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Nata

LumCAT: 3-2040-M
Luminaire: 92.70.131.00
Report No: GC2017071902
Test No: NT-0010
LampCAT: SEOUL SAWx15
Lamp flux(lm): 2937.0
Number of Lamps: 1
Length(mm): 79
Phm Type: C

Voltage(V): 34.7600
Current(A): 0.6000
Power (W): 20.8560
PF: 0.0000
Ballast type: DC
Width(mm): 79
Height(mm): 0

Photometric Results

Lumens(lm): 2584.39
Efficiency(%): 87.99%
Lumens(lm)/Power(W): 123.92
Central intensity(cd): 11408.580
Maximum intensity(cd): 11408.580
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=21.2
 [C90/270]Total=21.2
Field angle(10%Imax): [C0/180]Total=48.3
 [C90/270]Total=48.3
Maximum s/h(1/2): C0_180=0.36 C90_270=0.36
Maximum s/h(1/4): C0_180=0.38 C90_270=0.38
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 87.99%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.680%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	11408.578	0.000	0	.000%	.000%
1.0	11302.075	10.867	10.867	.370%	.420%
2.0	11051.643	32.084	42.951	1.092%	1.662%
3.0	10600.030	51.784	94.734	1.763%	3.666%
4.0	10128.730	69.386	164.12	2.362%	6.350%
5.0	9554.962	84.678	248.798	2.883%	9.627%
6.0	8853.126	96.739	345.538	3.294%	13.370%
7.0	8220.089	105.973	451.511	3.608%	17.471%
8.0	7546.844	112.841	564.352	3.842%	21.837%
9.0	6826.990	116.492	680.844	3.966%	26.345%
10.0	6120.772	117.173	798.017	3.990%	30.878%
11.0	5430.414	115.420	913.437	3.930%	35.344%
12.0	4781.933	111.636	1025.072	3.801%	39.664%
13.0	4158.775	106.104	1131.176	3.613%	43.770%
14.0	3572.694	98.962	1230.138	3.369%	47.599%
15.0	3155.098	92.362	1322.5	3.145%	51.173%
16.0	2703.833	85.850	1408.35	2.923%	54.495%
17.0	2344.254	78.612	1486.962	2.677%	57.536%
18.0	2056.953	72.566	1559.529	2.471%	60.344%
19.0	1833.581	67.687	1627.216	2.305%	62.963%
20.0	1635.183	63.488	1690.704	2.162%	65.420%
21.0	1477.550	59.771	1750.475	2.035%	67.733%
22.0	1350.247	56.826	1807.3	1.935%	69.931%
23.0	1246.589	54.489	1861.789	1.855%	72.040%
24.0	1152.350	52.449	1914.238	1.786%	74.069%
25.0	1071.057	50.555	1964.794	1.721%	76.026%
26.0	1026.556	49.514	2014.308	1.686%	77.941%
27.0	982.014	49.140	2063.448	1.673%	79.843%
28.0	950.682	48.932	2112.38	1.666%	81.736%
29.0	927.712	49.144	2161.524	1.673%	83.638%
30.0	902.196	49.407	2210.931	1.682%	85.550%
31.0	865.069	49.180	2260.112	1.675%	87.453%
32.0	805.766	47.867	2307.979	1.630%	89.305%
33.0	725.565	45.114	2353.093	1.536%	91.050%
34.0	635.214	41.181	2394.274	1.402%	92.644%
35.0	530.868	36.214	2430.488	1.233%	94.045%
36.0	419.543	30.261	2460.75	1.030%	95.216%
37.0	321.993	24.185	2484.934	.823%	96.152%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	221.313	18.135	2503.069	.617%	96.853%
39.0	134.788	12.155	2515.224	.414%	97.324%
40.0	74.691	7.306	2522.53	.249%	97.607%
41.0	41.801	4.148	2526.678	.141%	97.767%
42.0	25.224	2.435	2529.113	.083%	97.861%
43.0	20.549	1.696	2530.809	.058%	97.927%
44.0	17.635	1.441	2532.25	.049%	97.983%
45.0	15.798	1.285	2533.535	.044%	98.032%
46.0	14.838	1.198	2534.733	.041%	98.079%
47.0	14.212	1.155	2535.888	.039%	98.123%
48.0	13.871	1.135	2537.024	.039%	98.167%
49.0	13.551	1.126	2538.15	.038%	98.211%
50.0	13.280	1.119	2539.268	.038%	98.254%
51.0	13.009	1.112	2540.381	.038%	98.297%
52.0	12.786	1.107	2541.487	.038%	98.340%
53.0	12.584	1.104	2542.591	.038%	98.383%
54.0	12.369	1.100	2543.691	.037%	98.425%
55.0	12.202	1.097	2544.788	.037%	98.468%
56.0	12.069	1.097	2545.884	.037%	98.510%
57.0	11.889	1.095	2546.98	.037%	98.553%
58.0	11.770	1.094	2548.074	.037%	98.595%
59.0	11.659	1.095	2549.169	.037%	98.637%
60.0	11.555	1.097	2550.266	.037%	98.680%
61.0	11.478	1.099	2551.365	.037%	98.722%
62.0	11.409	1.103	2552.468	.038%	98.765%
63.0	11.325	1.106	2553.573	.038%	98.808%
64.0	11.228	1.107	2554.68	.038%	98.851%
65.0	11.179	1.109	2555.789	.038%	98.893%
66.0	11.137	1.113	2556.902	.038%	98.937%
67.0	11.061	1.116	2558.019	.038%	98.980%
68.0	11.026	1.119	2559.138	.038%	99.023%
69.0	10.984	1.123	2560.26	.038%	99.066%
70.0	10.936	1.126	2561.386	.038%	99.110%
71.0	10.901	1.129	2562.515	.038%	99.154%
72.0	10.873	1.132	2563.647	.039%	99.197%
73.0	10.838	1.135	2564.782	.039%	99.241%
74.0	10.803	1.138	2565.92	.039%	99.285%
75.0	10.782	1.141	2567.06	.039%	99.330%

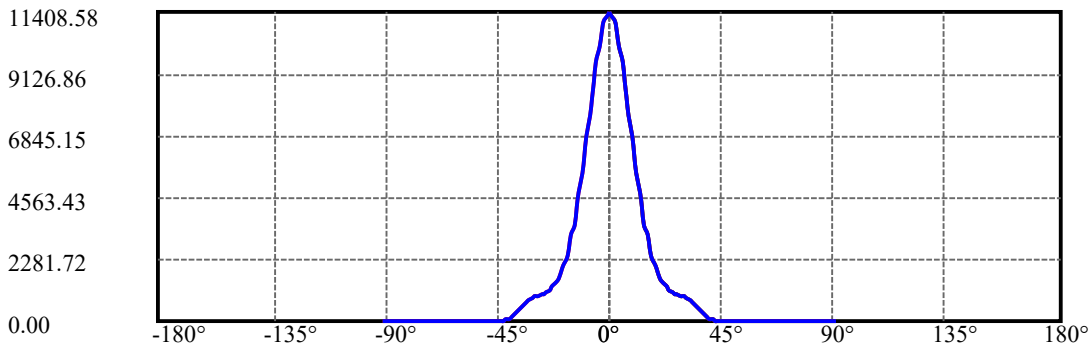
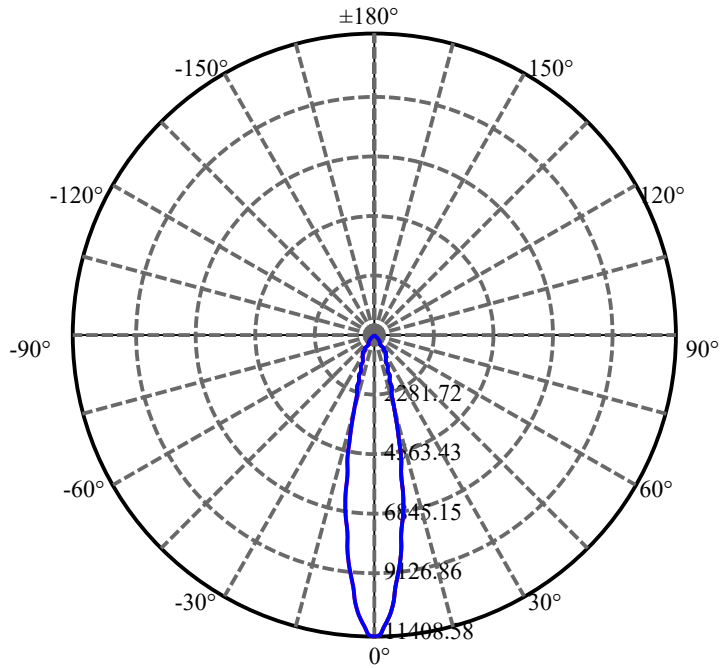
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	10.755	1.143	2568.204	.039%	99.374%
77.0	10.741	1.146	2569.35	.039%	99.418%
78.0	10.727	1.149	2570.499	.039%	99.463%
79.0	10.713	1.152	2571.651	.039%	99.507%
80.0	10.699	1.154	2572.805	.039%	99.552%
81.0	10.685	1.156	2573.962	.039%	99.597%
82.0	10.678	1.158	2575.12	.039%	99.641%
83.0	10.650	1.159	2576.28	.039%	99.686%
84.0	10.636	1.160	2577.439	.039%	99.731%
85.0	10.622	1.160	2578.6	.040%	99.776%
86.0	10.609	1.161	2579.76	.040%	99.821%
87.0	10.567	1.159	2580.919	.039%	99.866%
88.0	10.546	1.157	2582.076	.039%	99.911%
89.0	10.539	1.156	2583.231	.039%	99.955%
90.0	10.539	1.156	2584.387	.039%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	2210.93	75.28%	85.55%
0-40	2522.53	85.89%	97.61%
0-60	2550.27	86.83%	98.68%
0-90	2583.23	87.95%	99.96%
0-120	2583.23	87.95%	99.96%
0-180	2584.39	87.99%	100.00%
60-90	34.06	1.16%	1.32%
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%
0-27.08	2067.51	70.40%	80.00%

ZONAL LUMEN SUMMARY

0-10	798.02
10-20	892.69
20-30	520.23
30-40	311.60
40-50	16.74
50-60	11.00
60-70	11.12
70-80	11.42
80-90	10.43
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: —————

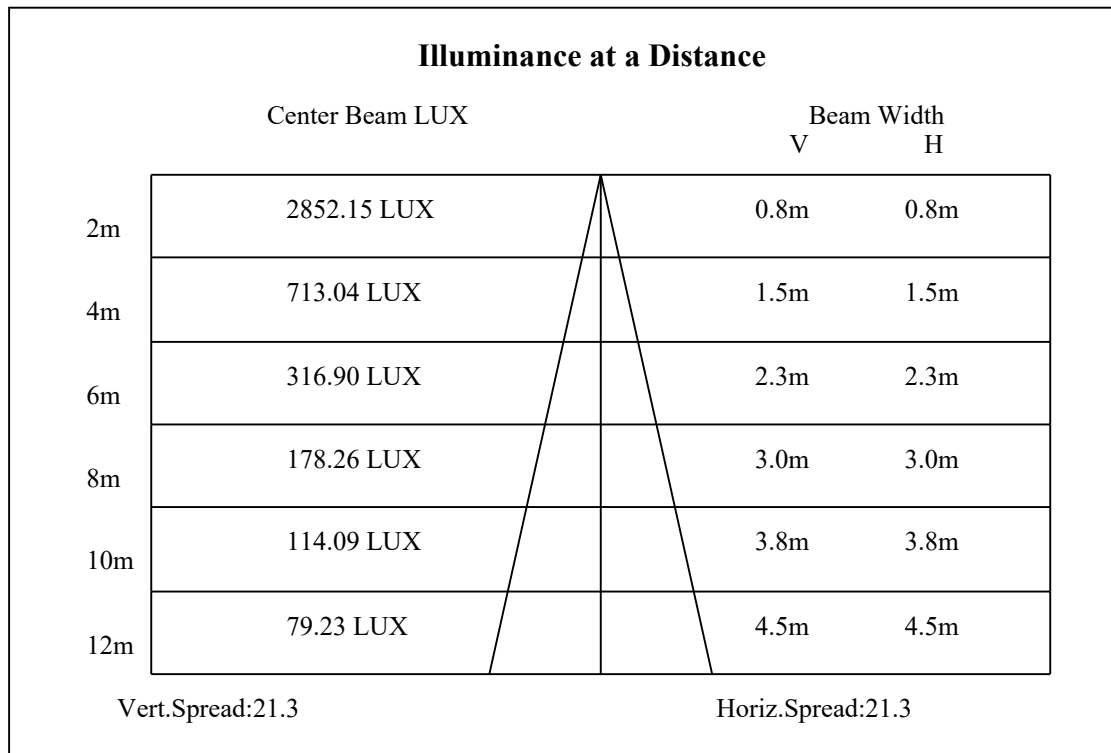
C90/C270: —————

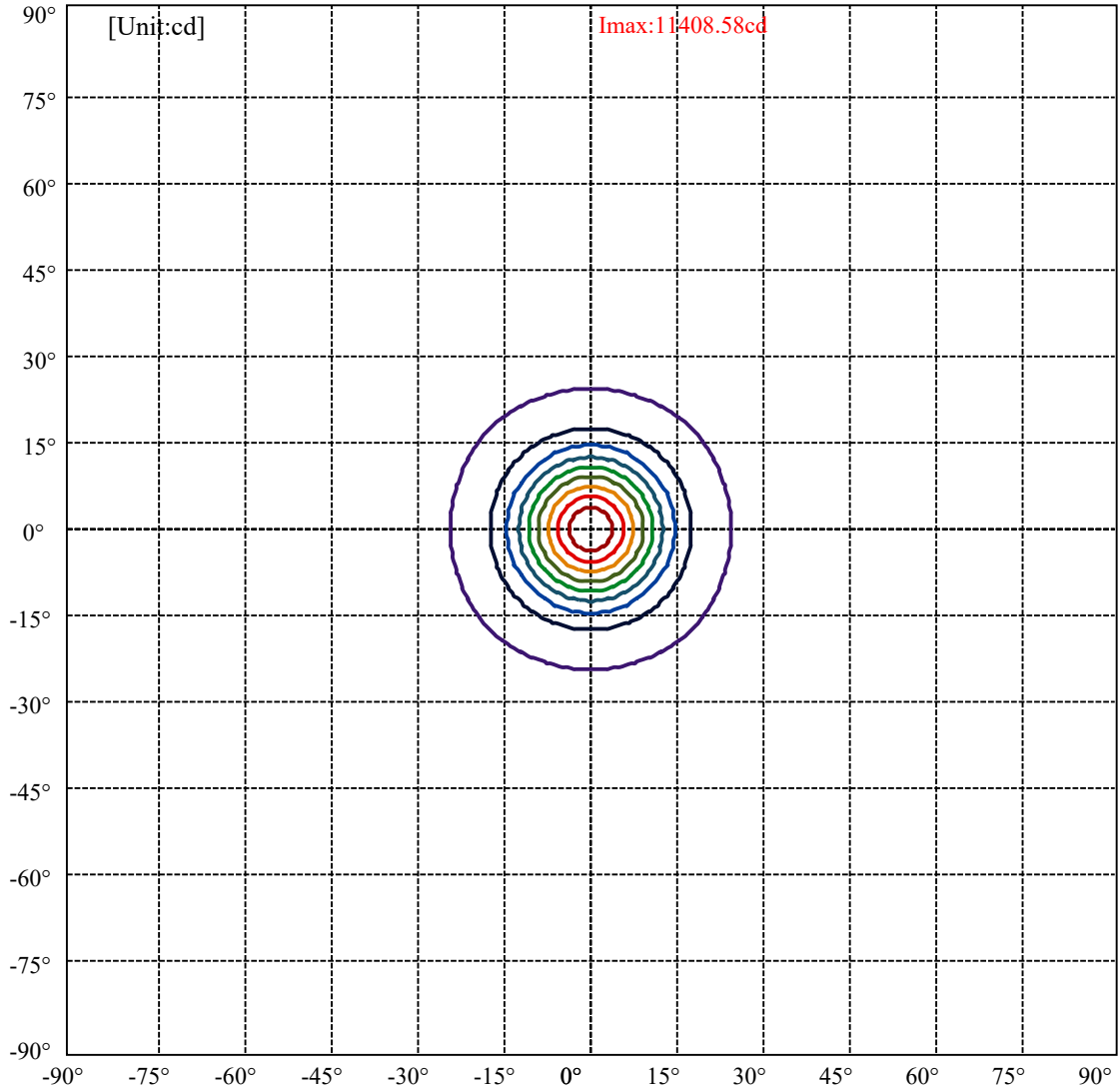
Field angle(10%Imax):C0/180Left:24.1 Right:24.1

:C90/270Left:24.1 Right:24.1

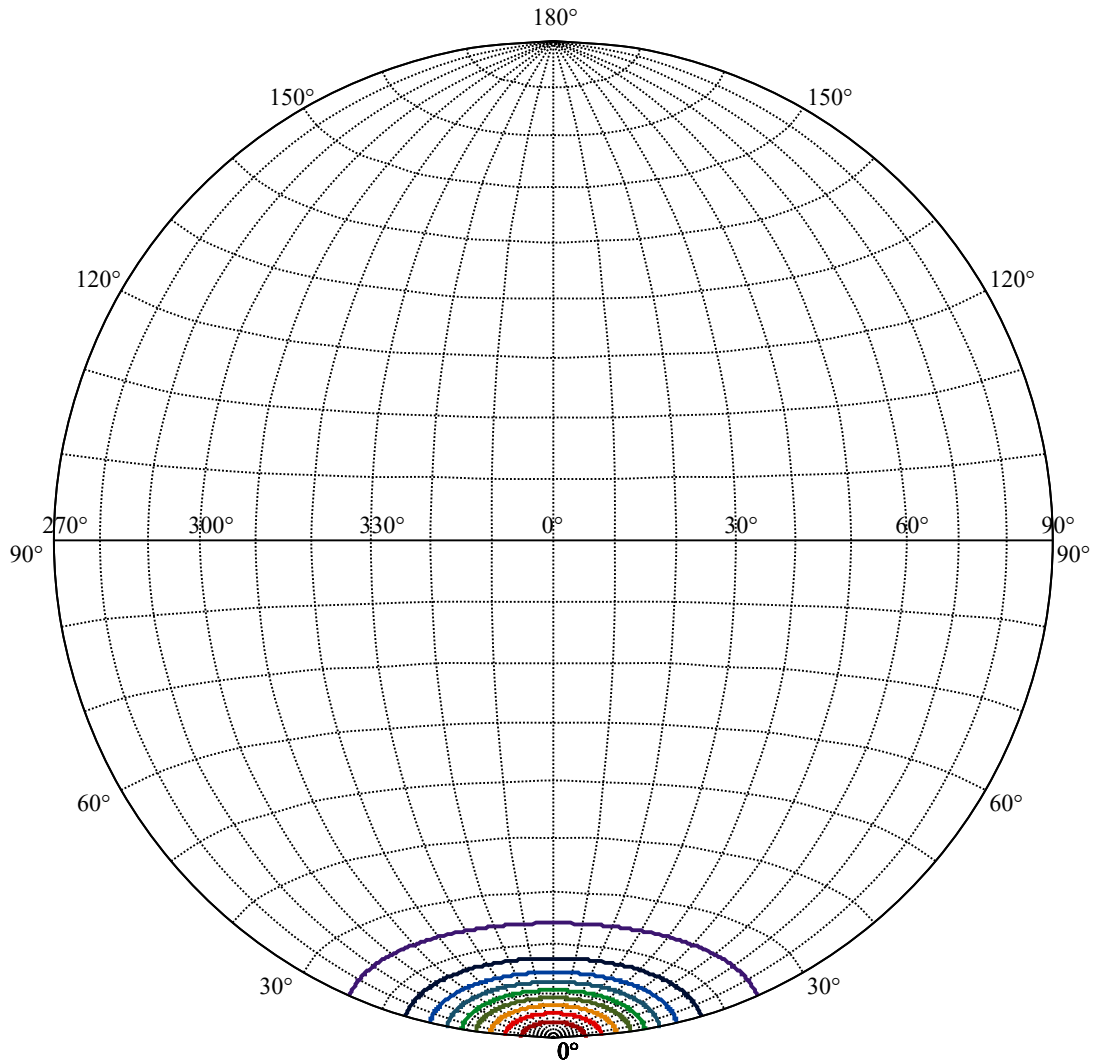
Beam Angle(50%Imax):C0/180Left:10.6 Right:10.6

:C90/270Left:10.6 Right:10.6





(10%Imax)	1140.86	—
(20%Imax)	2281.72	—
(30%Imax)	3422.57	—
(40%Imax)	4563.43	—
(50%Imax)	5704.29	—
(60%Imax)	6845.15	—
(70%Imax)	7986	—
(80%Imax)	9126.86	—
(90%Imax)	10267.7	—



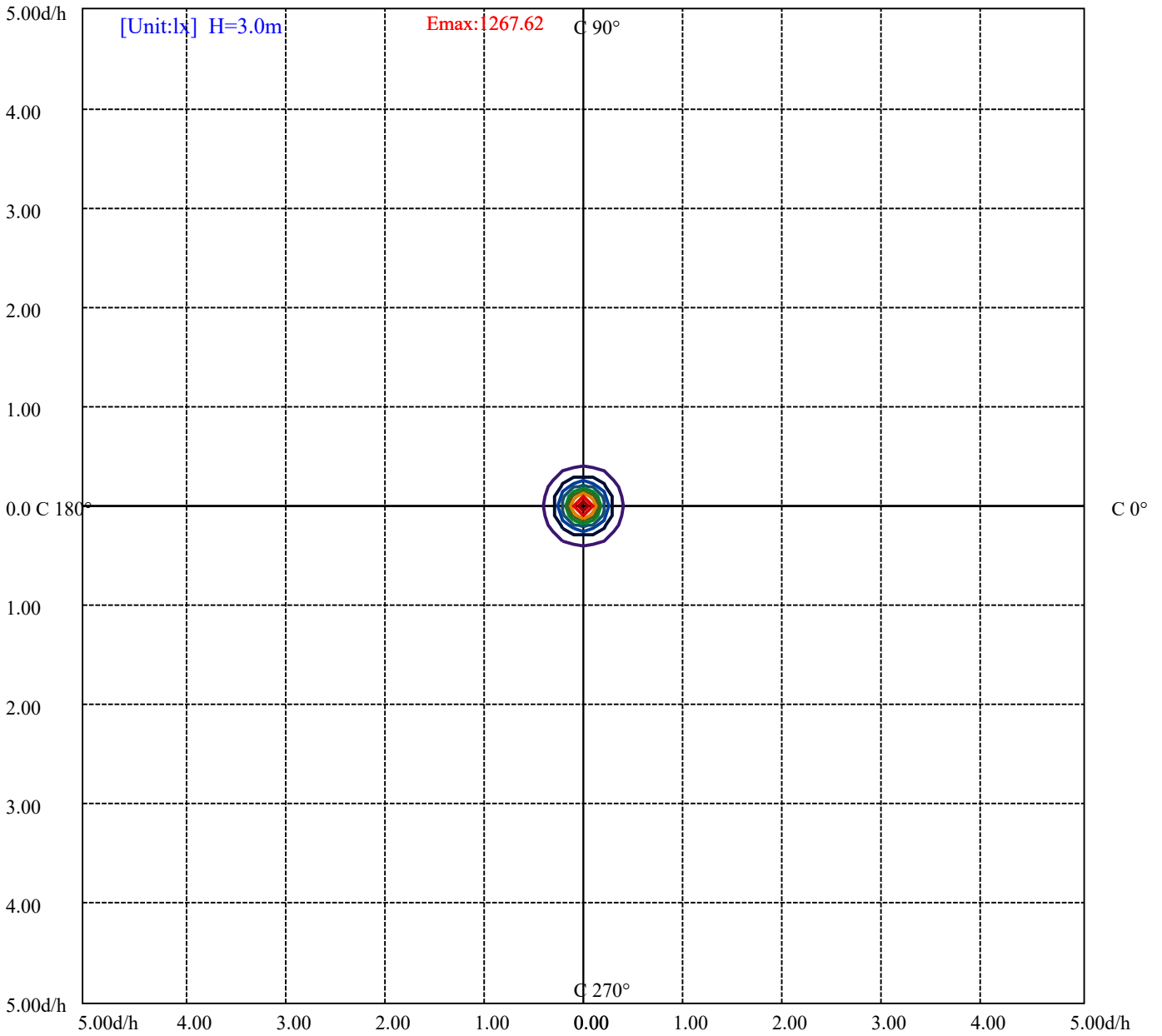
House

[Unit:cd]

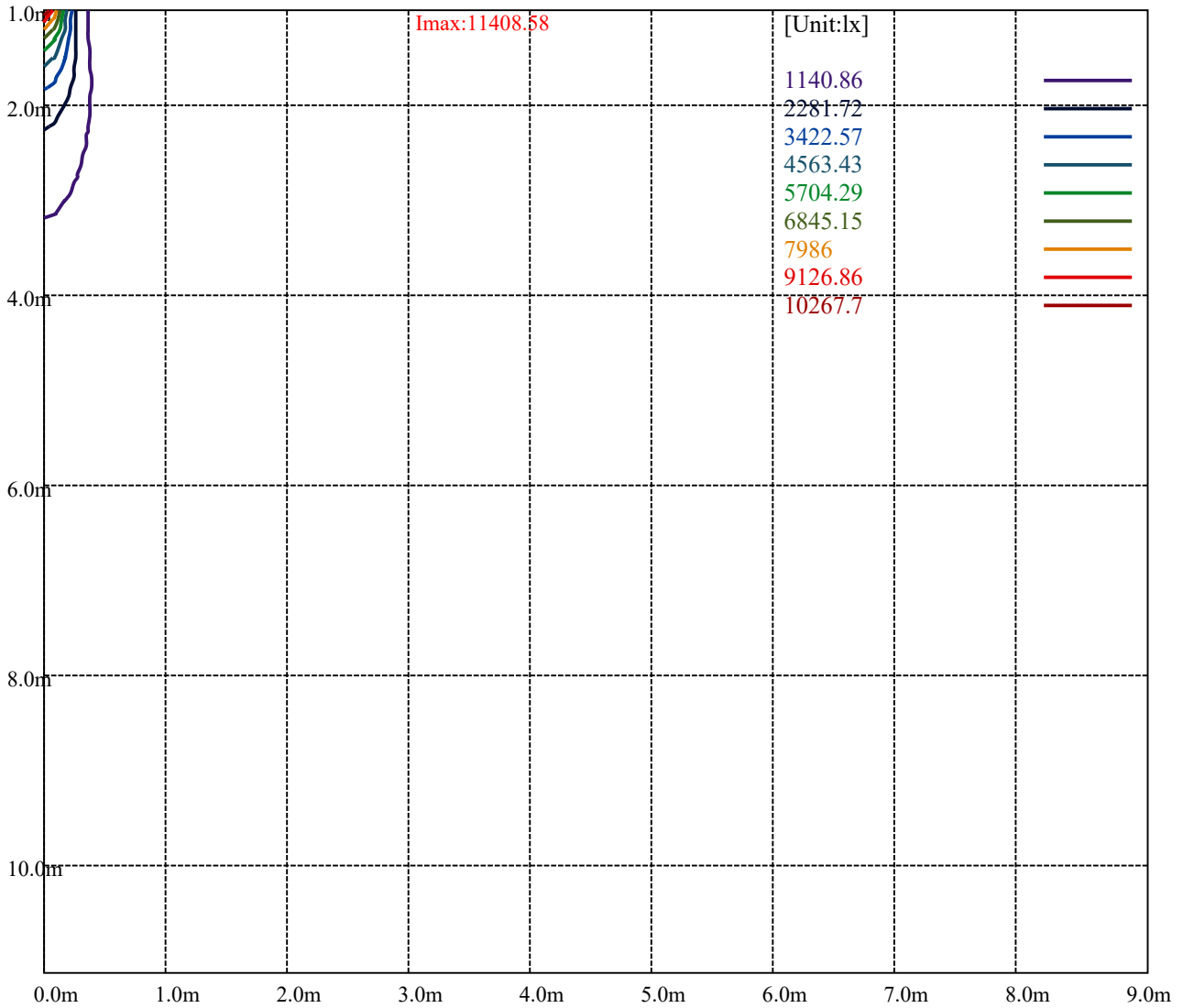
Road

Imax:11408.58

(10%Imax)	1140.86	—
(20%Imax)	2281.72	—
(30%Imax)	3422.57	—
(40%Imax)	4563.43	—
(50%Imax)	5704.29	—
(60%Imax)	6845.15	—
(70%Imax)	7986	—
(80%Imax)	9126.86	—
(90%Imax)	10267.7	—



- (10%Emax) 126.7622
- (20%Emax) 253.5233
- (30%Emax) 380.2856
- (40%Emax) 507.0467
- (50%Emax) 633.8088
- (60%Emax) 760.5711
- (70%Emax) 887.3323
- (80%Emax) 1014.094
- (90%Emax) 1140.856



Luminance Table

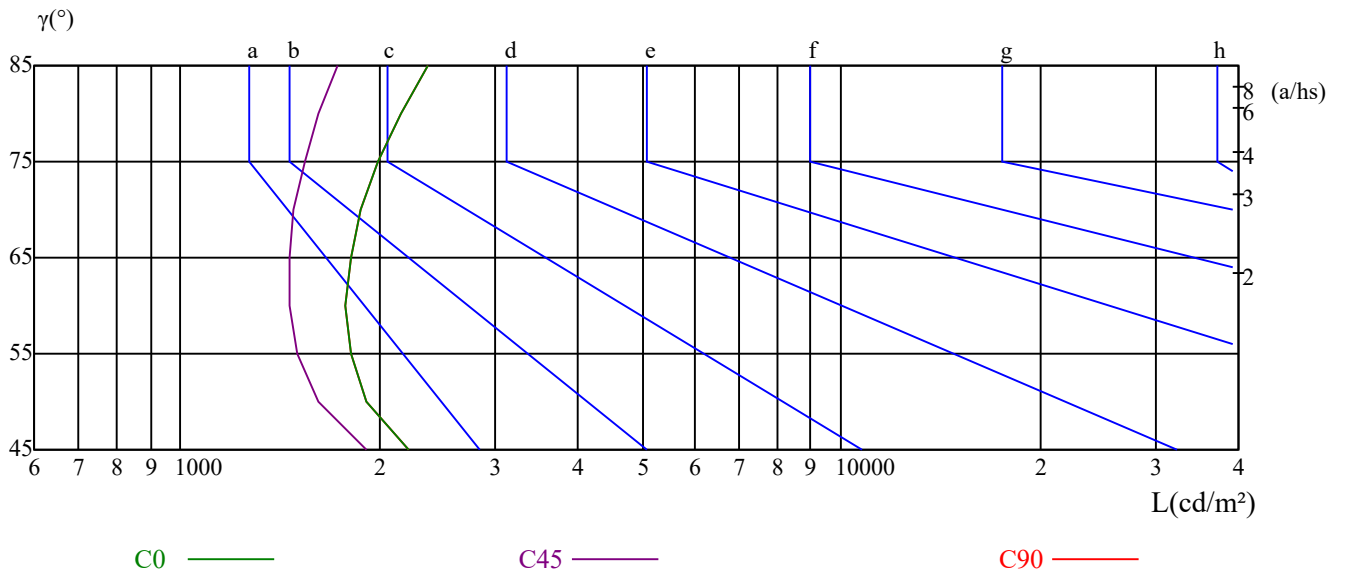
γ	45	50	55	60	65	70	75	80	85
C0	2220	1909	1808	1781	1810	1879	1990	2151	2364
C45	1908	1615	1507	1460	1458	1484	1538	1622	1732
C90	2220	1909	1808	1781	1810	1879	1990	2151	2364

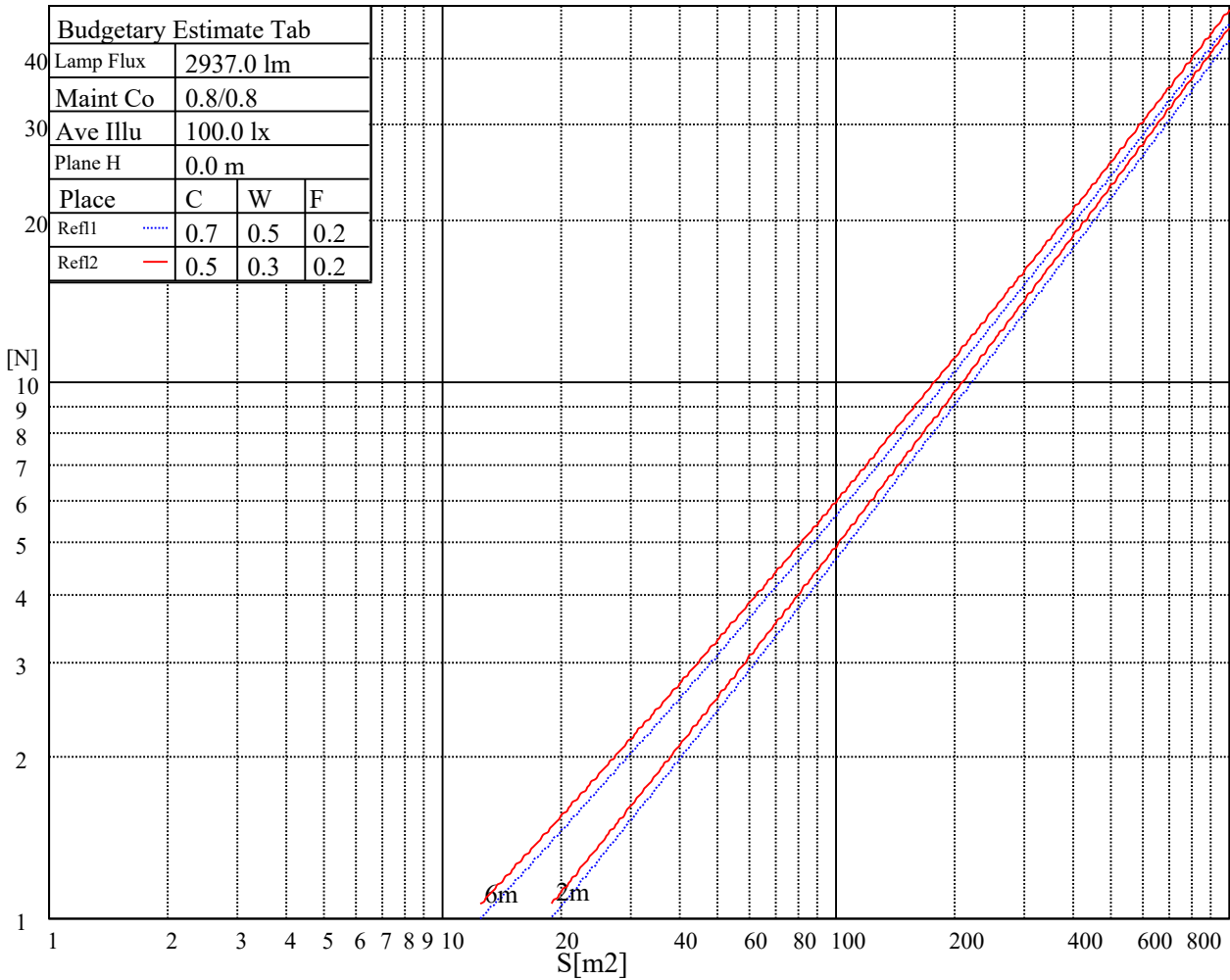
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
4348	4348	4348	6848	6848	6848	20033	20033	20033

Glare Table

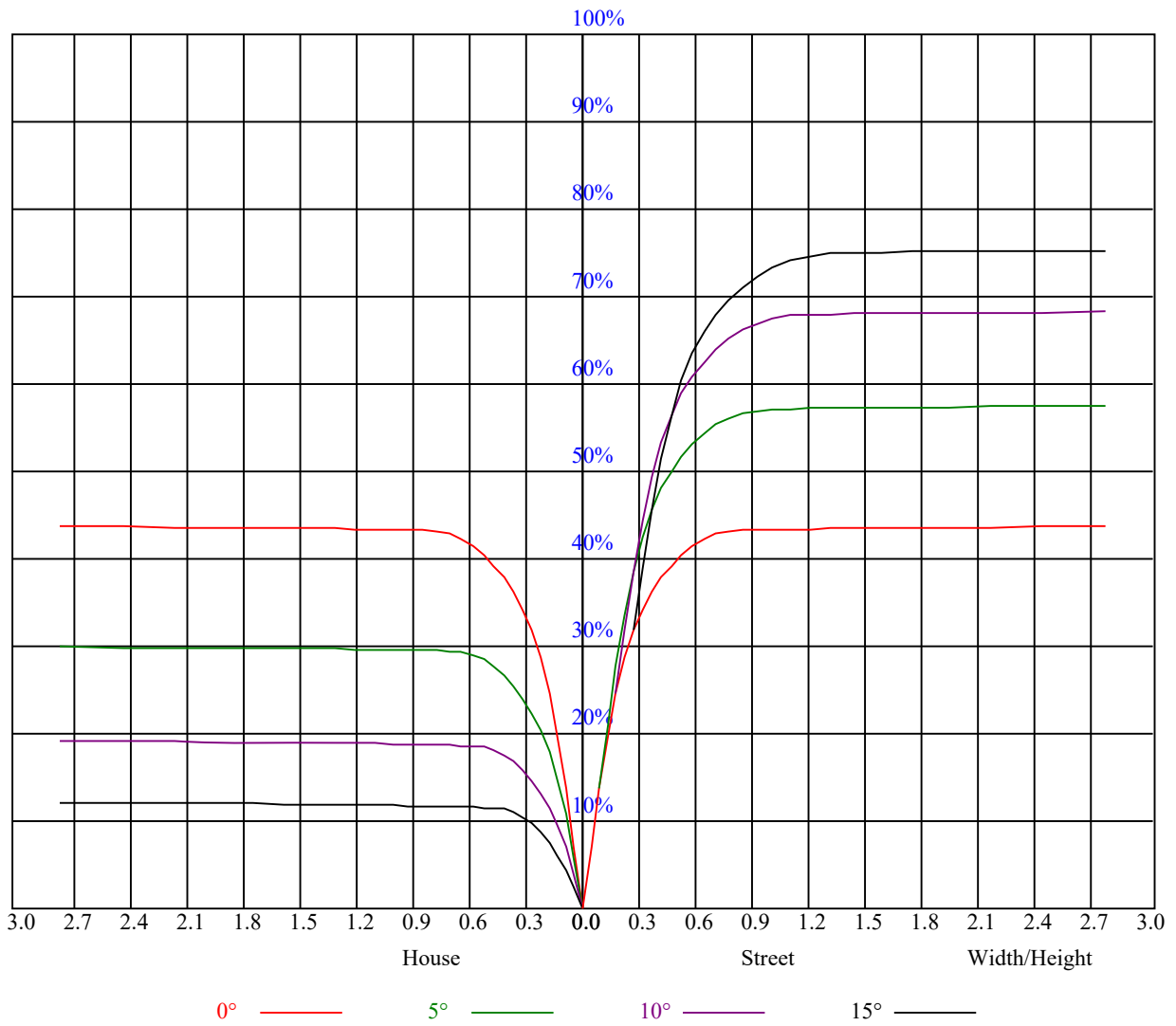
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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 RHOF=20 CU															
0	1.05	1.05	1.05	1.02	1.02	1.02	0.98	0.98	0.98	0.94	0.94	0.94	0.90	0.90	0.90	0.88
1	0.99	0.97	0.95	0.97	0.95	0.93	0.93	0.92	0.91	0.90	0.89	0.88	0.87	0.86	0.85	0.84
2	0.93	0.90	0.88	0.92	0.89	0.87	0.89	0.87	0.85	0.86	0.85	0.83	0.84	0.83	0.81	0.80
3	0.89	0.85	0.82	0.87	0.84	0.81	0.85	0.82	0.80	0.83	0.81	0.79	0.81	0.79	0.78	0.77
4	0.84	0.80	0.77	0.83	0.80	0.77	0.82	0.79	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	0.73	0.78	0.75	0.73	0.77	0.74	0.72	0.76	0.73	0.71	0.70
6	0.77	0.73	0.70	0.77	0.73	0.70	0.76	0.72	0.70	0.74	0.71	0.69	0.73	0.71	0.69	0.68
7	0.74	0.70	0.67	0.74	0.70	0.67	0.73	0.69	0.67	0.72	0.69	0.66	0.71	0.68	0.66	0.65
8	0.72	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
9	0.69	0.65	0.62	0.69	0.65	0.62	0.68	0.64	0.62	0.67	0.64	0.62	0.67	0.64	0.62	0.61
10	0.67	0.63	0.60	0.66	0.63	0.60	0.66	0.62	0.60	0.65	0.62	0.60	0.65	0.62	0.60	0.59



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	11503.19	11258.32	10813.11	10239.89	9677.81	9065.65	8264.26	7607.57	6939.75
45.0	11319.54	11030.15	10507.02	10000.59	9444.08	8776.26	8058.35	7412.79	6700.45
90.0	11386.32	11099.16	10926.08	10448.59	9958.30	9337.23	8650.48	8014.94	7306.50
135.0	11425.27	11592.23	11519.88	11286.14	10902.15	10401.28	9800.25	9215.90	8531.39
180.0	11503.19	11575.53	11458.66	11061.31	10693.45	10205.95	9579.31	8880.88	8244.23
225.0	11319.54	11425.27	11430.84	11051.85	10673.42	10134.71	9510.30	8934.31	8248.68
270.0	11386.32	11352.93	11069.10	10685.11	10212.07	9666.68	8926.52	8314.35	7691.05
315.0	11425.27	11083.02	10688.45	10026.75	9468.56	8851.94	8035.53	7379.96	6712.70
360.0	11503.19	11258.32	10813.11	10239.89	9677.81	9065.65	8264.26	7607.57	6939.75

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	6104.98	5459.42	4819.43	4146.04	3545.01	3077.53	2821.54	2285.05	2020.71
45.0	5971.42	5325.86	4613.52	4045.87	3467.09	2977.36	2832.67	2273.92	2022.94
90.0	6666.51	5934.13	5206.21	4602.39	4040.31	3412.00	2976.80	2607.28	2221.61
135.0	7813.48	7134.54	6355.41	5676.46	4964.12	4285.17	3734.22	3188.84	2827.10
180.0	7588.65	6756.66	6092.18	5436.05	4726.49	4074.25	3556.69	3048.04	2619.52
225.0	7628.16	6906.92	6176.21	5527.32	4893.45	4161.07	3650.19	3204.98	2721.92
270.0	6895.23	6244.11	5609.68	4902.91	4235.09	3695.27	3172.14	2827.10	2406.38
315.0	5947.49	5204.54	4570.67	3918.43	3398.64	2898.89	2496.53	2195.46	1913.86
360.0	6104.98	5459.42	4819.43	4146.04	3545.01	3077.53	2821.54	2285.05	2020.71

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1804.78	1615.01	1464.75	1351.78	1242.14	1162.01	1090.21	1030.67	992.27
45.0	1790.31	1622.24	1464.75	1334.53	1236.58	1155.33	1072.96	1020.09	981.14
90.0	1971.18	1767.49	1561.58	1430.80	1319.50	1203.19	1106.80	1060.11	1003.29
135.0	2397.47	2113.65	1829.27	1646.17	1497.03	1357.34	1242.14	1157.55	1081.31
180.0	2299.52	2001.79	1788.09	1592.75	1433.03	1316.72	1220.44	1109.80	1057.05
225.0	2403.04	2134.24	1883.81	1680.68	1527.64	1382.94	1278.32	1105.52	1096.61
270.0	2097.51	1877.13	1677.90	1509.83	1384.06	1290.00	1166.46	1093.00	1037.90
315.0	1691.81	1537.10	1411.32	1273.87	1162.01	1105.19	1041.46	991.71	962.88
360.0	1804.78	1615.01	1464.75	1351.78	1242.14	1162.01	1090.21	1030.67	992.27

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	960.55	938.29	919.92	899.89	843.68	762.43	673.38	556.52	439.65
45.0	947.19	926.04	905.45	861.49	785.24	697.87	597.14	491.96	378.99
90.0	968.62	939.34	914.69	895.66	861.38	772.83	681.90	595.64	488.06
135.0	1023.99	984.48	951.64	929.94	909.90	888.76	851.47	800.27	692.31
180.0	1007.91	966.00	942.07	922.37	903.50	874.29	826.76	747.07	646.23
225.0	1027.55	980.41	951.98	927.49	908.40	879.02	806.56	725.31	632.42
270.0	981.14	954.42	935.50	909.90	885.42	840.34	739.05	650.01	558.74
315.0	939.18	916.47	900.44	870.84	823.03	730.59	628.25	514.94	410.54
360.0	960.55	938.29	919.92	899.89	843.68	762.43	673.38	556.52	439.65

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	331.68	281.60	120.82	60.27	30.72	25.15	21.04	17.70	16.31
45.0	291.06	178.81	97.84	41.57	27.05	23.76	18.20	16.31	15.03
90.0	381.38	282.54	182.37	94.66	43.02	26.77	22.54	18.20	16.19
135.0	588.79	480.27	350.61	287.16	156.88	84.26	35.28	25.88	21.48
180.0	530.69	426.90	310.98	206.24	121.04	54.65	29.66	23.93	18.92
225.0	515.78	410.04	317.16	208.14	128.17	62.83	30.78	25.15	20.65
270.0	438.53	336.14	289.39	129.78	63.05	33.17	24.82	20.70	17.70
315.0	278.42	179.64	101.34	50.48	27.60	23.82	19.48	16.53	14.80
360.0	331.68	281.60	120.82	60.27	30.72	25.15	21.04	17.70	16.31

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	15.03	14.19	13.86	13.52	13.19	12.97	12.74	12.47	12.19
45.0	14.58	14.25	13.97	13.63	13.36	13.19	12.91	12.69	12.52
90.0	14.64	14.25	13.97	13.69	13.41	13.08	12.91	12.74	12.58
135.0	17.70	16.14	14.47	14.02	13.75	13.47	13.25	13.02	12.80
180.0	16.64	14.91	14.41	14.14	13.80	13.41	13.13	12.91	12.69
225.0	17.98	16.19	14.97	14.58	14.25	13.97	13.58	13.30	13.08
270.0	15.53	14.80	14.41	14.08	13.63	13.41	13.08	12.86	12.69
315.0	14.30	13.97	13.63	13.30	13.02	12.74	12.47	12.30	12.13
360.0	15.03	14.19	13.86	13.52	13.19	12.97	12.74	12.47	12.19
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	12.02	11.91	11.80	11.63	11.52	11.41	11.30	11.24	11.19
45.0	12.35	12.19	12.13	11.91	11.80	11.74	11.69	11.63	11.58
90.0	12.24	12.08	11.97	11.91	11.85	11.74	11.58	11.46	11.41
135.0	12.52	12.35	12.19	11.97	11.85	11.69	11.69	11.58	11.52
180.0	12.47	12.30	12.13	11.91	11.80	11.63	11.52	11.46	11.41
225.0	12.86	12.63	12.47	12.19	12.02	11.91	11.80	11.74	11.63
270.0	12.52	12.30	12.13	12.02	11.80	11.74	11.58	11.52	11.41
315.0	11.97	11.85	11.74	11.58	11.52	11.41	11.30	11.19	11.13
360.0	12.02	11.91	11.80	11.63	11.52	11.41	11.30	11.24	11.19
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	11.13	10.96	10.91	10.91	10.85	10.80	10.80	10.80	10.69
45.0	11.46	11.30	11.30	11.24	11.13	11.19	11.19	11.13	11.07
90.0	11.30	11.24	11.24	11.19	11.13	11.13	11.02	10.96	10.96
135.0	11.41	11.24	11.19	11.13	11.07	11.02	11.02	10.96	10.96
180.0	11.30	11.24	11.13	11.07	11.02	10.96	10.91	10.85	10.85
225.0	11.52	11.46	11.35	11.35	11.30	11.24	11.13	11.07	11.02
270.0	11.35	11.35	11.30	11.24	11.07	11.07	11.02	10.96	10.96
315.0	11.13	11.02	11.02	10.96	10.91	10.80	10.80	10.74	10.69
360.0	11.13	10.96	10.91	10.91	10.85	10.80	10.80	10.80	10.69
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	10.69	10.63	10.57	10.57	10.57	10.52	10.57	10.52	10.52
45.0	10.96	10.96	10.96	10.96	10.91	10.91	10.91	10.91	10.91
90.0	10.91	10.85	10.85	10.85	10.85	10.85	10.80	10.80	10.80
135.0	10.91	10.85	10.80	10.74	10.69	10.74	10.74	10.74	10.69
180.0	10.80	10.74	10.69	10.63	10.63	10.57	10.57	10.57	10.57
225.0	11.07	11.02	11.02	10.91	10.91	10.91	10.91	10.85	10.80
270.0	10.91	10.91	10.85	10.91	10.85	10.80	10.74	10.74	10.74
315.0	10.74	10.74	10.69	10.69	10.63	10.63	10.57	10.57	10.57
360.0	10.69	10.63	10.57	10.57	10.57	10.52	10.57	10.52	10.52
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	10.46	10.46	10.46	10.46	10.46	10.46	10.41	10.41	10.35
45.0	10.85	10.91	10.91	10.85	10.74	10.74	10.69	10.63	10.63
90.0	10.74	10.80	10.69	10.80	10.69	10.63	10.63	10.57	10.57
135.0	10.69	10.63	10.63	10.57	10.57	10.57	10.52	10.57	10.46
180.0	10.57	10.46	10.52	10.41	10.46	10.52	10.46	10.41	10.41
225.0	10.85	10.85	10.80	10.80	10.80	10.74	10.69	10.69	10.69
270.0	10.74	10.74	10.69	10.69	10.74	10.69	10.69	10.63	10.69
315.0	10.57	10.57	10.52	10.52	10.52	10.52	10.46	10.46	10.52
360.0	10.46	10.46	10.46	10.46	10.46	10.46	10.41	10.41	10.35

Intensity data(cd)

<i>C/γ(°)</i>	90.0
0.0	10.41
45.0	10.63
90.0	10.69
135.0	10.52
180.0	10.35
225.0	10.63
270.0	10.57
315.0	10.52
360.0	10.41