
Nata

LumCAT: 2-1678-M
Luminaire: 92.70.124.00
Report No: NT2017071907
Test No: GC2017071907
LampCAT: SEOUL SAWx10 MTJ 12W
Lamp flux(lm): 1550.0
Number of Lamps: 1
Length(mm): 70
Phm Type: C

Voltage(V): 220.4000
Current(A): 0.0690
Power (W): 14.0900
PF: 0.9240
Ballast type: DC
Width(mm): 70
Height(mm): 0

Photometric Results

Lumens(lm): 1401.34
Efficiency(%): 90.41%
Lumens(lm)/Power(W): 99.46
Central intensity(cd): 16478.430
Maximum intensity(cd): 16478.430
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=11.3
 [C90/270]Total=11.3
Field angle(10%Imax): [C0/180]Total=22.4
 [C90/270]Total=22.4
Maximum s/h(1/2): C0_180=0.20 C90_270=0.20
Maximum s/h(1/4): C0_180=0.20 C90_270=0.20
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 90.66%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 99.641%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	16478.432	3.942	3.942	.254%	.281%
1.0	16189.570	30.984	34.927	1.999%	2.492%
2.0	15183.197	58.108	93.034	3.749%	6.639%
3.0	12932.032	74.220	167.254	4.788%	11.935%
4.0	10925.064	83.572	250.826	5.392%	17.899%
5.0	9434.473	90.171	340.997	5.817%	24.334%
6.0	7552.121	86.568	427.564	5.585%	30.511%
7.0	5545.988	74.118	501.682	4.782%	35.800%
8.0	4031.789	61.533	563.215	3.970%	40.191%
9.0	2930.464	50.271	613.486	3.243%	43.779%
10.0	2181.108	41.534	655.02	2.680%	46.743%
11.0	1759.713	36.821	691.841	2.376%	49.370%
12.0	1242.653	28.332	720.173	1.828%	51.392%
13.0	1002.910	24.740	744.913	1.596%	53.157%
14.0	892.638	23.681	768.594	1.528%	54.847%
15.0	808.027	22.934	791.528	1.480%	56.484%
16.0	757.187	22.887	814.415	1.477%	58.117%
17.0	715.441	22.938	837.353	1.480%	59.754%
18.0	686.752	23.272	860.625	1.501%	61.415%
19.0	665.418	23.757	884.382	1.533%	63.110%
20.0	647.675	24.292	908.674	1.567%	64.843%
21.0	630.563	24.780	933.454	1.599%	66.612%
22.0	615.192	25.272	958.726	1.630%	68.415%
23.0	602.136	25.800	984.527	1.665%	70.256%
24.0	589.114	26.276	1010.803	1.695%	72.131%
25.0	577.884	26.782	1037.585	1.728%	74.043%
26.0	564.880	27.155	1064.74	1.752%	75.980%
27.0	554.439	27.603	1092.342	1.781%	77.950%
28.0	544.416	28.028	1120.37	1.808%	79.950%
29.0	534.277	28.405	1148.775	1.833%	81.977%
30.0	523.401	28.698	1177.473	1.852%	84.025%
31.0	513.407	28.997	1206.47	1.871%	86.094%
32.0	504.491	29.317	1235.787	1.891%	88.186%
33.0	490.634	29.303	1265.09	1.891%	90.278%
34.0	467.630	28.676	1293.766	1.850%	92.324%
35.0	422.166	26.554	1320.32	1.713%	94.219%
36.0	355.722	22.929	1343.249	1.479%	95.855%
37.0	282.161	18.621	1361.87	1.201%	97.184%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	219.041	14.788	1376.659	.954%	98.239%
39.0	170.097	11.739	1388.397	.757%	99.077%
40.0	88.723	6.254	1394.651	.403%	99.523%
41.0	33.132	2.384	1397.035	.154%	99.693%
42.0	13.967	1.025	1398.06	.066%	99.766%
43.0	7.686	0.575	1398.635	.037%	99.807%
44.0	4.014	0.306	1398.94	.020%	99.829%
45.0	2.227	0.173	1399.113	.011%	99.841%
46.0	1.549	0.122	1399.235	.008%	99.850%
47.0	1.079	0.087	1399.322	.006%	99.856%
48.0	0.992	0.081	1399.403	.005%	99.862%
49.0	0.951	0.079	1399.481	.005%	99.868%
50.0	0.911	0.077	1399.558	.005%	99.873%
51.0	0.858	0.073	1399.631	.005%	99.878%
52.0	0.777	0.067	1399.698	.004%	99.883%
53.0	0.760	0.067	1399.765	.004%	99.888%
54.0	0.748	0.066	1399.831	.004%	99.893%
55.0	0.713	0.064	1399.895	.004%	99.897%
56.0	0.650	0.059	1399.954	.004%	99.901%
57.0	0.592	0.054	1400.009	.004%	99.905%
58.0	0.597	0.056	1400.064	.004%	99.909%
59.0	0.580	0.055	1400.119	.004%	99.913%
60.0	0.557	0.053	1400.172	.003%	99.917%
61.0	0.481	0.046	1400.218	.003%	99.920%
62.0	0.458	0.044	1400.262	.003%	99.923%
63.0	0.493	0.048	1400.31	.003%	99.927%
64.0	0.458	0.045	1400.355	.003%	99.930%
65.0	0.423	0.042	1400.398	.003%	99.933%
66.0	0.389	0.039	1400.436	.003%	99.936%
67.0	0.412	0.042	1400.478	.003%	99.939%
68.0	0.383	0.039	1400.517	.003%	99.942%
69.0	0.348	0.036	1400.553	.002%	99.944%
70.0	0.348	0.036	1400.588	.002%	99.947%
71.0	0.348	0.036	1400.625	.002%	99.949%
72.0	0.354	0.037	1400.661	.002%	99.952%
73.0	0.348	0.036	1400.698	.002%	99.955%
74.0	0.331	0.035	1400.733	.002%	99.957%
75.0	0.342	0.036	1400.769	.002%	99.960%

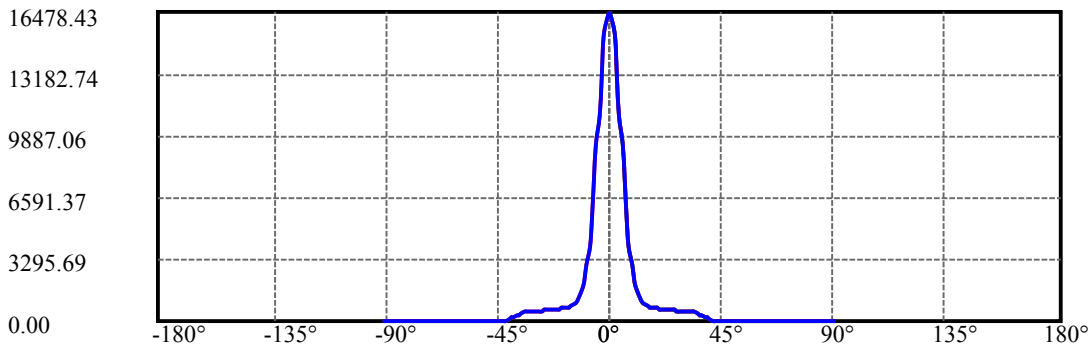
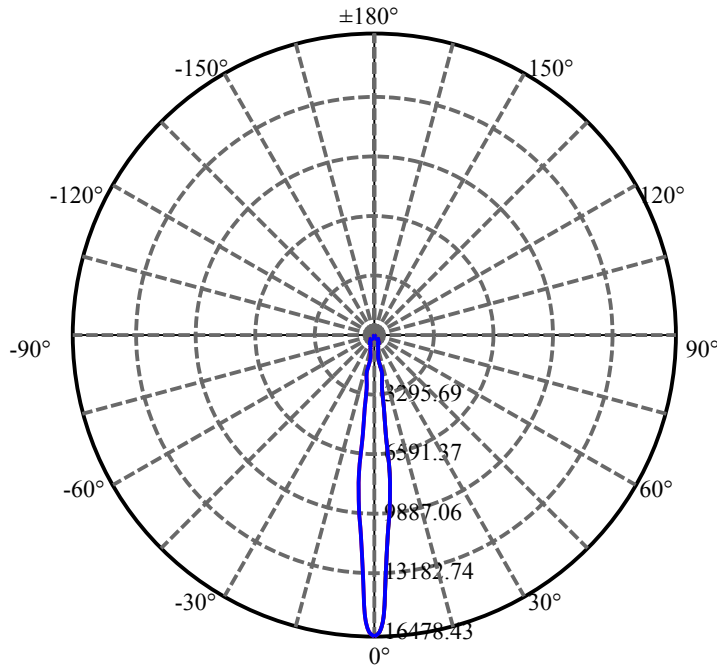
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	0.319	0.034	1400.803	.002%	99.962%
77.0	0.348	0.037	1400.84	.002%	99.965%
78.0	0.325	0.035	1400.875	.002%	99.967%
79.0	0.302	0.032	1400.908	.002%	99.969%
80.0	0.302	0.033	1400.94	.002%	99.972%
81.0	0.325	0.035	1400.975	.002%	99.974%
82.0	0.302	0.033	1401.008	.002%	99.977%
83.0	0.331	0.036	1401.044	.002%	99.979%
84.0	0.307	0.034	1401.078	.002%	99.982%
85.0	0.354	0.039	1401.116	.002%	99.984%
86.0	0.336	0.037	1401.153	.002%	99.987%
87.0	0.423	0.046	1401.199	.003%	99.990%
88.0	0.534	0.058	1401.258	.004%	99.994%
89.0	0.499	0.055	1401.313	.004%	99.998%
90.0	0.412	0.023	1401.335	.001%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1177.47	75.97%	84.03%
0-40	1394.65	89.98%	99.52%
0-60	1400.17	90.33%	99.92%
0-90	1401.31	90.41%	100.00%
0-120	1401.31	90.41%	100.00%
0-180	1401.34	90.41%	100.00%
60-90	1.19	0.08%	0.09%
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%
0-28.02	1121.07	72.33%	80.00%

ZONAL LUMEN SUMMARY

0-10	655.02
10-20	253.65
20-30	268.80
30-40	217.18
40-50	4.91
50-60	0.61
60-70	0.42
70-80	0.35
80-90	0.37
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



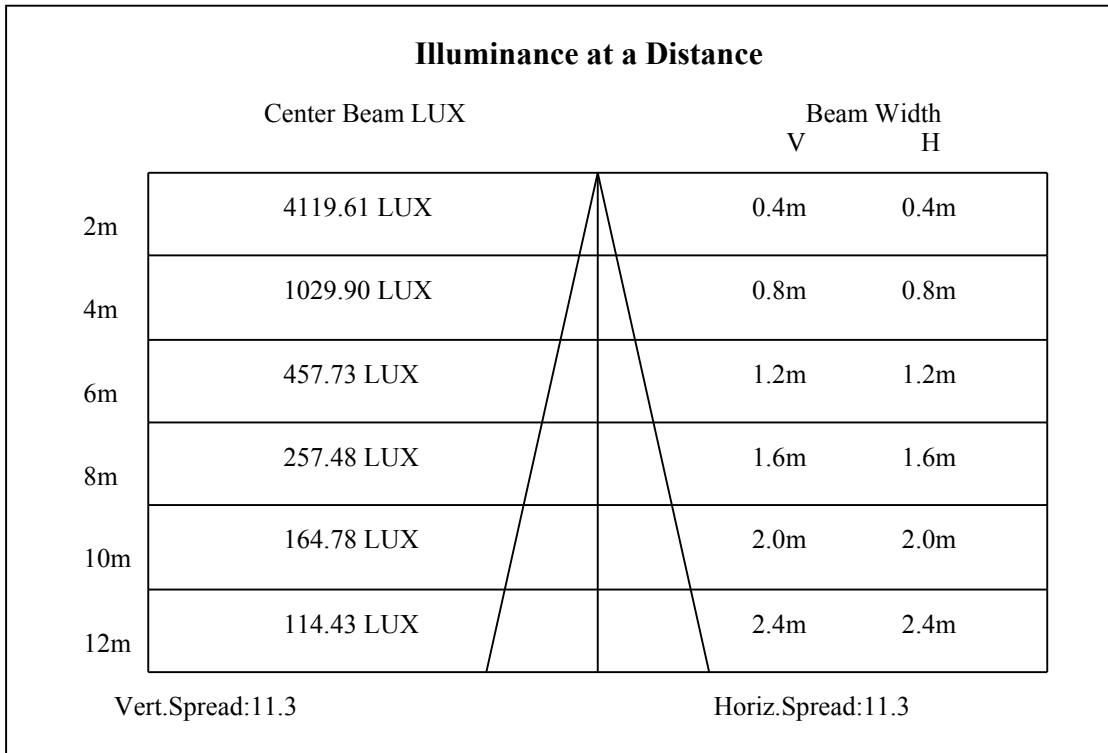
C0(Max): —————

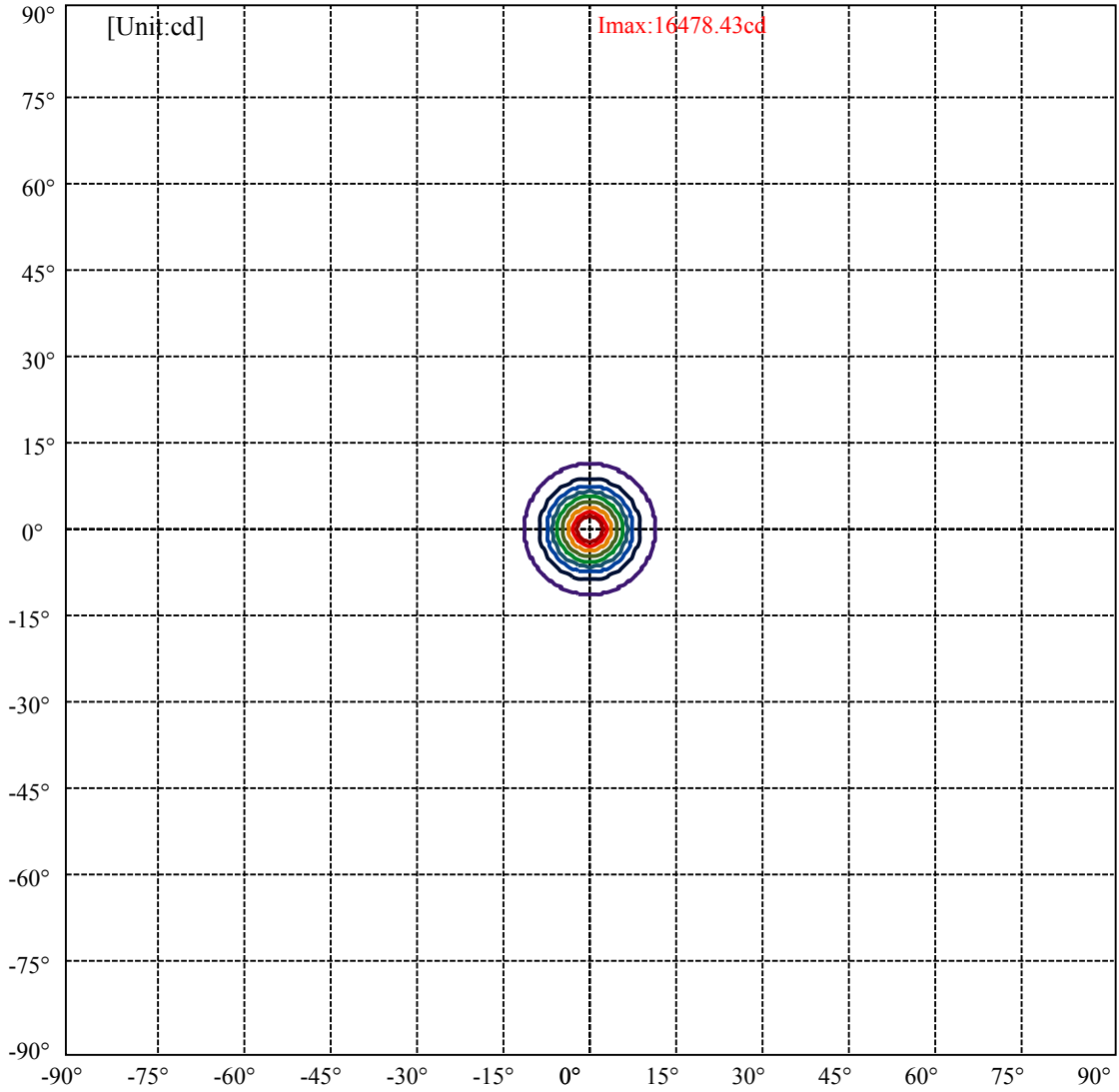
C0/C180: —————

C90/C270: —————

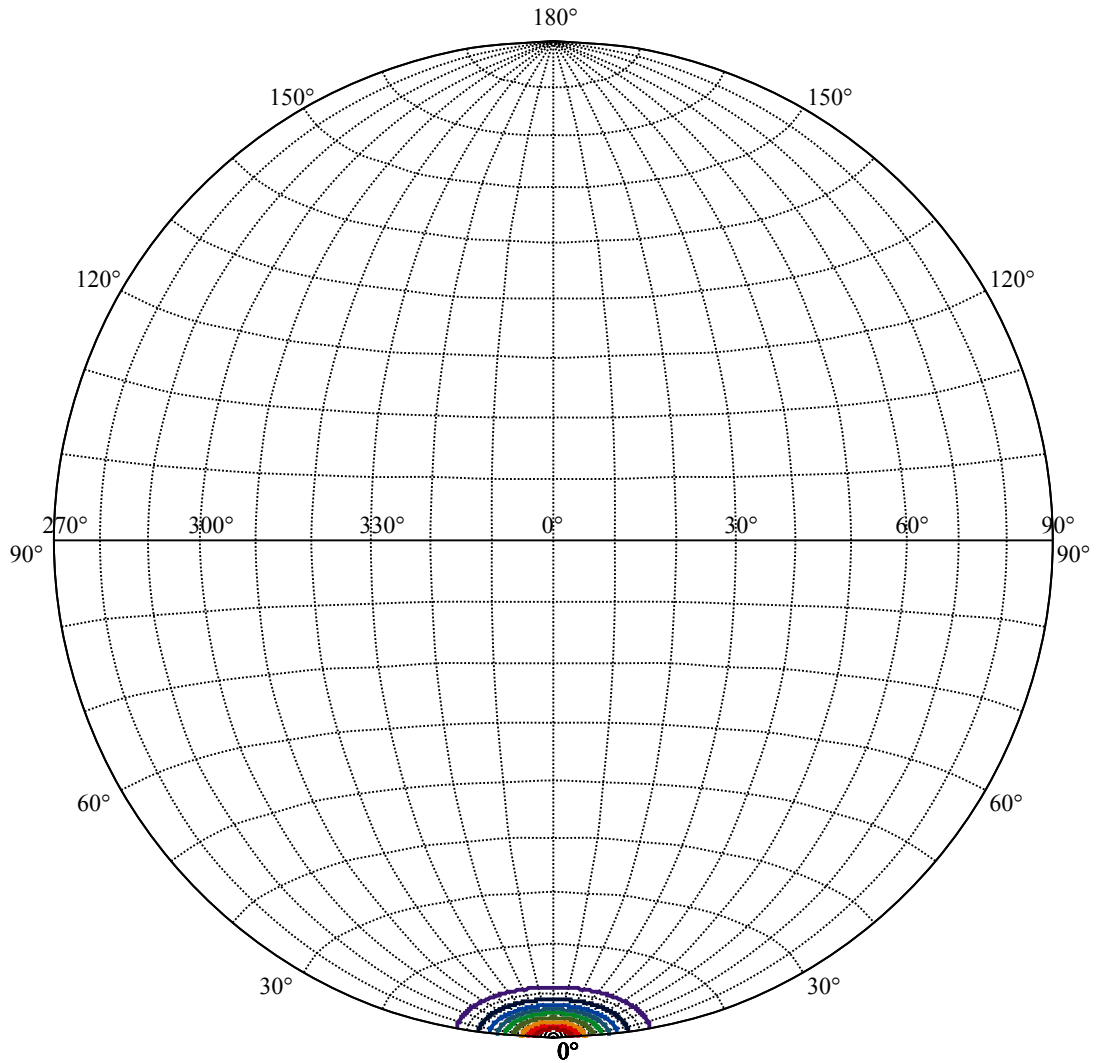
Field angle(10%Imax):C0/180Left:11.2 Right:11.2
:C90/270Left:11.2 Right:11.2

Beam Angle(50%Imax):C0/180Left:5.6 Right:5.6
:C90/270Left:5.6 Right:5.6





(10%Imax) 1647.84	—
(20%Imax) 3295.69	—
(30%Imax) 4943.53	—
(40%Imax) 6591.37	—
(50%Imax) 8239.21	—
(60%Imax) 9887.06	—
(70%Imax) 11534.9	—
(80%Imax) 13182.7	—
(90%Imax) 14830.6	—



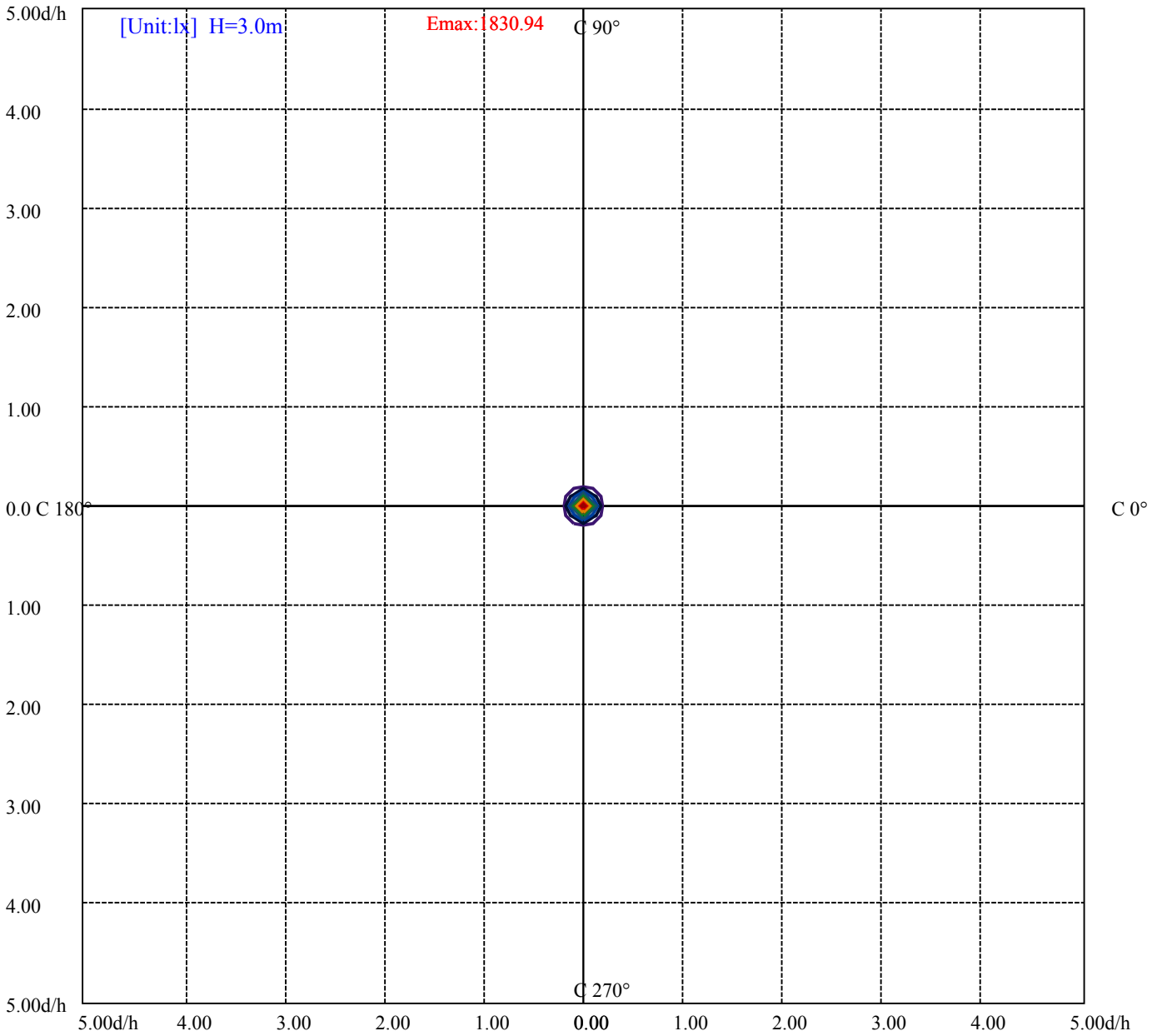
House

[Unit:cd]

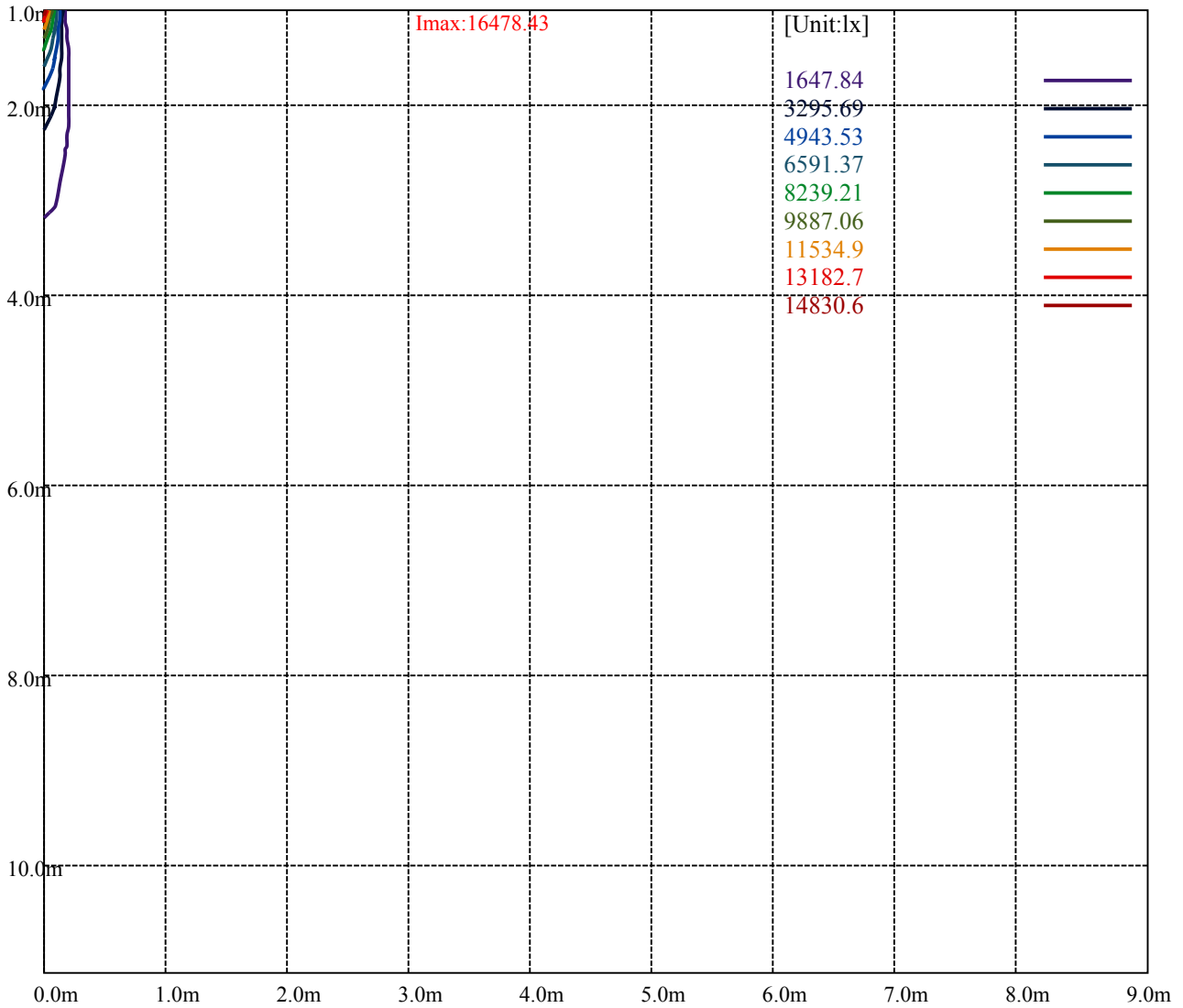
Road

Imax:16478.43

(10%Imax)	1647.84	—
(20%Imax)	3295.69	—
(30%Imax)	4943.53	—
(40%Imax)	6591.37	—
(50%Imax)	8239.21	—
(60%Imax)	9887.06	—
(70%Imax)	11534.9	—
(80%Imax)	13182.7	—
(90%Imax)	14830.6	—



- (10%Emax) 183.0933
- (20%Emax) 366.1866
- (30%Emax) 549.28
- (40%Emax) 732.3723
- (50%Emax) 915.4656
- (60%Emax) 1098.559
- (70%Emax) 1281.656
- (80%Emax) 1464.745
- (90%Emax) 1647.833



Luminance Table

γ	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

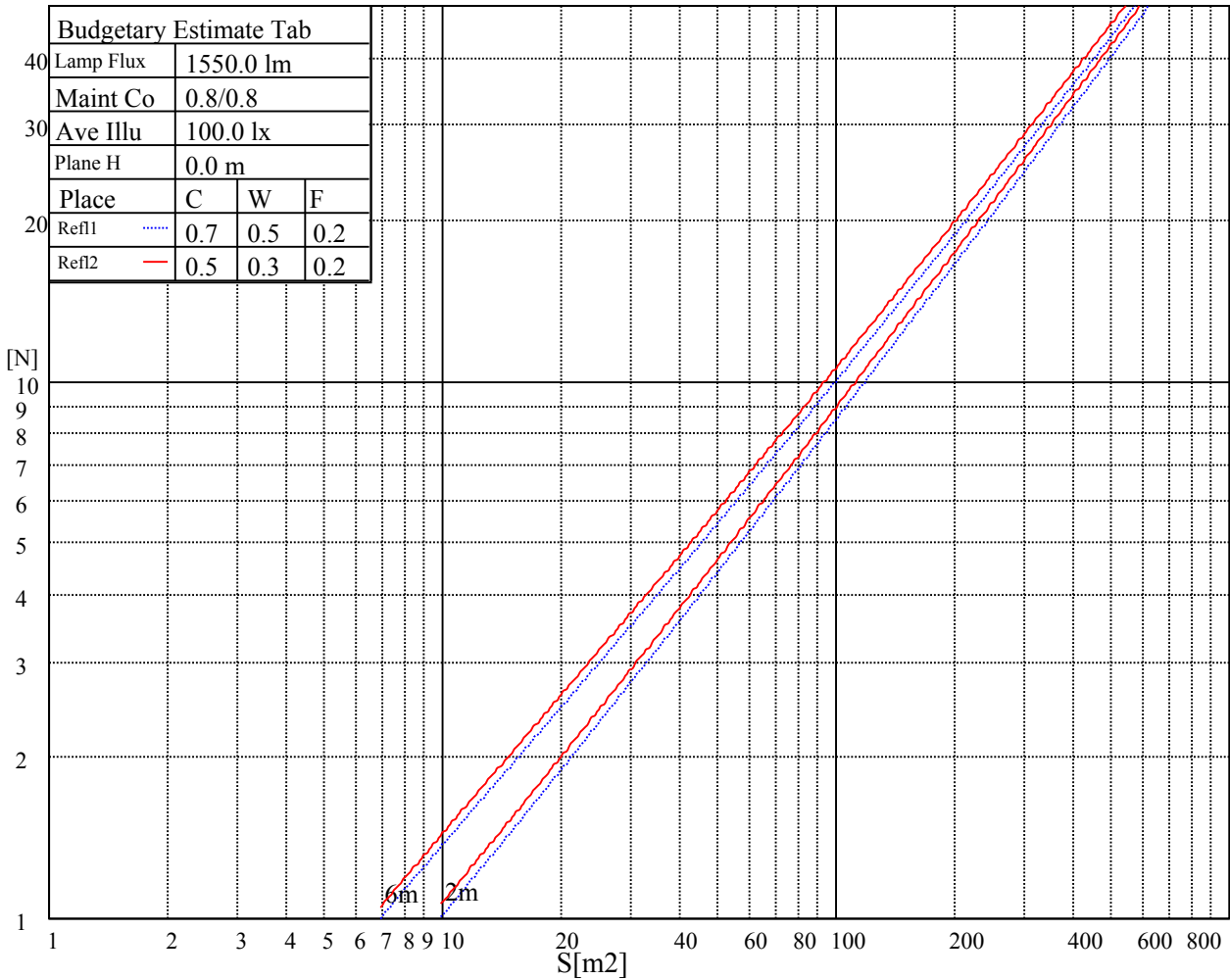
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

Glare Table

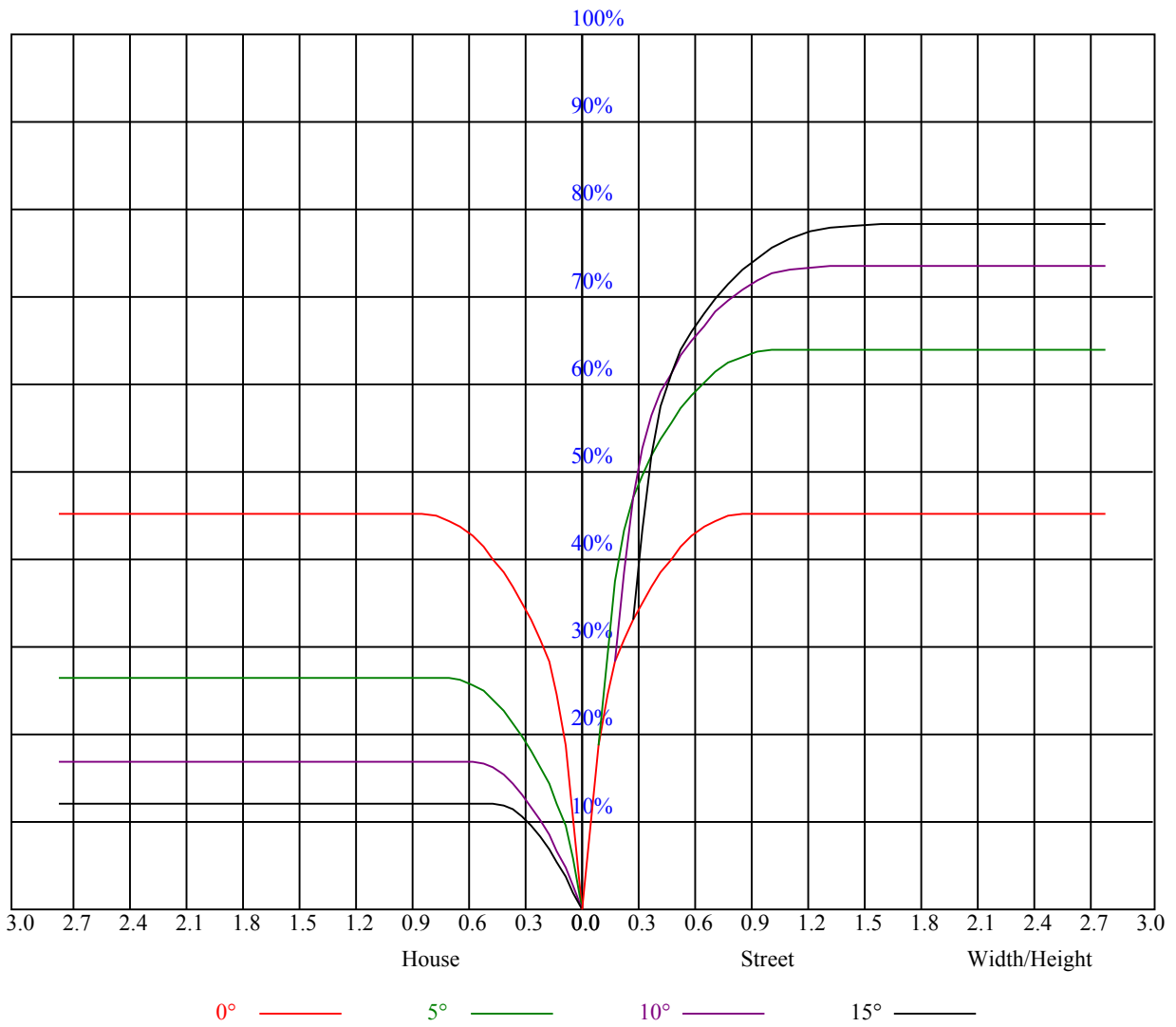
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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 RHOF=20 CU															
0	1.08	1.08	1.08	1.05	1.05	1.05	1.01	1.01	1.01	0.96	0.96	0.96	0.93	0.93	0.93	0.91
1	1.02	1.00	0.98	1.00	0.98	0.97	0.96	0.95	0.94	0.93	0.92	0.91	0.90	0.89	0.88	0.87
2	0.97	0.94	0.92	0.95	0.93	0.91	0.93	0.90	0.89	0.90	0.88	0.87	0.87	0.86	0.85	0.84
3	0.93	0.89	0.86	0.91	0.88	0.86	0.89	0.86	0.84	0.87	0.85	0.83	0.85	0.83	0.82	0.81
4	0.89	0.85	0.82	0.88	0.84	0.82	0.86	0.83	0.81	0.84	0.82	0.80	0.83	0.81	0.79	0.78
5	0.85	0.81	0.78	0.84	0.81	0.78	0.83	0.80	0.77	0.82	0.79	0.77	0.80	0.78	0.76	0.75
6	0.82	0.78	0.75	0.81	0.78	0.75	0.80	0.77	0.75	0.79	0.76	0.74	0.78	0.76	0.74	0.73
7	0.79	0.75	0.73	0.79	0.75	0.72	0.78	0.74	0.72	0.77	0.74	0.72	0.76	0.73	0.71	0.70
8	0.77	0.73	0.70	0.76	0.73	0.70	0.75	0.72	0.70	0.75	0.72	0.70	0.74	0.71	0.69	0.68
9	0.74	0.71	0.68	0.74	0.70	0.68	0.73	0.70	0.68	0.73	0.70	0.68	0.72	0.69	0.67	0.66
10	0.72	0.69	0.66	0.72	0.68	0.66	0.71	0.68	0.66	0.71	0.68	0.66	0.70	0.68	0.66	0.65



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	16640.84	15851.99	14515.57	12747.60	8469.12	8469.12	6851.96	4681.22	3551.29
45.0	16255.69	16951.74	16761.49	15689.57	14176.82	12237.17	10422.79	7749.96	6102.64
90.0	17058.47	16854.30	15963.35	13875.20	9132.69	9132.69	7313.68	5344.32	3818.58
135.0	15958.71	16733.65	16617.64	15624.61	14195.39	12162.92	9875.23	7638.59	5689.65
180.0	16640.84	16729.01	15893.75	14473.81	12534.15	10297.51	8084.07	6079.44	4399.64
225.0	16255.69	14984.24	13230.20	8605.55	8605.55	6458.46	5331.79	3807.44	2289.59
270.0	17058.47	16074.72	15392.59	13740.63	11587.52	9285.91	7067.83	5151.37	3647.91
315.0	15958.71	15336.91	13090.99	8699.28	8699.28	7432.01	5469.61	3915.56	2755.01
360.0	16640.84	15851.99	14515.57	12747.60	8469.12	8469.12	6851.96	4681.22	3551.29
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	2502.11	1830.66	1403.75	924.26	901.66	862.82	790.20	735.86	697.67
45.0	4385.72	2900.81	2515.66	2515.66	1283.56	1070.11	924.40	829.74	763.85
90.0	2709.07	1946.67	1465.00	923.80	900.64	900.64	814.94	758.05	719.76
135.0	4084.10	2840.49	2840.49	1363.84	1184.26	943.43	845.05	804.22	732.29
180.0	3559.74	2464.62	2464.62	1267.79	1047.83	913.73	826.49	766.17	723.47
225.0	1673.82	1424.17	924.08	924.08	847.79	780.13	734.94	703.43	678.97
270.0	2543.51	2543.51	1389.36	1121.15	956.88	852.48	784.73	737.40	711.41
315.0	1985.65	1497.95	1074.75	900.64	900.64	817.77	743.47	722.64	696.10
360.0	2502.11	1830.66	1403.75	924.26	901.66	862.82	790.20	735.86	697.67
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	670.99	650.76	633.08	616.98	602.55	594.52	582.64	571.32	560.32
45.0	717.44	686.35	671.50	650.62	626.03	616.75	602.83	589.83	577.77
90.0	692.89	670.48	650.76	633.73	618.74	604.87	591.50	578.19	565.47
135.0	700.27	684.96	664.08	645.98	629.28	614.89	600.97	587.98	575.91
180.0	694.24	671.04	652.48	634.84	619.07	604.22	590.76	582.87	565.70
225.0	658.28	639.81	624.12	609.42	601.25	583.57	571.46	564.50	549.00
270.0	685.89	665.47	648.30	631.60	617.21	603.75	590.76	578.70	567.10
315.0	674.01	654.47	637.07	621.34	607.42	594.52	581.99	569.69	557.77
360.0	670.99	650.76	633.08	616.98	602.55	594.52	582.64	571.32	560.32
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	549.74	539.53	528.77	518.19	509.18	500.74	491.55	470.58	414.94
45.0	566.17	555.96	545.75	536.01	523.48	514.20	505.38	496.10	484.96
90.0	553.68	542.78	532.34	520.74	511.36	502.32	492.53	479.81	435.73
135.0	564.78	554.10	543.43	533.22	520.69	510.95	502.13	492.39	482.64
180.0	555.03	549.00	539.72	528.58	517.91	509.09	499.81	486.35	444.59
225.0	543.10	532.48	521.94	512.66	503.75	492.66	461.25	399.30	326.40
270.0	556.42	546.21	534.61	523.48	515.12	506.31	496.10	468.26	407.93
315.0	546.58	535.26	527.65	514.33	505.75	499.67	476.33	448.26	380.14
360.0	549.74	539.53	528.77	518.19	509.18	500.74	491.55	470.58	414.94
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	346.68	268.81	191.51	119.12	56.80	21.58	12.58	6.87	4.18
45.0	447.37	381.02	307.24	244.13	244.13	91.55	26.31	16.57	9.93
90.0	368.40	285.10	204.59	125.29	60.79	24.92	13.32	6.68	2.46
135.0	412.57	371.27	295.17	261.30	168.17	51.79	21.07	12.11	6.17
180.0	381.02	305.84	259.44	259.44	81.25	31.00	15.08	7.89	3.94
225.0	249.37	173.46	99.63	41.53	15.59	9.33	4.08	2.37	1.16
270.0	336.01	252.02	252.02	236.24	55.13	21.30	11.55	5.99	2.69
315.0	304.36	219.77	142.74	73.73	27.93	13.60	7.75	3.02	1.58
360.0	346.68	268.81	191.51	119.12	56.80	21.58	12.58	6.87	4.18

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	2.46	1.11	1.07	1.02	0.97	0.97	0.84	0.79	0.84
45.0	4.87	3.39	1.25	1.02	1.02	1.02	0.93	0.79	0.84
90.0	1.48	1.07	1.02	1.02	0.93	0.84	0.84	0.84	0.74
135.0	2.83	2.18	1.25	1.16	1.11	0.97	0.93	0.88	0.88
180.0	1.95	1.21	1.16	1.07	0.93	0.93	0.93	0.88	0.79
225.0	0.97	1.07	0.88	0.84	0.84	0.79	0.79	0.60	0.60
270.0	2.13	1.25	1.02	0.88	0.88	0.88	0.84	0.74	0.70
315.0	1.11	1.11	0.97	0.93	0.93	0.88	0.79	0.70	0.70
360.0	2.46	1.11	1.07	1.02	0.97	0.97	0.84	0.79	0.84
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	0.79	0.65	0.65	0.70	0.65	0.51	0.56	0.60	0.51
45.0	0.84	0.74	0.65	0.70	0.70	0.60	0.65	0.56	0.46
90.0	0.74	0.74	0.60	0.51	0.56	0.56	0.51	0.42	0.46
135.0	0.84	0.79	0.74	0.65	0.70	0.70	0.60	0.51	0.56
180.0	0.70	0.74	0.70	0.60	0.60	0.60	0.60	0.51	0.42
225.0	0.65	0.65	0.60	0.51	0.51	0.56	0.46	0.37	0.42
270.0	0.74	0.70	0.65	0.56	0.51	0.56	0.56	0.46	0.42
315.0	0.70	0.70	0.60	0.51	0.56	0.56	0.51	0.42	0.42
360.0	0.79	0.65	0.65	0.70	0.65	0.51	0.56	0.60	0.51
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	0.46	0.46	0.56	0.46	0.42	0.42	0.37	0.51	0.46
45.0	0.51	0.51	0.46	0.37	0.42	0.46	0.37	0.32	0.32
90.0	0.51	0.46	0.37	0.37	0.42	0.37	0.32	0.28	0.37
135.0	0.56	0.51	0.42	0.42	0.46	0.42	0.32	0.37	0.32
180.0	0.51	0.42	0.46	0.46	0.42	0.32	0.42	0.42	0.37
225.0	0.46	0.42	0.32	0.32	0.42	0.32	0.32	0.28	0.28
270.0	0.46	0.46	0.42	0.32	0.32	0.42	0.37	0.28	0.28
315.0	0.46	0.42	0.37	0.37	0.42	0.32	0.28	0.32	0.37
360.0	0.46	0.46	0.56	0.46	0.42	0.42	0.37	0.51	0.46
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	0.42	0.42	0.46	0.51	0.37	0.42	0.46	0.46	0.37
45.0	0.42	0.37	0.28	0.32	0.37	0.37	0.28	0.28	0.32
90.0	0.32	0.28	0.28	0.32	0.23	0.28	0.32	0.23	0.28
135.0	0.37	0.37	0.37	0.32	0.28	0.37	0.32	0.28	0.28
180.0	0.32	0.37	0.42	0.37	0.32	0.37	0.37	0.32	0.32
225.0	0.37	0.32	0.28	0.28	0.32	0.32	0.23	0.28	0.32
270.0	0.32	0.37	0.28	0.28	0.32	0.32	0.28	0.32	0.28
315.0	0.28	0.28	0.28	0.32	0.32	0.32	0.32	0.23	0.23
360.0	0.42	0.42	0.46	0.51	0.37	0.42	0.46	0.46	0.37
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	0.46	0.51	0.51	0.51	0.56	0.56	0.60	0.70	0.70
45.0	0.32	0.28	0.28	0.28	0.28	0.32	0.32	0.28	0.32
90.0	0.23	0.28	0.32	0.23	0.32	0.23	0.32	0.32	0.42
135.0	0.37	0.23	0.32	0.28	0.32	0.28	0.28	0.28	0.37
180.0	0.32	0.37	0.32	0.37	0.46	0.46	0.46	0.79	1.11
225.0	0.32	0.23	0.32	0.23	0.23	0.32	0.79	0.84	0.37
270.0	0.32	0.28	0.23	0.28	0.32	0.23	0.28	0.46	0.32
315.0	0.23	0.23	0.32	0.28	0.32	0.28	0.32	0.60	0.37
360.0	0.46	0.51	0.51	0.51	0.56	0.56	0.60	0.70	0.70

Intensity data(cd)

<i>C/γ</i> (°)	90.0
0.0	0.60
45.0	0.32
90.0	0.42
135.0	0.32
180.0	0.65
225.0	0.32
270.0	0.32
315.0	0.32
360.0	0.60