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Nata

LumCAT: 3-1938-M
Luminaire: BJB 47.319.2011
Report No: NATA0100
Test No: GC2019112008
LampCAT: LUMILEDS LUXEON CoB 1204 LES13
Lamp flux(lm): 1930.0
Number of Lamps: 1
Length(mm): 0
Phm Type: C

Voltage(V): 35.8200
Current(A): 0.3970
Power (W): 14.2200
PF: 1.0000
Ballast type: DC
Width(mm): 0
Height(mm): 0

Photometric Results

Lumens(lm): 1704.75
Efficiency(%): 88.33%
Lumens(lm)/Power(W): 119.88
Central intensity(cd): 7772.485
Maximum intensity(cd): 7772.485
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=14.4
 [C90/270]Total=14.4
Field angle(10%Imax): [C0/180]Total=59.5
 [C90/270]Total=59.5
Maximum s/h(1/2): C0_180=0.25 C90_270=0.25
Maximum s/h(1/4): C0_180=0.34 C90_270=0.34
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 88.33%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.487%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	7772.484	0.000	0	.000%	.000%
1.0	7687.547	7.397	7.397	.383%	.434%
2.0	7372.547	21.616	29.013	1.120%	1.702%
3.0	6898.289	34.131	63.144	1.768%	3.704%
4.0	6271.383	44.083	107.227	2.284%	6.290%
5.0	5468.344	50.504	157.731	2.617%	9.252%
6.0	4685.695	53.362	211.093	2.765%	12.383%
7.0	3993.188	53.870	264.963	2.791%	15.543%
8.0	3392.438	52.858	317.82	2.739%	18.643%
9.0	2946.797	51.376	369.196	2.662%	21.657%
10.0	2639.953	50.558	419.754	2.620%	24.623%
11.0	2428.594	50.645	470.4	2.624%	27.594%
12.0	2285.508	51.532	521.931	2.670%	30.616%
13.0	2159.016	52.745	574.677	2.733%	33.710%
14.0	2045.953	53.823	628.5	2.789%	36.868%
15.0	1948.008	54.831	683.331	2.841%	40.084%
16.0	1848.164	55.625	738.955	2.882%	43.347%
17.0	1736.789	55.827	794.783	2.893%	46.622%
18.0	1637.789	55.639	850.422	2.883%	49.886%
19.0	1548.211	55.430	905.852	2.872%	53.137%
20.0	1449.141	54.860	960.712	2.842%	56.355%
21.0	1363.641	54.011	1014.723	2.799%	59.523%
22.0	1289.883	53.324	1068.047	2.763%	62.651%
23.0	1197.471	52.191	1120.238	2.704%	65.713%
24.0	1126.132	50.802	1171.04	2.632%	68.693%
25.0	1062.197	49.758	1220.798	2.578%	71.612%
26.0	995.266	48.567	1269.365	2.516%	74.461%
27.0	932.273	47.158	1316.523	2.443%	77.227%
28.0	876.333	45.790	1362.313	2.373%	79.913%
29.0	818.409	44.339	1406.652	2.297%	82.514%
30.0	764.459	42.737	1449.389	2.214%	85.021%
31.0	697.577	40.686	1490.075	2.108%	87.407%
32.0	601.713	37.223	1527.299	1.929%	89.591%
33.0	503.641	32.564	1559.863	1.687%	91.501%
34.0	409.584	27.637	1587.5	1.432%	93.122%
35.0	312.574	22.428	1609.927	1.162%	94.438%
36.0	223.144	17.057	1626.985	.884%	95.438%
37.0	144.049	11.976	1638.96	.621%	96.141%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	78.645	7.433	1646.394	.385%	96.577%
39.0	43.812	4.180	1650.573	.217%	96.822%
40.0	34.755	2.740	1653.313	.142%	96.983%
41.0	31.205	2.349	1655.662	.122%	97.121%
42.0	27.464	2.132	1657.794	.110%	97.246%
43.0	24.420	1.922	1659.716	.100%	97.358%
44.0	21.713	1.741	1661.457	.090%	97.461%
45.0	19.245	1.574	1663.031	.082%	97.553%
46.0	17.353	1.431	1664.462	.074%	97.637%
47.0	15.891	1.322	1665.784	.069%	97.714%
48.0	14.695	1.236	1667.021	.064%	97.787%
49.0	13.788	1.170	1668.191	.061%	97.856%
50.0	13.071	1.120	1669.31	.058%	97.921%
51.0	12.488	1.081	1670.392	.056%	97.985%
52.0	11.946	1.048	1671.44	.054%	98.046%
53.0	11.426	1.017	1672.457	.053%	98.106%
54.0	10.948	0.986	1673.443	.051%	98.164%
55.0	10.589	0.961	1674.404	.050%	98.220%
56.0	10.245	0.941	1675.346	.049%	98.275%
57.0	9.949	0.923	1676.269	.048%	98.330%
58.0	9.696	0.908	1677.178	.047%	98.383%
59.0	9.464	0.896	1678.073	.046%	98.435%
60.0	9.239	0.884	1678.957	.046%	98.487%
61.0	9.063	0.873	1679.83	.045%	98.538%
62.0	8.916	0.866	1680.697	.045%	98.589%
63.0	8.775	0.860	1681.557	.045%	98.640%
64.0	8.670	0.856	1682.413	.044%	98.690%
65.0	8.585	0.854	1683.267	.044%	98.740%
66.0	8.501	0.852	1684.119	.044%	98.790%
67.0	8.416	0.851	1684.97	.044%	98.840%
68.0	8.374	0.851	1685.821	.044%	98.890%
69.0	8.311	0.851	1686.672	.044%	98.940%
70.0	8.283	0.852	1687.524	.044%	98.990%
71.0	8.227	0.853	1688.377	.044%	99.040%
72.0	8.191	0.854	1689.231	.044%	99.090%
73.0	8.177	0.856	1690.087	.044%	99.140%
74.0	8.149	0.858	1690.945	.044%	99.190%
75.0	8.135	0.860	1691.806	.045%	99.241%

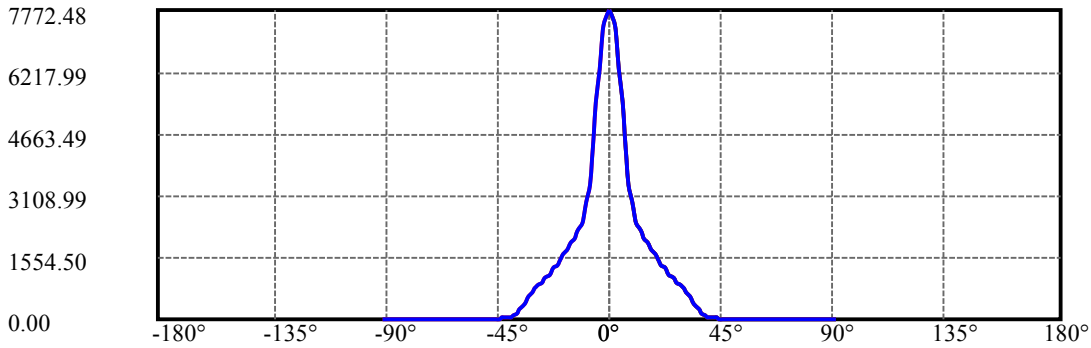
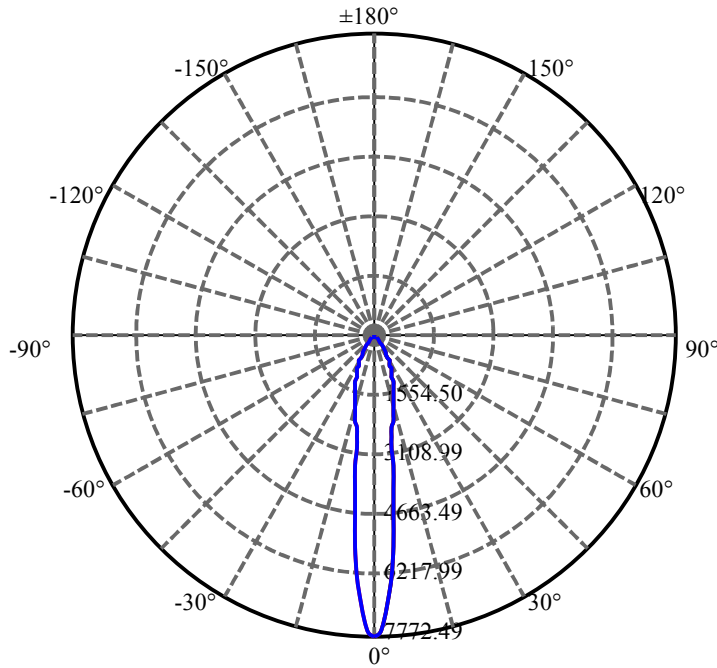
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	8.100	0.862	1692.668	.045%	99.291%
77.0	8.079	0.863	1693.53	.045%	99.342%
78.0	8.037	0.863	1694.393	.045%	99.393%
79.0	8.030	0.863	1695.256	.045%	99.443%
80.0	8.023	0.865	1696.121	.045%	99.494%
81.0	7.988	0.866	1696.987	.045%	99.545%
82.0	7.966	0.865	1697.852	.045%	99.596%
83.0	7.952	0.865	1698.718	.045%	99.646%
84.0	7.931	0.865	1699.583	.045%	99.697%
85.0	7.903	0.864	1700.447	.045%	99.748%
86.0	7.889	0.863	1701.311	.045%	99.798%
87.0	7.854	0.862	1702.172	.045%	99.849%
88.0	7.833	0.859	1703.031	.045%	99.899%
89.0	7.819	0.858	1703.889	.044%	99.950%
90.0	7.819	0.857	1704.747	.044%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1449.39	75.10%	85.02%
0-40	1653.31	85.66%	96.98%
0-60	1678.96	86.99%	98.49%
0-90	1703.89	88.28%	99.95%
0-120	1703.89	88.28%	99.95%
0-180	1704.75	88.33%	100.00%
60-90	25.82	1.34%	1.51%
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%
0-28.03	1363.80	70.66%	80.00%

ZONAL LUMEN SUMMARY

0-10	419.75
10-20	540.96
20-30	488.68
30-40	203.92
40-50	16.00
50-60	9.65
60-70	8.57
70-80	8.60
80-90	7.77
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



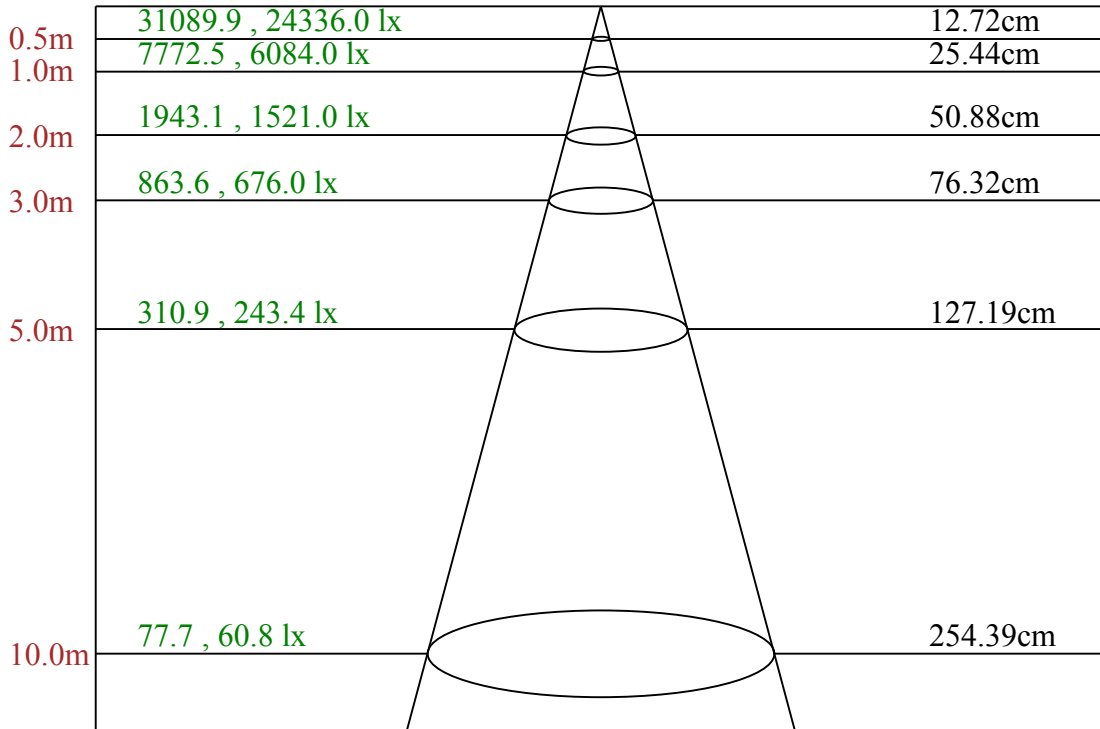
C0(Max): —————

C0/C180: —————

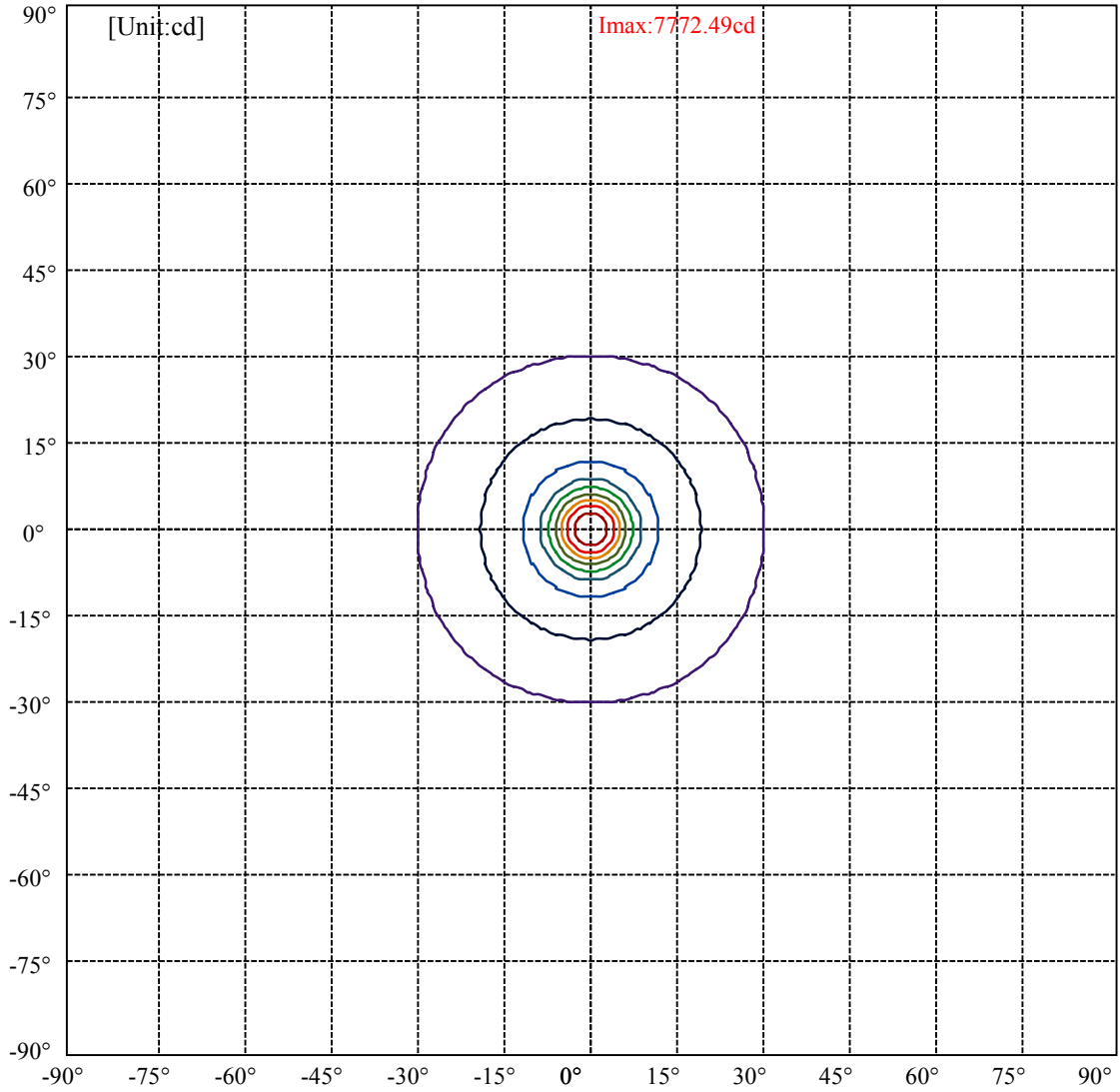
C90/C270: —————

Field angle(10%Imax):C0/180Left:29.8 Right:29.8
:C90/270Left:29.8 Right:29.8

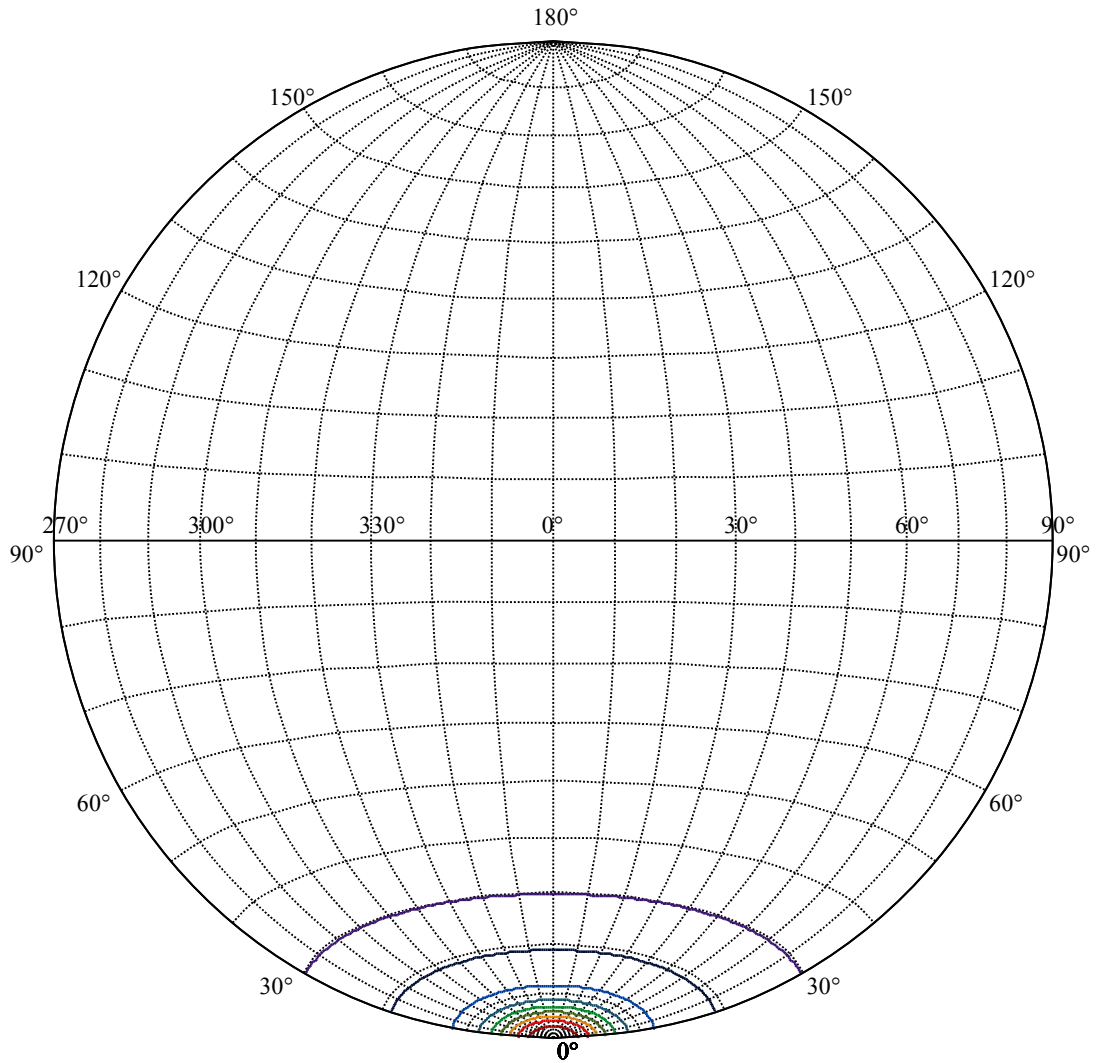
Beam Angle(50%Imax):C0/180Left:7.2 Right:7.2
:C90/270Left:7.2 Right:7.2



Max , Ave Beam angle of C0 plane 14.50



(10%Imax) 777.248	—
(20%Imax) 1554.5	—
(30%Imax) 2331.75	—
(40%Imax) 3108.99	—
(50%Imax) 3886.24	—
(60%Imax) 4663.49	—
(70%Imax) 5440.74	—
(80%Imax) 6217.99	—
(90%Imax) 6995.24	—



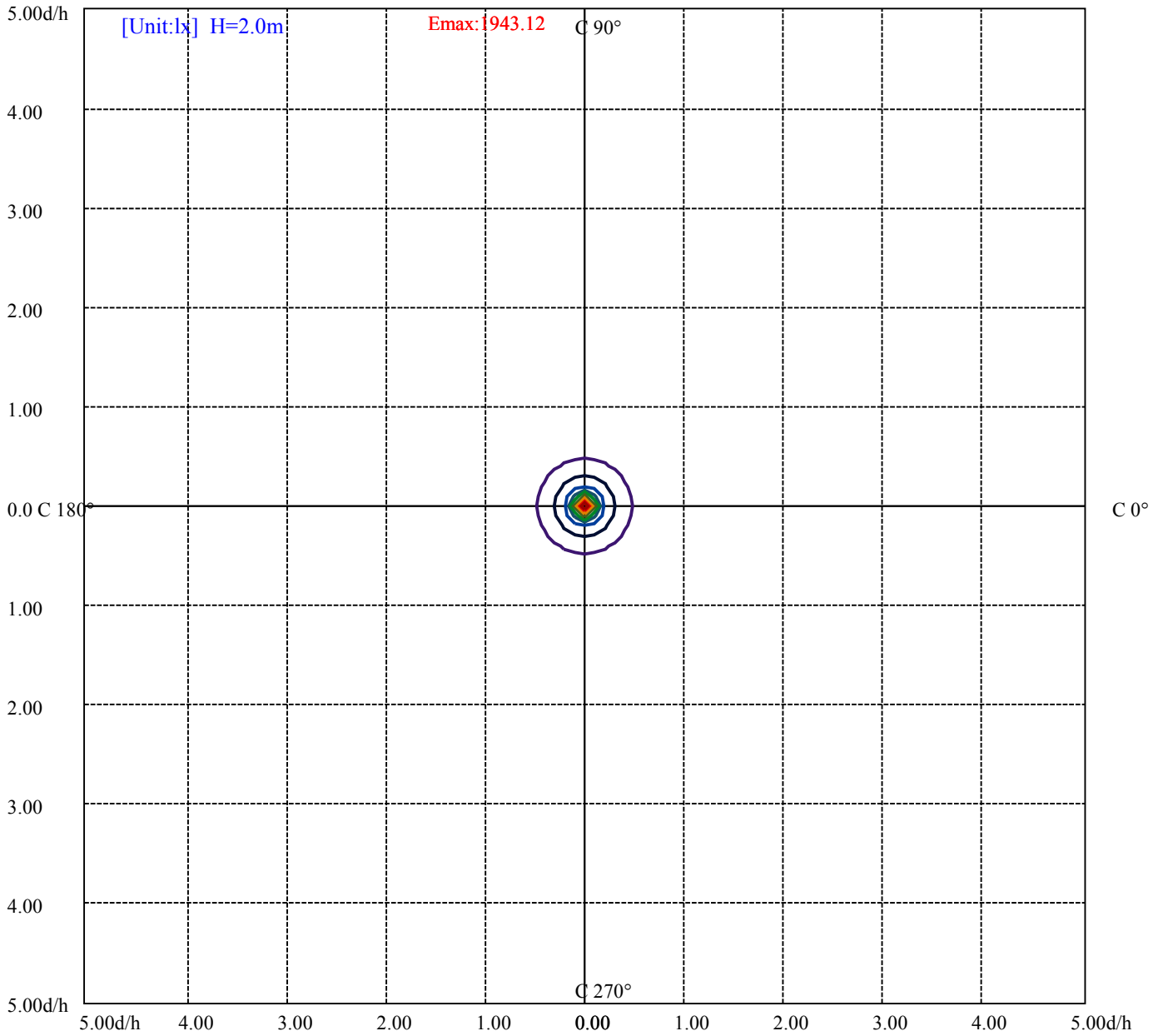
House

[Unit:cd]

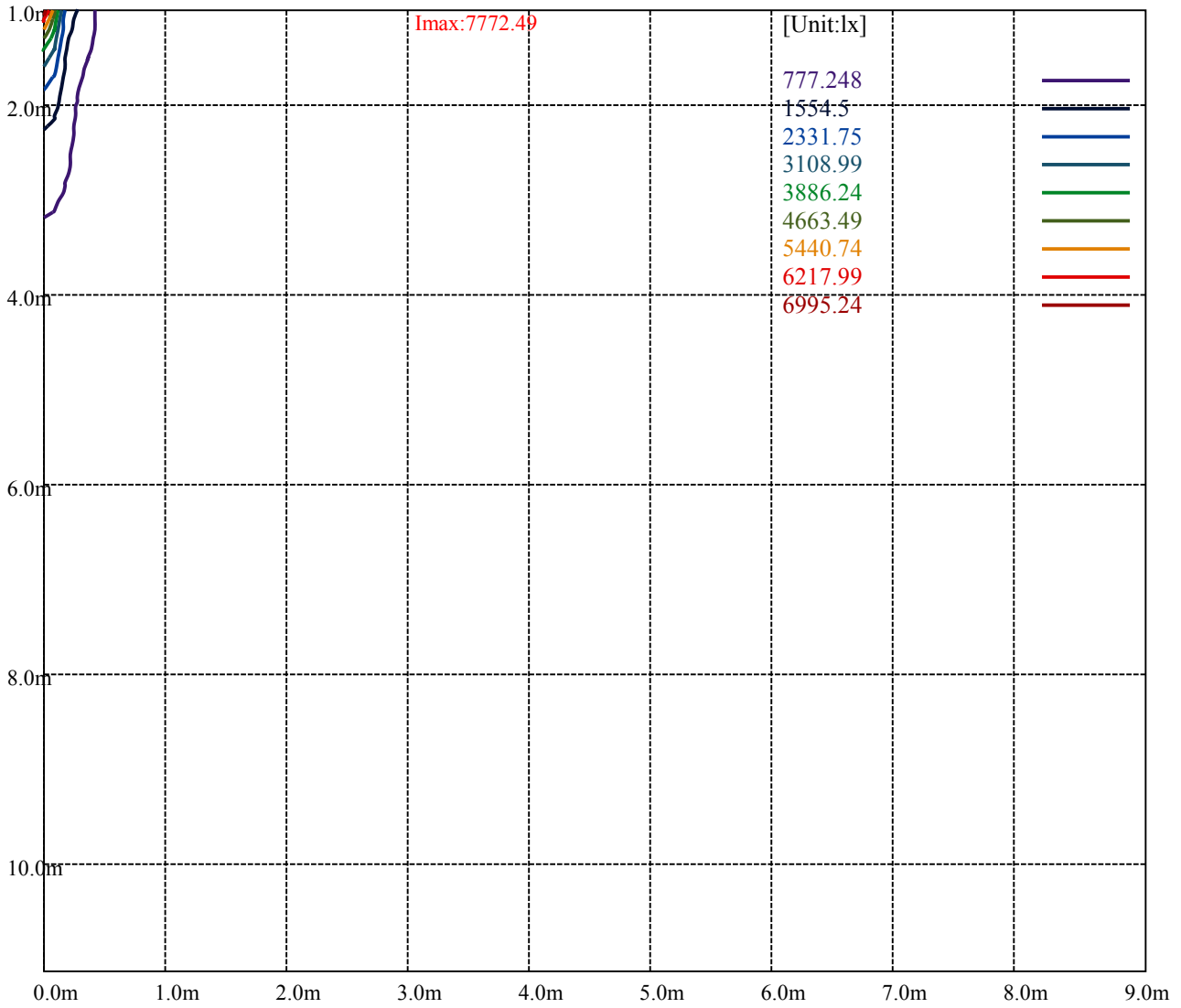
Road

Imax:7772.49

(10%Imax) 777.248	—
(20%Imax) 1554.5	—
(30%Imax) 2331.75	—
(40%Imax) 3108.99	—
(50%Imax) 3886.24	—
(60%Imax) 4663.49	—
(70%Imax) 5440.74	—
(80%Imax) 6217.99	—
(90%Imax) 6995.24	—



(10%Emax) 194.3118	—
(20%Emax) 388.6225	—
(30%Emax) 582.935	—
(40%Emax) 777.2475	—
(50%Emax) 971.56	—
(60%Emax) 1165.87	—
(70%Emax) 1360.182	—
(80%Emax) 1554.495	—
(90%Emax) 1748.807	—



Luminance Table

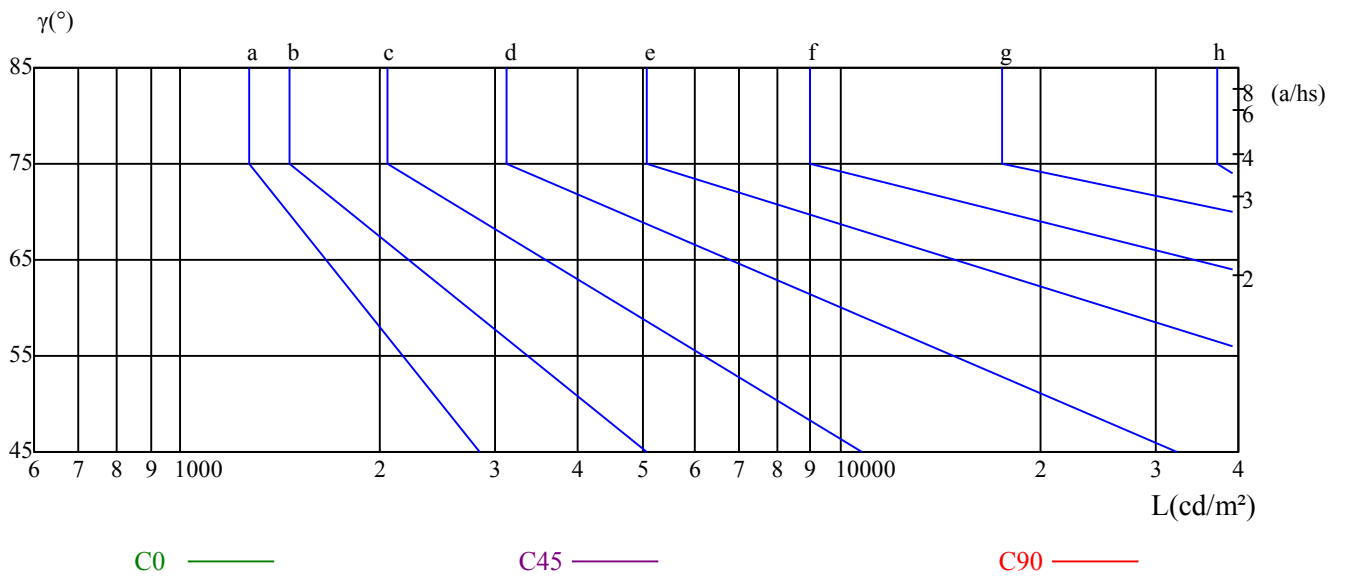
γ	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

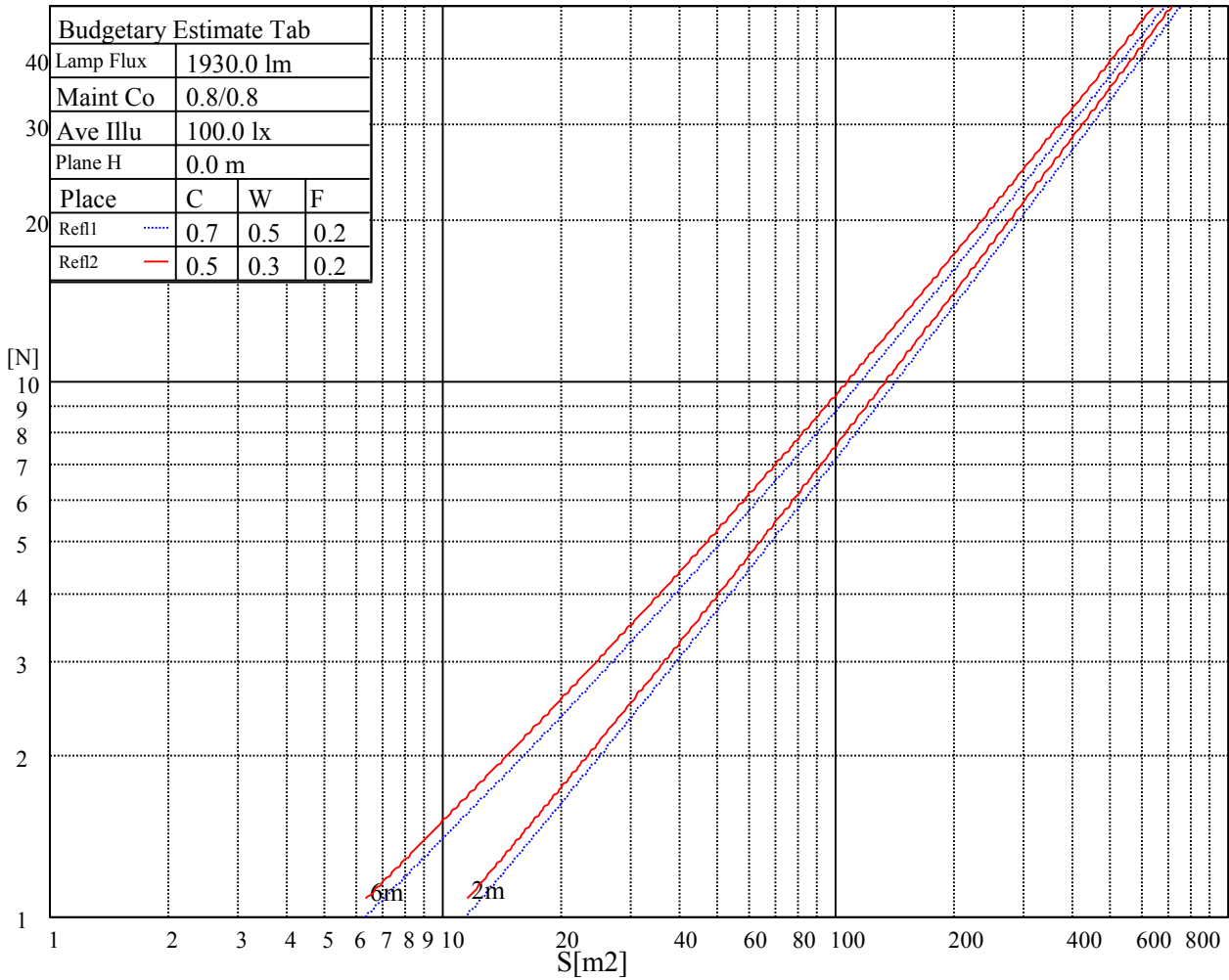
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

Glare Table

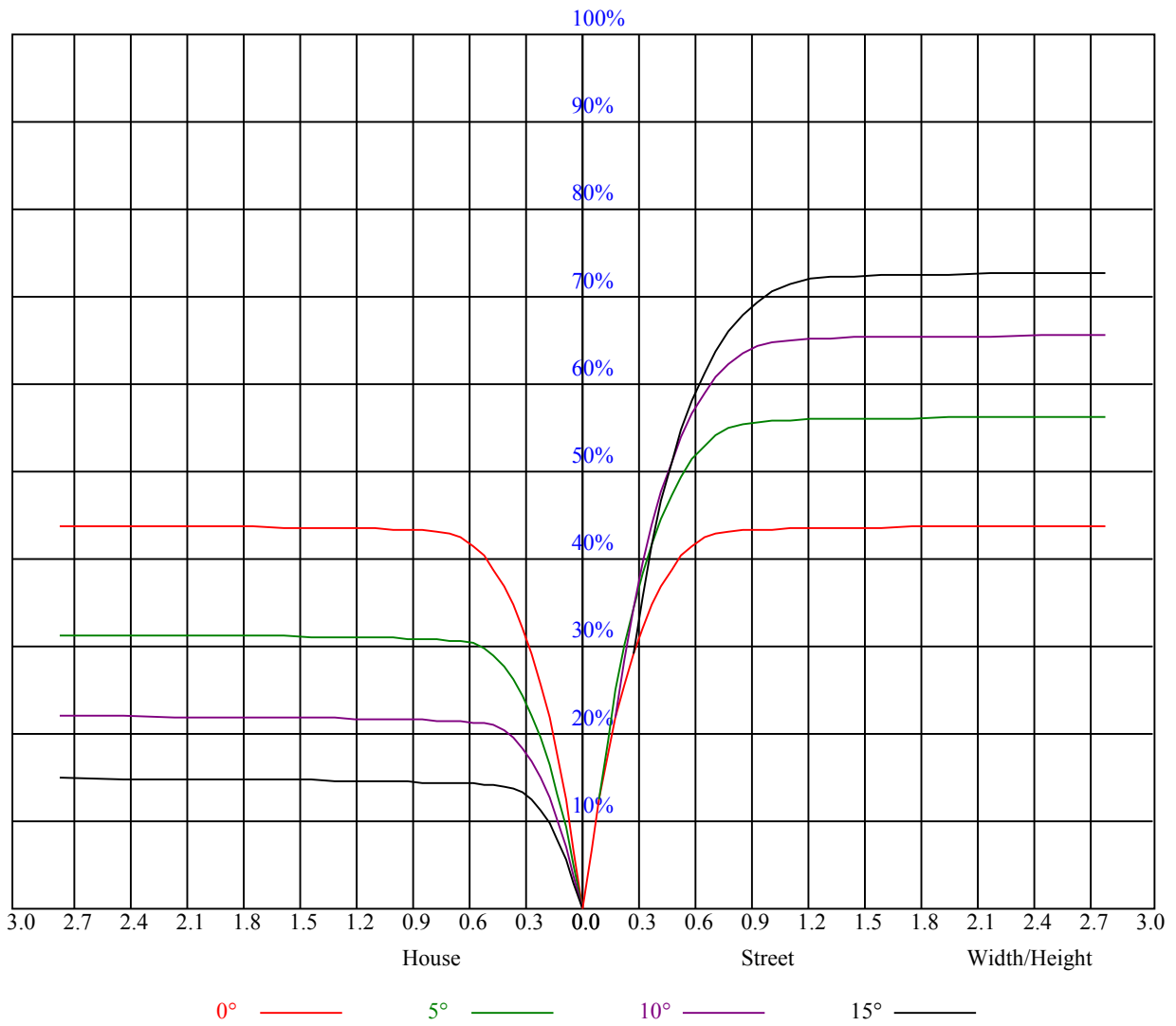
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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	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	0.88
1	0.98	0.96	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	0.88	0.86	0.84	0.86	0.84	0.82	0.83	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	0.75	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	0.61	0.59	0.65	0.61	0.59	0.64	0.61	0.58	0.57
10	0.64	0.60	0.57	0.63	0.59	0.57	0.63	0.59	0.56	0.62	0.59	0.56	0.62	0.58	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	7801.88	7666.88	7325.44	6838.31	6094.69	5353.31	4534.88	3811.50	3284.44
45.0	7795.69	7595.44	7122.94	6562.13	5875.31	5051.25	4264.88	3654.00	3119.06
90.0	7727.06	7502.63	6991.31	6398.44	5689.13	4767.75	4161.94	3489.75	2940.75
135.0	7765.31	7741.13	7468.88	7062.75	6483.38	5598.00	4853.25	4149.00	3482.44
180.0	7801.88	7738.88	7481.81	7013.25	6418.13	5710.50	4783.50	4099.50	3521.81
225.0	7795.69	7831.13	7665.19	7286.63	6761.25	6006.94	5182.88	4471.31	3760.88
270.0	7727.06	7794.56	7651.13	7337.81	6831.56	5983.31	5240.25	4523.63	3804.19
315.0	7765.31	7629.75	7273.69	6687.00	6017.63	5275.69	4464.00	3746.81	3225.94
360.0	7801.88	7666.88	7325.44	6838.31	6094.69	5353.31	4534.88	3811.50	3284.44
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	2853.00	2562.19	2387.81	2257.88	2125.69	2031.19	1939.50	1846.69	1731.38
45.0	2755.13	2536.88	2365.88	2247.19	2130.19	2022.19	1929.38	1834.31	1712.81
90.0	2676.94	2446.88	2273.06	2173.50	2071.69	1938.94	1854.00	1756.69	1648.13
135.0	2981.25	2669.63	2436.75	2291.63	2160.56	2046.38	1951.88	1846.13	1738.13
180.0	3027.38	2696.63	2500.31	2337.19	2204.44	2100.38	1987.88	1888.31	1775.25
225.0	3253.50	2838.94	2558.81	2386.69	2238.75	2114.44	2012.63	1910.25	1789.88
270.0	3227.63	2848.50	2555.44	2379.94	2234.25	2112.19	2011.50	1900.13	1791.56
315.0	2799.56	2520.00	2350.69	2210.06	2106.56	2001.94	1897.31	1802.81	1707.19
360.0	2853.00	2562.19	2387.81	2257.88	2125.69	2031.19	1939.50	1846.69	1731.38
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1641.38	1543.50	1450.69	1371.94	1294.88	1212.19	1132.88	1064.25	992.81
45.0	1617.19	1526.63	1419.75	1336.50	1264.50	1177.31	1095.19	1031.06	957.38
90.0	1543.50	1457.44	1367.44	1283.06	1212.19	1117.29	1068.47	998.78	940.95
135.0	1645.31	1562.63	1442.81	1362.94	1298.81	1202.63	1122.19	1065.94	984.94
180.0	1665.00	1573.88	1487.25	1385.44	1308.38	1234.69	1117.41	1076.74	1014.47
225.0	1700.44	1612.69	1509.19	1431.56	1355.06	1263.38	1194.19	1115.27	1052.83
270.0	1698.19	1604.81	1495.13	1413.56	1334.81	1251.56	1173.94	1108.13	1036.69
315.0	1591.31	1504.13	1420.88	1324.13	1250.44	1120.73	1104.81	1037.42	982.07
360.0	1641.38	1543.50	1450.69	1371.94	1294.88	1212.19	1132.88	1064.25	992.81
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	933.75	871.88	815.06	766.13	687.94	592.88	501.19	406.13	290.25
45.0	897.75	835.88	778.50	716.63	624.38	520.31	423.56	331.31	288.00
90.0	878.74	826.09	763.82	705.66	627.58	527.57	424.86	332.94	248.63
135.0	920.25	873.00	807.75	759.38	705.38	605.81	518.06	428.06	322.88
180.0	941.46	886.67	835.54	773.10	714.21	617.79	497.81	414.39	310.16
225.0	993.04	928.74	868.84	817.54	763.48	666.11	573.86	475.54	353.98
270.0	970.31	915.75	858.38	810.56	757.69	680.63	594.56	491.06	383.63
315.0	922.89	872.66	819.39	766.69	699.98	602.61	495.23	397.24	303.08
360.0	933.75	871.88	815.06	766.13	687.94	592.88	501.19	406.13	290.25
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	236.81	129.04	67.95	39.66	35.78	31.78	28.18	25.37	22.33
45.0	149.40	89.27	49.33	36.17	32.40	29.08	25.20	22.56	20.48
90.0	154.74	92.70	50.51	34.48	31.16	27.90	24.36	21.49	19.29
135.0	290.81	160.54	84.15	47.93	34.82	31.05	27.39	24.53	21.60
180.0	204.24	141.69	84.66	39.66	34.31	30.88	27.17	24.02	21.32
225.0	262.80	179.78	111.54	53.10	37.07	33.58	29.76	26.21	23.34
270.0	289.13	234.23	111.71	61.43	38.03	34.20	30.21	27.00	23.79
315.0	197.21	125.16	69.30	38.08	34.48	31.16	27.45	24.19	21.54
360.0	236.81	129.04	67.95	39.66	35.78	31.78	28.18	25.37	22.33

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	20.08	18.11	16.20	15.08	14.23	13.44	12.88	12.26	11.64
45.0	18.06	16.09	15.08	14.01	13.22	12.60	12.09	11.53	11.03
90.0	17.27	15.98	14.91	14.01	13.39	12.77	12.21	11.70	11.25
135.0	19.18	17.61	16.20	14.91	13.95	13.22	12.71	12.21	11.64
180.0	18.68	16.59	15.30	14.23	13.44	12.77	12.21	11.70	11.25
225.0	20.53	18.00	16.31	14.85	14.01	13.22	12.60	12.04	11.53
270.0	21.09	19.07	17.33	15.86	14.34	13.50	12.83	12.32	11.70
315.0	19.07	17.38	15.81	14.63	13.73	13.05	12.38	11.81	11.36
360.0	20.08	18.11	16.20	15.08	14.23	13.44	12.88	12.26	11.64
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	11.14	10.74	10.35	10.01	9.73	9.51	9.28	9.11	8.89
45.0	10.63	10.35	10.07	9.79	9.56	9.39	9.11	9.00	8.89
90.0	10.86	10.46	10.13	9.90	9.68	9.45	9.23	9.06	8.94
135.0	11.25	10.86	10.46	10.18	9.90	9.62	9.39	9.23	9.11
180.0	10.74	10.46	10.18	9.84	9.62	9.39	9.23	9.06	8.89
225.0	10.91	10.58	10.24	9.90	9.68	9.45	9.17	9.00	8.83
270.0	11.25	10.80	10.35	10.07	9.79	9.51	9.28	9.06	8.89
315.0	10.80	10.46	10.18	9.90	9.62	9.39	9.23	9.00	8.89
360.0	11.14	10.74	10.35	10.01	9.73	9.51	9.28	9.11	8.89
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	8.78	8.66	8.55	8.49	8.38	8.33	8.27	8.27	8.16
45.0	8.72	8.61	8.55	8.49	8.38	8.33	8.27	8.27	8.21
90.0	8.83	8.72	8.61	8.49	8.44	8.38	8.33	8.27	8.27
135.0	8.94	8.83	8.72	8.66	8.61	8.61	8.55	8.49	8.49
180.0	8.78	8.66	8.61	8.49	8.44	8.33	8.33	8.27	8.21
225.0	8.66	8.61	8.55	8.44	8.33	8.33	8.27	8.21	8.16
270.0	8.78	8.66	8.61	8.49	8.38	8.38	8.27	8.27	8.16
315.0	8.72	8.61	8.49	8.44	8.38	8.33	8.21	8.21	8.16
360.0	8.78	8.66	8.55	8.49	8.38	8.33	8.27	8.27	8.16
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	8.10	8.10	8.04	8.04	7.99	7.99	7.93	7.93	7.93
45.0	8.16	8.10	8.10	8.10	8.04	7.99	7.99	7.99	7.99
90.0	8.21	8.16	8.10	8.10	8.10	8.04	7.99	7.99	7.99
135.0	8.49	8.55	8.55	8.55	8.49	8.44	8.33	8.33	8.38
180.0	8.21	8.21	8.21	8.21	8.16	8.21	8.16	8.16	8.10
225.0	8.10	8.10	8.04	8.04	7.99	8.04	7.99	7.99	7.93
270.0	8.16	8.10	8.10	8.04	8.04	7.99	7.99	7.93	7.93
315.0	8.10	8.10	8.04	7.99	7.99	7.93	7.93	7.93	7.93
360.0	8.10	8.10	8.04	8.04	7.99	7.99	7.93	7.93	7.93
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	7.93	7.88	7.88	7.88	7.82	7.82	7.82	7.82	7.82
45.0	7.93	7.93	7.93	7.88	7.88	7.88	7.82	7.82	7.82
90.0	7.93	7.93	7.93	7.93	7.88	7.88	7.82	7.82	7.82
135.0	8.16	8.16	8.04	8.04	7.99	7.99	7.93	7.82	7.82
180.0	8.16	8.10	8.10	8.04	8.04	7.99	7.93	7.82	7.76
225.0	7.93	7.93	7.93	7.93	7.88	7.88	7.88	7.88	7.82
270.0	7.93	7.93	7.93	7.88	7.88	7.88	7.82	7.88	7.88
315.0	7.93	7.88	7.88	7.88	7.88	7.82	7.82	7.82	7.82
360.0	7.93	7.88	7.88	7.88	7.82	7.82	7.82	7.82	7.82

Intensity data(cd)

C/ γ ($^{\circ}$)	90.0
0.0	7.82
45.0	7.82
90.0	7.82
135.0	7.82
180.0	7.82
225.0	7.82
270.0	7.82
315.0	7.82
360.0	7.82