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## Nata

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LumCAT: 1-0920-M  
Luminaire: 99.02.73.179+92.76.853.00  
Report No: 220609-B005  
Test No: 220609-C005  
LampCAT: CREE CXA1516  
Lamp flux(lm): 1492.4  
Number of Lamps: 1  
Length(mm): 43  
Phm Type: C

Voltage(V): 35.2300  
Current(A): 0.3610  
Power (W): 12.7180  
PF: 0.0000  
Ballast type: DC  
Width(mm): 43  
Height(mm): 0

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## Photometric Results

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Lumens(lm): 1077.35  
Efficiency(%): 72.19%  
Lumens(lm)/Power(W): 84.71  
Central intensity(cd): 4022.416  
Maximum intensity(cd): 4022.416  
Angle of maximum intensity: C=0.0  $\gamma$ =0.0  
Beam Angle(50%Imax): [C0/180]Total=31.1  
                                  [C90/270]Total=31.1  
Field angle(10%Imax): [C0/180]Total=47.1  
                                  [C90/270]Total=47.1  
Maximum s/h(1/2): C0\_180=0.52 C90\_270=0.52  
Maximum s/h(1/4): C0\_180=0.49 C90\_270=0.49  
Up flux rate of lamp(%): 0.00%  
Down flux rate of lamp(%): 72.19%  
Up flux rate of LUM(%): - -  
Down flux rate of LUM(%): 100.00%  
CIE Type : Direct lighting  
Output flux ratio in  $\pi$  solid angle : 98.553%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	4022.416	0.000	0	.000%	.000%
1.0	4011.735	3.844	3.844	.258%	.357%
2.0	3982.605	11.474	15.318	.769%	1.422%
3.0	3930.546	18.926	34.244	1.268%	3.179%
4.0	3862.652	26.086	60.33	1.748%	5.600%
5.0	3780.715	32.881	93.212	2.203%	8.652%
6.0	3667.782	39.144	132.356	2.623%	12.285%
7.0	3542.525	44.754	177.11	2.999%	16.439%
8.0	3417.716	49.813	226.923	3.338%	21.063%
9.0	3262.135	54.137	281.06	3.628%	26.088%
10.0	3085.939	57.448	338.507	3.849%	31.420%
11.0	2926.025	60.072	398.579	4.025%	36.996%
12.0	2743.778	61.979	460.558	4.153%	42.749%
13.0	2527.772	62.560	523.118	4.192%	48.556%
14.0	2338.430	62.287	585.405	4.174%	54.337%
15.0	2128.025	61.317	646.723	4.109%	60.029%
16.0	1907.387	59.130	705.853	3.962%	65.517%
17.0	1667.210	55.666	761.519	3.730%	70.684%
18.0	1456.552	51.504	813.023	3.451%	75.465%
19.0	1231.261	46.762	859.785	3.133%	79.805%
20.0	1030.939	41.405	901.19	2.774%	83.649%
21.0	826.711	35.671	936.861	2.390%	86.960%
22.0	643.927	29.553	966.414	1.980%	89.703%
23.0	484.992	23.688	990.101	1.587%	91.901%
24.0	336.693	17.965	1008.066	1.204%	93.569%
25.0	224.193	12.753	1020.82	.855%	94.753%
26.0	167.637	9.249	1030.069	.620%	95.611%
27.0	97.636	6.490	1036.559	.435%	96.214%
28.0	58.244	3.947	1040.505	.264%	96.580%
29.0	38.429	2.529	1043.035	.169%	96.815%
30.0	24.588	1.701	1044.736	.114%	96.973%
31.0	18.172	1.190	1045.926	.080%	97.083%
32.0	14.834	0.946	1046.872	.063%	97.171%
33.0	12.757	0.813	1047.684	.054%	97.246%
34.0	11.278	0.727	1048.412	.049%	97.314%
35.0	10.173	0.666	1049.078	.045%	97.376%
36.0	9.441	0.625	1049.703	.042%	97.434%
37.0	8.828	0.596	1050.298	.040%	97.489%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	8.350	0.573	1050.872	.038%	97.542%
39.0	7.910	0.555	1051.427	.037%	97.594%
40.0	7.566	0.540	1051.967	.036%	97.644%
41.0	7.290	0.529	1052.496	.035%	97.693%
42.0	7.006	0.519	1053.015	.035%	97.741%
43.0	6.767	0.510	1053.525	.034%	97.788%
44.0	6.565	0.503	1054.028	.034%	97.835%
45.0	6.394	0.498	1054.526	.033%	97.881%
46.0	6.214	0.493	1055.019	.033%	97.927%
47.0	6.057	0.488	1055.508	.033%	97.972%
48.0	5.930	0.485	1055.992	.032%	98.017%
49.0	5.826	0.483	1056.475	.032%	98.062%
50.0	5.706	0.481	1056.956	.032%	98.107%
51.0	5.624	0.479	1057.435	.032%	98.151%
52.0	5.550	0.479	1057.915	.032%	98.196%
53.0	5.452	0.479	1058.393	.032%	98.240%
54.0	5.385	0.478	1058.871	.032%	98.285%
55.0	5.325	0.478	1059.349	.032%	98.329%
56.0	5.273	0.479	1059.828	.032%	98.373%
57.0	5.243	0.481	1060.309	.032%	98.418%
58.0	5.191	0.483	1060.791	.032%	98.463%
59.0	5.146	0.483	1061.275	.032%	98.508%
60.0	5.124	0.485	1061.76	.033%	98.553%
61.0	5.072	0.487	1062.246	.033%	98.598%
62.0	5.057	0.488	1062.734	.033%	98.643%
63.0	5.012	0.490	1063.224	.033%	98.689%
64.0	4.997	0.491	1063.715	.033%	98.734%
65.0	4.982	0.494	1064.209	.033%	98.780%
66.0	4.974	0.497	1064.706	.033%	98.826%
67.0	4.959	0.500	1065.205	.033%	98.873%
68.0	4.922	0.501	1065.706	.034%	98.919%
69.0	4.937	0.503	1066.209	.034%	98.966%
70.0	4.922	0.506	1066.715	.034%	99.013%
71.0	4.922	0.509	1067.224	.034%	99.060%
72.0	4.974	0.515	1067.739	.034%	99.108%
73.0	5.019	0.523	1068.261	.035%	99.156%
74.0	5.079	0.531	1068.792	.036%	99.205%
75.0	5.139	0.540	1069.332	.036%	99.256%

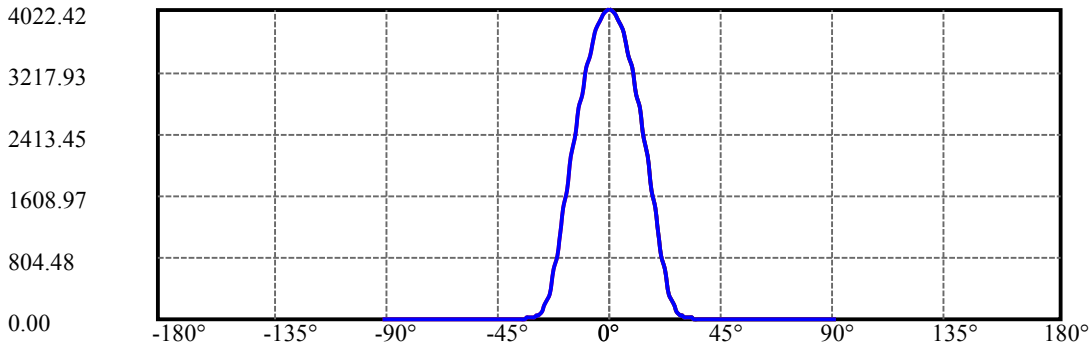
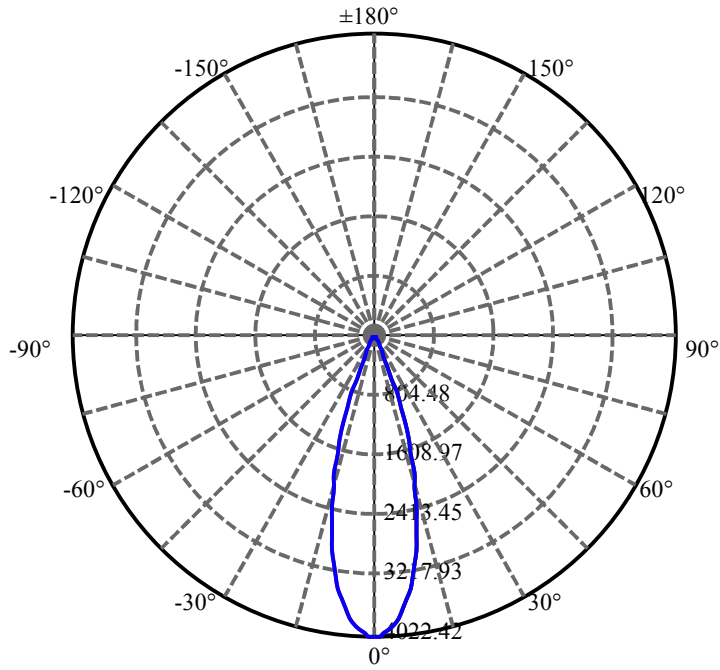
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	5.169	0.547	1069.879	.037%	99.306%
77.0	5.139	0.550	1070.429	.037%	99.357%
78.0	5.094	0.548	1070.976	.037%	99.408%
79.0	4.974	0.541	1071.517	.036%	99.458%
80.0	4.989	0.537	1072.054	.036%	99.508%
81.0	5.012	0.541	1072.595	.036%	99.558%
82.0	5.042	0.545	1073.141	.037%	99.609%
83.0	5.094	0.551	1073.691	.037%	99.660%
84.0	5.101	0.555	1074.247	.037%	99.712%
85.0	4.930	0.547	1074.794	.037%	99.763%
86.0	4.818	0.533	1075.327	.036%	99.812%
87.0	4.601	0.515	1075.843	.035%	99.860%
88.0	4.594	0.504	1076.346	.034%	99.907%
89.0	4.594	0.504	1076.85	.034%	99.953%
90.0	4.571	0.502	1077.352	.034%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1044.74	70.00%	96.97%
0-40	1051.97	70.49%	97.64%
0-60	1061.76	71.14%	98.55%
0-90	1076.85	72.16%	99.95%
0-120	1076.85	72.16%	99.95%
0-180	1077.35	72.19%	100.00%
60-90	15.58	1.04%	1.45%
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%
0-19.05	861.88	57.75%	80.00%

ZONAL LUMEN SUMMARY

0-10	338.51
10-20	562.68
20-30	143.55
30-40	7.23
40-50	4.99
50-60	4.80
60-70	4.96
70-80	5.34
80-90	4.80
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: —————

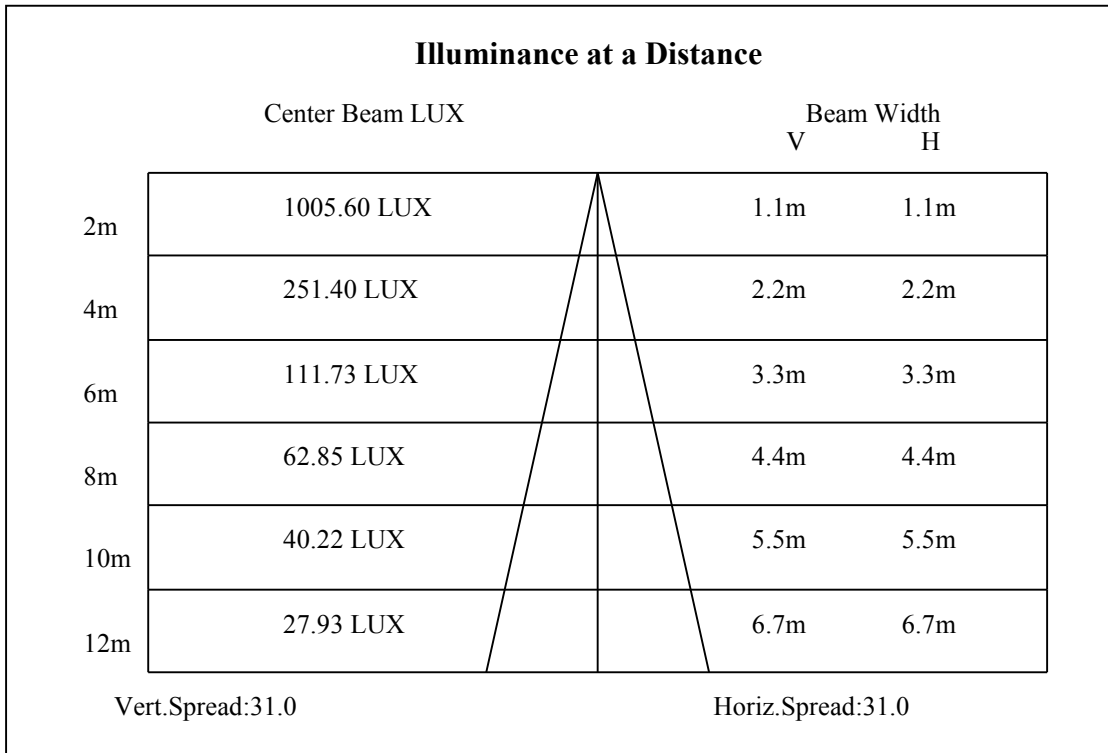
C90/C270: —————

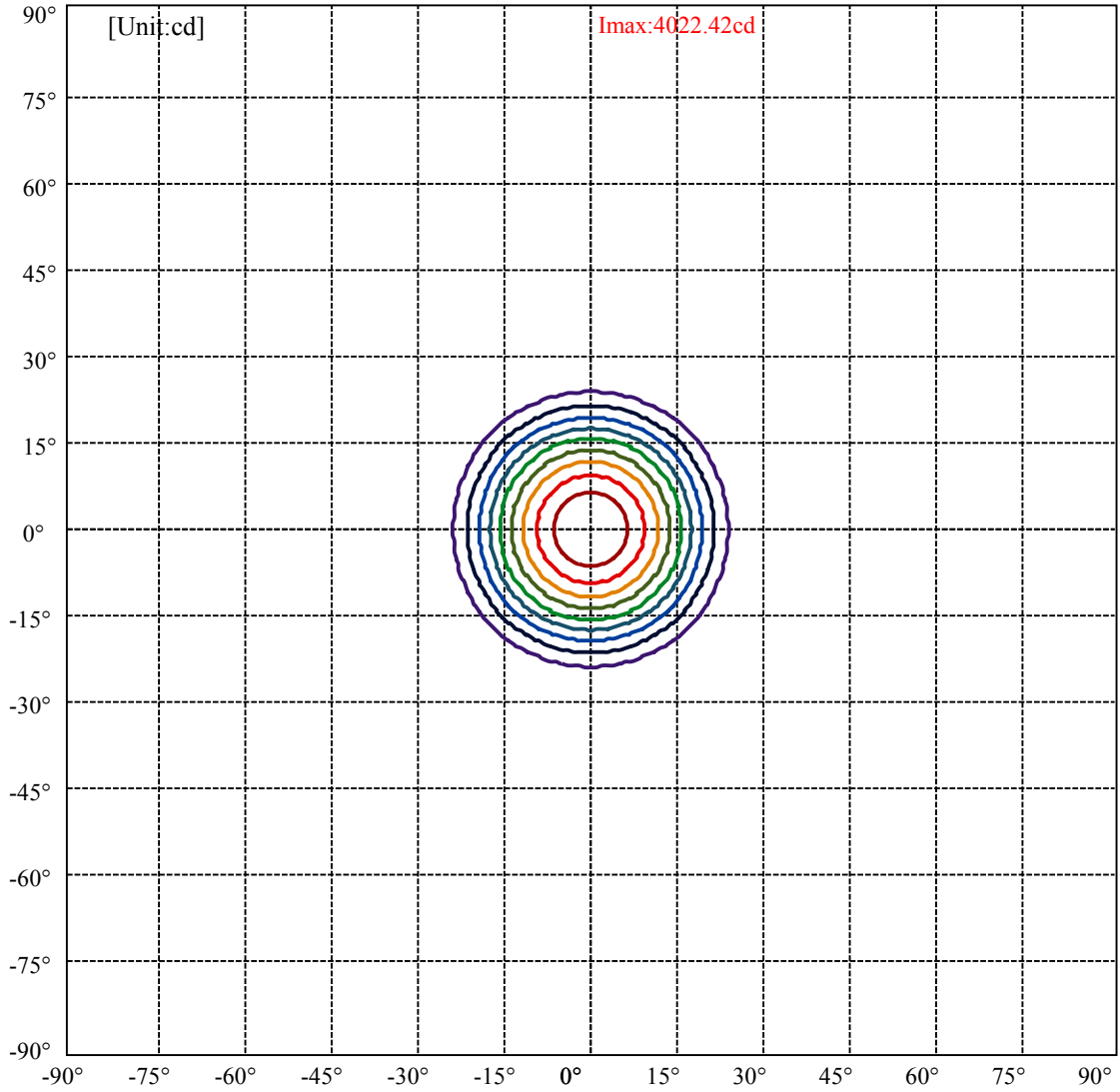
Field angle(10%Imax):C0/180Left:23.6 Right:23.6

:C90/270Left:23.6 Right:23.6

Beam Angle(50%Imax):C0/180Left:15.5 Right:15.5

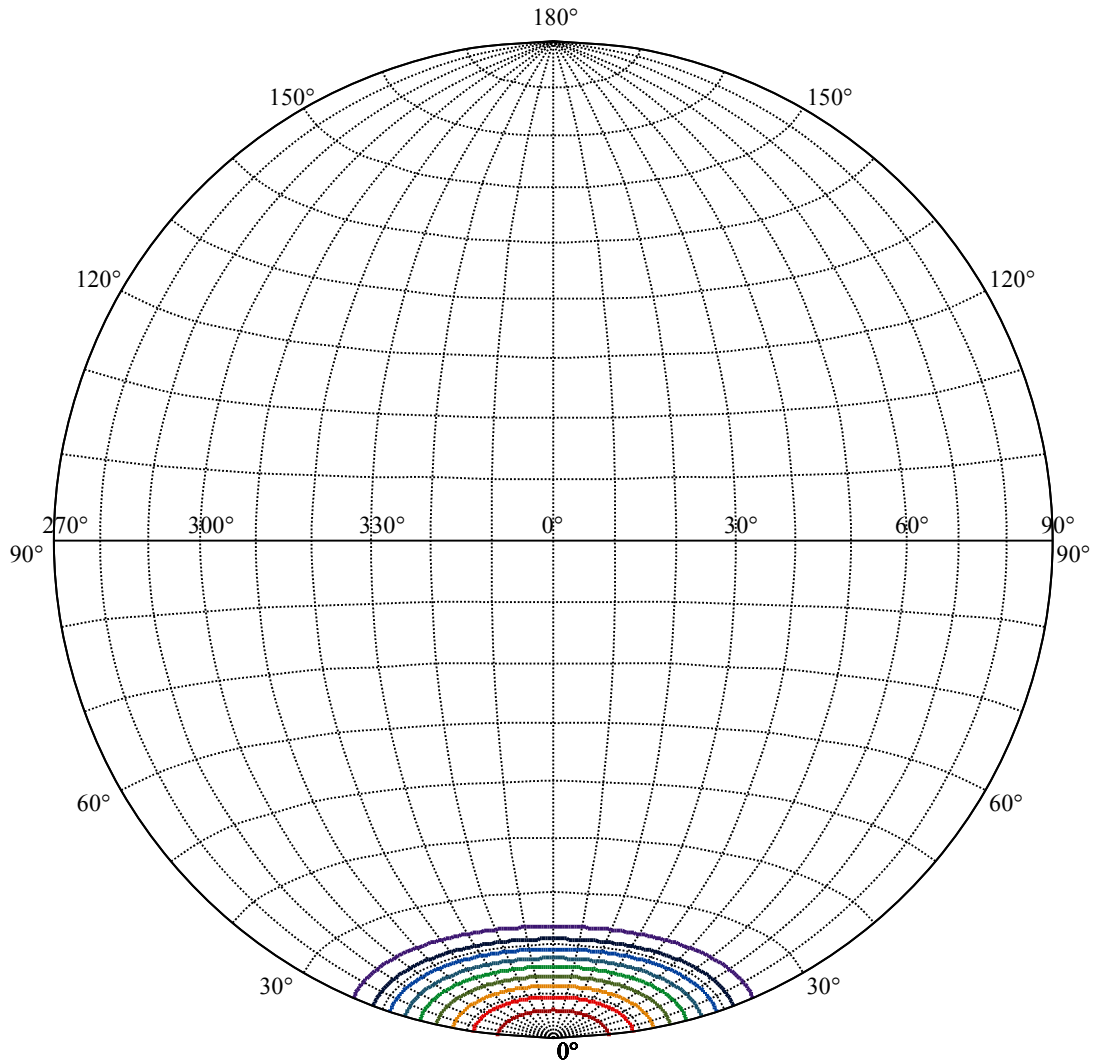
:C90/270Left:15.5 Right:15.5





(10%Imax) 402.242	—
(20%Imax) 804.483	—
(30%Imax) 1206.72	—
(40%Imax) 1608.97	—
(50%Imax) 2011.21	—
(60%Imax) 2413.45	—
(70%Imax) 2815.69	—
(80%Imax) 3217.93	—
(90%Imax) 3620.17	—





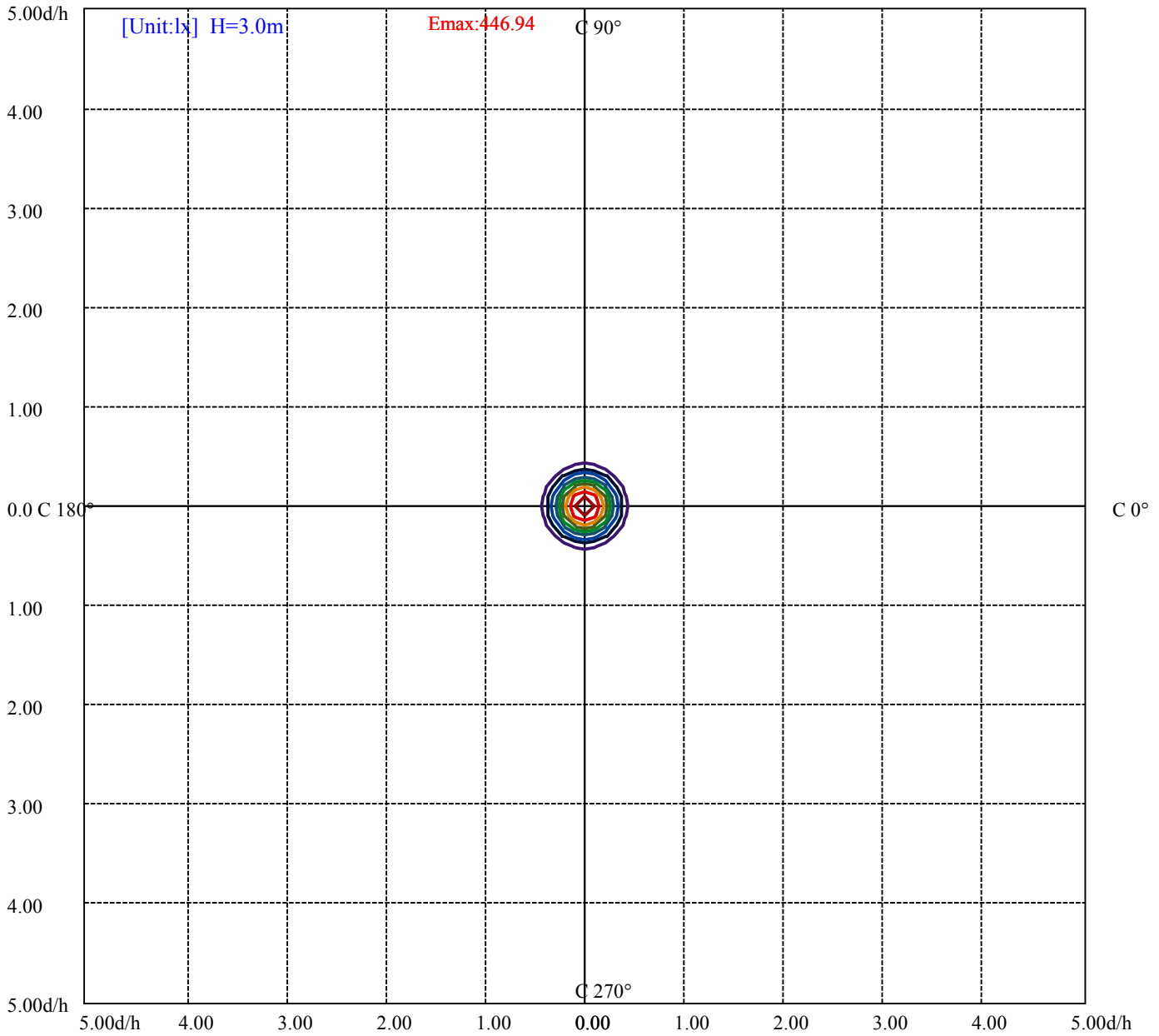
House

[Unit:cd]

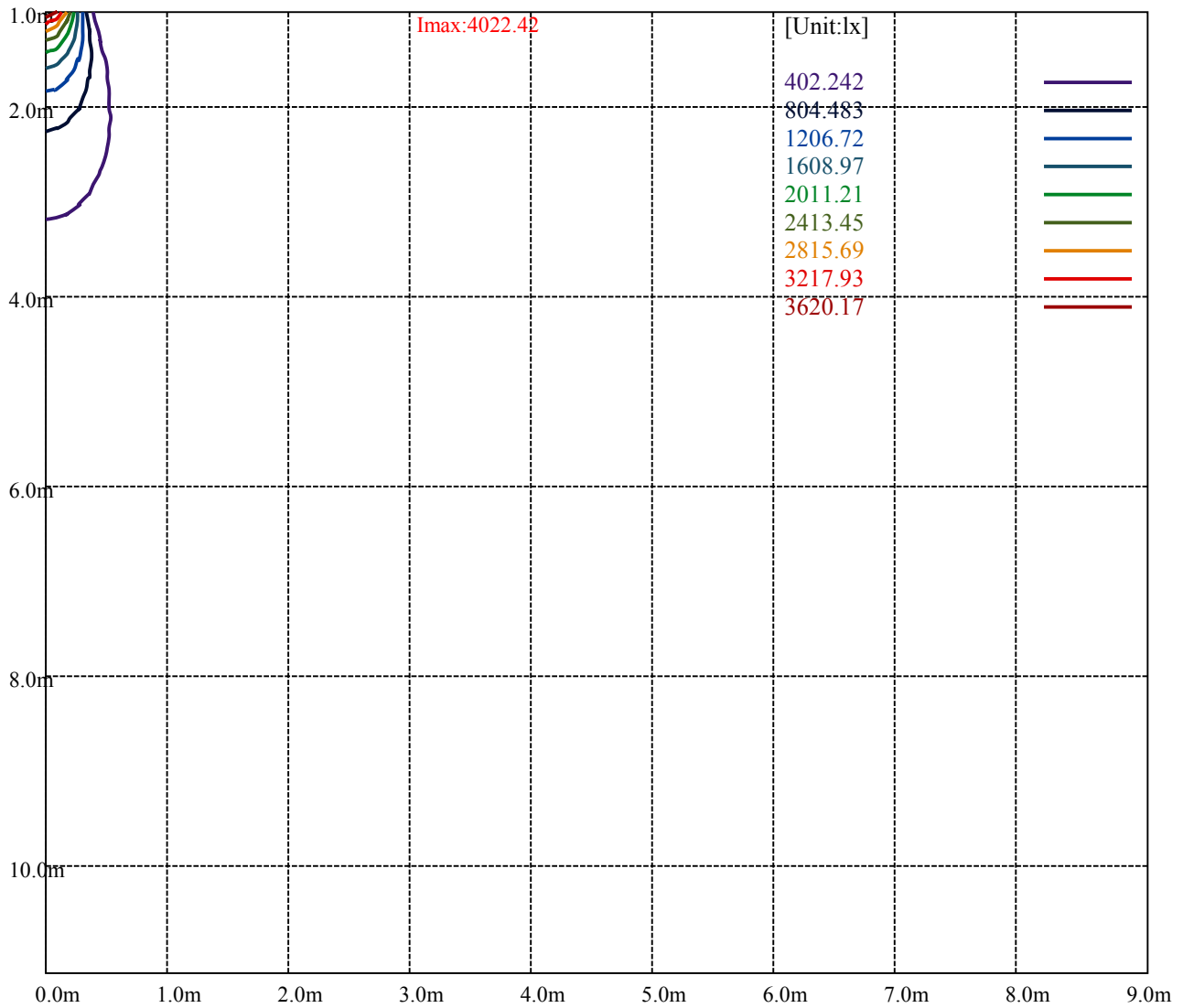
Road

Imax:4022.42

(10%Imax)	402.242	—
(20%Imax)	804.483	—
(30%Imax)	1206.72	—
(40%Imax)	1608.97	—
(50%Imax)	2011.21	—
(60%Imax)	2413.45	—
(70%Imax)	2815.69	—
(80%Imax)	3217.93	—
(90%Imax)	3620.17	—



(10%E <sub>max</sub> ) 44.69344	—
(20%E <sub>max</sub> ) 89.38699	—
(30%E <sub>max</sub> ) 134.08	—
(40%E <sub>max</sub> ) 178.7744	—
(50%E <sub>max</sub> ) 223.4678	—
(60%E <sub>max</sub> ) 268.1611	—
(70%E <sub>max</sub> ) 312.8544	—
(80%E <sub>max</sub> ) 357.5478	—
(90%E <sub>max</sub> ) 402.2411	—



Luminance Table

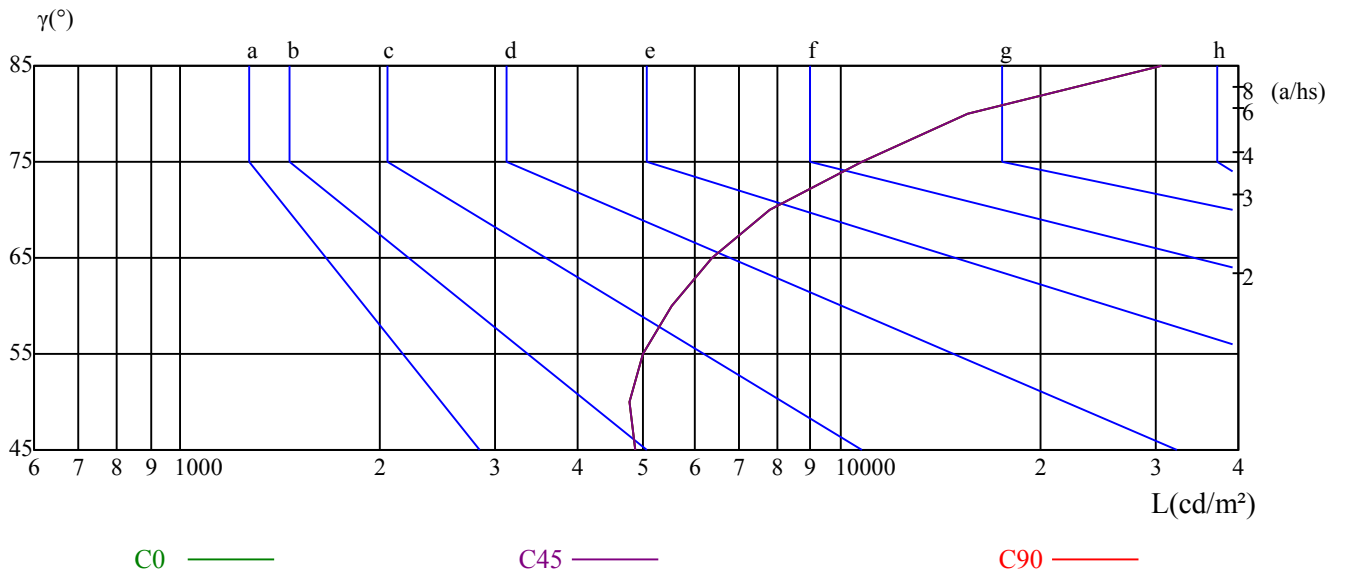
$\gamma$	45	50	55	60	65	70	75	80	85
C0	4890	4801	5021	5542	6375	7783	10738	15540	30590
C45	4890	4801	5021	5542	6375	7783	10738	15540	30590
C90	4890	4801	5021	5542	6375	7783	10738	15540	30590

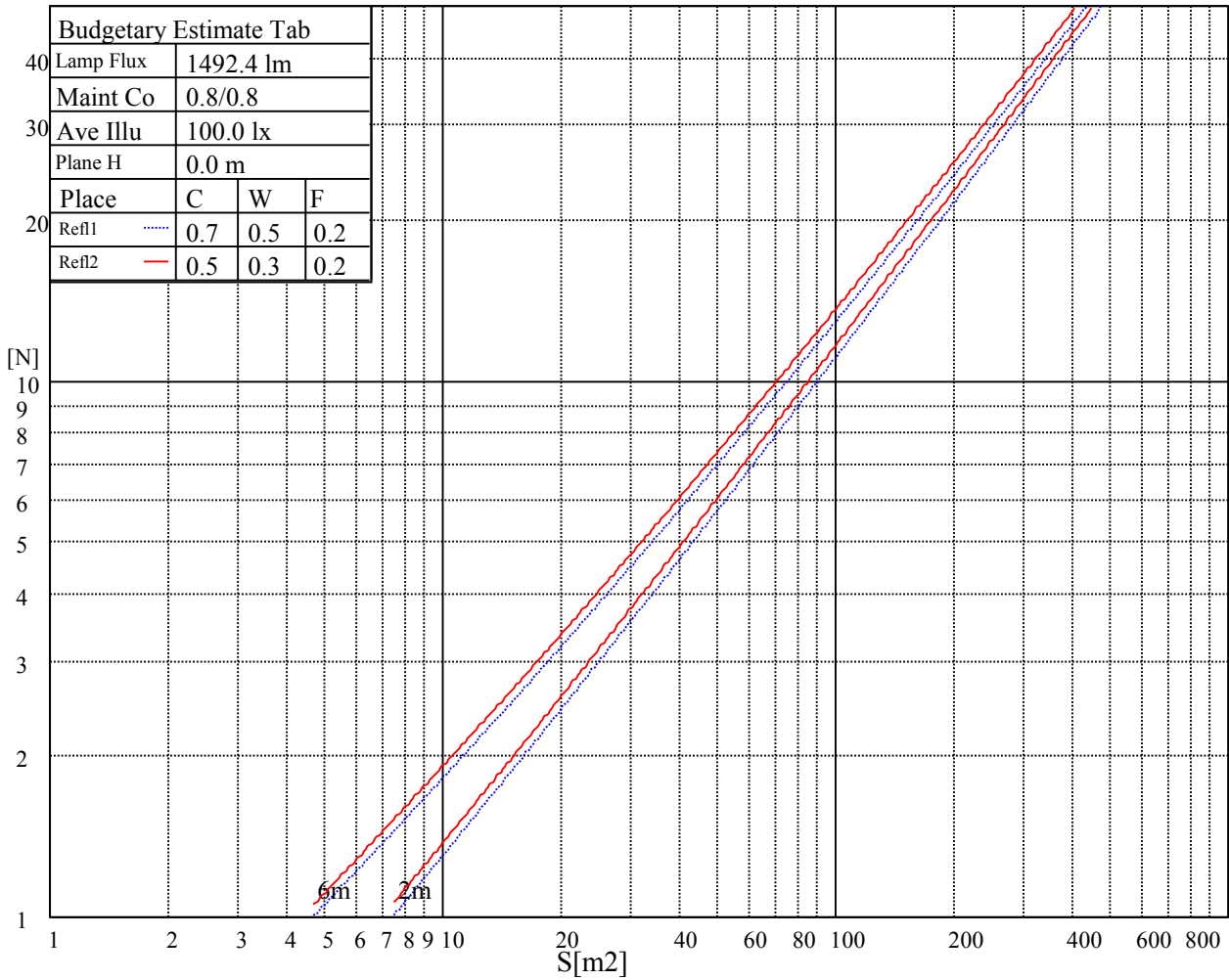
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
6375	6375	6375	10738	10738	10738	30590	30590	30590

Glare Table

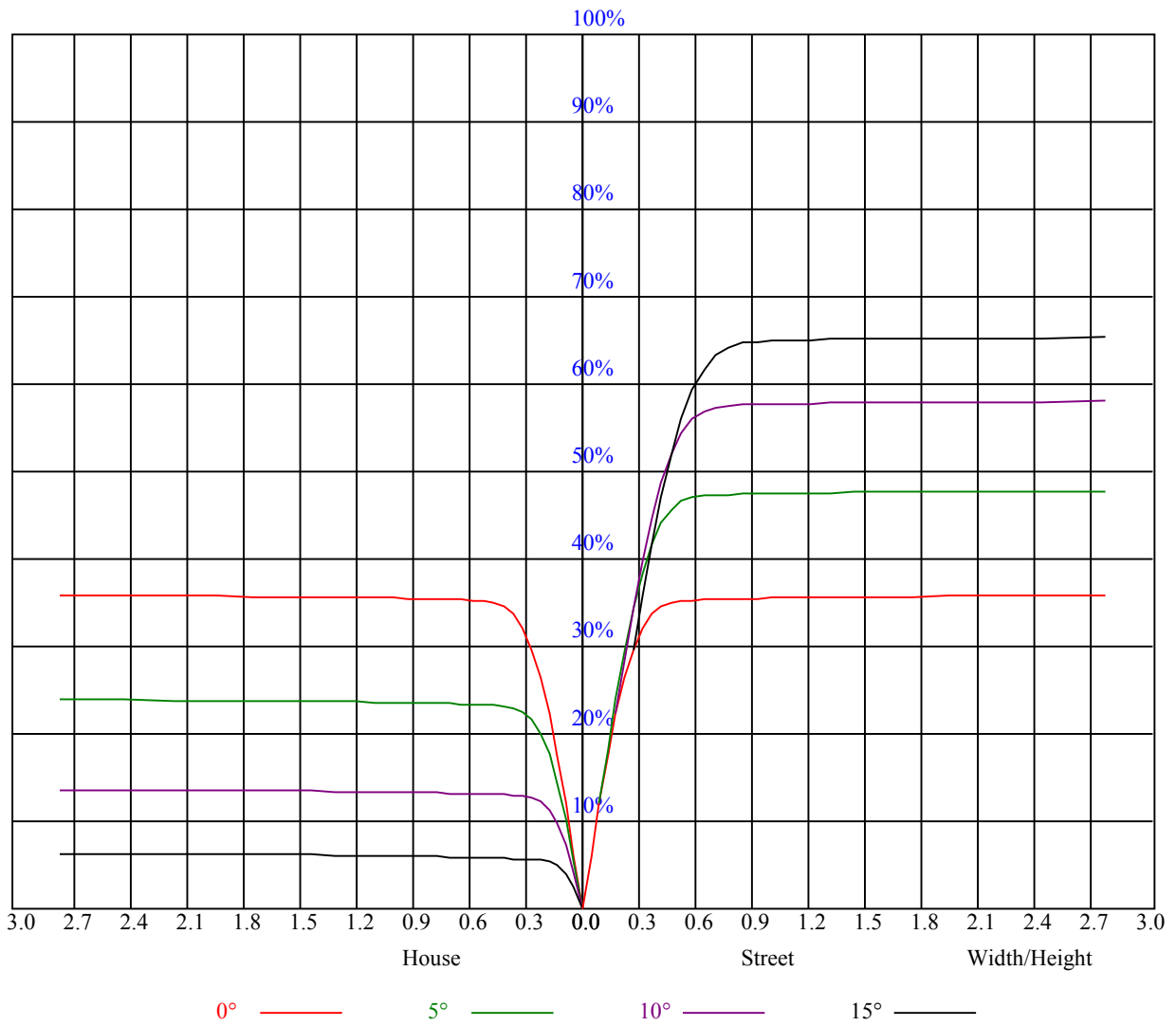
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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	0.86	0.86	0.86	0.84	0.84	0.84	0.80	0.80	0.80	0.77	0.77	0.77	0.74	0.74	0.74	0.72
1	0.81	0.80	0.78	0.80	0.78	0.77	0.77	0.76	0.75	0.74	0.73	0.73	0.72	0.71	0.71	0.69
2	0.77	0.75	0.73	0.76	0.74	0.72	0.74	0.72	0.71	0.72	0.70	0.69	0.70	0.69	0.68	0.67
3	0.74	0.71	0.69	0.73	0.71	0.69	0.71	0.69	0.68	0.70	0.68	0.67	0.68	0.67	0.66	0.65
4	0.71	0.68	0.66	0.70	0.68	0.66	0.69	0.67	0.65	0.68	0.66	0.64	0.66	0.65	0.63	0.63
5	0.69	0.66	0.63	0.68	0.65	0.63	0.67	0.64	0.63	0.66	0.64	0.62	0.65	0.63	0.62	0.61
6	0.66	0.63	0.61	0.66	0.63	0.61	0.65	0.62	0.60	0.64	0.62	0.60	0.63	0.61	0.60	0.59
7	0.64	0.61	0.59	0.64	0.61	0.59	0.63	0.60	0.59	0.62	0.60	0.58	0.61	0.59	0.58	0.57
8	0.62	0.59	0.57	0.62	0.59	0.57	0.61	0.59	0.57	0.61	0.58	0.57	0.60	0.58	0.56	0.56
9	0.60	0.57	0.55	0.60	0.57	0.55	0.59	0.57	0.55	0.59	0.57	0.55	0.58	0.56	0.55	0.54
10	0.59	0.56	0.54	0.58	0.56	0.54	0.58	0.55	0.54	0.57	0.55	0.54	0.57	0.55	0.53	0.53



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	4013.00	4032.72	4036.31	4019.58	3983.73	3938.91	3841.51	3751.29	3662.26
45.0	4029.14	4018.98	3982.53	3928.75	3853.46	3758.46	3654.49	3524.23	3398.74
90.0	4020.18	3983.13	3935.33	3859.44	3767.42	3667.63	3536.18	3389.18	3246.38
135.0	4026.75	3998.66	3945.48	3873.78	3790.72	3692.13	3549.92	3423.24	3283.42
180.0	4013.00	3967.00	3900.07	3822.39	3720.22	3610.87	3471.64	3309.71	3156.75
225.0	4030.33	4025.55	4005.83	3947.28	3889.32	3812.24	3717.83	3582.19	3457.30
270.0	4020.18	4029.14	4024.96	3998.66	3953.25	3887.52	3788.93	3690.34	3579.20
315.0	4026.75	4038.70	4030.33	3994.48	3943.09	3877.96	3781.76	3670.02	3557.69
360.0	4013.00	4032.72	4036.31	4019.58	3983.73	3938.91	3841.51	3751.29	3662.26
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	3514.67	3369.47	3244.58	3051.58	2861.57	2708.00	2473.17	2273.00	2066.26
45.0	3236.81	3062.34	2895.63	2722.94	2491.70	2302.88	2100.91	1846.36	1646.79
90.0	3092.81	2888.46	2719.35	2541.29	2305.27	2102.70	1896.56	1672.48	1438.25
135.0	3093.41	2925.50	2752.22	2547.86	2335.74	2134.97	1900.14	1701.76	1467.53
180.0	2994.82	2782.69	2604.03	2421.19	2176.20	1974.24	1771.08	1567.32	1173.19
225.0	3319.27	3131.05	2968.52	2791.66	2590.29	2382.95	2184.57	1952.72	1743.59
270.0	3421.45	3280.43	3130.45	2948.21	2753.41	2576.55	2363.23	2161.86	1928.82
315.0	3423.84	3247.57	3093.41	2925.50	2708.00	2525.16	2334.55	2083.58	1873.25
360.0	3514.67	3369.47	3244.58	3051.58	2861.57	2708.00	2473.17	2273.00	2066.26
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1809.32	1611.54	1411.36	1158.61	962.02	773.80	559.29	405.72	305.93
45.0	1441.24	1212.39	989.51	786.35	595.14	435.00	320.28	178.90	120.88
90.0	1178.81	980.07	812.04	617.90	444.98	315.44	201.85	128.65	98.47
135.0	1234.49	1038.51	825.79	617.84	469.66	328.64	201.19	139.04	101.40
180.0	1097.18	903.40	697.02	514.47	374.53	246.48	159.00	113.53	77.20
225.0	1512.94	1179.88	1078.84	862.29	659.13	495.77	353.92	214.81	141.49
270.0	1700.57	1498.60	1263.77	1036.12	841.92	659.67	456.51	320.28	304.74
315.0	1677.86	1425.70	1169.18	1020.10	804.04	625.13	441.51	292.61	190.97
360.0	1809.32	1611.54	1411.36	1158.61	962.02	773.80	559.29	405.72	305.93
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	164.38	103.37	71.23	37.70	23.96	18.94	15.48	13.32	11.65
45.0	80.97	44.99	26.23	19.90	15.42	13.09	11.47	10.16	9.38
90.0	65.79	29.64	22.41	17.57	14.22	12.07	10.70	9.74	9.02
135.0	66.68	34.78	24.56	18.46	15.00	12.73	11.05	10.10	9.32
180.0	48.40	28.86	20.91	16.97	14.34	12.07	10.88	10.04	9.26
225.0	99.07	65.91	37.29	26.05	19.54	15.95	13.68	11.89	10.76
270.0	133.31	81.56	56.47	32.03	21.87	17.45	14.76	12.67	11.23
315.0	122.49	76.84	48.34	28.02	21.03	16.37	14.04	12.31	10.76
360.0	164.38	103.37	71.23	37.70	23.96	18.94	15.48	13.32	11.65
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	10.46	9.68	9.02	8.43	8.01	7.71	7.29	7.05	6.81
45.0	8.90	8.37	7.95	7.65	7.29	7.05	6.81	6.57	6.39
90.0	8.54	8.07	7.71	7.35	7.11	6.87	6.63	6.39	6.21
135.0	8.84	8.31	7.95	7.53	7.29	7.05	6.75	6.57	6.39
180.0	8.78	8.37	8.01	7.65	7.41	7.17	6.93	6.75	6.57
225.0	9.80	9.14	8.66	8.25	7.77	7.47	7.23	6.93	6.75
270.0	10.28	9.44	8.84	8.31	7.89	7.53	7.23	6.99	6.75
315.0	9.92	9.26	8.66	8.13	7.77	7.47	7.17	6.87	6.63
360.0	10.46	9.68	9.02	8.43	8.01	7.71	7.29	7.05	6.81



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	6.57	6.39	6.21	6.04	5.98	5.80	5.68	5.62	5.50
45.0	6.21	6.04	5.92	5.80	5.68	5.62	5.50	5.44	5.32
90.0	6.09	5.92	5.80	5.68	5.62	5.44	5.38	5.32	5.26
135.0	6.21	6.09	5.92	5.86	5.74	5.62	5.56	5.50	5.38
180.0	6.45	6.27	6.15	6.04	5.98	5.92	5.86	5.80	5.74
225.0	6.57	6.39	6.21	6.04	5.98	5.86	5.74	5.68	5.56
270.0	6.57	6.33	6.15	6.04	5.86	5.74	5.68	5.56	5.44
315.0	6.45	6.27	6.09	5.98	5.80	5.68	5.62	5.50	5.44
360.0	6.57	6.39	6.21	6.04	5.98	5.80	5.68	5.62	5.50
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	5.44	5.38	5.32	5.20	5.20	5.14	5.08	5.02	5.02
45.0	5.26	5.20	5.20	5.14	5.08	5.08	5.02	4.96	4.96
90.0	5.20	5.14	5.08	5.08	5.02	4.96	4.96	4.90	4.90
135.0	5.32	5.26	5.20	5.20	5.14	5.08	5.08	5.02	5.02
180.0	5.68	5.62	5.56	5.62	5.56	5.56	5.56	5.50	5.50
225.0	5.50	5.44	5.38	5.38	5.32	5.26	5.20	5.20	5.20
270.0	5.38	5.32	5.26	5.20	5.14	5.08	5.08	5.02	4.96
315.0	5.32	5.26	5.20	5.14	5.08	5.02	5.02	4.96	4.90
360.0	5.44	5.38	5.32	5.20	5.20	5.14	5.08	5.02	5.02
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	4.96	4.96	4.90	4.90	4.84	4.84	4.84	4.84	4.78
45.0	4.90	4.90	4.90	4.90	4.84	4.78	4.78	4.78	4.78
90.0	4.84	4.84	4.84	4.78	4.78	4.72	4.78	4.72	4.72
135.0	4.96	4.96	4.90	4.90	4.90	4.84	4.84	4.84	4.84
180.0	5.50	5.50	5.50	5.56	5.56	5.56	5.62	5.62	5.74
225.0	5.14	5.08	5.08	5.08	5.08	5.08	5.08	5.08	5.02
270.0	4.90	4.90	4.90	4.84	4.84	4.78	4.78	4.72	4.72
315.0	4.90	4.84	4.84	4.84	4.84	4.78	4.78	4.78	4.78
360.0	4.96	4.96	4.90	4.90	4.84	4.84	4.84	4.84	4.78
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	4.78	4.78	4.78	4.78	4.72	4.72	4.78	4.78	4.78
45.0	4.84	4.78	4.78	4.78	4.78	4.78	5.02	4.84	4.78
90.0	4.72	4.72	4.72	4.72	4.72	4.72	4.72	4.72	4.72
135.0	4.84	4.84	4.78	4.78	4.78	4.78	4.78	4.78	4.78
180.0	5.98	6.39	7.05	7.53	7.83	7.65	6.81	6.09	6.27
225.0	5.08	5.08	5.08	5.08	5.08	5.08	5.20	5.14	5.14
270.0	4.78	4.78	4.72	4.72	4.72	4.66	4.72	4.72	4.72
315.0	4.78	4.78	4.72	4.72	4.72	4.72	4.72	4.72	4.72
360.0	4.78	4.78	4.78	4.78	4.72	4.72	4.78	4.78	4.78
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	4.72	4.72	4.78	4.78	4.84	4.84	4.66	4.60	4.66
45.0	4.78	4.78	4.84	4.84	4.90	4.60	4.60	4.54	4.54
90.0	4.72	4.72	4.72	4.78	4.60	4.54	4.54	4.54	4.54
135.0	4.78	4.84	4.90	4.90	4.96	4.60	4.60	4.60	4.60
180.0	6.45	6.63	6.75	6.69	5.14	4.60	4.60	4.66	4.72
225.0	5.20	5.20	5.26	5.32	5.50	5.74	4.60	4.60	4.60
270.0	4.72	4.72	4.72	4.72	4.72	4.78	4.60	4.60	4.54
315.0	4.72	4.72	4.78	4.78	4.78	4.84	4.60	4.60	4.54
360.0	4.72	4.72	4.78	4.78	4.84	4.84	4.66	4.60	4.66

Intensity data(cd)

C/ $\gamma$ ( $^{\circ}$ )	90.0
0.0	4.60
45.0	4.54
90.0	4.54
135.0	4.54
180.0	4.60
225.0	4.60
270.0	4.54
315.0	4.60
360.0	4.60