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Nata

LumCAT: LN01D04515DA-N

Luminaire: 97.70.234.00

Report No: 210104-B006

Test No: 201231-C006

LampCAT: CITIZEN CLU028 LES9.8

Lamp flux(lm): 1520.7

Number of Lamps: 1

Length(mm): 92

Phm Type: C

Voltage(V): 36.9800

Current(A): 0.3800

Power (W): 14.0520

PF: 0.0000

Ballast type: DC

Width(mm): 92

Height(mm): 50

Photometric Results

Lumens(lm): 1323.65

Efficiency(%): 87.04%

Lumens(lm)/Power(W): 94.20

Central intensity(cd): 7538.765

Maximum intensity(cd): 7538.765

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=19.9

[C90/270]Total=19.9

Field angle(10%Imax): [C0/180]Total=39.2

[C90/270]Total=39.2

Maximum s/h(1/2): C0_180=0.34 C90_270=0.34

Maximum s/h(1/4): C0_180=0.35 C90_270=0.35

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 87.04%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 96.340%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	7538.766	0.000	0	.000%	.000%
1.0	7478.578	7.186	7.186	.473%	.543%
2.0	7312.148	21.229	28.415	1.396%	2.147%
3.0	7031.672	34.306	62.72	2.256%	4.738%
4.0	6688.688	45.926	108.647	3.020%	8.208%
5.0	6298.102	55.868	164.515	3.674%	12.429%
6.0	5809.641	63.629	228.145	4.184%	17.236%
7.0	5292.773	68.912	297.057	4.532%	22.442%
8.0	4812.188	72.319	369.376	4.756%	27.906%
9.0	4274.789	73.645	443.021	4.843%	33.470%
10.0	3733.594	72.473	515.494	4.766%	38.945%
11.0	3276.422	70.044	585.539	4.606%	44.237%
12.0	2819.109	66.633	652.172	4.382%	49.271%
13.0	2359.617	61.458	713.63	4.041%	53.914%
14.0	2010.867	55.942	769.572	3.679%	58.140%
15.0	1690.945	50.820	820.392	3.342%	61.980%
16.0	1406.630	45.388	865.78	2.985%	65.409%
17.0	1173.213	40.175	905.955	2.642%	68.444%
18.0	994.718	35.744	941.7	2.351%	71.144%
19.0	831.853	31.779	973.478	2.090%	73.545%
20.0	701.353	28.062	1001.54	1.845%	75.665%
21.0	591.729	24.830	1026.37	1.633%	77.541%
22.0	499.282	21.924	1048.294	1.442%	79.197%
23.0	429.680	19.492	1067.787	1.282%	80.670%
24.0	366.216	17.401	1085.188	1.144%	81.985%
25.0	315.415	15.499	1100.686	1.019%	83.155%
26.0	271.301	13.849	1114.536	.911%	84.202%
27.0	243.239	12.588	1127.124	.828%	85.153%
28.0	203.119	11.301	1138.425	.743%	86.007%
29.0	178.580	9.986	1148.411	.657%	86.761%
30.0	158.787	9.109	1157.52	.599%	87.449%
31.0	140.280	8.323	1165.843	.547%	88.078%
32.0	125.339	7.610	1173.453	.500%	88.653%
33.0	113.709	7.042	1180.495	.463%	89.185%
34.0	103.029	6.559	1187.054	.431%	89.680%
35.0	93.558	6.105	1193.159	.401%	90.142%
36.0	86.020	5.718	1198.877	.376%	90.574%
37.0	79.088	5.385	1204.262	.354%	90.980%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	73.252	5.085	1209.347	.334%	91.365%
39.0	67.444	4.802	1214.149	.316%	91.727%
40.0	62.480	4.531	1218.681	.298%	92.070%
41.0	58.233	4.299	1222.979	.283%	92.395%
42.0	54.183	4.084	1227.063	.269%	92.703%
43.0	50.133	3.864	1230.927	.254%	92.995%
44.0	46.793	3.658	1234.586	.241%	93.271%
45.0	43.671	3.477	1238.062	.229%	93.534%
46.0	40.395	3.288	1241.35	.216%	93.782%
47.0	37.793	3.110	1244.46	.204%	94.017%
48.0	35.494	2.963	1247.422	.195%	94.241%
49.0	33.279	2.824	1250.247	.186%	94.455%
50.0	31.296	2.692	1252.939	.177%	94.658%
51.0	29.742	2.582	1255.521	.170%	94.853%
52.0	28.273	2.489	1258.011	.164%	95.041%
53.0	26.937	2.402	1260.412	.158%	95.223%
54.0	25.734	2.322	1262.734	.153%	95.398%
55.0	24.574	2.246	1264.98	.148%	95.568%
56.0	23.534	2.174	1267.153	.143%	95.732%
57.0	22.535	2.106	1269.26	.139%	95.891%
58.0	21.586	2.040	1271.3	.134%	96.045%
59.0	20.742	1.979	1273.279	.130%	96.195%
60.0	19.920	1.921	1275.2	.126%	96.340%
61.0	19.104	1.862	1277.062	.122%	96.480%
62.0	18.380	1.806	1278.868	.119%	96.617%
63.0	17.747	1.757	1280.625	.116%	96.750%
64.0	17.121	1.711	1282.336	.113%	96.879%
65.0	16.734	1.675	1284.012	.110%	97.005%
66.0	16.615	1.664	1285.676	.109%	97.131%
67.0	16.734	1.677	1287.353	.110%	97.258%
68.0	17.135	1.716	1289.068	.113%	97.387%
69.0	17.648	1.774	1290.843	.117%	97.522%
70.0	18.211	1.842	1292.685	.121%	97.661%
71.0	18.998	1.923	1294.608	.126%	97.806%
72.0	19.631	2.009	1296.616	.132%	97.958%
73.0	20.306	2.088	1298.705	.137%	98.115%
74.0	20.911	2.167	1300.872	.142%	98.279%
75.0	21.326	2.232	1303.103	.147%	98.448%

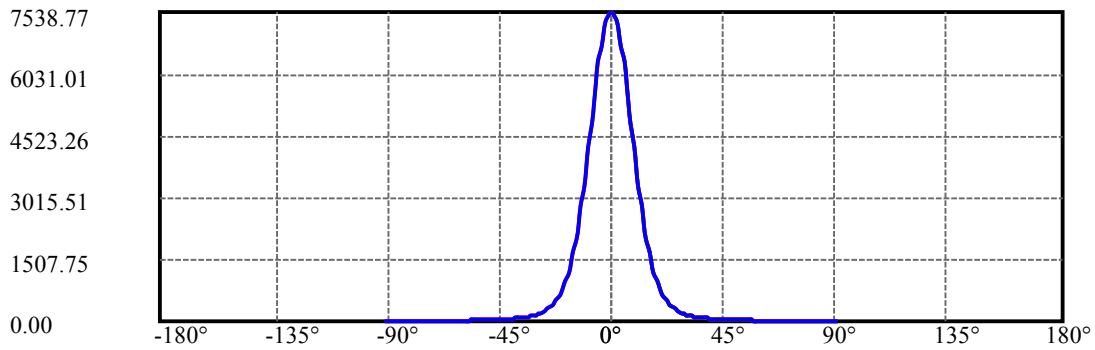
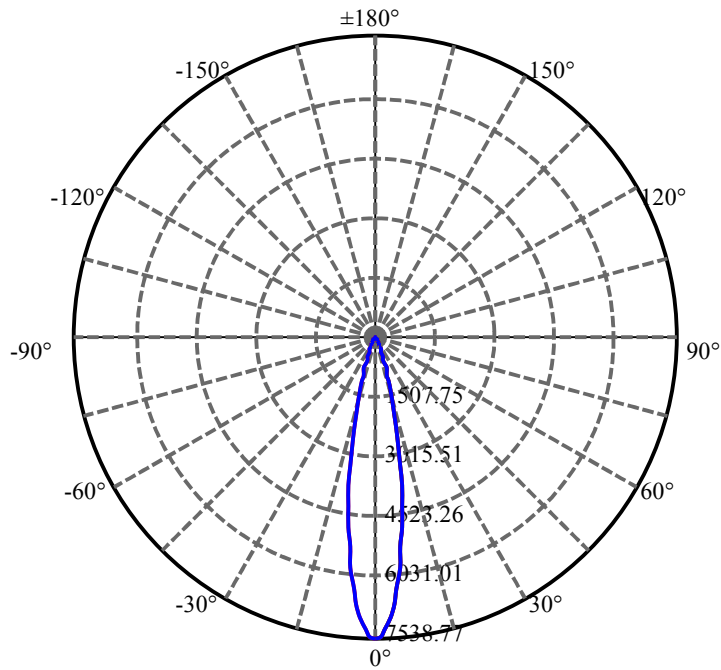
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	21.143	2.254	1305.358	.148%	98.618%
77.0	20.580	2.225	1307.582	.146%	98.786%
78.0	19.554	2.148	1309.731	.141%	98.948%
79.0	18.014	2.019	1311.749	.133%	99.101%
80.0	16.334	1.852	1313.601	.122%	99.241%
81.0	14.569	1.671	1315.272	.110%	99.367%
82.0	12.579	1.472	1316.744	.097%	99.478%
83.0	10.470	1.253	1317.997	.082%	99.573%
84.0	9.211	1.072	1319.069	.071%	99.654%
85.0	8.086	0.944	1320.013	.062%	99.725%
86.0	7.151	0.833	1320.846	.055%	99.788%
87.0	6.630	0.754	1321.601	.050%	99.845%
88.0	6.307	0.709	1322.309	.047%	99.899%
89.0	6.089	0.679	1322.989	.045%	99.950%
90.0	5.955	0.660	1323.649	.043%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1157.52	76.12%	87.45%
0-40	1218.68	80.14%	92.07%
0-60	1275.20	83.86%	96.34%
0-90	1322.99	87.00%	99.95%
0-120	1322.99	87.00%	99.95%
0-180	1323.65	87.04%	100.00%
60-90	49.71	3.27%	3.76%
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%
0-22.55	1058.92	69.63%	80.00%

ZONAL LUMEN SUMMARY

0-10	515.49
10-20	486.05
20-30	155.98
30-40	61.16
40-50	34.26
50-60	22.26
60-70	17.48
70-80	20.92
80-90	9.39
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



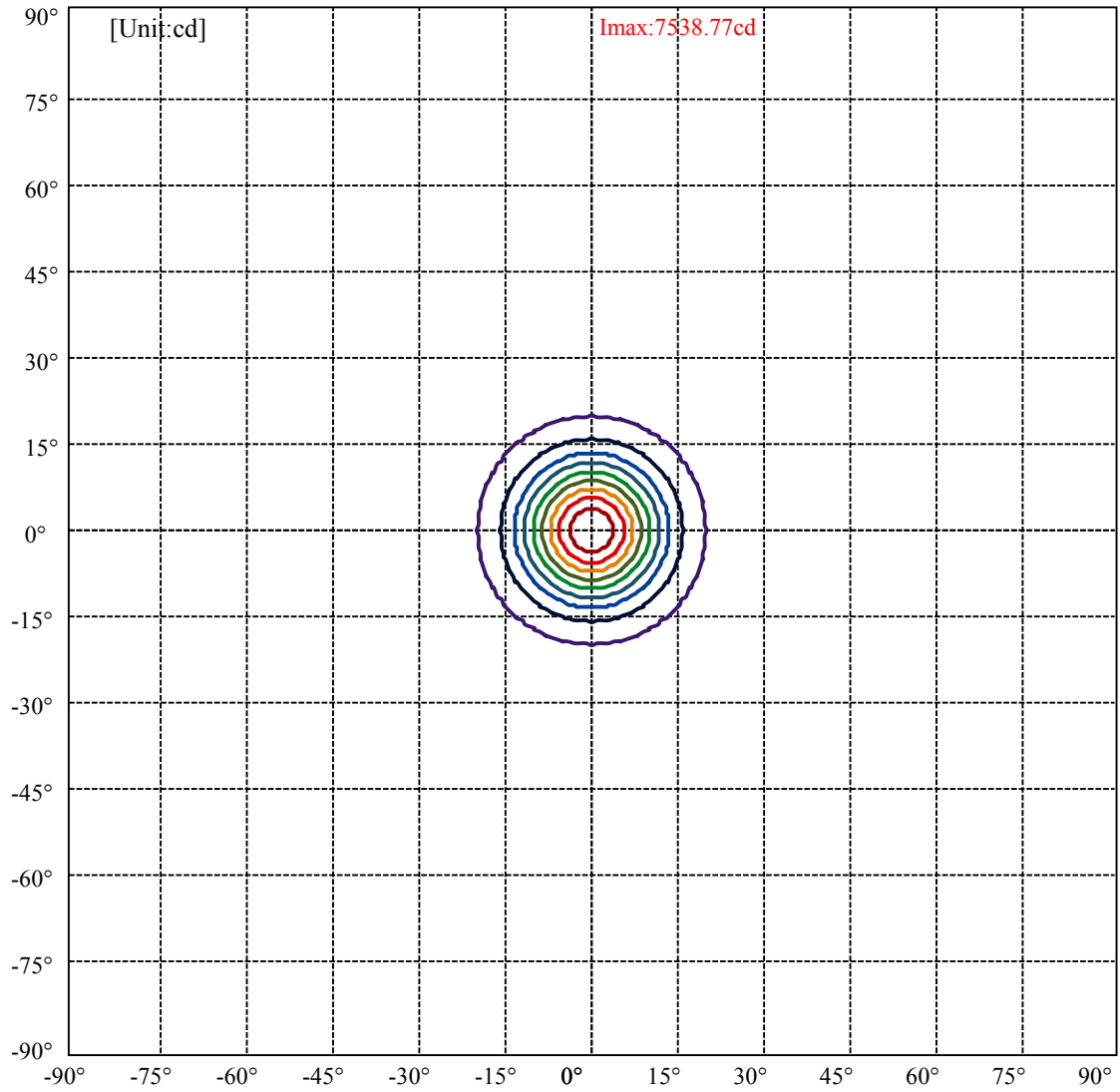
C0(Max): —————

C0/C180: —————

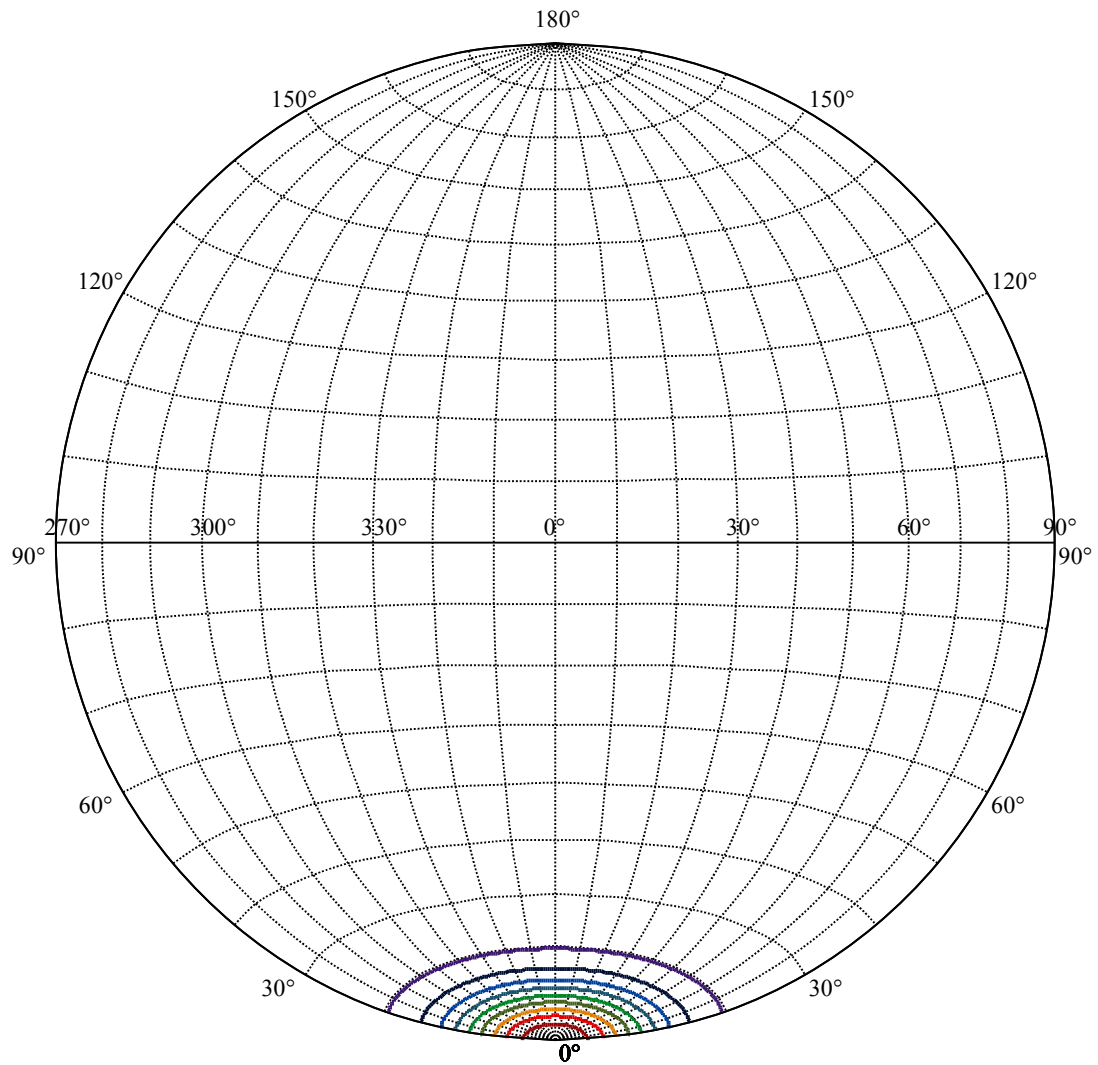
C90/C270: —————

Field angle(10%Imax):C0/180Left:19.6 Right:19.6
:C90/270Left:19.6 Right:19.6

Beam Angle(50%Imax):C0/180Left:9.9 Right:9.9
:C90/270Left:9.9 Right:9.9



(10%Imax) 753.877	—
(20%Imax) 1507.75	—
(30%Imax) 2261.63	—
(40%Imax) 3015.51	—
(50%Imax) 3769.38	—
(60%Imax) 4523.26	—
(70%Imax) 5277.14	—
(80%Imax) 6031.01	—
(90%Imax) 6784.89	—



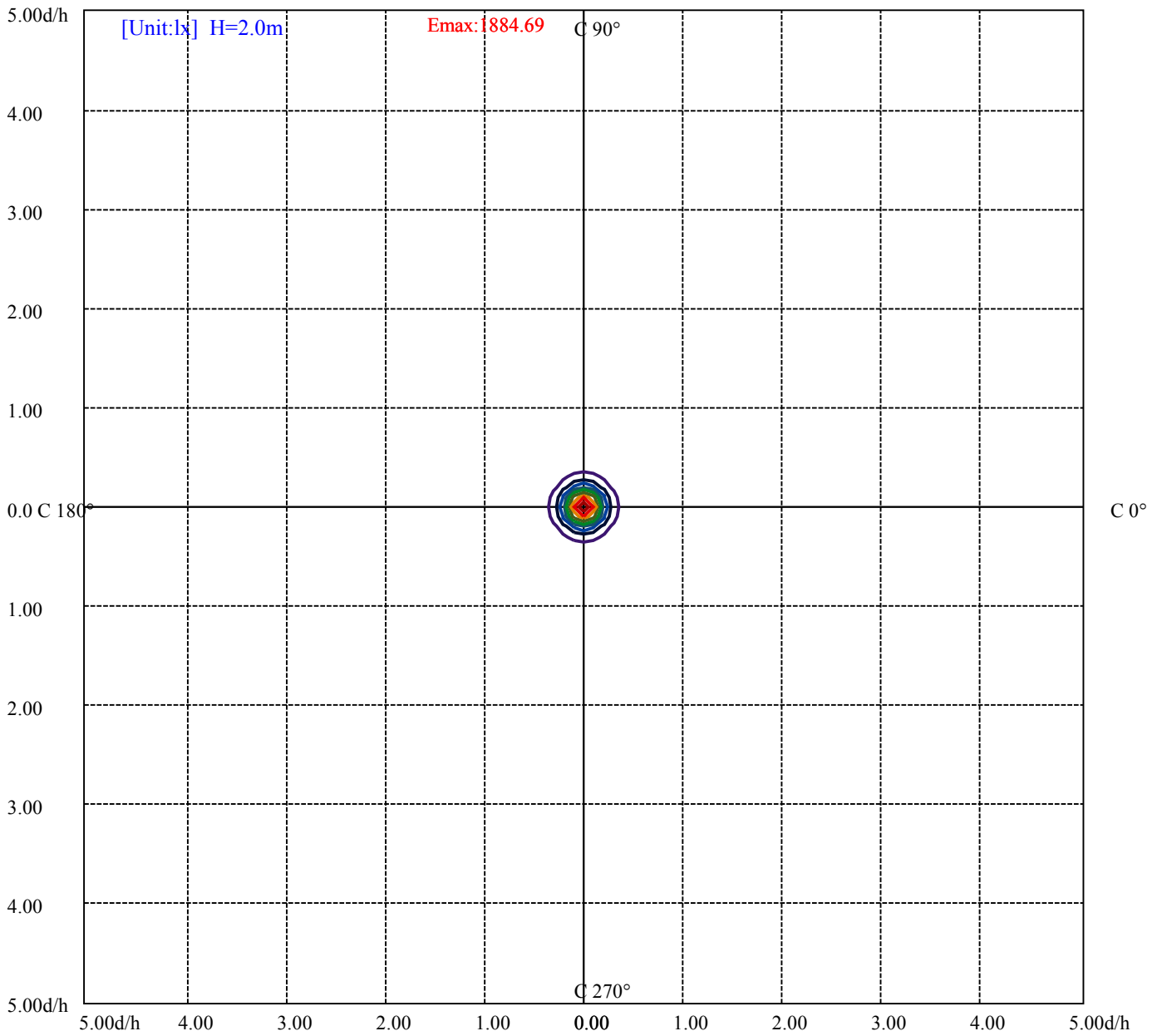
House

[Unit:cd]

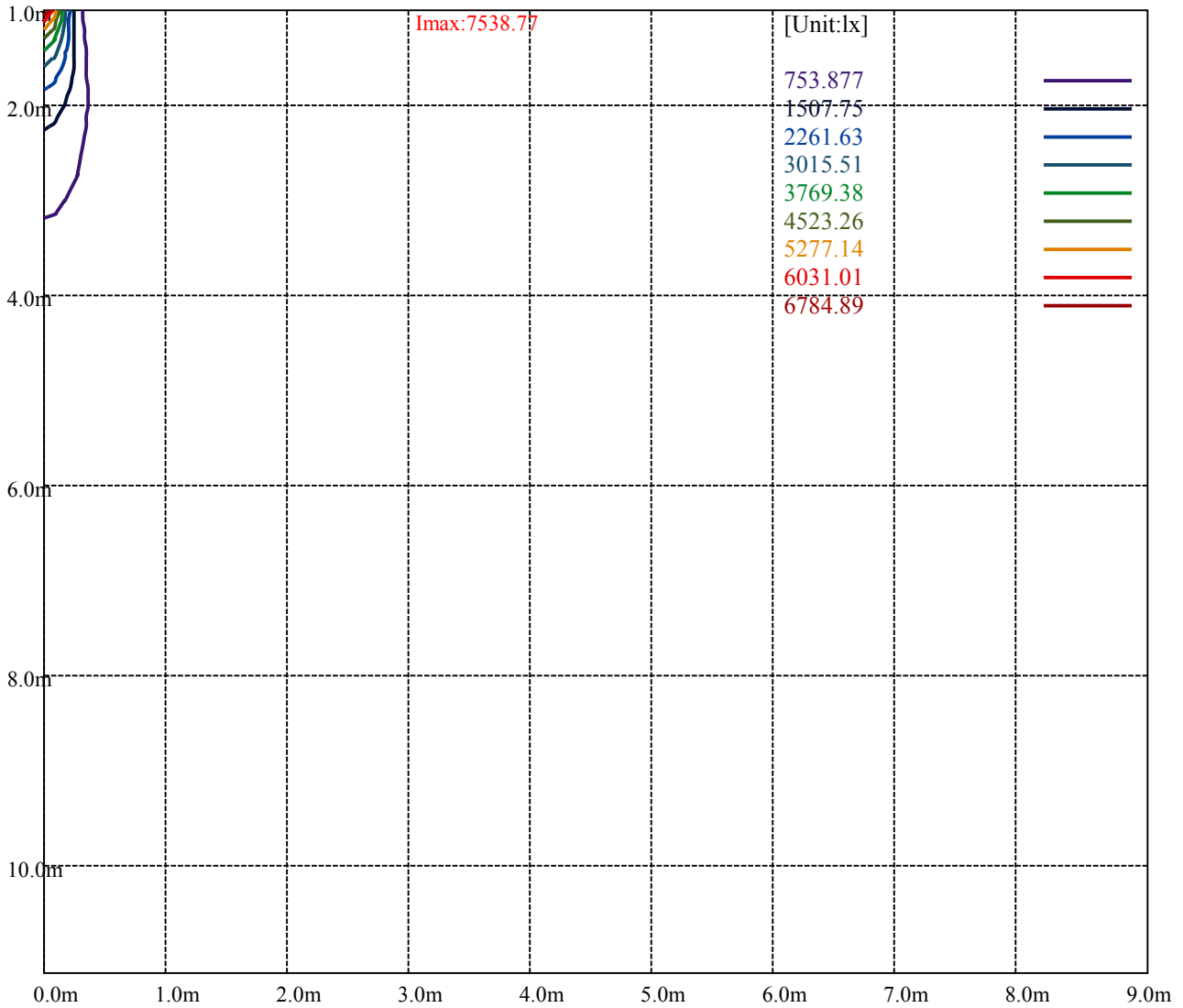
Road

Imax:7538.77

(10%Imax) 753.877	—
(20%Imax) 1507.75	—
(30%Imax) 2261.63	—
(40%Imax) 3015.51	—
(50%Imax) 3769.38	—
(60%Imax) 4523.26	—
(70%Imax) 5277.14	—
(80%Imax) 6031.01	—
(90%Imax) 6784.89	—



- (10%Emax) 188.469
- (20%Emax) 376.9375
- (30%Emax) 565.4075
- (40%Emax) 753.875
- (50%Emax) 942.345
- (60%Emax) 1130.813
- (70%Emax) 1319.282
- (80%Emax) 1507.75
- (90%Emax) 1696.22



Luminance Table

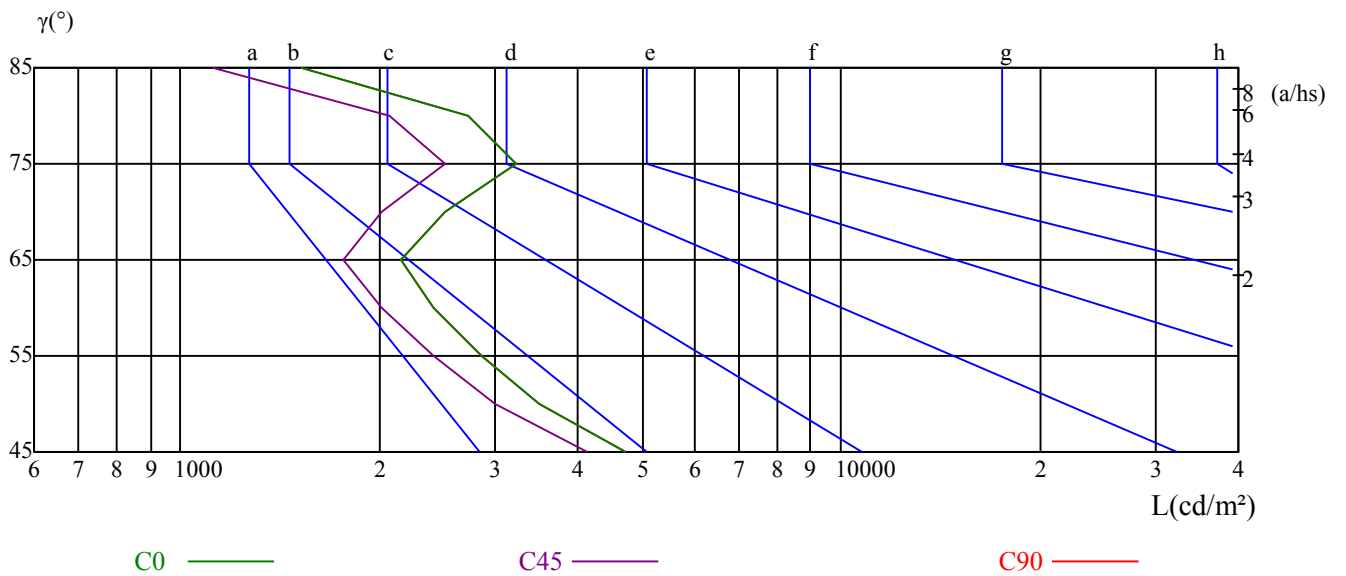
γ	45	50	55	60	65	70	75	80	85
C0	4728	3491	2850	2425	2160	2523	3215	2722	1520
C45	4126	3002	2413	2019	1767	2022	2517	2074	1120
C90	4728	3491	2850	2425	2160	2523	3215	2722	1520

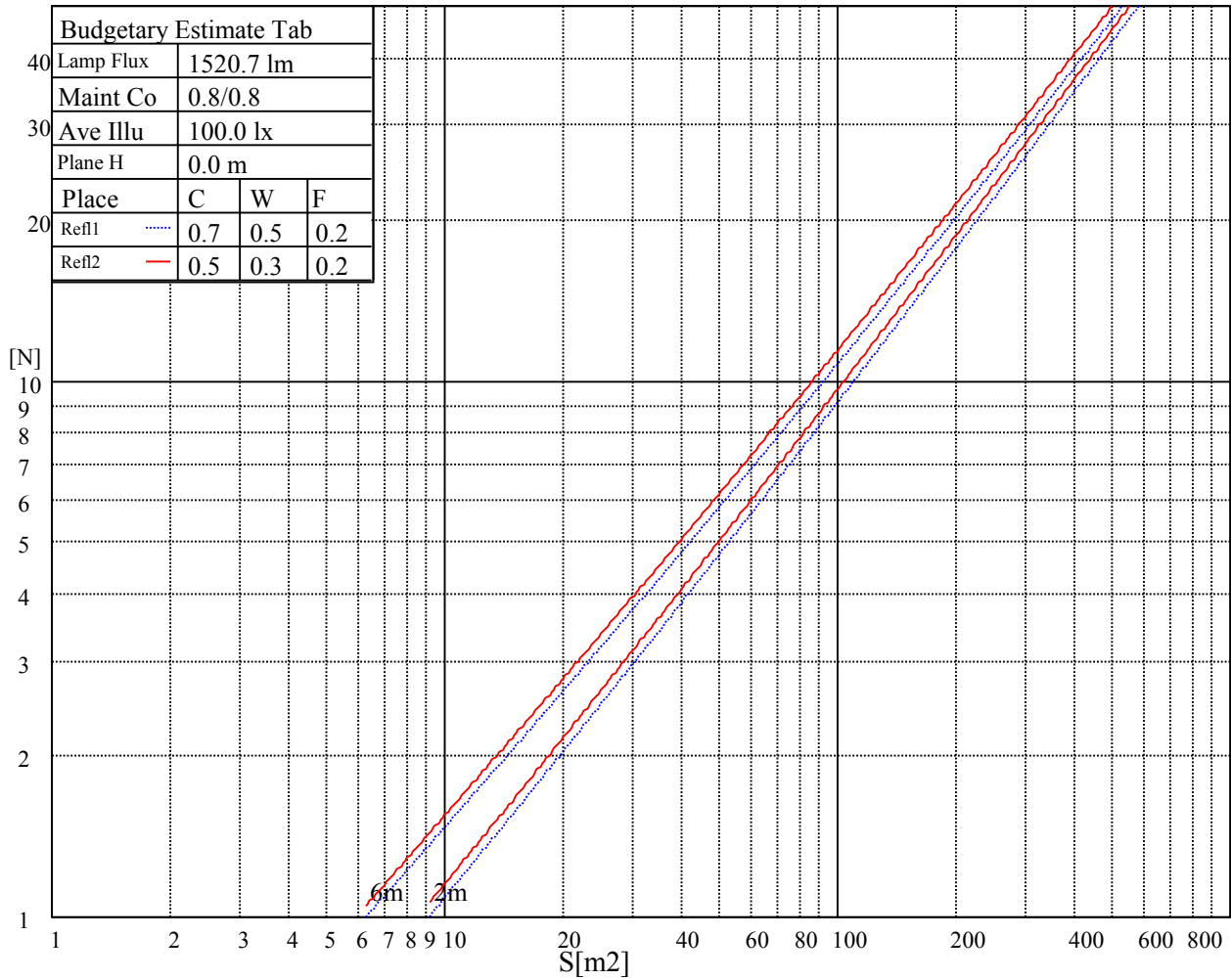
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
4678	4678	4678	9735	9735	9735	10961	10961	10961

Glare Table

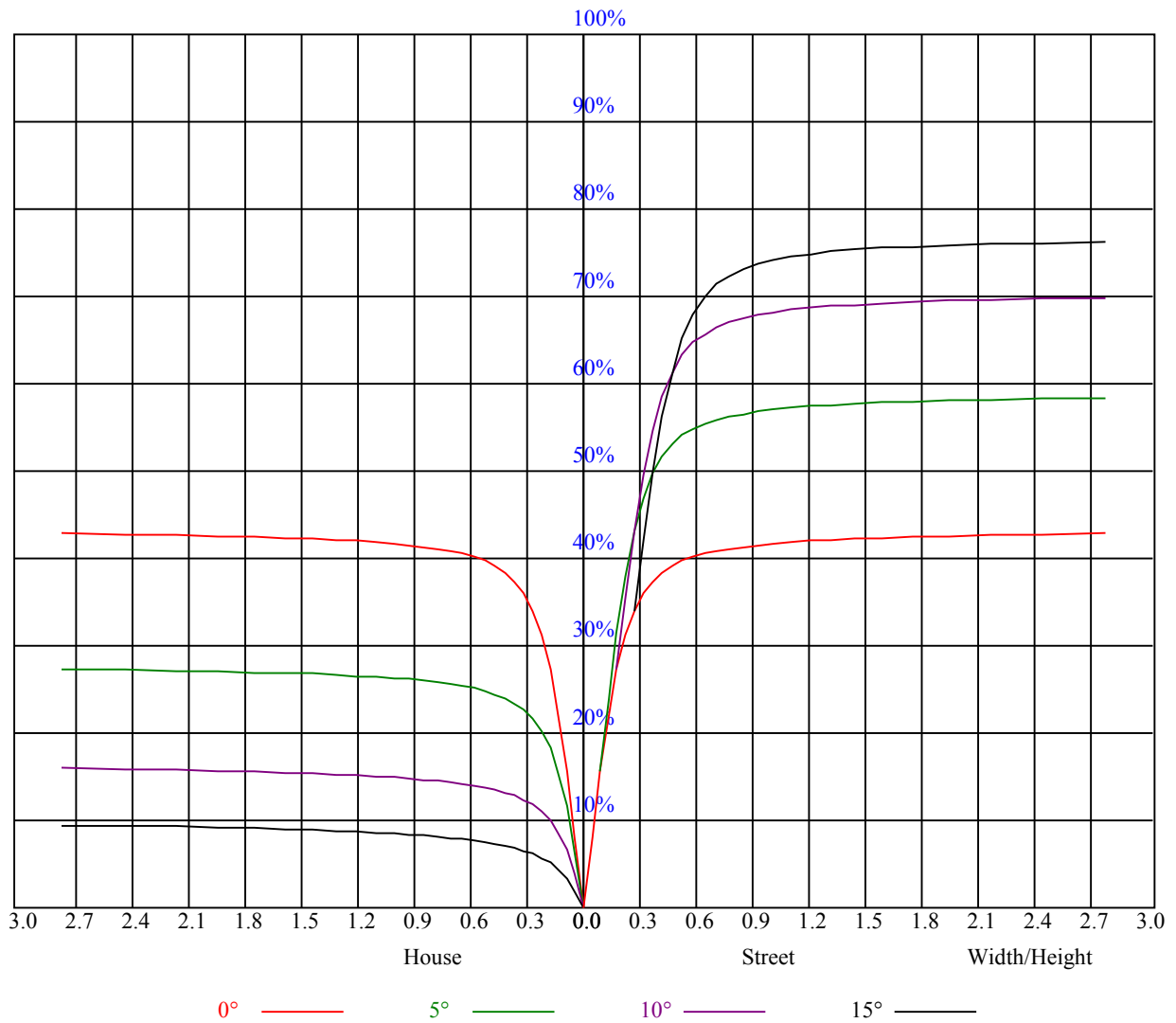
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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	1.04	1.04	1.04	1.01	1.01	1.01	0.97	0.97	0.97	0.93	0.93	0.93	0.89	0.89	0.89	0.87
1	0.97	0.95	0.94	0.95	0.94	0.92	0.92	0.91	0.89	0.89	0.88	0.87	0.86	0.85	0.84	0.83
2	0.92	0.89	0.87	0.91	0.88	0.86	0.88	0.86	0.84	0.85	0.84	0.82	0.83	0.82	0.80	0.79
3	0.88	0.84	0.81	0.87	0.83	0.81	0.84	0.82	0.79	0.82	0.80	0.78	0.80	0.79	0.77	0.76
4	0.84	0.80	0.77	0.83	0.80	0.77	0.81	0.78	0.76	0.80	0.77	0.75	0.78	0.76	0.74	0.73
5	0.81	0.77	0.74	0.80	0.76	0.74	0.79	0.75	0.73	0.77	0.74	0.72	0.76	0.74	0.72	0.71
6	0.78	0.74	0.71	0.77	0.74	0.71	0.76	0.73	0.70	0.75	0.72	0.70	0.74	0.71	0.70	0.69
7	0.75	0.71	0.69	0.75	0.71	0.69	0.74	0.71	0.68	0.73	0.70	0.68	0.72	0.69	0.68	0.67
8	0.73	0.69	0.67	0.73	0.69	0.66	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	0.64	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	0.68	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	7494.19	7592.06	7551.00	7401.38	7130.25	6815.25	6389.44	5907.38	5447.81
45.0	7558.31	7524.00	7358.06	7119.56	6773.06	6350.06	5914.69	5385.38	4903.88
90.0	7517.25	7364.25	7126.88	6736.50	6355.13	5918.06	5319.56	4824.00	4324.50
135.0	7576.31	7414.88	7148.25	6882.19	6414.75	5984.44	5514.19	4896.56	4406.06
180.0	7512.19	7304.06	7040.81	6616.69	6211.69	5761.13	5220.00	4660.88	4164.19
225.0	7558.31	7471.69	7287.19	6959.81	6624.56	6233.63	5734.69	5211.56	4726.69
270.0	7517.25	7569.00	7484.63	7305.75	7011.00	6674.06	6237.00	5750.44	5290.31
315.0	7576.31	7588.69	7500.38	7231.50	6989.06	6648.19	6147.56	5706.00	5234.06
360.0	7494.19	7592.06	7551.00	7401.38	7130.25	6815.25	6389.44	5907.38	5447.81
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	4905.56	4362.19	3882.38	3412.69	2858.06	2452.50	2130.75	1732.50	1432.13
45.0	4352.63	3804.19	3337.88	2896.31	2397.94	2049.75	1749.94	1434.38	1221.75
90.0	3714.19	3255.19	2826.56	2338.88	1998.56	1704.38	1396.13	1117.80	1011.66
135.0	3920.63	3323.81	2873.25	2458.69	2002.50	1694.25	1433.25	1184.06	976.50
180.0	3675.38	3096.56	2670.75	2280.94	1856.81	1571.63	1247.06	1087.99	891.39
225.0	4182.75	3651.75	3195.00	2715.75	2329.88	1952.44	1630.69	1385.44	1105.59
270.0	4755.94	4224.38	3754.13	3300.19	2764.69	2377.13	2032.31	1696.50	1413.00
315.0	4691.25	4150.69	3671.44	3149.44	2668.50	2284.88	1907.44	1614.38	1333.69
360.0	4905.56	4362.19	3882.38	3412.69	2858.06	2452.50	2130.75	1732.50	1432.13
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1234.69	1000.13	827.44	715.50	583.88	498.94	426.38	352.13	302.63
45.0	1042.31	874.69	735.75	628.88	534.38	457.31	398.25	340.88	298.13
90.0	864.68	728.66	627.86	533.08	454.44	395.94	340.03	293.79	258.86
135.0	821.25	677.25	566.44	476.44	402.75	349.31	297.00	286.31	220.28
180.0	746.38	613.69	518.18	431.10	361.58	311.34	264.21	226.35	199.01
225.0	945.34	825.24	708.64	577.74	509.12	440.44	375.69	322.88	284.01
270.0	1202.63	1006.31	843.19	722.25	609.19	525.94	445.50	379.13	329.63
315.0	1100.48	928.86	783.34	648.84	538.93	458.21	382.67	321.86	277.88
360.0	1234.69	1000.13	827.44	715.50	583.88	498.94	426.38	352.13	302.63
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	286.88	217.41	190.91	168.75	146.25	131.34	119.19	107.44	97.54
45.0	284.63	229.39	195.30	173.25	154.69	134.89	121.73	110.53	98.38
90.0	228.99	196.93	175.22	156.60	138.99	123.92	112.61	101.70	92.31
135.0	194.51	167.91	149.79	134.44	118.91	108.56	99.68	91.07	83.64
180.0	175.84	151.99	136.13	123.02	110.87	100.63	93.04	85.67	79.26
225.0	246.38	217.24	190.35	167.68	150.30	133.76	119.64	108.73	99.17
270.0	288.00	241.65	213.08	188.94	163.63	146.70	132.30	118.41	106.65
315.0	240.69	202.44	177.86	157.61	138.60	122.91	111.49	100.69	91.52
360.0	286.88	217.41	190.91	168.75	146.25	131.34	119.19	107.44	97.54
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	90.06	82.63	76.78	70.99	65.93	61.76	57.60	53.83	50.51
45.0	90.11	82.69	74.87	69.36	64.29	59.12	54.56	50.63	46.46
90.0	84.94	77.74	72.17	66.21	60.98	56.76	52.93	48.49	45.23
135.0	77.91	71.94	67.33	62.44	57.99	54.39	50.63	47.08	44.27
180.0	74.03	68.91	64.58	60.13	56.14	52.71	49.56	45.84	43.20
225.0	88.88	81.79	75.54	68.46	63.51	59.01	54.51	50.18	46.63
270.0	97.76	89.10	82.13	74.87	68.68	63.68	58.73	54.06	50.12
315.0	84.49	77.91	72.62	67.11	62.33	58.44	54.96	50.96	47.93
360.0	90.06	82.63	76.78	70.99	65.93	61.76	57.60	53.83	50.51

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	47.48	43.99	41.40	38.98	36.51	34.37	32.63	30.88	29.36
45.0	42.86	39.83	36.73	34.43	32.01	29.98	28.46	27.11	25.54
90.0	42.30	38.87	36.51	34.48	32.34	30.71	29.42	28.07	27.06
135.0	41.63	38.59	36.39	34.37	32.40	30.71	29.31	27.90	26.55
180.0	40.56	37.80	35.72	33.86	32.06	30.38	29.08	27.73	26.55
225.0	42.98	39.99	36.90	34.20	32.06	30.09	28.41	27.00	25.88
270.0	46.52	42.36	39.38	36.56	34.09	31.39	29.53	28.01	26.33
315.0	45.06	41.74	39.32	37.07	34.76	32.74	31.11	29.48	28.24
360.0	47.48	43.99	41.40	38.98	36.51	34.37	32.63	30.88	29.36
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	28.07	26.78	25.65	24.47	23.46	22.61	21.54	20.70	19.86
45.0	24.53	23.46	22.33	21.49	20.76	19.91	19.13	18.45	17.72
90.0	25.88	24.58	23.51	22.50	21.43	20.64	19.97	19.13	18.39
135.0	25.48	24.30	23.29	22.33	21.43	20.59	19.63	18.79	18.11
180.0	25.37	24.30	23.34	22.39	21.49	20.64	19.91	19.01	18.34
225.0	24.47	23.46	22.56	21.71	20.64	19.86	19.18	18.39	17.72
270.0	25.14	24.08	22.95	21.88	21.04	20.14	19.24	18.62	17.89
315.0	26.94	25.65	24.64	23.51	22.44	21.54	20.76	19.74	19.01
360.0	28.07	26.78	25.65	24.47	23.46	22.61	21.54	20.70	19.86
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	19.13	18.23	17.61	16.93	16.31	15.69	15.24	14.63	14.12
45.0	17.16	16.54	16.09	16.09	16.48	17.38	18.45	19.80	21.60
90.0	17.89	17.94	18.56	19.74	21.60	23.85	25.82	27.90	30.04
135.0	17.38	16.59	15.98	15.47	14.96	14.34	13.89	13.39	12.77
180.0	17.66	16.82	16.26	15.69	15.13	14.57	14.06	13.50	13.11
225.0	17.04	16.54	16.03	16.03	16.48	17.33	18.62	20.25	21.66
270.0	17.38	16.76	16.48	16.65	17.21	18.84	20.53	22.22	25.09
315.0	18.34	17.55	16.88	16.31	15.69	15.08	14.57	14.01	13.61
360.0	19.13	18.23	17.61	16.93	16.31	15.69	15.24	14.63	14.12
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	13.61	13.11	12.60	12.09	11.70	11.31	10.91	10.46	10.18
45.0	22.89	24.47	26.10	27.45	27.56	26.78	24.98	22.67	19.97
90.0	32.29	34.31	35.78	36.28	34.93	32.63	29.87	25.88	22.39
135.0	12.32	11.87	11.31	10.86	10.52	10.13	9.84	9.45	9.11
180.0	12.54	11.98	11.59	11.14	10.63	10.35	10.01	9.56	9.39
225.0	23.23	24.86	26.16	27.28	27.28	26.38	24.86	22.44	19.63
270.0	27.06	29.25	31.61	33.81	35.33	36.28	35.49	33.64	30.32
315.0	13.11	12.60	12.15	11.70	11.19	10.80	10.46	10.01	9.68
360.0	13.61	13.11	12.60	12.09	11.70	11.31	10.91	10.46	10.18
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	9.84	9.51	9.06	8.66	8.27	7.88	7.48	7.03	6.64
45.0	17.04	14.06	10.41	8.94	8.33	7.03	6.53	6.08	5.91
90.0	18.34	13.56	10.01	9.06	7.14	6.53	6.13	5.91	5.68
135.0	8.72	8.33	7.88	7.48	6.98	6.53	6.19	6.02	5.85
180.0	9.00	8.61	8.21	7.88	7.43	6.92	6.53	6.30	6.24
225.0	17.04	13.56	10.41	9.17	8.44	7.03	6.47	6.13	5.96
270.0	27.23	24.02	19.07	14.23	10.24	7.93	6.92	6.53	6.19
315.0	9.34	9.00	8.72	8.27	7.88	7.37	6.81	6.47	6.24
360.0	9.84	9.51	9.06	8.66	8.27	7.88	7.48	7.03	6.64

Intensity data(cd)

C/γ(°)	90.0
0.0	6.41
45.0	5.68
90.0	5.63
135.0	5.85
180.0	6.36
225.0	5.79
270.0	5.96
315.0	5.96
360.0	6.41