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Nata

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LumCAT: 4-2273-M  
Luminaire: 92.70.135.00  
Report No: NATA0100  
Test No: GC2018062607  
LampCAT: NICHIA NFCWJ120B-V3  
Lamp flux(lm): 2280.0  
Number of Lamps: 1  
Length(mm): 100  
Phm Type: C

Voltage(V): 33.5000  
Current(A): 0.5000  
Power (W): 16.7500  
PF: 0.0000  
Ballast type: DC  
Width(mm): 100  
Height(mm): 0

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Photometric Results

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Lumens(lm): 2013.08  
Efficiency(%): 88.29%  
Lumens(lm)/Power(W): 120.54  
Central intensity(cd): 25503.500  
Maximum intensity(cd): 25503.500  
Angle of maximum intensity: C=0.0  $\gamma$ =0.0  
Beam Angle(50%Imax): [C0/180]Total=10.8  
                                  [C90/270]Total=10.8  
Field angle(10%Imax): [C0/180]Total=22.1  
                                  [C90/270]Total=22.1  
Maximum s/h(1/2): C0\_180=0.19 C90\_270=0.19  
Maximum s/h(1/4): C0\_180=0.19 C90\_270=0.19  
Up flux rate of lamp(%): 0.00%  
Down flux rate of lamp(%): 88.56%  
Up flux rate of LUM(%): - -  
Down flux rate of LUM(%): 100.00%  
CIE Type : Direct lighting  
Output flux ratio in  $\pi$  solid angle : 98.403%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	25503.502	6.102	6.102	.268%	.303%
1.0	25045.846	47.934	54.035	2.102%	2.684%
2.0	23489.125	89.895	143.931	3.943%	7.150%
3.0	20999.887	120.523	264.454	5.286%	13.137%
4.0	18044.047	138.029	402.483	6.054%	19.993%
5.0	13924.383	133.083	535.566	5.837%	26.604%
6.0	10844.803	124.311	659.876	5.452%	32.779%
7.0	8361.071	111.740	771.616	4.901%	38.330%
8.0	6215.936	94.867	866.483	4.161%	43.043%
9.0	4567.204	78.349	944.832	3.436%	46.935%
10.0	3440.130	65.508	1010.341	2.873%	50.189%
11.0	2564.734	53.665	1064.006	2.354%	52.854%
12.0	2116.093	48.246	1112.252	2.116%	55.251%
13.0	1577.848	38.923	1151.175	1.707%	57.185%
14.0	1271.631	33.736	1184.911	1.480%	58.860%
15.0	1092.195	30.999	1215.91	1.360%	60.400%
16.0	1007.567	30.455	1246.365	1.336%	61.913%
17.0	933.454	29.928	1276.293	1.313%	63.400%
18.0	882.747	29.914	1306.207	1.312%	64.886%
19.0	852.597	30.439	1336.646	1.335%	66.398%
20.0	828.475	31.073	1367.719	1.363%	67.941%
21.0	808.070	31.756	1399.476	1.393%	69.519%
22.0	792.034	32.537	1432.012	1.427%	71.135%
23.0	775.524	33.230	1465.242	1.457%	72.786%
24.0	760.398	33.916	1499.158	1.488%	74.471%
25.0	747.927	34.662	1533.82	1.520%	76.193%
26.0	736.359	35.398	1569.219	1.553%	77.951%
27.0	725.547	36.121	1605.34	1.584%	79.745%
28.0	715.967	36.860	1642.2	1.617%	81.576%
29.0	704.674	37.464	1679.664	1.643%	83.437%
30.0	693.146	38.006	1717.669	1.667%	85.325%
31.0	683.250	38.590	1756.259	1.693%	87.242%
32.0	669.692	38.917	1795.176	1.707%	89.175%
33.0	638.172	38.115	1833.291	1.672%	91.069%
34.0	581.987	35.688	1868.979	1.565%	92.842%
35.0	493.464	31.038	1900.017	1.361%	94.383%
36.0	389.097	25.080	1925.098	1.100%	95.629%
37.0	304.193	20.075	1945.173	.881%	96.626%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	199.579	13.474	1958.647	.591%	97.296%
39.0	98.021	6.765	1965.412	.297%	97.632%
40.0	47.982	3.382	1968.794	.148%	97.800%
41.0	25.051	1.802	1970.596	.079%	97.889%
42.0	18.939	1.390	1971.986	.061%	97.958%
43.0	15.147	1.133	1973.119	.050%	98.015%
44.0	12.264	0.934	1974.053	.041%	98.061%
45.0	10.213	0.792	1974.845	.035%	98.100%
46.0	10.007	0.789	1975.634	.035%	98.140%
47.0	9.821	0.788	1976.422	.035%	98.179%
48.0	9.676	0.789	1977.211	.035%	98.218%
49.0	9.545	0.790	1978.001	.035%	98.257%
50.0	9.415	0.791	1978.792	.035%	98.296%
51.0	9.298	0.792	1979.584	.035%	98.336%
52.0	9.201	0.795	1980.379	.035%	98.375%
53.0	9.105	0.797	1981.176	.035%	98.415%
54.0	9.002	0.799	1981.975	.035%	98.455%
55.0	8.947	0.804	1982.779	.035%	98.495%
56.0	8.878	0.807	1983.586	.035%	98.535%
57.0	8.823	0.811	1984.397	.036%	98.575%
58.0	8.761	0.815	1985.212	.036%	98.615%
59.0	8.720	0.820	1986.032	.036%	98.656%
60.0	8.678	0.824	1986.856	.036%	98.697%
61.0	8.651	0.830	1987.685	.036%	98.738%
62.0	8.616	0.834	1988.52	.037%	98.780%
63.0	8.589	0.839	1989.359	.037%	98.821%
64.0	8.561	0.844	1990.203	.037%	98.863%
65.0	8.541	0.849	1991.052	.037%	98.905%
66.0	8.520	0.854	1991.905	.037%	98.948%
67.0	8.492	0.857	1992.762	.038%	98.990%
68.0	8.479	0.862	1993.624	.038%	99.033%
69.0	8.465	0.867	1994.491	.038%	99.076%
70.0	8.465	0.872	1995.363	.038%	99.120%
71.0	8.444	0.876	1996.239	.038%	99.163%
72.0	8.444	0.881	1997.12	.039%	99.207%
73.0	8.437	0.885	1998.004	.039%	99.251%
74.0	8.424	0.888	1998.892	.039%	99.295%
75.0	8.431	0.893	1999.785	.039%	99.339%

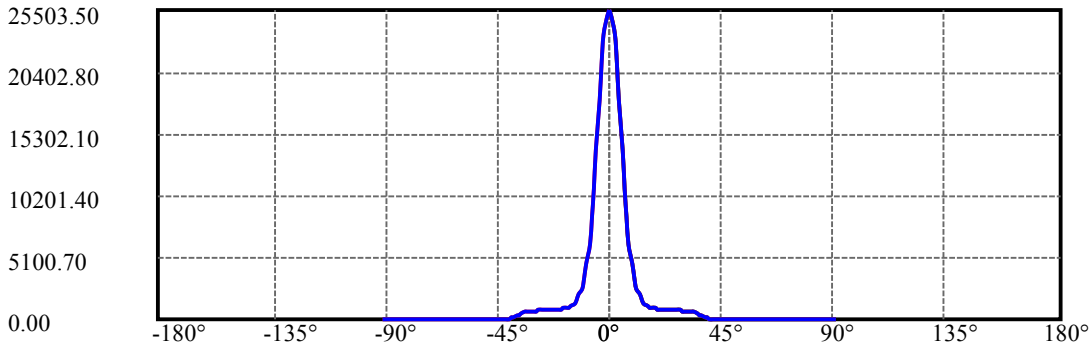
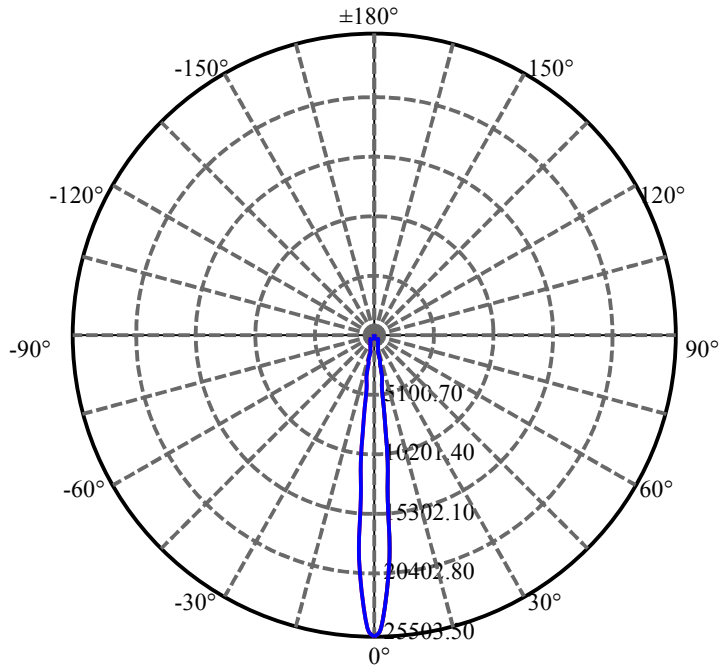
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	8.431	0.897	2000.682	.039%	99.384%
77.0	8.458	0.904	2001.586	.040%	99.429%
78.0	8.492	0.911	2002.497	.040%	99.474%
79.0	8.554	0.921	2003.418	.040%	99.520%
80.0	8.582	0.927	2004.345	.041%	99.566%
81.0	8.541	0.925	2005.27	.041%	99.612%
82.0	8.513	0.924	2006.194	.041%	99.658%
83.0	8.486	0.924	2007.118	.041%	99.704%
84.0	8.465	0.923	2008.041	.040%	99.749%
85.0	8.465	0.925	2008.966	.041%	99.795%
86.0	8.437	0.923	2009.889	.040%	99.841%
87.0	8.369	0.916	2010.805	.040%	99.887%
88.0	8.314	0.911	2011.716	.040%	99.932%
89.0	8.320	0.912	2012.629	.040%	99.977%
90.0	8.320	0.456	2013.085	.020%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1717.67	75.34%	85.33%
0-40	1968.79	86.35%	97.80%
0-60	1986.86	87.14%	98.70%
0-90	2012.63	88.27%	99.98%
0-120	2012.63	88.27%	99.98%
0-180	2013.08	88.29%	100.00%
60-90	26.60	1.17%	1.32%
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%
0-27.14	1610.47	70.63%	80.00%

ZONAL LUMEN SUMMARY

0-10	1010.34
10-20	357.38
20-30	349.95
30-40	251.13
40-50	10.00
50-60	8.06
60-70	8.51
70-80	8.98
80-90	8.28
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



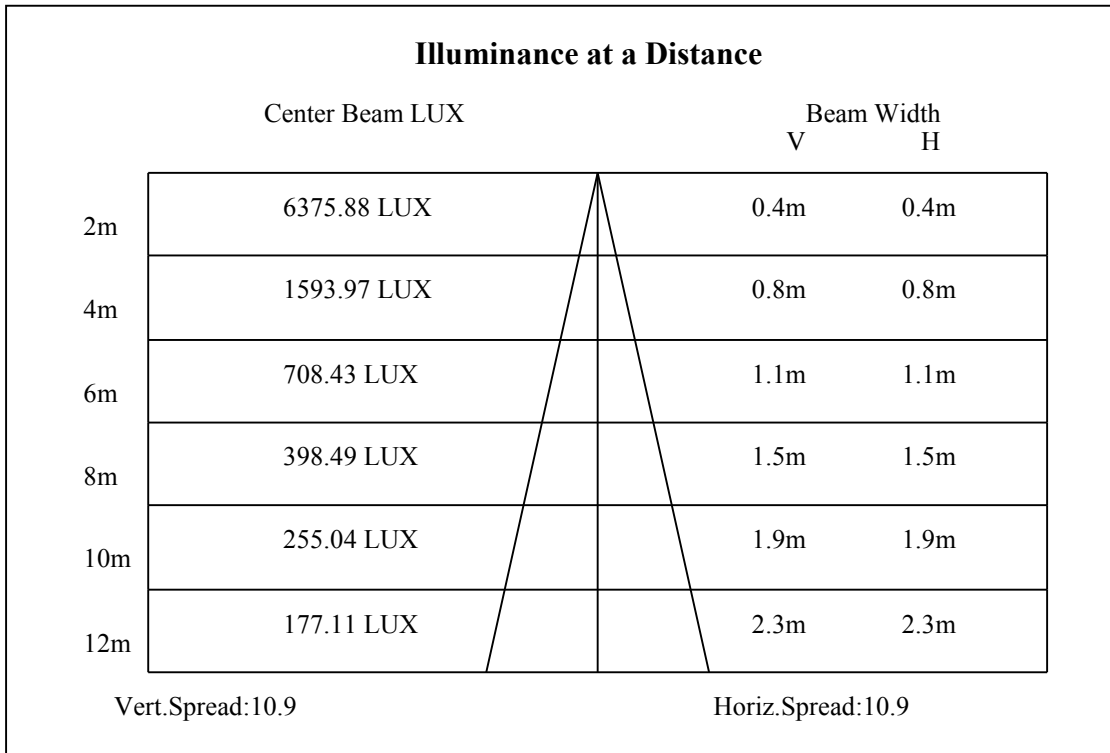
C0(Max): —————

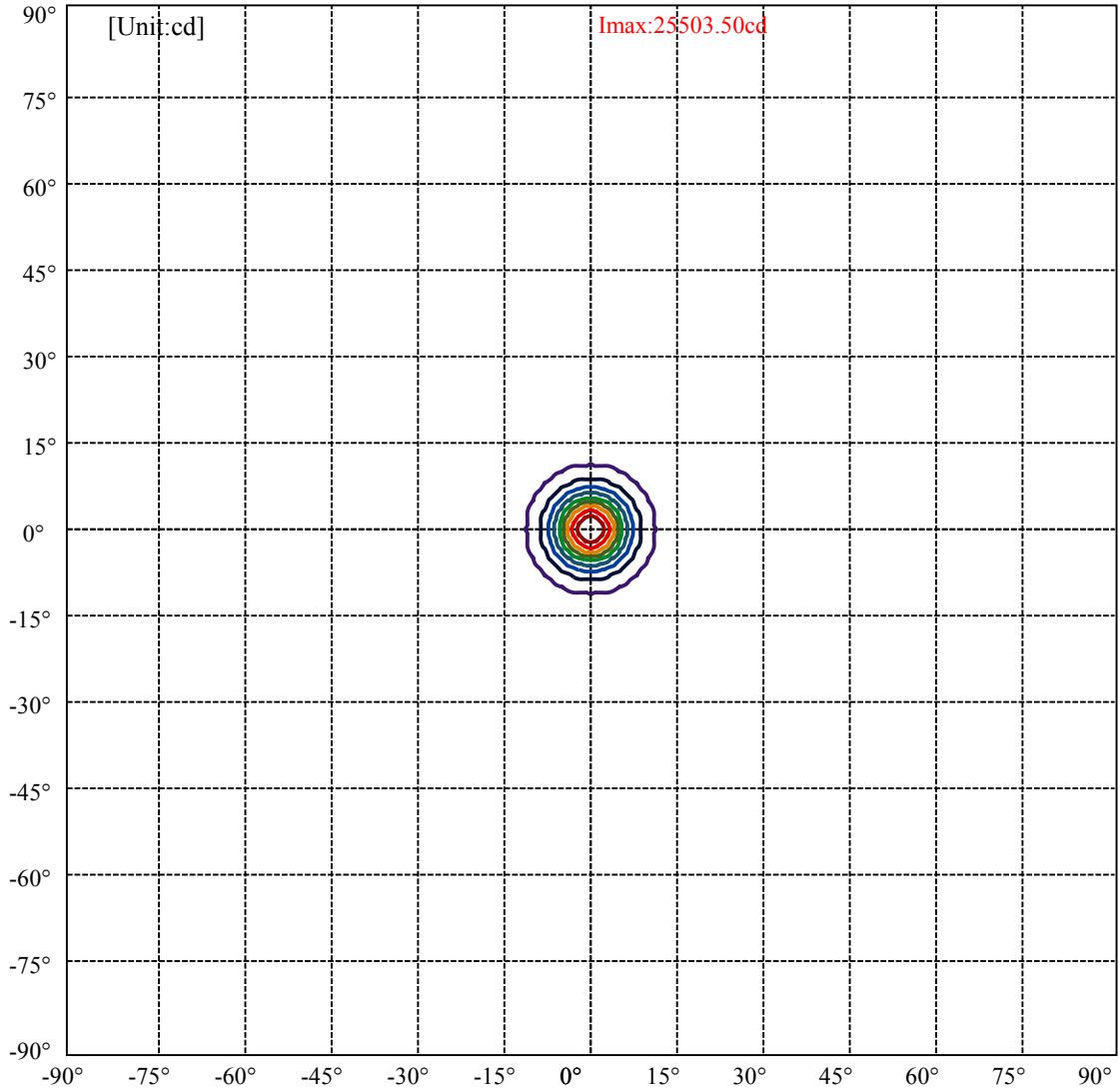
C0/C180: —————

C90/C270: —————

Field angle(10%Imax):C0/180Left:11.0 Right:11.0  
:C90/270Left:11.0 Right:11.0

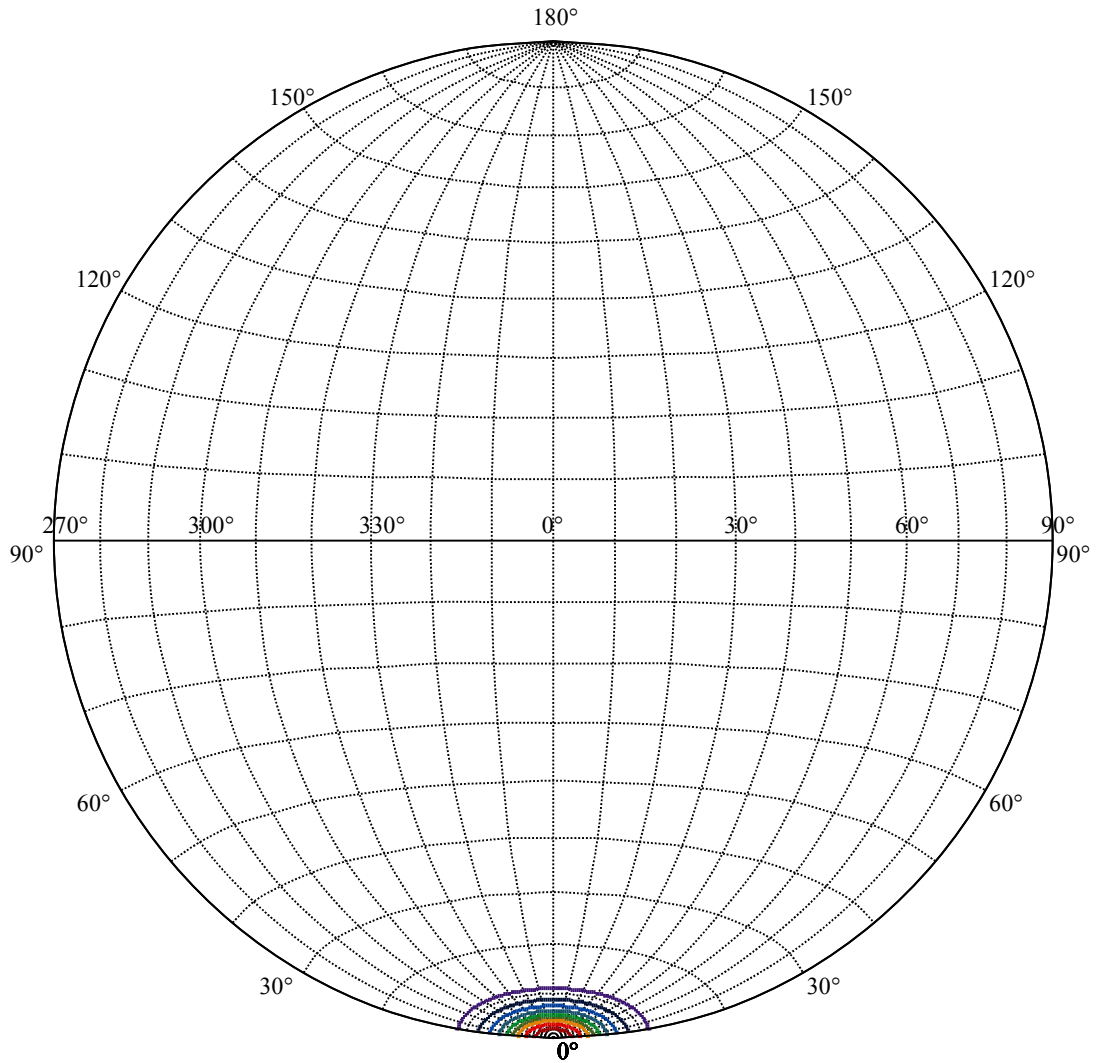
Beam Angle(50%Imax):C0/180Left:5.4 Right:5.4  
:C90/270Left:5.4 Right:5.4





(10%Imax) 2550.35	—
(20%Imax) 5100.7	—
(30%Imax) 7651.05	—
(40%Imax) 10201.4	—
(50%Imax) 12751.8	—
(60%Imax) 15302.1	—
(70%Imax) 17852.4	—
(80%Imax) 20402.8	—
(90%Imax) 22953.2	—





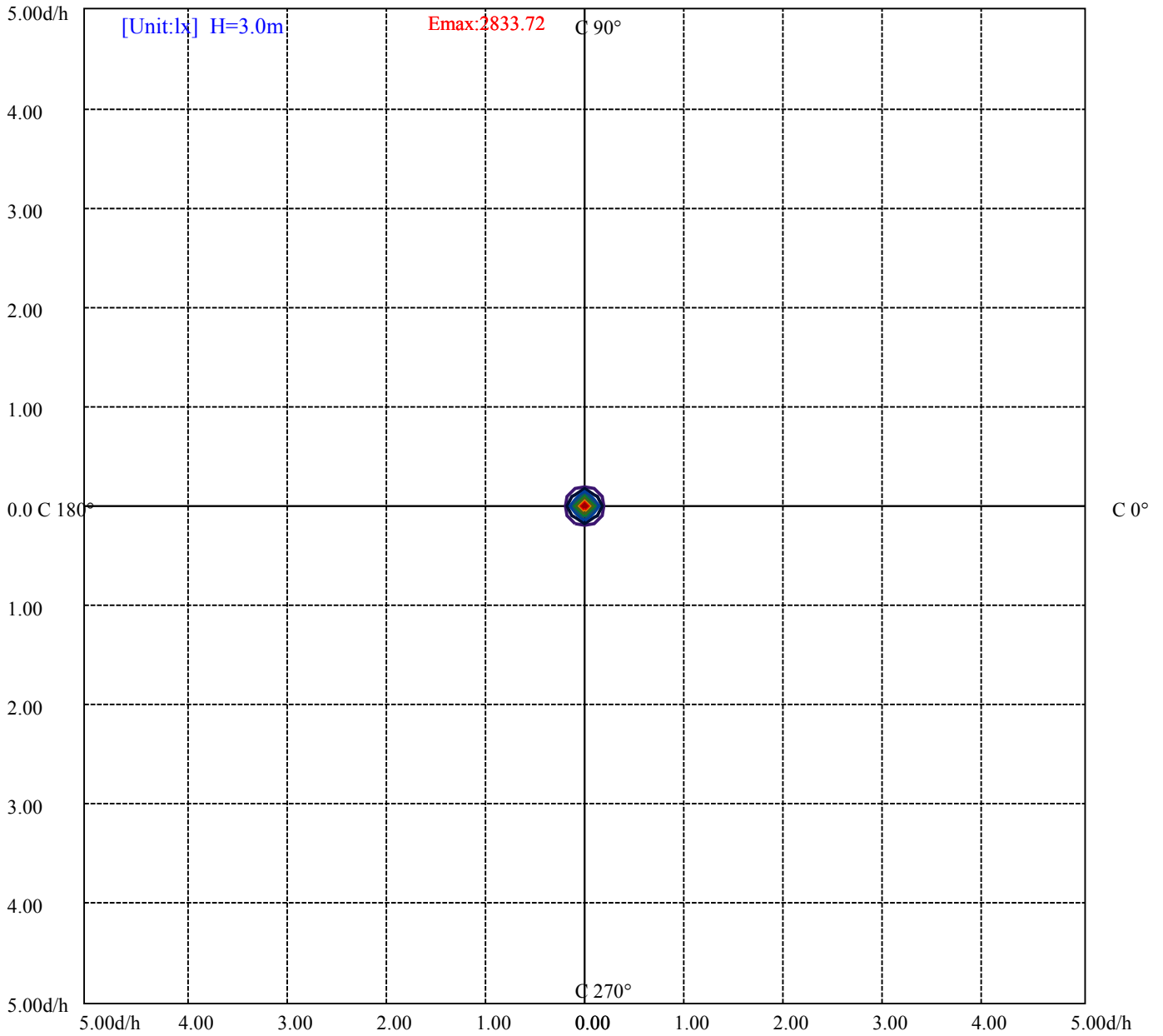
House

[Unit:cd]

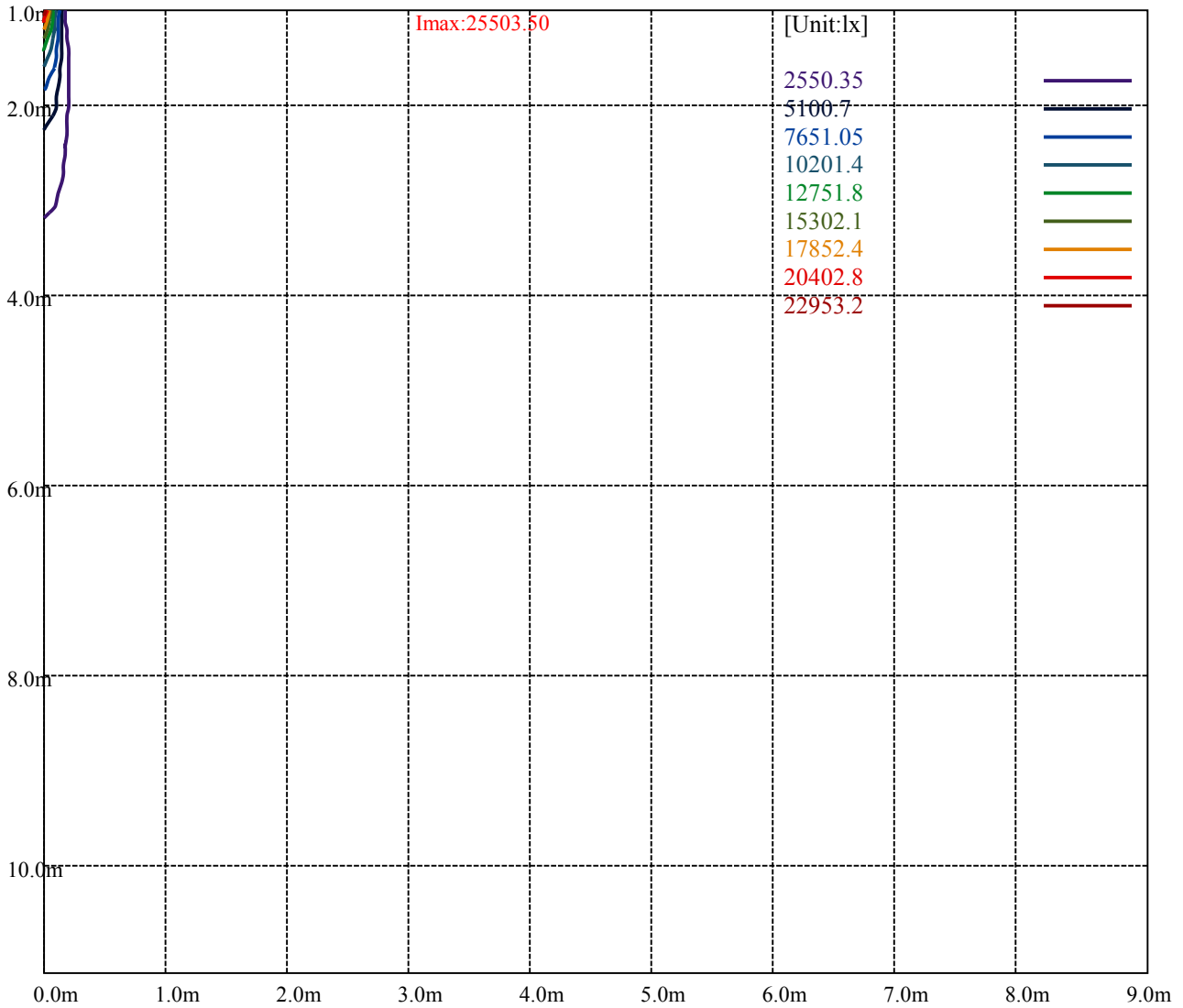
Road

**Imax:25503.50**

(10%Imax) 2550.35	—
(20%Imax) 5100.7	—
(30%Imax) 7651.05	—
(40%Imax) 10201.4	—
(50%Imax) 12751.8	—
(60%Imax) 15302.1	—
(70%Imax) 17852.4	—
(80%Imax) 20402.8	—
(90%Imax) 22953.2	—



- (10%Emax) 283.3711
- (20%Emax) 566.7433
- (30%Emax) 850.1144
- (40%Emax) 1133.489
- (50%Emax) 1416.856
- (60%Emax) 1700.233
- (70%Emax) 1983.6
- (80%Emax) 2266.967
- (90%Emax) 2550.344



Luminance Table

$\gamma$	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

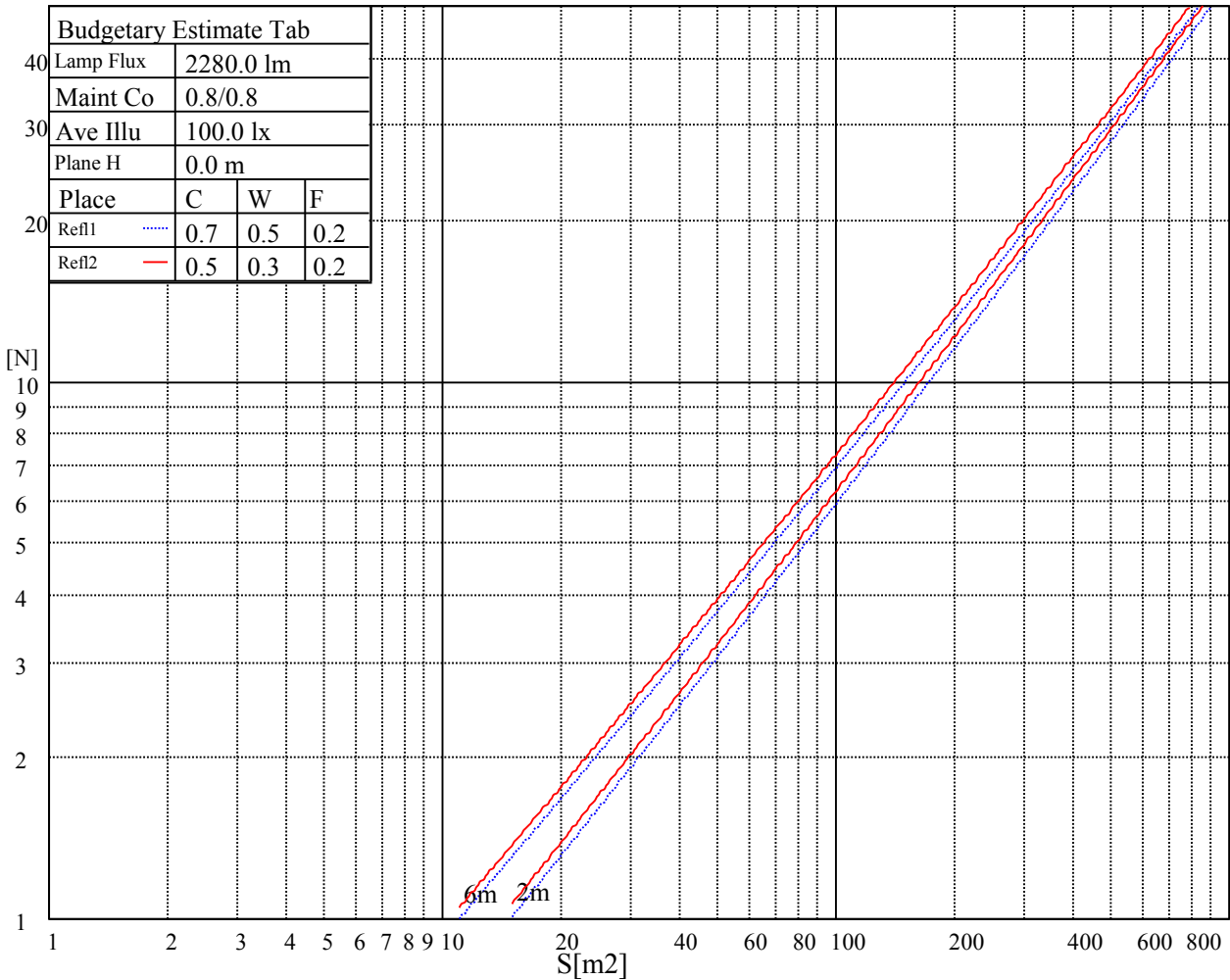
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

Glare Table

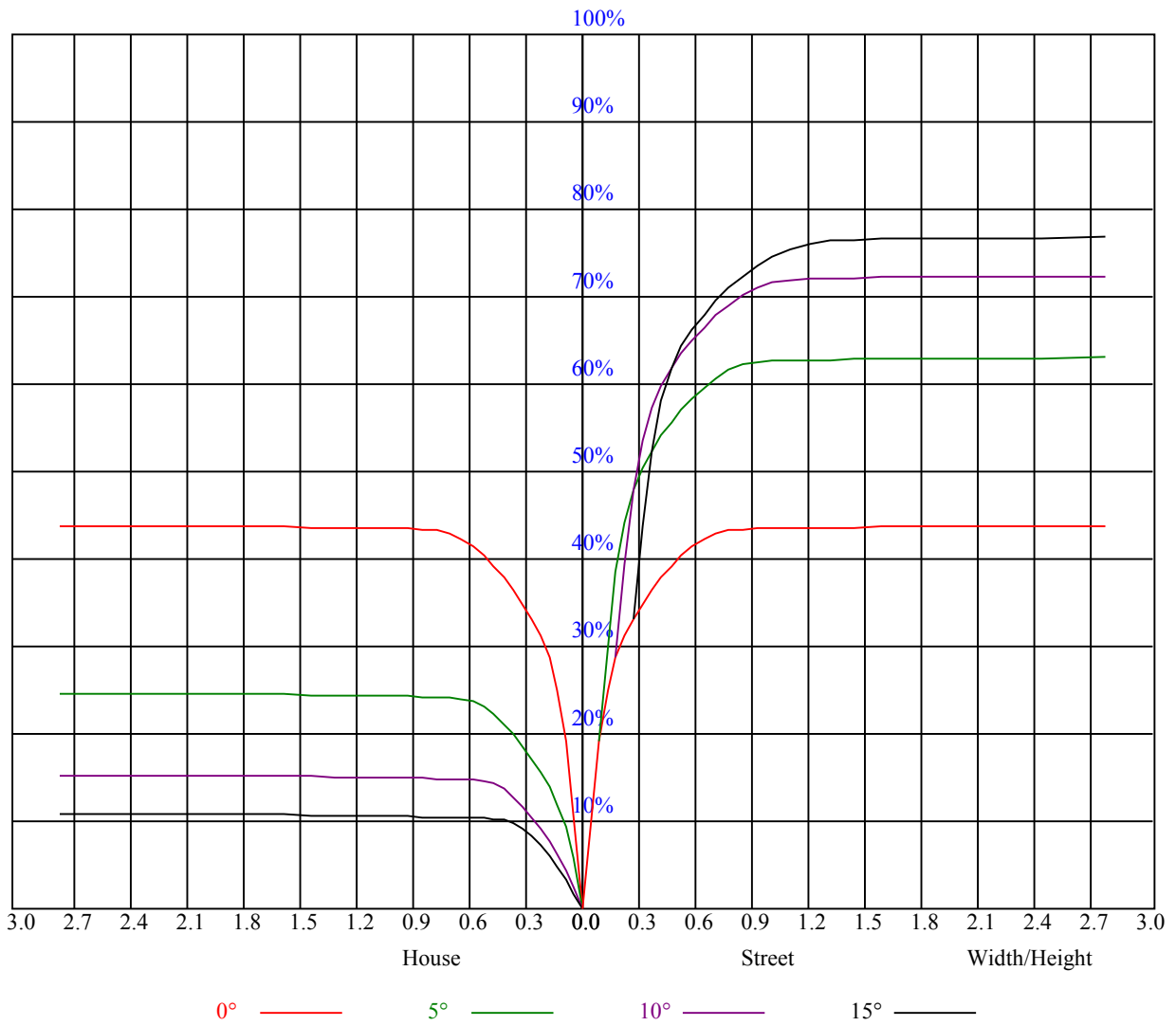
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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	0.89
1	0.99	0.97	0.96	0.97	0.96	0.94	0.94	0.93	0.91	0.91	0.90	0.89	0.88	0.87	0.86	0.85
2	0.94	0.92	0.89	0.93	0.90	0.88	0.90	0.88	0.86	0.88	0.86	0.85	0.85	0.84	0.83	0.81
3	0.90	0.87	0.84	0.89	0.86	0.84	0.87	0.84	0.82	0.85	0.83	0.81	0.83	0.81	0.80	0.79
4	0.87	0.83	0.80	0.86	0.82	0.80	0.84	0.81	0.79	0.82	0.80	0.78	0.81	0.79	0.77	0.76
5	0.84	0.80	0.77	0.83	0.79	0.77	0.81	0.78	0.76	0.80	0.77	0.75	0.79	0.77	0.75	0.74
6	0.81	0.77	0.74	0.80	0.76	0.74	0.79	0.76	0.73	0.78	0.75	0.73	0.77	0.74	0.73	0.72
7	0.78	0.74	0.72	0.78	0.74	0.72	0.77	0.73	0.71	0.76	0.73	0.71	0.75	0.72	0.71	0.70
8	0.76	0.72	0.70	0.75	0.72	0.69	0.75	0.71	0.69	0.74	0.71	0.69	0.73	0.71	0.69	0.68
9	0.74	0.70	0.68	0.73	0.70	0.68	0.73	0.70	0.67	0.72	0.69	0.67	0.71	0.69	0.67	0.66
10	0.72	0.68	0.66	0.72	0.68	0.66	0.71	0.68	0.66	0.70	0.68	0.66	0.70	0.67	0.65	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	25546.17	24235.83	21323.34	18328.28	14980.85	10950.72	8352.06	6348.00	4696.31
45.0	25810.44	24758.86	22418.97	19589.07	15911.30	12167.46	9277.00	6760.93	5103.73
90.0	25485.61	24659.76	22837.39	19445.92	16197.59	10409.51	9339.77	6758.72	5111.99
135.0	25171.79	25595.72	24995.61	23387.96	21185.70	16863.78	13472.30	10587.35	7339.02
180.0	25546.17	25937.07	25540.66	23949.53	21416.94	17871.31	14430.28	10631.94	7947.94
225.0	25810.44	25876.51	25182.80	22875.93	20128.62	16880.29	10770.13	9729.57	7410.59
270.0	25485.61	25474.60	24241.33	22198.74	19523.00	15569.95	12343.64	9552.29	7118.79
315.0	25171.79	23828.41	21372.89	18223.67	15008.37	10682.04	8773.24	6519.78	4999.12
360.0	25546.17	24235.83	21323.34	18328.28	14980.85	10950.72	8352.06	6348.00	4696.31

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	3474.06	2851.92	2025.52	1636.83	1341.72	1152.88	1040.57	953.58	894.12
45.0	3760.35	2868.44	2133.44	1684.73	1363.75	1157.84	1038.36	950.27	890.81
90.0	3733.93	2729.15	2107.01	1603.24	1318.60	1084.45	997.90	931.28	886.30
135.0	5362.49	4052.15	2962.03	2862.93	1719.96	1368.15	1167.75	1025.70	939.26
180.0	5790.83	4215.67	3085.36	2365.77	1833.38	1433.67	1083.57	1055.21	970.31
225.0	5443.98	4003.70	3055.08	2278.78	1790.98	1433.67	1093.97	1064.85	969.65
270.0	5252.38	4013.61	2973.05	2791.36	1829.52	1445.23	1244.27	1093.42	992.12
315.0	3719.61	2786.40	2176.38	1705.10	1424.86	1097.16	1071.18	986.23	925.06
360.0	3474.06	2851.92	2025.52	1636.83	1341.72	1152.88	1040.57	953.58	894.12

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	861.08	837.41	813.73	797.77	784.00	770.79	758.13	747.12	735.00
45.0	858.33	839.06	817.04	801.07	787.86	771.34	757.03	747.12	733.90
90.0	848.80	830.36	817.09	800.35	782.90	764.51	746.84	734.89	724.76
135.0	888.61	853.37	827.50	812.63	797.77	780.15	763.08	748.77	735.55
180.0	901.55	861.91	837.96	814.17	795.62	777.18	760.16	745.79	735.33
225.0	898.96	866.92	840.93	811.37	794.90	778.99	764.57	751.46	740.73
270.0	928.25	882.00	845.67	824.19	806.58	788.41	774.64	761.98	749.32
315.0	876.39	849.74	827.88	803.00	786.65	772.83	758.73	746.29	736.27
360.0	861.08	837.41	813.73	797.77	784.00	770.79	758.13	747.12	735.00

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	725.09	713.53	702.52	694.26	683.80	665.63	615.53	526.89	420.08
45.0	722.89	714.63	700.32	690.41	681.60	663.98	618.28	545.61	436.60
90.0	713.75	706.32	694.92	681.43	672.13	656.00	592.08	523.09	433.62
135.0	723.44	714.63	705.27	693.16	682.70	671.69	661.78	623.79	529.09
180.0	724.38	715.35	705.44	692.33	681.93	671.08	659.08	629.74	564.49
225.0	730.43	719.86	709.29	695.69	686.17	675.16	664.42	626.16	554.36
270.0	738.31	727.85	715.73	704.17	693.71	683.80	673.34	637.55	558.27
315.0	726.08	715.57	703.90	693.71	683.97	670.20	620.87	543.08	451.19
360.0	725.09	713.53	702.52	694.26	683.80	665.63	615.53	526.89	420.08

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	317.12	278.59	113.42	43.05	22.24	19.27	14.65	12.06	10.46
45.0	331.44	280.79	117.82	52.96	25.27	20.59	16.68	14.15	10.13
90.0	312.61	216.76	130.10	48.34	25.33	22.13	18.50	12.72	10.13
135.0	443.75	350.16	303.36	136.10	67.39	28.74	21.36	17.51	13.65
180.0	457.63	362.44	264.93	153.66	78.51	32.70	22.57	18.55	15.69
225.0	455.37	346.52	248.30	147.22	66.34	28.46	21.58	16.90	14.31
270.0	469.08	371.08	280.79	149.86	73.94	27.80	20.04	16.30	13.16
315.0	325.77	227.22	137.92	52.96	24.83	20.70	16.13	12.99	10.57
360.0	317.12	278.59	113.42	43.05	22.24	19.27	14.65	12.06	10.46



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	10.13	9.97	9.80	9.63	9.47	9.36	9.25	9.14	9.08
45.0	9.91	9.74	9.58	9.47	9.36	9.30	9.19	9.14	8.97
90.0	9.97	9.74	9.63	9.52	9.41	9.25	9.19	9.08	9.03
135.0	10.35	10.19	9.97	9.86	9.74	9.58	9.47	9.36	9.25
180.0	10.35	10.13	9.91	9.74	9.63	9.52	9.36	9.30	9.19
225.0	10.35	10.08	9.86	9.69	9.52	9.41	9.30	9.14	9.08
270.0	10.41	10.19	9.97	9.80	9.63	9.47	9.36	9.25	9.14
315.0	10.24	10.02	9.86	9.69	9.58	9.41	9.25	9.19	9.08
360.0	10.13	9.97	9.80	9.63	9.47	9.36	9.25	9.14	9.08

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	8.97	8.92	8.86	8.81	8.75	8.70	8.70	8.64	8.59
45.0	8.92	8.86	8.81	8.81	8.75	8.70	8.64	8.64	8.59
90.0	8.92	8.86	8.81	8.81	8.70	8.70	8.64	8.64	8.59
135.0	9.14	9.08	9.03	8.92	8.86	8.86	8.81	8.75	8.70
180.0	9.08	9.03	8.97	8.86	8.81	8.75	8.70	8.64	8.64
225.0	8.97	8.86	8.81	8.75	8.70	8.64	8.59	8.59	8.59
270.0	9.03	8.97	8.86	8.81	8.75	8.70	8.70	8.64	8.64
315.0	8.97	8.97	8.86	8.81	8.75	8.70	8.64	8.64	8.59
360.0	8.97	8.92	8.86	8.81	8.75	8.70	8.70	8.64	8.59

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	8.59	8.53	8.53	8.48	8.53	8.48	8.42	8.42	8.42
45.0	8.59	8.53	8.53	8.53	8.48	8.48	8.48	8.48	8.42
90.0	8.59	8.59	8.53	8.53	8.53	8.48	8.48	8.48	8.48
135.0	8.64	8.64	8.59	8.59	8.53	8.53	8.53	8.48	8.48
180.0	8.59	8.59	8.53	8.53	8.48	8.48	8.48	8.48	8.42
225.0	8.53	8.48	8.48	8.48	8.42	8.42	8.42	8.42	8.42
270.0	8.59	8.59	8.59	8.53	8.48	8.48	8.48	8.48	8.48
315.0	8.59	8.53	8.53	8.48	8.48	8.48	8.42	8.48	8.42
360.0	8.59	8.53	8.53	8.48	8.53	8.48	8.42	8.42	8.42

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	8.42	8.42	8.42	8.42	8.42	8.42	8.48	8.59	8.70
45.0	8.42	8.42	8.42	8.42	8.42	8.48	8.59	8.75	8.64
90.0	8.48	8.42	8.48	8.48	8.48	8.53	8.59	8.64	8.70
135.0	8.48	8.42	8.42	8.42	8.42	8.42	8.37	8.37	8.37
180.0	8.42	8.42	8.42	8.42	8.42	8.42	8.37	8.37	8.42
225.0	8.37	8.42	8.37	8.37	8.37	8.37	8.37	8.37	8.37
270.0	8.48	8.48	8.42	8.42	8.42	8.42	8.42	8.48	8.48
315.0	8.48	8.48	8.42	8.48	8.48	8.59	8.75	8.86	8.97
360.0	8.42	8.42	8.42	8.42	8.42	8.42	8.48	8.59	8.70

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	8.53	8.53	8.48	8.48	8.48	8.48	8.31	8.31	8.31
45.0	8.53	8.48	8.48	8.42	8.42	8.42	8.31	8.31	8.31
90.0	8.64	8.59	8.53	8.48	8.48	8.42	8.31	8.31	8.31
135.0	8.37	8.42	8.37	8.37	8.37	8.37	8.37	8.31	8.31
180.0	8.42	8.37	8.42	8.48	8.48	8.42	8.42	8.31	8.31
225.0	8.37	8.37	8.37	8.37	8.42	8.37	8.42	8.31	8.31
270.0	8.53	8.59	8.53	8.53	8.53	8.48	8.48	8.31	8.37
315.0	8.92	8.75	8.70	8.59	8.53	8.53	8.31	8.31	8.31
360.0	8.53	8.53	8.48	8.48	8.48	8.48	8.31	8.31	8.31

Intensity data(cd)

C/γ(°)	90.0
0.0	8.31
45.0	8.31
90.0	8.31
135.0	8.37
180.0	8.31
225.0	8.31
270.0	8.31
315.0	8.31
360.0	8.31