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Nata

LumCAT: 2-2180-M
Luminaire: BJB 47.360.1010
Report No: NATA0100
Test No: GC202002105
LampCAT: OSRAM OPTO SOLERIQ S15
Lamp flux(lm): 2825.0
Number of Lamps: 1
Length(mm): 0
Phm Type: C

Voltage(V): 35.7200
Current(A): 0.5970
Power (W): 21.3000
PF: 0.0000
Ballast type: DC
Width(mm): 0
Height(mm): 0

Photometric Results

Lumens(lm): 2243.19
Efficiency(%): 79.40%
Lumens(lm)/Power(W): 105.31
Central intensity(cd): 15643.130
Maximum intensity(cd): 15643.130
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=17.0
 [C90/270]Total=17.0
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(%): 79.40%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.474%

Equipment: GMS1980
Temperature(°C): 25.0

Date: 2020/2/14
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	15643.125	0.000	0	.000%	.000%
1.0	15491.250	14.897	14.897	.527%	.664%
2.0	14941.406	43.680	58.577	1.546%	2.611%
3.0	14139.844	69.553	128.13	2.462%	5.712%
4.0	13005.211	90.863	218.993	3.216%	9.763%
5.0	11821.641	106.804	325.797	3.781%	14.524%
6.0	10662.047	118.158	443.955	4.183%	19.791%
7.0	9536.203	125.370	569.325	4.438%	25.380%
8.0	8353.125	128.031	697.355	4.532%	31.088%
9.0	7338.234	127.170	824.525	4.502%	36.757%
10.0	6466.570	124.928	949.454	4.422%	42.326%
11.0	5650.594	121.075	1070.529	4.286%	47.724%
12.0	4996.266	116.385	1186.914	4.120%	52.912%
13.0	4387.430	111.361	1298.275	3.942%	57.876%
14.0	3837.094	105.273	1403.548	3.726%	62.569%
15.0	3396.164	99.301	1502.85	3.515%	66.996%
16.0	3020.414	94.021	1596.871	3.328%	71.188%
17.0	2623.992	87.899	1684.769	3.111%	75.106%
18.0	2335.852	81.777	1766.546	2.895%	78.752%
19.0	1993.500	75.322	1841.868	2.666%	82.109%
20.0	1680.961	67.253	1909.121	2.381%	85.107%
21.0	1395.485	59.074	1968.195	2.091%	87.741%
22.0	1165.795	51.470	2019.665	1.822%	90.035%
23.0	958.570	44.575	2064.24	1.578%	92.023%
24.0	713.791	36.564	2100.804	1.294%	93.653%
25.0	516.171	27.967	2128.77	.990%	94.899%
26.0	353.580	20.531	2149.301	.727%	95.815%
27.0	212.646	13.853	2163.154	.490%	96.432%
28.0	124.896	8.546	2171.7	.303%	96.813%
29.0	48.572	4.538	2176.238	.161%	97.015%
30.0	24.504	1.973	2178.211	.070%	97.103%
31.0	18.802	1.205	2179.416	.043%	97.157%
32.0	17.452	1.039	2180.455	.037%	97.203%
33.0	16.474	0.999	2181.454	.035%	97.248%
34.0	15.750	0.975	2182.43	.035%	97.291%
35.0	15.096	0.958	2183.388	.034%	97.334%
36.0	14.548	0.944	2184.331	.033%	97.376%
37.0	14.161	0.936	2185.268	.033%	97.418%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	13.816	0.934	2186.202	.033%	97.460%
39.0	13.514	0.933	2187.134	.033%	97.501%
40.0	13.282	0.935	2188.069	.033%	97.543%
41.0	13.106	0.940	2189.009	.033%	97.585%
42.0	12.923	0.946	2189.954	.033%	97.627%
43.0	12.790	0.952	2190.907	.034%	97.669%
44.0	12.698	0.962	2191.869	.034%	97.712%
45.0	12.607	0.973	2192.841	.034%	97.756%
46.0	12.516	0.982	2193.824	.035%	97.799%
47.0	12.452	0.993	2194.817	.035%	97.844%
48.0	12.375	1.004	2195.821	.036%	97.888%
49.0	12.333	1.015	2196.835	.036%	97.934%
50.0	12.298	1.027	2197.862	.036%	97.979%
51.0	12.284	1.040	2198.902	.037%	98.026%
52.0	12.312	1.055	2199.958	.037%	98.073%
53.0	12.305	1.071	2201.028	.038%	98.120%
54.0	12.333	1.086	2202.114	.038%	98.169%
55.0	12.354	1.102	2203.216	.039%	98.218%
56.0	12.396	1.118	2204.335	.040%	98.268%
57.0	12.424	1.135	2205.469	.040%	98.318%
58.0	12.417	1.149	2206.618	.041%	98.370%
59.0	12.438	1.162	2207.78	.041%	98.421%
60.0	12.488	1.178	2208.958	.042%	98.474%
61.0	12.551	1.195	2210.153	.042%	98.527%
62.0	12.600	1.212	2211.365	.043%	98.581%
63.0	12.684	1.230	2212.594	.044%	98.636%
64.0	12.783	1.250	2213.844	.044%	98.692%
65.0	12.846	1.268	2215.112	.045%	98.748%
66.0	12.902	1.285	2216.397	.045%	98.806%
67.0	12.938	1.299	2217.696	.046%	98.864%
68.0	12.966	1.312	2219.008	.046%	98.922%
69.0	12.881	1.319	2220.327	.047%	98.981%
70.0	12.705	1.314	2221.641	.047%	99.039%
71.0	12.361	1.296	2222.937	.046%	99.097%
72.0	11.742	1.253	2224.19	.044%	99.153%
73.0	11.475	1.214	2225.404	.043%	99.207%
74.0	11.306	1.198	2226.602	.042%	99.261%
75.0	11.039	1.181	2227.782	.042%	99.313%

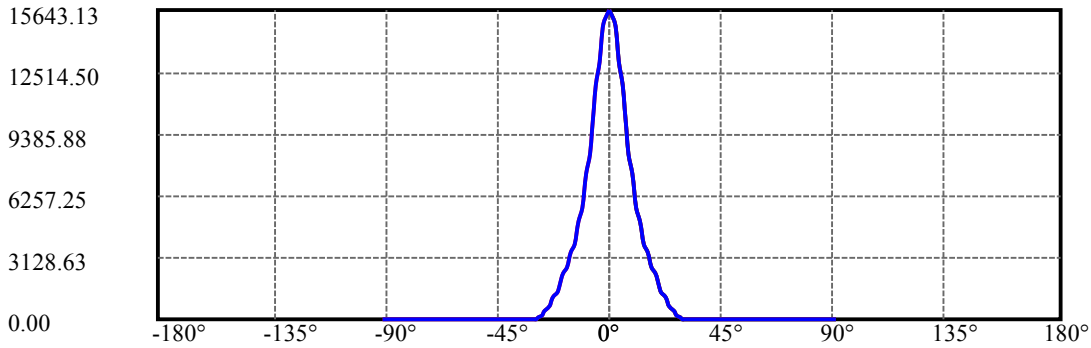
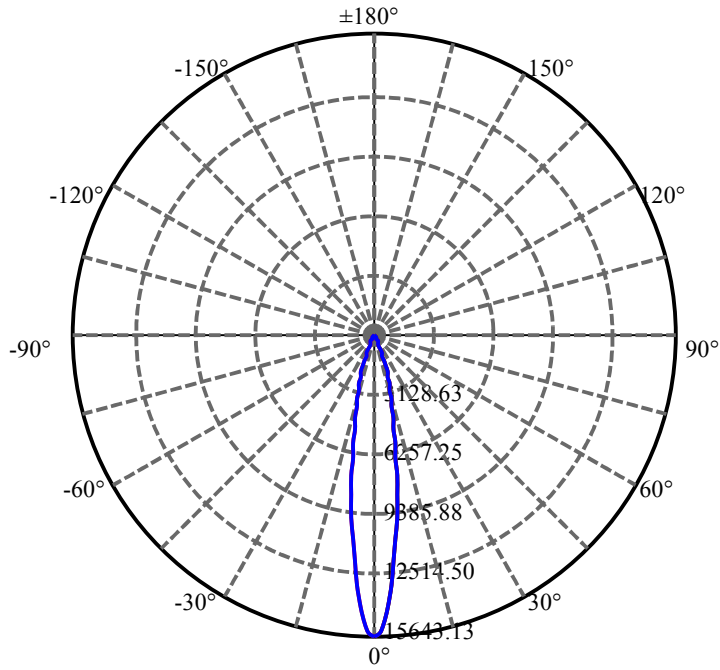
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	10.751	1.157	2228.939	.041%	99.365%
77.0	10.399	1.128	2230.067	.040%	99.415%
78.0	10.090	1.097	2231.164	.039%	99.464%
79.0	9.823	1.070	2232.233	.038%	99.512%
80.0	9.619	1.048	2233.282	.037%	99.558%
81.0	9.464	1.032	2234.314	.037%	99.604%
82.0	9.330	1.019	2235.333	.036%	99.650%
83.0	9.211	1.008	2236.341	.036%	99.695%
84.0	9.148	1.000	2237.341	.035%	99.739%
85.0	9.091	0.995	2238.336	.035%	99.784%
86.0	9.042	0.991	2239.327	.035%	99.828%
87.0	8.909	0.982	2240.31	.035%	99.872%
88.0	8.775	0.969	2241.279	.034%	99.915%
89.0	8.705	0.958	2242.237	.034%	99.958%
90.0	8.677	0.953	2243.19	.034%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	2178.21	77.10%	97.10%
0-40	2188.07	77.45%	97.54%
0-60	2208.96	78.19%	98.47%
0-90	2242.24	79.37%	99.96%
0-120	2242.24	79.37%	99.96%
0-180	2243.19	79.40%	100.00%
60-90	34.46	1.22%	1.54%
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%
0-18.37	1794.55	63.52%	80.00%

ZONAL LUMEN SUMMARY

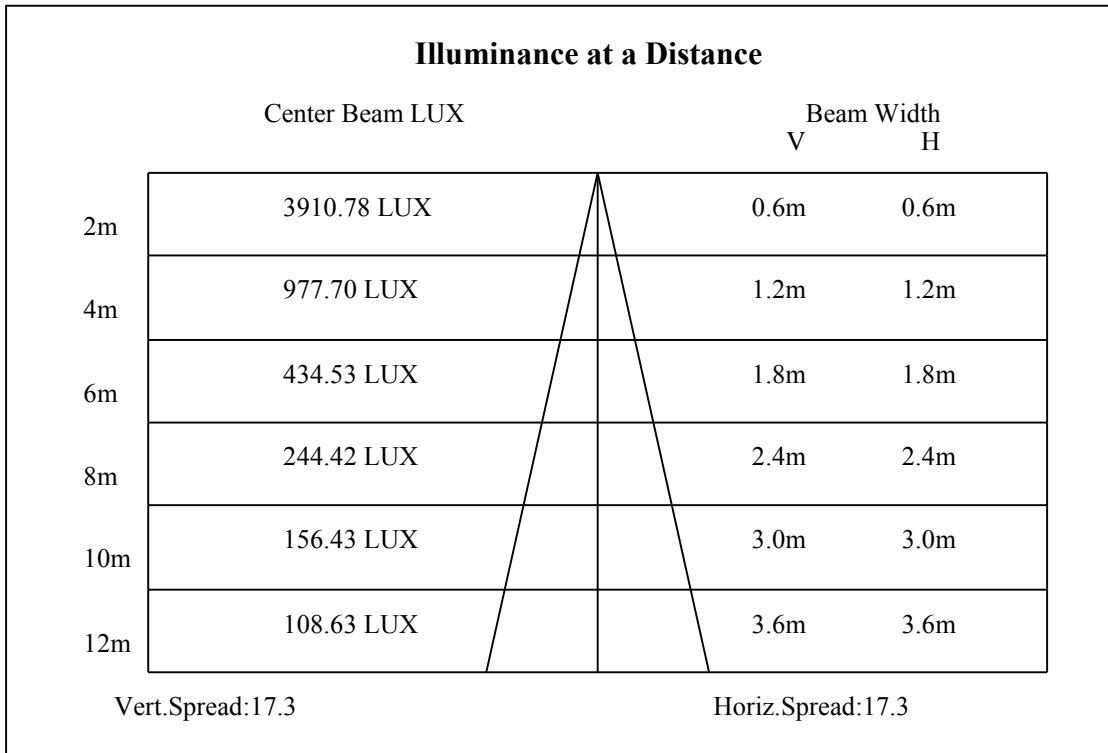
0-10	949.45
10-20	959.67
20-30	269.09
30-40	9.86
40-50	9.79
50-60	11.10
60-70	12.68
70-80	11.64
80-90	8.96
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

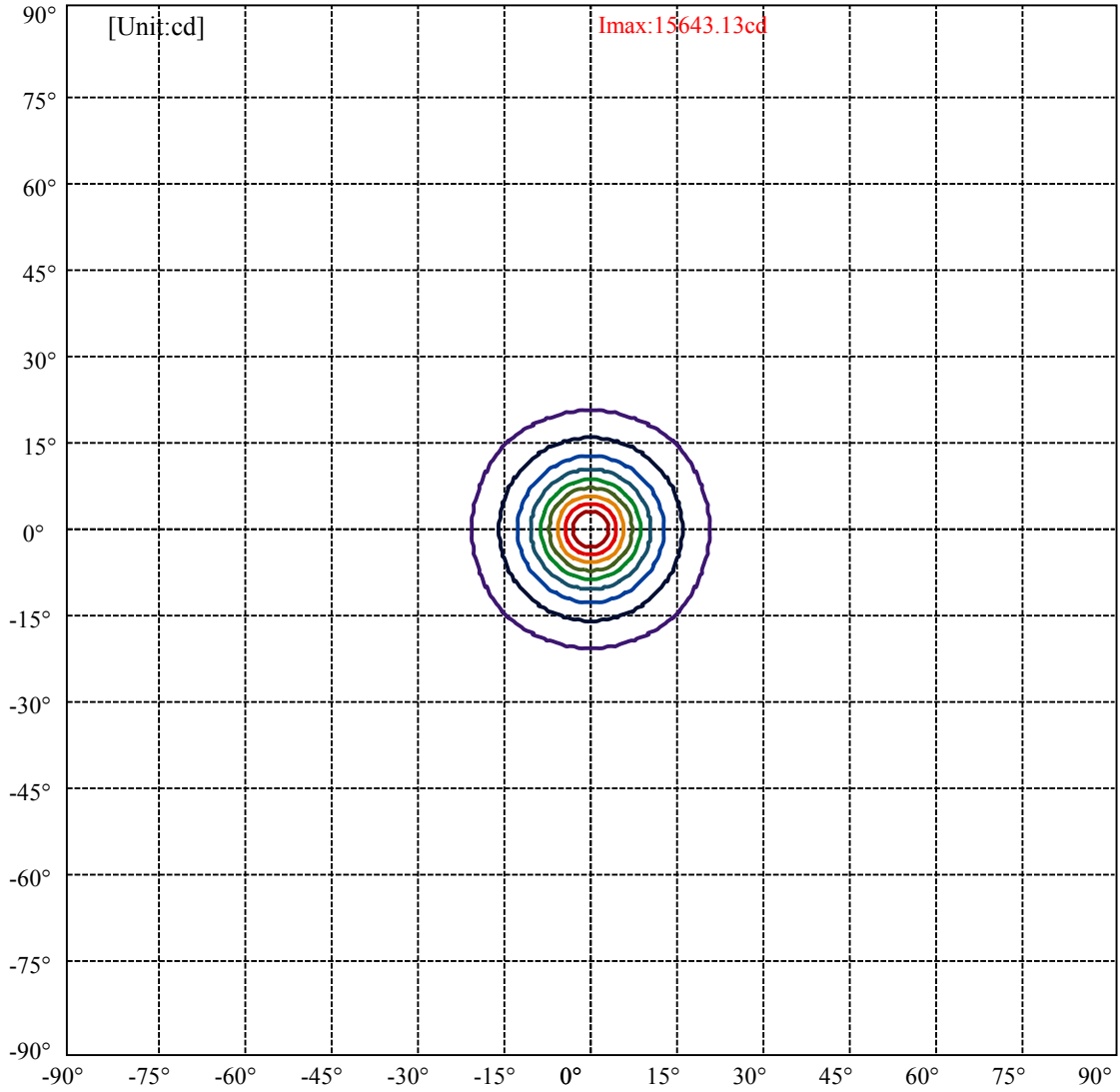


C0(Max): —————
C0/C180: —————
C90/C270: —————

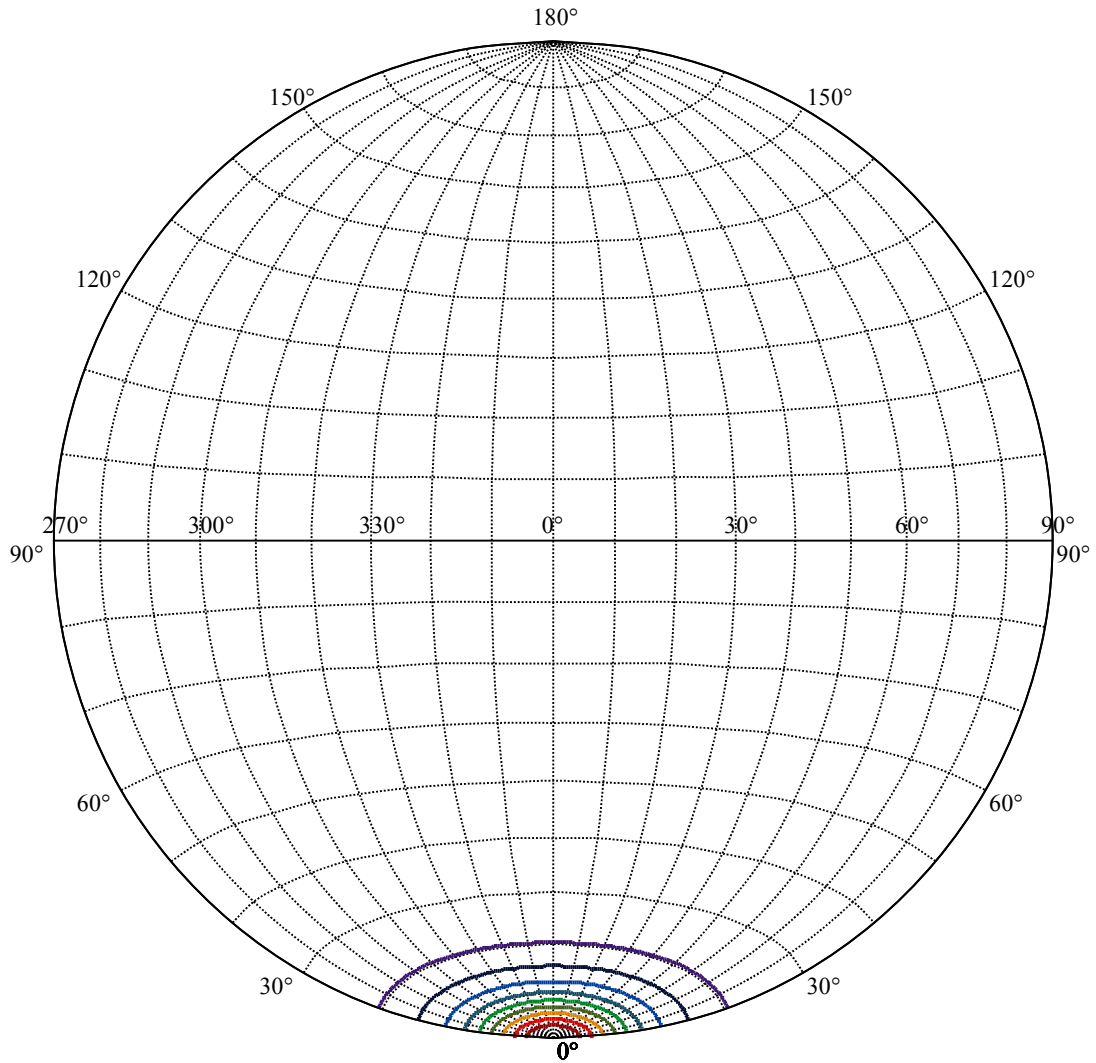
Field angle(10%Imax):C0/180Left:20.4 Right:20.4
:C90/270Left:20.4 Right:20.4

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





(10%Imax) 1564.31	—
(20%Imax) 3128.63	—
(30%Imax) 4692.94	—
(40%Imax) 6257.25	—
(50%Imax) 7821.56	—
(60%Imax) 9385.88	—
(70%Imax) 10950.2	—
(80%Imax) 12514.5	—
(90%Imax) 14078.8	—



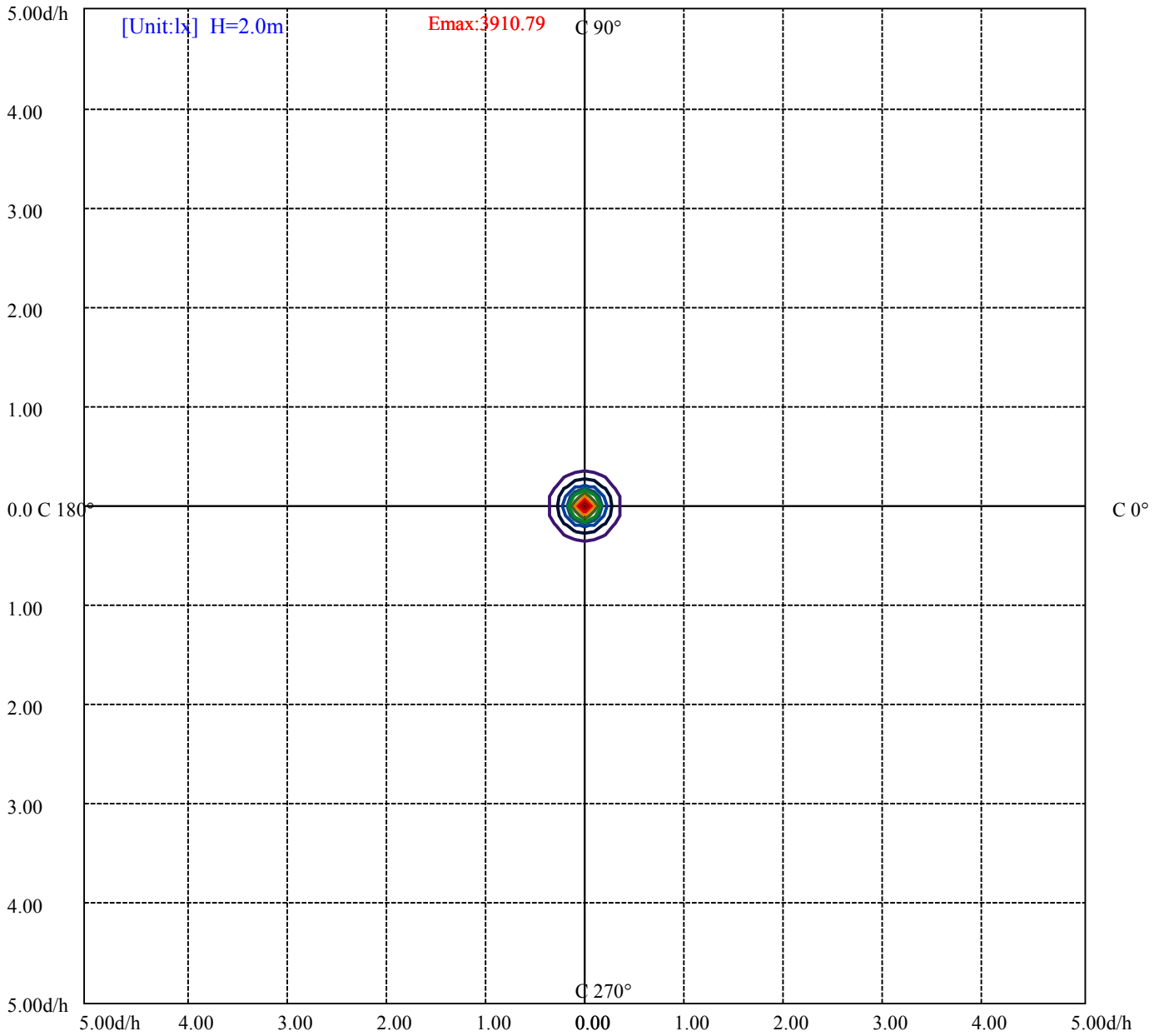
House

[Unit:cd]

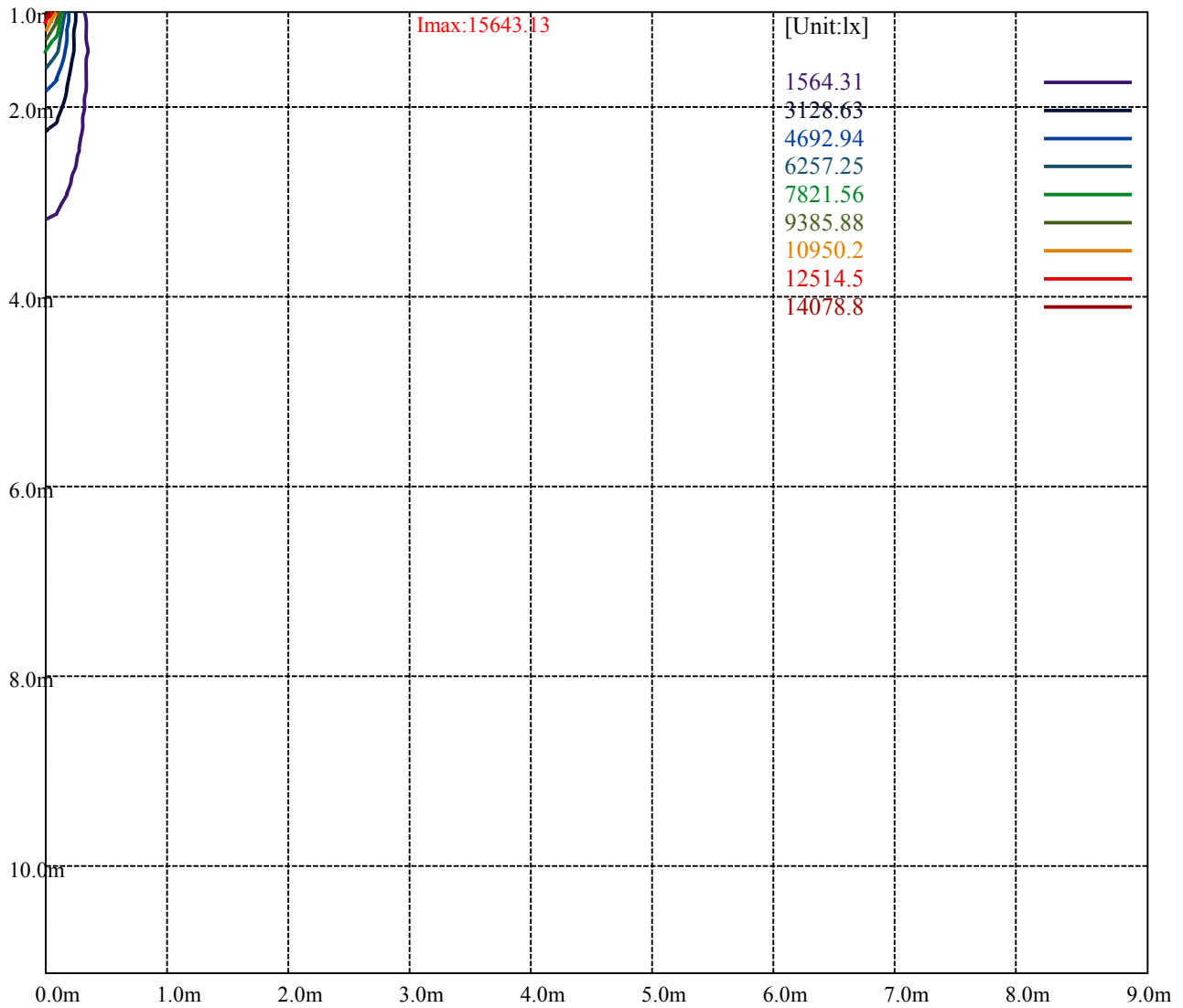
Road

Imax:15643.13

(10%Imax)	1564.31	—
(20%Imax)	3128.63	—
(30%Imax)	4692.94	—
(40%Imax)	6257.25	—
(50%Imax)	7821.56	—
(60%Imax)	9385.88	—
(70%Imax)	10950.2	—
(80%Imax)	12514.5	—
(90%Imax)	14078.8	—



(10%Emax) 391.0775	—
(20%Emax) 782.155	—
(30%Emax) 1173.233	—
(40%Emax) 1564.31	—
(50%Emax) 1955.387	—
(60%Emax) 2346.465	—
(70%Emax) 2737.55	—
(80%Emax) 3128.625	—
(90%Emax) 3519.7	—



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

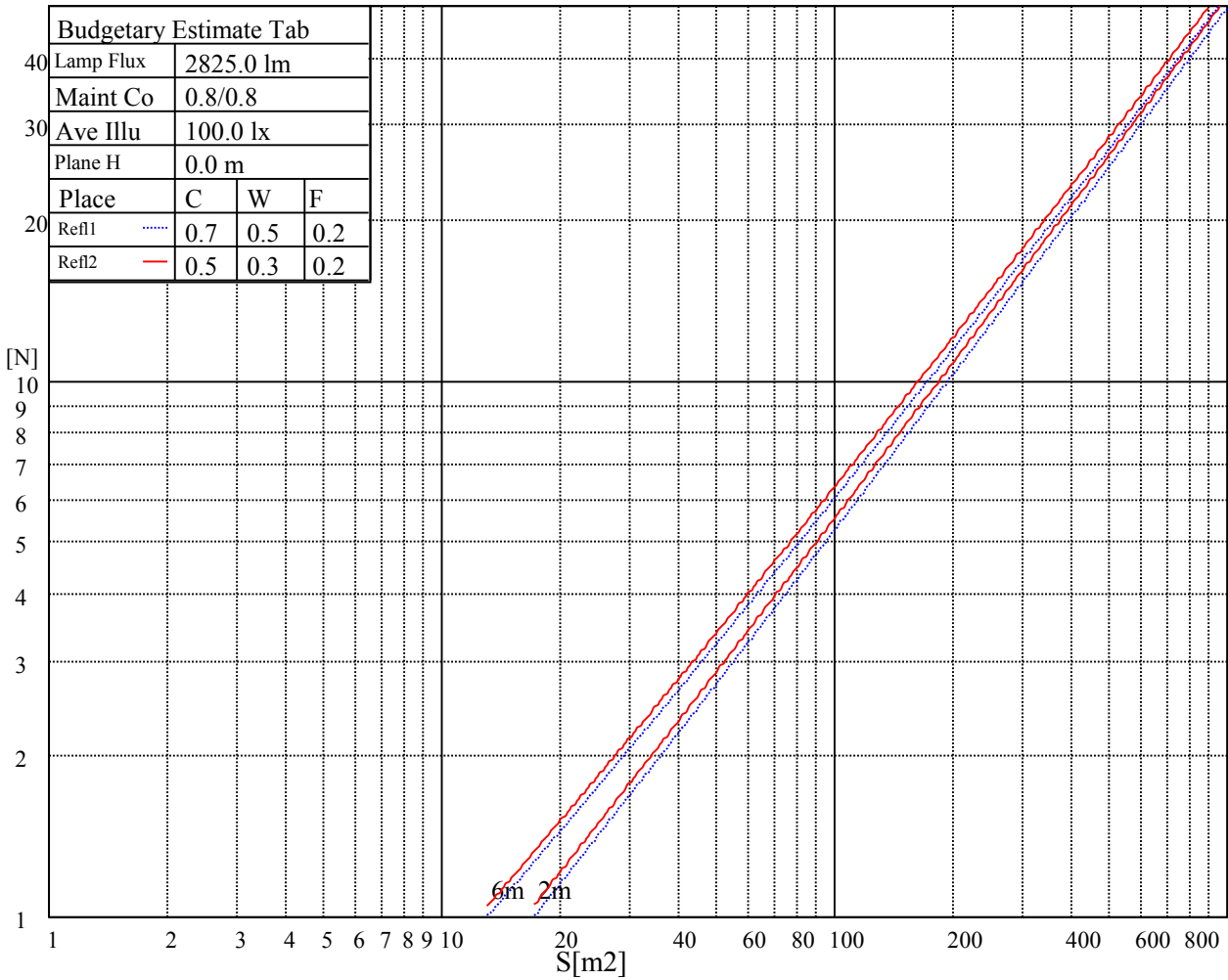
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

Glare Table

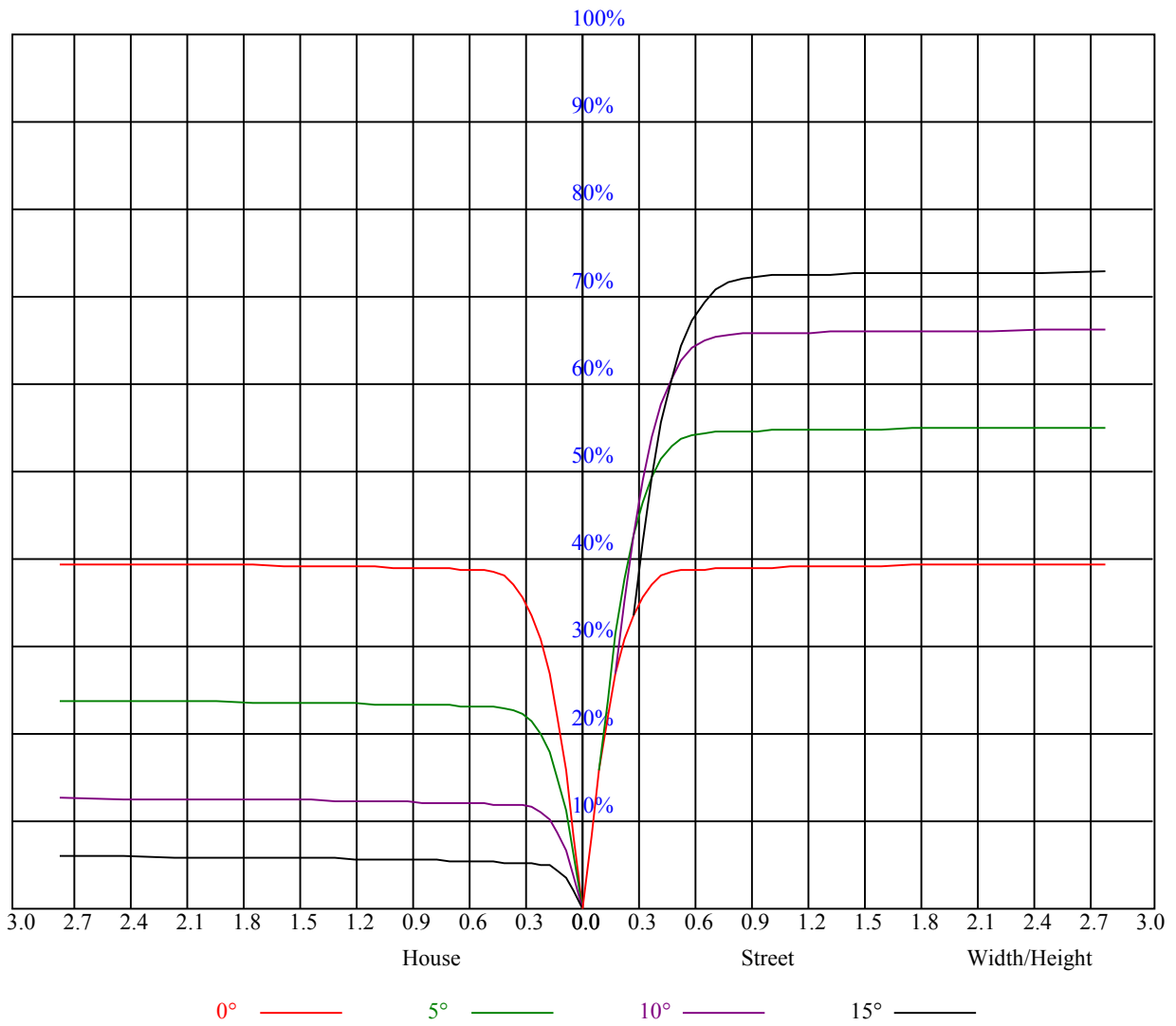
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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 RHOFC=20 CU															
0	0.95	0.95	0.95	0.92	0.92	0.92	0.88	0.88	0.88	0.84	0.84	0.84	0.81	0.81	0.81	0.79
1	0.90	0.88	0.87	0.88	0.87	0.85	0.85	0.84	0.83	0.82	0.81	0.80	0.79	0.79	0.78	0.77
2	0.86	0.83	0.81	0.84	0.82	0.80	0.82	0.80	0.79	0.80	0.78	0.77	0.77	0.76	0.75	0.74
3	0.82	0.79	0.77	0.81	0.79	0.77	0.79	0.77	0.75	0.77	0.76	0.74	0.76	0.74	0.73	0.72
4	0.79	0.76	0.74	0.78	0.76	0.74	0.77	0.75	0.73	0.75	0.74	0.72	0.74	0.73	0.71	0.70
5	0.77	0.74	0.71	0.76	0.73	0.71	0.75	0.72	0.70	0.74	0.72	0.70	0.73	0.71	0.69	0.68
6	0.74	0.71	0.69	0.74	0.71	0.69	0.73	0.70	0.68	0.72	0.70	0.68	0.71	0.69	0.68	0.67
7	0.72	0.69	0.67	0.72	0.69	0.67	0.71	0.68	0.67	0.70	0.68	0.66	0.70	0.68	0.66	0.65
8	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
9	0.69	0.66	0.64	0.68	0.66	0.64	0.68	0.65	0.63	0.67	0.65	0.63	0.67	0.65	0.63	0.62
10	0.67	0.64	0.62	0.67	0.64	0.62	0.66	0.64	0.62	0.66	0.64	0.62	0.65	0.63	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	15547.50	15800.63	15710.63	15294.38	14585.63	13494.38	12228.75	11075.63	9781.88
45.0	15620.63	15789.38	15581.25	15091.88	14428.13	13072.50	11936.25	10890.00	9433.13
90.0	15693.75	15485.63	14855.63	14023.13	13010.63	11158.31	10414.13	9252.56	8184.38
135.0	15710.63	15446.25	14715.00	13837.50	12780.00	11491.88	10186.88	9050.63	7897.50
180.0	15547.50	15007.50	14073.75	12898.13	11172.94	10438.88	9149.06	8087.06	7044.75
225.0	15620.63	15148.13	14276.25	13162.50	11160.00	10864.69	9572.63	8386.88	7446.94
270.0	15693.75	15586.88	15046.88	14281.88	13303.13	12048.75	10749.38	9624.38	8443.13
315.0	15710.63	15665.63	15271.88	14529.38	13601.25	12003.75	11059.31	9922.50	8593.31
360.0	15547.50	15800.63	15710.63	15294.38	14585.63	13494.38	12228.75	11075.63	9781.88
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	8566.88	7593.75	6626.25	5872.50	5135.63	4477.50	3976.88	3526.88	3037.50
45.0	8246.25	7402.50	6322.50	5591.25	4955.63	4263.75	3780.00	3369.38	2908.13
90.0	7119.56	6186.94	5472.56	4780.13	4181.06	3715.88	3255.19	2890.13	2481.75
135.0	6896.25	6091.88	5315.63	4702.50	4111.88	3594.38	3189.38	2868.75	2432.81
180.0	6234.19	5435.44	4750.88	4224.38	3704.63	3244.50	2878.88	2550.38	2173.50
225.0	6510.38	5698.69	5065.88	4440.94	3951.56	3468.38	3042.56	2698.88	2380.50
270.0	7402.50	6575.63	5760.00	5130.00	4488.75	3931.88	3487.50	3099.38	2863.13
315.0	7729.88	6747.75	5891.06	5228.44	4570.31	4000.50	3558.94	3159.56	2714.63
360.0	8566.88	7593.75	6626.25	5872.50	5135.63	4477.50	3976.88	3526.88	3037.50
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	2857.50	2387.25	2067.19	1762.31	1515.94	1322.44	1000.69	780.19	604.13
45.0	2863.13	2270.81	1925.44	1650.38	1406.25	1135.13	918.00	698.06	491.63
90.0	2180.25	1895.63	1635.19	1253.25	1108.41	885.26	633.49	456.86	308.31
135.0	2131.31	1848.38	1536.75	1293.19	1071.00	832.50	603.00	412.31	285.75
180.0	1887.19	1622.25	1246.50	1094.51	871.43	669.26	448.09	298.91	162.45
225.0	2020.50	1748.81	1501.88	1096.93	983.42	767.53	537.19	342.39	209.64
270.0	2345.63	2059.88	1725.75	1488.94	1250.44	991.69	750.38	556.88	366.75
315.0	2401.31	2115.00	1809.00	1524.38	1119.49	1064.76	819.51	583.76	399.99
360.0	2857.50	2387.25	2067.19	1762.31	1515.94	1322.44	1000.69	780.19	604.13
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	387.56	295.88	116.16	42.13	20.48	18.00	16.48	15.41	14.34
45.0	303.75	285.75	83.31	34.37	20.25	18.73	17.72	16.82	16.09
90.0	169.93	69.24	31.05	20.70	19.46	18.39	17.55	16.99	16.48
135.0	137.03	57.21	27.17	18.34	17.10	16.43	15.58	15.08	14.74
180.0	69.41	26.89	17.94	16.54	15.47	14.34	13.67	13.11	12.54
225.0	100.80	41.85	21.26	19.52	18.28	17.16	16.31	15.64	15.08
270.0	292.50	98.94	36.90	22.11	20.31	18.90	17.94	17.16	16.37
315.0	240.19	123.41	54.79	22.33	19.07	17.66	16.54	15.81	15.13
360.0	387.56	295.88	116.16	42.13	20.48	18.00	16.48	15.41	14.34
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	13.56	12.94	12.43	11.98	11.64	11.36	11.14	10.97	10.86
45.0	15.53	15.13	14.68	14.46	14.18	14.01	13.78	13.67	13.61
90.0	16.09	15.75	15.53	15.19	14.96	14.79	14.68	14.57	14.46
135.0	14.23	14.01	13.73	13.44	13.28	13.16	12.99	12.88	12.77
180.0	12.15	11.81	11.59	11.36	11.14	11.03	10.91	10.80	10.74
225.0	14.46	14.12	13.84	13.61	13.44	13.28	13.11	12.94	12.88
270.0	15.86	15.41	15.02	14.68	14.46	14.29	14.01	13.89	13.78
315.0	14.51	14.12	13.73	13.39	13.16	12.94	12.77	12.60	12.49
360.0	13.56	12.94	12.43	11.98	11.64	11.36	11.14	10.97	10.86

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	10.74	10.63	10.58	10.52	10.46	10.41	10.41	10.41	10.41
45.0	13.44	13.33	13.22	13.11	13.05	12.94	12.88	12.83	12.71
90.0	14.34	14.29	14.23	14.23	14.29	14.34	14.51	14.74	15.02
135.0	12.71	12.60	12.54	12.43	12.38	12.32	12.26	12.26	12.15
180.0	10.69	10.63	10.63	10.58	10.52	10.52	10.52	10.52	10.46
225.0	12.77	12.71	12.60	12.49	12.43	12.38	12.26	12.26	12.21
270.0	13.73	13.61	13.56	13.50	13.44	13.39	13.44	13.50	13.56
315.0	12.43	12.32	12.26	12.15	12.09	12.09	11.98	11.98	11.93
360.0	10.74	10.63	10.58	10.52	10.46	10.41	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	10.41	10.41	10.41	10.41	10.35	10.35	10.35	10.29	10.29
45.0	12.66	12.60	12.54	12.54	12.49	12.49	12.54	12.60	12.60
90.0	15.36	15.58	15.86	16.09	16.26	16.43	16.71	16.99	17.27
135.0	12.09	12.04	12.04	11.93	11.87	11.81	11.81	11.81	11.76
180.0	10.46	10.46	10.46	10.46	10.41	10.41	10.35	10.35	10.35
225.0	12.09	12.04	12.04	11.98	11.93	11.87	11.87	11.87	11.81
270.0	13.73	13.95	14.06	14.29	14.40	14.57	14.74	14.96	15.19
315.0	11.87	11.76	11.76	11.70	11.64	11.59	11.53	11.53	11.53
360.0	10.41	10.41	10.41	10.41	10.35	10.35	10.35	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	10.18	10.18	10.13	10.18	10.13
45.0	12.60	12.54	12.49	12.43	12.38	12.32	12.21	12.15	11.98
90.0	17.83	18.28	18.51	18.68	18.84	18.90	18.34	17.21	15.41
135.0	11.70	11.76	11.70	11.70	11.76	11.87	11.87	12.04	12.43
180.0	10.29	10.29	10.24	10.24	10.29	10.24	10.29	10.35	10.41
225.0	11.76	11.76	11.76	11.76	11.70	11.64	11.53	11.42	11.31
270.0	15.53	15.98	16.43	16.82	16.99	17.21	17.27	16.82	15.64
315.0	11.48	11.42	11.42	11.36	11.36	11.36	11.42	11.48	11.59
360.0	10.29	10.24	10.24	10.24	10.18	10.18	10.13	10.18	10.13
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	10.13	10.18	10.24	10.35	10.52	10.63	10.35	9.96	9.68
45.0	11.81	11.64	11.31	10.97	10.69	10.52	10.18	10.01	9.79
90.0	11.93	10.97	10.69	10.41	10.18	9.96	9.68	9.56	9.45
135.0	12.94	13.16	12.94	11.76	10.91	10.41	10.18	10.01	9.79
180.0	10.69	10.86	11.14	11.14	10.63	10.13	9.79	9.51	9.28
225.0	11.14	10.91	10.74	10.52	10.35	10.18	9.96	9.73	9.51
270.0	13.50	11.87	10.91	10.58	10.41	10.18	10.01	9.79	9.62
315.0	11.81	12.21	12.49	12.60	12.32	11.19	10.58	10.01	9.84
360.0	10.13	10.18	10.24	10.35	10.52	10.63	10.35	9.96	9.68
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	9.51	9.28	9.23	9.17	9.11	9.06	9.00	8.94	8.94
45.0	9.56	9.45	9.28	9.23	9.17	9.06	9.00	9.00	8.72
90.0	9.39	9.28	9.23	9.17	9.17	9.23	9.06	8.66	8.61
135.0	9.56	9.39	9.28	9.23	9.17	9.28	9.00	8.78	8.66
180.0	9.28	9.23	9.11	9.06	9.00	8.94	8.94	8.83	8.83
225.0	9.39	9.28	9.11	9.06	9.00	8.94	8.72	8.66	8.61
270.0	9.45	9.34	9.23	9.11	9.06	8.83	8.61	8.61	8.61
315.0	9.56	9.39	9.23	9.17	9.06	9.00	8.94	8.72	8.66
360.0	9.51	9.28	9.23	9.17	9.11	9.06	9.00	8.94	8.94

Intensity data(cd)

C/γ(°)	90.0
0.0	8.83
45.0	8.66
90.0	8.61
135.0	8.61
180.0	8.78
225.0	8.66
270.0	8.61
315.0	8.66
360.0	8.83