



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: 2-2158-A
Luminaire: 92.70.151.00+92.70.153.00
Report No: NATA0100
Test No: GC2020011304
LampCAT: CITIZEN LCN-C03A
Lamp flux(lm): 2216.0
Number of Lamps: 1
Length(mm): 0
Phm Type: C

Voltage(V): 33.8800
Current(A): 0.4970
Power (W): 16.8000
PF: 0.0000
Ballast type: DC
Width(mm): 0
Height(mm): 0

Photometric Results

Lumens(lm): 1844.44
Efficiency(%): 83.23%
Lumens(lm)/Power(W): 109.79
Central intensity(cd): 4776.188
Maximum intensity(cd): 4776.188
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=27.9
 [C90/270]Total=27.9
Field angle(10%Imax): [C0/180]Total=70.1
 [C90/270]Total=70.1
Maximum s/h(1/2): C0_180=0.47 C90_270=0.47
Maximum s/h(1/4): C0_180=0.50 C90_270=0.50
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 83.23%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.497%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	4776.188	0.000	0	.000%	.000%
1.0	4765.008	4.565	4.565	.206%	.248%
2.0	4717.758	13.611	18.176	.614%	.985%
3.0	4647.375	22.398	40.574	1.011%	2.200%
4.0	4552.102	30.794	71.368	1.390%	3.869%
5.0	4418.719	38.592	109.96	1.742%	5.962%
6.0	4250.039	45.557	155.516	2.056%	8.432%
7.0	4072.641	51.659	207.175	2.331%	11.232%
8.0	3866.625	56.820	263.995	2.564%	14.313%
9.0	3632.766	60.778	324.773	2.743%	17.608%
10.0	3377.320	63.439	388.212	2.863%	21.048%
11.0	3128.133	65.003	453.215	2.933%	24.572%
12.0	2873.953	65.611	518.826	2.961%	28.129%
13.0	2614.852	65.138	583.965	2.939%	31.661%
14.0	2373.188	63.846	647.811	2.881%	35.122%
15.0	2154.305	62.155	709.967	2.805%	38.492%
16.0	1960.805	60.298	770.264	2.721%	41.761%
17.0	1760.766	57.955	828.219	2.615%	44.903%
18.0	1599.680	55.406	883.626	2.500%	47.907%
19.0	1470.867	53.421	937.047	2.411%	50.804%
20.0	1338.314	51.416	988.463	2.320%	53.591%
21.0	1231.313	49.342	1037.805	2.227%	56.267%
22.0	1142.079	47.694	1085.499	2.152%	58.852%
23.0	1054.343	46.087	1131.586	2.080%	61.351%
24.0	985.922	44.608	1176.193	2.013%	63.770%
25.0	930.178	43.568	1219.761	1.966%	66.132%
26.0	877.486	42.670	1262.432	1.926%	68.445%
27.0	830.644	41.790	1304.221	1.886%	70.711%
28.0	790.559	41.045	1345.267	1.852%	72.936%
29.0	752.759	40.378	1385.644	1.822%	75.125%
30.0	714.192	39.607	1425.252	1.787%	77.273%
31.0	673.734	38.624	1463.876	1.743%	79.367%
32.0	626.885	37.261	1501.137	1.681%	81.387%
33.0	579.129	35.530	1536.666	1.603%	83.313%
34.0	533.130	33.660	1570.327	1.519%	85.138%
35.0	481.015	31.496	1601.822	1.421%	86.846%
36.0	431.571	29.057	1630.879	1.311%	88.421%
37.0	388.603	26.749	1657.629	1.207%	89.871%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	344.039	24.455	1682.083	1.104%	91.197%
39.0	293.941	21.776	1703.859	.983%	92.378%
40.0	257.295	19.225	1723.084	.868%	93.420%
41.0	215.473	16.835	1739.92	.760%	94.333%
42.0	173.102	14.118	1754.037	.637%	95.098%
43.0	142.109	11.676	1765.713	.527%	95.731%
44.0	115.137	9.709	1775.423	.438%	96.258%
45.0	91.603	7.945	1783.368	.359%	96.689%
46.0	72.436	6.415	1789.783	.289%	97.036%
47.0	56.292	5.120	1794.903	.231%	97.314%
48.0	43.066	4.017	1798.92	.181%	97.532%
49.0	32.435	3.101	1802.02	.140%	97.700%
50.0	23.513	2.333	1804.353	.105%	97.826%
51.0	18.120	1.761	1806.114	.079%	97.922%
52.0	15.166	1.428	1807.542	.064%	97.999%
53.0	13.816	1.261	1808.803	.057%	98.068%
54.0	13.254	1.193	1809.996	.054%	98.132%
55.0	12.909	1.168	1811.164	.053%	98.196%
56.0	12.565	1.151	1812.315	.052%	98.258%
57.0	12.185	1.132	1813.447	.051%	98.319%
58.0	11.869	1.112	1814.559	.050%	98.380%
59.0	11.503	1.093	1815.652	.049%	98.439%
60.0	11.159	1.071	1816.723	.048%	98.497%
61.0	10.758	1.046	1817.768	.047%	98.554%
62.0	10.463	1.023	1818.791	.046%	98.609%
63.0	10.146	1.002	1819.793	.045%	98.664%
64.0	9.837	0.981	1820.774	.044%	98.717%
65.0	9.577	0.961	1821.735	.043%	98.769%
66.0	9.352	0.944	1822.679	.043%	98.820%
67.0	9.211	0.933	1823.612	.042%	98.871%
68.0	9.035	0.924	1824.537	.042%	98.921%
69.0	8.937	0.917	1825.453	.041%	98.970%
70.0	8.866	0.914	1826.368	.041%	99.020%
71.0	8.810	0.914	1827.281	.041%	99.069%
72.0	8.761	0.914	1828.195	.041%	99.119%
73.0	8.712	0.914	1829.109	.041%	99.169%
74.0	8.684	0.915	1830.023	.041%	99.218%
75.0	8.627	0.915	1830.938	.041%	99.268%

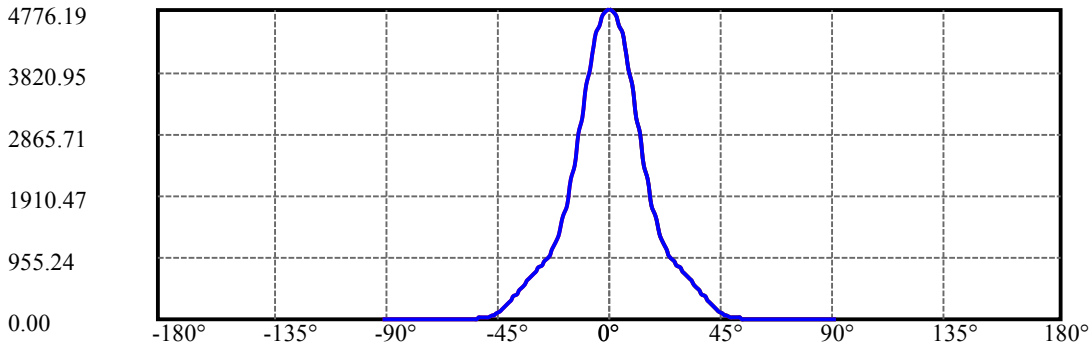
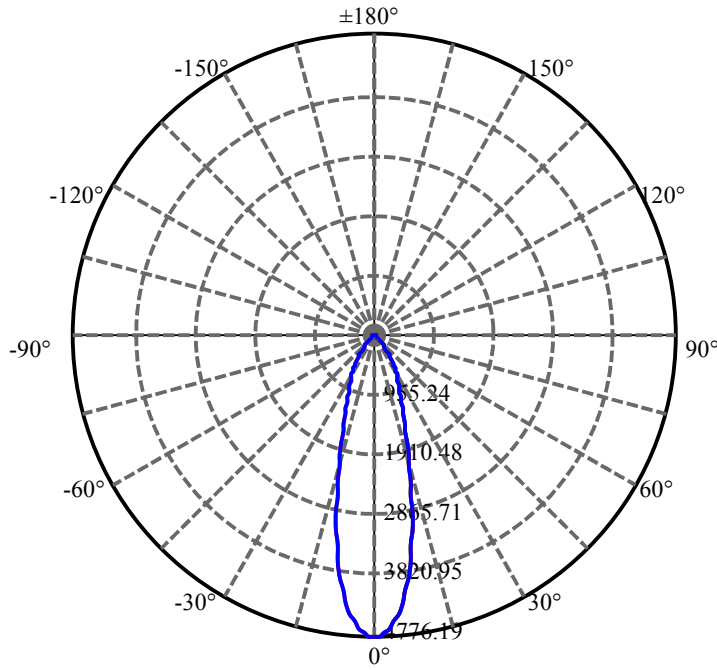
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	8.571	0.913	1831.851	.041%	99.317%
77.0	8.550	0.913	1832.764	.041%	99.367%
78.0	8.487	0.912	1833.676	.041%	99.416%
79.0	8.473	0.911	1834.587	.041%	99.466%
80.0	8.445	0.912	1835.499	.041%	99.515%
81.0	8.409	0.911	1836.41	.041%	99.564%
82.0	8.402	0.912	1837.322	.041%	99.614%
83.0	8.388	0.913	1838.235	.041%	99.663%
84.0	8.332	0.911	1839.146	.041%	99.713%
85.0	8.325	0.909	1840.055	.041%	99.762%
86.0	8.234	0.905	1840.96	.041%	99.811%
87.0	8.009	0.889	1841.849	.040%	99.859%
88.0	7.896	0.871	1842.72	.039%	99.907%
89.0	7.875	0.864	1843.584	.039%	99.953%
90.0	7.805	0.860	1844.444	.039%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1425.25	64.32%	77.27%
0-40	1723.08	77.76%	93.42%
0-60	1816.72	81.98%	98.50%
0-90	1843.58	83.19%	99.95%
0-120	1843.58	83.19%	99.95%
0-180	1844.44	83.23%	100.00%
60-90	27.93	1.26%	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%
0-31.31	1475.56	66.59%	80.00%

ZONAL LUMEN SUMMARY

0-10	388.21
10-20	600.25
20-30	436.79
30-40	297.83
40-50	81.27
50-60	12.37
60-70	9.65
70-80	9.13
80-90	8.09
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: —————

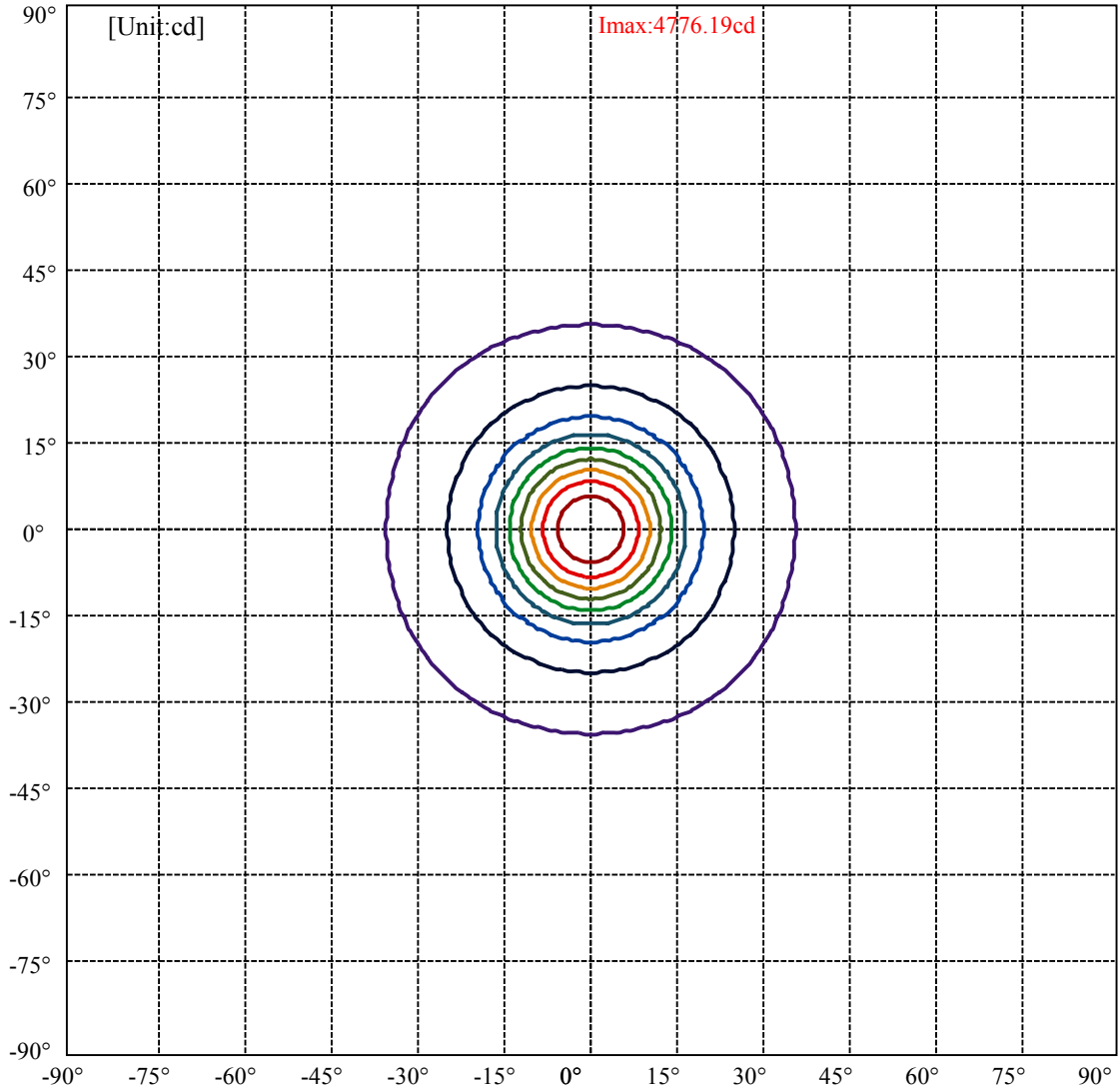
C90/C270: —————

Field angle(10%Imax):C0/180Left:35.1 Right:35.1

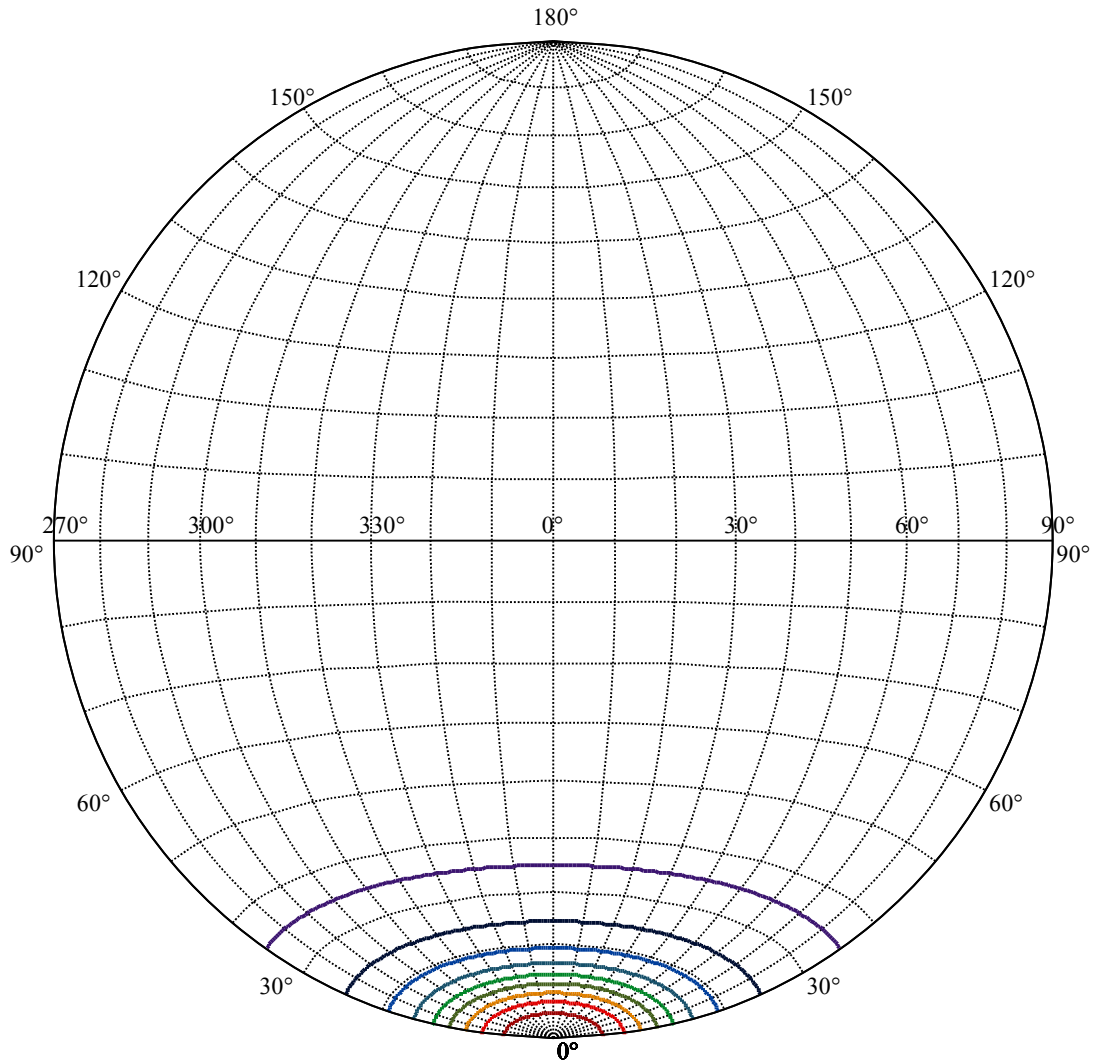
:C90/270Left:35.1 Right:35.1

Beam Angle(50%Imax):C0/180Left:13.9 Right:13.9

:C90/270Left:13.9 Right:13.9



(10%Imax) 477.619	—
(20%Imax) 955.237	—
(30%Imax) 1432.86	—
(40%Imax) 1910.47	—
(50%Imax) 2388.09	—
(60%Imax) 2865.71	—
(70%Imax) 3343.33	—
(80%Imax) 3820.95	—
(90%Imax) 4298.57	—



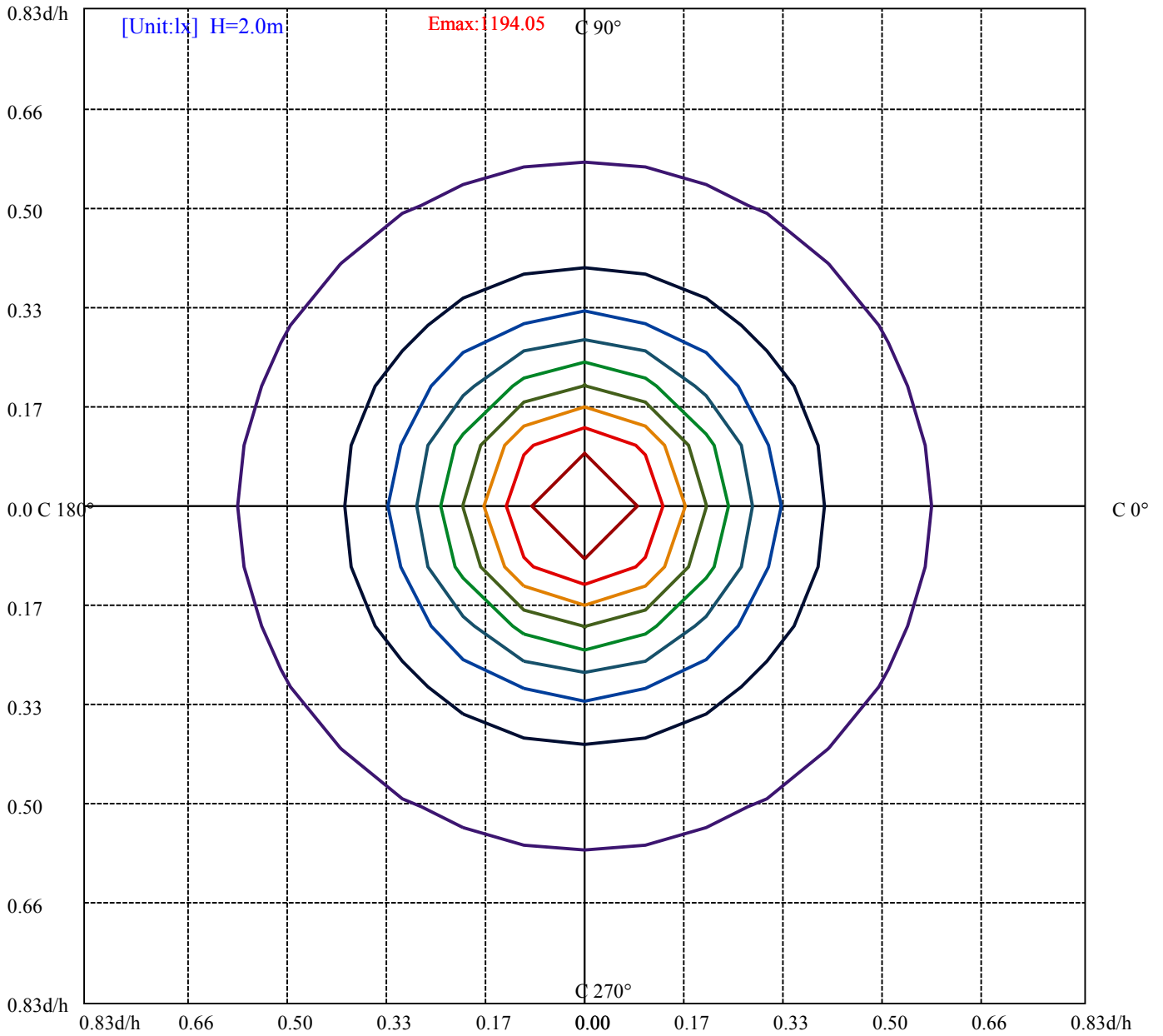
House

[Unit:cd]

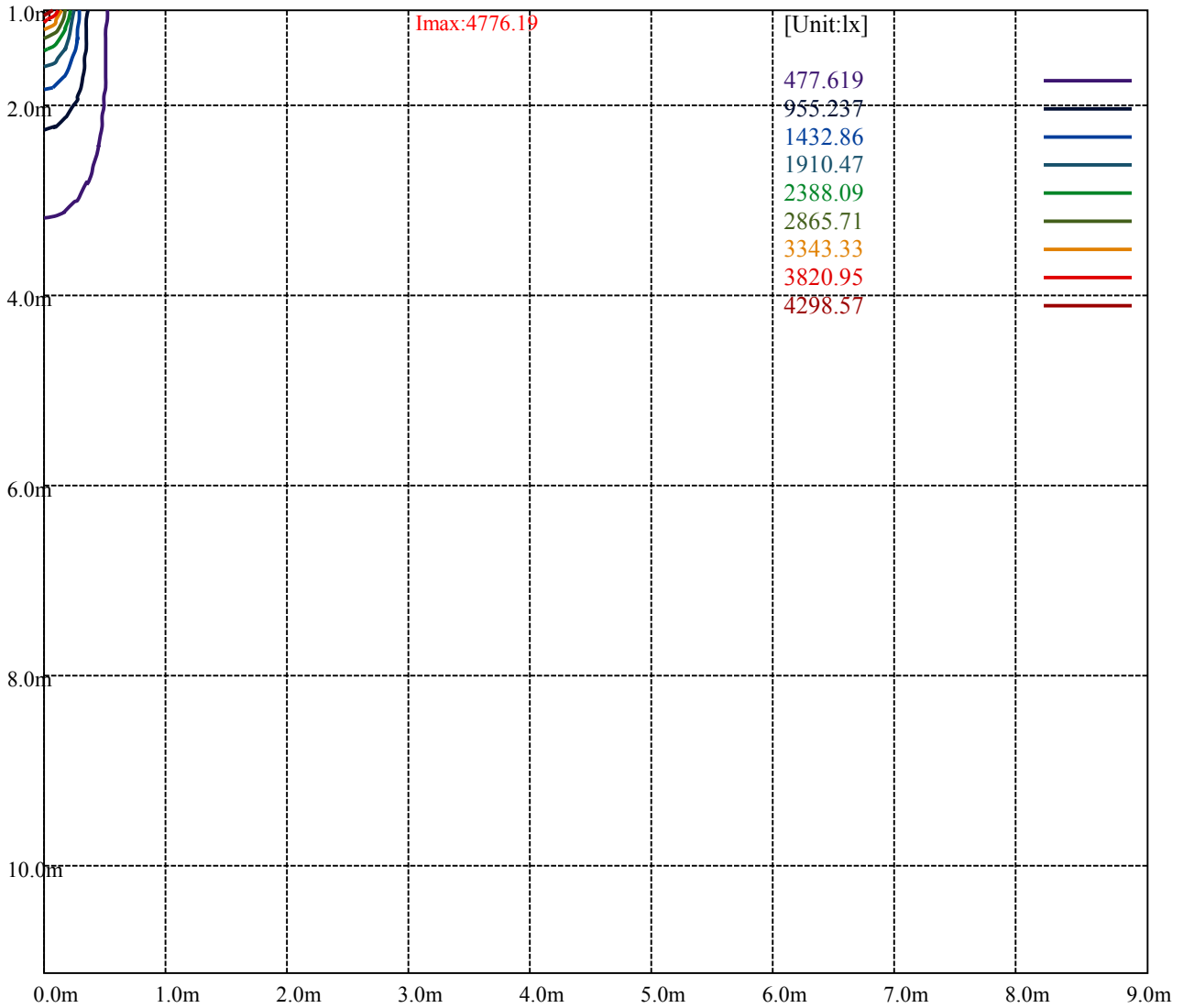
Road

Imax:4776.19

(10%Imax) 477.619	—
(20%Imax) 955.237	—
(30%Imax) 1432.86	—
(40%Imax) 1910.47	—
(50%Imax) 2388.09	—
(60%Imax) 2865.71	—
(70%Imax) 3343.33	—
(80%Imax) 3820.95	—
(90%Imax) 4298.57	—



- (10%Emax) 119.4047
- (20%Emax) 238.8092
- (30%Emax) 358.215
- (40%Emax) 477.6175
- (50%Emax) 597.0225
- (60%Emax) 716.4275
- (70%Emax) 835.8325
- (80%Emax) 955.2375
- (90%Emax) 1074.642



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

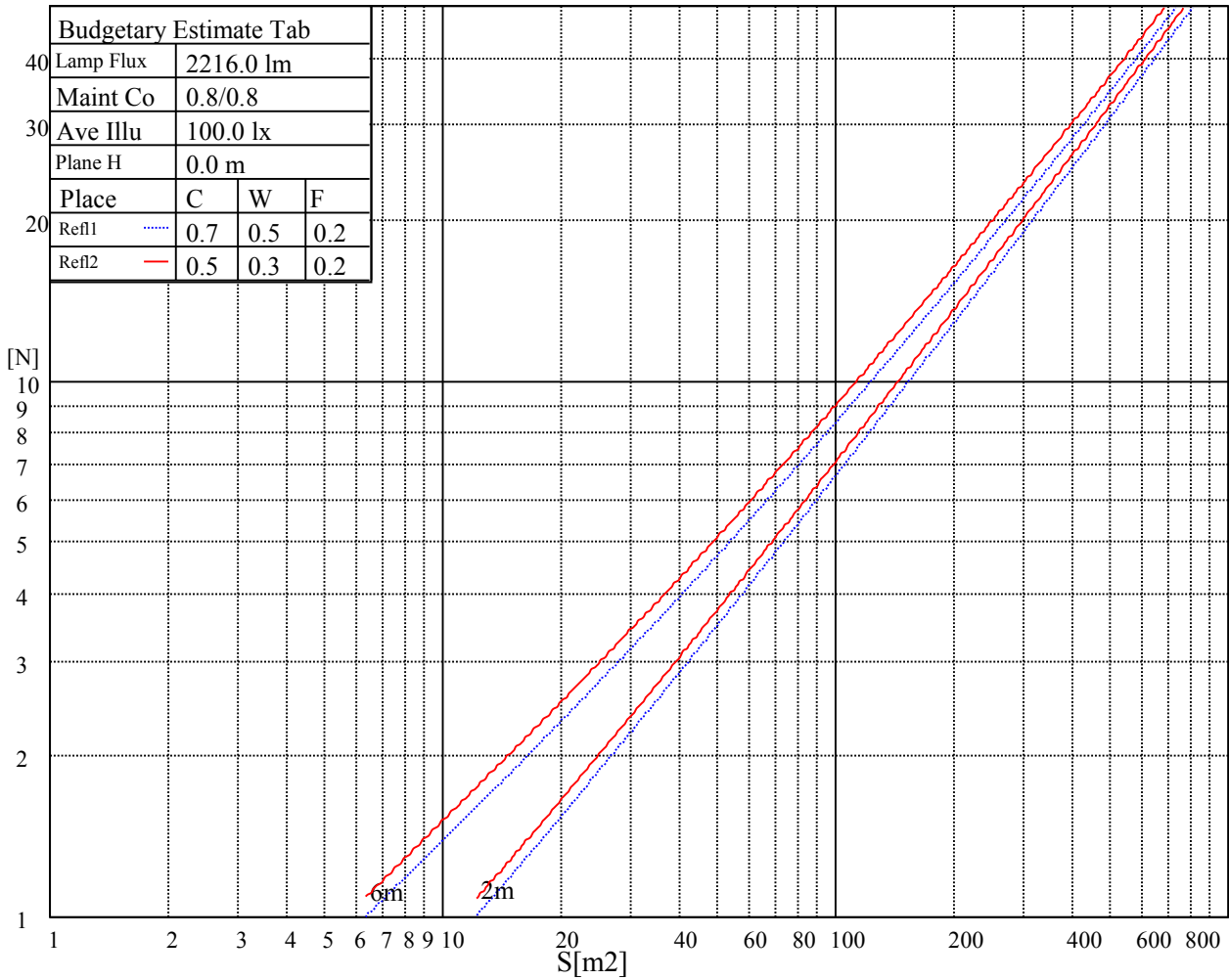
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

Glare Table

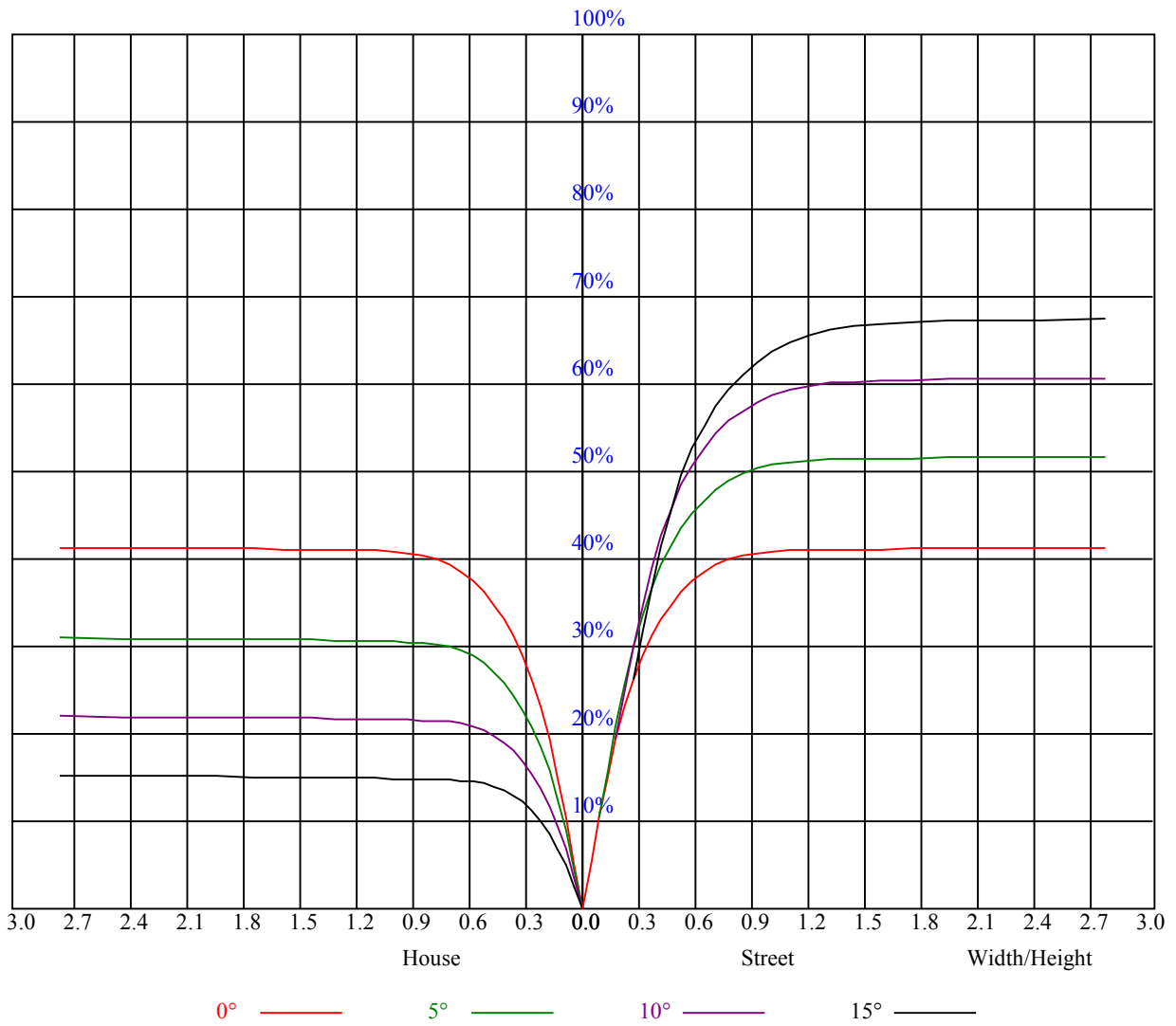
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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	0.99	0.99	0.99	0.97	0.97	0.97	0.92	0.92	0.92	0.89	0.89	0.89	0.85	0.85	0.85	0.83
1	0.93	0.91	0.89	0.91	0.89	0.87	0.87	0.86	0.85	0.84	0.83	0.82	0.81	0.81	0.80	0.78
2	0.87	0.84	0.81	0.85	0.82	0.80	0.83	0.80	0.78	0.80	0.78	0.77	0.78	0.76	0.75	0.74
3	0.82	0.78	0.75	0.80	0.77	0.74	0.78	0.75	0.73	0.76	0.74	0.72	0.75	0.73	0.71	0.70
4	0.77	0.73	0.70	0.76	0.72	0.69	0.74	0.71	0.68	0.73	0.70	0.68	0.71	0.69	0.67	0.66
5	0.73	0.69	0.65	0.72	0.68	0.65	0.71	0.67	0.64	0.69	0.66	0.64	0.68	0.66	0.63	0.62
6	0.69	0.65	0.62	0.69	0.64	0.61	0.67	0.64	0.61	0.66	0.63	0.61	0.65	0.62	0.60	0.59
7	0.66	0.61	0.58	0.65	0.61	0.58	0.64	0.61	0.58	0.63	0.60	0.58	0.63	0.60	0.57	0.56
8	0.63	0.58	0.55	0.62	0.58	0.55	0.62	0.58	0.55	0.61	0.57	0.55	0.60	0.57	0.55	0.54
9	0.60	0.56	0.53	0.60	0.55	0.53	0.59	0.55	0.52	0.58	0.55	0.52	0.58	0.54	0.52	0.51
10	0.58	0.53	0.50	0.57	0.53	0.50	0.57	0.53	0.50	0.56	0.52	0.50	0.55	0.52	0.50	0.49



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	4788.00	4725.00	4636.13	4533.75	4385.81	4205.25	4023.56	3799.13	3579.19
45.0	4785.19	4749.19	4658.06	4563.56	4465.13	4297.50	4113.00	3948.19	3692.81
90.0	4773.38	4754.81	4695.19	4623.19	4527.00	4404.94	4219.31	4046.06	3850.88
135.0	4758.19	4794.75	4799.25	4772.81	4714.31	4633.31	4514.06	4353.19	4187.81
180.0	4788.00	4820.06	4821.75	4783.50	4723.31	4629.94	4497.75	4334.63	4160.81
225.0	4785.19	4801.50	4786.88	4736.25	4655.25	4530.94	4381.88	4224.94	4024.13
270.0	4773.38	4768.88	4727.25	4667.06	4579.88	4443.75	4276.69	4106.25	3891.38
315.0	4758.19	4705.88	4617.56	4498.88	4366.13	4204.13	3974.06	3768.75	3546.00
360.0	4788.00	4725.00	4636.13	4533.75	4385.81	4205.25	4023.56	3799.13	3579.19
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	3322.13	3051.56	2815.31	2550.94	2297.25	2084.06	1890.00	1676.81	1530.56
45.0	3445.88	3215.81	2948.06	2712.38	2459.25	2219.63	2023.88	1847.81	1657.69
90.0	3609.56	3351.94	3116.25	2853.56	2595.94	2373.75	2140.31	1951.88	1762.31
135.0	3974.63	3731.06	3491.44	3246.19	2937.94	2694.38	2460.38	2241.56	1992.38
180.0	3935.81	3683.25	3446.44	3170.81	2925.56	2652.75	2393.44	2178.56	1982.81
225.0	3818.25	3564.56	3296.25	3054.38	2788.31	2534.06	2320.31	2119.50	1891.69
270.0	3678.19	3422.81	3155.06	2914.88	2649.38	2395.13	2183.06	2011.50	1771.88
315.0	3277.69	2997.56	2756.25	2488.50	2265.19	2031.75	1823.06	1658.81	1496.81
360.0	3322.13	3051.56	2815.31	2550.94	2297.25	2084.06	1890.00	1676.81	1530.56
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1404.56	1284.19	1179.56	1098.00	1018.69	951.19	897.75	845.44	803.81
45.0	1521.56	1400.63	1274.63	1182.38	1102.50	1020.38	950.06	898.88	846.56
90.0	1595.81	1464.75	1350.00	1224.00	1114.20	1058.46	976.28	919.86	870.86
135.0	1809.56	1646.44	1476.56	1352.25	1245.38	1151.44	1064.81	999.56	933.75
180.0	1760.63	1606.50	1475.44	1333.69	1235.81	1116.11	1053.68	990.90	934.93
225.0	1733.63	1596.38	1474.88	1341.56	1247.06	1119.54	1065.71	1002.60	947.25
270.0	1624.50	1510.31	1353.94	1253.25	1175.06	1078.88	1003.50	951.75	887.63
315.0	1347.19	1257.75	1121.51	1065.38	997.93	938.76	875.59	832.44	795.09
360.0	1404.56	1284.19	1179.56	1098.00	1018.69	951.19	897.75	845.44	803.81
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	762.75	726.75	691.31	651.94	596.81	548.44	498.38	438.19	391.50
45.0	805.50	763.88	726.75	686.81	635.06	581.06	533.25	482.06	421.88
90.0	823.39	782.16	748.01	707.18	668.53	621.51	571.05	524.98	471.71
135.0	883.69	835.88	795.94	762.19	727.31	689.06	650.81	613.69	553.50
180.0	875.64	839.87	799.43	759.38	730.41	687.88	636.86	600.86	560.70
225.0	892.13	845.44	807.64	768.21	730.86	684.17	636.47	593.89	551.81
270.0	843.75	806.06	763.31	728.44	693.56	646.31	603.56	557.44	497.81
315.0	758.31	724.44	689.68	649.41	607.33	556.65	502.65	453.94	399.21
360.0	762.75	726.75	691.31	651.94	596.81	548.44	498.38	438.19	391.50
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	348.19	308.25	284.06	225.23	194.34	161.61	132.58	110.19	88.82
45.0	376.31	334.13	290.25	262.46	213.98	177.92	145.35	119.70	95.63
90.0	419.12	372.26	326.31	271.07	229.56	191.59	150.64	122.85	99.79
135.0	506.81	465.19	405.56	353.25	314.44	286.88	214.93	180.39	146.42
180.0	513.28	472.78	431.04	382.67	332.89	288.62	240.30	195.64	160.93
225.0	499.78	456.98	411.86	353.76	309.04	264.54	217.52	174.99	142.31
270.0	448.88	398.81	345.38	293.63	288.00	205.99	167.79	137.98	109.29
315.0	340.20	300.43	257.85	209.48	176.12	146.64	115.71	95.12	77.91
360.0	348.19	308.25	284.06	225.23	194.34	161.61	132.58	110.19	88.82

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	70.99	57.38	44.16	34.03	25.09	19.13	16.43	15.47	14.63
45.0	77.57	60.75	46.13	35.27	25.37	17.83	13.84	12.32	11.64
90.0	76.44	61.43	48.83	37.01	28.07	20.25	14.85	12.38	11.53
135.0	120.77	97.14	76.95	61.88	47.81	35.72	27.23	21.15	17.49
180.0	127.35	102.83	79.93	61.26	47.64	35.04	26.33	19.74	17.33
225.0	110.76	85.05	66.21	48.88	35.94	24.41	16.48	12.94	11.76
270.0	87.81	67.50	50.85	38.31	27.84	18.28	13.95	12.09	11.25
315.0	61.14	47.42	37.29	27.90	21.71	17.44	15.86	15.24	14.91
360.0	70.99	57.38	44.16	34.03	25.09	19.13	16.43	15.47	14.63
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	14.12	13.56	12.94	12.32	11.93	11.36	10.86	10.41	10.01
45.0	11.42	11.25	11.14	10.91	10.80	10.58	10.35	10.13	9.96
90.0	11.14	10.97	10.80	10.69	10.58	10.41	10.29	10.13	9.96
135.0	16.48	15.81	15.30	14.57	14.06	13.39	12.71	12.09	11.53
180.0	16.31	15.86	15.30	14.79	14.12	13.56	12.94	12.15	11.64
225.0	11.14	10.97	10.80	10.69	10.63	10.52	10.41	10.24	10.13
270.0	11.08	10.97	10.86	10.74	10.63	10.52	10.46	10.29	10.13
315.0	14.34	13.89	13.39	12.77	12.21	11.70	11.25	10.63	10.35
360.0	14.12	13.56	12.94	12.32	11.93	11.36	10.86	10.41	10.01
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	9.73	9.34	9.11	8.94	8.89	8.78	8.72	8.66	8.66
45.0	9.79	9.56	9.39	9.23	9.17	8.94	8.89	8.78	8.72
90.0	9.73	9.56	9.45	9.28	9.17	9.00	8.89	8.89	8.78
135.0	11.03	10.58	10.13	9.73	9.51	9.23	9.11	9.06	9.00
180.0	11.08	10.58	10.07	9.68	9.39	9.11	8.94	8.89	8.83
225.0	9.90	9.73	9.56	9.39	9.23	9.11	8.94	8.83	8.78
270.0	9.96	9.79	9.51	9.39	9.23	9.06	8.94	8.89	8.78
315.0	9.96	9.56	9.39	9.17	9.11	9.06	9.06	8.94	8.94
360.0	9.73	9.34	9.11	8.94	8.89	8.78	8.72	8.66	8.66
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	8.61	8.55	8.55	8.44	8.44	8.38	8.33	8.27	8.21
45.0	8.66	8.61	8.55	8.49	8.44	8.38	8.33	8.33	8.33
90.0	8.66	8.66	8.61	8.55	8.49	8.44	8.38	8.38	8.33
135.0	9.00	8.89	8.89	8.83	8.78	8.78	8.72	8.72	8.66
180.0	8.83	8.78	8.78	8.72	8.66	8.66	8.55	8.55	8.49
225.0	8.72	8.66	8.61	8.55	8.49	8.44	8.44	8.38	8.38
270.0	8.72	8.66	8.61	8.61	8.49	8.49	8.38	8.38	8.38
315.0	8.89	8.89	8.89	8.83	8.78	8.83	8.78	8.78	8.78
360.0	8.61	8.55	8.55	8.44	8.44	8.38	8.33	8.27	8.21
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	8.16	8.16	8.10	8.04	8.04	7.99	7.88	7.76	7.71
45.0	8.27	8.27	8.27	8.21	8.16	8.10	8.04	7.93	7.93
90.0	8.33	8.33	8.27	8.27	8.21	8.16	7.99	7.93	7.93
135.0	8.61	8.61	8.55	8.49	8.44	8.44	8.21	7.93	7.88
180.0	8.44	8.38	8.38	8.33	8.33	8.33	7.93	7.88	7.88
225.0	8.33	8.33	8.38	8.38	8.38	8.38	8.04	7.99	7.99
270.0	8.38	8.38	8.38	8.38	8.33	8.33	8.04	7.93	7.93
315.0	8.78	8.78	8.78	8.55	8.72	8.16	7.93	7.82	7.76
360.0	8.16	8.16	8.10	8.04	8.04	7.99	7.88	7.76	7.71

Intensity data(cd)

C/γ(°)	90.0
0.0	7.71
45.0	7.82
90.0	7.82
135.0	7.82
180.0	7.82
225.0	7.88
270.0	7.82
315.0	7.76
360.0	7.71