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NATA

LumCAT: NA01D020024BW

Luminaire:

Report No: NATA0100

Voltage(V): 3.8000

Test No: GC2018121804

Current(A): 0.2600

LampCAT: NICHIA NF2W757

Power (W): 0.9880

Lamp flux(lm): 97.0

PF: 0.0000

Number of Lamps: 1

Ballast type: DC

Length(mm): 20

Width(mm): 20

Phm Type: C

Height(mm): 0

Photometric Results

Lumens(lm): 92.88

Efficiency(%): 95.75%

Lumens(lm)/Power(W): 94.01

Central intensity(cd): 349.369

Maximum intensity(cd): 349.369

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=24.0

[C90/270]Total=24.0

Field angle(10%Imax): [C0/180]Total=48.4

[C90/270]Total=48.4

Maximum s/h(1/2): C0_180=0.40 C90_270=0.40

Maximum s/h(1/4): C0_180=0.42 C90_270=0.42

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 95.83%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 95.720%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	349.369	0.084	0.084	.086%	.090%
1.0	347.611	0.665	0.749	.686%	.806%
2.0	342.387	1.310	2.059	1.351%	2.217%
3.0	334.202	1.918	3.977	1.977%	4.282%
4.0	323.571	2.475	6.452	2.552%	6.947%
5.0	309.902	2.962	9.414	3.054%	10.136%
6.0	294.180	3.372	12.786	3.476%	13.767%
7.0	275.878	3.687	16.473	3.801%	17.737%
8.0	257.168	3.925	20.398	4.046%	21.963%
9.0	235.730	4.044	24.442	4.169%	26.317%
10.0	214.432	4.083	28.525	4.210%	30.713%
11.0	194.442	4.069	32.594	4.194%	35.094%
12.0	174.347	3.975	36.569	4.098%	39.373%
13.0	154.505	3.811	40.38	3.929%	43.477%
14.0	136.195	3.613	43.994	3.725%	47.367%
15.0	119.791	3.400	47.394	3.505%	51.028%
16.0	104.077	3.146	50.539	3.243%	54.415%
17.0	91.716	2.941	53.48	3.032%	57.581%
18.0	79.495	2.694	56.174	2.777%	60.482%
19.0	69.546	2.483	58.657	2.560%	63.155%
20.0	60.588	2.272	60.929	2.343%	65.602%
21.0	52.720	2.072	63.001	2.136%	67.832%
22.0	46.427	1.907	64.908	1.966%	69.886%
23.0	40.725	1.745	66.653	1.799%	71.765%
24.0	35.852	1.599	68.252	1.649%	73.487%
25.0	31.451	1.458	69.71	1.503%	75.056%
26.0	28.020	1.347	71.057	1.389%	76.506%
27.0	24.884	1.239	72.296	1.277%	77.840%
28.0	22.191	1.142	73.438	1.178%	79.070%
29.0	19.898	1.058	74.496	1.091%	80.209%
30.0	17.944	0.984	75.48	1.014%	81.268%
31.0	16.073	0.908	76.388	.936%	82.246%
32.0	14.527	0.844	77.232	.870%	83.155%
33.0	13.261	0.792	78.024	.817%	84.007%
34.0	12.066	0.740	78.764	.763%	84.804%
35.0	11.081	0.697	79.461	.719%	85.555%
36.0	10.174	0.656	80.117	.676%	86.261%
37.0	9.359	0.618	80.734	.637%	86.926%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	8.585	0.580	81.314	.598%	87.550%
39.0	7.938	0.548	81.862	.565%	88.140%
40.0	7.334	0.517	82.379	.533%	88.696%
41.0	6.870	0.494	82.873	.510%	89.228%
42.0	6.413	0.471	83.343	.485%	89.735%
43.0	5.970	0.446	83.79	.460%	90.216%
44.0	5.611	0.427	84.217	.441%	90.676%
45.0	5.266	0.408	84.626	.421%	91.115%
46.0	4.950	0.390	85.016	.403%	91.536%
47.0	4.641	0.372	85.388	.384%	91.937%
48.0	4.366	0.356	85.744	.367%	92.320%
49.0	4.092	0.339	86.083	.349%	92.684%
50.0	3.853	0.324	86.407	.334%	93.033%
51.0	3.642	0.310	86.717	.320%	93.367%
52.0	3.445	0.298	87.015	.307%	93.688%
53.0	3.255	0.285	87.3	.294%	93.995%
54.0	3.066	0.272	87.572	.280%	94.287%
55.0	2.897	0.260	87.832	.268%	94.568%
56.0	2.749	0.250	88.082	.258%	94.837%
57.0	2.595	0.239	88.321	.246%	95.094%
58.0	2.447	0.228	88.548	.235%	95.339%
59.0	2.341	0.220	88.768	.227%	95.576%
60.0	2.215	0.210	88.978	.217%	95.802%
61.0	2.116	0.203	89.181	.209%	96.021%
62.0	2.018	0.195	89.377	.201%	96.231%
63.0	1.934	0.189	89.566	.195%	96.434%
64.0	1.821	0.179	89.745	.185%	96.628%
65.0	1.751	0.174	89.919	.179%	96.815%
66.0	1.666	0.167	90.086	.172%	96.995%
67.0	1.610	0.163	90.249	.168%	97.170%
68.0	1.533	0.156	90.405	.161%	97.338%
69.0	1.484	0.152	90.557	.157%	97.501%
70.0	1.434	0.148	90.704	.152%	97.660%
71.0	1.371	0.142	90.846	.147%	97.813%
72.0	1.315	0.137	90.984	.141%	97.961%
73.0	1.287	0.135	91.119	.139%	98.106%
74.0	1.230	0.130	91.248	.134%	98.246%
75.0	1.238	0.131	91.379	.135%	98.387%

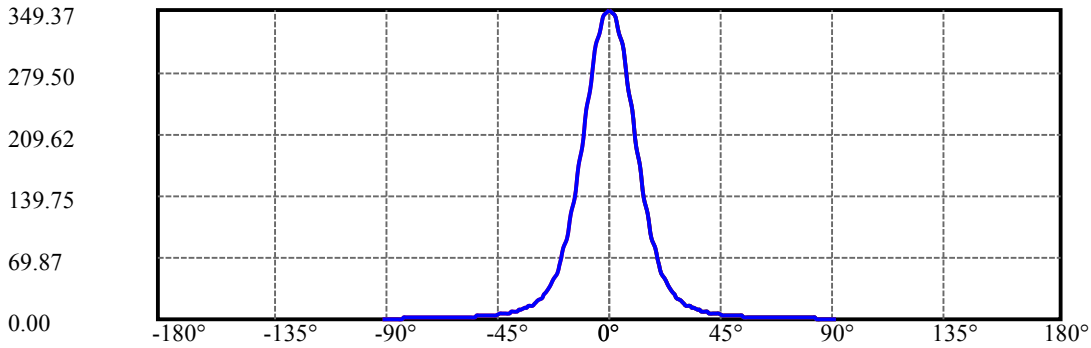
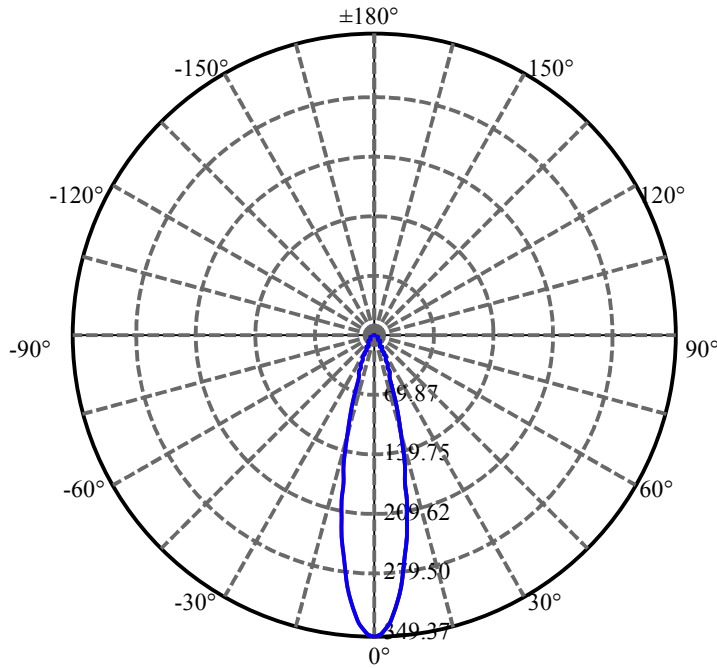
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	1.209	0.129	91.508	.133%	98.526%
77.0	1.188	0.127	91.635	.131%	98.662%
78.0	1.167	0.125	91.76	.129%	98.797%
79.0	1.153	0.124	91.884	.128%	98.931%
80.0	1.139	0.123	92.007	.127%	99.063%
81.0	1.139	0.123	92.131	.127%	99.196%
82.0	1.111	0.121	92.251	.124%	99.326%
83.0	1.083	0.118	92.369	.122%	99.453%
84.0	1.034	0.113	92.482	.116%	99.574%
85.0	1.013	0.111	92.593	.114%	99.693%
86.0	0.816	0.089	92.682	.092%	99.789%
87.0	0.654	0.072	92.753	.074%	99.866%
88.0	0.520	0.057	92.81	.059%	99.928%
89.0	0.429	0.047	92.857	.048%	99.978%
90.0	0.366	0.020	92.877	.021%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	75.48	77.81%	81.27%
0-40	82.38	84.93%	88.70%
0-60	88.98	91.73%	95.80%
0-90	92.86	95.73%	99.98%
0-120	92.86	95.73%	99.98%
0-180	92.88	95.75%	100.00%
60-90	4.09	4.22%	4.40%
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%
0-28.82	74.30	76.60%	80.00%

ZONAL LUMEN SUMMARY

0-10	28.53
10-20	32.40
20-30	14.55
30-40	6.90
40-50	4.03
50-60	2.57
60-70	1.73
70-80	1.30
80-90	0.85
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: —————

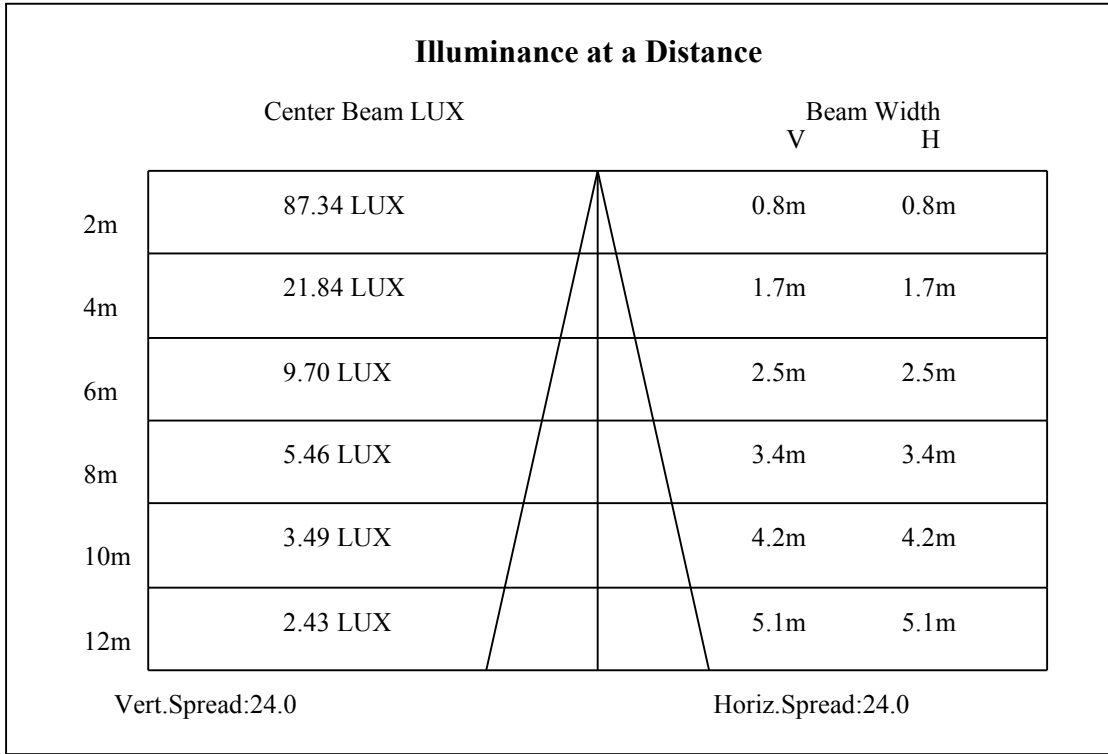
C90/C270: —————

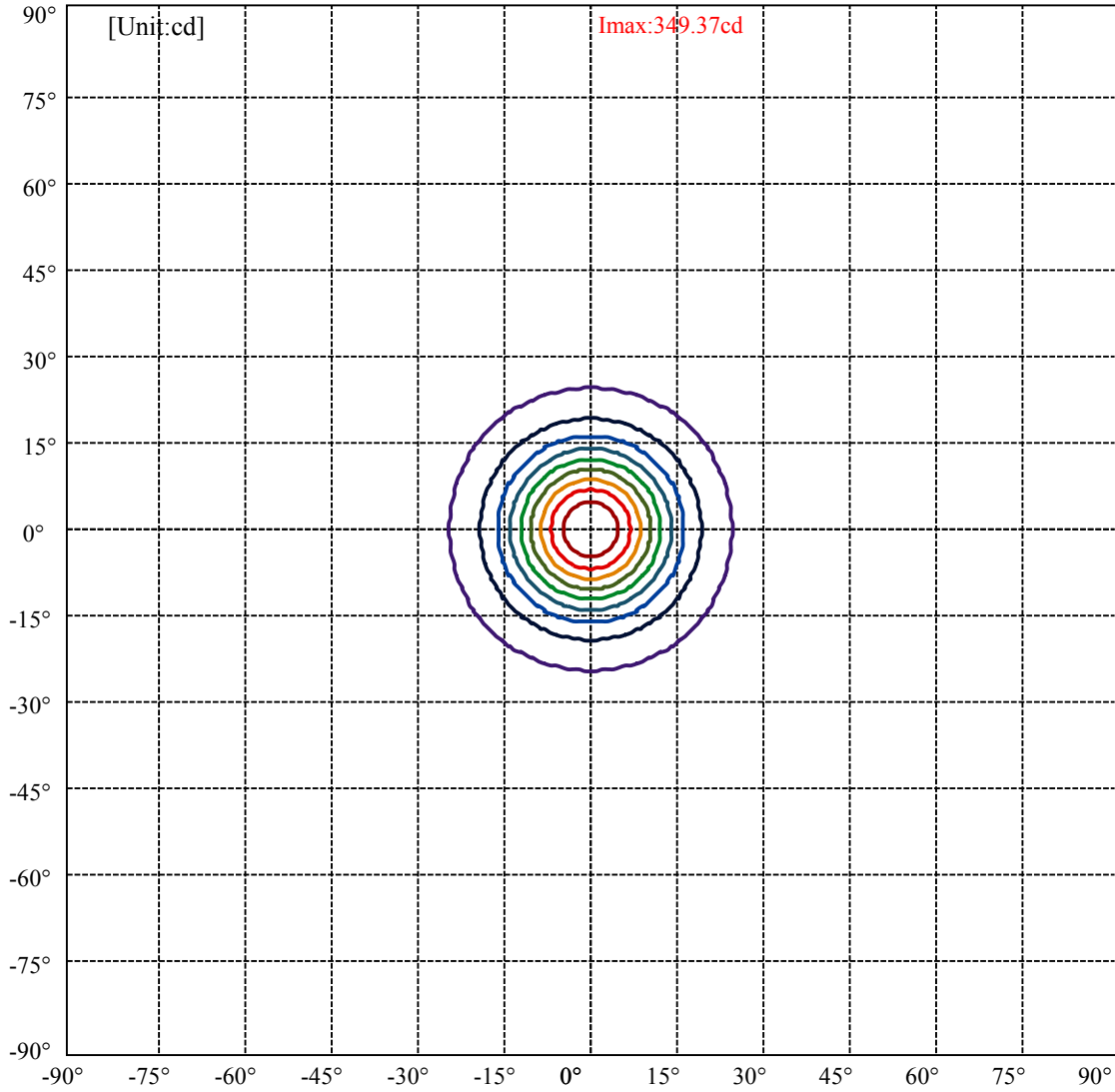
Field angle(10%Imax):C0/180Left:24.2 Right:24.2

:C90/270Left:24.2 Right:24.2

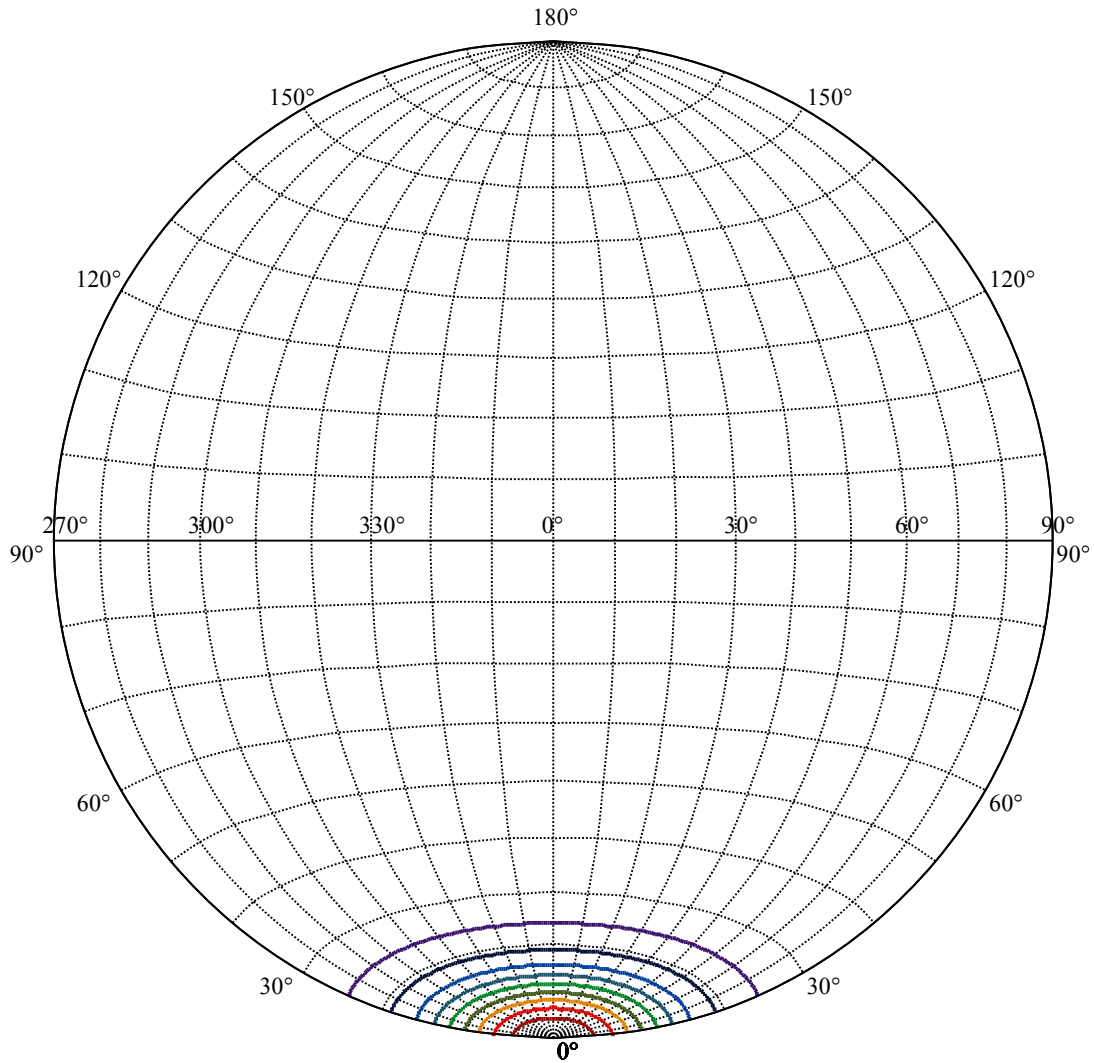
Beam Angle(50%Imax):C0/180Left:12.0 Right:12.0

:C90/270Left:12.0 Right:12.0





(10%Imax) 34.9369	—
(20%Imax) 69.8738	—
(30%Imax) 104.811	—
(40%Imax) 139.748	—
(50%Imax) 174.684	—
(60%Imax) 209.621	—
(70%Imax) 244.558	—
(80%Imax) 279.495	—
(90%Imax) 314.432	—



House

[Unit:cd]

Road

Imax:349.37

(10%Imax) 34.9369

(20%Imax) 69.8738

(30%Imax) 104.811

(40%Imax) 139.748

(50%Imax) 174.684

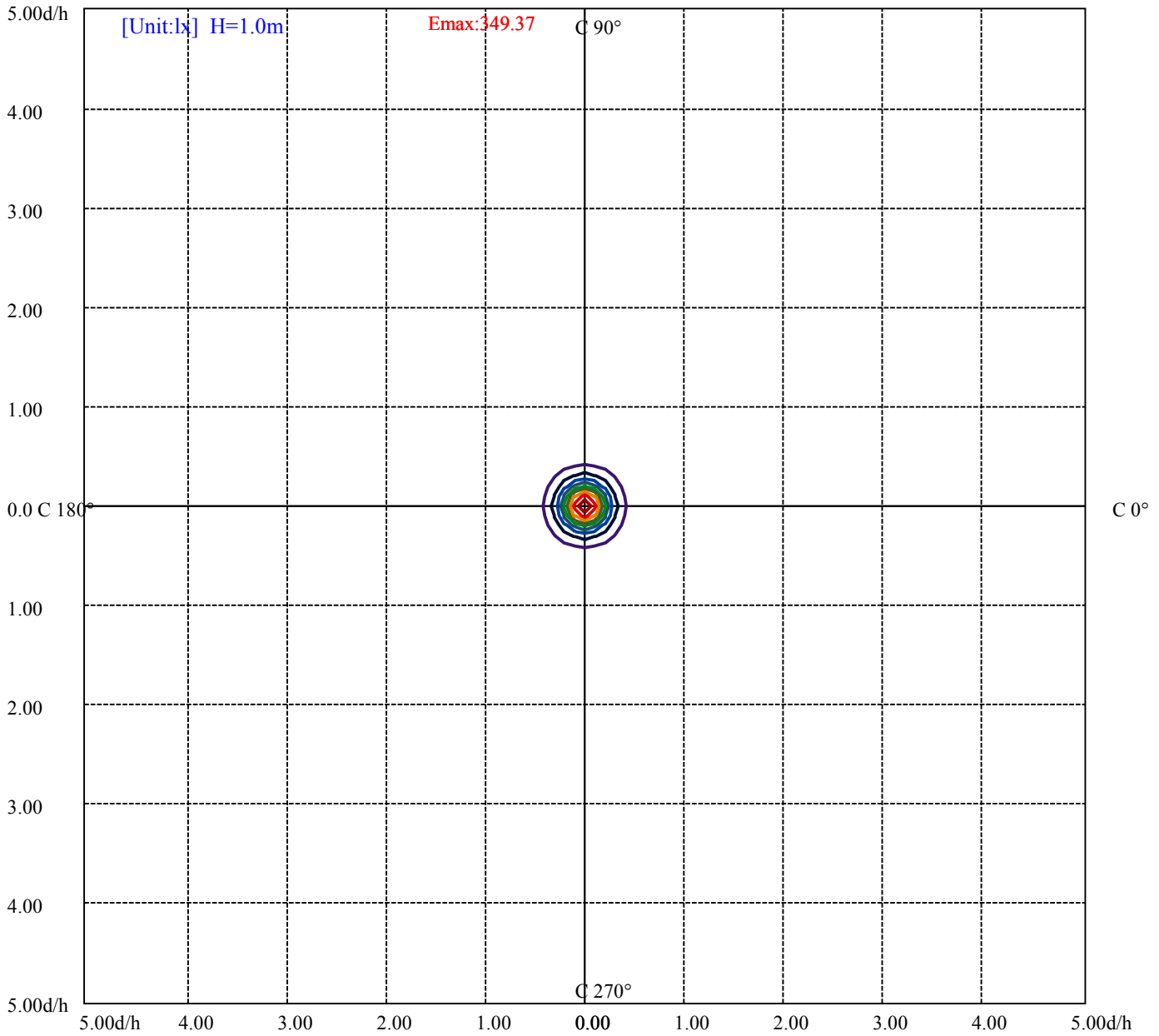
(60%Imax) 209.621

(70%Imax) 244.558

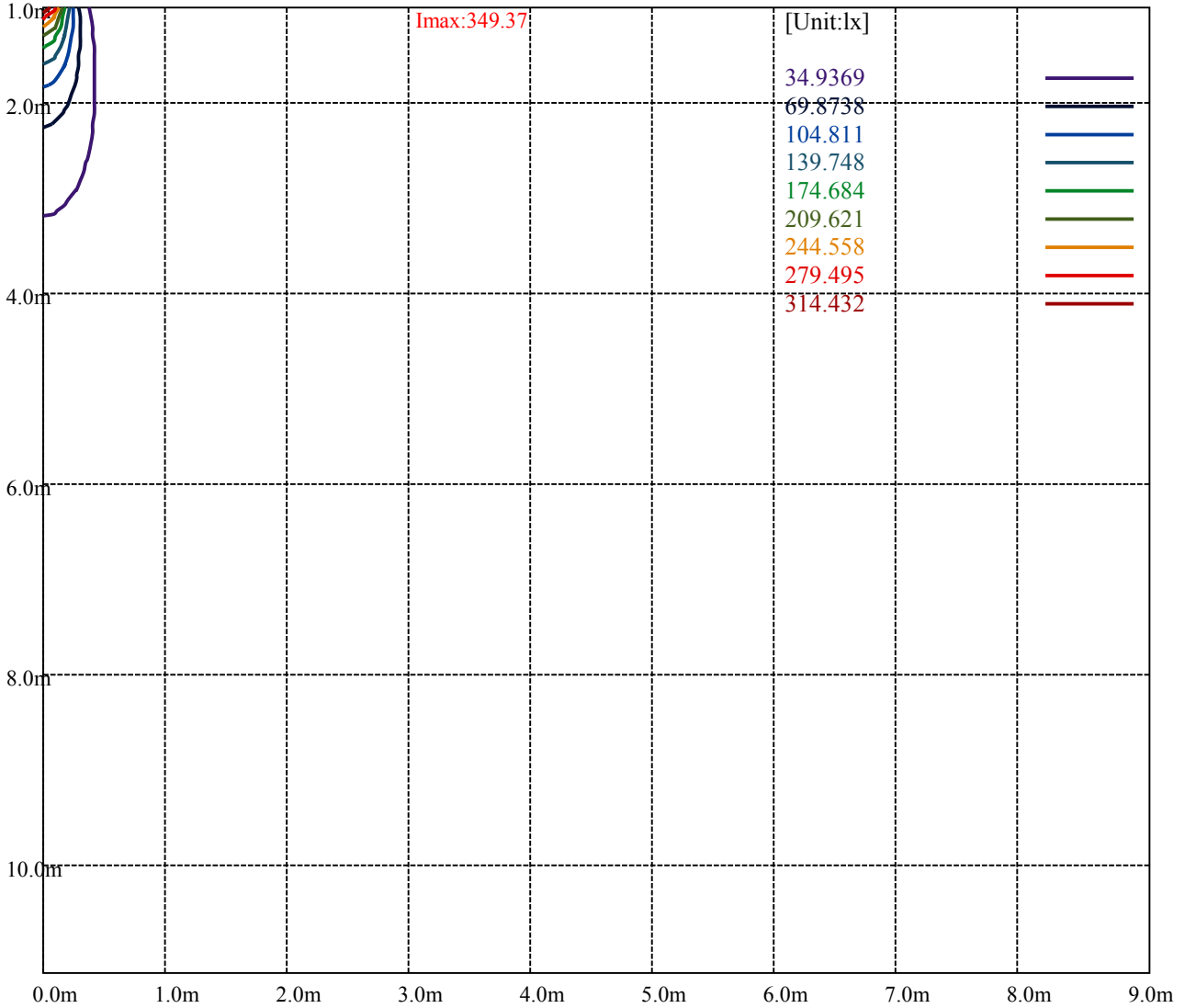
(80%Imax) 279.495

(90%Imax) 314.432





(10%Emax) 34.9369	—
(20%Emax) 69.8737	—
(30%Emax) 104.811	—
(40%Emax) 139.747	—
(50%Emax) 174.684	—
(60%Emax) 209.621	—
(70%Emax) 244.558	—
(80%Emax) 279.495	—
(90%Emax) 314.432	—



Luminance Table

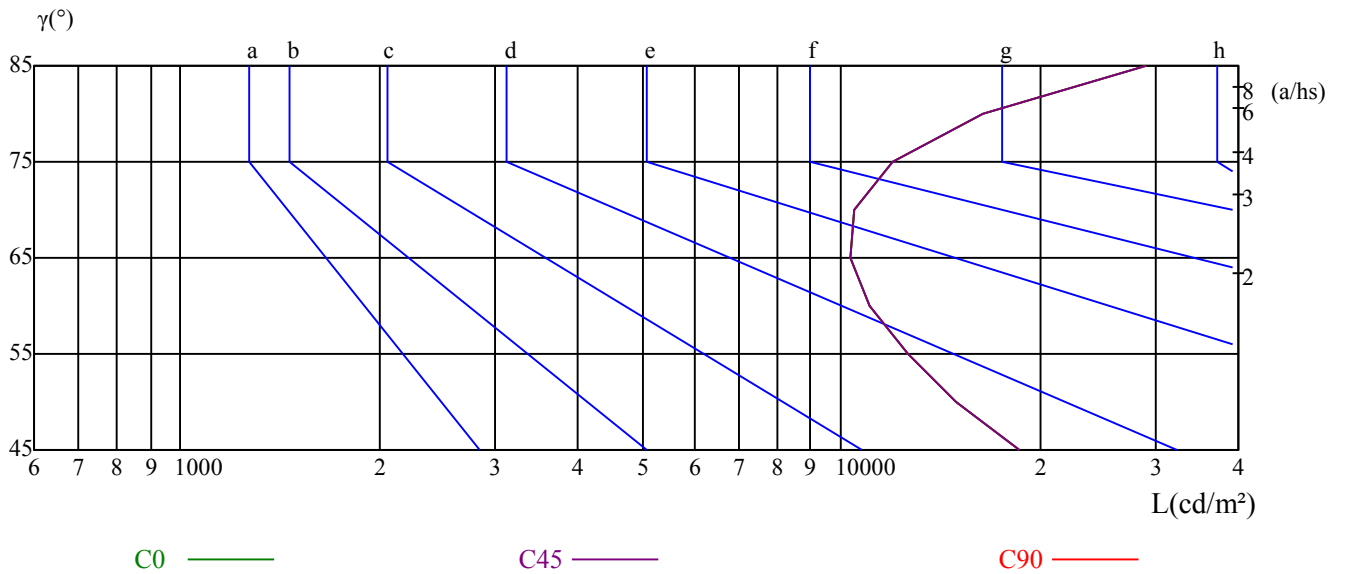
γ	45	50	55	60	65	70	75	80	85
C0	18620	14986	12626	11074	10357	10485	11953	16399	29043
C45	18620	14986	12626	11074	10357	10485	11953	16399	29043
C90	18620	14986	12626	11074	10357	10485	11953	16399	29043

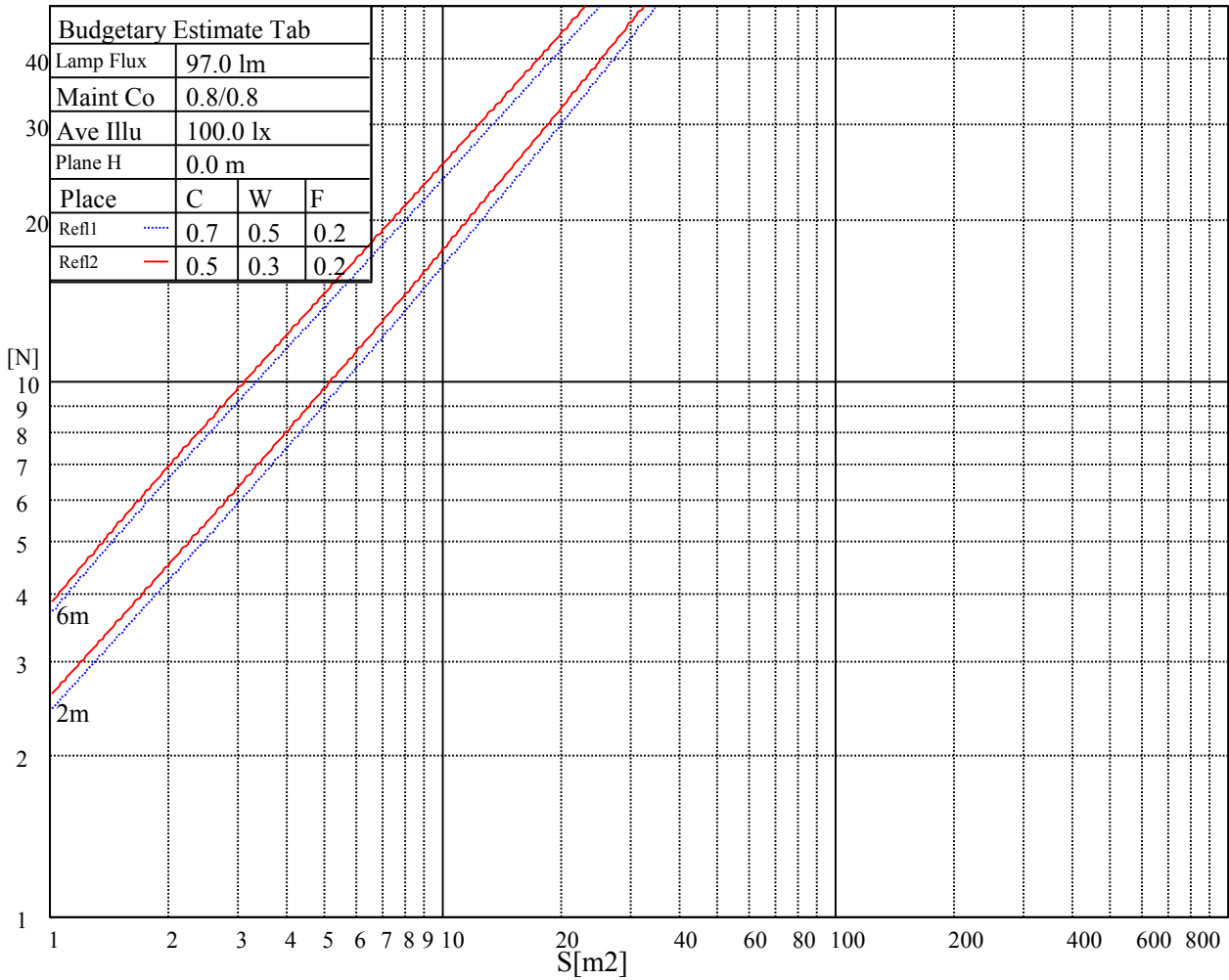
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
10357	10357	10357	11953	11953	11953	29043	29043	29043

Glare Table

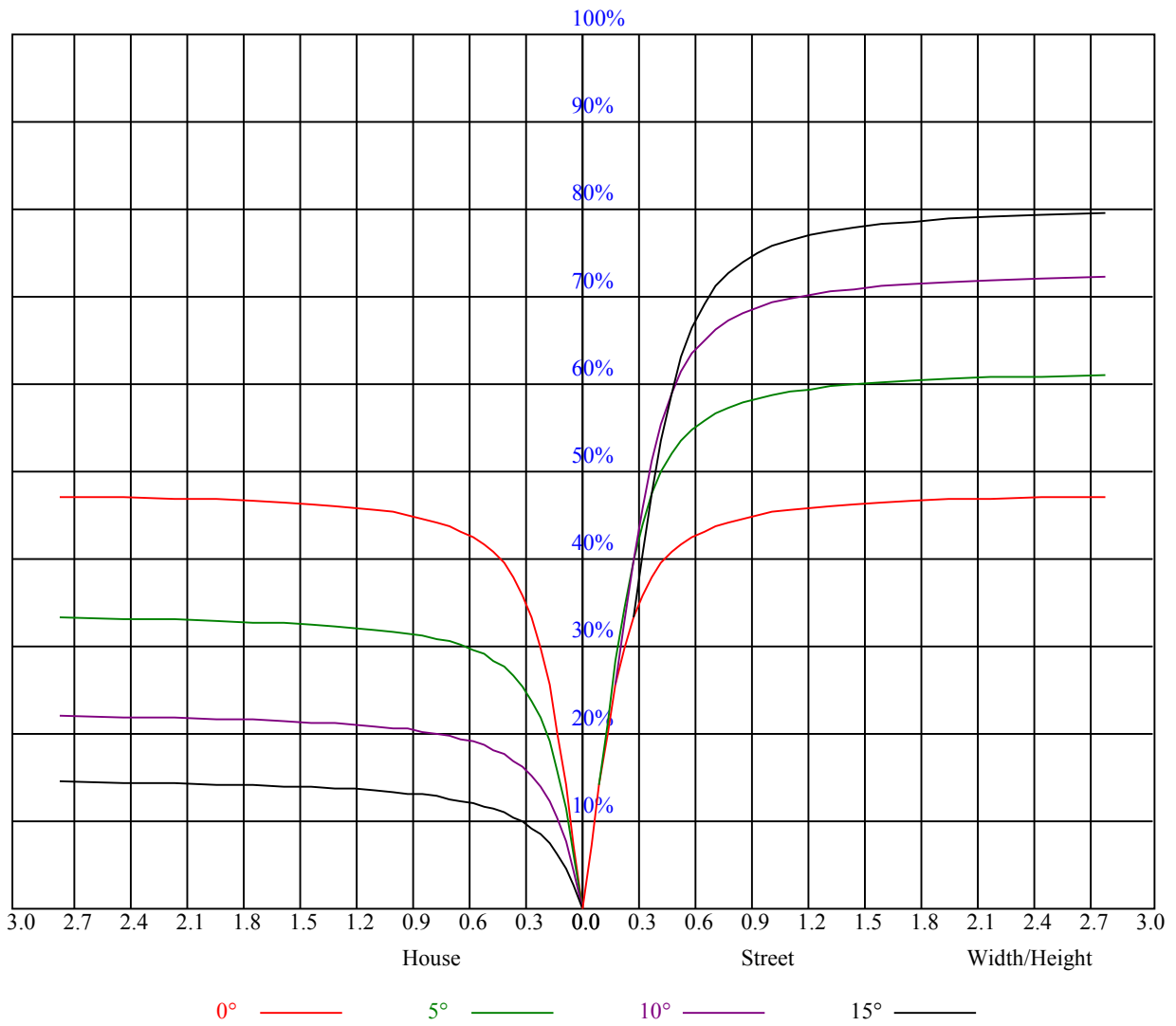
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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	1.14	1.14	1.14	1.11	1.11	1.11	1.06	1.06	1.06	1.02	1.02	1.02	0.98	0.98	0.98	0.96
1	1.06	1.04	1.02	1.04	1.02	1.00	1.00	0.99	0.97	0.97	0.95	0.94	0.93	0.92	0.91	0.90
2	1.00	0.96	0.93	0.98	0.95	0.92	0.95	0.92	0.90	0.92	0.90	0.88	0.90	0.88	0.86	0.85
3	0.94	0.90	0.86	0.93	0.89	0.86	0.90	0.87	0.84	0.88	0.85	0.83	0.86	0.84	0.82	0.80
4	0.90	0.85	0.81	0.88	0.84	0.81	0.86	0.83	0.80	0.85	0.81	0.79	0.83	0.80	0.78	0.77
5	0.85	0.81	0.77	0.85	0.80	0.77	0.83	0.79	0.76	0.81	0.78	0.75	0.80	0.77	0.75	0.73
6	0.82	0.77	0.73	0.81	0.76	0.73	0.80	0.76	0.73	0.78	0.75	0.72	0.77	0.74	0.72	0.70
7	0.78	0.74	0.70	0.78	0.73	0.70	0.77	0.73	0.70	0.76	0.72	0.69	0.75	0.71	0.69	0.68
8	0.76	0.71	0.67	0.75	0.70	0.67	0.74	0.70	0.67	0.73	0.69	0.67	0.72	0.69	0.67	0.65
9	0.73	0.68	0.65	0.72	0.68	0.65	0.72	0.68	0.65	0.71	0.67	0.65	0.70	0.67	0.64	0.63
10	0.70	0.66	0.63	0.70	0.66	0.63	0.69	0.65	0.63	0.69	0.65	0.62	0.68	0.65	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	348.41	344.25	336.26	325.86	311.63	294.30	276.92	256.28	236.48
45.0	351.23	353.25	350.94	345.83	337.84	327.99	316.41	299.76	282.38
90.0	350.66	352.74	351.39	348.08	341.21	333.06	322.48	305.10	289.52
135.0	347.18	351.00	351.39	350.10	344.93	336.43	327.49	315.90	300.49
180.0	348.41	348.98	347.12	341.38	333.34	323.61	309.94	293.29	276.08
225.0	351.23	346.22	339.13	326.36	312.47	296.10	273.83	253.97	233.21
270.0	350.66	345.09	334.74	322.99	309.54	290.25	268.48	247.61	227.08
315.0	347.18	339.36	328.11	313.03	297.62	277.48	257.91	235.13	212.12
360.0	348.41	344.25	336.26	325.86	311.63	294.30	276.92	256.28	236.48
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	214.14	191.81	172.52	154.07	132.36	116.78	102.88	87.64	77.29
45.0	261.28	240.13	220.39	199.86	175.28	156.43	138.77	119.31	106.09
90.0	273.26	249.92	229.78	210.04	188.16	167.51	150.02	129.43	116.55
135.0	282.54	264.77	243.84	224.38	202.39	180.90	162.56	142.71	126.00
180.0	254.48	232.31	212.79	191.08	172.18	151.93	132.69	117.23	103.39
225.0	206.94	186.30	166.84	143.61	128.70	111.32	93.71	82.86	71.89
270.0	201.99	181.74	162.06	141.13	121.73	106.82	91.91	78.75	68.51
315.0	191.19	168.47	147.32	130.61	115.26	97.88	85.78	74.70	64.01
360.0	214.14	191.81	172.52	154.07	132.36	116.78	102.88	87.64	77.29
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	68.23	59.57	52.03	46.01	40.50	35.44	31.89	28.13	25.09
45.0	94.16	81.34	70.82	63.17	55.58	48.60	43.65	38.76	35.16
90.0	101.48	88.37	78.36	68.40	60.02	53.66	47.87	41.91	37.91
135.0	111.66	98.55	84.88	75.49	66.83	58.22	50.79	44.89	39.66
180.0	87.86	76.89	67.22	56.76	49.67	43.76	38.08	33.13	29.36
225.0	59.29	52.76	46.07	38.08	33.86	29.64	25.54	22.11	19.69
270.0	58.28	50.68	43.43	37.46	32.85	28.69	24.36	21.26	18.62
315.0	55.01	48.21	41.91	36.39	32.12	27.79	24.64	21.43	18.68
360.0	68.23	59.57	52.03	46.01	40.50	35.44	31.89	28.13	25.09
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	22.33	19.86	17.94	16.26	14.51	13.33	12.15	11.03	10.07
45.0	31.33	27.96	25.31	22.89	20.25	18.45	16.99	15.24	13.95
90.0	34.37	30.26	27.45	24.86	22.05	20.03	18.39	16.65	15.24
135.0	34.93	31.39	28.01	25.26	22.56	20.19	18.34	16.43	14.91
180.0	25.99	23.23	20.59	18.39	16.59	14.74	13.22	12.15	11.14
225.0	17.27	15.41	13.73	12.32	11.19	10.13	9.23	8.49	7.88
270.0	16.14	14.34	12.88	11.48	10.35	9.39	8.55	7.99	7.59
315.0	16.71	15.08	13.28	12.09	11.08	9.96	9.23	8.55	7.88
360.0	22.33	19.86	17.94	16.26	14.51	13.33	12.15	11.03	10.07
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	9.28	8.61	7.82	7.37	6.75	6.36	5.96	5.63	5.29
45.0	12.71	11.64	10.58	9.79	8.89	8.33	7.59	7.03	6.53
90.0	13.89	12.49	11.48	10.46	9.56	8.89	8.27	7.54	7.14
135.0	13.73	12.60	11.25	10.29	9.51	8.72	8.04	7.48	6.92
180.0	10.07	9.23	8.61	7.76	7.14	6.69	6.24	5.74	5.46
225.0	7.26	6.69	6.36	5.91	5.63	5.34	5.06	4.78	4.56
270.0	7.14	6.69	6.24	5.85	5.51	5.23	4.95	4.73	4.44
315.0	7.31	6.92	6.36	6.08	5.68	5.40	5.18	4.84	4.56
360.0	9.28	8.61	7.82	7.37	6.75	6.36	5.96	5.63	5.29

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	4.95	4.61	4.33	4.11	3.83	3.60	3.38	3.21	3.04
45.0	6.02	5.63	5.23	4.95	4.56	4.28	4.05	3.83	3.54
90.0	6.64	6.19	5.63	5.23	4.84	4.56	4.16	3.94	3.71
135.0	6.41	5.96	5.51	5.23	4.84	4.50	4.28	4.05	3.71
180.0	5.18	4.84	4.61	4.33	4.11	3.88	3.71	3.49	3.38
225.0	4.33	4.16	3.99	3.77	3.60	3.43	3.26	3.09	2.93
270.0	4.22	4.05	3.94	3.66	3.49	3.32	3.15	2.98	2.87
315.0	4.39	4.16	3.88	3.66	3.49	3.26	3.15	2.98	2.87
360.0	4.95	4.61	4.33	4.11	3.83	3.60	3.38	3.21	3.04
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	2.87	2.76	2.59	2.42	2.31	2.19	2.08	2.03	1.91
45.0	3.43	3.15	2.98	2.81	2.59	2.48	2.31	2.19	2.08
90.0	3.43	3.21	3.04	2.81	2.64	2.53	2.36	2.25	2.08
135.0	3.54	3.32	3.09	2.93	2.76	2.64	2.53	2.36	2.25
180.0	3.09	2.93	2.81	2.64	2.53	2.42	2.25	2.19	2.08
225.0	2.76	2.64	2.53	2.42	2.25	2.14	2.08	1.97	1.91
270.0	2.70	2.59	2.48	2.36	2.25	2.19	2.03	1.97	1.91
315.0	2.70	2.59	2.48	2.36	2.25	2.14	2.08	1.97	1.91
360.0	2.87	2.76	2.59	2.42	2.31	2.19	2.08	2.03	1.91
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	1.80	1.69	1.63	1.52	1.52	1.41	1.29	1.24	1.13
45.0	2.03	1.91	1.86	1.74	1.63	1.58	1.52	1.46	1.41
90.0	2.03	1.86	1.74	1.69	1.63	1.52	1.46	1.41	1.29
135.0	2.14	2.03	1.91	1.80	1.74	1.63	1.63	1.52	1.46
180.0	1.97	1.86	1.80	1.69	1.63	1.58	1.52	1.52	1.46
225.0	1.86	1.74	1.69	1.63	1.58	1.52	1.46	1.46	1.35
270.0	1.80	1.74	1.69	1.63	1.58	1.52	1.46	1.41	1.41
315.0	1.86	1.74	1.69	1.63	1.58	1.52	1.52	1.46	1.46
360.0	1.80	1.69	1.63	1.52	1.52	1.41	1.29	1.24	1.13
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	1.07	1.01	1.01	1.07	1.13	1.18	1.13	1.18	1.18
45.0	1.35	1.35	1.29	1.29	1.24	1.18	1.18	1.18	1.24
90.0	1.24	1.18	1.13	1.13	1.07	1.01	0.96	0.96	0.90
135.0	1.41	1.35	1.24	1.24	1.18	1.13	1.13	1.07	1.07
180.0	1.35	1.35	1.29	1.29	1.29	1.24	1.24	1.18	1.13
225.0	1.35	1.29	1.24	1.24	1.24	1.24	1.18	1.13	1.13
270.0	1.35	1.35	1.29	1.24	1.24	1.24	1.24	1.18	1.18
315.0	1.41	1.41	1.35	1.41	1.29	1.29	1.29	1.35	1.29
360.0	1.07	1.01	1.01	1.07	1.13	1.18	1.13	1.18	1.18
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	1.13	1.18	1.13	1.13	1.07	0.68	0.51	0.39	0.34
45.0	1.24	1.18	1.24	1.13	1.13	1.13	0.79	0.56	0.45
90.0	0.96	0.84	0.84	0.79	0.79	0.73	0.68	0.62	0.45
135.0	1.01	1.01	0.96	0.90	0.90	0.84	0.79	0.73	0.56
180.0	1.18	1.13	1.13	1.07	1.07	1.01	0.90	0.62	0.51
225.0	1.13	1.13	1.07	1.01	1.01	0.84	0.56	0.45	0.39
270.0	1.18	1.13	1.13	1.07	1.07	0.73	0.56	0.39	0.39
315.0	1.29	1.29	1.18	1.18	1.07	0.56	0.45	0.39	0.34
360.0	1.13	1.18	1.13	1.13	1.07	0.68	0.51	0.39	0.34

Intensity data(cd)

C/ γ (°)	90.0
0.0	0.28
45.0	0.39
90.0	0.39
135.0	0.45
180.0	0.39
225.0	0.34
270.0	0.34
315.0	0.34
360.0	0.28