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## Nata

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LumCAT: LN01D02824DA-N

Luminaire: 92.70.307.00

Report No: 211113-B007

Test No: 211113-C007

LampCAT: CREE CXA1310

Lamp flux(lm): 987.9

Number of Lamps: 1

Length(mm): 111

Phm Type: C

Voltage(V): 33.3700

Current(A): 0.2500

Power (W): 8.3420

PF: 0.0000

Ballast type: DC

Width(mm): 111

Height(mm): 0

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## Photometric Results

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Lumens(lm): 634.50

Efficiency(%): 64.23%

Lumens(lm)/Power(W): 76.06

Central intensity(cd): 1715.954

Maximum intensity(cd): 1715.954

Angle of maximum intensity: C=0.0  $\gamma$ =0.0

Beam Angle(50%Imax): [C0/180]Total=29.0

[C90/270]Total=29.0

Field angle(10%Imax): [C0/180]Total=57.5

[C90/270]Total=57.5

Maximum s/h(1/2): C0\_180=0.48 C90\_270=0.48

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(%): 64.23%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in  $\pi$  solid angle : 94.815%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	1715.954	0.000	0	.000%	.000%
1.0	1710.352	1.639	1.639	.166%	.258%
2.0	1694.144	4.886	6.526	.495%	1.029%
3.0	1667.554	8.040	14.566	.814%	2.296%
4.0	1631.404	11.043	25.609	1.118%	4.036%
5.0	1588.381	13.851	39.46	1.402%	6.219%
6.0	1530.720	16.392	55.852	1.659%	8.802%
7.0	1465.290	18.596	74.448	1.882%	11.733%
8.0	1393.819	20.462	94.91	2.071%	14.958%
9.0	1317.350	21.973	116.883	2.224%	18.421%
10.0	1228.370	23.038	139.92	2.332%	22.052%
11.0	1156.069	23.825	163.746	2.412%	25.807%
12.0	1073.371	24.371	188.117	2.467%	29.648%
13.0	979.066	24.357	212.474	2.466%	33.487%
14.0	898.191	24.029	236.503	2.432%	37.274%
15.0	816.964	23.546	260.049	2.384%	40.985%
16.0	733.078	22.712	282.762	2.299%	44.564%
17.0	660.561	21.703	304.464	2.197%	47.985%
18.0	589.933	20.618	325.082	2.087%	51.234%
19.0	525.631	19.409	344.491	1.965%	54.293%
20.0	469.643	18.216	362.707	1.844%	57.164%
21.0	415.895	17.004	379.711	1.721%	59.844%
22.0	368.810	15.769	395.48	1.596%	62.329%
23.0	333.018	14.726	410.206	1.491%	64.650%
24.0	296.061	13.754	423.96	1.392%	66.818%
25.0	259.469	12.632	436.592	1.279%	68.808%
26.0	239.617	11.781	448.373	1.193%	70.665%
27.0	208.231	10.957	459.33	1.109%	72.392%
28.0	185.227	9.962	469.291	1.008%	73.962%
29.0	166.778	9.209	478.501	.932%	75.413%
30.0	150.966	8.579	487.08	.868%	76.765%
31.0	135.475	7.971	495.051	.807%	78.022%
32.0	122.501	7.391	502.441	.748%	79.187%
33.0	111.716	6.900	509.342	.698%	80.274%
34.0	101.184	6.443	515.785	.652%	81.289%
35.0	92.288	6.009	521.793	.608%	82.236%
36.0	84.543	5.630	527.423	.570%	83.124%
37.0	77.529	5.286	532.709	.535%	83.957%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	71.173	4.963	537.673	.502%	84.739%
39.0	65.332	4.659	542.332	.472%	85.473%
40.0	60.223	4.379	546.711	.443%	86.164%
41.0	56.033	4.140	550.851	.419%	86.816%
42.0	51.978	3.924	554.775	.397%	87.435%
43.0	48.176	3.710	558.485	.376%	88.019%
44.0	45.113	3.521	562.006	.356%	88.574%
45.0	42.290	3.359	565.365	.340%	89.104%
46.0	39.504	3.199	568.564	.324%	89.608%
47.0	37.151	3.049	571.613	.309%	90.088%
48.0	35.135	2.922	574.535	.296%	90.549%
49.0	33.028	2.799	577.334	.283%	90.990%
50.0	31.072	2.673	580.007	.271%	91.411%
51.0	29.458	2.561	582.567	.259%	91.815%
52.0	27.860	2.460	585.027	.249%	92.202%
53.0	26.373	2.359	587.386	.239%	92.574%
54.0	25.059	2.267	589.653	.229%	92.931%
55.0	23.797	2.181	591.834	.221%	93.275%
56.0	22.661	2.099	593.933	.213%	93.606%
57.0	21.616	2.024	595.958	.205%	93.925%
58.0	20.570	1.951	597.908	.197%	94.232%
59.0	19.674	1.881	599.79	.190%	94.529%
60.0	18.762	1.816	601.606	.184%	94.815%
61.0	17.836	1.747	603.352	.177%	95.090%
62.0	17.022	1.680	605.032	.170%	95.355%
63.0	16.283	1.620	606.652	.164%	95.610%
64.0	15.461	1.558	608.209	.158%	95.856%
65.0	14.766	1.496	609.705	.151%	96.092%
66.0	14.132	1.442	611.147	.146%	96.319%
67.0	13.467	1.388	612.535	.140%	96.538%
68.0	12.832	1.332	613.867	.135%	96.748%
69.0	12.287	1.281	615.149	.130%	96.950%
70.0	11.921	1.243	616.392	.126%	97.146%
71.0	11.809	1.226	617.618	.124%	97.339%
72.0	11.704	1.223	618.841	.124%	97.531%
73.0	11.301	1.203	620.044	.122%	97.721%
74.0	11.077	1.176	621.22	.119%	97.906%
75.0	11.084	1.171	622.391	.119%	98.091%

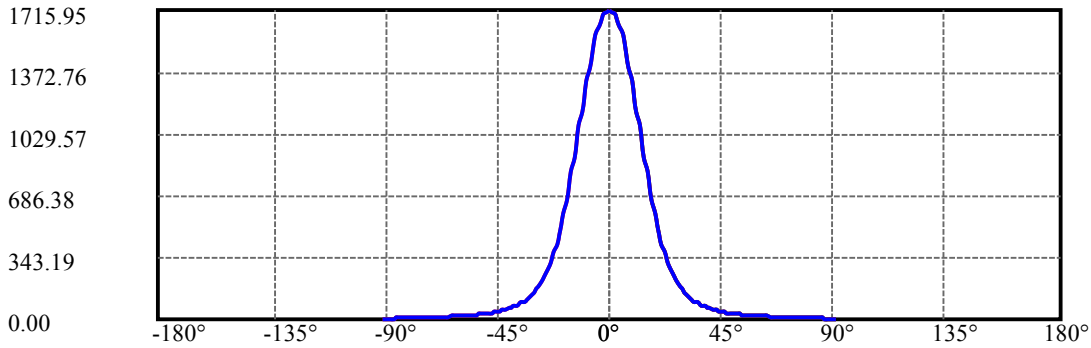
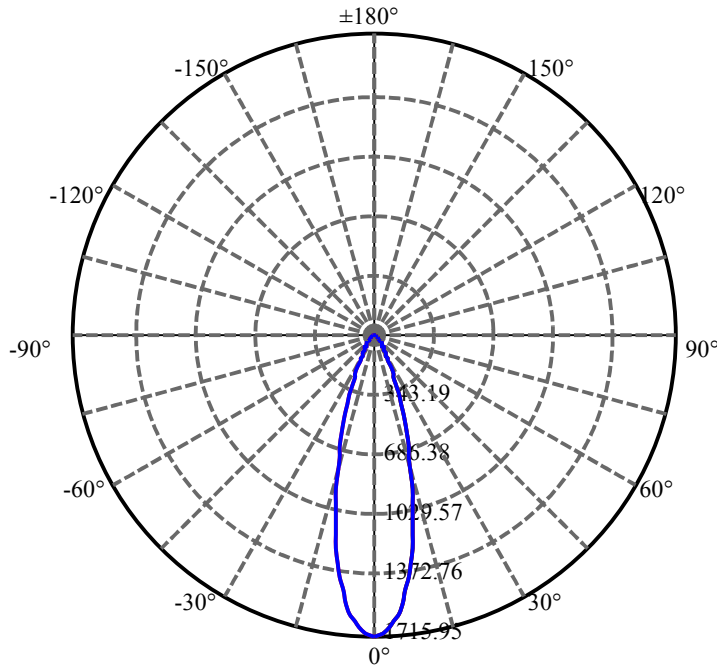
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	11.039	1.174	623.566	.119%	98.276%
77.0	11.151	1.183	624.749	.120%	98.463%
78.0	11.278	1.201	625.949	.122%	98.652%
79.0	11.017	1.198	627.147	.121%	98.841%
80.0	10.270	1.148	628.295	.116%	99.021%
81.0	9.471	1.068	629.362	.108%	99.190%
82.0	8.627	0.981	630.344	.099%	99.344%
83.0	7.723	0.889	631.233	.090%	99.484%
84.0	7.036	0.804	632.037	.081%	99.611%
85.0	5.632	0.691	632.728	.070%	99.720%
86.0	3.525	0.501	633.229	.051%	99.799%
87.0	3.062	0.361	633.589	.036%	99.856%
88.0	2.831	0.323	633.912	.033%	99.907%
89.0	2.644	0.300	634.212	.030%	99.954%
90.0	2.674	0.292	634.504	.030%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	487.08	49.31%	76.77%
0-40	546.71	55.34%	86.16%
0-60	601.61	60.90%	94.82%
0-90	634.21	64.20%	99.95%
0-120	634.21	64.20%	99.95%
0-180	634.50	64.23%	100.00%
60-90	34.42	3.48%	5.43%
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%
0-32.75	507.60	51.38%	80.00%

ZONAL LUMEN SUMMARY

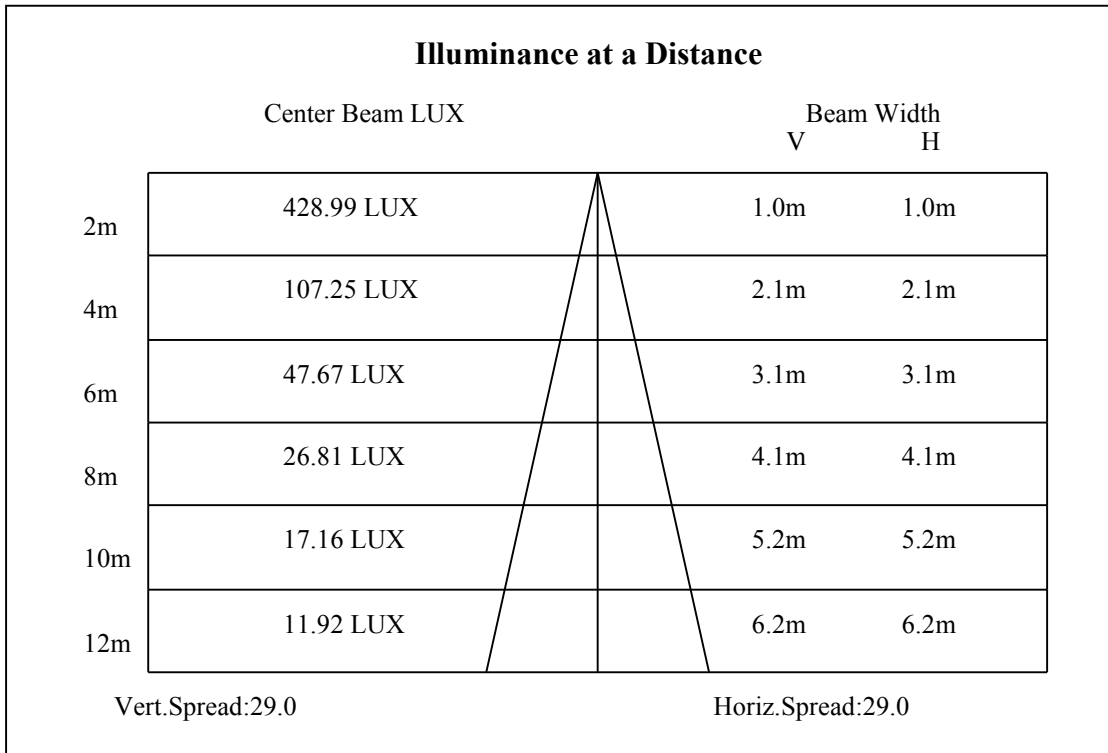
0-10	139.92
10-20	222.79
20-30	124.37
30-40	59.63
40-50	33.30
50-60	21.60
60-70	14.79
70-80	11.90
80-90	5.92
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

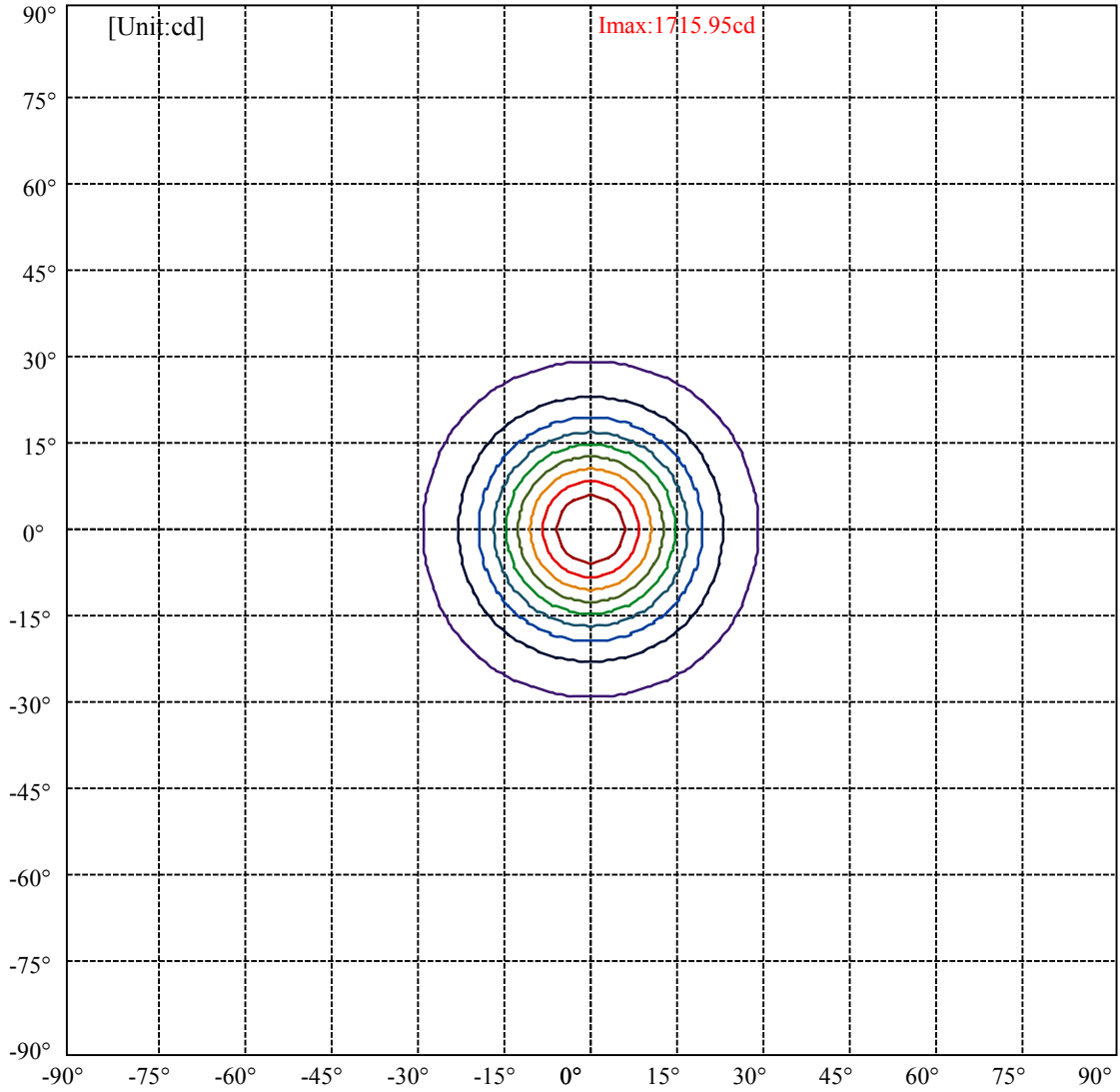


C0(Max): ———  
C0/C180: ———  
C90/C270: ———

Field angle(10%Imax):C0/180Left:28.7 Right:28.7  
:C90/270Left:28.7 Right:28.7

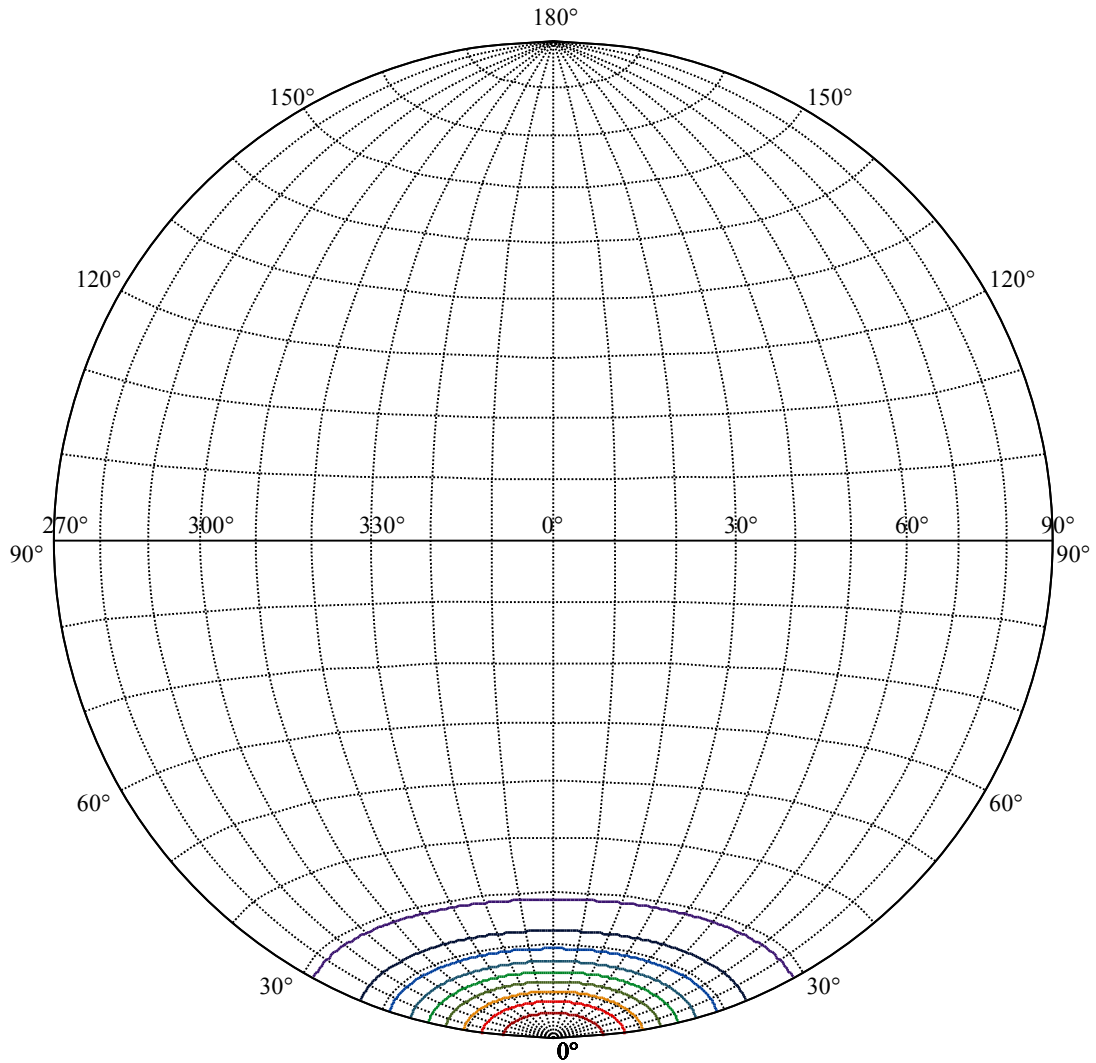
Beam Angle(50%Imax):C0/180Left:14.5 Right:14.5  
:C90/270Left:14.5 Right:14.5





(10%Imax) 171.595	—
(20%Imax) 343.191	—
(30%Imax) 514.786	—
(40%Imax) 686.382	—
(50%Imax) 857.977	—
(60%Imax) 1029.57	—
(70%Imax) 1201.17	—
(80%Imax) 1372.76	—
(90%Imax) 1544.36	—





House

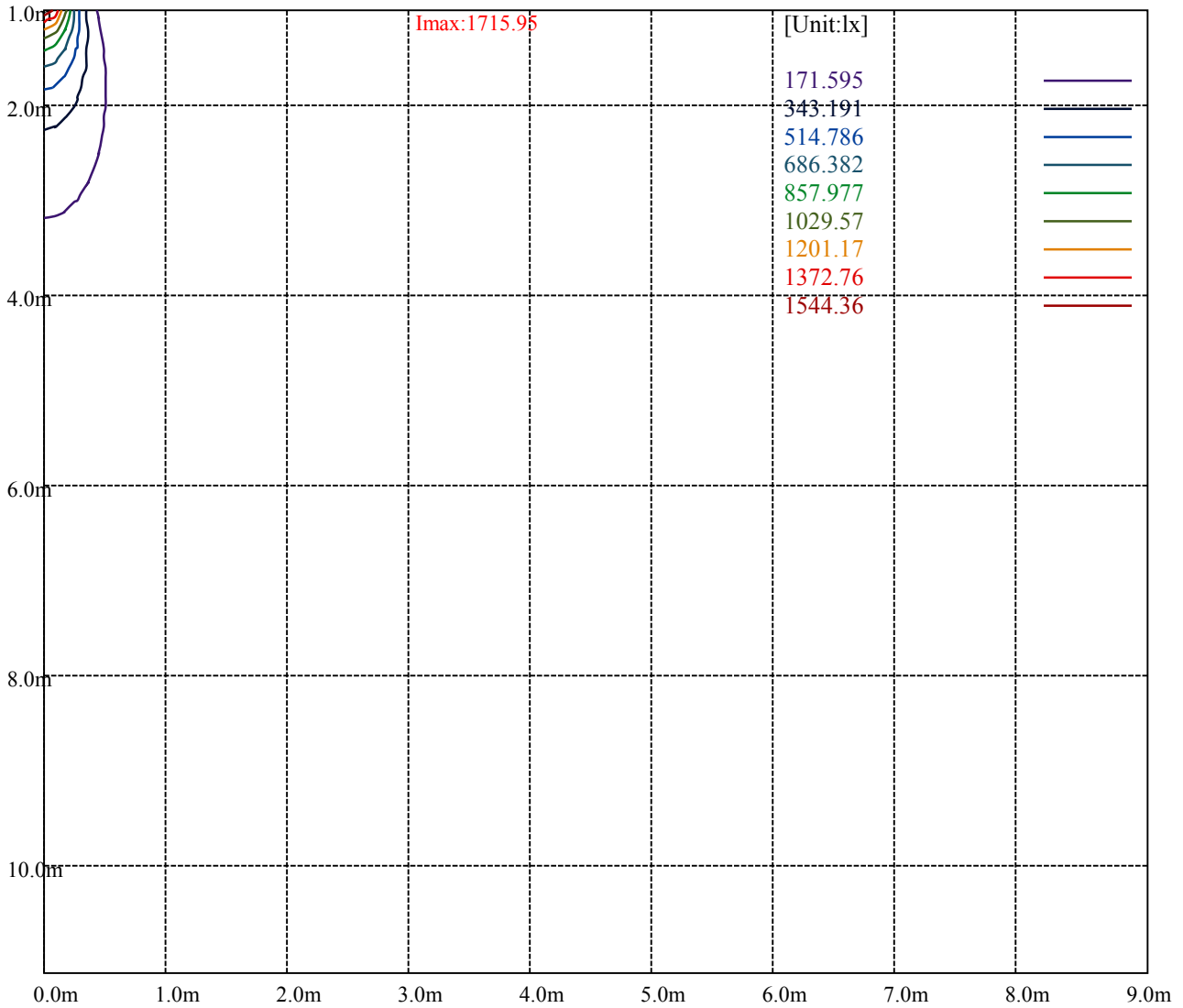
[Unit:cd]

Road

Imax:1715.95

(10%Imax) 171.595	—
(20%Imax) 343.191	—
(30%Imax) 514.786	—
(40%Imax) 686.382	—
(50%Imax) 857.977	—
(60%Imax) 1029.57	—
(70%Imax) 1201.17	—
(80%Imax) 1372.76	—
(90%Imax) 1544.36	—





Luminance Table

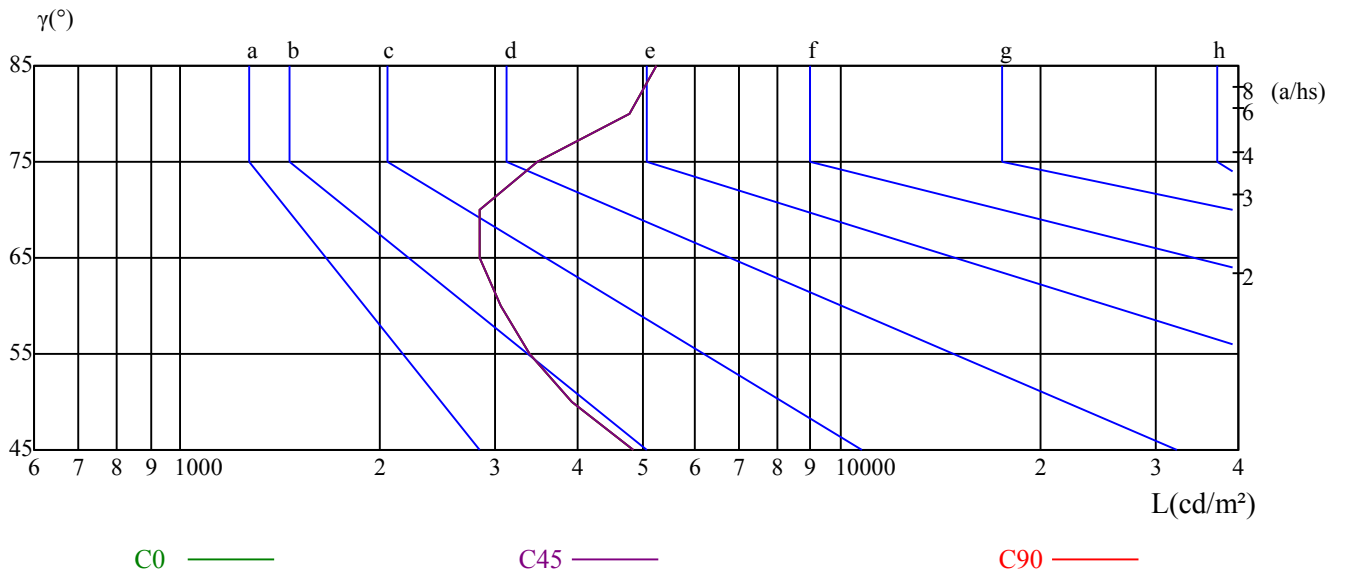
$\gamma$	45	50	55	60	65	70	75	80	85
C0	4854	3923	3367	3046	2836	2829	3476	4800	5244
C45	4854	3923	3367	3046	2836	2829	3476	4800	5244
C90	4854	3923	3367	3046	2836	2829	3476	4800	5244

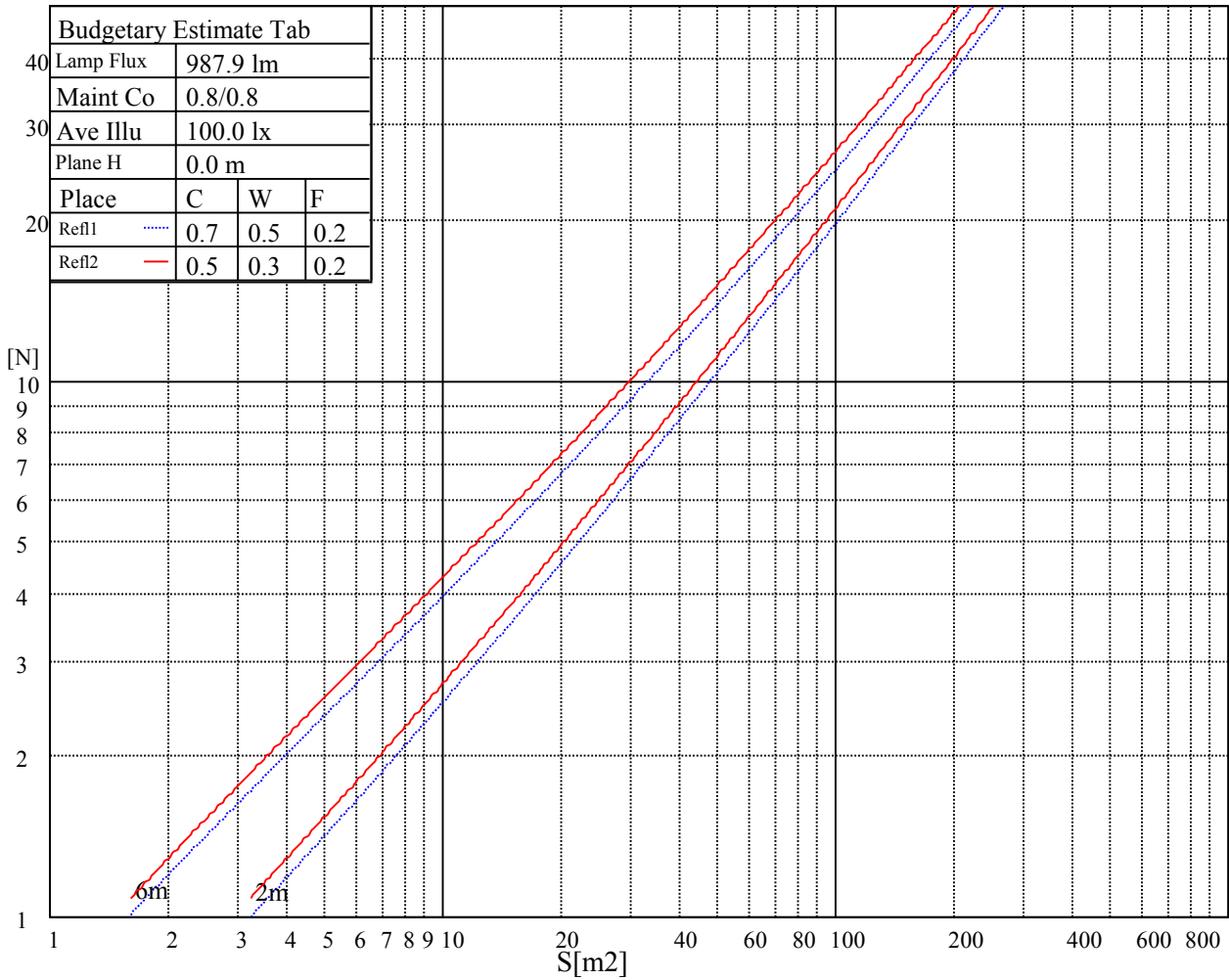
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
2836	2836	2836	3476	3476	3476	5244	5244	5244

Glare Table

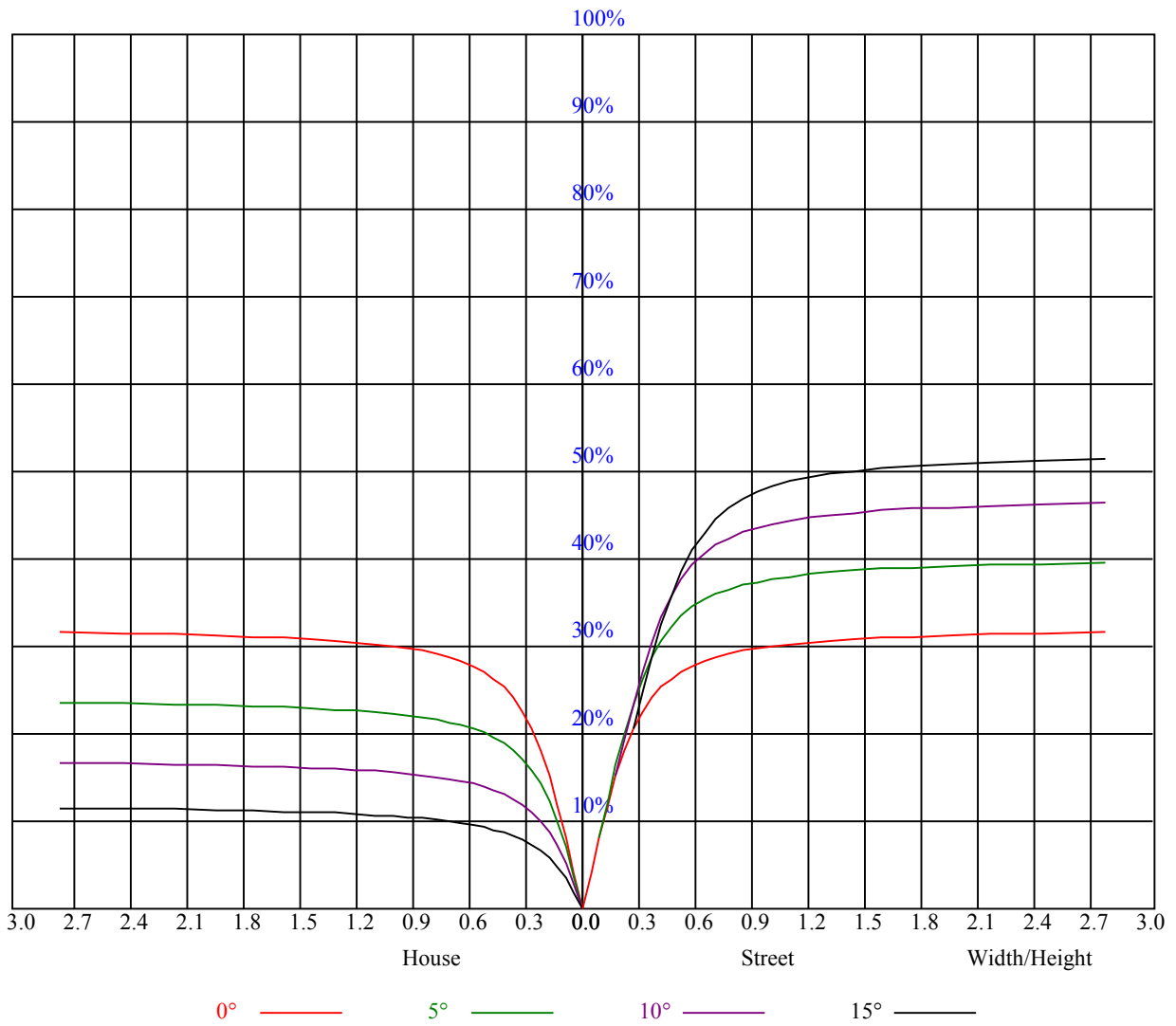
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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	0.76	0.76	0.76	0.75	0.75	0.75	0.71	0.71	0.71	0.68	0.68	0.68	0.66	0.66	0.66	0.64
1	0.71	0.69	0.68	0.69	0.68	0.67	0.67	0.66	0.64	0.64	0.63	0.63	0.62	0.61	0.61	0.60
2	0.66	0.63	0.61	0.65	0.62	0.60	0.63	0.61	0.59	0.61	0.59	0.58	0.59	0.58	0.57	0.56
3	0.62	0.59	0.56	0.61	0.58	0.56	0.59	0.57	0.55	0.58	0.56	0.54	0.56	0.55	0.53	0.52
4	0.58	0.55	0.52	0.58	0.54	0.52	0.56	0.54	0.51	0.55	0.53	0.51	0.54	0.52	0.50	0.49
5	0.55	0.52	0.49	0.55	0.51	0.49	0.53	0.51	0.48	0.52	0.50	0.48	0.51	0.49	0.48	0.47
6	0.52	0.49	0.46	0.52	0.49	0.46	0.51	0.48	0.46	0.50	0.48	0.46	0.49	0.47	0.45	0.44
7	0.50	0.46	0.44	0.50	0.46	0.44	0.49	0.46	0.44	0.48	0.45	0.43	0.47	0.45	0.43	0.42
8	0.48	0.44	0.42	0.47	0.44	0.42	0.47	0.44	0.42	0.46	0.43	0.41	0.46	0.43	0.41	0.40
9	0.46	0.42	0.40	0.46	0.42	0.40	0.45	0.42	0.40	0.44	0.42	0.40	0.44	0.41	0.40	0.39
10	0.44	0.41	0.38	0.44	0.41	0.38	0.43	0.40	0.38	0.43	0.40	0.38	0.42	0.40	0.38	0.37



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	1708.93	1724.47	1730.44	1723.87	1707.74	1686.23	1637.23	1591.22	1545.21
45.0	1722.68	1715.51	1696.98	1670.69	1631.25	1587.63	1527.28	1457.97	1391.65
90.0	1715.51	1693.99	1665.91	1624.08	1571.50	1517.72	1455.58	1368.94	1294.85
135.0	1716.70	1697.58	1664.72	1621.10	1575.09	1514.74	1443.63	1374.91	1303.21
180.0	1708.93	1681.45	1642.01	1599.59	1542.22	1484.26	1410.17	1328.90	1190.34
225.0	1722.68	1718.49	1702.96	1676.07	1643.80	1602.57	1539.23	1482.47	1419.13
270.0	1715.51	1723.87	1723.87	1710.73	1689.81	1654.56	1614.52	1560.15	1505.18
315.0	1716.70	1727.46	1726.26	1714.31	1689.81	1659.34	1618.11	1557.76	1500.99
360.0	1708.93	1724.47	1730.44	1723.87	1707.74	1686.23	1637.23	1591.22	1545.21

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	1462.75	1394.63	1330.10	1233.30	1141.28	1067.78	962.02	878.97	798.30
45.0	1309.78	1221.35	1139.49	1056.43	953.66	872.39	793.52	706.88	630.99
90.0	1182.75	1112.36	1031.28	950.79	861.76	775.71	702.99	626.57	563.23
135.0	1208.20	1127.54	1045.68	944.69	865.82	788.74	706.28	629.80	570.04
180.0	1170.50	1080.75	990.64	911.95	825.67	742.73	672.94	607.81	532.34
225.0	1341.45	1185.32	1175.46	1095.99	994.83	914.58	837.50	753.84	673.59
270.0	1426.90	1357.59	1283.49	1207.01	1106.03	1023.57	941.71	841.32	764.24
315.0	1436.46	1347.43	1252.42	1186.81	1083.50	1000.02	918.76	819.45	751.75
360.0	1462.75	1394.63	1330.10	1233.30	1141.28	1067.78	962.02	878.97	798.30

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	702.69	633.98	570.64	497.74	445.16	397.95	346.57	310.12	301.75
45.0	567.65	498.94	442.77	396.76	347.16	313.11	304.74	243.31	219.05
90.0	497.50	439.30	393.35	347.70	307.67	276.54	248.93	218.99	197.90
135.0	504.31	451.73	400.94	352.54	314.90	302.95	247.26	222.34	200.95
180.0	477.01	427.41	377.76	334.20	300.08	266.32	236.86	213.74	190.67
225.0	608.17	540.94	486.69	430.94	381.22	341.91	302.77	268.35	241.70
270.0	691.34	616.05	548.53	492.96	435.60	390.78	345.97	306.53	302.35
315.0	670.79	596.69	536.46	474.32	418.69	374.59	335.39	292.37	262.55
360.0	702.69	633.98	570.64	497.74	445.16	397.95	346.57	310.12	301.75

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	243.37	215.77	194.44	173.82	155.90	141.79	127.75	116.82	105.88
45.0	197.60	174.30	157.81	142.99	126.92	115.92	105.94	96.08	87.36
90.0	179.26	160.62	144.06	131.16	118.37	107.20	98.35	89.57	82.58
135.0	177.35	160.44	145.32	131.93	117.47	107.50	98.41	88.49	81.50
180.0	172.69	154.70	138.63	126.08	115.08	103.07	94.71	87.30	79.11
225.0	218.10	191.93	173.76	157.63	141.61	127.45	116.34	105.11	95.19
270.0	241.16	214.15	193.18	174.90	154.94	140.84	128.29	114.43	104.69
315.0	236.32	209.91	187.03	169.22	153.51	136.24	123.93	111.68	102.00
360.0	243.37	215.77	194.44	173.82	155.90	141.79	127.75	116.82	105.88

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	96.14	88.43	81.50	73.85	68.60	63.88	58.86	55.15	51.81
45.0	80.49	74.03	68.12	62.44	57.42	53.42	49.24	45.53	42.60
90.0	75.53	69.25	64.17	59.10	54.43	50.67	47.26	43.44	40.69
135.0	75.23	69.25	63.34	58.80	54.20	50.55	46.61	43.26	40.69
180.0	73.38	68.06	62.68	58.08	54.32	50.67	47.86	45.17	42.78
225.0	87.36	79.47	73.32	67.10	61.66	57.36	53.36	48.88	45.65
270.0	95.90	87.00	79.11	72.84	66.62	61.72	56.88	52.46	48.94
315.0	92.32	84.73	77.14	70.45	64.53	59.99	55.75	51.51	47.74
360.0	96.14	88.43	81.50	73.85	68.60	63.88	58.86	55.15	51.81



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	48.70	46.01	43.86	41.65	39.86	37.82	35.85	34.36	32.74
45.0	40.03	36.99	34.84	32.86	30.77	28.86	27.31	25.69	24.20
90.0	38.18	35.61	33.28	31.43	29.40	27.55	26.05	24.44	23.18
135.0	37.94	35.43	33.46	31.85	29.52	27.90	26.65	24.98	23.54
180.0	40.81	38.72	36.69	35.02	33.46	31.61	30.18	28.98	27.67
225.0	42.72	39.44	36.99	34.84	32.63	30.53	28.92	27.19	25.81
270.0	45.35	42.07	39.50	37.05	34.30	32.33	30.47	28.56	26.77
315.0	44.58	41.77	38.60	36.39	34.30	31.97	30.23	28.68	27.07
360.0	48.70	46.01	43.86	41.65	39.86	37.82	35.85	34.36	32.74
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	31.37	30.23	29.34	28.38	27.61	26.83	25.87	25.10	24.38
45.0	22.95	21.69	20.61	19.48	18.40	17.57	16.61	15.72	14.94
90.0	21.81	20.55	19.48	18.46	17.33	16.43	15.66	14.70	13.92
135.0	22.59	21.21	20.08	19.24	18.16	17.27	16.43	15.54	14.76
180.0	26.59	25.63	24.68	23.84	23.12	22.41	21.69	20.91	20.14
225.0	24.26	22.89	21.75	20.44	19.30	18.34	17.39	16.37	15.54
270.0	25.39	23.90	22.47	21.33	20.08	19.06	17.93	16.85	15.95
315.0	25.51	24.26	22.89	21.75	20.55	19.48	18.52	17.51	16.55
360.0	31.37	30.23	29.34	28.38	27.61	26.83	25.87	25.10	24.38
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	23.48	22.59	21.69	20.73	19.96	19.12	18.34	17.69	16.91
45.0	14.22	13.44	12.85	12.25	11.71	10.99	10.52	10.04	9.50
90.0	13.27	12.43	11.83	11.23	10.58	10.16	9.56	8.96	8.54
135.0	14.10	13.32	12.73	12.25	11.53	11.05	10.64	10.10	9.62
180.0	19.48	18.70	18.11	17.57	16.97	16.25	15.83	16.85	19.78
225.0	14.76	13.92	13.21	12.61	11.95	11.29	10.76	10.22	9.74
270.0	15.12	14.22	13.50	12.79	12.01	11.41	10.88	10.28	9.68
315.0	15.83	15.06	14.22	13.62	13.03	12.37	11.77	11.23	10.70
360.0	23.48	22.59	21.69	20.73	19.96	19.12	18.34	17.69	16.91
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	16.19	15.77	17.39	20.73	22.35	22.83	23.30	24.74	26.71
45.0	9.08	8.66	8.13	7.65	7.35	8.13	9.14	8.96	7.41
90.0	8.01	7.47	7.05	6.69	6.09	5.80	5.38	4.96	4.60
135.0	9.20	8.72	8.37	7.89	7.47	7.17	6.81	6.45	6.15
180.0	22.53	22.77	22.05	21.51	22.11	22.95	22.29	20.44	17.63
225.0	9.26	8.72	8.31	7.83	7.47	7.77	9.56	9.56	7.47
270.0	9.20	8.60	8.13	7.59	7.11	6.69	6.21	5.86	5.44
315.0	10.16	9.68	9.20	8.78	8.37	7.89	7.53	7.17	6.75
360.0	16.19	15.77	17.39	20.73	22.35	22.83	23.30	24.74	26.71
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	27.84	27.67	26.17	22.89	18.46	5.86	4.30	3.76	2.93
45.0	5.68	5.08	4.72	4.54	3.29	3.05	2.69	2.57	2.57
90.0	4.30	3.88	3.64	3.29	2.87	2.63	2.57	2.57	2.57
135.0	5.80	5.56	5.56	6.33	3.53	3.11	2.75	2.63	2.63
180.0	14.88	10.88	6.81	5.08	3.70	3.17	2.81	2.69	2.63
225.0	5.80	5.20	4.84	4.66	4.36	3.35	2.99	2.69	2.63
270.0	5.08	4.66	4.30	4.00	3.64	3.23	2.93	2.75	2.57
315.0	6.39	6.09	5.74	5.50	5.20	3.82	3.47	2.99	2.63
360.0	27.84	27.67	26.17	22.89	18.46	5.86	4.30	3.76	2.93

Intensity data(cd)

<b>C/γ(°)</b>	<b>90.0</b>
<b>0.0</b>	<b>2.75</b>
<b>45.0</b>	<b>2.57</b>
<b>90.0</b>	<b>2.57</b>
<b>135.0</b>	<b>2.63</b>
<b>180.0</b>	<b>3.11</b>
<b>225.0</b>	<b>2.57</b>
<b>270.0</b>	<b>2.57</b>
<b>315.0</b>	<b>2.63</b>
<b>360.0</b>	<b>2.75</b>