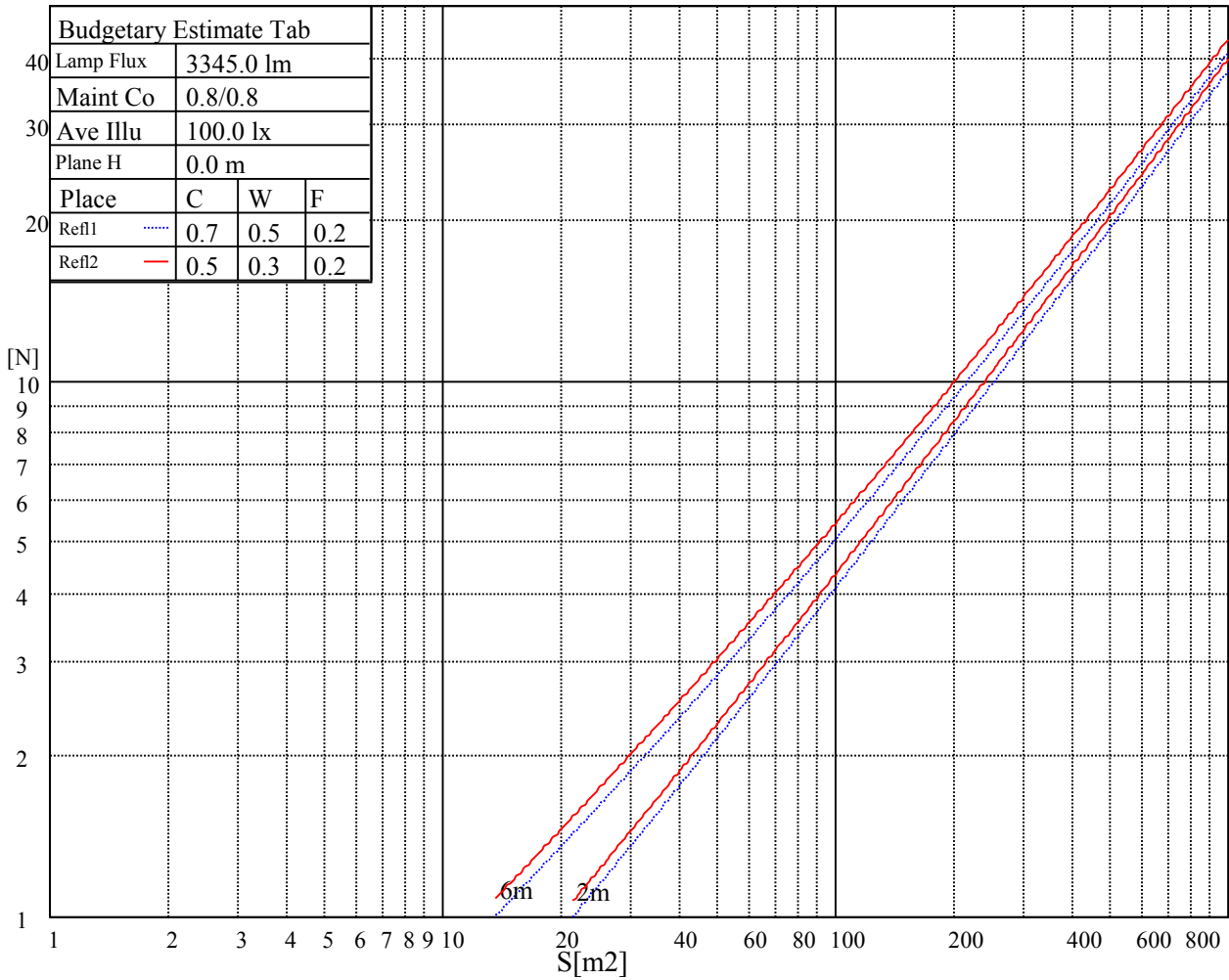
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
8769	8769	8769	12993	12993	12993	31991	31991	31991

Glare Table

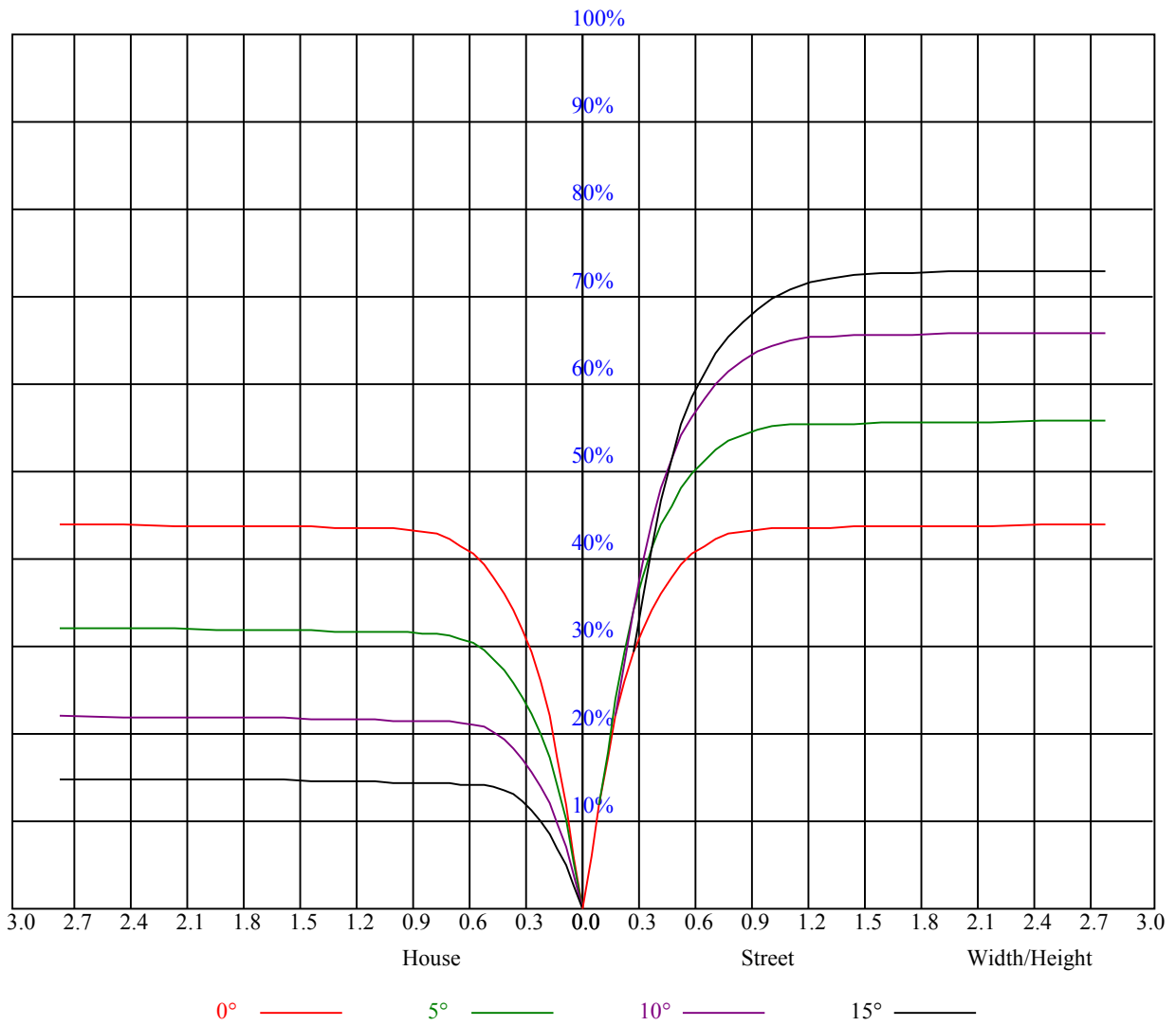
Glare	Quality	Service Values Illuminance(lx)							
		a	b	c	d	e	f	g	h
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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	1.05	1.05	1.05	1.03	1.03	1.03	0.98	0.98	0.98	0.94	0.94	0.94	0.90	0.90	0.90	0.89
1	0.99	0.97	0.95	0.97	0.95	0.93	0.93	0.92	0.90	0.90	0.89	0.88	0.87	0.86	0.85	0.84
2	0.93	0.90	0.87	0.91	0.88	0.86	0.89	0.86	0.84	0.86	0.84	0.82	0.84	0.82	0.81	0.79
3	0.88	0.84	0.81	0.87	0.83	0.80	0.84	0.81	0.79	0.82	0.80	0.78	0.80	0.78	0.77	0.75
4	0.83	0.79	0.76	0.82	0.78	0.75	0.80	0.77	0.74	0.79	0.76	0.74	0.77	0.75	0.73	0.72
5	0.79	0.75	0.72	0.78	0.74	0.71	0.77	0.73	0.71	0.76	0.72	0.70	0.74	0.72	0.69	0.68
6	0.76	0.71	0.68	0.75	0.71	0.68	0.74	0.70	0.67	0.72	0.69	0.67	0.71	0.69	0.66	0.65
7	0.72	0.68	0.65	0.72	0.67	0.64	0.71	0.67	0.64	0.70	0.66	0.64	0.69	0.66	0.63	0.62
8	0.69	0.65	0.62	0.69	0.65	0.62	0.68	0.64	0.61	0.67	0.64	0.61	0.66	0.63	0.61	0.60
9	0.66	0.62	0.59	0.66	0.62	0.59	0.65	0.62	0.59	0.65	0.61	0.59	0.64	0.61	0.58	0.58
10	0.64	0.60	0.57	0.64	0.60	0.57	0.63	0.59	0.57	0.62	0.59	0.56	0.62	0.59	0.56	0.55



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	8339.63	8339.06	8337.38	8335.69	8321.63	8274.94	8153.44	7902.00	7560.56
45.0	8354.25	8353.13	8343.00	8327.25	8304.75	8211.38	8040.38	7765.88	7359.19
90.0	8353.69	8342.44	8327.81	8305.88	8241.19	8038.69	7796.81	7392.38	6888.38
135.0	8347.50	8345.25	8326.13	8317.13	8287.31	8160.19	7957.69	7695.56	7197.19
180.0	8339.63	8333.44	8325.56	8309.25	8267.06	8169.19	7949.81	7588.69	7167.38
225.0	8354.25	8355.94	8359.88	8355.94	8331.75	8245.13	8083.69	7787.81	7348.50
270.0	8353.69	8360.44	8372.81	8371.13	8375.63	8338.50	8242.88	8062.88	7729.88
315.0	8347.50	8357.63	8367.75	8370.00	8369.44	8327.81	8195.63	7934.06	7573.50
360.0	8339.63	8339.06	8337.38	8335.69	8321.63	8274.94	8153.44	7902.00	7560.56
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	7088.63	6521.06	5943.94	5336.44	4593.94	4056.19	3588.75	3094.31	2771.44
45.0	6860.25	6338.81	5675.06	5071.50	4435.31	3876.75	3445.88	3036.94	2698.31
90.0	6361.88	5702.63	5032.69	4476.94	3979.69	3442.50	3080.25	2774.25	2515.50
135.0	6649.88	6165.00	5405.63	4798.13	4242.38	3650.06	3249.00	2904.75	2555.44
180.0	6586.88	5929.88	5315.06	4632.19	4072.50	3539.25	3102.75	2779.88	2511.56
225.0	6854.06	6212.81	5515.31	4884.75	4288.50	3656.81	3241.13	2886.19	2522.81
270.0	7282.13	6789.94	6145.31	5528.81	4838.63	4195.13	3693.94	3216.94	2828.25
315.0	7071.19	6476.06	5866.88	5155.31	4554.56	3954.38	3449.81	3070.13	2755.56
360.0	7088.63	6521.06	5943.94	5336.44	4593.94	4056.19	3588.75	3094.31	2771.44
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	2508.19	2266.31	2071.69	1932.75	1801.69	1702.13	1601.44	1509.75	1433.25
45.0	2448.00	2239.31	2010.94	1872.56	1753.88	1638.00	1544.06	1472.63	1403.44
90.0	2246.06	2061.56	1905.19	1748.81	1645.88	1558.69	1473.19	1400.06	1343.81
135.0	2333.81	2141.44	1932.75	1795.50	1682.44	1571.06	1481.63	1412.44	1346.06
180.0	2236.50	2054.25	1900.69	1743.75	1641.38	1553.06	1460.81	1394.44	1335.94
225.0	2295.00	2106.00	1911.94	1780.88	1668.38	1553.63	1484.44	1410.19	1339.88
270.0	2543.06	2306.25	2068.88	1917.56	1792.69	1674.00	1566.00	1482.19	1405.13
315.0	2421.00	2210.63	2037.94	1863.56	1746.00	1643.63	1545.75	1467.56	1407.38
360.0	2508.19	2266.31	2071.69	1932.75	1801.69	1702.13	1601.44	1509.75	1433.25
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	1362.38	1308.38	1258.31	1196.44	1111.50	1038.38	964.13	869.06	792.00
45.0	1344.38	1295.44	1239.19	1174.50	1104.19	1027.69	948.94	867.94	772.31
90.0	1290.38	1247.63	1173.94	1113.58	1045.41	964.80	882.17	805.89	728.94
135.0	1290.94	1244.25	1186.31	1126.69	1050.75	970.88	895.50	813.38	727.88
180.0	1273.50	1232.44	1118.31	1083.60	1013.18	930.26	854.78	767.48	689.46
225.0	1294.88	1243.69	1165.50	1114.76	1045.01	961.99	877.33	800.33	721.24
270.0	1341.00	1291.50	1241.44	1184.06	1113.75	1036.13	963.56	879.75	789.75
315.0	1346.63	1298.25	1241.44	1117.58	1099.86	1018.58	935.66	857.36	778.11
360.0	1362.38	1308.38	1258.31	1196.44	1111.50	1038.38	964.13	869.06	792.00
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	714.38	636.19	540.56	464.63	388.69	305.44	288.00	167.34	108.34
45.0	693.56	615.38	519.75	442.69	367.31	284.63	207.45	148.73	103.28
90.0	629.04	548.61	469.97	373.28	297.96	228.94	161.61	103.44	62.44
135.0	648.56	568.13	470.25	390.94	314.44	287.44	169.14	115.76	66.38
180.0	604.01	520.54	446.96	364.11	281.31	212.79	154.35	92.25	54.28
225.0	622.41	544.95	468.17	371.93	299.48	231.53	159.19	108.73	66.99
270.0	708.75	626.63	524.81	443.25	366.19	284.06	207.45	151.71	97.71
315.0	676.41	596.81	517.39	418.05	342.90	272.14	199.01	136.91	88.59
360.0	714.38	636.19	540.56	464.63	388.69	305.44	288.00	167.34	108.34

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	62.21	35.27	26.21	20.36	17.66	17.33	17.04	16.82	16.26
45.0	50.01	29.70	23.34	17.04	16.31	16.03	15.58	15.30	15.13
90.0	31.16	25.14	19.46	17.33	17.10	17.04	16.82	16.31	16.09
135.0	37.13	25.99	20.87	18.17	17.94	17.78	17.78	17.49	15.92
180.0	31.05	24.64	19.35	17.72	17.27	16.88	16.54	16.26	15.98
225.0	35.21	25.88	20.93	17.44	16.99	16.65	16.31	16.03	15.81
270.0	56.25	32.68	24.47	20.48	18.23	17.78	17.44	17.21	16.76
315.0	47.36	28.35	23.06	18.34	17.78	17.38	16.93	16.82	16.65
360.0	62.21	35.27	26.21	20.36	17.66	17.33	17.04	16.82	16.26
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	15.81	15.64	15.41	15.24	15.53	16.09	16.59	16.99	17.27
45.0	14.91	14.79	14.68	14.51	14.46	14.40	14.46	14.46	14.40
90.0	15.86	15.81	16.31	17.04	17.21	17.49	17.89	18.28	18.56
135.0	15.69	15.53	15.64	16.48	17.66	18.96	19.46	19.58	19.80
180.0	15.75	15.53	15.36	15.13	14.96	14.85	14.91	15.41	15.86
225.0	15.53	15.36	15.24	15.13	15.08	15.81	16.20	16.43	16.65
270.0	16.59	16.65	17.49	18.39	19.41	19.86	20.59	21.32	21.88
315.0	16.43	16.37	16.93	18.62	20.03	20.53	20.76	20.81	20.93
360.0	15.81	15.64	15.41	15.24	15.53	16.09	16.59	16.99	17.27
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	17.55	17.66	17.78	17.72	17.66	17.61	17.49	17.33	17.10
45.0	14.40	14.40	14.57	14.74	14.85	14.91	15.02	15.08	15.13
90.0	18.79	18.96	18.96	18.73	18.56	18.23	17.89	17.72	17.49
135.0	19.97	20.08	20.03	20.03	19.91	19.69	19.46	19.18	18.90
180.0	16.26	16.54	16.71	16.76	16.76	16.71	16.59	16.43	16.26
225.0	16.88	17.10	17.27	17.49	17.55	17.61	17.61	17.55	17.55
270.0	22.33	22.61	22.67	22.39	21.99	21.60	21.32	21.04	20.64
315.0	21.21	21.38	21.49	21.43	21.26	20.87	20.31	19.91	19.58
360.0	17.55	17.66	17.78	17.72	17.66	17.61	17.49	17.33	17.10
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	16.88	16.71	16.54	16.31	16.20	16.03	15.81	15.58	15.24
45.0	15.24	15.24	15.30	15.30	15.19	15.08	14.85	14.63	14.40
90.0	17.21	16.99	16.65	16.48	16.26	16.03	15.75	15.47	15.19
135.0	18.68	18.45	18.23	17.83	17.55	17.27	16.99	16.71	16.37
180.0	16.20	16.03	15.98	15.86	15.75	15.58	15.41	15.19	14.96
225.0	17.44	17.38	17.38	17.21	16.93	16.71	16.37	16.03	15.69
270.0	20.19	19.58	19.01	18.68	18.34	17.89	17.44	17.16	16.82
315.0	19.18	18.84	18.45	17.94	17.49	17.21	16.76	16.48	16.09
360.0	16.88	16.71	16.54	16.31	16.20	16.03	15.81	15.58	15.24
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	14.85	14.57	14.29	14.01	13.67	13.39	12.83	11.98	11.98
45.0	14.12	14.01	13.84	13.61	13.39	13.05	12.66	11.98	11.98
90.0	14.91	14.63	14.23	14.06	13.84	13.61	12.15	11.93	11.98
135.0	16.09	15.64	15.24	14.79	14.12	13.84	12.43	11.98	11.93
180.0	14.74	14.51	14.23	13.95	13.67	13.28	12.26	11.98	11.93
225.0	15.36	15.02	14.79	14.46	14.18	13.78	12.49	11.98	11.98
270.0	16.43	16.03	15.69	15.41	15.19	14.91	14.51	12.04	11.93
315.0	15.75	15.36	15.02	14.68	14.40	14.06	12.60	11.98	11.98
360.0	14.85	14.57	14.29	14.01	13.67	13.39	12.83	11.98	11.98

Intensity data(cd)

C/γ(°)	90.0
0.0	11.93
45.0	11.98
90.0	11.93
135.0	11.93
180.0	11.93
225.0	11.98
270.0	11.93
315.0	11.93
360.0	11.93