
LumCAT: 61.0009.03

Luminaire:

Report No: NATA0100

Test No: GC2019120516

LampCAT: LUMINUS CXM-4-AC40

Lamp flux(lm): 602.0

Number of Lamps: 1

Length(mm): 0

Phm Type: C

Voltage(V): 35.0100

Current(A): 0.1470

Power (W): 5.1400

PF: 1.0000

Ballast type: DC

Width(mm): 0

Height(mm): 0

Photometric Results

Lumens(lm): 549.38

Efficiency(%): 91.26%

Lumens(lm)/Power(W): 106.88

Central intensity(cd): 3345.609

Maximum intensity(cd): 3345.609

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=18.7

[C90/270]Total=18.7

Field angle(10%Imax): [C0/180]Total=37.8

[C90/270]Total=37.8

Maximum s/h(1/2): C0_180=0.32 C90_270=0.32

Maximum s/h(1/4): C0_180=0.33 C90_270=0.33

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 91.26%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 95.228%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	3345.609	0.000	0	.000%	.000%
1.0	3322.898	3.191	3.191	.530%	.581%
2.0	3243.164	9.424	12.615	1.565%	2.296%
3.0	3126.727	15.235	27.85	2.531%	5.069%
4.0	2978.227	20.435	48.285	3.395%	8.789%
5.0	2774.742	24.749	73.034	4.111%	13.294%
6.0	2530.758	27.882	100.916	4.632%	18.369%
7.0	2294.508	29.950	130.866	4.975%	23.820%
8.0	2023.734	30.905	161.771	5.134%	29.446%
9.0	1765.898	30.713	192.484	5.102%	35.036%
10.0	1508.288	29.630	222.114	4.922%	40.430%
11.0	1261.596	27.677	249.791	4.597%	45.467%
12.0	1078.320	25.579	275.369	4.249%	50.123%
13.0	916.875	23.678	299.047	3.933%	54.433%
14.0	756.935	21.425	320.472	3.559%	58.333%
15.0	639.675	19.173	339.645	3.185%	61.823%
16.0	538.868	17.269	356.914	2.869%	64.966%
17.0	449.283	15.388	372.302	2.556%	67.767%
18.0	382.774	13.719	386.021	2.279%	70.264%
19.0	327.895	12.364	398.385	2.054%	72.515%
20.0	281.580	11.155	409.54	1.853%	74.545%
21.0	241.988	10.054	419.594	1.670%	76.375%
22.0	207.654	9.036	428.63	1.501%	78.020%
23.0	176.927	8.070	436.699	1.340%	79.489%
24.0	151.516	7.181	443.88	1.193%	80.796%
25.0	129.720	6.395	450.275	1.062%	81.960%
26.0	112.395	5.715	455.99	.949%	83.000%
27.0	96.729	5.116	461.106	.850%	83.931%
28.0	83.665	4.567	465.674	.759%	84.763%
29.0	73.350	4.108	469.782	.682%	85.510%
30.0	64.477	3.721	473.503	.618%	86.188%
31.0	56.580	3.369	476.872	.560%	86.801%
32.0	49.669	3.044	479.916	.506%	87.355%
33.0	44.135	2.763	482.679	.459%	87.858%
34.0	39.438	2.529	485.208	.420%	88.318%
35.0	35.262	2.320	487.528	.385%	88.741%
36.0	32.091	2.145	489.673	.356%	89.131%
37.0	29.637	2.013	491.686	.334%	89.498%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	27.316	1.901	493.587	.316%	89.844%
39.0	25.418	1.800	495.387	.299%	90.171%
40.0	23.927	1.721	497.108	.286%	90.484%
41.0	22.549	1.655	498.763	.275%	90.786%
42.0	21.312	1.594	500.356	.265%	91.076%
43.0	20.222	1.539	501.895	.256%	91.356%
44.0	19.322	1.492	503.387	.248%	91.627%
45.0	18.570	1.456	504.844	.242%	91.893%
46.0	17.733	1.420	506.263	.236%	92.151%
47.0	17.037	1.383	507.646	.230%	92.403%
48.0	16.404	1.352	508.998	.225%	92.649%
49.0	15.792	1.322	510.32	.220%	92.889%
50.0	15.195	1.292	511.612	.215%	93.125%
51.0	14.674	1.264	512.876	.210%	93.355%
52.0	14.161	1.237	514.113	.206%	93.580%
53.0	13.669	1.211	515.324	.201%	93.800%
54.0	13.198	1.184	516.508	.197%	94.016%
55.0	12.804	1.161	517.669	.193%	94.227%
56.0	12.452	1.141	518.81	.190%	94.435%
57.0	12.030	1.119	519.929	.186%	94.638%
58.0	11.693	1.097	521.026	.182%	94.838%
59.0	11.398	1.080	522.106	.179%	95.035%
60.0	11.074	1.062	523.167	.176%	95.228%
61.0	10.814	1.045	524.212	.174%	95.418%
62.0	10.603	1.032	525.244	.171%	95.606%
63.0	10.322	1.018	526.262	.169%	95.791%
64.0	10.076	1.001	527.263	.166%	95.973%
65.0	9.837	0.985	528.248	.164%	96.153%
66.0	9.619	0.971	529.219	.161%	96.329%
67.0	9.394	0.956	530.175	.159%	96.503%
68.0	9.141	0.939	531.114	.156%	96.674%
69.0	8.923	0.922	532.035	.153%	96.842%
70.0	8.712	0.906	532.941	.150%	97.007%
71.0	8.473	0.888	533.829	.148%	97.168%
72.0	8.241	0.869	534.698	.144%	97.327%
73.0	8.044	0.852	535.55	.141%	97.482%
74.0	7.882	0.837	536.387	.139%	97.634%
75.0	7.741	0.825	537.212	.137%	97.784%

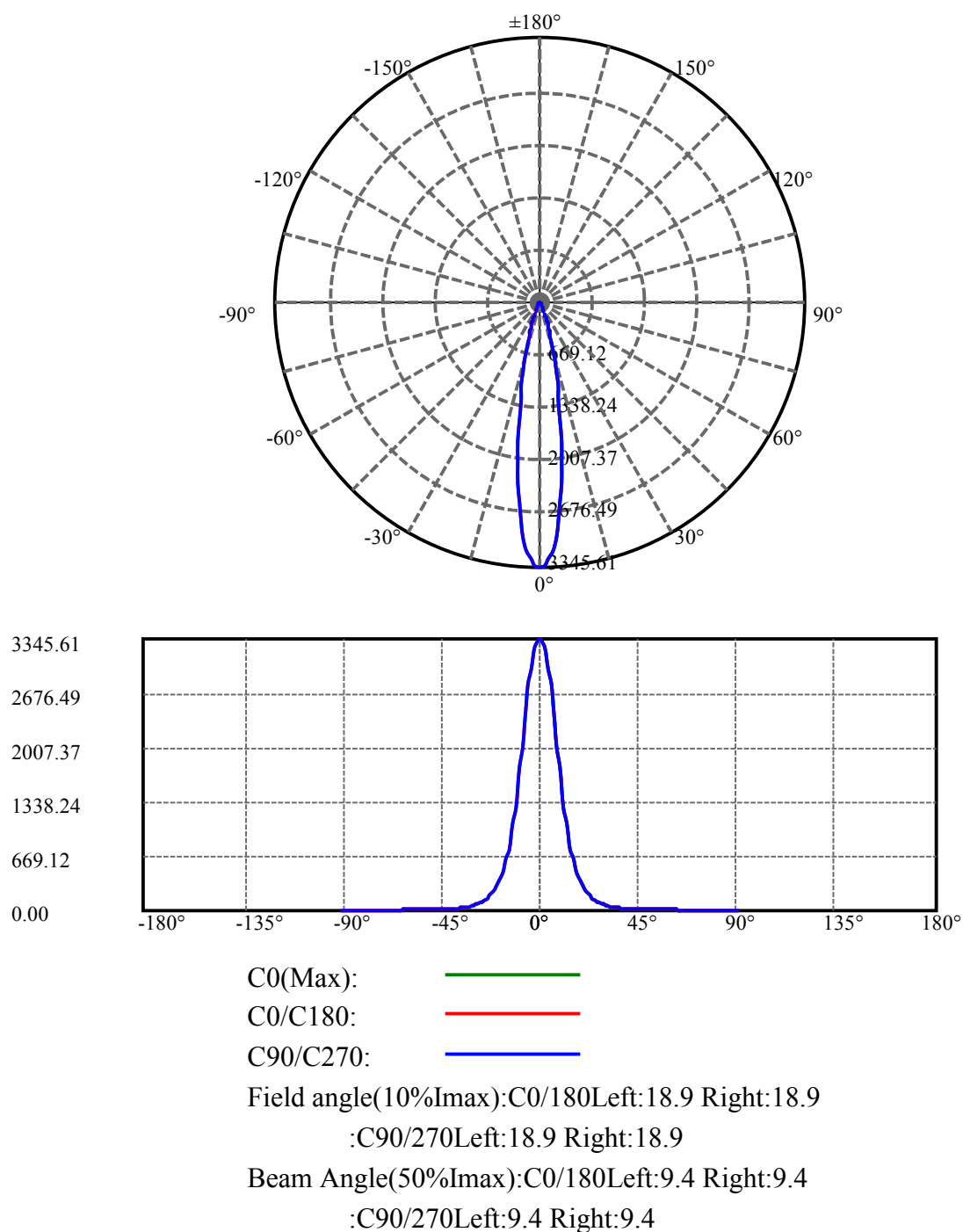
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	7.650	0.817	538.029	.136%	97.933%
77.0	7.608	0.813	538.843	.135%	98.081%
78.0	7.777	0.824	539.666	.137%	98.231%
79.0	8.128	0.855	540.521	.142%	98.387%
80.0	8.543	0.899	541.42	.149%	98.550%
81.0	9.134	0.956	542.376	.159%	98.724%
82.0	9.457	1.008	543.384	.167%	98.908%
83.0	9.478	1.029	544.413	.171%	99.095%
84.0	9.274	1.022	545.435	.170%	99.281%
85.0	8.627	0.977	546.412	.162%	99.459%
86.0	7.088	0.859	547.271	.143%	99.615%
87.0	5.351	0.681	547.951	.113%	99.739%
88.0	4.444	0.537	548.488	.089%	99.837%
89.0	4.106	0.469	548.957	.078%	99.922%
90.0	3.705	0.428	549.385	.071%	100.000%

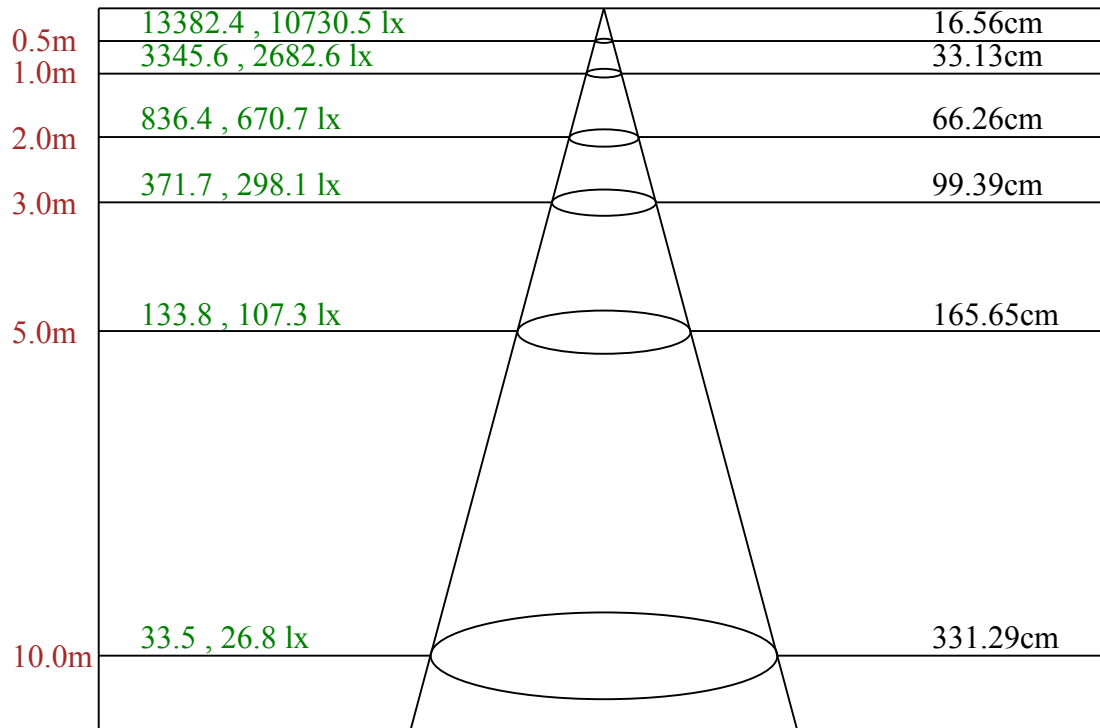
ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	473.50	78.65%	86.19%
0-40	497.11	82.58%	90.48%
0-60	523.17	86.90%	95.23%
0-90	548.96	91.19%	99.92%
0-120	548.96	91.19%	99.92%
0-180	549.38	91.26%	100.00%
60-90	26.85	4.46%	4.89%
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%
0-23.39	439.51	73.01%	80.00%

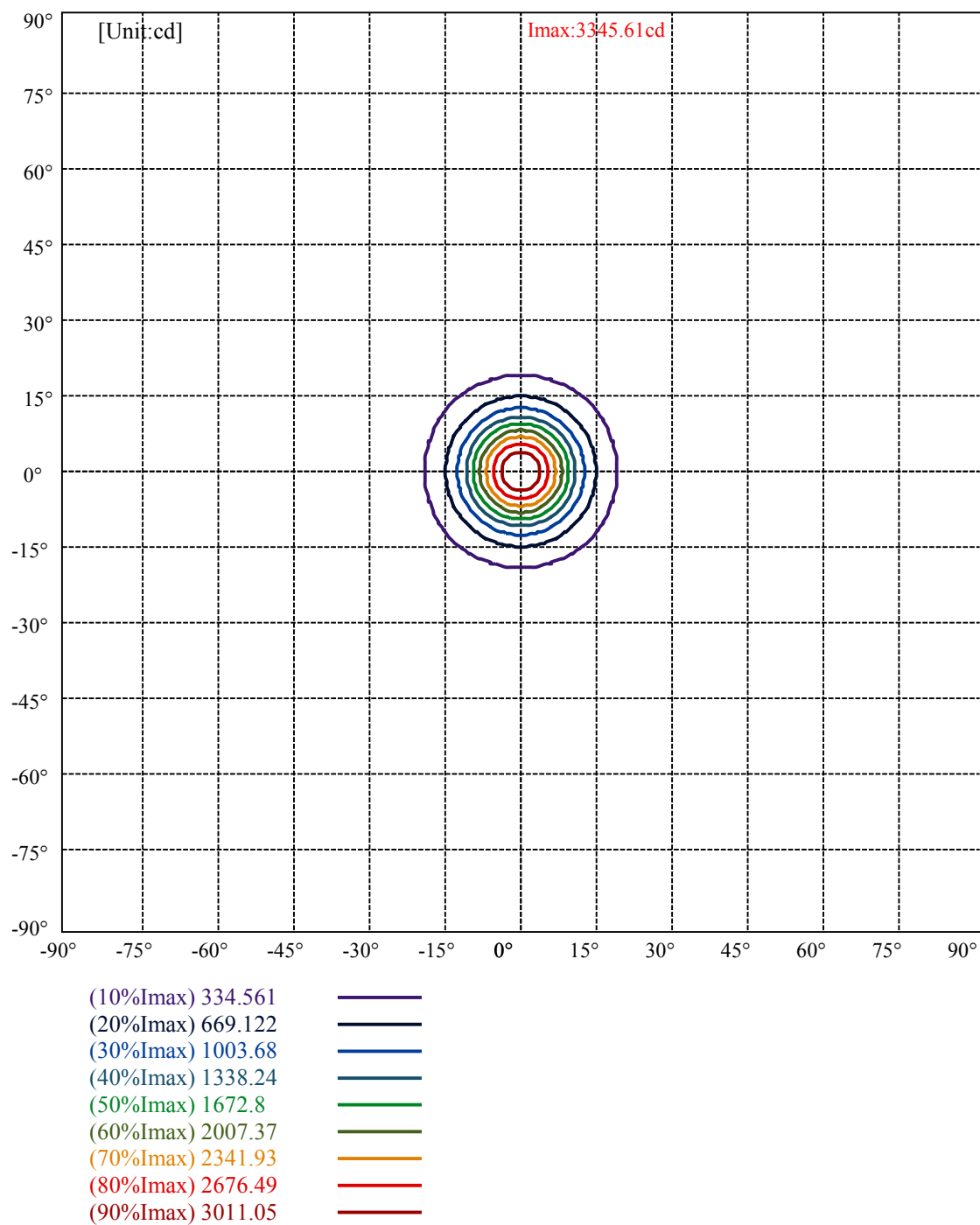
ZONAL LUMEN SUMMARY

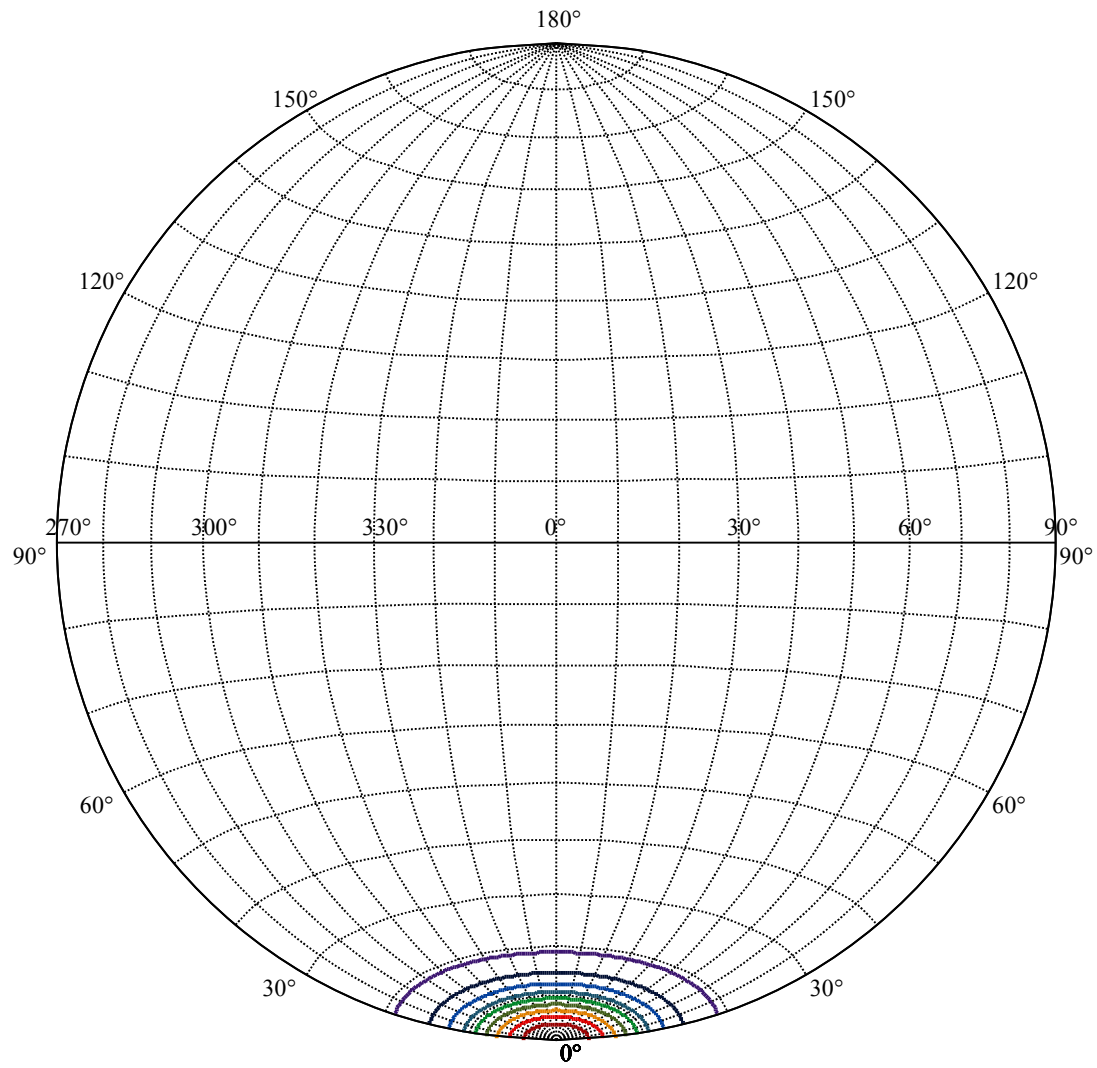
0-10	222.11
10-20	187.43
20-30	63.96
30-40	23.61
40-50	14.50
50-60	11.56
60-70	9.77
70-80	8.48
80-90	7.54
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00





Max , Ave Beam angle of C0 plane 18.81



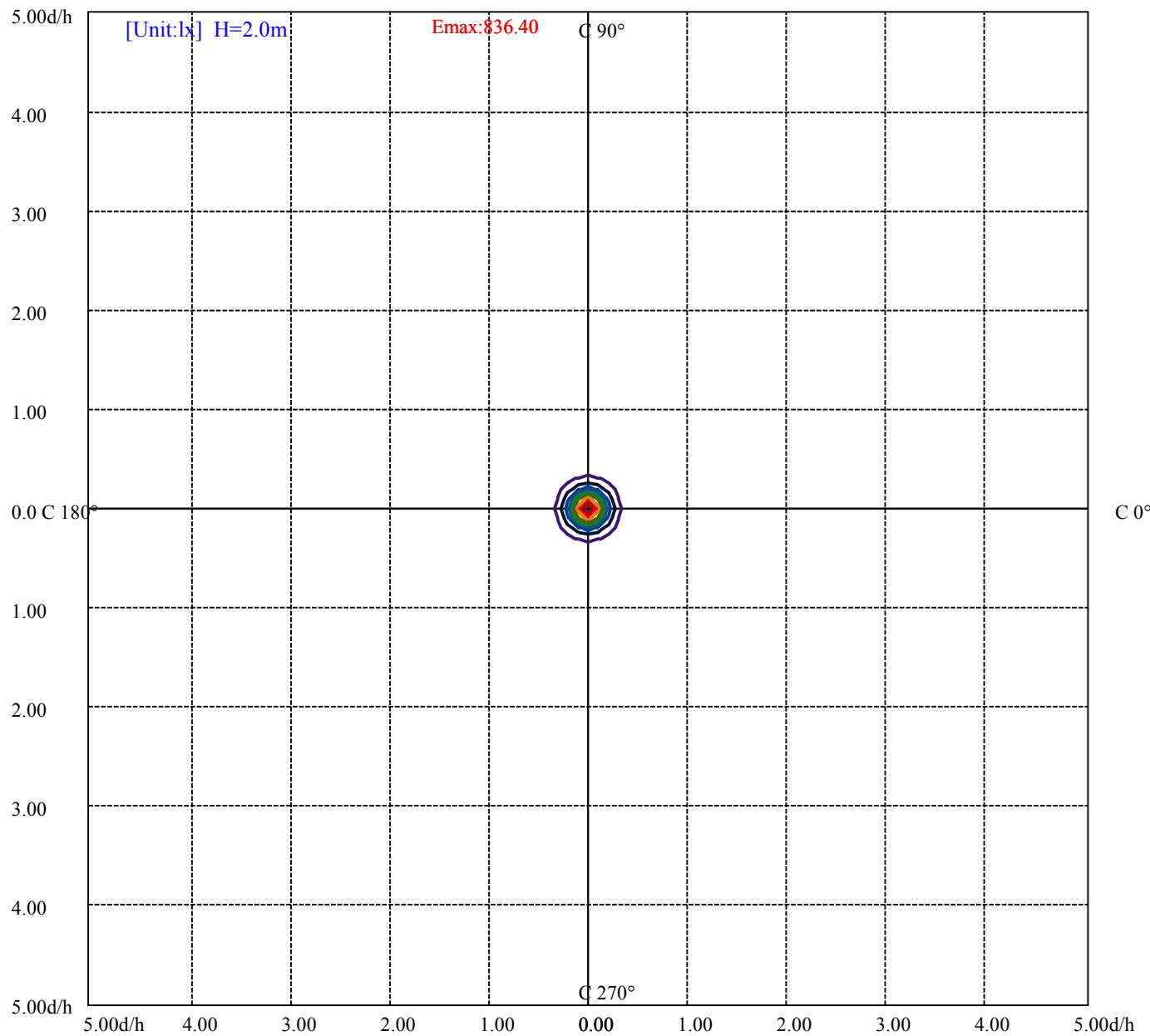


House

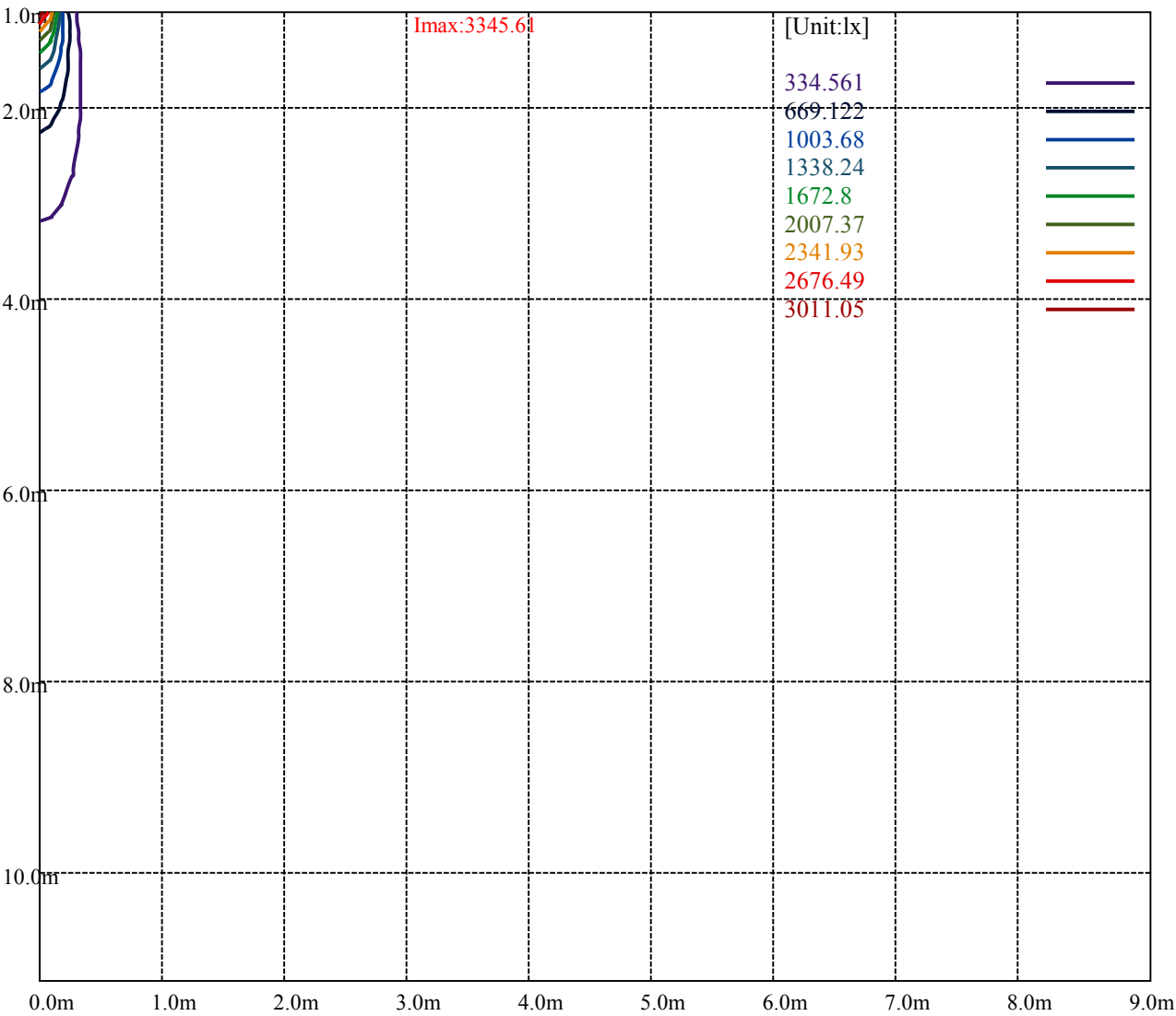
[Unit:cd]

Road

Imax:3345.61	
(10%Imax) 334.561	
(20%Imax) 669.122	
(30%Imax) 1003.68	
(40%Imax) 1338.24	
(50%Imax) 1672.8	
(60%Imax) 2007.37	
(70%Imax) 2341.93	
(80%Imax) 2676.49	
(90%Imax) 3011.05	



(10%Emax)	83.64025	—
(20%Emax)	167.2802	—
(30%Emax)	250.92	—
(40%Emax)	334.56	—
(50%Emax)	418.2	—
(60%Emax)	501.84	—
(70%Emax)	585.48	—
(80%Emax)	669.12	—
(90%Emax)	752.7625	—



Luminance Table

γ	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

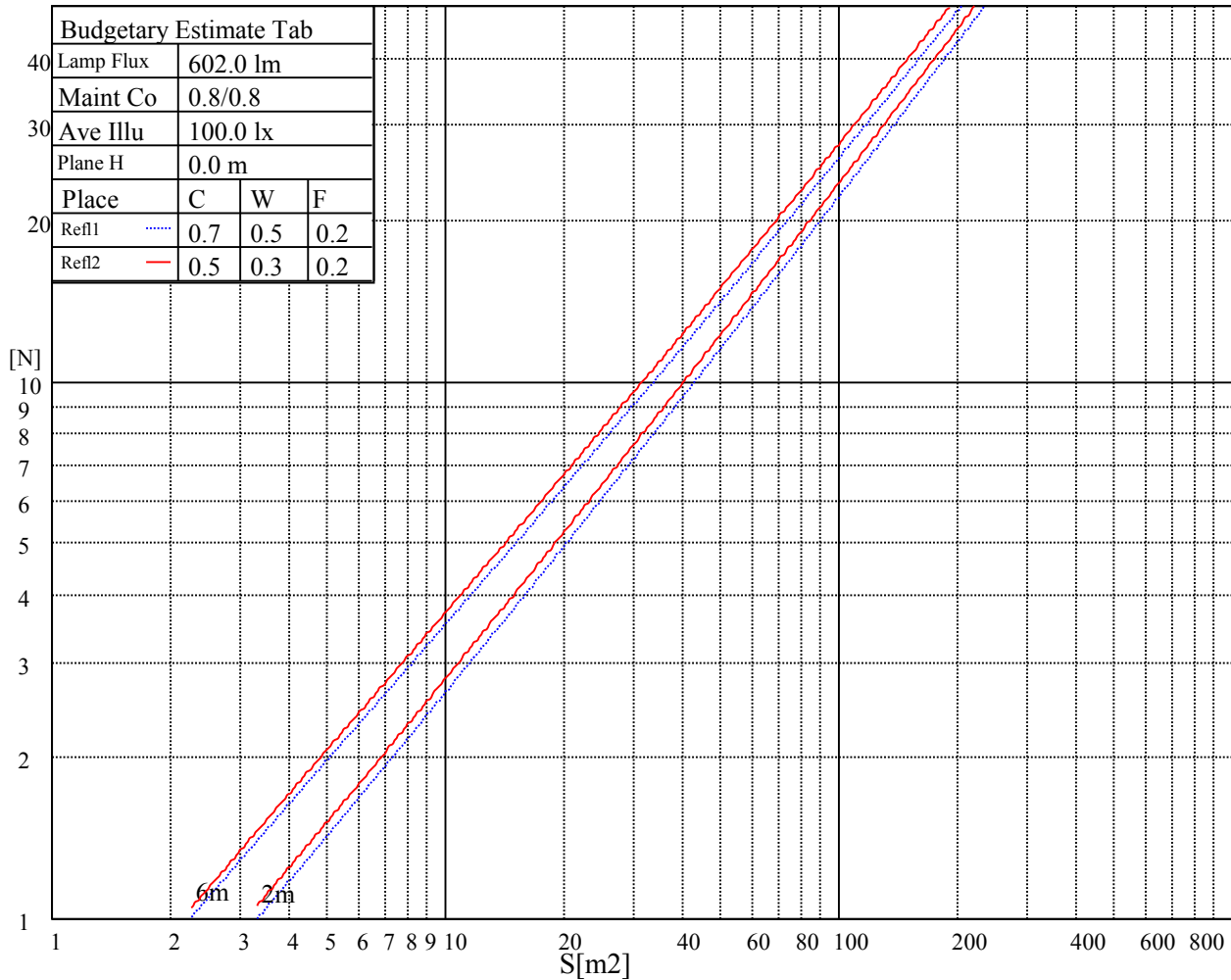
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

Glare Table

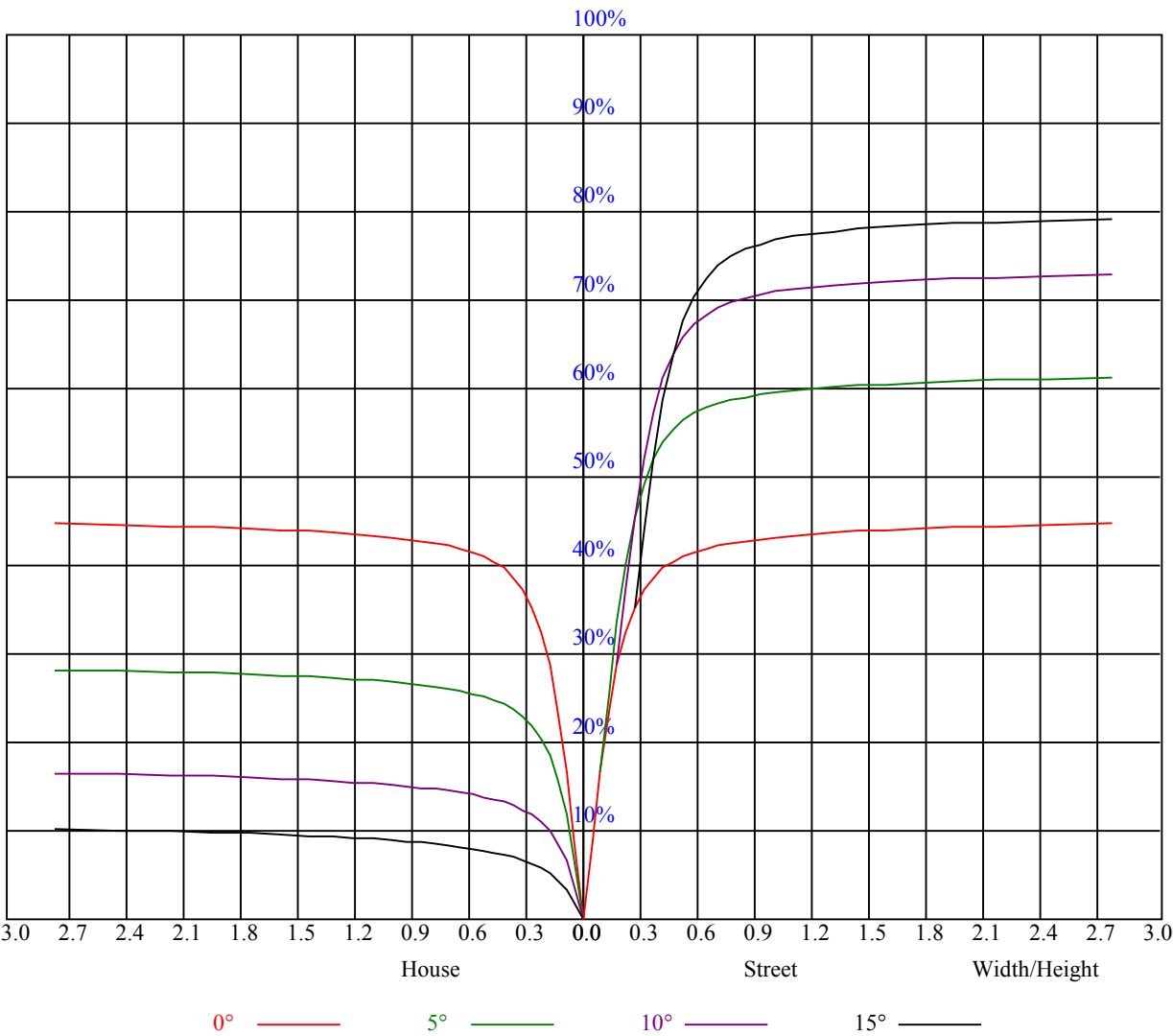
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

Luminance Limiting Curve





RHOC	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	1.09	1.09	1.09	1.06	1.06	1.06	1.01	1.01	1.01	0.97	0.97	0.97	0.93	0.93	0.93	0.91
1	1.02	0.99	0.97	1.00	0.98	0.96	0.96	0.94	0.93	0.93	0.91	0.90	0.89	0.88	0.88	0.86
2	0.96	0.93	0.90	0.94	0.92	0.89	0.92	0.89	0.87	0.89	0.87	0.85	0.86	0.85	0.83	0.82
3	0.91	0.88	0.85	0.90	0.87	0.84	0.88	0.85	0.83	0.86	0.83	0.81	0.84	0.82	0.80	0.79
4	0.87	0.83	0.80	0.86	0.83	0.80	0.85	0.81	0.79	0.83	0.80	0.78	0.81	0.79	0.77	0.76
5	0.84	0.80	0.77	0.83	0.79	0.76	0.82	0.78	0.76	0.80	0.77	0.75	0.79	0.77	0.75	0.73
6	0.81	0.77	0.74	0.80	0.77	0.74	0.79	0.76	0.73	0.78	0.75	0.73	0.77	0.74	0.72	0.71
7	0.79	0.74	0.71	0.78	0.74	0.71	0.77	0.73	0.71	0.76	0.73	0.71	0.75	0.72	0.70	0.69
8	0.76	0.72	0.69	0.76	0.72	0.69	0.75	0.71	0.69	0.74	0.71	0.69	0.73	0.70	0.68	0.67
9	0.74	0.70	0.67	0.74	0.70	0.67	0.73	0.69	0.67	0.72	0.69	0.67	0.72	0.69	0.67	0.66
10	0.72	0.68	0.66	0.72	0.68	0.66	0.71	0.68	0.65	0.71	0.67	0.65	0.70	0.67	0.65	0.64



Intensity data(cd)

Appendix Page: 16 Total:18

C/ γ (°)	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0
0.0	3354.75	3339.00	3263.06	3160.13	3016.13	2811.38	2575.13	2340.56	2066.06
45.0	3347.44	3295.69	3156.19	3009.38	2854.69	2592.56	2323.69	2102.63	1800.56
90.0	3327.75	3232.69	3105.00	2912.63	2680.88	2450.25	2172.38	1887.75	1652.06
135.0	3352.50	3313.13	3202.88	3074.06	2904.19	2674.13	2409.75	2157.19	1874.25
180.0	3354.75	3323.25	3237.75	3106.69	2952.00	2766.94	2484.56	2232.56	1971.56
225.0	3347.44	3363.19	3330.00	3245.63	3131.44	2958.75	2748.94	2533.50	2265.19
270.0	3327.75	3369.38	3364.31	3306.94	3214.69	3081.94	2872.13	2671.88	2442.38
315.0	3352.50	3346.88	3286.13	3198.38	3071.81	2862.00	2659.50	2430.00	2117.81
360.0	3354.75	3339.00	3263.06	3160.13	3016.13	2811.38	2575.13	2340.56	2066.06
C/ γ (°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	1800.00	1575.00	1338.19	1149.19	966.94	812.81	696.94	587.81	500.06
45.0	1551.38	1374.75	1146.38	1004.63	879.75	741.38	654.75	577.69	493.88
90.0	1439.44	1106.55	1051.31	917.89	787.89	680.79	599.40	521.49	454.95
135.0	1612.13	1393.31	1170.00	1010.81	850.50	714.38	623.25	532.13	455.63
180.0	1683.00	1415.25	1104.58	991.13	830.93	681.13	560.53	473.18	391.95
225.0	2010.94	1715.63	1427.63	1109.19	983.14	768.21	626.06	512.61	401.79
270.0	2136.38	1873.69	1607.63	1325.81	1076.63	885.38	707.63	562.50	459.00
315.0	1893.94	1612.13	1247.06	1117.91	959.23	771.41	648.84	543.54	437.01
360.0	1800.00	1575.00	1338.19	1149.19	966.94	812.81	696.94	587.81	500.06
C/ γ (°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	434.25	378.56	320.06	286.31	245.31	212.18	183.49	161.33	138.77
45.0	437.06	388.13	335.81	298.13	285.75	229.61	201.04	177.58	154.58
90.0	403.82	348.69	315.17	275.91	237.09	213.81	189.06	159.36	142.76
135.0	398.25	349.88	299.25	286.31	230.23	197.83	171.23	150.19	130.05
180.0	325.29	277.03	236.81	195.24	166.11	142.31	120.26	102.09	88.65
225.0	329.40	271.46	226.18	181.58	152.49	128.93	106.54	88.14	74.98
270.0	364.50	297.00	254.81	195.19	159.13	132.98	109.41	89.78	75.66
315.0	369.62	312.41	264.54	217.24	185.12	157.78	131.12	109.29	93.71
360.0	434.25	378.56	320.06	286.31	245.31	212.18	183.49	161.33	138.77
C/ γ (°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	119.25	104.79	91.07	80.49	70.03	60.98	54.45	48.71	42.81
45.0	134.55	118.63	103.33	90.51	79.65	69.41	61.71	55.07	48.54
90.0	126.23	106.43	95.18	83.93	73.13	63.39	56.25	49.44	44.61
135.0	112.61	98.89	86.40	76.22	66.71	59.18	51.86	46.29	40.84
180.0	75.99	65.48	57.88	50.91	45.73	40.67	36.34	33.08	30.26
225.0	62.94	53.89	47.53	41.57	37.24	33.08	29.59	26.94	24.58
270.0	63.17	54.11	47.14	42.08	36.06	32.40	29.53	26.10	23.46
315.0	79.09	67.11	58.28	50.12	44.10	38.25	33.36	29.87	27.00
360.0	119.25	104.79	91.07	80.49	70.03	60.98	54.45	48.71	42.81
C/ γ (°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	38.98	35.78	32.57	30.21	28.18	25.82	23.96	22.50	21.04
45.0	44.04	40.50	36.56	33.86	31.67	29.48	27.62	26.33	24.92
90.0	40.16	36.79	33.98	31.33	29.25	27.96	26.61	24.98	23.96
135.0	37.41	34.65	31.50	29.25	27.28	25.37	23.85	22.61	21.43
180.0	27.90	26.16	24.75	23.18	22.28	21.26	20.08	18.73	17.89
225.0	22.11	20.64	19.35	18.11	17.27	16.59	15.92	15.41	14.91
270.0	21.71	19.86	18.45	17.55	16.65	15.92	15.41	14.79	14.51
315.0	24.41	22.73	21.38	19.86	18.84	18.00	17.04	16.43	15.92
360.0	38.98	35.78	32.57	30.21	28.18	25.82	23.96	22.50	21.04

Intensity data(cd)

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C/γ(°)	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0
0.0	20.03	19.07	18.00	17.10	16.20	15.47	14.91	14.29	13.78
45.0	23.79	22.67	21.49	20.42	19.46	18.56	17.72	16.99	16.03
90.0	23.12	21.77	20.64	19.80	19.01	18.11	17.38	16.59	15.86
135.0	20.59	19.52	18.62	17.83	17.04	16.20	15.64	14.96	14.23
180.0	17.04	16.14	15.69	15.30	14.63	13.89	13.16	12.66	12.32
225.0	14.46	14.01	13.89	13.44	13.22	12.99	12.83	12.54	12.32
270.0	14.18	13.78	13.56	13.33	13.11	12.94	12.71	12.43	12.21
315.0	15.36	14.91	14.40	14.01	13.67	13.39	13.05	12.83	12.60
360.0	20.03	19.07	18.00	17.10	16.20	15.47	14.91	14.29	13.78
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	13.44	13.11	12.66	12.21	11.87	11.42	11.19	10.91	10.69
45.0	15.24	14.63	14.12	13.61	13.28	12.94	12.54	12.26	11.93
90.0	15.19	14.51	14.06	13.56	13.05	12.71	12.26	11.81	11.48
135.0	13.78	13.39	12.99	12.49	12.15	11.87	11.59	11.31	11.08
180.0	11.76	11.48	11.25	10.97	10.69	10.41	10.07	9.84	9.62
225.0	11.98	11.64	11.42	11.03	10.74	10.46	10.13	9.96	9.79
270.0	12.04	11.81	11.53	11.14	10.80	10.63	10.35	10.13	10.01
315.0	12.15	11.87	11.59	11.25	10.97	10.74	10.46	10.29	10.24
360.0	13.44	13.11	12.66	12.21	11.87	11.42	11.19	10.91	10.69
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	10.41	10.13	9.84	9.62	9.34	9.06	8.89	8.72	8.49
45.0	11.48	11.14	10.74	10.52	10.18	9.84	9.56	9.23	8.83
90.0	11.08	10.63	10.29	9.96	9.68	9.23	8.94	8.55	8.27
135.0	10.69	10.29	10.01	9.73	9.45	9.17	8.83	8.61	8.27
180.0	9.34	9.17	9.00	8.83	8.61	8.44	8.16	8.04	7.93
225.0	9.62	9.51	9.34	9.11	9.06	8.89	8.72	8.61	8.49
270.0	9.96	9.84	9.79	9.68	9.56	9.39	9.28	9.11	8.89
315.0	10.01	9.90	9.68	9.51	9.28	9.11	9.00	8.83	8.61
360.0	10.41	10.13	9.84	9.62	9.34	9.06	8.89	8.72	8.49
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	8.33	8.16	7.99	7.88	7.93	7.99	8.61	10.01	11.87
45.0	8.44	8.16	7.88	7.65	7.54	7.54	7.48	7.54	7.65
90.0	7.93	7.65	7.43	7.26	7.14	7.03	6.98	7.03	7.09
135.0	7.99	7.76	7.59	7.48	7.43	7.37	7.37	7.48	7.99
180.0	7.82	7.71	7.65	7.59	7.65	7.82	8.83	10.18	11.03
225.0	8.33	8.21	8.10	8.04	7.93	7.82	7.76	7.76	7.82
270.0	8.72	8.55	8.44	8.21	7.99	7.82	7.71	7.59	7.54
315.0	8.38	8.16	7.99	7.82	7.59	7.48	7.48	7.43	7.37
360.0	8.33	8.16	7.99	7.88	7.93	7.99	8.61	10.01	11.87
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	13.67	14.79	15.75	15.64	13.67	11.53	5.79	4.39	4.11
45.0	7.76	7.76	7.65	7.43	7.14	5.91	4.67	4.22	4.11
90.0	7.26	7.14	6.75	6.47	6.36	5.79	4.33	4.05	3.83
135.0	8.72	9.23	9.39	9.11	8.55	6.30	5.23	4.28	4.16
180.0	12.60	13.56	13.39	12.77	11.08	6.08	4.84	4.05	3.88
225.0	7.93	7.93	7.88	7.88	7.71	7.37	5.91	4.61	4.11
270.0	7.59	7.65	7.48	7.43	7.20	6.92	6.30	5.63	4.33
315.0	7.54	7.59	7.54	7.48	7.31	6.81	5.74	4.33	4.33
360.0	13.67	14.79	15.75	15.64	13.67	11.53	5.79	4.39	4.11

61.0009.03

Intensity data(cd)

Appendix Page: 18 Total:18

C/ γ (°)	90.0
0.0	4.05
45.0	3.15
90.0	2.81
135.0	3.54
180.0	3.43
225.0	4.11
270.0	4.28
315.0	4.28
360.0	4.05