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## Nata

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LumCAT: LN01D02824DA-N

Luminaire: 92.70.307.00

Report No: 211111-B002

Test No: 211111-C002

LampCAT: LUMINUS CXM-4 LES4.5

Lamp flux(lm): 742.4

Number of Lamps: 1

Length(mm): 111

Phm Type: C

Voltage(V): 35.3900

Current(A): 0.1850

Power (W): 6.5470

PF: 0.0000

Ballast type: DC

Width(mm): 111

Height(mm): 0

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## Photometric Results

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Lumens(lm): 471.06

Efficiency(%): 63.45%

Lumens(lm)/Power(W): 71.95

Central intensity(cd): 1509.657

Maximum intensity(cd): 1509.657

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

Beam Angle(50%Imax): [C0/180]Total=25.6

[C90/270]Total=25.6

Field angle(10%Imax): [C0/180]Total=52.5

[C90/270]Total=52.5

Maximum s/h(1/2): C0\_180=0.43 C90\_270=0.43

Maximum s/h(1/4): C0\_180=0.44 C90\_270=0.44

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 63.45%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in  $\pi$  solid angle : 94.959%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	1509.657	0.000	0	.000%	.000%
1.0	1503.756	1.442	1.442	.194%	.306%
2.0	1485.606	4.291	5.732	.578%	1.217%
3.0	1454.983	7.033	12.765	.947%	2.710%
4.0	1414.725	9.606	22.371	1.294%	4.749%
5.0	1365.727	11.961	34.333	1.611%	7.288%
6.0	1296.571	13.991	48.324	1.885%	10.259%
7.0	1215.740	15.594	63.918	2.101%	13.569%
8.0	1157.772	16.987	80.904	2.288%	17.175%
9.0	1075.201	18.097	99.001	2.438%	21.017%
10.0	987.312	18.665	117.666	2.514%	24.979%
11.0	906.511	18.923	136.59	2.549%	28.996%
12.0	824.463	18.922	155.512	2.549%	33.013%
13.0	739.554	18.561	174.073	2.500%	36.954%
14.0	659.650	17.910	191.982	2.413%	40.756%
15.0	588.574	17.136	209.118	2.308%	44.393%
16.0	522.039	16.274	225.392	2.192%	47.848%
17.0	458.133	15.264	240.656	2.056%	51.088%
18.0	402.660	14.193	254.848	1.912%	54.101%
19.0	356.829	13.214	268.062	1.780%	56.906%
20.0	313.195	12.263	280.325	1.652%	59.510%
21.0	282.452	11.438	291.763	1.541%	61.938%
22.0	243.620	10.572	302.335	1.424%	64.182%
23.0	217.142	9.668	312.003	1.302%	66.235%
24.0	191.949	8.944	320.947	1.205%	68.133%
25.0	171.498	8.264	329.211	1.113%	69.888%
26.0	154.536	7.696	336.907	1.037%	71.521%
27.0	139.023	7.182	344.089	.967%	73.046%
28.0	124.465	6.671	350.76	.899%	74.462%
29.0	112.888	6.210	356.97	.836%	75.781%
30.0	102.723	5.821	362.791	.784%	77.016%
31.0	93.073	5.449	368.24	.734%	78.173%
32.0	84.857	5.097	373.337	.687%	79.255%
33.0	78.007	4.798	378.135	.646%	80.274%
34.0	71.255	4.517	382.652	.608%	81.233%
35.0	65.437	4.245	386.898	.572%	82.134%
36.0	60.589	4.013	390.91	.541%	82.986%
37.0	55.988	3.802	394.712	.512%	83.793%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	51.858	3.600	398.312	.485%	84.557%
39.0	48.004	3.409	401.721	.459%	85.281%
40.0	44.613	3.230	404.951	.435%	85.966%
41.0	41.693	3.073	408.024	.414%	86.619%
42.0	38.929	2.929	410.953	.395%	87.241%
43.0	36.322	2.788	413.741	.375%	87.832%
44.0	34.194	2.661	416.402	.359%	88.397%
45.0	32.259	2.554	418.956	.344%	88.940%
46.0	30.369	2.449	421.405	.330%	89.460%
47.0	28.726	2.350	423.756	.317%	89.958%
48.0	27.255	2.263	426.019	.305%	90.439%
49.0	25.806	2.179	428.198	.294%	90.901%
50.0	24.327	2.090	430.288	.282%	91.345%
51.0	23.147	2.009	432.297	.271%	91.772%
52.0	21.967	1.936	434.232	.261%	92.183%
53.0	20.801	1.860	436.093	.251%	92.578%
54.0	19.771	1.788	437.881	.241%	92.957%
55.0	18.845	1.724	439.605	.232%	93.323%
56.0	17.933	1.662	441.267	.224%	93.676%
57.0	17.052	1.600	442.866	.215%	94.015%
58.0	16.201	1.538	444.404	.207%	94.342%
59.0	15.461	1.480	445.884	.199%	94.656%
60.0	14.677	1.424	447.308	.192%	94.958%
61.0	13.915	1.364	448.672	.184%	95.248%
62.0	13.243	1.309	449.981	.176%	95.526%
63.0	12.630	1.258	451.239	.170%	95.793%
64.0	11.951	1.206	452.446	.162%	96.049%
65.0	11.361	1.154	453.599	.155%	96.294%
66.0	10.838	1.108	454.707	.149%	96.529%
67.0	10.307	1.063	455.77	.143%	96.755%
68.0	9.829	1.020	456.79	.137%	96.971%
69.0	9.366	0.979	457.769	.132%	97.179%
70.0	8.903	0.938	458.708	.126%	97.378%
71.0	8.448	0.897	459.604	.121%	97.569%
72.0	8.074	0.859	460.463	.116%	97.751%
73.0	8.014	0.841	461.305	.113%	97.930%
74.0	7.955	0.840	462.144	.113%	98.108%
75.0	7.820	0.833	462.978	.112%	98.285%

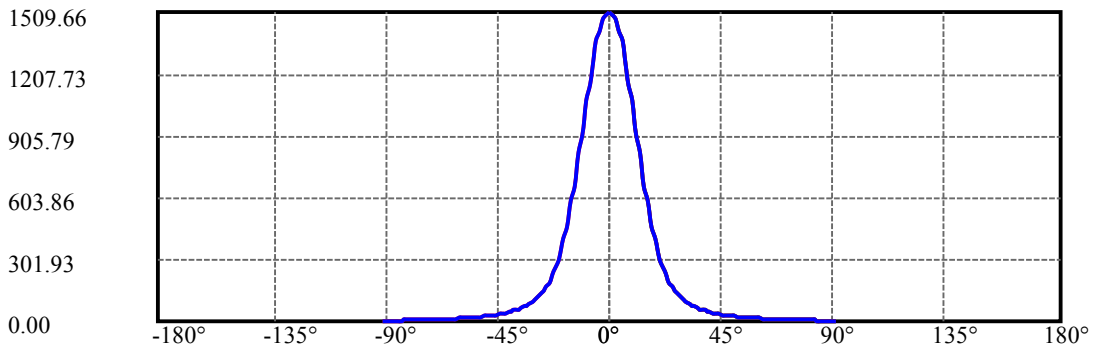
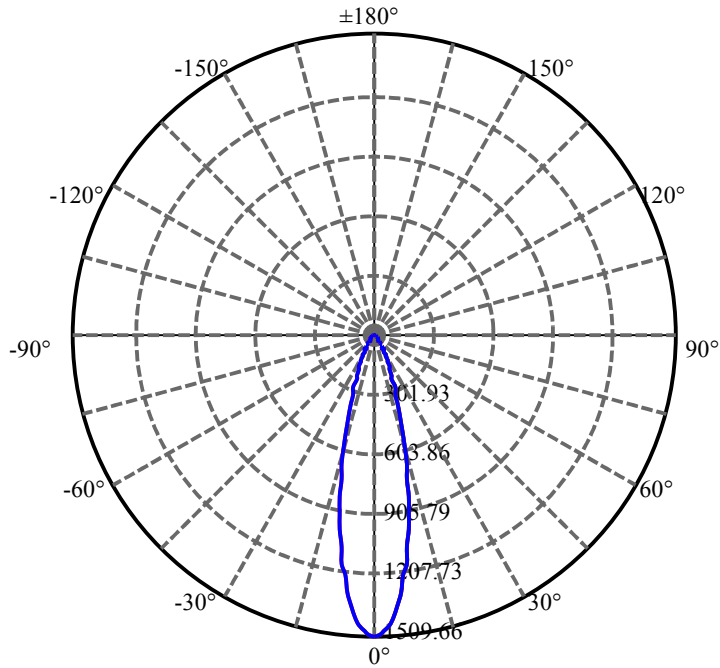
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	7.678	0.823	463.801	.111%	98.460%
77.0	7.731	0.822	464.622	.111%	98.634%
78.0	8.037	0.844	465.466	.114%	98.813%
79.0	7.910	0.857	466.323	.115%	98.995%
80.0	7.230	0.816	467.139	.110%	99.168%
81.0	6.296	0.731	467.871	.099%	99.324%
82.0	5.438	0.636	468.507	.086%	99.459%
83.0	4.392	0.534	469.041	.072%	99.572%
84.0	3.458	0.428	469.469	.058%	99.663%
85.0	3.077	0.357	469.826	.048%	99.739%
86.0	2.532	0.307	470.132	.041%	99.804%
87.0	2.211	0.260	470.392	.035%	99.859%
88.0	2.054	0.234	470.625	.031%	99.908%
89.0	1.927	0.218	470.844	.029%	99.955%
90.0	1.964	0.213	471.057	.029%	100.000%

## ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	362.79	48.87%	77.02%
0-40	404.95	54.55%	85.97%
0-60	447.31	60.25%	94.96%
0-90	470.84	63.43%	99.95%
0-120	470.84	63.43%	99.95%
0-180	471.06	63.45%	100.00%
60-90	24.96	3.36%	5.30%
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%
0-32.73	376.85	50.76%	80.00%

## ZONAL LUMEN SUMMARY

0-10	117.67
10-20	162.66
20-30	82.47
30-40	42.16
40-50	25.34
50-60	17.02
60-70	11.40
70-80	8.43
80-90	3.70
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: —————

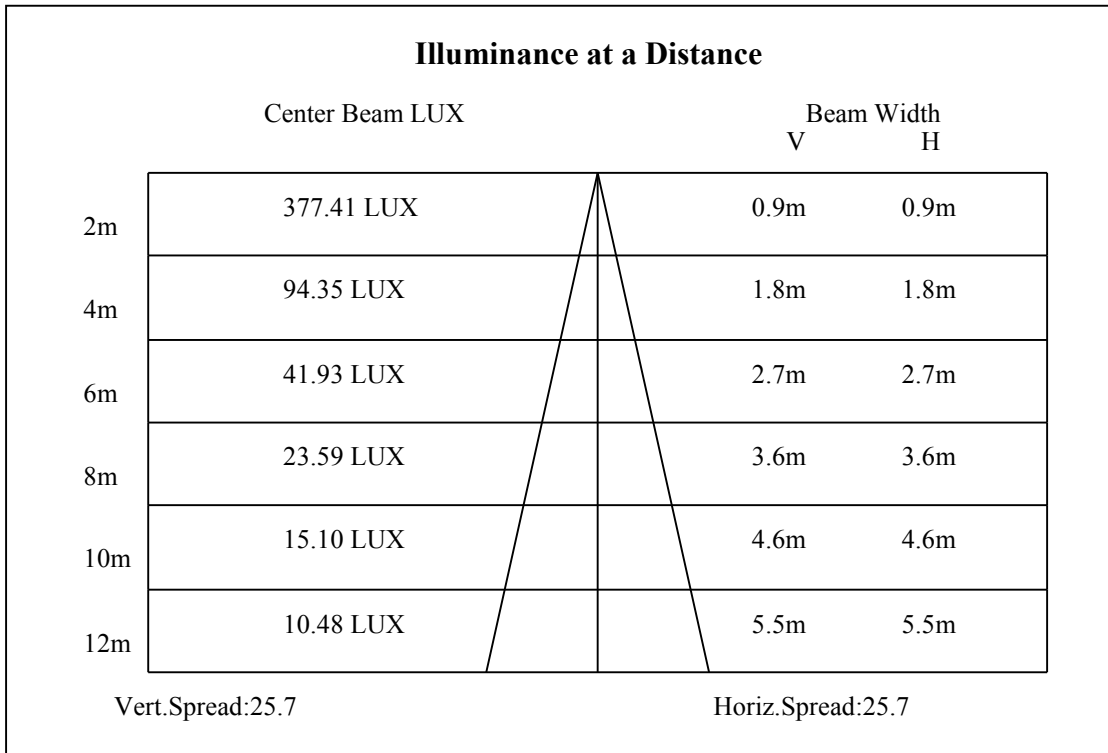
C90/C270: —————

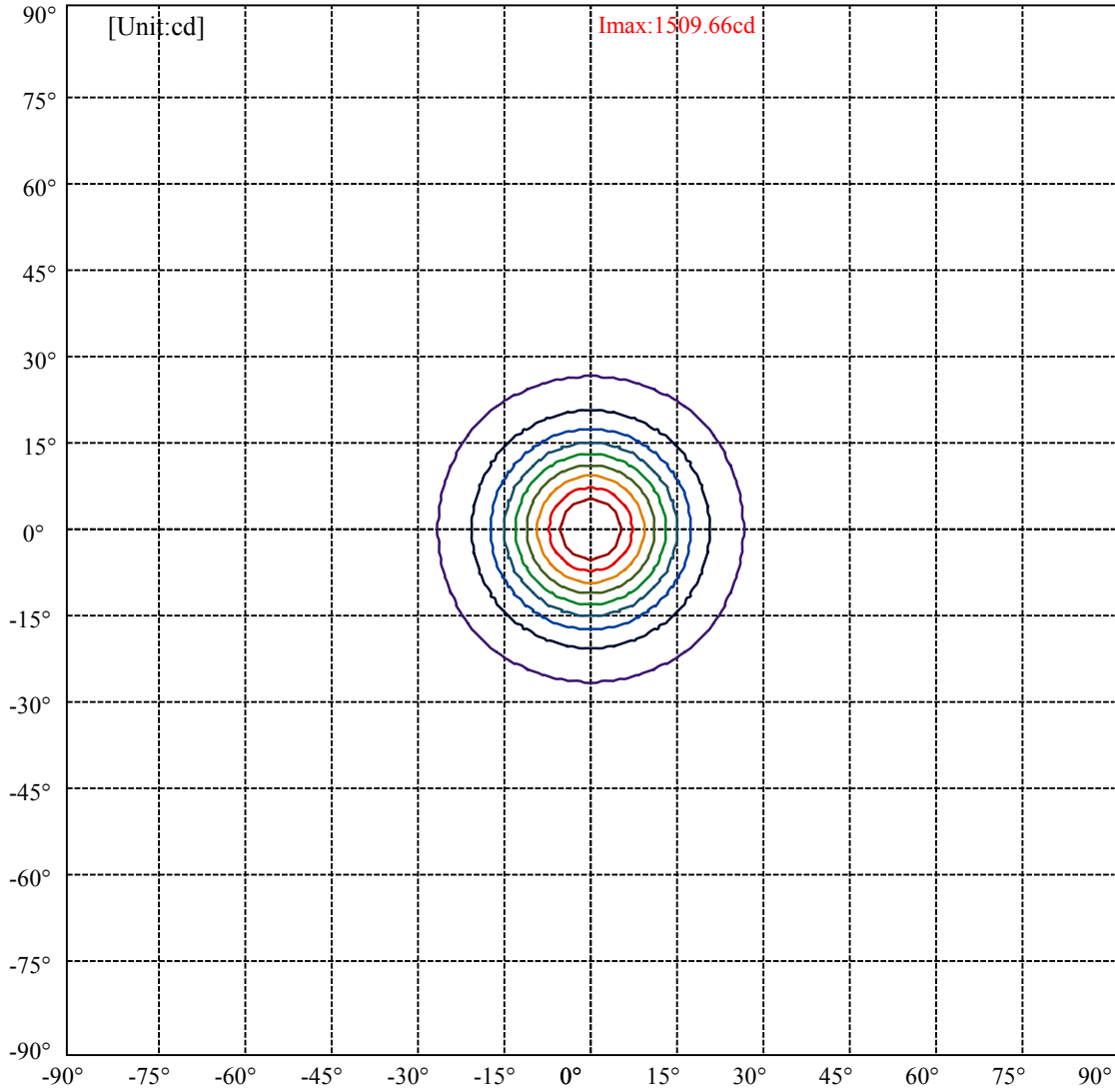
Field angle(10%Imax):C0/180Left:26.2 Right:26.2

:C90/270Left:26.2 Right:26.2

Beam Angle(50%Imax):C0/180Left:12.8 Right:12.8

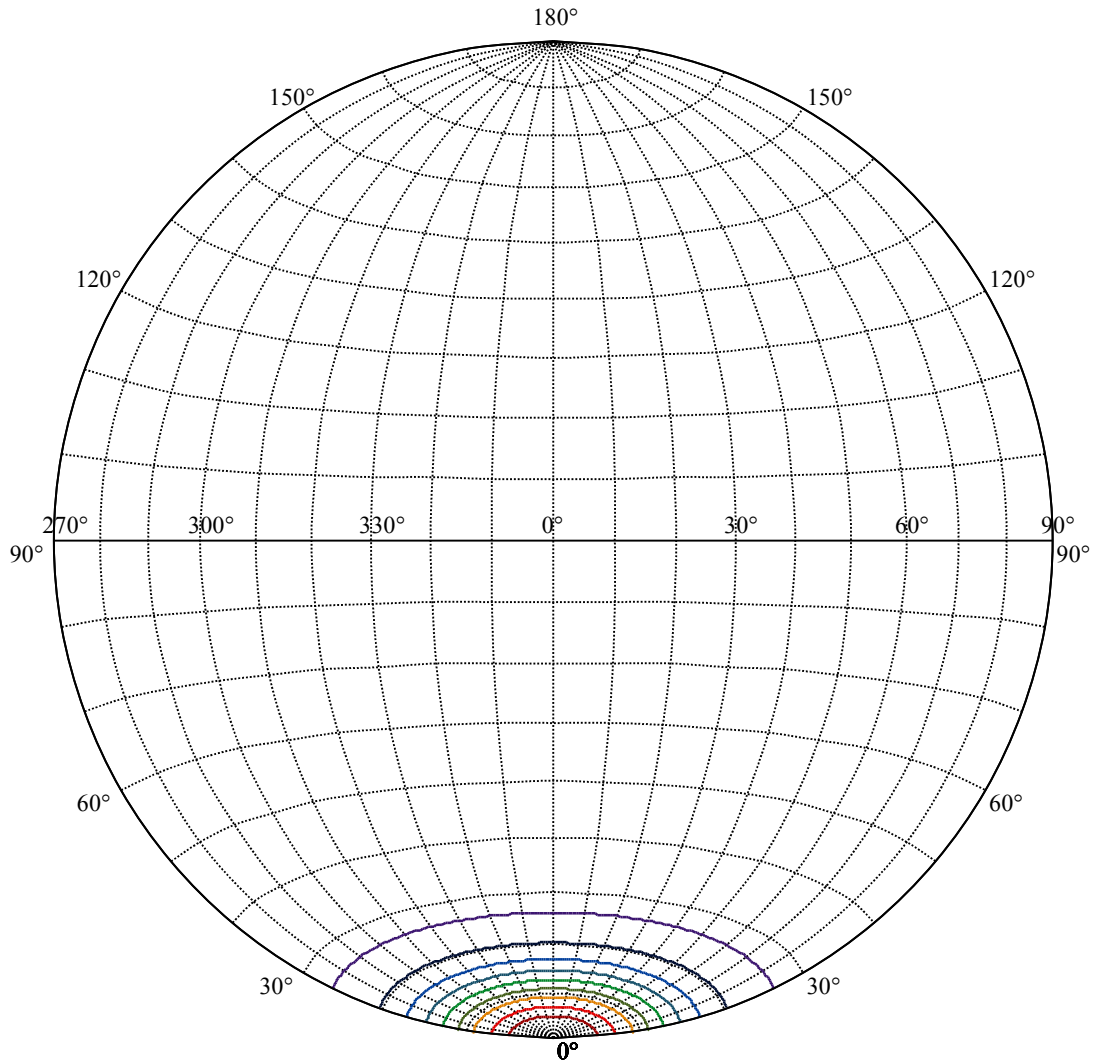
:C90/270Left:12.8 Right:12.8





(10%Imax) 150.966	—
(20%Imax) 301.931	—
(30%Imax) 452.897	—
(40%Imax) 603.863	—
(50%Imax) 754.828	—
(60%Imax) 905.794	—
(70%Imax) 1056.76	—
(80%Imax) 1207.73	—
(90%Imax) 1358.69	—





House

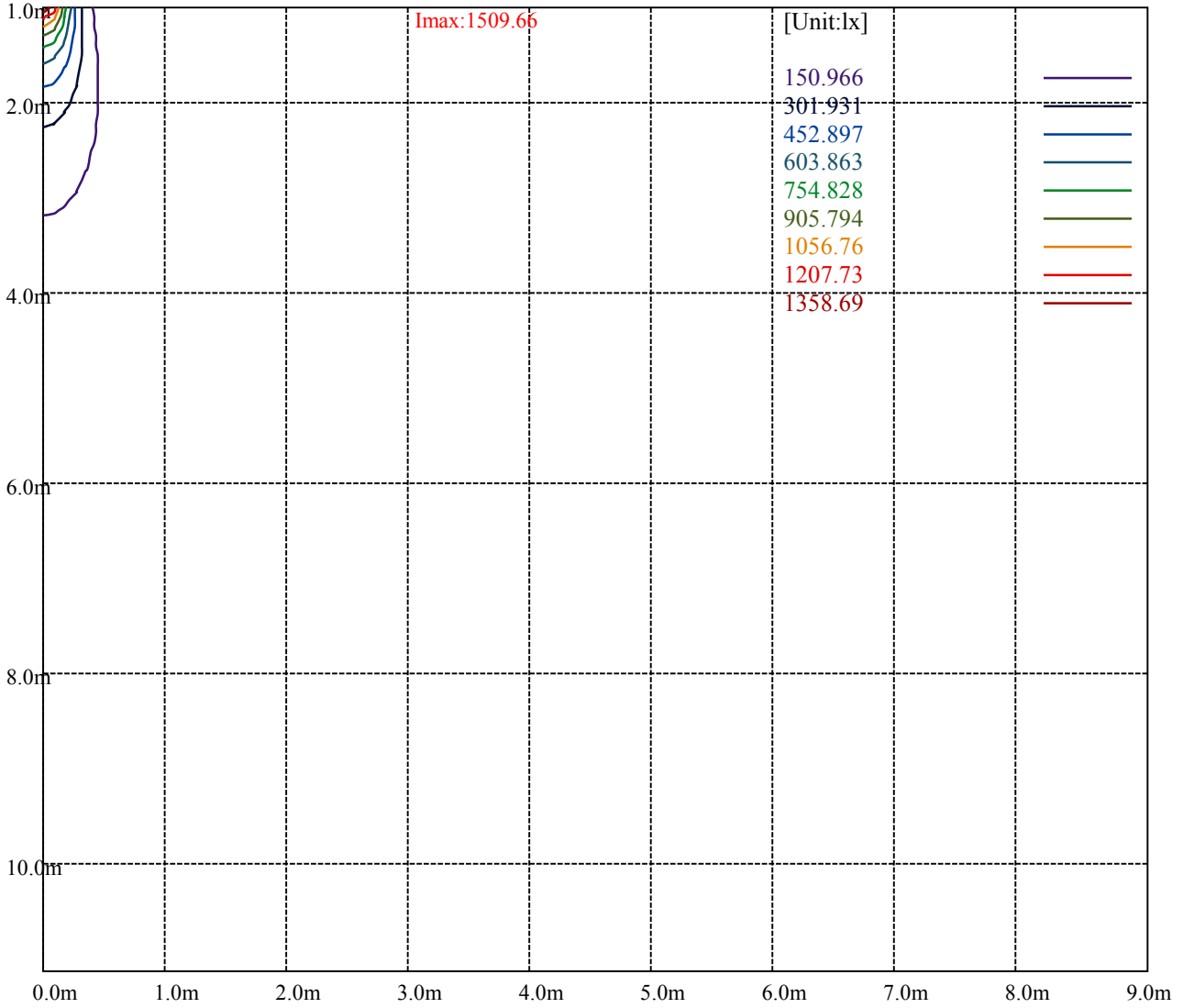
[Unit:cd]

Road

**Imax:1509.66**

(10%Imax) 150.966	—
(20%Imax) 301.931	—
(30%Imax) 452.897	—
(40%Imax) 603.863	—
(50%Imax) 754.828	—
(60%Imax) 905.794	—
(70%Imax) 1056.76	—
(80%Imax) 1207.73	—
(90%Imax) 1358.69	—





Luminance Table

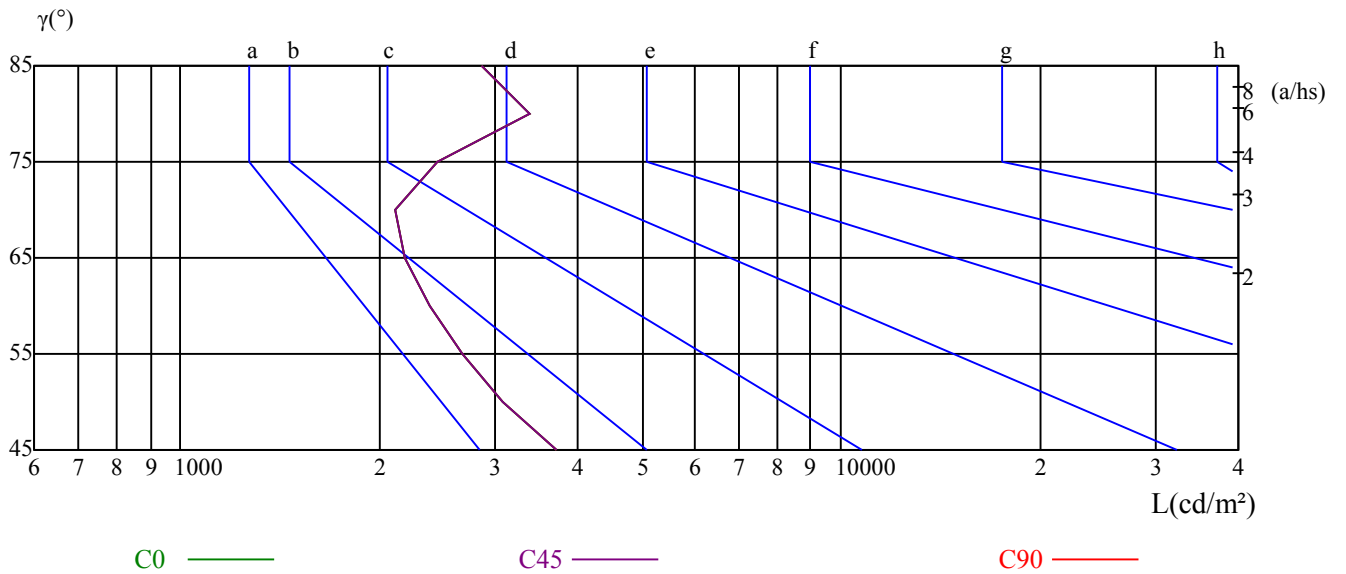
$\gamma$	45	50	55	60	65	70	75	80	85
C0	3703	3072	2667	2382	2182	2113	2452	3379	2866
C45	3703	3072	2667	2382	2182	2113	2452	3379	2866
C90	3703	3072	2667	2382	2182	2113	2452	3379	2866

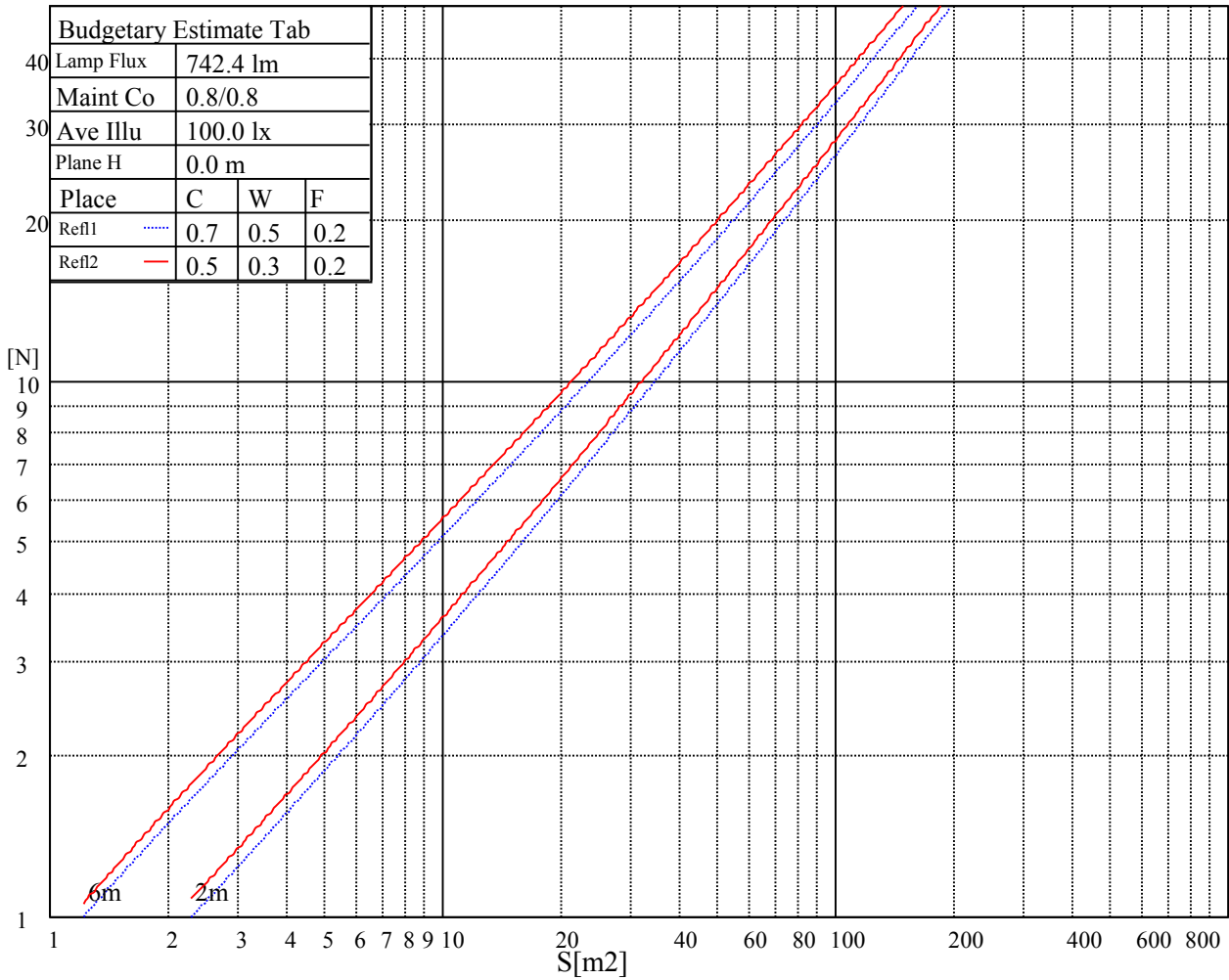
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
2182	2182	2182	2452	2452	2452	2866	2866	2866

Glare Table

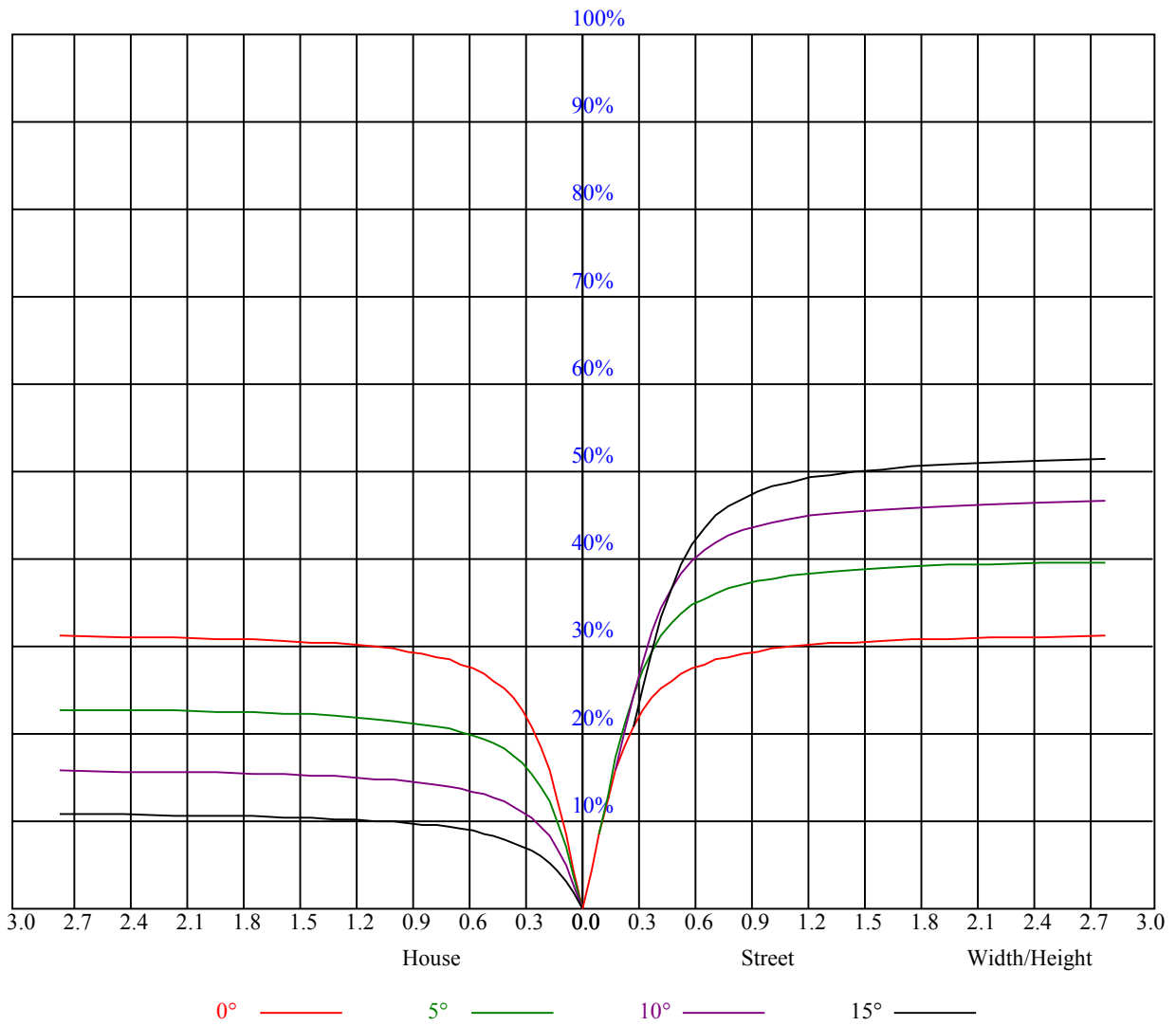
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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	0.74	0.74	0.74	0.71	0.71	0.71	0.68	0.68	0.68	0.65	0.65	0.65	0.63
1	0.70	0.68	0.67	0.69	0.67	0.66	0.66	0.65	0.64	0.64	0.63	0.62	0.62	0.61	0.60	0.59
2	0.65	0.63	0.61	0.64	0.62	0.60	0.62	0.60	0.59	0.60	0.59	0.57	0.59	0.57	0.56	0.55
3	0.61	0.58	0.56	0.61	0.58	0.55	0.59	0.57	0.55	0.57	0.55	0.54	0.56	0.54	0.53	0.52
4	0.58	0.55	0.52	0.57	0.54	0.52	0.56	0.53	0.51	0.55	0.52	0.51	0.54	0.52	0.50	0.49
5	0.55	0.52	0.49	0.54	0.51	0.49	0.53	0.50	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	0.47	0.44	0.50	0.46	0.44	0.49	0.46	0.44	0.48	0.45	0.44	0.47	0.45	0.43	0.43
8	0.48	0.45	0.42	0.48	0.44	0.42	0.47	0.44	0.42	0.46	0.44	0.42	0.46	0.43	0.42	0.41
9	0.46	0.43	0.40	0.46	0.43	0.40	0.45	0.42	0.40	0.45	0.42	0.40	0.44	0.42	0.40	0.39
10	0.44	0.41	0.39	0.44	0.41	0.39	0.44	0.41	0.39	0.43	0.40	0.39	0.43	0.40	0.39	0.38



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	1503.98	1512.35	1508.76	1493.22	1466.34	1417.34	1367.74	1309.78	1236.29
45.0	1509.96	1502.79	1483.07	1450.20	1411.36	1363.56	1290.66	1223.74	1153.23
90.0	1512.35	1498.60	1471.71	1438.25	1389.85	1337.87	1269.75	1179.94	1116.06
135.0	1512.35	1502.79	1482.47	1443.03	1402.40	1352.81	1279.91	1214.18	1144.27
180.0	1503.98	1484.86	1451.40	1405.99	1357.59	1293.65	1189.14	1144.33	1060.26
225.0	1509.96	1504.58	1486.65	1459.76	1419.13	1373.12	1310.38	1185.98	1168.65
270.0	1512.35	1514.14	1503.38	1479.48	1447.22	1404.79	1339.06	1278.71	1212.39
315.0	1512.35	1509.96	1497.41	1469.92	1423.91	1382.68	1325.92	1189.26	1171.04
360.0	1503.98	1512.35	1508.76	1493.22	1466.34	1417.34	1367.74	1309.78	1236.29
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	1155.62	1078.54	987.12	905.85	813.83	724.80	649.51	571.84	499.53
45.0	1058.22	977.56	896.29	806.07	720.02	647.12	571.84	509.69	446.35
90.0	1040.06	933.16	865.22	789.40	706.70	628.36	563.41	496.49	435.60
135.0	1052.85	975.17	896.29	810.25	727.79	657.28	584.38	516.86	461.29
180.0	983.23	896.11	810.13	736.57	666.07	583.31	522.42	466.61	409.61
225.0	1095.99	1000.14	921.93	843.83	747.87	674.61	606.55	535.03	469.24
270.0	1120.96	1043.88	963.22	873.59	783.96	706.28	624.42	558.09	488.18
315.0	1094.67	993.93	911.89	830.15	750.20	655.43	586.06	521.70	455.26
360.0	1155.62	1078.54	987.12	905.85	813.83	724.80	649.51	571.84	499.53
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	442.77	392.58	338.20	304.74	264.35	235.73	205.13	183.92	165.28
45.0	388.39	346.57	302.95	280.06	233.81	209.97	185.83	165.46	150.10
90.0	386.84	338.86	301.75	265.48	234.41	210.45	187.21	167.13	151.35
135.0	403.33	360.31	317.29	302.95	247.68	219.95	192.88	174.18	158.17
180.0	358.70	319.14	280.42	247.14	221.44	196.47	177.29	158.29	141.73
225.0	417.37	365.99	325.77	285.86	251.14	224.49	198.50	176.15	159.00
270.0	426.64	378.83	331.03	303.54	255.98	228.67	199.40	179.08	161.15
315.0	397.24	352.36	308.15	269.84	240.15	211.41	189.36	167.79	149.50
360.0	442.77	392.58	338.20	304.74	264.35	235.73	205.13	183.92	165.28
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	145.14	131.28	119.27	107.50	97.34	89.33	81.26	74.21	68.60
45.0	136.36	120.70	109.89	101.34	89.75	82.46	76.72	69.37	63.64
90.0	137.43	122.19	111.56	101.94	93.45	84.13	77.56	70.99	65.07
135.0	139.64	126.80	115.44	104.09	94.23	86.58	78.87	72.06	66.62
180.0	128.89	117.47	104.75	95.78	87.90	79.23	73.20	67.76	61.72
225.0	144.06	127.57	116.28	106.18	95.19	87.48	80.43	72.60	67.04
270.0	145.38	128.41	116.82	105.34	95.49	87.66	80.67	73.62	67.34
315.0	135.28	121.30	109.11	99.61	91.24	81.98	75.35	69.43	63.46
360.0	145.14	131.28	119.27	107.50	97.34	89.33	81.26	74.21	68.60
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	62.98	58.50	53.90	49.89	46.73	43.92	40.81	38.60	36.75
45.0	59.63	54.43	50.61	47.20	43.26	40.39	37.76	34.84	32.68
90.0	60.41	56.17	51.75	47.80	44.58	41.29	38.60	35.85	33.34
135.0	61.31	57.06	52.58	48.58	45.23	42.25	38.96	36.51	34.30
180.0	57.60	53.66	49.71	46.19	43.38	40.57	38.24	36.21	34.30
225.0	62.14	56.65	53.18	49.06	45.11	42.54	39.86	36.57	34.66
270.0	62.38	57.36	53.30	49.18	45.53	42.54	39.62	36.93	34.72
315.0	58.26	54.08	49.83	46.13	43.08	40.03	37.58	35.07	32.80
360.0	62.98	58.50	53.90	49.89	46.73	43.92	40.81	38.60	36.75



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	34.84	33.52	32.27	31.01	29.58	28.32	27.01	25.93	24.80
45.0	30.77	28.62	27.01	25.57	24.02	22.59	21.45	20.20	19.06
90.0	31.31	29.10	27.43	25.87	24.50	22.83	21.57	20.38	19.06
135.0	31.85	30.00	28.38	26.65	25.10	23.78	22.59	21.27	20.02
180.0	33.10	31.85	30.23	29.10	27.90	26.35	25.45	24.44	23.42
225.0	32.63	30.29	28.56	27.01	25.45	23.96	22.71	21.51	20.44
270.0	32.74	30.41	28.74	27.13	25.51	23.96	22.71	21.39	20.14
315.0	30.83	29.16	27.19	25.69	24.38	22.83	21.69	20.61	19.48
360.0	34.84	33.52	32.27	31.01	29.58	28.32	27.01	25.93	24.80
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	23.72	22.83	21.87	20.91	20.08	19.30	18.28	17.51	16.73
45.0	18.11	17.15	16.31	15.54	14.58	13.92	13.15	12.43	11.83
90.0	18.05	17.09	16.13	15.24	14.46	13.68	12.97	12.19	11.59
135.0	18.94	18.05	17.03	16.13	15.36	14.64	13.80	13.15	12.49
180.0	22.47	21.75	20.91	20.20	19.42	18.76	18.11	17.33	16.55
225.0	19.30	18.22	17.33	16.37	15.48	14.76	14.04	13.15	12.55
270.0	19.12	18.11	17.21	16.25	15.36	14.52	13.68	12.91	12.19
315.0	18.46	17.57	16.67	15.77	14.88	14.10	13.38	12.67	12.01
360.0	23.72	22.83	21.87	20.91	20.08	19.30	18.28	17.51	16.73
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	15.89	15.00	14.28	13.50	12.85	12.25	11.71	11.23	10.64
45.0	11.29	10.64	10.16	9.68	9.14	8.72	8.31	7.89	7.47
90.0	10.99	10.46	9.86	9.38	8.90	8.43	8.01	7.59	7.17
135.0	11.89	11.23	10.76	10.22	9.68	9.32	8.90	8.43	8.07
180.0	15.83	15.18	14.40	13.86	13.38	12.85	12.25	11.77	11.23
225.0	11.95	11.23	10.70	10.22	9.68	9.20	8.78	8.31	7.89
270.0	11.71	10.88	10.40	9.92	9.32	8.84	8.43	7.89	7.41
315.0	11.47	10.99	10.34	9.92	9.50	9.02	8.54	8.13	7.71
360.0	15.89	15.00	14.28	13.50	12.85	12.25	11.71	11.23	10.64
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	10.04	9.50	9.26	8.90	8.13	7.35	6.45	5.92	5.86
45.0	7.11	6.69	6.39	6.04	5.68	6.51	8.48	8.13	6.27
90.0	6.75	6.39	5.98	5.56	5.26	4.84	4.48	4.12	3.82
135.0	7.71	7.35	6.99	6.57	6.15	5.92	5.56	5.26	5.02
180.0	11.05	13.56	15.54	17.03	18.88	20.79	22.35	23.42	22.83
225.0	7.53	7.11	6.69	6.39	6.04	5.86	7.05	7.23	5.50
270.0	7.11	6.57	6.21	5.86	5.44	5.08	4.78	4.36	4.06
315.0	7.29	6.93	6.57	6.21	5.86	5.50	5.14	4.84	4.48
360.0	10.04	9.50	9.26	8.90	8.13	7.35	6.45	5.92	5.86
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	5.26	4.90	4.60	4.36	3.94	3.47	3.17	2.75	2.03
45.0	4.24	3.70	3.41	3.29	2.51	2.33	1.97	1.91	1.91
90.0	3.53	3.17	2.87	2.57	2.33	2.15	1.91	1.91	1.91
135.0	4.66	4.42	4.12	3.53	2.87	2.39	2.09	1.91	1.91
180.0	20.26	15.77	9.50	3.82	2.93	2.45	2.03	1.97	1.91
225.0	4.42	4.12	3.82	3.70	3.53	2.57	2.27	2.03	1.91
270.0	3.76	3.47	3.17	2.87	2.63	2.39	1.97	1.91	1.91
315.0	4.24	3.94	3.64	3.53	3.88	2.51	2.27	2.03	1.91
360.0	5.26	4.90	4.60	4.36	3.94	3.47	3.17	2.75	2.03

Intensity data(cd)

<b>C/γ(°)</b>	<b>90.0</b>
<b>0.0</b>	<b>1.97</b>
<b>45.0</b>	<b>1.91</b>
<b>90.0</b>	<b>1.91</b>
<b>135.0</b>	<b>1.91</b>
<b>180.0</b>	<b>2.27</b>
<b>225.0</b>	<b>1.91</b>
<b>270.0</b>	<b>1.91</b>
<b>315.0</b>	<b>1.91</b>
<b>360.0</b>	<b>1.97</b>