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## Nata

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LumCAT: 1-0940-N	
Luminaire: 92.70.360.00	
Report No: 220513-B005	Voltage(V): 37.0700
Test No: 220513-C005	Current(A): 0.1720
LampCAT: NICHIA NTCWT012B-V3	Power (W): 6.3760
Lamp flux(lm): 754.4	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 43	Width(mm): 43
Phm Type: C	Height(mm): 0

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## Photometric Results

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Lumens(lm): 627.32  
Efficiency(%): 83.16%  
Lumens(lm)/Power(W): 98.39  
Central intensity(cd): 4067.978  
Maximum intensity(cd): 4067.978  
Angle of maximum intensity: C=0.0  $\gamma$ =0.0  
Beam Angle(50%Imax): [C0/180]Total=16.4  
                                  [C90/270]Total=16.4  
Field angle(10%Imax): [C0/180]Total=42.3  
                                  [C90/270]Total=42.3  
Maximum s/h(1/2): C0\_180=0.28 C90\_270=0.28  
Maximum s/h(1/4): C0\_180=0.31 C90\_270=0.31  
Up flux rate of lamp(%): 0.00%  
Down flux rate of lamp(%): 83.16%  
Up flux rate of LUM(%): - -  
Down flux rate of LUM(%): 100.00%  
CIE Type : Direct lighting  
Output flux ratio in  $\pi$  solid angle : 98.359%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	4067.977	0.000	0	.000%	.000%
1.0	4034.889	3.877	3.877	.514%	.618%
2.0	3913.964	11.409	15.286	1.512%	2.437%
3.0	3707.817	18.229	33.515	2.416%	5.343%
4.0	3447.892	23.952	57.467	3.175%	9.161%
5.0	3131.201	28.303	85.77	3.752%	13.672%
6.0	2791.506	31.125	116.896	4.126%	18.634%
7.0	2420.067	32.348	149.244	4.288%	23.791%
8.0	2091.949	32.292	181.535	4.280%	28.938%
9.0	1767.192	31.276	212.812	4.146%	33.924%
10.0	1523.968	29.784	242.595	3.948%	38.671%
11.0	1313.862	28.356	270.951	3.759%	43.192%
12.0	1138.442	26.807	297.758	3.553%	47.465%
13.0	999.591	25.373	323.131	3.363%	51.509%
14.0	882.065	24.085	347.216	3.193%	55.349%
15.0	791.382	22.974	370.19	3.045%	59.011%
16.0	708.027	21.971	392.161	2.912%	62.513%
17.0	637.287	20.950	413.111	2.777%	65.853%
18.0	572.373	19.945	433.056	2.644%	69.032%
19.0	517.251	18.957	452.013	2.513%	72.054%
20.0	462.540	17.933	469.946	2.377%	74.913%
21.0	414.065	16.833	486.778	2.231%	77.596%
22.0	370.983	15.776	502.554	2.091%	80.111%
23.0	330.889	14.727	517.281	1.952%	82.458%
24.0	288.375	13.539	530.821	1.795%	84.617%
25.0	250.365	12.250	543.071	1.624%	86.569%
26.0	220.204	11.108	554.178	1.472%	88.340%
27.0	183.404	9.874	564.053	1.309%	89.914%
28.0	152.601	8.507	572.56	1.128%	91.270%
29.0	122.307	7.192	579.752	.953%	92.417%
30.0	96.628	5.911	585.663	.784%	93.359%
31.0	73.026	4.721	590.384	.626%	94.112%
32.0	54.726	3.660	594.044	.485%	94.695%
33.0	41.185	2.826	596.87	.375%	95.145%
34.0	30.616	2.173	599.043	.288%	95.492%
35.0	24.125	1.700	600.743	.225%	95.763%
36.0	20.309	1.415	602.158	.188%	95.988%
37.0	18.128	1.254	603.411	.166%	96.188%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	16.283	1.149	604.56	.152%	96.371%
39.0	14.572	1.053	605.613	.140%	96.539%
40.0	13.086	0.965	606.578	.128%	96.693%
41.0	11.816	0.887	607.464	.118%	96.834%
42.0	10.531	0.812	608.276	.108%	96.964%
43.0	9.463	0.741	609.017	.098%	97.082%
44.0	8.627	0.683	609.7	.091%	97.191%
45.0	7.790	0.631	610.331	.084%	97.291%
46.0	7.140	0.584	610.915	.077%	97.384%
47.0	6.580	0.546	611.46	.072%	97.471%
48.0	6.125	0.514	611.974	.068%	97.553%
49.0	5.781	0.489	612.463	.065%	97.631%
50.0	5.460	0.469	612.931	.062%	97.706%
51.0	5.221	0.452	613.383	.060%	97.778%
52.0	5.012	0.439	613.822	.058%	97.848%
53.0	4.825	0.428	614.25	.057%	97.916%
54.0	4.661	0.418	614.668	.055%	97.983%
55.0	4.504	0.409	615.078	.054%	98.048%
56.0	4.377	0.401	615.479	.053%	98.112%
57.0	4.250	0.394	615.873	.052%	98.175%
58.0	4.160	0.389	616.262	.052%	98.237%
59.0	4.078	0.385	616.647	.051%	98.298%
60.0	3.996	0.381	617.029	.051%	98.359%
61.0	3.929	0.378	617.407	.050%	98.419%
62.0	3.869	0.376	617.783	.050%	98.479%
63.0	3.809	0.373	618.156	.050%	98.539%
64.0	3.779	0.372	618.529	.049%	98.598%
65.0	3.727	0.371	618.9	.049%	98.657%
66.0	3.675	0.369	619.269	.049%	98.716%
67.0	3.645	0.368	619.637	.049%	98.775%
68.0	3.600	0.367	620.004	.049%	98.833%
69.0	3.548	0.365	620.369	.048%	98.891%
70.0	3.488	0.361	620.73	.048%	98.949%
71.0	3.436	0.358	621.088	.047%	99.006%
72.0	3.376	0.354	621.442	.047%	99.062%
73.0	3.316	0.350	621.792	.046%	99.118%
74.0	3.257	0.346	622.138	.046%	99.173%
75.0	3.212	0.342	622.48	.045%	99.228%

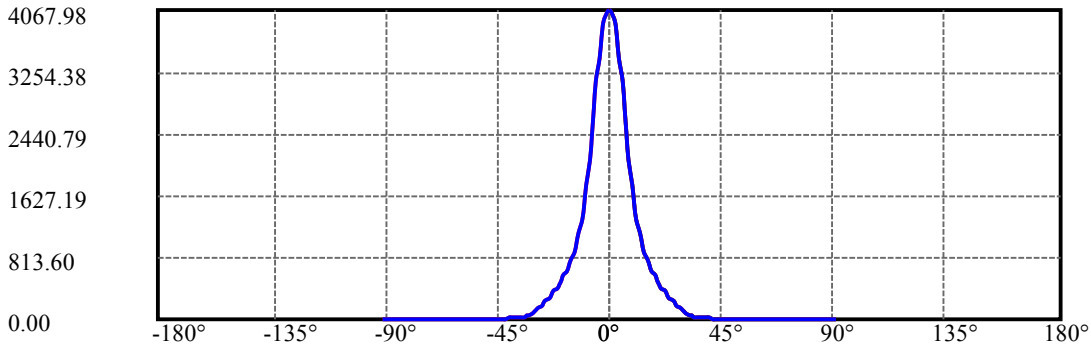
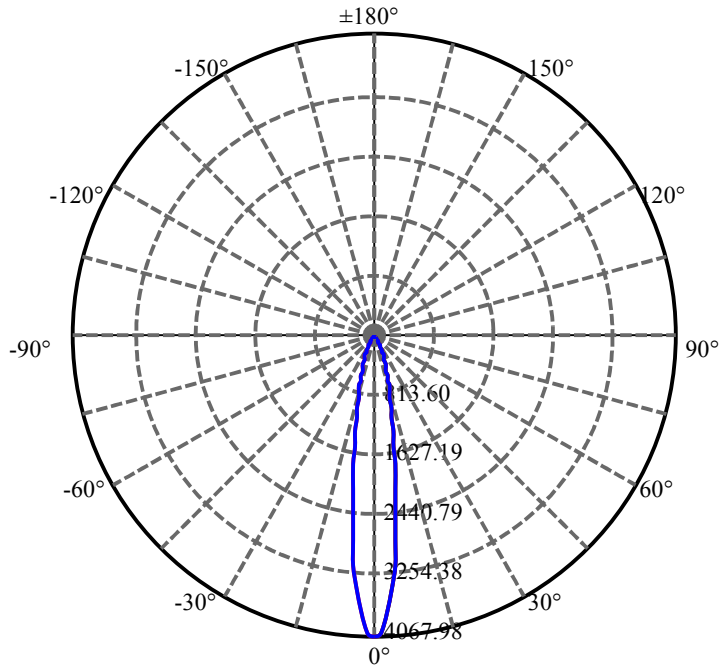
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	3.167	0.339	622.818	.045%	99.282%
77.0	3.130	0.336	623.154	.044%	99.335%
78.0	3.107	0.334	623.488	.044%	99.389%
79.0	3.062	0.331	623.819	.044%	99.441%
80.0	3.040	0.329	624.148	.044%	99.494%
81.0	3.077	0.331	624.479	.044%	99.547%
82.0	3.167	0.339	624.818	.045%	99.600%
83.0	3.249	0.349	625.167	.046%	99.656%
84.0	3.204	0.352	625.518	.047%	99.712%
85.0	3.070	0.342	625.861	.045%	99.767%
86.0	2.704	0.316	626.176	.042%	99.817%
87.0	2.637	0.292	626.468	.039%	99.864%
88.0	2.614	0.288	626.756	.038%	99.909%
89.0	2.584	0.285	627.041	.038%	99.955%
90.0	2.577	0.283	627.324	.038%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	585.66	77.63%	93.36%
0-40	606.58	80.41%	96.69%
0-60	617.03	81.79%	98.36%
0-90	627.04	83.12%	99.95%
0-120	627.04	83.12%	99.95%
0-180	627.32	83.16%	100.00%
60-90	10.39	1.38%	1.66%
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%
0-21.96	501.86	66.52%	80.00%

ZONAL LUMEN SUMMARY

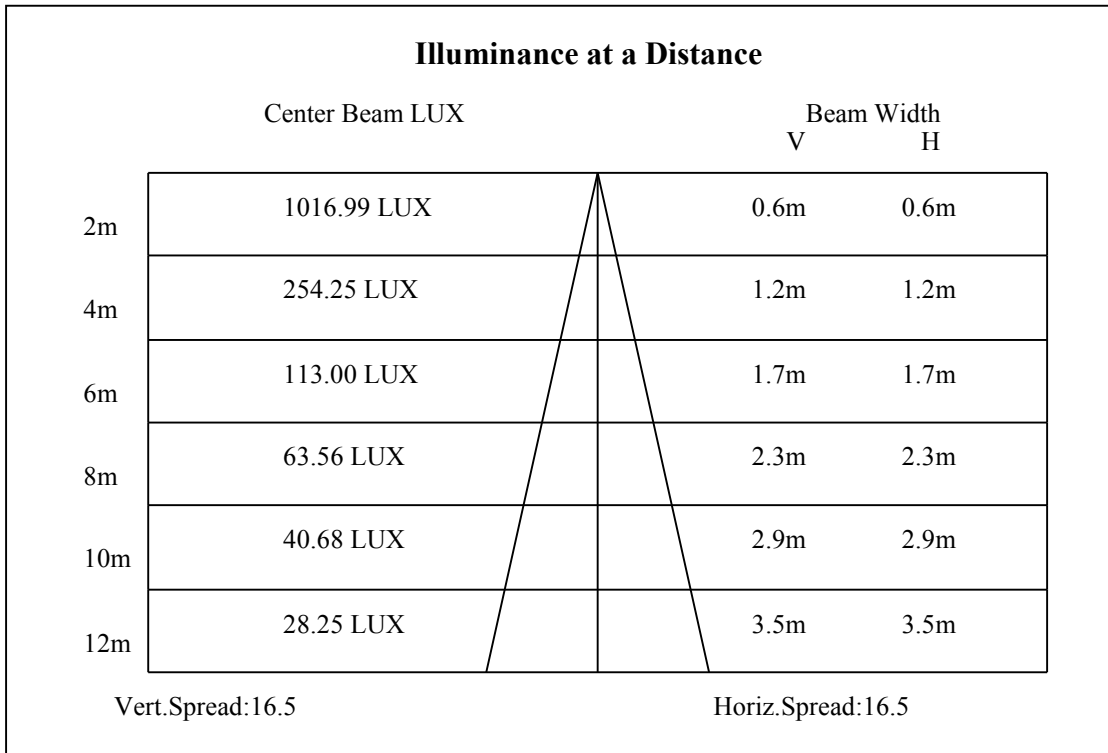
0-10	242.60
10-20	227.35
20-30	115.72
30-40	20.91
40-50	6.35
50-60	4.10
60-70	3.70
70-80	3.42
80-90	2.89
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

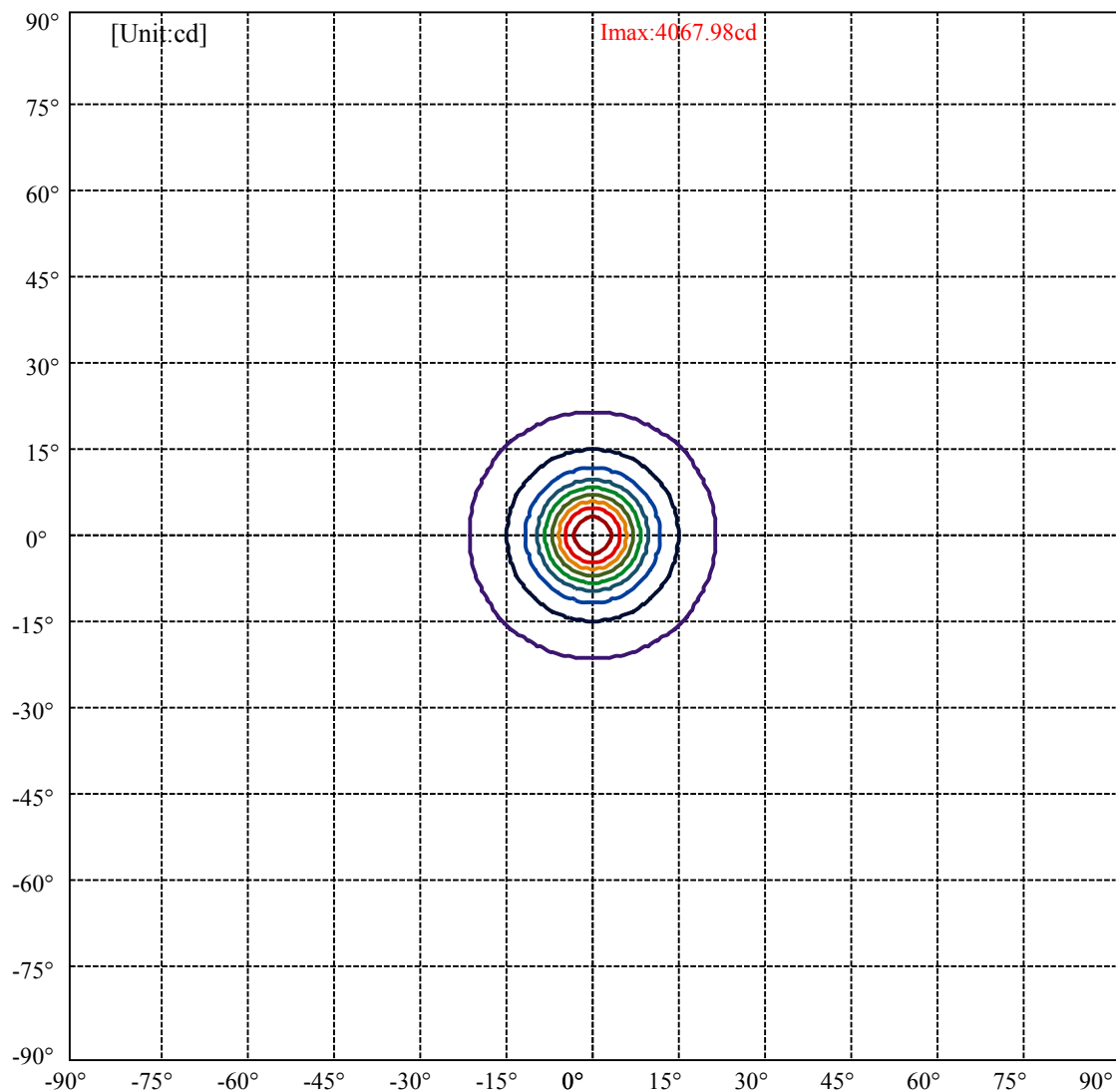


C0(Max): —————  
C0/C180: —————  
C90/C270: —————

Field angle(10%Imax):C0/180Left:21.2 Right:21.2  
:C90/270Left:21.2 Right:21.2

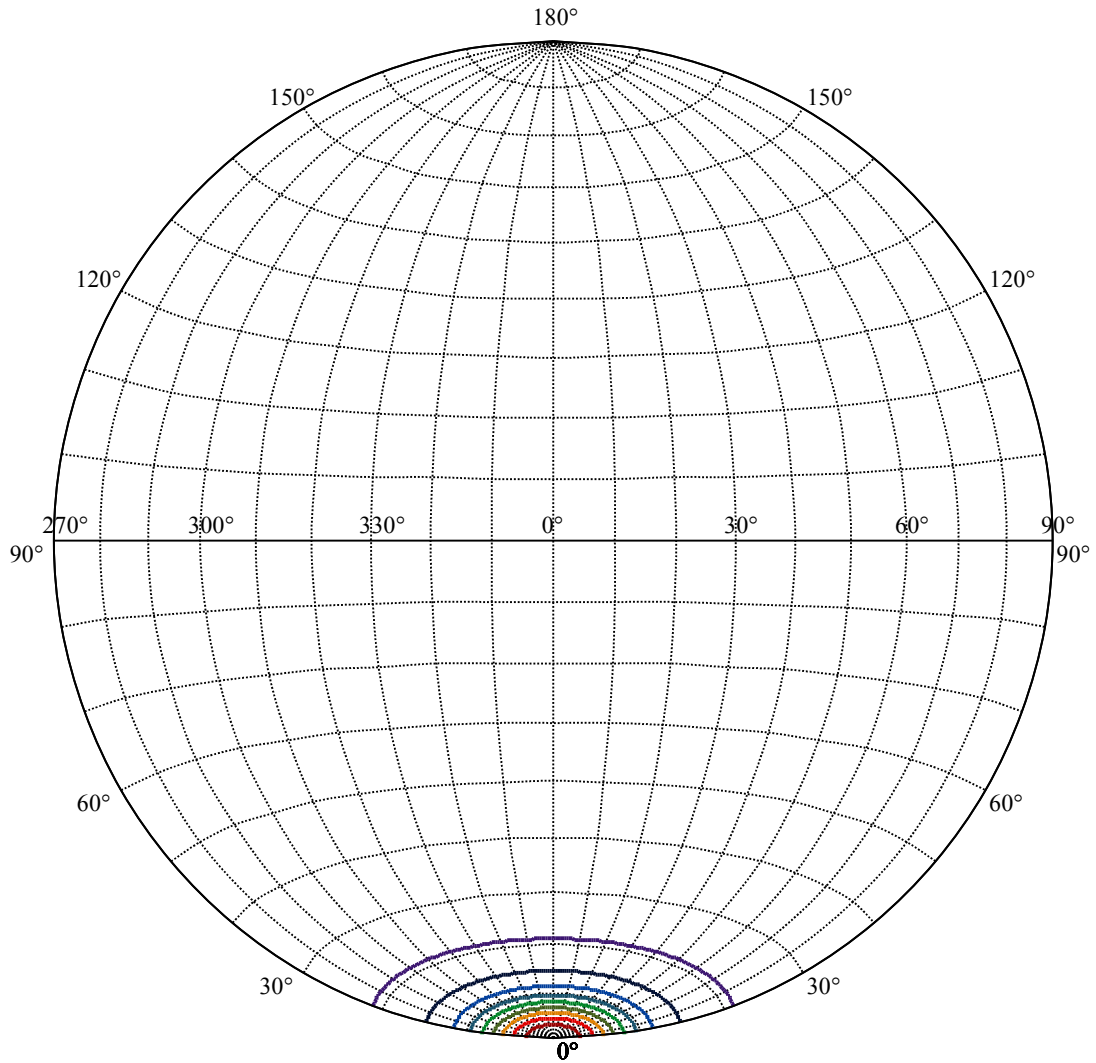
Beam Angle(50%Imax):C0/180Left:8.2 Right:8.2  
:C90/270Left:8.2 Right:8.2





(10%Imax) 406.798	—
(20%Imax) 813.596	—
(30%Imax) 1220.39	—
(40%Imax) 1627.19	—
(50%Imax) 2033.99	—
(60%Imax) 2440.79	—
(70%Imax) 2847.58	—
(80%Imax) 3254.38	—
(90%Imax) 3661.18	—





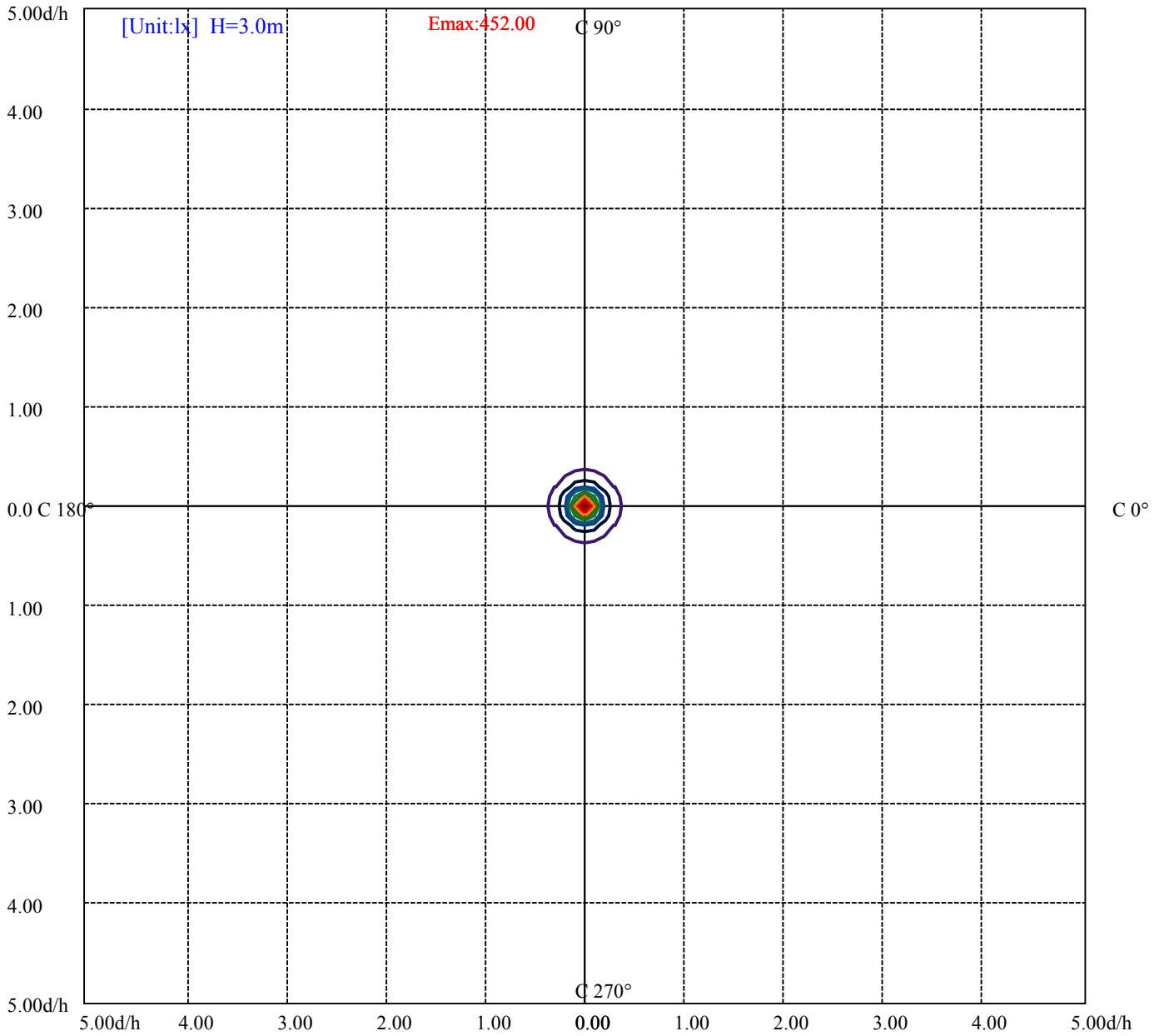
House

[Unit:cd]

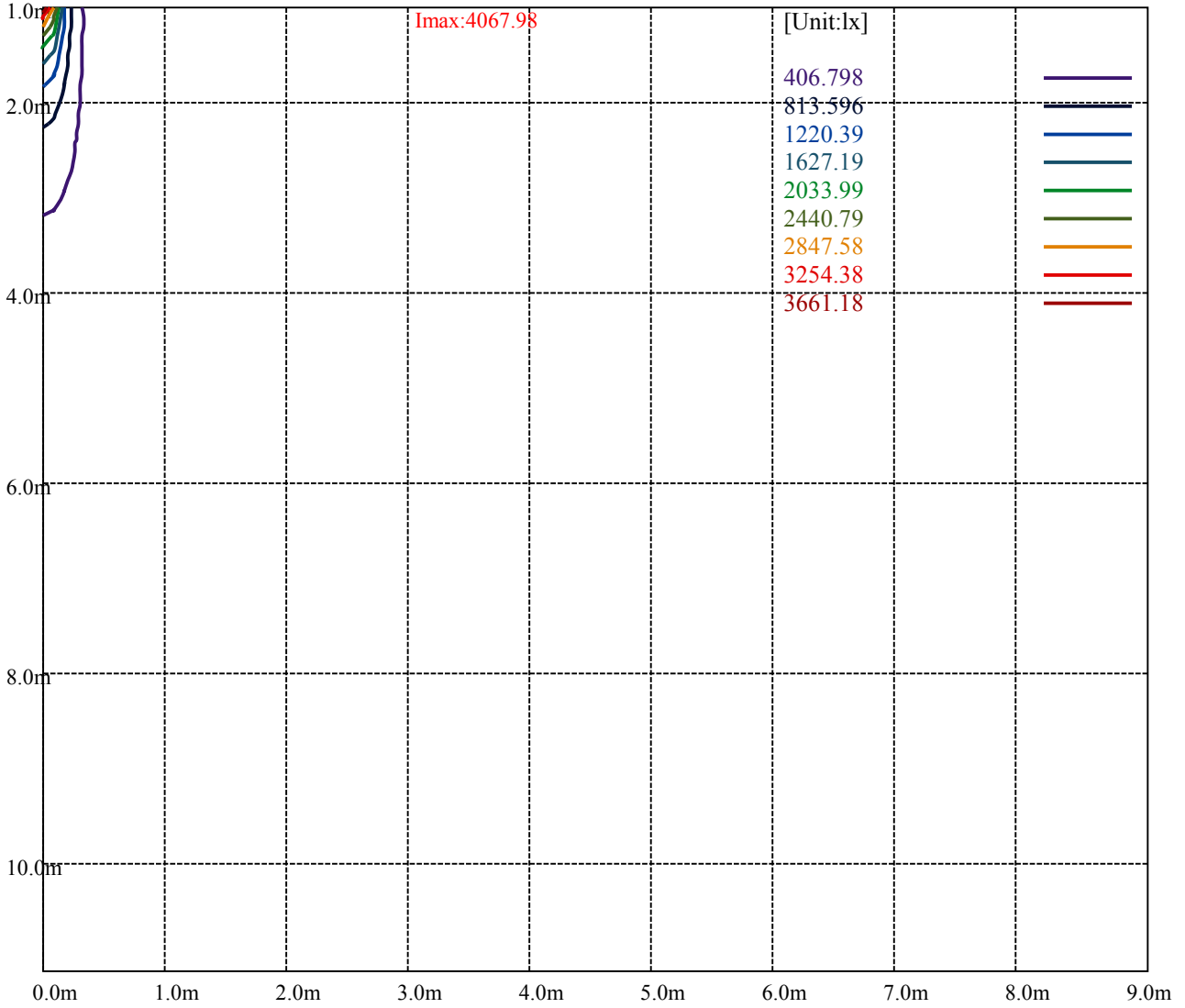
Road

**Imax:4067.98**

(10%Imax) 406.798	—
(20%Imax) 813.596	—
(30%Imax) 1220.39	—
(40%Imax) 1627.19	—
(50%Imax) 2033.99	—
(60%Imax) 2440.79	—
(70%Imax) 2847.58	—
(80%Imax) 3254.38	—
(90%Imax) 3661.18	—



- (10%Emax) 45.19967
- (20%Emax) 90.39944
- (30%Emax) 135.5989
- (40%Emax) 180.7989
- (50%Emax) 225.9989
- (60%Emax) 271.1978
- (70%Emax) 316.3978
- (80%Emax) 361.5978
- (90%Emax) 406.7978



Luminance Table

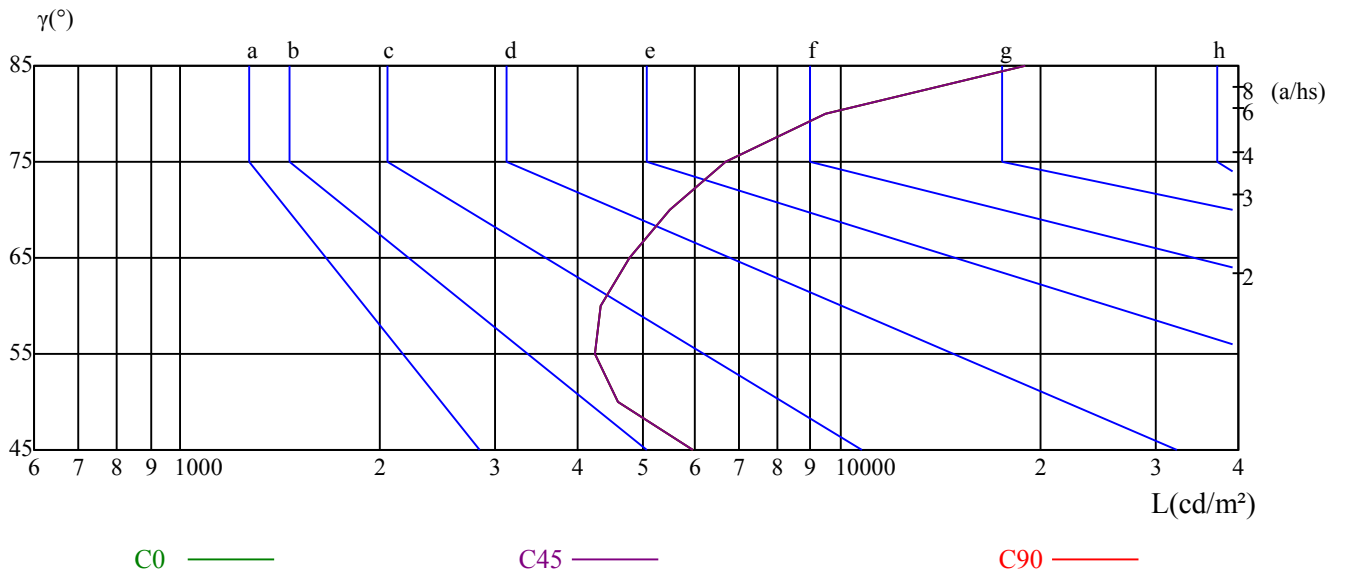
$\gamma$	45	50	55	60	65	70	75	80	85
C0	5958	4594	4247	4322	4770	5516	6711	9468	19049
C45	5958	4594	4247	4322	4770	5516	6711	9468	19049
C90	5958	4594	4247	4322	4770	5516	6711	9468	19049

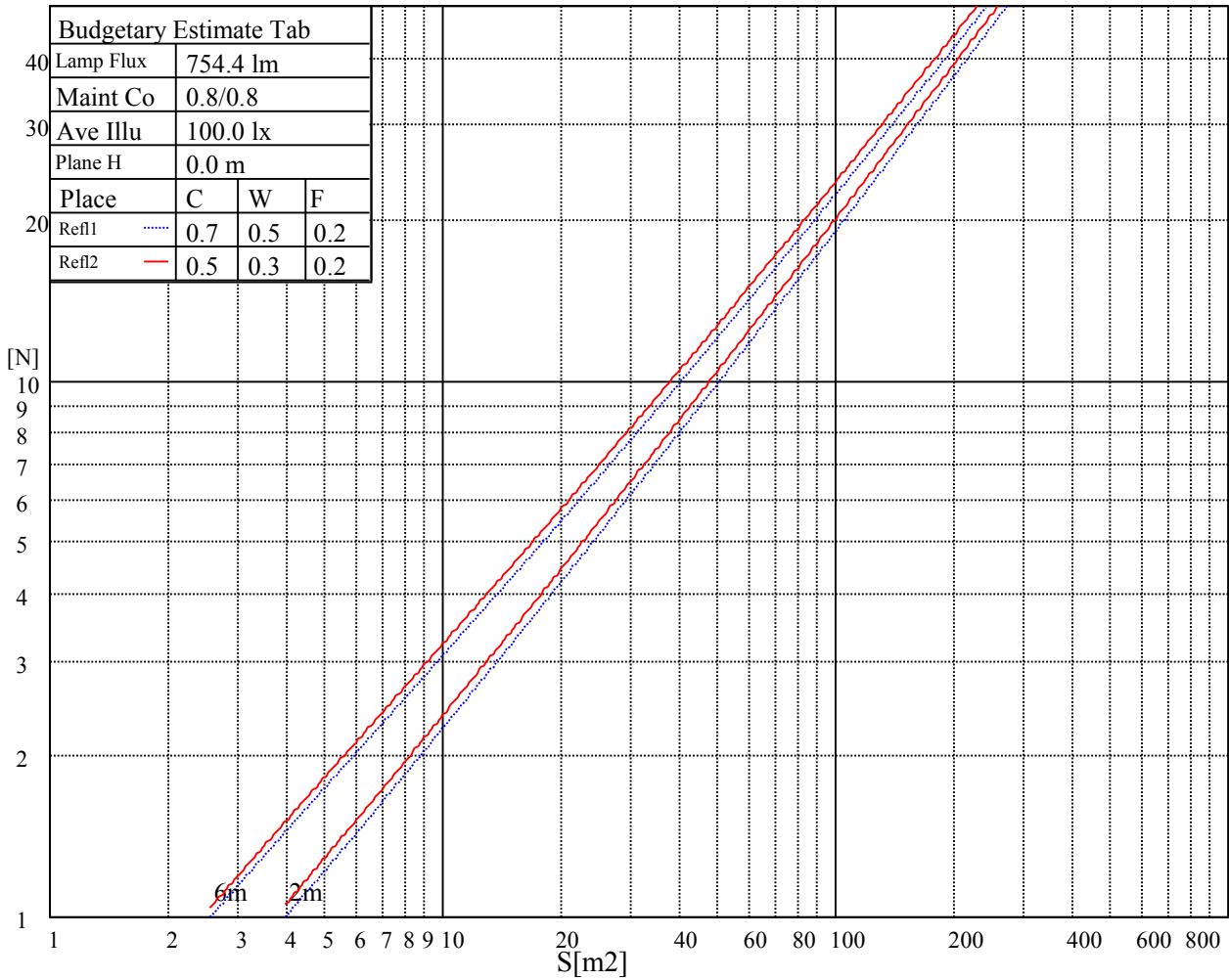
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
4770	4770	4770	6711	6711	6711	19049	19049	19049

Glare Table

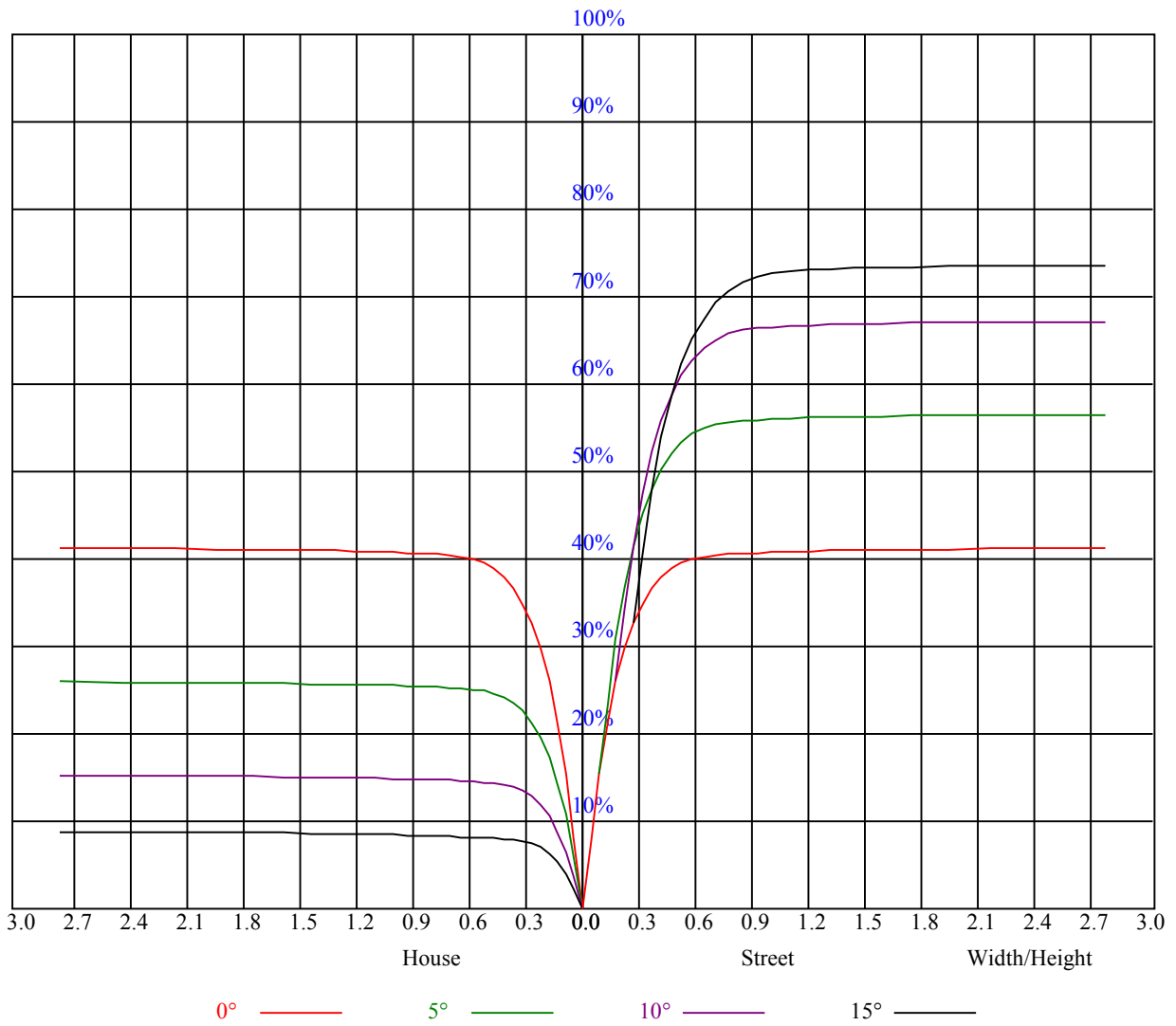
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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	0.88	0.88	0.88	0.85	0.85	0.85	0.83
1	0.93	0.92	0.90	0.92	0.90	0.89	0.88	0.87	0.86	0.85	0.84	0.84	0.82	0.82	0.81	0.80
2	0.89	0.86	0.84	0.88	0.85	0.83	0.85	0.83	0.81	0.83	0.81	0.80	0.80	0.79	0.78	0.77
3	0.85	0.82	0.79	0.84	0.81	0.79	0.82	0.79	0.78	0.80	0.78	0.76	0.78	0.77	0.75	0.74
4	0.82	0.78	0.76	0.81	0.78	0.75	0.79	0.76	0.74	0.78	0.75	0.73	0.76	0.74	0.73	0.72
5	0.79	0.75	0.72	0.78	0.75	0.72	0.77	0.74	0.72	0.75	0.73	0.71	0.74	0.72	0.70	0.69
6	0.76	0.72	0.70	0.75	0.72	0.70	0.74	0.71	0.69	0.73	0.71	0.69	0.72	0.70	0.68	0.67
7	0.73	0.70	0.67	0.73	0.70	0.67	0.72	0.69	0.67	0.71	0.69	0.67	0.70	0.68	0.66	0.65
8	0.71	0.68	0.65	0.71	0.67	0.65	0.70	0.67	0.65	0.69	0.67	0.65	0.69	0.66	0.64	0.64
9	0.69	0.66	0.63	0.69	0.66	0.63	0.68	0.65	0.63	0.68	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	0.63	0.61	0.66	0.63	0.61	0.65	0.63	0.61	0.60



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	4051.25	4157.61	4163.58	4079.33	3943.69	3674.80	3355.72	2986.45	2569.97
45.0	4126.54	4030.93	3828.97	3517.65	3178.26	2770.74	2354.26	2017.26	1732.83
90.0	4009.42	3763.24	3472.24	3125.08	2666.77	2349.48	2010.09	1623.49	1431.68
135.0	4084.71	3910.23	3617.44	3295.37	2934.46	2476.76	2125.41	1818.28	1542.82
180.0	4051.25	3908.44	3659.27	3299.56	2939.84	2531.73	2180.98	1833.82	1552.98
225.0	4126.54	4164.18	4121.16	3981.34	3771.60	3505.11	3156.15	2694.86	2336.34
270.0	4009.42	4143.27	4222.74	4202.42	4096.66	3913.81	3627.00	3278.64	2896.82
315.0	4084.71	4201.23	4226.32	4161.79	4051.84	3827.17	3522.43	3107.75	2672.15
360.0	4051.25	4157.61	4163.58	4079.33	3943.69	3674.80	3355.72	2986.45	2569.97
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	2171.42	1854.73	1556.56	1346.83	1161.00	1013.41	906.45	804.87	718.23
45.0	1442.44	1257.80	1111.40	978.75	867.61	782.76	700.30	628.60	571.84
90.0	1177.13	1078.00	965.73	869.52	784.14	692.00	628.36	571.66	512.98
135.0	1328.90	1174.14	1048.07	927.37	825.19	736.16	668.04	601.11	540.17
180.0	1297.83	1192.37	1033.37	927.07	834.75	725.22	665.11	604.46	543.63
225.0	2002.32	1647.98	1425.70	1188.07	1071.13	957.78	861.28	756.59	692.66
270.0	2423.58	2076.41	1773.47	1495.02	1275.72	1122.16	982.34	868.81	780.37
315.0	2293.91	1910.30	1596.60	1374.91	1177.19	1027.03	919.18	828.12	738.43
360.0	2171.42	1854.73	1556.56	1346.83	1161.00	1013.41	906.45	804.87	718.23
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	652.50	595.74	531.80	483.40	435.60	378.83	338.20	304.74	283.41
45.0	512.68	464.28	412.89	363.90	320.87	302.95	247.91	209.14	178.66
90.0	456.93	408.89	359.00	316.15	282.93	244.87	210.45	175.55	143.83
135.0	488.18	439.18	380.63	341.79	304.14	264.94	225.99	194.56	164.20
180.0	488.18	440.14	388.99	341.79	307.73	271.40	238.23	200.35	167.91
225.0	621.55	554.15	511.72	459.56	402.79	364.43	323.08	278.39	250.96
270.0	696.72	632.78	571.24	515.67	470.26	426.64	372.86	332.82	301.75
315.0	662.24	602.85	544.05	490.27	443.55	393.05	350.27	307.37	270.92
360.0	652.50	595.74	531.80	483.40	435.60	378.83	338.20	304.74	283.41
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	222.58	188.88	159.78	127.63	98.71	75.77	51.21	34.66	26.53
45.0	148.72	116.94	90.94	70.93	45.11	32.98	26.59	21.03	19.00
90.0	116.94	91.78	63.76	45.17	32.63	24.62	21.87	19.96	17.99
135.0	128.41	100.92	75.89	53.30	35.91	27.43	23.30	20.91	19.06
180.0	140.90	113.83	81.74	58.92	41.23	28.56	23.78	21.51	19.48
225.0	218.28	183.74	151.17	122.49	94.05	67.82	49.42	32.86	24.32
270.0	253.95	221.03	188.88	156.79	126.56	99.91	73.08	50.49	35.67
315.0	237.46	203.70	166.29	137.79	110.01	80.73	60.23	43.50	30.95
360.0	222.58	188.88	159.78	127.63	98.71	75.77	51.21	34.66	26.53
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	22.95	20.79	18.58	16.61	15.00	13.74	12.01	10.93	10.04
45.0	17.45	15.60	14.04	12.91	11.35	10.40	9.32	8.19	7.47
90.0	16.13	14.58	13.09	11.71	10.64	9.44	8.54	7.71	7.05
135.0	17.33	15.54	13.80	12.25	11.05	10.04	8.78	7.95	7.29
180.0	17.15	15.54	14.22	12.55	11.35	10.16	9.02	8.07	7.41
225.0	20.26	18.52	17.03	15.42	13.74	12.43	11.23	10.04	9.14
270.0	26.53	22.53	20.02	17.81	15.95	14.52	12.79	11.71	10.58
315.0	24.68	21.93	19.48	17.33	15.60	13.80	12.55	11.11	10.04
360.0	22.95	20.79	18.58	16.61	15.00	13.74	12.01	10.93	10.04



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	8.84	8.07	7.47	6.75	6.33	5.98	5.62	5.38	5.20
45.0	6.87	6.27	5.86	5.56	5.20	4.96	4.78	4.60	4.36
90.0	6.57	6.15	5.74	5.50	5.32	5.02	4.90	4.72	4.54
135.0	6.63	6.21	5.92	5.56	5.32	5.14	4.96	4.78	4.66
180.0	6.81	6.33	5.92	5.56	5.38	5.14	4.96	4.78	4.66
225.0	8.25	7.53	6.69	6.21	5.86	5.50	5.26	5.08	4.84
270.0	9.32	8.37	7.71	7.05	6.45	6.04	5.68	5.44	5.20
315.0	9.02	8.19	7.35	6.81	6.39	5.92	5.62	5.32	5.14
360.0	8.84	8.07	7.47	6.75	6.33	5.98	5.62	5.38	5.20
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	4.96	4.78	4.66	4.48	4.36	4.30	4.12	4.06	4.00
45.0	4.30	4.06	4.00	3.88	3.88	3.76	3.76	3.70	3.70
90.0	4.42	4.30	4.18	4.12	4.06	4.00	3.88	3.88	3.82
135.0	4.54	4.42	4.30	4.24	4.12	4.06	4.00	3.88	3.88
180.0	4.48	4.36	4.24	4.18	4.06	4.00	3.94	3.88	3.82
225.0	4.66	4.54	4.36	4.24	4.12	4.00	3.94	3.88	3.82
270.0	4.96	4.78	4.66	4.42	4.36	4.30	4.18	4.06	3.94
315.0	4.96	4.78	4.60	4.42	4.30	4.18	4.12	4.06	3.94
360.0	4.96	4.78	4.66	4.48	4.36	4.30	4.12	4.06	4.00
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	3.94	3.88	3.82	3.76	3.70	3.70	3.64	3.64	3.59
45.0	3.64	3.64	3.59	3.53	3.53	3.47	3.47	3.35	3.29
90.0	3.76	3.76	3.70	3.64	3.64	3.59	3.53	3.47	3.41
135.0	3.82	3.76	3.70	3.64	3.59	3.53	3.41	3.35	3.29
180.0	3.70	3.70	3.70	3.64	3.59	3.53	3.41	3.35	3.35
225.0	3.76	3.70	3.70	3.64	3.64	3.59	3.59	3.53	3.41
270.0	3.94	3.88	3.82	3.76	3.76	3.70	3.70	3.64	3.64
315.0	3.88	3.88	3.76	3.76	3.70	3.70	3.64	3.59	3.53
360.0	3.94	3.88	3.82	3.76	3.70	3.70	3.64	3.64	3.59
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	3.53	3.41	3.35	3.29	3.23	3.17	3.11	3.11	3.05
45.0	3.23	3.17	3.11	3.11	2.99	2.99	2.99	2.93	2.87
90.0	3.35	3.35	3.29	3.29	3.29	3.29	3.29	3.29	3.41
135.0	3.29	3.23	3.17	3.11	3.11	3.05	2.99	2.93	2.93
180.0	3.23	3.23	3.17	3.11	3.05	3.05	2.99	2.93	2.87
225.0	3.35	3.29	3.23	3.17	3.17	3.05	3.05	2.99	2.93
270.0	3.59	3.47	3.41	3.35	3.29	3.29	3.29	3.23	3.23
315.0	3.47	3.41	3.35	3.29	3.23	3.17	3.17	3.11	3.05
360.0	3.53	3.41	3.35	3.29	3.23	3.17	3.11	3.11	3.05
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	3.05	2.99	2.99	2.87	2.87	2.81	2.75	2.69	2.63
45.0	2.87	2.81	2.75	2.75	2.69	2.63	2.57	2.57	2.57
90.0	3.88	4.84	5.62	4.84	2.63	2.57	2.57	2.51	2.51
135.0	2.87	2.81	2.81	2.75	2.69	2.57	2.57	2.57	2.57
180.0	2.87	2.87	2.81	2.75	2.69	2.63	2.57	2.63	2.57
225.0	2.93	2.87	2.87	2.81	2.81	2.69	2.63	2.63	2.57
270.0	3.17	3.17	3.23	4.00	5.32	2.93	2.69	2.63	2.63
315.0	2.99	2.99	2.93	2.87	2.87	2.81	2.75	2.69	2.63
360.0	3.05	2.99	2.99	2.87	2.87	2.81	2.75	2.69	2.63

Intensity data(cd)

<b>C/γ(°)</b>	<b>90.0</b>
<b>0.0</b>	<b>2.63</b>
<b>45.0</b>	<b>2.57</b>
<b>90.0</b>	<b>2.57</b>
<b>135.0</b>	<b>2.57</b>
<b>180.0</b>	<b>2.57</b>
<b>225.0</b>	<b>2.57</b>
<b>270.0</b>	<b>2.57</b>
<b>315.0</b>	<b>2.57</b>
<b>360.0</b>	<b>2.63</b>