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NATA

LumCAT: LM01D06924BJ
Luminaire: 92.70.045.00
Report No: NATA0100
Test No: GC2018122101
LampCAT: LUMILEDS LUXEON 1205
Lamp flux(lm): 2231.5
Number of Lamps: 1
Length(mm): 69
Phm Type: C

Voltage(V): 35.6000
Current(A): 0.5000
Power (W): 17.8000
PF: 0.0000
Ballast type: DC
Width(mm): 69
Height(mm): 0

Photometric Results

Lumens(lm): 2009.82
Efficiency(%): 90.07%
Lumens(lm)/Power(W): 113.01
Central intensity(cd): 7630.594
Maximum intensity(cd): 7630.594
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=25.5
 [C90/270]Total=25.5
Field angle(10%Imax): [C0/180]Total=47.0
 [C90/270]Total=47.0
Maximum s/h(1/2): C0_180=0.43 C90_270=0.43
Maximum s/h(1/4): C0_180=0.43 C90_270=0.43
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 90.15%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 94.667%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	7630.594	1.826	1.826	.082%	.091%
1.0	7590.938	14.528	16.353	.651%	.814%
2.0	7490.531	28.667	45.021	1.285%	2.240%
3.0	7322.766	42.027	87.047	1.883%	4.331%
4.0	7101.070	54.320	141.367	2.434%	7.034%
5.0	6834.445	65.321	206.688	2.927%	10.284%
6.0	6528.586	74.835	281.523	3.354%	14.007%
7.0	6171.469	82.477	364.001	3.696%	18.111%
8.0	5806.969	88.625	452.626	3.972%	22.521%
9.0	5391.422	92.488	545.114	4.145%	27.123%
10.0	4959.422	94.439	639.554	4.232%	31.821%
11.0	4557.938	95.372	734.925	4.274%	36.567%
12.0	4137.117	94.325	829.25	4.227%	41.260%
13.0	3702.727	91.340	920.591	4.093%	45.805%
14.0	3291.328	87.317	1007.907	3.913%	50.149%
15.0	2901.727	82.358	1090.265	3.691%	54.247%
16.0	2525.836	76.348	1166.613	3.421%	58.046%
17.0	2200.500	70.552	1237.164	3.162%	61.556%
18.0	1876.289	63.582	1300.746	2.849%	64.720%
19.0	1591.355	56.815	1357.561	2.546%	67.546%
20.0	1346.259	50.493	1408.054	2.263%	70.059%
21.0	1133.803	44.557	1452.611	1.997%	72.276%
22.0	971.184	39.896	1492.507	1.788%	74.261%
23.0	821.348	35.193	1527.701	1.577%	76.012%
24.0	699.342	31.193	1558.893	1.398%	77.564%
25.0	596.461	27.643	1586.536	1.239%	78.939%
26.0	515.222	24.768	1611.304	1.110%	80.172%
27.0	441.323	21.971	1633.275	.985%	81.265%
28.0	386.466	19.896	1653.172	.892%	82.255%
29.0	336.523	17.891	1671.063	.802%	83.145%
30.0	296.543	16.260	1687.322	.729%	83.954%
31.0	259.903	14.679	1702.001	.658%	84.684%
32.0	229.444	13.333	1715.335	.598%	85.348%
33.0	206.227	12.317	1727.652	.552%	85.961%
34.0	186.202	11.418	1739.07	.512%	86.529%
35.0	168.905	10.624	1749.694	.476%	87.057%
36.0	154.329	9.948	1759.641	.446%	87.552%
37.0	141.884	9.364	1769.005	.420%	88.018%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	130.099	8.784	1777.789	.394%	88.455%
39.0	120.192	8.295	1786.083	.372%	88.868%
40.0	111.734	7.876	1793.959	.353%	89.260%
41.0	103.999	7.482	1801.441	.335%	89.632%
42.0	97.010	7.118	1808.56	.319%	89.986%
43.0	90.745	6.787	1815.346	.304%	90.324%
44.0	85.690	6.528	1821.874	.293%	90.649%
45.0	81.120	6.290	1828.164	.282%	90.962%
46.0	77.295	6.097	1834.261	.273%	91.265%
47.0	73.582	5.901	1840.163	.264%	91.559%
48.0	70.594	5.753	1845.916	.258%	91.845%
49.0	67.402	5.578	1851.494	.250%	92.122%
50.0	64.512	5.419	1856.913	.243%	92.392%
51.0	62.149	5.297	1862.21	.237%	92.656%
52.0	59.604	5.151	1867.36	.231%	92.912%
53.0	57.213	5.011	1872.371	.225%	93.161%
54.0	55.027	4.882	1877.253	.219%	93.404%
55.0	52.995	4.760	1882.013	.213%	93.641%
56.0	51.096	4.645	1886.659	.208%	93.872%
57.0	49.423	4.545	1891.204	.204%	94.098%
58.0	47.827	4.448	1895.652	.199%	94.319%
59.0	46.448	4.366	1900.018	.196%	94.537%
60.0	44.930	4.267	1904.285	.191%	94.749%
61.0	43.523	4.174	1908.459	.187%	94.957%
62.0	42.244	4.090	1912.549	.183%	95.160%
63.0	41.048	4.011	1916.56	.180%	95.360%
64.0	39.909	3.934	1920.494	.176%	95.555%
65.0	38.728	3.849	1924.343	.172%	95.747%
66.0	37.603	3.767	1928.11	.169%	95.934%
67.0	36.359	3.670	1931.78	.164%	96.117%
68.0	35.205	3.580	1935.36	.160%	96.295%
69.0	34.102	3.491	1938.851	.156%	96.469%
70.0	33.124	3.413	1942.264	.153%	96.639%
71.0	32.365	3.356	1945.62	.150%	96.806%
72.0	32.112	3.349	1948.969	.150%	96.972%
73.0	32.337	3.391	1952.36	.152%	97.141%
74.0	33.230	3.503	1955.863	.157%	97.315%
75.0	34.277	3.631	1959.494	.163%	97.496%

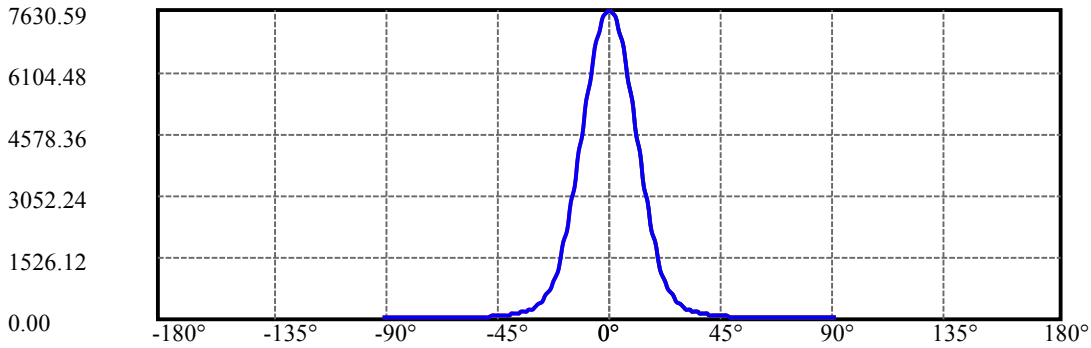
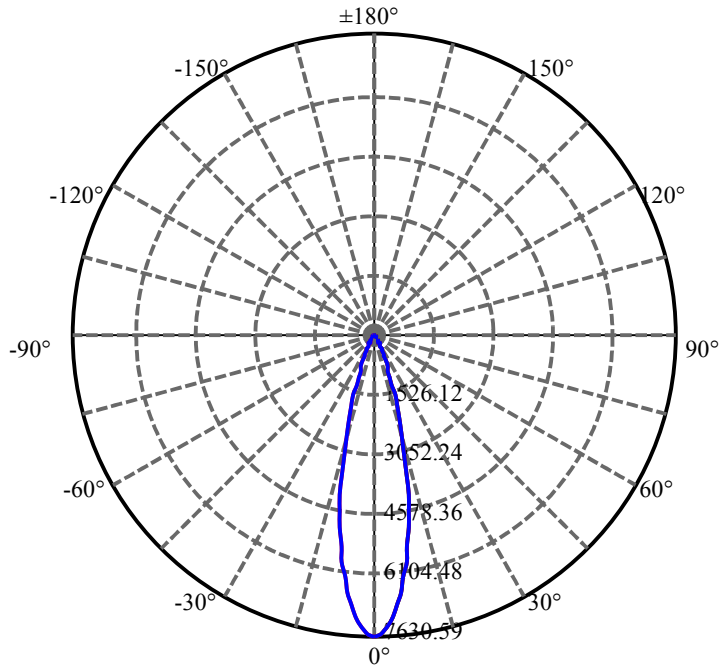
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	36.183	3.850	1963.344	.173%	97.688%
77.0	37.934	4.053	1967.397	.182%	97.889%
78.0	39.333	4.219	1971.616	.189%	98.099%
79.0	40.106	4.317	1975.933	.193%	98.314%
80.0	39.459	4.261	1980.195	.191%	98.526%
81.0	37.245	4.034	1984.229	.181%	98.727%
82.0	33.630	3.652	1987.881	.164%	98.908%
83.0	29.334	3.193	1991.074	.143%	99.067%
84.0	27.042	2.949	1994.023	.132%	99.214%
85.0	26.536	2.899	1996.922	.130%	99.358%
86.0	26.845	2.937	1999.859	.132%	99.504%
87.0	26.866	2.942	2002.801	.132%	99.651%
88.0	26.508	2.905	2005.706	.130%	99.795%
89.0	25.397	2.785	2008.49	.125%	99.934%
90.0	24.258	1.330	2009.82	.060%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1687.32	75.61%	83.95%
0-40	1793.96	80.39%	89.26%
0-60	1904.28	85.34%	94.75%
0-90	2008.49	90.01%	99.93%
0-120	2008.49	90.01%	99.93%
0-180	2009.82	90.07%	100.00%
60-90	108.47	4.86%	5.40%
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%
0-25.86	1607.86	72.05%	80.00%

ZONAL LUMEN SUMMARY

0-10	639.55
10-20	768.50
20-30	279.27
30-40	106.64
40-50	62.95
50-60	47.37
60-70	37.98
70-80	37.93
80-90	28.30
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: ———

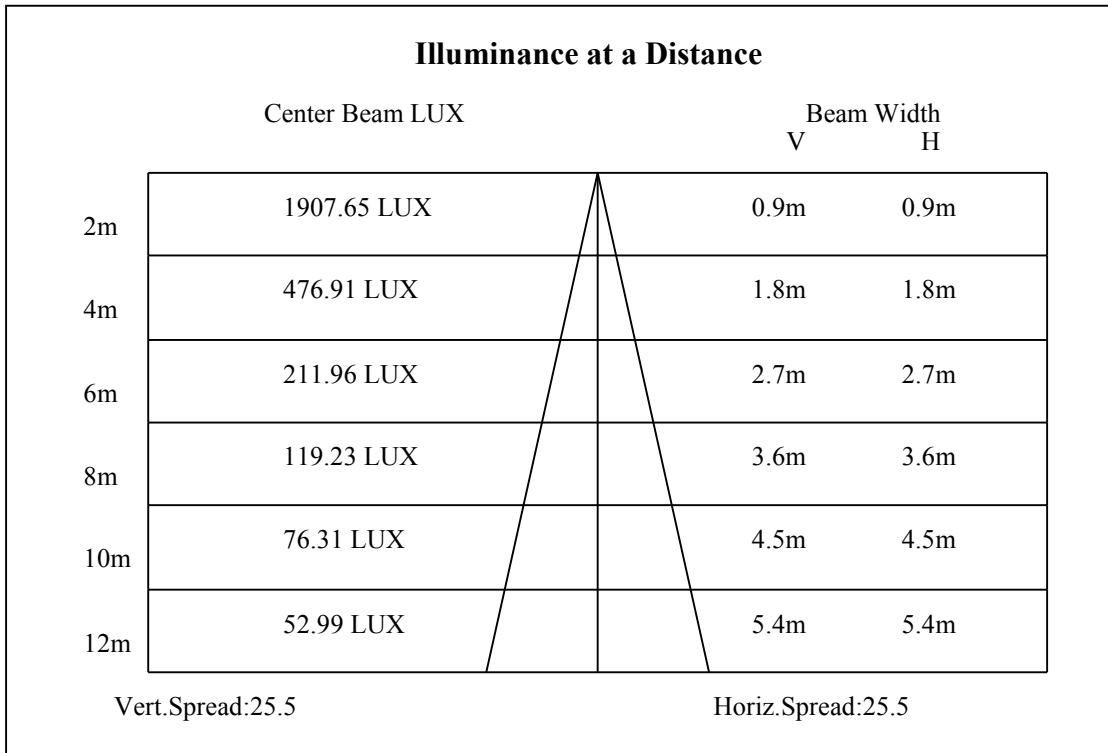
C90/C270: ———

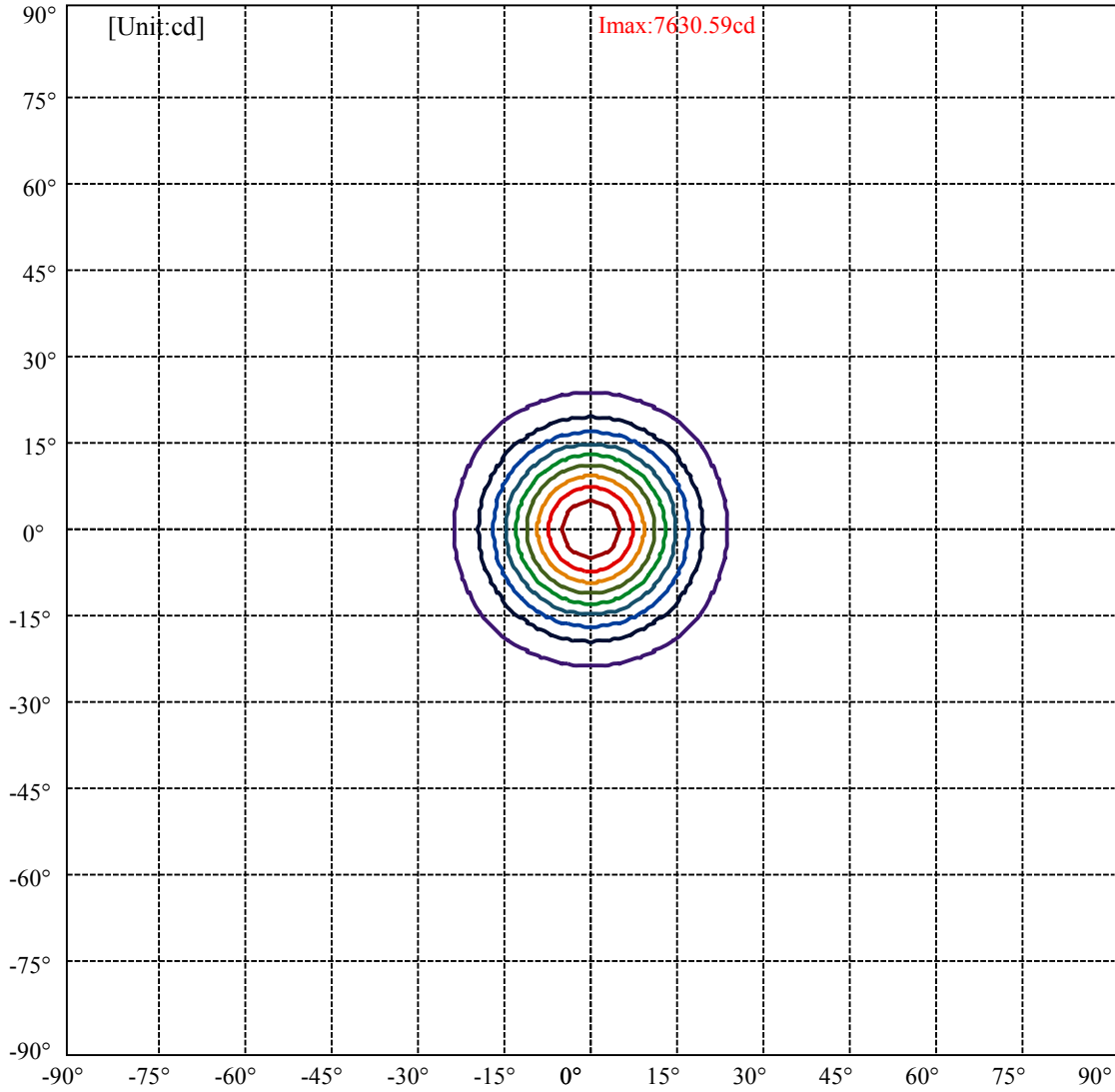
Field angle(10%Imax):C0/180Left:23.5 Right:23.5

:C90/270Left:23.5 Right:23.5

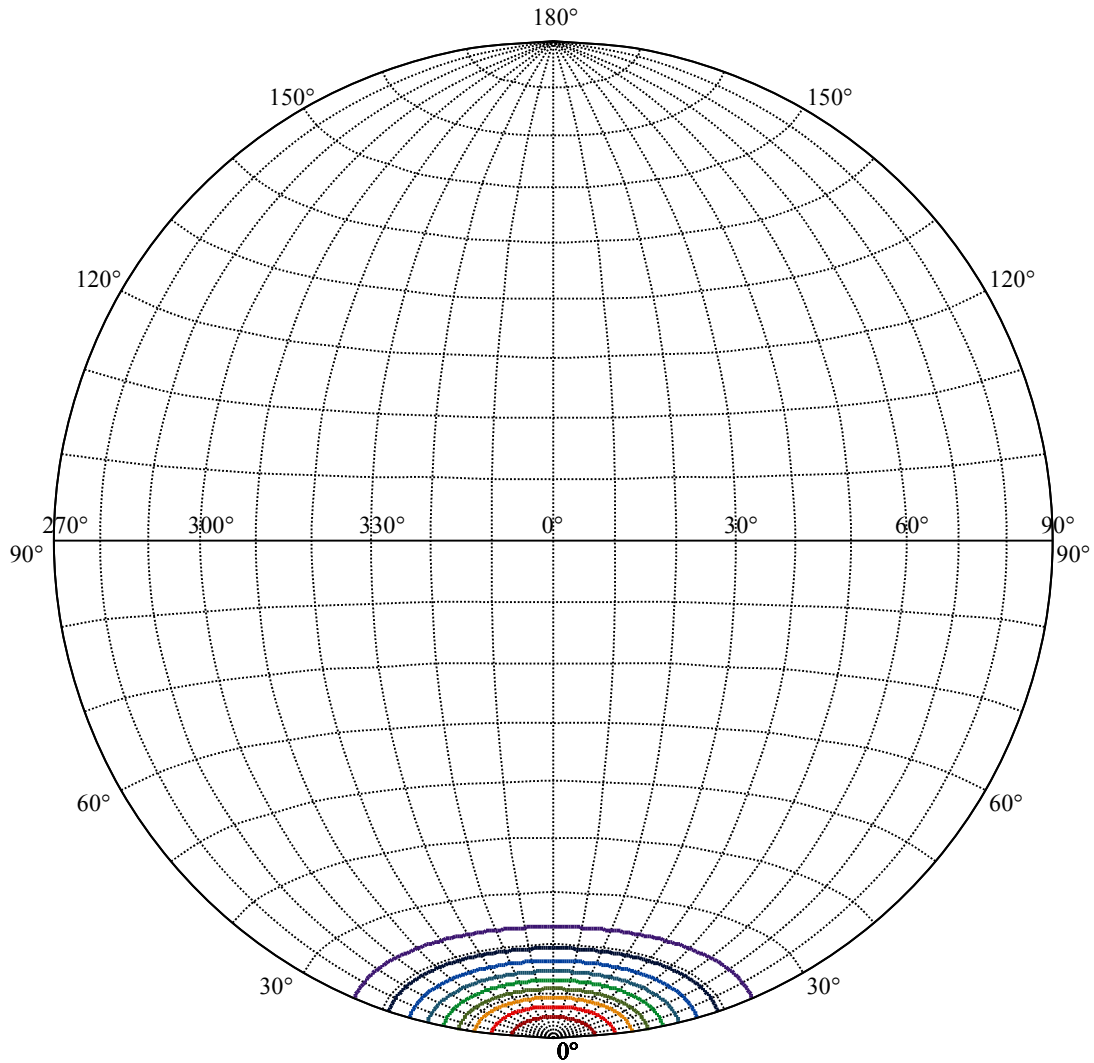
Beam Angle(50%Imax):C0/180Left:12.7 Right:12.7

:C90/270Left:12.7 Right:12.7





(10%Imax) 763.059	—
(20%Imax) 1526.12	—
(30%Imax) 2289.18	—
(40%Imax) 3052.24	—
(50%Imax) 3815.3	—
(60%Imax) 4578.36	—
(70%Imax) 5341.42	—
(80%Imax) 6104.48	—
(90%Imax) 6867.53	—



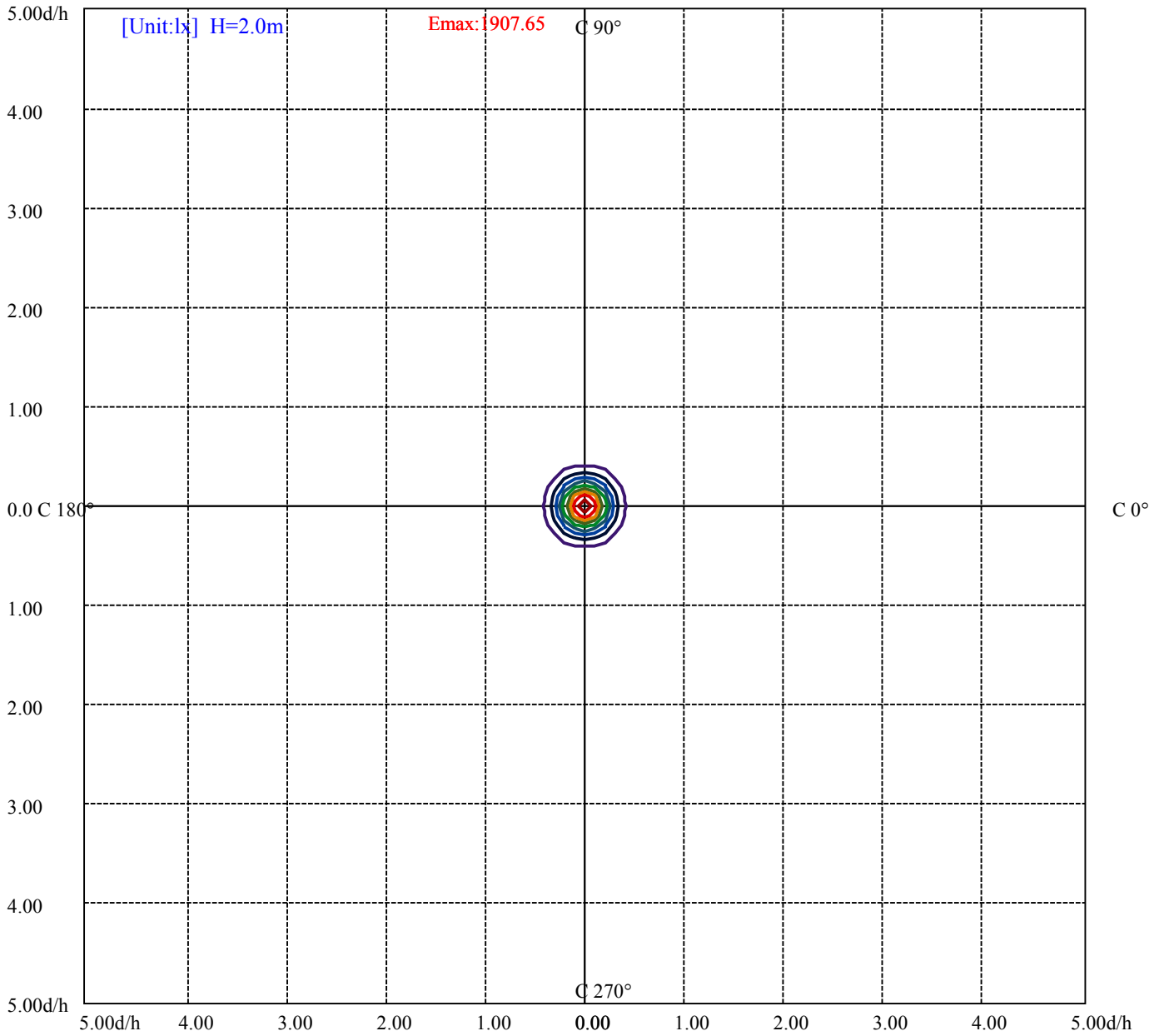
House

[Unit:cd]

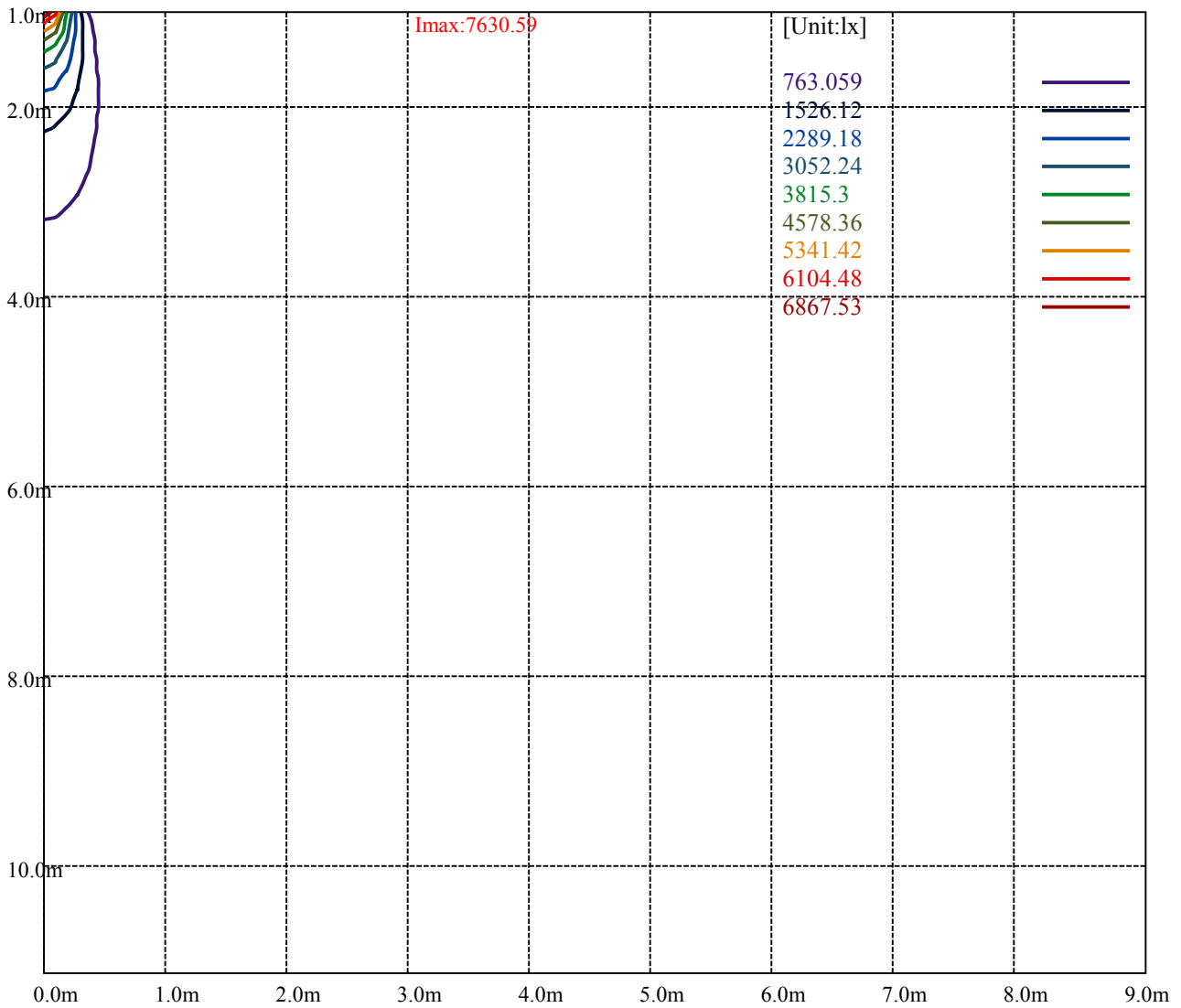
Road

Imax:7630.59

(10%Imax) 763.059	—
(20%Imax) 1526.12	—
(30%Imax) 2289.18	—
(40%Imax) 3052.24	—
(50%Imax) 3815.3	—
(60%Imax) 4578.36	—
(70%Imax) 5341.42	—
(80%Imax) 6104.48	—
(90%Imax) 6867.53	—



- (10%Emax) 190.7648
- (20%Emax) 381.53
- (30%Emax) 572.295
- (40%Emax) 763.06
- (50%Emax) 953.8225
- (60%Emax) 1144.588
- (70%Emax) 1335.353
- (80%Emax) 1526.118
- (90%Emax) 1716.882



Luminance Table

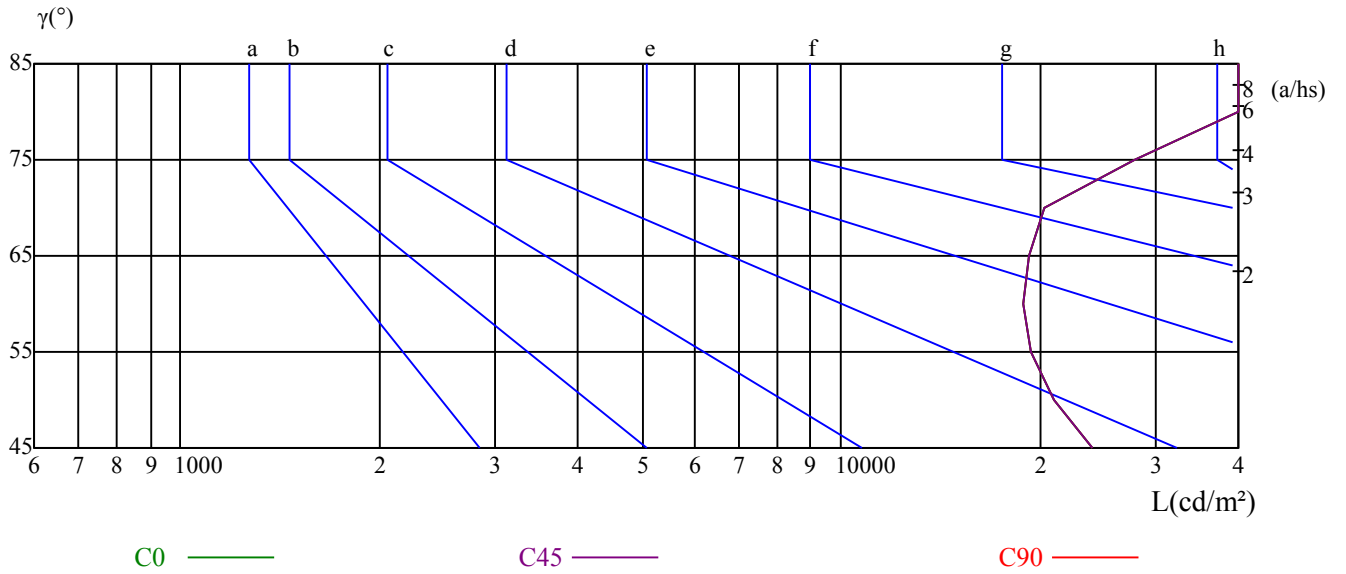
γ	45	50	55	60	65	70	75	80	85
C0	24096	21080	19406	18874	19248	20342	27817	47729	63950
C45	24096	21080	19406	18874	19248	20342	27817	47729	63950
C90	24096	21080	19406	18874	19248	20342	27817	47729	63950

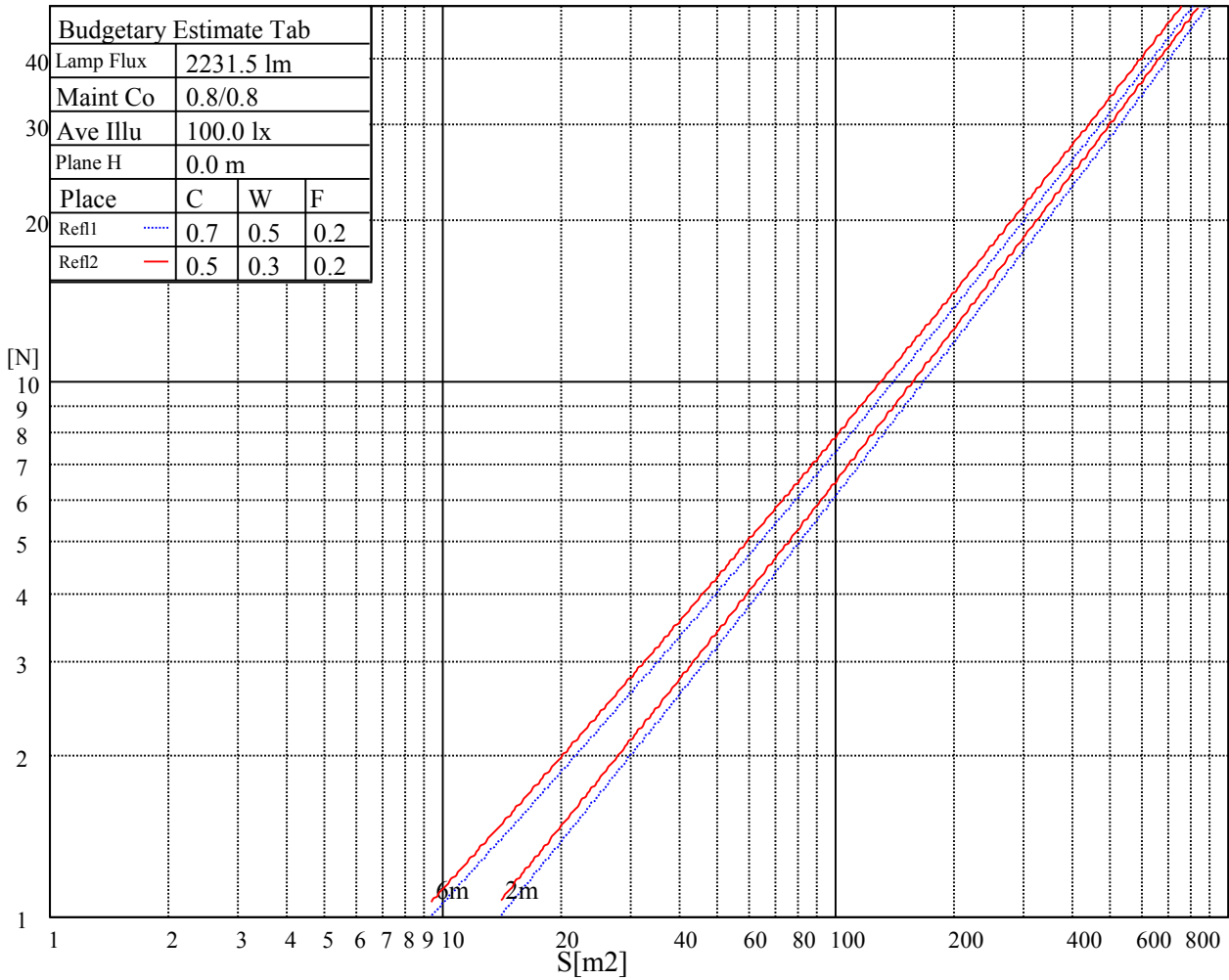
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
19248	19248	19248	27817	27817	27817	63950	63950	63950

Glare Table

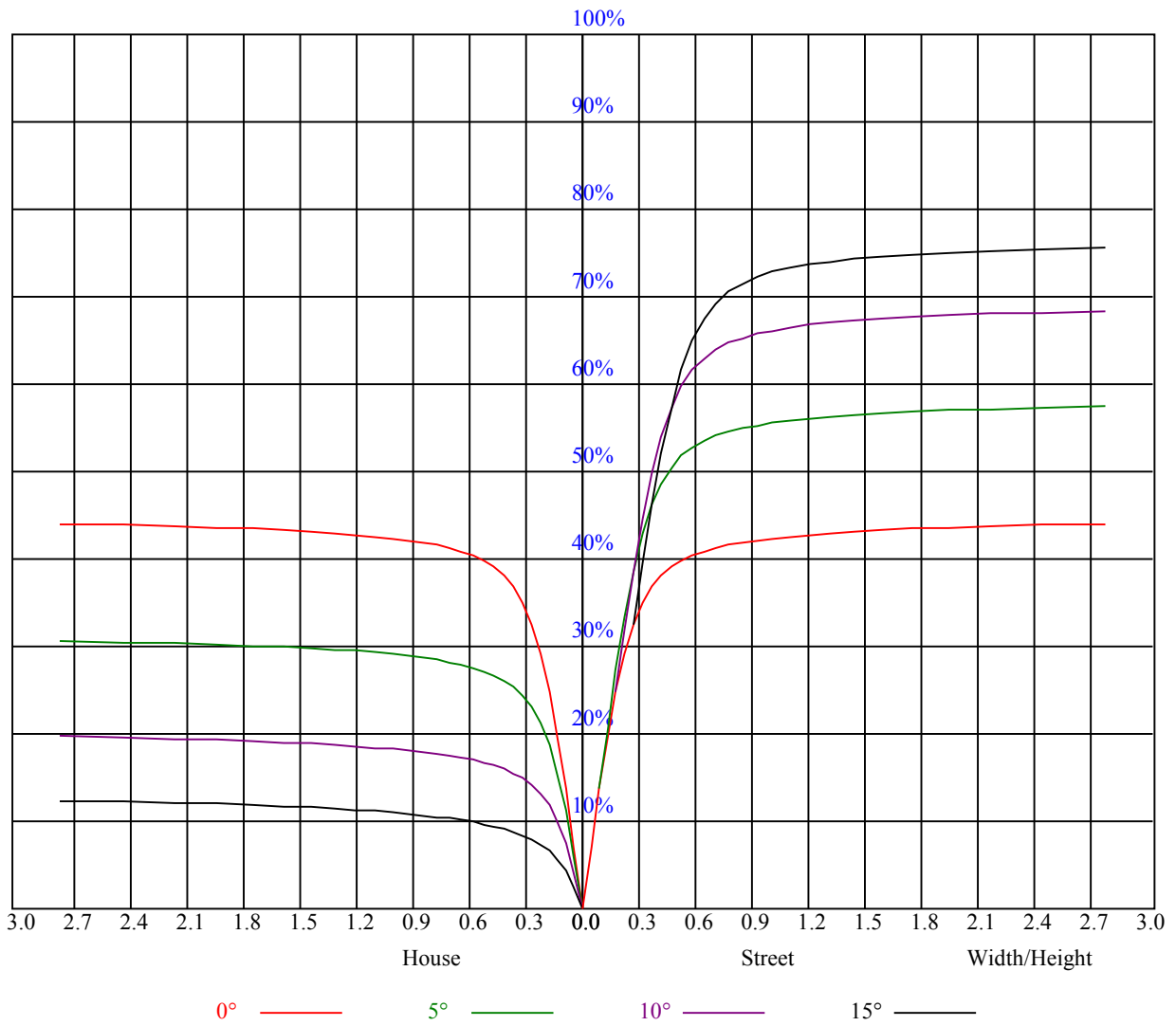
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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	1.07	1.07	1.07	1.05	1.05	1.05	1.00	1.00	1.00	0.96	0.96	0.96	0.92	0.92	0.92	0.90
1	1.00	0.97	0.95	0.98	0.96	0.94	0.94	0.93	0.91	0.91	0.89	0.88	0.88	0.87	0.86	0.84
2	0.94	0.90	0.87	0.92	0.89	0.87	0.89	0.87	0.85	0.87	0.85	0.83	0.84	0.83	0.81	0.80
3	0.89	0.85	0.82	0.88	0.84	0.81	0.85	0.82	0.80	0.83	0.81	0.78	0.81	0.79	0.77	0.76
4	0.85	0.80	0.77	0.84	0.80	0.76	0.82	0.78	0.76	0.80	0.77	0.75	0.78	0.76	0.74	0.73
5	0.81	0.76	0.73	0.80	0.76	0.73	0.79	0.75	0.72	0.77	0.74	0.72	0.76	0.73	0.71	0.70
6	0.78	0.73	0.70	0.77	0.73	0.70	0.76	0.72	0.69	0.75	0.71	0.69	0.73	0.71	0.68	0.67
7	0.75	0.70	0.67	0.74	0.70	0.67	0.73	0.69	0.67	0.72	0.69	0.66	0.71	0.68	0.66	0.65
8	0.72	0.68	0.65	0.72	0.68	0.65	0.71	0.67	0.64	0.70	0.67	0.64	0.69	0.66	0.64	0.63
9	0.70	0.66	0.63	0.69	0.65	0.63	0.69	0.65	0.62	0.68	0.65	0.62	0.67	0.64	0.62	0.61
10	0.68	0.64	0.61	0.67	0.63	0.61	0.67	0.63	0.61	0.66	0.63	0.60	0.65	0.62	0.60	0.59



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	7593.19	7490.81	7281.56	7059.38	6799.50	6426.00	6089.63	5737.50	5367.38
45.0	7690.50	7682.06	7599.94	7450.88	7264.13	6995.81	6684.75	6363.00	6017.63
90.0	7655.06	7659.00	7599.38	7472.25	7270.31	7048.69	6778.69	6384.94	6034.50
135.0	7583.63	7653.38	7668.00	7605.56	7480.13	7301.81	7013.25	6732.00	6415.88
180.0	7593.19	7637.63	7615.13	7518.38	7368.75	7140.38	6888.94	6554.81	6183.56
225.0	7690.50	7619.63	7498.13	7298.44	7038.56	6769.13	6469.88	6052.50	5691.38
270.0	7655.06	7583.63	7430.06	7209.56	6971.63	6660.00	6306.75	5961.38	5592.94
315.0	7583.63	7401.38	7232.06	6967.69	6615.56	6333.75	5996.81	5585.63	5152.50
360.0	7593.19	7490.81	7281.56	7059.38	6799.50	6426.00	6089.63	5737.50	5367.38
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	4889.81	4499.44	4111.88	3681.56	3259.13	2895.19	2504.25	2147.06	1864.69
45.0	5570.44	5189.06	4790.25	4332.94	3887.44	3493.69	3069.56	2670.19	2345.06
90.0	5665.50	5175.00	4770.56	4368.38	3917.25	3473.44	3092.63	2692.13	2356.31
135.0	5990.06	5619.94	5221.69	4765.50	4305.94	3900.38	3456.56	3035.81	2684.81
180.0	5825.81	5400.56	4963.50	4568.06	4172.63	3686.63	3308.63	2944.13	2549.25
225.0	5313.94	4815.00	4419.00	4022.44	3582.00	3157.88	2793.38	2404.13	2088.56
270.0	5115.94	4718.25	4323.38	3882.94	3445.31	3067.31	2662.31	2288.81	1989.00
315.0	4759.88	4258.13	3863.25	3475.13	3052.13	2656.13	2326.50	2024.44	1726.31
360.0	4889.81	4499.44	4111.88	3681.56	3259.13	2895.19	2504.25	2147.06	1864.69
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1584.56	1364.63	1148.63	964.69	828.00	697.50	590.63	513.56	452.25
45.0	1998.00	1722.94	1447.88	1211.06	1025.44	848.81	707.63	606.38	523.13
90.0	2009.81	1701.56	1461.38	1110.49	1026.79	879.08	756.51	630.62	538.37
135.0	2311.88	2008.69	1713.38	1450.13	1242.00	1042.31	878.63	757.69	654.75
180.0	2179.69	1881.00	1586.81	1328.63	1104.86	940.28	804.26	676.74	573.69
225.0	1768.50	1486.69	1115.27	1047.43	866.98	738.45	630.23	522.56	454.61
270.0	1691.44	1458.56	1230.19	1037.81	893.81	757.69	645.75	563.63	492.19
315.0	1466.44	1106.78	1066.56	920.19	781.59	666.68	581.12	500.51	432.79
360.0	1584.56	1364.63	1148.63	964.69	828.00	697.50	590.63	513.56	452.25
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	375.19	330.19	294.19	265.50	226.29	204.69	183.83	167.01	154.18
45.0	435.38	380.81	334.69	292.50	248.63	221.40	199.69	175.44	159.58
90.0	478.74	420.24	358.71	314.44	276.30	240.30	218.31	198.23	177.92
135.0	547.31	477.56	419.63	363.94	316.69	285.75	242.83	219.71	198.34
180.0	499.67	437.46	369.96	326.48	285.02	241.54	221.74	201.32	177.81
225.0	396.45	337.05	295.14	260.94	226.86	204.98	185.34	166.73	152.66
270.0	417.38	371.81	329.06	288.00	264.21	228.66	207.68	186.13	171.17
315.0	380.48	336.60	290.81	260.55	235.24	208.24	190.41	175.05	159.58
360.0	375.19	330.19	294.19	265.50	226.29	204.69	183.83	167.01	154.18
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	141.75	131.68	120.77	111.09	104.01	97.65	90.62	85.95	81.56
45.0	146.59	134.66	124.20	115.76	107.38	100.29	93.43	87.53	82.74
90.0	160.99	148.05	135.17	124.09	115.43	106.03	99.11	92.14	86.46
135.0	179.10	163.74	148.11	134.83	125.04	116.21	106.31	99.68	93.77
180.0	162.73	149.91	136.46	127.35	119.36	109.13	102.83	95.57	88.99
225.0	139.50	127.13	119.19	110.31	101.25	95.68	89.89	83.08	79.37
270.0	157.84	144.68	132.75	123.36	113.85	106.76	99.34	93.09	88.48
315.0	146.14	135.23	124.14	114.75	107.55	100.24	94.56	88.93	84.15
360.0	141.75	131.68	120.77	111.09	104.01	97.65	90.62	85.95	81.56

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	77.06	74.25	71.33	68.51	65.31	62.61	60.02	58.05	55.80
45.0	78.24	74.19	71.21	68.51	66.26	64.01	61.88	59.46	57.43
90.0	82.07	78.24	73.91	70.71	67.67	64.74	62.27	59.63	57.15
135.0	87.41	83.03	79.26	75.49	71.94	68.79	66.15	63.34	60.30
180.0	84.77	80.55	75.49	72.84	70.09	67.11	65.31	62.61	59.96
225.0	75.43	71.61	68.63	66.49	63.73	61.03	58.73	56.31	54.51
270.0	83.59	79.54	76.11	73.18	68.40	65.36	62.83	59.74	57.21
315.0	80.38	76.95	72.73	69.02	65.81	62.44	60.02	57.71	55.35
360.0	77.06	74.25	71.33	68.51	65.31	62.61	60.02	58.05	55.80
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	53.78	52.20	50.57	49.05	47.81	46.58	44.83	43.48	42.19
45.0	55.46	53.16	51.30	49.56	48.26	46.91	45.17	43.99	43.03
90.0	54.90	52.93	51.02	49.11	47.36	45.84	44.38	42.92	41.29
135.0	57.99	55.58	53.49	51.36	49.84	48.38	46.52	45.23	43.82
180.0	57.54	55.69	53.78	52.20	50.46	49.22	47.98	46.86	45.56
225.0	51.98	49.84	48.04	46.52	44.89	43.54	42.13	40.78	39.66
270.0	55.41	53.10	51.24	49.84	47.93	46.58	45.28	43.31	42.02
315.0	53.16	51.47	49.33	47.76	46.07	44.55	43.14	41.63	40.39
360.0	53.78	52.20	50.57	49.05	47.81	46.58	44.83	43.48	42.19
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	40.89	39.83	38.98	37.80	36.62	35.44	34.26	33.13	32.12
45.0	41.79	40.61	39.71	38.76	37.80	37.35	36.62	36.23	35.78
90.0	40.11	38.87	37.29	35.78	34.14	32.57	31.05	29.81	28.63
135.0	42.58	41.23	40.16	39.15	37.35	35.72	34.43	32.91	31.56
180.0	44.44	43.48	42.75	42.02	41.34	40.39	39.04	37.58	35.94
225.0	38.59	37.86	36.90	36.39	36.06	35.61	35.27	35.21	34.93
270.0	40.73	39.38	37.91	36.45	34.65	33.19	31.95	30.83	29.87
315.0	39.26	38.03	36.11	34.48	32.91	31.39	30.21	29.31	30.09
360.0	40.89	39.83	38.98	37.80	36.62	35.44	34.26	33.13	32.12
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	31.22	30.88	31.28	31.84	32.46	32.40	32.29	31.44	29.64
45.0	35.16	34.82	34.43	33.53	32.40	31.22	30.04	28.52	27.73
90.0	27.68	27.00	26.55	28.86	31.84	36.06	39.32	42.13	44.16
135.0	30.71	29.53	28.80	28.58	32.06	36.45	42.02	46.74	50.40
180.0	34.43	33.30	32.29	31.28	30.66	31.28	31.33	31.44	30.94
225.0	34.76	34.59	34.03	33.36	32.12	30.71	28.97	27.62	26.66
270.0	29.25	30.60	35.04	38.87	44.49	47.98	51.19	53.16	53.72
315.0	33.69	37.97	43.43	47.93	53.44	57.38	59.51	59.79	52.43
360.0	31.22	30.88	31.28	31.84	32.46	32.40	32.29	31.44	29.64
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	27.00	25.76	25.26	25.71	26.66	27.17	27.00	26.61	24.75
45.0	27.00	26.49	26.61	26.44	26.16	26.49	26.89	27.11	25.99
90.0	44.78	41.57	32.74	27.28	26.21	26.89	27.28	27.17	26.16
135.0	51.98	50.51	42.13	32.29	26.78	26.16	26.66	26.49	25.82
180.0	30.49	28.41	25.99	25.26	24.92	25.31	25.93	26.16	25.82
225.0	26.27	26.04	26.10	25.82	26.04	26.55	26.44	25.93	24.98
270.0	48.71	37.58	29.08	26.38	27.28	28.24	28.35	27.34	25.65
315.0	41.74	32.68	26.78	27.17	28.24	27.96	26.38	25.26	24.02
360.0	27.00	25.76	25.26	25.71	26.66	27.17	27.00	26.61	24.75

Intensity data(cd)

C/γ(°)	90.0
0.0	22.73
45.0	24.98
90.0	25.71
135.0	24.92
180.0	25.31
225.0	23.29
270.0	24.53
315.0	22.61
360.0	22.73