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Nata

LumCAT: LN01D04515DA-N

Luminaire: 97.70.234.00

Report No: 210106-B011

Test No: 210106-C011

LampCAT: SEOUL SAWX10 LES9.8

Lamp flux(lm): 1758.8

Number of Lamps: 1

Length(mm): 92

Phm Type: C

Voltage(V): 35.3100

Current(A): 0.3810

Power (W): 13.4530

PF: 0.0000

Ballast type: DC

Width(mm): 92

Height(mm): 50

Photometric Results

Lumens(lm): 1532.55

Efficiency(%): 87.14%

Lumens(lm)/Power(W): 113.92

Central intensity(cd): 8134.594

Maximum intensity(cd): 8134.594

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=20.9

[C90/270]Total=20.9

Field angle(10%Imax): [C0/180]Total=40.4

[C90/270]Total=40.4

Maximum s/h(1/2): C0_180=0.36 C90_270=0.36

Maximum s/h(1/4): C0_180=0.36 C90_270=0.36

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 87.14%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 96.285%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	8134.594	0.000	0	.000%	.000%
1.0	8086.711	7.762	7.762	.441%	.506%
2.0	7928.297	22.986	30.748	1.307%	2.006%
3.0	7680.375	37.331	68.079	2.123%	4.442%
4.0	7346.180	50.299	118.377	2.860%	7.724%
5.0	6934.500	61.435	179.812	3.493%	11.733%
6.0	6453.070	70.355	250.167	4.000%	16.324%
7.0	5950.758	76.990	327.158	4.377%	21.347%
8.0	5435.438	81.489	408.647	4.633%	26.664%
9.0	4879.617	83.598	492.244	4.753%	32.119%
10.0	4312.055	83.181	575.426	4.729%	37.547%
11.0	3788.930	80.945	656.371	4.602%	42.829%
12.0	3285.000	77.328	733.699	4.397%	47.874%
13.0	2791.547	72.113	805.813	4.100%	52.580%
14.0	2375.719	66.141	871.953	3.761%	56.896%
15.0	2017.898	60.318	932.271	3.429%	60.831%
16.0	1703.953	54.536	986.806	3.101%	64.390%
17.0	1392.792	48.225	1035.031	2.742%	67.536%
18.0	1177.699	42.382	1077.413	2.410%	70.302%
19.0	1004.147	37.960	1115.372	2.158%	72.779%
20.0	839.081	33.736	1149.109	1.918%	74.980%
21.0	710.191	29.749	1178.858	1.691%	76.921%
22.0	603.984	26.409	1205.267	1.502%	78.644%
23.0	517.029	23.522	1228.789	1.337%	80.179%
24.0	437.906	20.878	1249.667	1.187%	81.542%
25.0	375.771	18.501	1268.168	1.052%	82.749%
26.0	328.739	16.630	1284.798	.946%	83.834%
27.0	283.409	14.976	1299.775	.852%	84.811%
28.0	244.111	13.356	1313.13	.759%	85.683%
29.0	220.106	12.145	1325.275	.691%	86.475%
30.0	189.802	11.067	1336.343	.629%	87.197%
31.0	167.815	9.952	1346.295	.566%	87.847%
32.0	150.047	9.106	1355.401	.518%	88.441%
33.0	135.485	8.412	1363.813	.478%	88.990%
34.0	122.815	7.817	1371.63	.444%	89.500%
35.0	111.586	7.280	1378.91	.414%	89.975%
36.0	102.178	6.806	1385.716	.387%	90.419%
37.0	94.085	6.401	1392.117	.364%	90.837%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	86.780	6.037	1398.154	.343%	91.231%
39.0	79.755	5.684	1403.838	.323%	91.601%
40.0	73.870	5.358	1409.196	.305%	91.951%
41.0	68.794	5.080	1414.276	.289%	92.283%
42.0	63.759	4.816	1419.092	.274%	92.597%
43.0	58.992	4.547	1423.639	.259%	92.893%
44.0	54.970	4.301	1427.941	.245%	93.174%
45.0	51.258	4.082	1432.023	.232%	93.440%
46.0	47.496	3.862	1435.885	.220%	93.692%
47.0	44.395	3.655	1439.54	.208%	93.931%
48.0	41.611	3.477	1443.017	.198%	94.158%
49.0	39.122	3.315	1446.332	.188%	94.374%
50.0	36.710	3.162	1449.494	.180%	94.580%
51.0	34.812	3.026	1452.52	.172%	94.778%
52.0	33.152	2.916	1455.436	.166%	94.968%
53.0	31.556	2.815	1458.251	.160%	95.152%
54.0	30.136	2.719	1460.97	.155%	95.329%
55.0	28.863	2.634	1463.604	.150%	95.501%
56.0	27.661	2.554	1466.158	.145%	95.668%
57.0	26.473	2.475	1468.633	.141%	95.829%
58.0	25.376	2.398	1471.031	.136%	95.986%
59.0	24.413	2.328	1473.358	.132%	96.138%
60.0	23.435	2.260	1475.619	.129%	96.285%
61.0	22.493	2.192	1477.81	.125%	96.428%
62.0	21.663	2.128	1479.938	.121%	96.567%
63.0	20.904	2.070	1482.008	.118%	96.702%
64.0	20.109	2.013	1484.021	.114%	96.833%
65.0	19.491	1.960	1485.981	.111%	96.961%
66.0	19.146	1.928	1487.908	.110%	97.087%
67.0	19.125	1.924	1489.833	.109%	97.213%
68.0	19.484	1.956	1491.789	.111%	97.340%
69.0	20.095	2.019	1493.808	.115%	97.472%
70.0	20.862	2.103	1495.911	.120%	97.609%
71.0	21.825	2.206	1498.118	.125%	97.753%
72.0	22.690	2.315	1500.432	.132%	97.904%
73.0	23.330	2.406	1502.839	.137%	98.061%
74.0	23.963	2.486	1505.325	.141%	98.223%
75.0	24.370	2.554	1507.879	.145%	98.390%

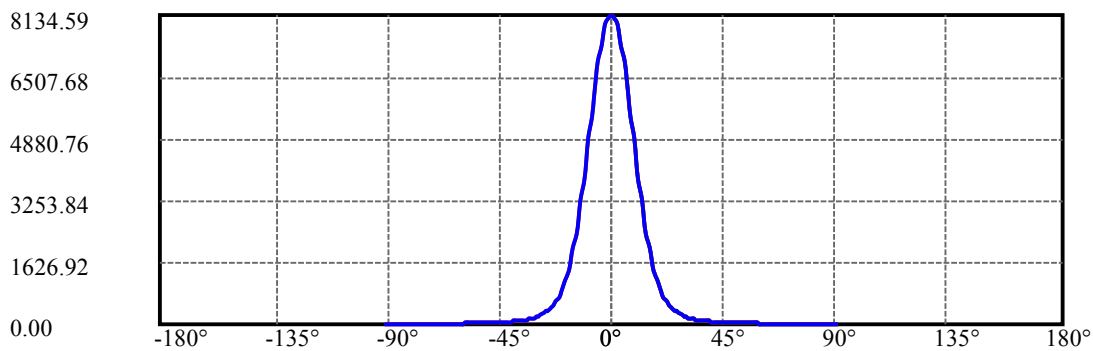
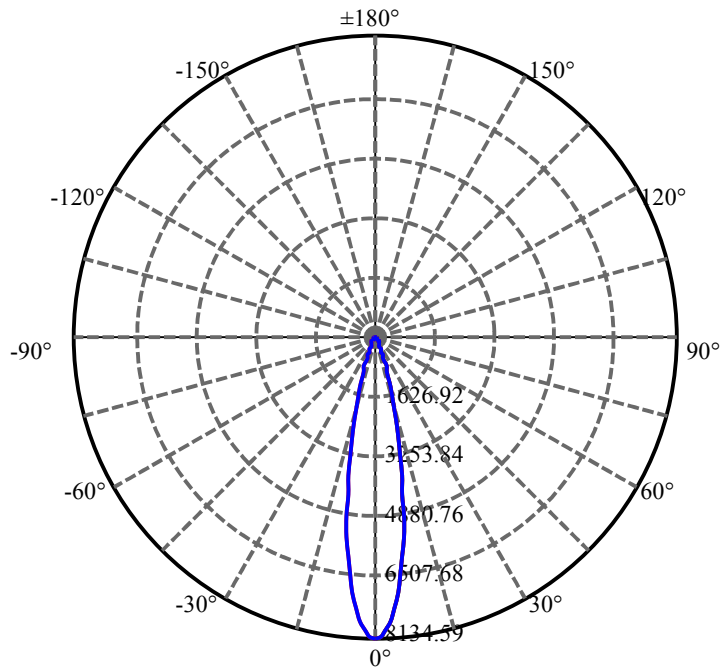
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	24.581	2.599	1510.477	.148%	98.560%
77.0	24.434	2.613	1513.09	.149%	98.730%
78.0	23.498	2.566	1515.656	.146%	98.898%
79.0	21.790	2.433	1518.09	.138%	99.056%
80.0	19.976	2.252	1520.341	.128%	99.203%
81.0	17.923	2.049	1522.391	.117%	99.337%
82.0	15.722	1.824	1524.215	.104%	99.456%
83.0	13.113	1.568	1525.783	.089%	99.558%
84.0	10.955	1.311	1527.094	.075%	99.644%
85.0	9.654	1.125	1528.219	.064%	99.717%
86.0	8.480	0.991	1529.21	.056%	99.782%
87.0	7.917	0.897	1530.107	.051%	99.841%
88.0	7.523	0.846	1530.953	.048%	99.896%
89.0	7.249	0.810	1531.763	.046%	99.949%
90.0	7.123	0.788	1532.551	.045%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1336.34	75.98%	87.20%
0-40	1409.20	80.12%	91.95%
0-60	1475.62	83.90%	96.29%
0-90	1531.76	87.09%	99.95%
0-120	1531.76	87.09%	99.95%
0-180	1532.55	87.14%	100.00%
60-90	58.40	3.32%	3.81%
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%
0-22.88	1226.04	69.71%	80.00%

ZONAL LUMEN SUMMARY

0-10	575.43
10-20	573.68
20-30	187.23
30-40	72.85
40-50	40.30
50-60	26.13
60-70	20.29
70-80	24.43
80-90	11.42
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



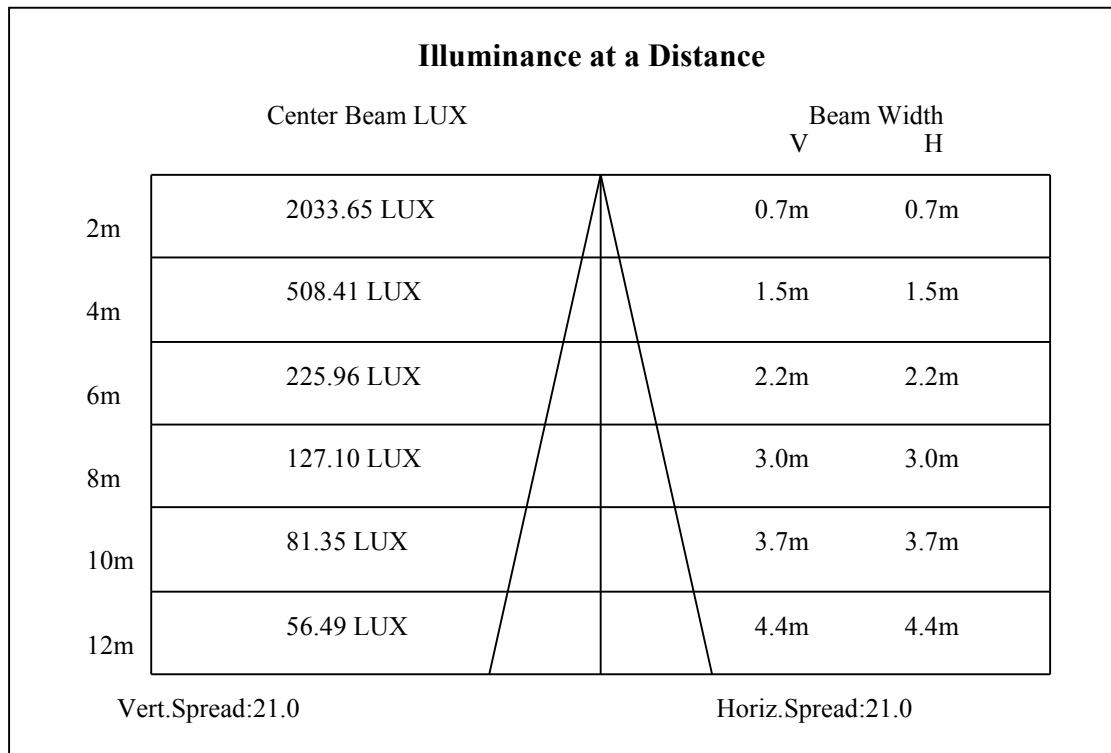
C0(Max): —————

C0/C180: —————

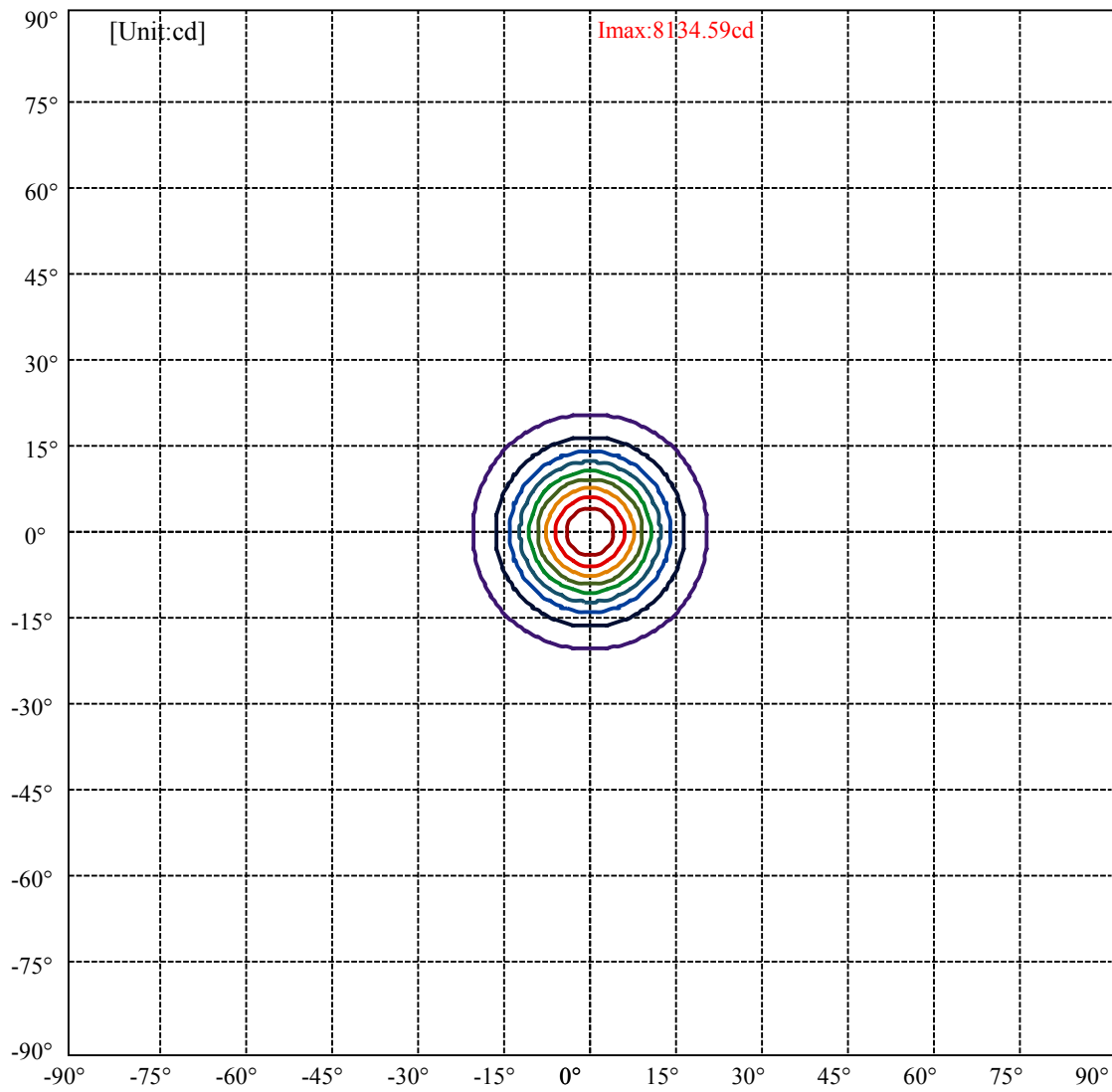
C90/C270: —————

Field angle(10%Imax):C0/180Left:20.2 Right:20.2
:C90/270Left:20.2 Right:20.2

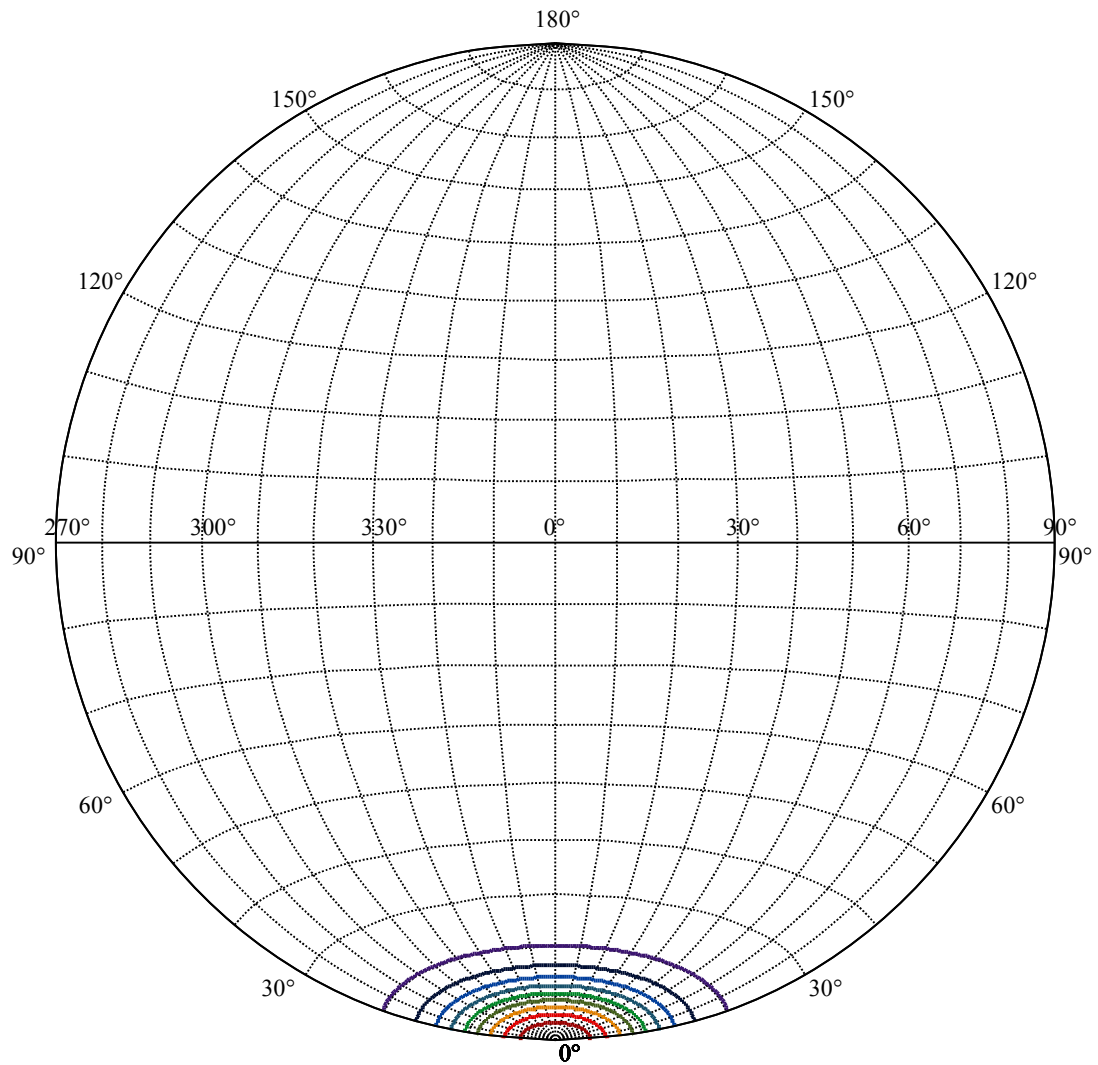
Beam Angle(50%Imax):C0/180Left:10.5 Right:10.5
:C90/270Left:10.5 Right:10.5



ISO-Intensity(V-H)



(10%Imax) 813.459	—
(20%Imax) 1626.92	—
(30%Imax) 2440.38	—
(40%Imax) 3253.84	—
(50%Imax) 4067.3	—
(60%Imax) 4880.76	—
(70%Imax) 5694.22	—
(80%Imax) 6507.68	—
(90%Imax) 7321.13	—



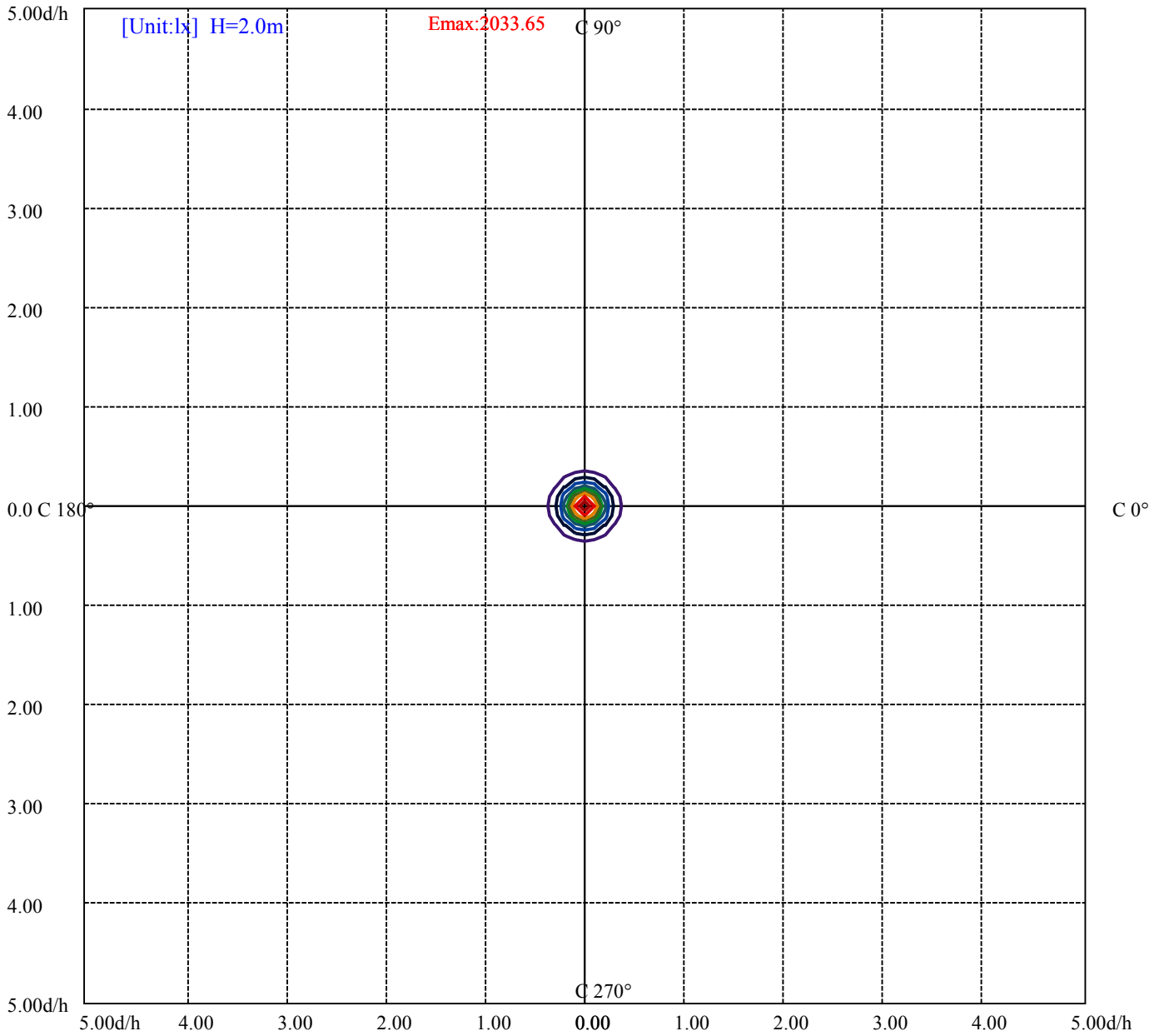
House

[Unit:cd]

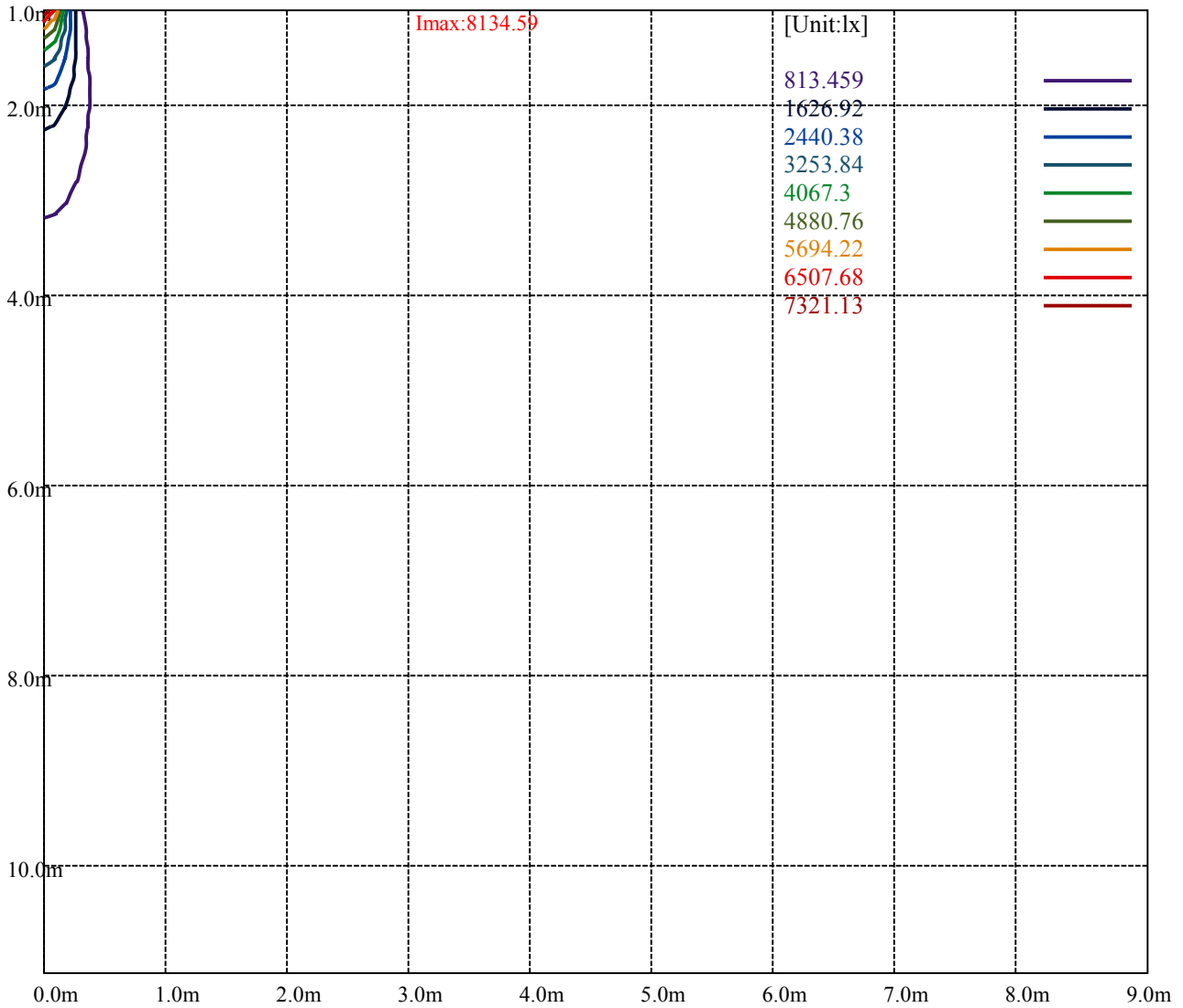
Road

Imax:8134.59

(10%Imax) 813.459	—
(20%Imax) 1626.92	—
(30%Imax) 2440.38	—
(40%Imax) 3253.84	—
(50%Imax) 4067.3	—
(60%Imax) 4880.76	—
(70%Imax) 5694.22	—
(80%Imax) 6507.68	—
(90%Imax) 7321.13	—



- (10%Emax) 203.3647
- (20%Emax) 406.73
- (30%Emax) 610.095
- (40%Emax) 813.4575
- (50%Emax) 1016.823
- (60%Emax) 1220.188
- (70%Emax) 1423.552
- (80%Emax) 1626.917
- (90%Emax) 1830.282



Luminance Table

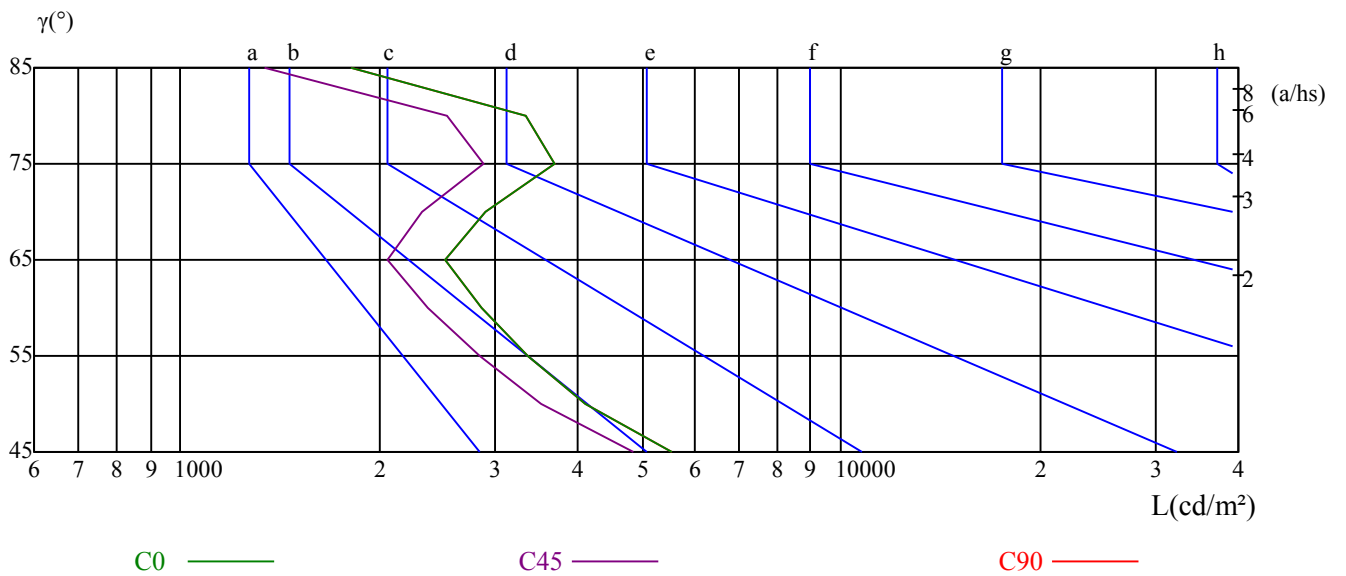
γ	45	50	55	60	65	70	75	80	85
C0	5549	4095	3347	2852	2516	2890	3674	3329	1815
C45	4843	3522	2834	2375	2058	2316	2876	2536	1337
C90	5549	4095	3347	2852	2516	2890	3674	3329	1815

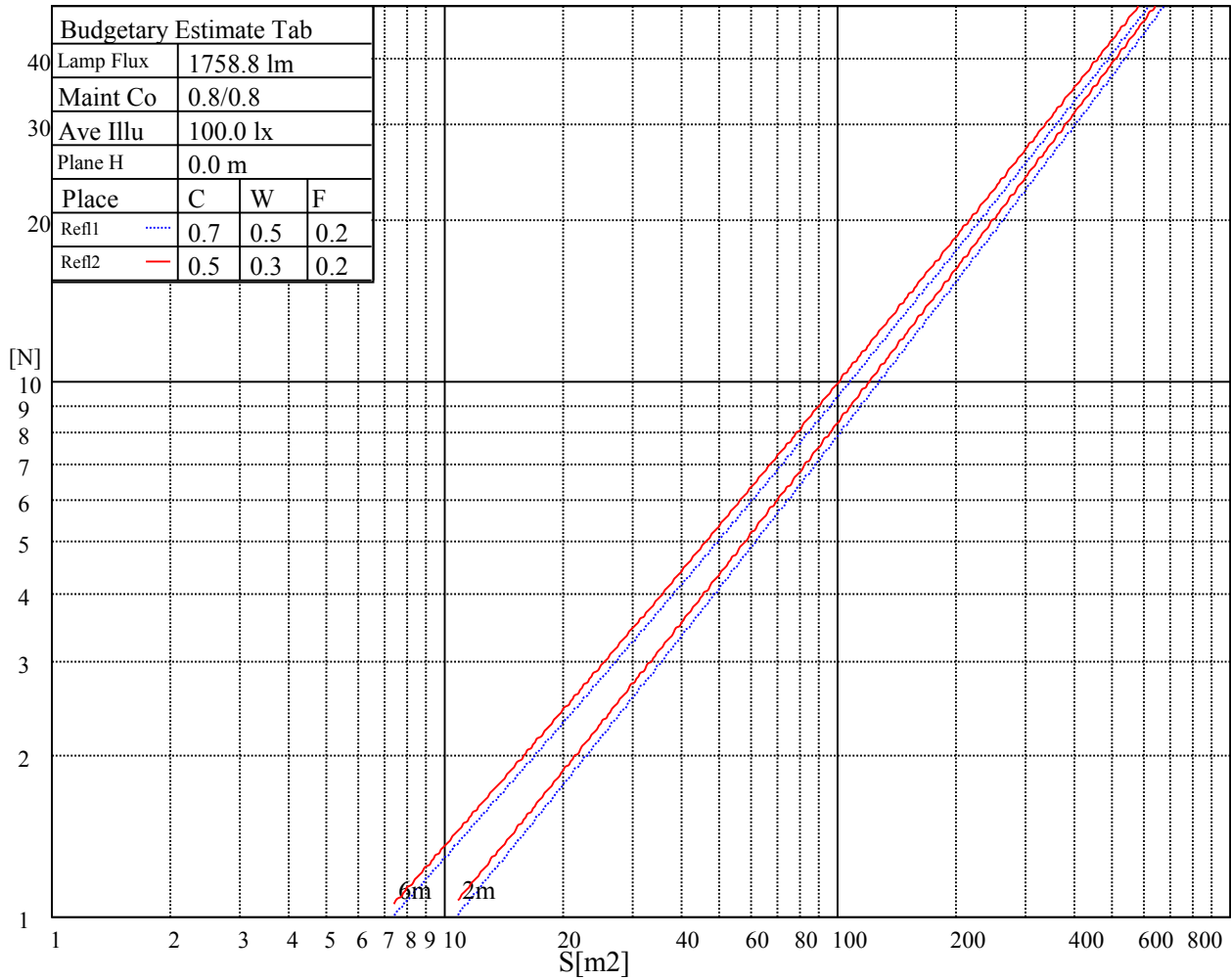
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
5449	5449	5449	11125	11125	11125	13087	13087	13087

Glare Table

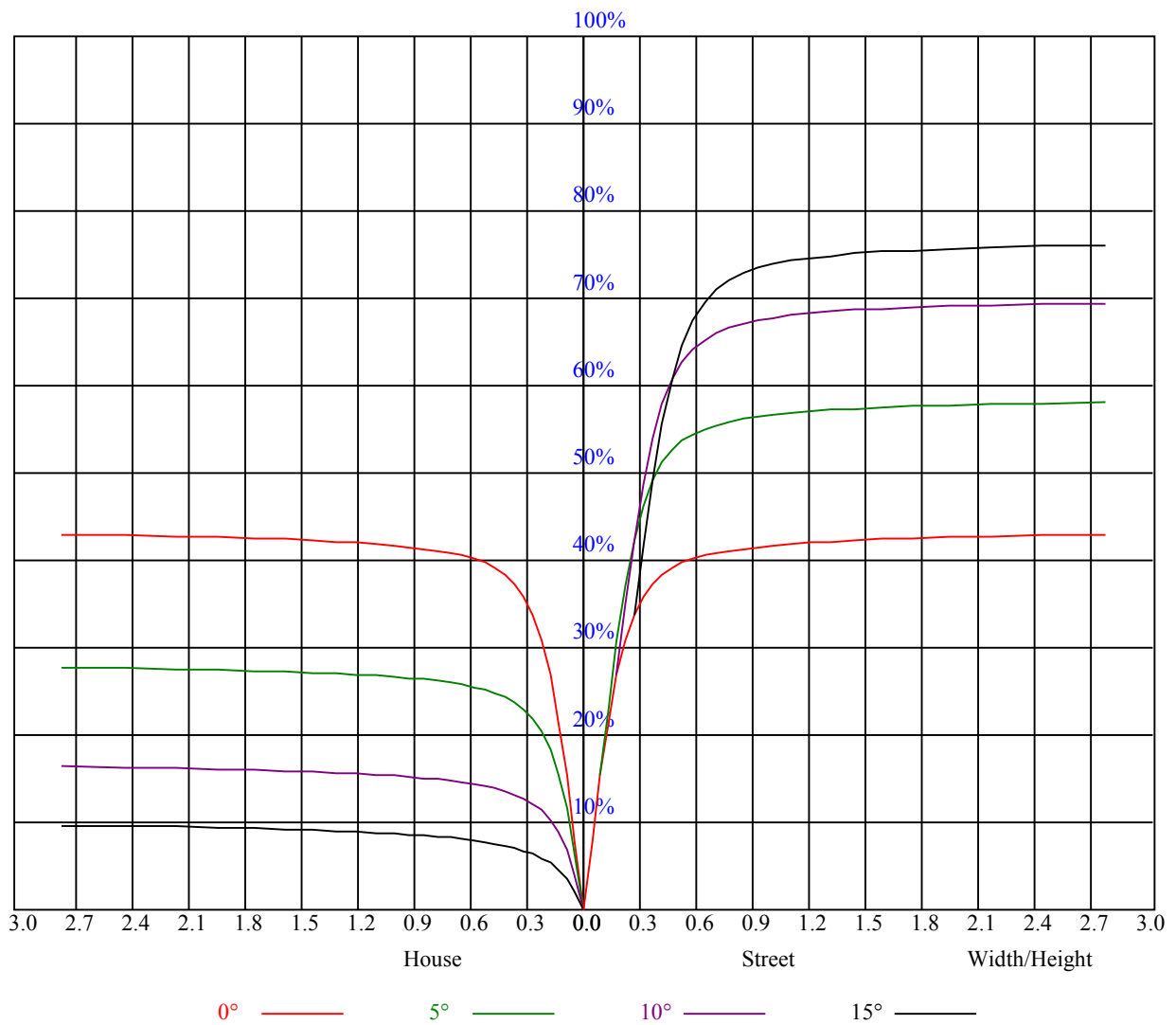
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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	0.86	0.91	0.88	0.85	0.88	0.86	0.84	0.85	0.83	0.82	0.83	0.81	0.80	0.79
3	0.88	0.84	0.81	0.86	0.83	0.81	0.84	0.81	0.79	0.82	0.80	0.78	0.80	0.78	0.77	0.76
4	0.84	0.80	0.77	0.83	0.79	0.77	0.81	0.78	0.76	0.79	0.77	0.75	0.78	0.76	0.74	0.73
5	0.81	0.77	0.74	0.80	0.76	0.73	0.78	0.75	0.73	0.77	0.74	0.72	0.76	0.73	0.71	0.70
6	0.78	0.74	0.71	0.77	0.73	0.71	0.76	0.73	0.70	0.75	0.72	0.70	0.74	0.71	0.69	0.68
7	0.75	0.71	0.68	0.75	0.71	0.68	0.74	0.70	0.68	0.73	0.70	0.67	0.72	0.69	0.67	0.66
8	0.73	0.69	0.66	0.72	0.69	0.66	0.71	0.68	0.66	0.71	0.68	0.66	0.70	0.67	0.65	0.64
9	0.71	0.67	0.64	0.70	0.67	0.64	0.69	0.66	0.64	0.69	0.66	0.64	0.68	0.66	0.64	0.63
10	0.69	0.65	0.62	0.68	0.65	0.62	0.68	0.64	0.62	0.67	0.64	0.62	0.67	0.64	0.62	0.61



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	8161.88	8061.75	7831.69	7545.94	7179.19	6771.94	6220.69	5740.31	5235.75
45.0	8150.63	8014.50	7780.50	7525.69	7067.81	6593.63	6197.63	5584.50	5070.38
90.0	8114.63	8022.38	7809.75	7504.88	7156.69	6690.94	6171.75	5683.50	5110.88
135.0	8111.25	8152.88	8075.81	7909.31	7615.69	7267.50	6796.13	6278.63	5803.31
180.0	8161.88	8175.94	8061.19	7866.56	7580.25	7156.69	6668.44	6202.13	5646.38
225.0	8150.63	8164.13	8089.88	7875.00	7609.50	7263.00	6859.69	6316.88	5843.81
270.0	8114.63	8112.94	7990.31	7796.25	7516.13	7108.88	6648.19	6212.81	5685.19
315.0	8111.25	7989.19	7787.25	7419.38	7044.19	6623.44	6062.06	5587.31	5087.81
360.0	8161.88	8061.75	7831.69	7545.94	7179.19	6771.94	6220.69	5740.31	5235.75
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	4594.50	4083.75	3587.63	3063.38	2588.06	2210.06	1837.13	1548.56	1274.06
45.0	4550.06	3908.25	3418.31	2903.06	2444.63	2090.25	1780.31	1448.44	1224.56
90.0	4596.19	4026.94	3485.25	3035.81	2576.25	2176.31	1868.63	1600.31	1315.69
135.0	5244.19	4663.13	4146.19	3647.81	3061.13	2639.25	2265.75	1900.69	1593.00
180.0	5124.94	4537.69	3962.81	3472.31	2950.31	2480.63	2113.88	1792.69	1449.00
225.0	5342.63	4698.56	4183.88	3681.56	3148.88	2665.13	2284.31	1904.63	1613.81
270.0	5128.31	4624.31	4060.13	3574.13	3063.94	2601.00	2231.44	1905.19	1560.38
315.0	4456.13	3953.81	3467.25	2901.94	2499.19	2143.13	1761.75	1531.13	1111.84
360.0	4594.50	4083.75	3587.63	3063.38	2588.06	2210.06	1837.13	1548.56	1274.06
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1049.63	884.25	730.69	605.81	516.38	449.44	363.38	312.75	285.75
45.0	1031.63	856.69	702.56	607.50	510.75	439.88	371.25	315.00	284.63
90.0	1102.39	965.14	815.68	692.21	599.34	511.76	438.36	383.06	330.64
135.0	1359.00	1137.94	955.13	825.19	701.44	603.00	516.38	443.25	388.69
180.0	1115.66	1024.03	845.21	699.86	595.35	499.95	420.92	363.43	310.05
225.0	1340.44	1108.35	936.90	777.99	648.28	552.60	472.78	392.40	339.75
270.0	1332.56	1140.19	939.94	807.19	695.25	590.06	502.31	436.50	374.06
315.0	1090.29	916.59	786.54	665.78	565.09	489.54	417.88	359.78	316.35
360.0	1049.63	884.25	730.69	605.81	516.38	449.44	363.38	312.75	285.75
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	229.61	198.39	175.50	155.08	138.26	125.66	114.08	105.24	96.69
45.0	235.24	204.08	181.41	162.17	142.99	129.94	118.91	107.49	99.56
90.0	290.81	252.23	219.88	195.41	174.49	152.49	137.76	125.10	111.54
135.0	340.31	290.81	285.75	225.23	195.02	174.26	156.71	140.12	125.94
180.0	270.84	233.38	202.61	179.94	161.38	142.09	129.32	118.52	107.04
225.0	295.03	248.96	219.66	195.24	172.41	153.39	139.11	125.72	115.31
270.0	326.81	286.88	264.15	216.11	190.80	173.76	153.00	138.83	126.45
315.0	278.61	238.16	211.89	189.23	167.18	148.78	135.00	121.50	110.14
360.0	229.61	198.39	175.50	155.08	138.26	125.66	114.08	105.24	96.69
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	89.10	83.25	77.79	71.61	67.16	63.17	58.50	55.07	51.86
45.0	92.59	85.50	79.31	74.25	68.91	64.52	60.08	56.03	52.65
90.0	102.09	93.88	85.89	78.75	72.90	67.56	62.16	57.09	52.48
135.0	115.09	105.47	96.02	88.03	80.44	74.64	68.79	63.34	58.95
180.0	99.17	92.14	85.28	78.98	73.80	68.57	64.29	59.74	55.69
225.0	105.30	96.69	89.83	82.74	76.67	71.72	67.28	62.04	58.22
270.0	113.06	103.61	95.12	85.95	79.59	73.80	67.28	62.44	57.88
315.0	101.03	92.14	84.99	77.74	71.49	66.38	61.71	56.19	52.03
360.0	89.10	83.25	77.79	71.61	67.16	63.17	58.50	55.07	51.86

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	48.49	45.34	42.75	40.16	37.97	35.89	33.98	32.51	30.99
45.0	49.16	46.07	43.54	41.29	38.81	37.07	35.44	33.69	32.12
90.0	48.77	45.00	42.02	39.09	36.79	34.54	32.63	31.11	29.81
135.0	55.07	50.57	47.14	44.16	41.51	38.42	36.51	34.76	33.02
180.0	52.37	48.88	45.62	42.98	40.61	37.86	36.00	34.31	32.40
225.0	54.68	50.96	47.48	44.78	42.08	39.60	37.69	35.83	34.14
270.0	53.27	49.16	45.73	42.19	39.54	36.79	34.48	32.79	31.16
315.0	48.26	43.99	40.89	38.25	35.66	33.53	31.78	30.21	28.80
360.0	48.49	45.34	42.75	40.16	37.97	35.89	33.98	32.51	30.99
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	29.59	28.41	27.28	25.99	24.98	24.08	22.95	22.05	21.21
45.0	30.83	29.42	28.13	27.06	25.93	24.98	23.96	22.95	22.11
90.0	28.29	27.11	26.16	24.98	24.02	23.18	22.28	21.43	20.76
135.0	31.61	30.43	29.19	27.96	26.78	25.65	24.58	23.68	22.78
180.0	31.05	29.87	28.29	27.17	26.10	24.98	24.13	23.18	22.11
225.0	32.51	30.94	29.70	28.52	27.11	26.10	25.09	23.91	22.95
270.0	29.64	28.46	27.28	25.99	24.98	24.08	23.01	22.16	21.43
315.0	27.56	26.27	25.26	24.13	23.12	22.28	21.49	20.59	19.97
360.0	29.59	28.41	27.28	25.99	24.98	24.08	22.95	22.05	21.21
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	20.36	19.58	18.96	18.17	17.55	16.93	16.43	15.86	15.30
45.0	21.32	20.31	19.58	18.84	18.06	17.55	16.99	16.26	15.64
90.0	20.03	19.46	19.35	19.80	20.76	22.28	24.30	26.44	28.74
135.0	21.99	21.15	20.36	19.91	20.19	21.21	22.61	24.36	26.94
180.0	21.32	20.48	19.46	18.84	18.23	17.44	16.99	16.48	15.86
225.0	22.11	21.09	20.31	19.58	18.68	18.06	17.44	16.76	16.31
270.0	20.70	20.08	19.58	19.63	20.19	21.54	23.34	25.65	28.58
315.0	19.41	18.73	18.34	18.39	19.35	20.87	22.67	25.09	27.23
360.0	20.36	19.58	18.96	18.17	17.55	16.93	16.43	15.86	15.30
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	14.68	14.18	13.67	13.05	12.60	12.15	11.64	11.31	10.91
45.0	15.02	14.46	13.95	13.39	12.94	12.49	12.04	11.64	11.19
90.0	31.16	32.96	34.82	36.17	37.35	37.01	34.99	31.78	28.35
135.0	28.97	30.60	32.74	34.03	34.71	35.27	34.20	31.56	28.46
180.0	15.24	14.68	14.06	13.50	12.94	12.38	12.04	11.59	11.14
225.0	15.64	15.02	14.51	13.95	13.28	12.88	12.49	12.04	11.64
270.0	31.33	33.19	35.16	37.24	38.70	40.05	39.43	36.90	33.81
315.0	29.48	31.56	32.79	33.64	34.14	33.24	31.16	27.51	24.30
360.0	14.68	14.18	13.67	13.05	12.60	12.15	11.64	11.31	10.91
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	10.46	10.07	9.73	9.17	8.72	8.04	7.65	7.31	7.03
45.0	10.74	10.29	9.79	9.34	8.94	8.33	7.82	7.54	7.37
90.0	24.36	20.19	14.96	11.31	9.62	8.27	7.59	7.26	7.03
135.0	24.98	21.99	16.82	12.77	10.52	8.66	7.99	7.54	7.20
180.0	10.80	10.41	9.96	9.56	9.00	8.38	7.99	7.54	7.20
225.0	11.25	10.80	10.46	10.01	9.56	9.17	8.55	8.10	7.76
270.0	29.64	25.09	20.19	14.79	11.31	8.83	8.16	7.59	7.31
315.0	21.15	16.93	12.99	10.69	9.56	8.16	7.59	7.31	7.09
360.0	10.46	10.07	9.73	9.17	8.72	8.04	7.65	7.31	7.03

Intensity data(cd)

C/γ(°)	90.0
0.0	7.03
45.0	7.31
90.0	6.92
135.0	6.98
180.0	7.09
225.0	7.54
270.0	7.09
315.0	7.03
360.0	7.03