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## Nata

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LumCAT: 1-1060-N	
Luminaire: 92.70.361.000	
Report No: 220518-B021	Voltage(V): 37.6600
Test No: 220518-C021	Current(A): 0.3600
LampCAT: CREE CXA1512	Power (W): 13.5570
Lamp flux(lm): 1623.7	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): 1398.20  
Efficiency(%): 86.11%  
Lumens(lm)/Power(W): 103.14  
Central intensity(cd): 8943.516  
Maximum intensity(cd): 8943.516  
Angle of maximum intensity: C=0.0  $\gamma$ =0.0  
Beam Angle(50%Imax): [C0/180]Total=16.1  
                                  [C90/270]Total=16.1  
Field angle(10%Imax): [C0/180]Total=42.8  
                                  [C90/270]Total=42.8  
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(%): 86.11%  
Up flux rate of LUM(%): - -  
Down flux rate of LUM(%): 100.00%  
CIE Type : Direct lighting  
Output flux ratio in  $\pi$  solid angle : 98.250%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	8943.515	0.000	0	.000%	.000%
1.0	8852.317	8.515	8.515	.524%	.609%
2.0	8577.902	25.018	33.532	1.541%	2.398%
3.0	8126.096	39.950	73.483	2.460%	5.256%
4.0	7547.613	52.465	125.948	3.231%	9.008%
5.0	6811.681	61.773	187.721	3.804%	13.426%
6.0	6048.189	67.582	255.303	4.162%	18.259%
7.0	5226.511	69.982	325.285	4.310%	23.264%
8.0	4498.646	69.601	394.886	4.286%	28.242%
9.0	3818.658	67.407	462.293	4.151%	33.063%
10.0	3249.960	63.968	526.261	3.940%	37.638%
11.0	2813.391	60.585	586.847	3.731%	41.971%
12.0	2463.761	57.687	644.534	3.553%	46.097%
13.0	2158.125	54.850	699.384	3.378%	50.020%
14.0	1918.964	52.186	751.57	3.214%	53.753%
15.0	1727.531	50.061	801.631	3.083%	57.333%
16.0	1549.542	48.018	849.649	2.957%	60.767%
17.0	1402.796	45.976	895.625	2.831%	64.055%
18.0	1273.790	44.131	939.756	2.718%	67.212%
19.0	1149.623	42.162	981.919	2.597%	70.227%
20.0	1046.908	40.203	1022.121	2.476%	73.102%
21.0	934.289	38.043	1060.164	2.343%	75.823%
22.0	837.952	35.614	1095.778	2.193%	78.370%
23.0	749.309	33.305	1129.083	2.051%	80.752%
24.0	666.581	30.956	1160.04	1.907%	82.966%
25.0	587.169	28.508	1188.547	1.756%	85.005%
26.0	518.170	26.092	1214.639	1.607%	86.871%
27.0	444.547	23.553	1238.192	1.451%	88.556%
28.0	372.417	20.684	1258.876	1.274%	90.035%
29.0	308.004	17.802	1276.677	1.096%	91.308%
30.0	246.892	14.982	1291.659	.923%	92.380%
31.0	188.610	12.119	1303.779	.746%	93.247%
32.0	138.126	9.361	1313.139	.576%	93.916%
33.0	105.016	7.163	1320.302	.441%	94.429%
34.0	79.494	5.584	1325.886	.344%	94.828%
35.0	66.662	4.539	1330.425	.280%	95.152%
36.0	57.901	3.966	1334.391	.244%	95.436%
37.0	50.768	3.544	1337.936	.218%	95.690%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	44.785	3.189	1341.125	.196%	95.918%
39.0	39.190	2.866	1343.991	.177%	96.123%
40.0	34.388	2.566	1346.557	.158%	96.306%
41.0	30.765	2.320	1348.877	.143%	96.472%
42.0	27.374	2.112	1350.99	.130%	96.623%
43.0	24.372	1.917	1352.907	.118%	96.760%
44.0	22.243	1.759	1354.666	.108%	96.886%
45.0	20.338	1.636	1356.302	.101%	97.003%
46.0	18.755	1.529	1357.831	.094%	97.113%
47.0	17.396	1.438	1359.269	.089%	97.215%
48.0	16.357	1.364	1360.634	.084%	97.313%
49.0	15.282	1.299	1361.933	.080%	97.406%
50.0	14.438	1.239	1363.172	.076%	97.495%
51.0	13.736	1.192	1364.364	.073%	97.580%
52.0	13.063	1.150	1365.514	.071%	97.662%
53.0	12.503	1.112	1366.626	.068%	97.742%
54.0	12.010	1.080	1367.707	.067%	97.819%
55.0	11.562	1.052	1368.759	.065%	97.894%
56.0	11.166	1.027	1369.786	.063%	97.968%
57.0	10.882	1.008	1370.794	.062%	98.040%
58.0	10.576	0.992	1371.786	.061%	98.111%
59.0	10.367	0.979	1372.765	.060%	98.181%
60.0	10.151	0.969	1373.735	.060%	98.250%
61.0	9.979	0.961	1374.695	.059%	98.319%
62.0	9.822	0.954	1375.649	.059%	98.387%
63.0	9.665	0.948	1376.597	.058%	98.455%
64.0	9.523	0.942	1377.539	.058%	98.522%
65.0	9.389	0.936	1378.475	.058%	98.589%
66.0	9.269	0.931	1379.406	.057%	98.656%
67.0	9.120	0.925	1380.33	.057%	98.722%
68.0	8.985	0.917	1381.247	.056%	98.787%
69.0	8.791	0.907	1382.154	.056%	98.852%
70.0	8.612	0.894	1383.048	.055%	98.916%
71.0	8.403	0.879	1383.927	.054%	98.979%
72.0	8.201	0.863	1384.791	.053%	99.041%
73.0	7.984	0.846	1385.637	.052%	99.101%
74.0	7.835	0.832	1386.469	.051%	99.161%
75.0	7.656	0.818	1387.287	.050%	99.219%

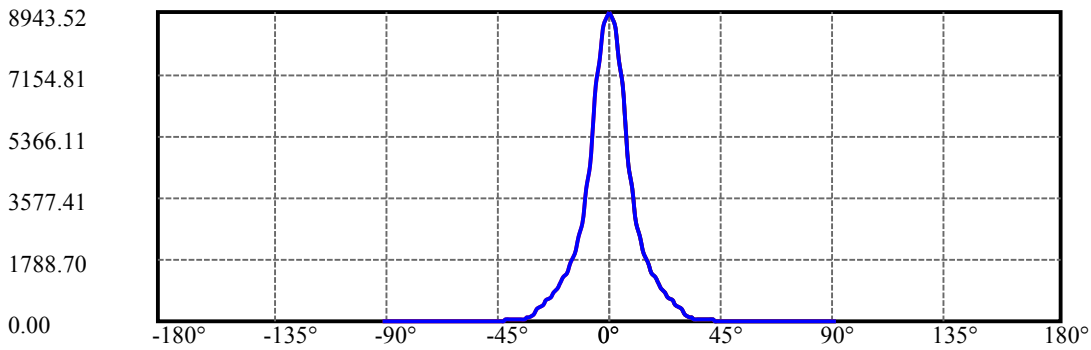
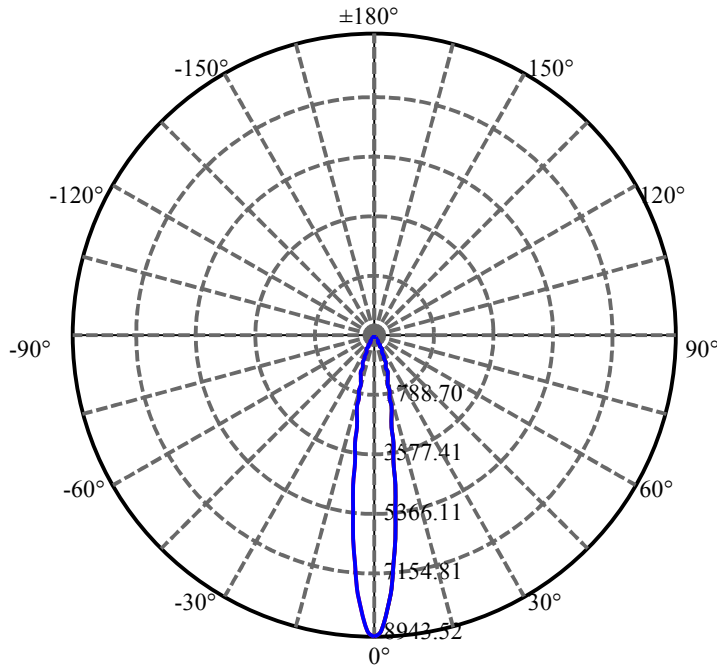
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	7.521	0.806	1388.093	.050%	99.277%
77.0	7.387	0.795	1388.888	.049%	99.334%
78.0	7.253	0.784	1389.671	.048%	99.390%
79.0	7.133	0.773	1390.444	.048%	99.445%
80.0	7.006	0.762	1391.207	.047%	99.500%
81.0	6.879	0.751	1391.958	.046%	99.553%
82.0	6.760	0.740	1392.697	.046%	99.606%
83.0	6.655	0.729	1393.426	.045%	99.658%
84.0	6.543	0.719	1394.145	.044%	99.710%
85.0	6.408	0.707	1394.852	.044%	99.760%
86.0	6.274	0.693	1395.546	.043%	99.810%
87.0	6.162	0.681	1396.226	.042%	99.859%
88.0	6.050	0.669	1396.895	.041%	99.906%
89.0	5.960	0.658	1397.553	.041%	99.954%
90.0	5.893	0.650	1398.203	.040%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1291.66	79.55%	92.38%
0-40	1346.56	82.93%	96.31%
0-60	1373.73	84.60%	98.25%
0-90	1397.55	86.07%	99.95%
0-120	1397.55	86.07%	99.95%
0-180	1398.20	86.11%	100.00%
60-90	24.79	1.53%	1.77%
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%
0-22.68	1118.56	68.89%	80.00%

ZONAL LUMEN SUMMARY

0-10	526.26
10-20	495.86
20-30	269.54
30-40	54.90
40-50	16.61
50-60	10.56
60-70	9.31
70-80	8.16
80-90	6.35
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



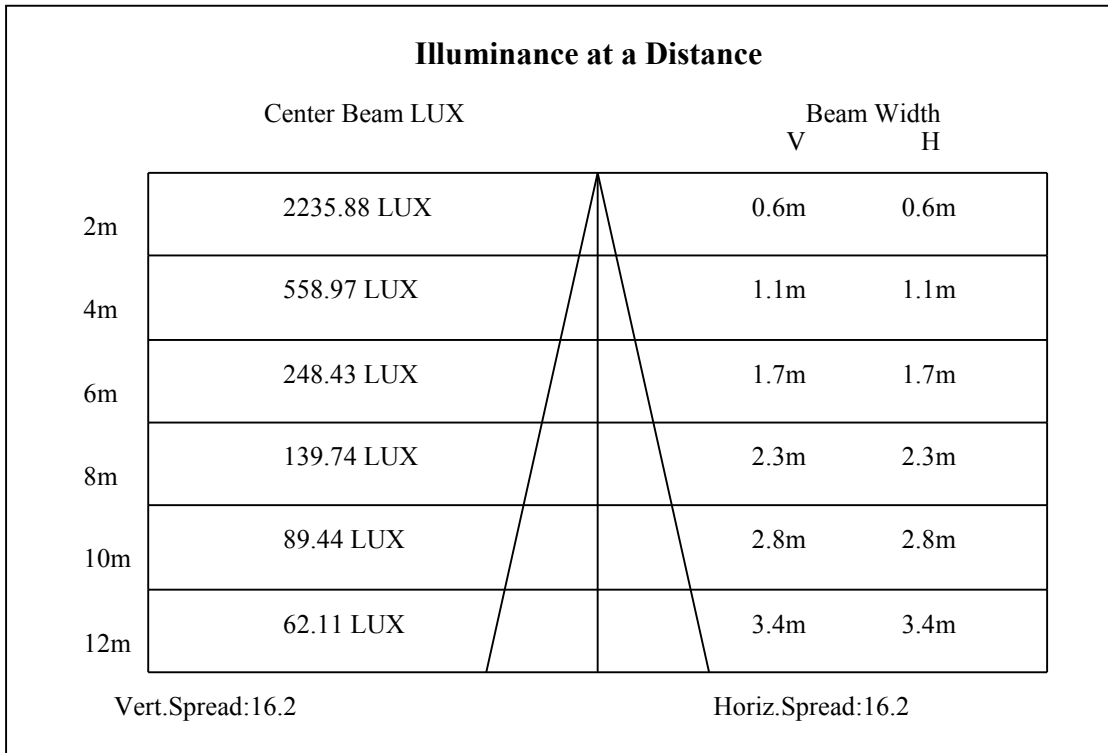
C0(Max): —————

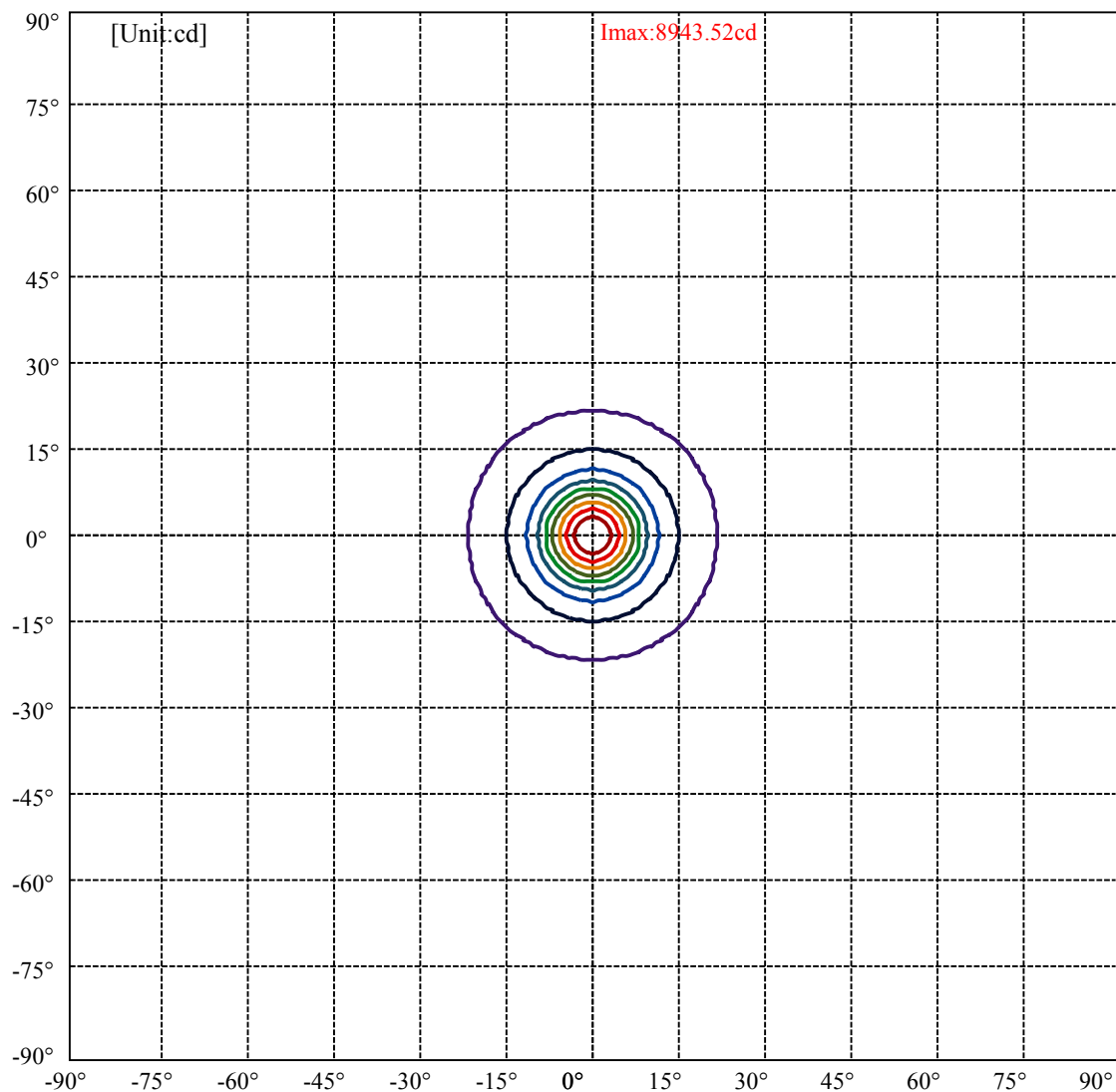
C0/C180: —————

C90/C270: —————

Field angle(10%Imax):C0/180Left:21.4 Right:21.4  
:C90/270Left:21.4 Right:21.4

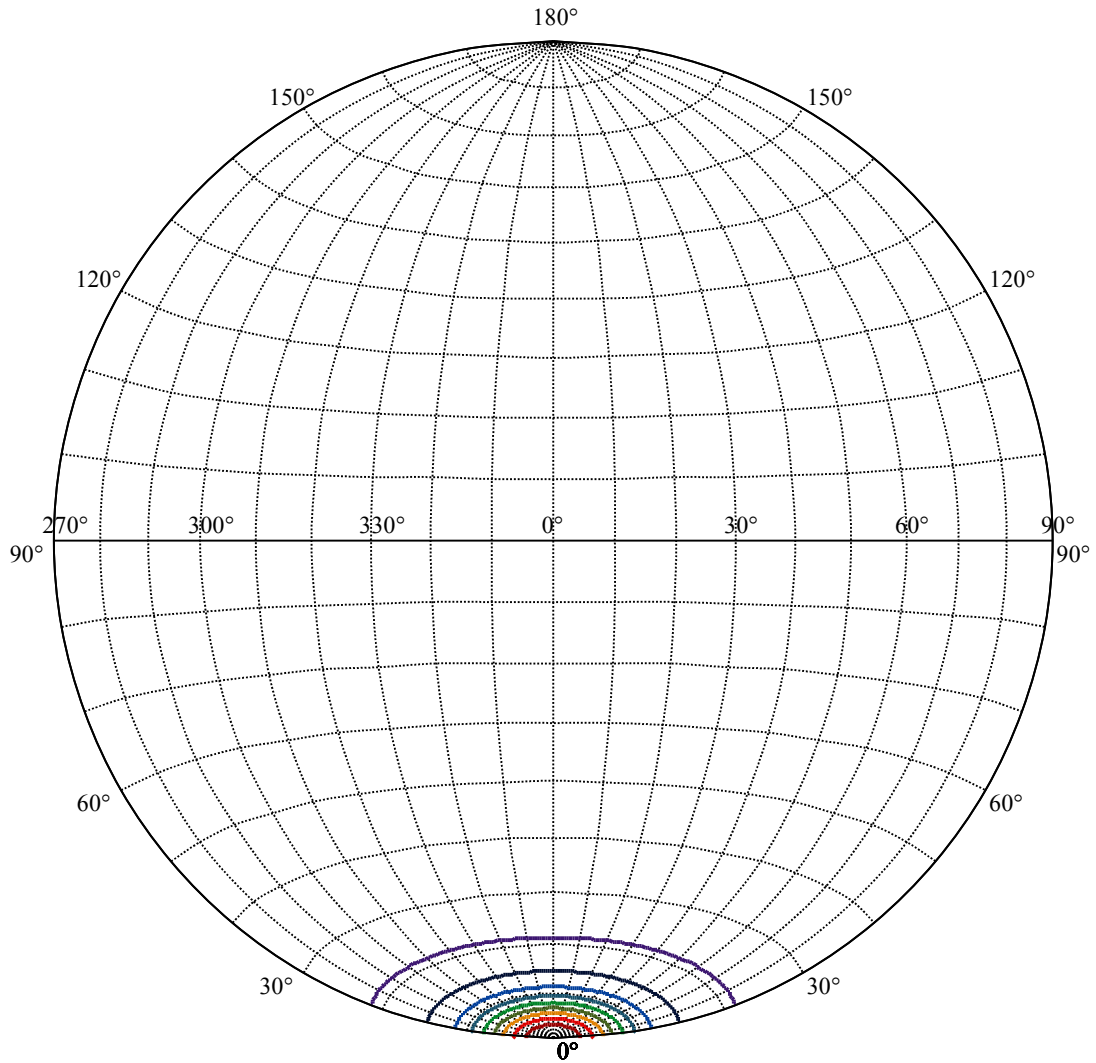
Beam Angle(50%Imax):C0/180Left:8.0 Right:8.0  
:C90/270Left:8.0 Right:8.0





(10%Imax) 894.352	—
(20%Imax) 1788.7	—
(30%Imax) 2683.05	—
(40%Imax) 3577.41	—
(50%Imax) 4471.76	—
(60%Imax) 5366.11	—
(70%Imax) 6260.46	—
(80%Imax) 7154.81	—
(90%Imax) 8049.16	—





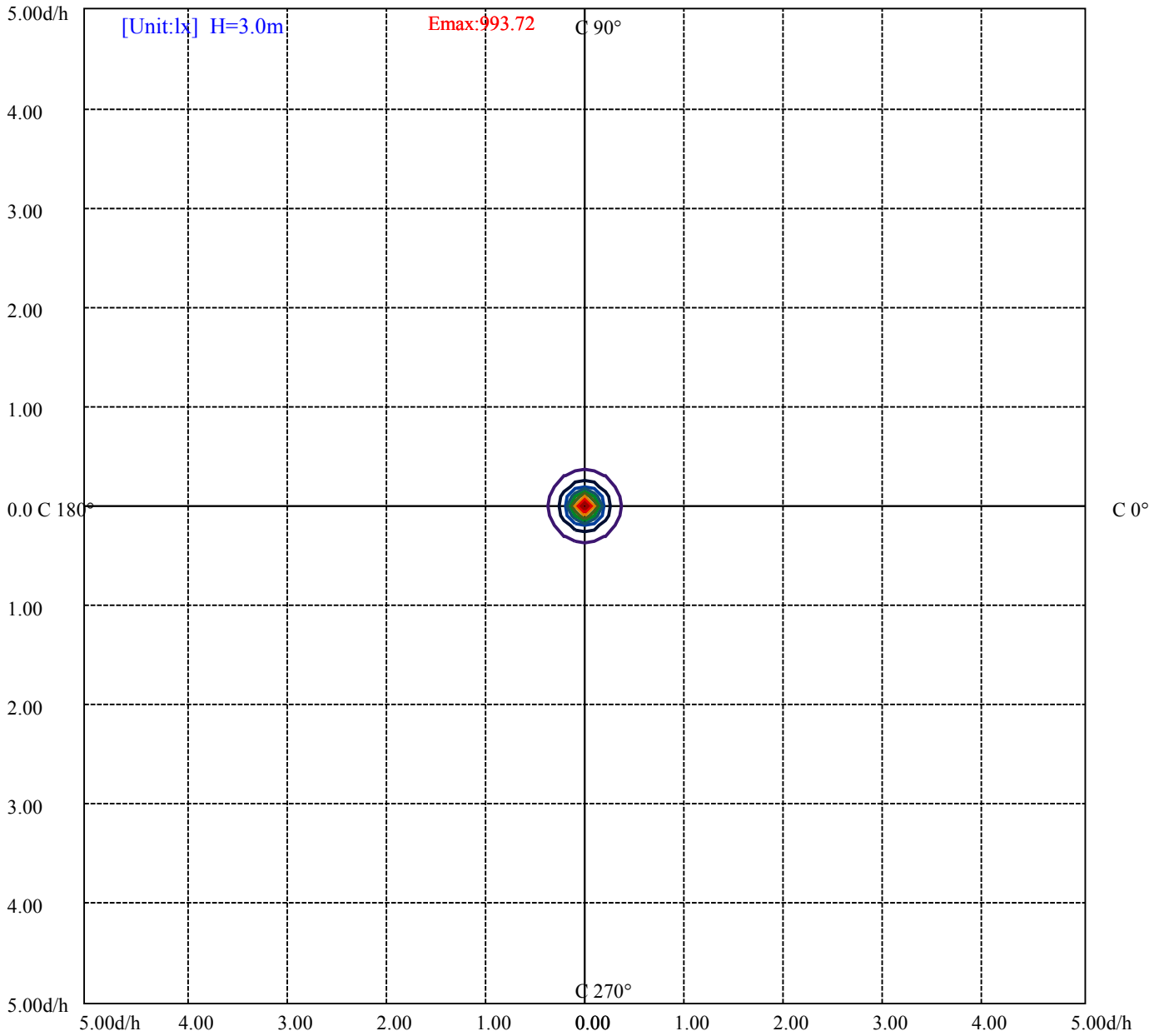
House

[Unit:cd]

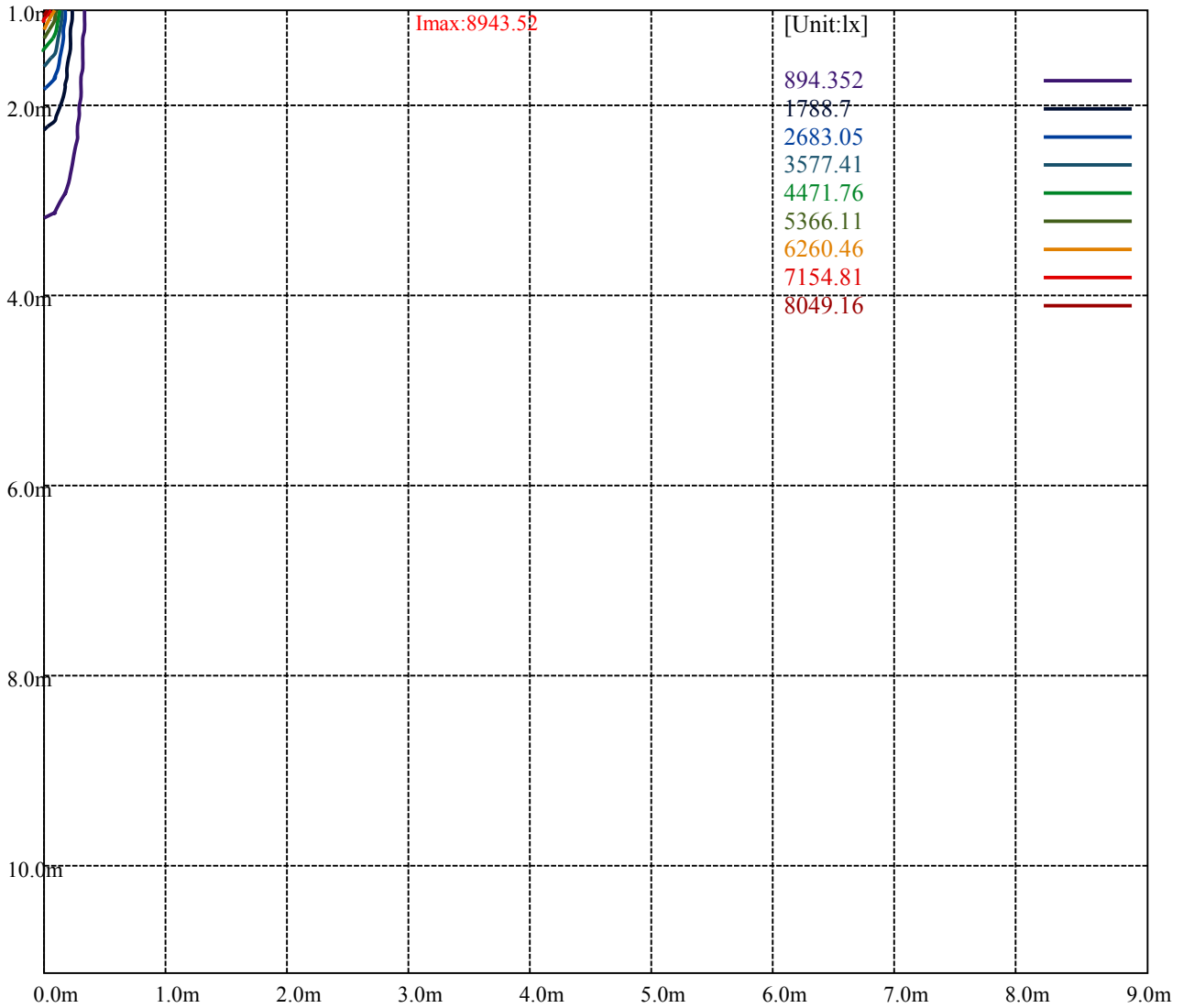
Road

Imax:8943.52

(10%Imax)	894.352	—
(20%Imax)	1788.7	—
(30%Imax)	2683.05	—
(40%Imax)	3577.41	—
(50%Imax)	4471.76	—
(60%Imax)	5366.11	—
(70%Imax)	6260.46	—
(80%Imax)	7154.81	—
(90%Imax)	8049.16	—



- (10%Emax) 99.37222
- (20%Emax) 198.7444
- (30%Emax) 298.1167
- (40%Emax) 397.4889
- (50%Emax) 496.8611
- (60%Emax) 596.2333
- (70%Emax) 695.6056
- (80%Emax) 794.9778
- (90%Emax) 894.35



Luminance Table

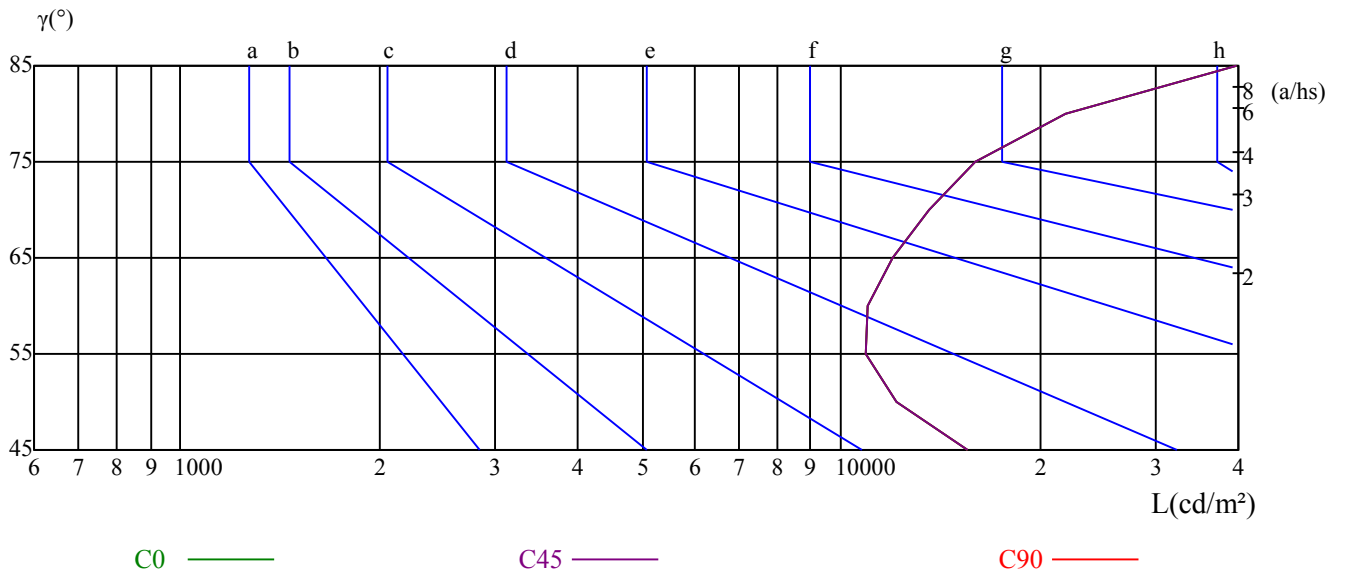
$\gamma$	45	50	55	60	65	70	75	80	85
C0	15556	12148	10902	10979	12015	13618	15998	21820	39767
C45	15556	12148	10902	10979	12015	13618	15998	21820	39767
C90	15556	12148	10902	10979	12015	13618	15998	21820	39767

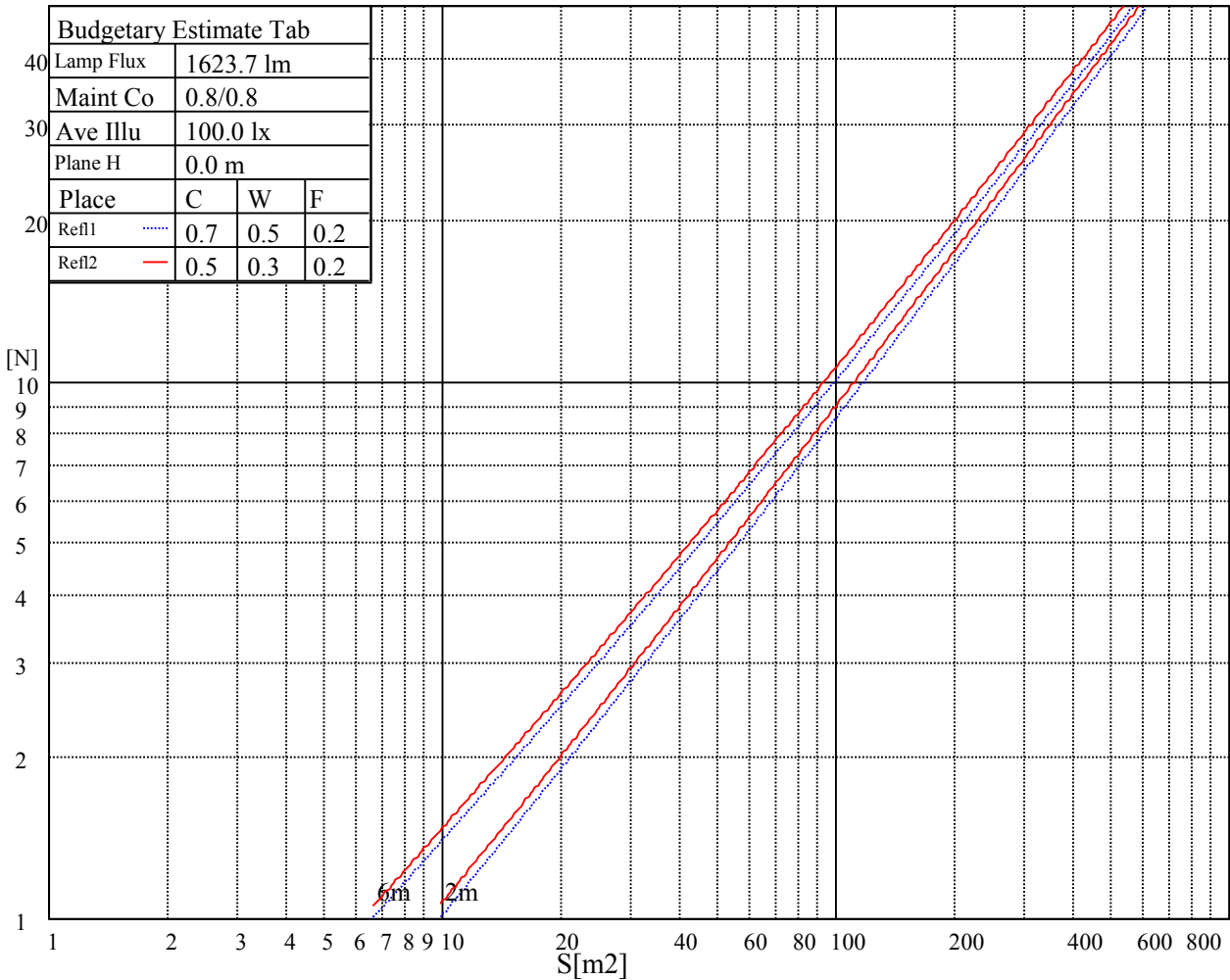
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
12015	12015	12015	15998	15998	15998	39767	39767	39767

Glare Table

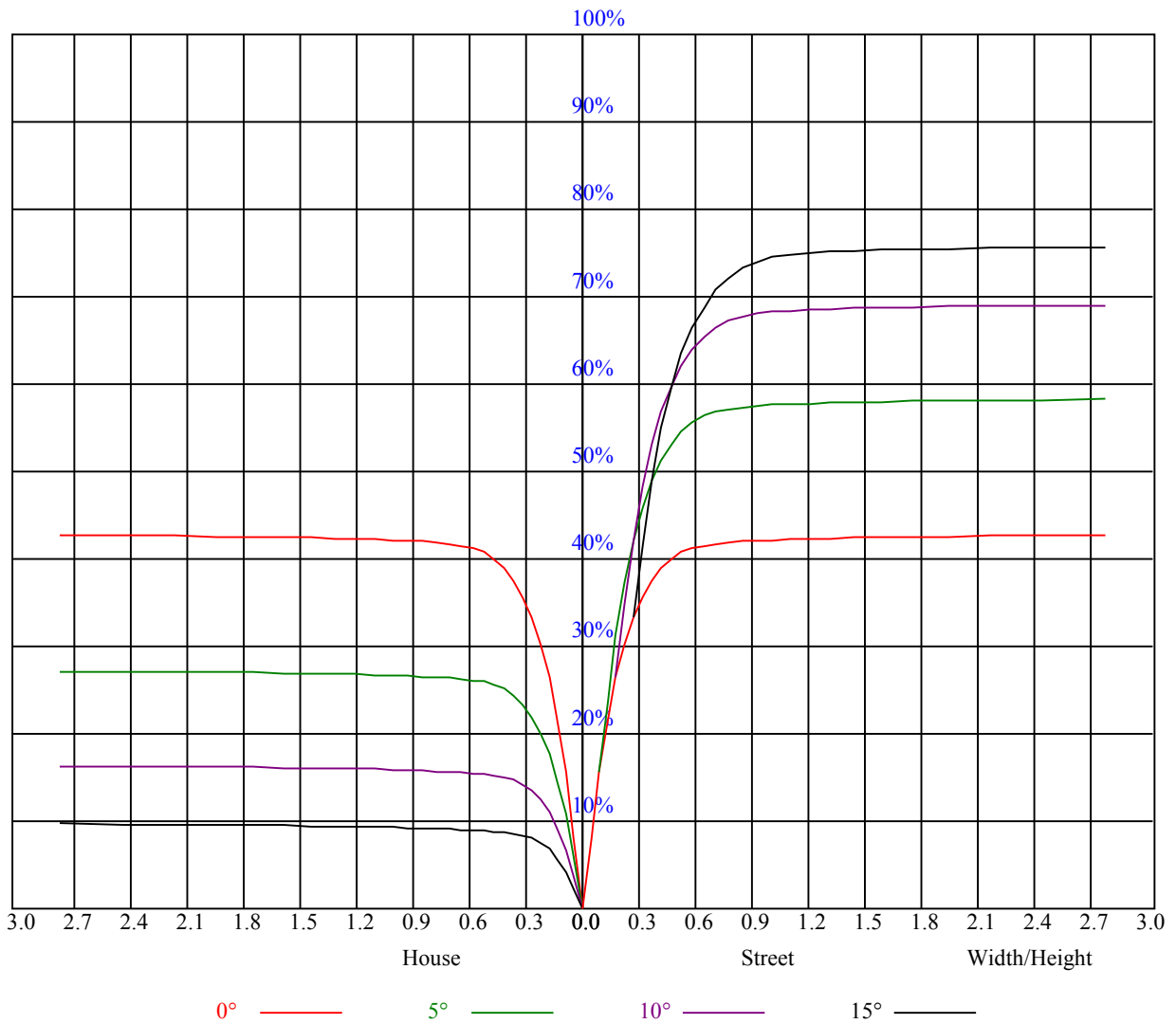
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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	1.03	1.03	1.03	1.00	1.00	1.00	0.96	0.96	0.96	0.92	0.92	0.92	0.88	0.88	0.88	0.86
1	0.97	0.95	0.93	0.95	0.93	0.92	0.91	0.90	0.89	0.88	0.87	0.86	0.85	0.85	0.84	0.82
2	0.92	0.89	0.87	0.90	0.88	0.86	0.88	0.86	0.84	0.85	0.84	0.82	0.83	0.82	0.81	0.79
3	0.88	0.84	0.82	0.87	0.84	0.81	0.84	0.82	0.80	0.82	0.80	0.79	0.81	0.79	0.77	0.76
4	0.84	0.81	0.78	0.83	0.80	0.77	0.81	0.79	0.76	0.80	0.78	0.76	0.78	0.76	0.75	0.74
5	0.81	0.77	0.74	0.80	0.77	0.74	0.79	0.76	0.73	0.77	0.75	0.73	0.76	0.74	0.72	0.71
6	0.78	0.74	0.72	0.77	0.74	0.71	0.76	0.73	0.71	0.75	0.73	0.70	0.74	0.72	0.70	0.69
7	0.75	0.72	0.69	0.75	0.71	0.69	0.74	0.71	0.69	0.73	0.70	0.68	0.72	0.70	0.68	0.67
8	0.73	0.69	0.67	0.73	0.69	0.67	0.72	0.69	0.66	0.71	0.68	0.66	0.70	0.68	0.66	0.65
9	0.71	0.67	0.65	0.71	0.67	0.65	0.70	0.67	0.65	0.69	0.66	0.64	0.69	0.66	0.64	0.63
10	0.69	0.65	0.63	0.69	0.65	0.63	0.68	0.65	0.63	0.67	0.65	0.63	0.67	0.64	0.62	0.62



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	8781.29	9025.68	9117.70	8995.20	8719.74	8229.17	7540.22	6815.42	6031.46
45.0	9092.00	8994.01	8706.60	8217.82	7648.37	6866.21	5979.47	5191.33	4456.37
90.0	8937.84	8661.18	8119.82	7535.44	6836.33	5878.49	5186.55	4363.75	3585.17
135.0	8962.94	8679.71	8186.74	7518.11	6809.44	5953.18	5073.62	4353.60	3728.58
180.0	8781.29	8325.97	7757.12	6986.31	6128.26	5346.69	4586.63	3765.03	3234.42
225.0	9092.00	8991.62	8740.65	8258.45	7595.19	6879.35	6106.15	5138.15	4416.93
270.0	8937.84	9057.34	8969.51	8722.13	8308.64	7571.29	6847.08	6075.67	5206.87
315.0	8962.94	9083.04	9025.08	8775.31	8334.93	7769.07	7065.78	6109.14	5329.36
360.0	8781.29	9025.68	9117.70	8995.20	8719.74	8229.17	7540.22	6815.42	6031.46
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	5062.27	4342.84	3717.83	3131.65	2673.34	2351.28	2068.05	1837.40	1666.51
45.0	3667.04	3144.20	2727.12	2359.04	2074.62	1871.46	1680.85	1515.33	1385.07
90.0	3140.01	2687.69	2307.06	2090.75	1884.01	1668.30	1519.52	1388.66	1183.41
135.0	3094.60	2700.23	2386.53	2130.19	1867.88	1696.38	1530.87	1387.46	1270.94
180.0	2817.35	2415.81	2162.46	1949.74	1748.37	1573.89	1440.04	1270.94	1187.77
225.0	3784.75	3150.77	2758.79	2439.11	2150.51	1911.50	1735.22	1560.75	1426.90
270.0	4402.59	3785.94	3208.13	2801.81	2438.52	2148.12	1930.62	1725.66	1548.80
315.0	4580.66	3772.20	3239.20	2807.79	2427.76	2130.79	1915.08	1710.13	1552.98
360.0	5062.27	4342.84	3717.83	3131.65	2673.34	2351.28	2068.05	1837.40	1666.51
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1500.99	1373.12	1247.64	1130.52	1026.55	927.37	808.46	728.99	660.27
45.0	1255.41	1155.62	1039.70	914.22	823.99	730.18	653.10	583.19	516.86
90.0	1130.05	1024.34	921.21	802.78	720.98	653.76	577.87	497.32	430.16
135.0	1161.00	1045.08	930.95	827.58	739.14	663.85	589.76	510.89	440.98
180.0	1064.14	944.75	845.86	746.19	669.11	600.82	529.29	444.08	380.92
225.0	1261.98	1169.01	1062.82	945.47	833.25	747.75	679.15	589.82	517.76
270.0	1414.95	1297.24	1165.18	1061.21	957.24	833.55	746.91	679.99	602.31
315.0	1401.80	1187.83	1161.90	1046.33	933.34	837.20	748.11	663.08	596.09
360.0	1500.99	1373.12	1247.64	1130.52	1026.55	927.37	808.46	728.99	660.27
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	572.43	497.74	430.22	357.32	302.95	225.81	170.95	116.28	88.31
45.0	440.38	370.47	302.35	265.72	177.23	128.23	95.54	72.24	64.53
90.0	359.71	297.03	229.27	168.50	124.11	89.45	71.05	63.70	56.65
135.0	371.66	302.35	260.94	178.30	124.35	94.89	75.53	65.91	57.78
180.0	320.04	258.55	185.41	135.46	98.83	73.79	65.85	58.56	51.03
225.0	449.76	369.27	307.73	247.44	177.59	131.99	96.80	73.68	66.56
270.0	518.66	448.15	375.25	313.11	267.87	180.51	132.41	94.41	73.44
315.0	523.73	435.78	372.86	309.28	235.96	180.33	131.99	91.18	74.99
360.0	572.43	497.74	430.22	357.32	302.95	225.81	170.95	116.28	88.31
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	72.90	64.77	56.88	49.95	43.68	38.78	34.24	30.29	27.25
45.0	57.18	49.59	43.26	38.24	33.58	29.88	26.47	23.78	21.75
90.0	48.46	42.96	38.06	32.86	29.34	26.35	23.60	21.39	19.66
135.0	50.79	44.04	38.24	34.06	29.76	26.65	23.66	21.27	19.66
180.0	44.46	38.72	34.66	30.06	26.89	24.14	21.99	20.02	18.40
225.0	58.38	50.31	45.05	39.14	33.82	30.59	27.37	23.90	22.05
270.0	65.31	58.50	50.61	44.52	39.62	34.90	30.71	27.61	24.68
315.0	65.73	57.24	51.51	44.70	38.42	34.84	30.95	26.71	24.50
360.0	72.90	64.77	56.88	49.95	43.68	38.78	34.24	30.29	27.25



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	24.56	22.23	20.44	19.18	17.45	16.37	15.60	14.58	13.86
45.0	19.78	18.22	17.09	16.07	15.00	14.22	13.56	12.91	12.31
90.0	18.22	17.09	16.01	15.06	14.34	13.62	12.91	12.43	12.01
135.0	18.05	16.79	15.83	14.94	13.98	13.38	12.79	12.19	11.71
180.0	17.21	16.25	15.12	14.40	13.74	13.03	12.49	12.01	11.53
225.0	20.26	18.64	17.21	16.19	15.18	14.28	13.56	12.91	12.43
270.0	22.29	20.55	18.88	17.63	16.37	15.36	14.52	13.80	13.09
315.0	22.35	20.26	18.58	17.39	16.19	15.24	14.46	13.68	13.09
360.0	24.56	22.23	20.44	19.18	17.45	16.37	15.60	14.58	13.86
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	13.32	12.67	12.13	11.77	11.29	10.99	10.76	10.52	10.28
45.0	11.89	11.41	10.99	10.76	10.46	10.28	9.98	9.80	9.74
90.0	11.47	11.11	10.82	10.58	10.34	10.16	9.92	9.80	9.62
135.0	11.35	10.99	10.70	10.46	10.28	10.10	9.92	9.80	9.68
180.0	11.11	10.82	10.52	10.34	10.10	9.98	9.86	9.68	9.56
225.0	11.89	11.41	11.05	10.76	10.46	10.22	10.04	9.86	9.74
270.0	12.55	12.07	11.53	11.17	10.88	10.64	10.34	10.22	9.98
315.0	12.49	12.01	11.59	11.23	10.82	10.58	10.40	10.16	9.98
360.0	13.32	12.67	12.13	11.77	11.29	10.99	10.76	10.52	10.28
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	10.10	9.92	9.74	9.62	9.50	9.44	9.26	9.08	8.84
45.0	9.56	9.38	9.32	9.20	9.02	8.84	8.72	8.54	8.31
90.0	9.50	9.44	9.32	9.14	9.02	8.84	8.60	8.37	8.19
135.0	9.56	9.44	9.26	9.20	9.02	8.78	8.60	8.37	8.19
180.0	9.44	9.32	9.20	9.08	8.90	8.66	8.43	8.31	8.07
225.0	9.56	9.44	9.26	9.14	9.02	8.90	8.66	8.54	8.31
270.0	9.80	9.62	9.50	9.38	9.20	9.20	9.02	8.84	8.66
315.0	9.80	9.62	9.50	9.38	9.26	9.20	9.02	8.84	8.66
360.0	10.10	9.92	9.74	9.62	9.50	9.44	9.26	9.08	8.84
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	8.78	8.48	8.31	8.07	7.89	7.71	7.59	7.47	7.35
45.0	8.13	7.89	7.71	7.59	7.41	7.35	7.17	7.05	6.87
90.0	8.01	7.77	7.65	7.47	7.35	7.23	7.11	6.99	6.87
135.0	7.95	7.77	7.59	7.47	7.35	7.17	7.05	6.87	6.81
180.0	7.83	7.65	7.53	7.35	7.29	7.11	6.99	6.87	6.75
225.0	8.13	7.89	7.77	7.59	7.47	7.35	7.23	7.11	6.93
270.0	8.37	8.25	8.07	7.83	7.71	7.65	7.47	7.41	7.29
315.0	8.43	8.19	8.07	7.89	7.71	7.53	7.41	7.29	7.17
360.0	8.78	8.48	8.31	8.07	7.89	7.71	7.59	7.47	7.35
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	7.17	7.05	6.87	6.81	6.69	6.57	6.45	6.33	6.21
45.0	6.75	6.69	6.57	6.45	6.33	6.21	6.09	5.98	5.92
90.0	6.75	6.63	6.57	6.33	6.21	6.09	5.98	5.86	5.80
135.0	6.69	6.57	6.45	6.39	6.21	6.09	6.04	5.92	5.86
180.0	6.63	6.51	6.39	6.33	6.21	6.09	5.98	5.92	5.92
225.0	6.81	6.69	6.63	6.51	6.33	6.27	6.15	6.04	5.92
270.0	7.17	6.99	6.93	6.81	6.69	6.39	6.27	6.15	6.04
315.0	7.05	6.93	6.81	6.69	6.57	6.45	6.33	6.21	6.04
360.0	7.17	7.05	6.87	6.81	6.69	6.57	6.45	6.33	6.21

Intensity data(cd)

C/ $\gamma$ (°)	90.0
0.0	6.09
45.0	5.86
90.0	5.80
135.0	5.80
180.0	5.92
225.0	5.86
270.0	5.92
315.0	5.92
360.0	6.09