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## NATA

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LumCAT: LN01D06324BF  
Luminaire: 92.70.130.00  
Report No: NATA0100  
Test No: GC2018122107  
LampCAT: LUMINUS CXM-14-AA10  
Lamp flux(lm): 2587.0  
Number of Lamps: 1  
Length(mm): 63  
Phm Type: C

Voltage(V): 36.1000  
Current(A): 0.5000  
Power (W): 18.0500  
PF: 0.0000  
Ballast type: DC  
Width(mm): 63  
Height(mm): 0

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## Photometric Results

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Lumens(lm): 2425.28  
Efficiency(%): 93.75%  
Lumens(lm)/Power(W): 134.50  
Central intensity(cd): 10347.610  
Maximum intensity(cd): 10347.610  
Angle of maximum intensity: C=0.0  $\gamma$ =0.0  
Beam Angle(50%Imax): [C0/180]Total=24.5  
                                  [C90/270]Total=24.5  
Field angle(10%Imax): [C0/180]Total=43.0  
                                  [C90/270]Total=43.0  
Maximum s/h(1/2): C0\_180=0.42 C90\_270=0.42  
Maximum s/h(1/4): C0\_180=0.39 C90\_270=0.39  
Up flux rate of lamp(%): 0.00%  
Down flux rate of lamp(%): 93.84%  
Up flux rate of LUM(%): - -  
Down flux rate of LUM(%): 100.00%  
CIE Type : Direct lighting  
Output flux ratio in  $\pi$  solid angle : 96.338%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	10347.609	2.476	2.476	.096%	.102%
1.0	10308.586	19.729	22.205	.763%	.916%
2.0	10195.102	39.018	61.222	1.508%	2.524%
3.0	10014.750	57.477	118.699	2.222%	4.894%
4.0	9771.750	74.750	193.449	2.889%	7.976%
5.0	9460.828	90.423	283.871	3.495%	11.705%
6.0	9090.352	104.200	388.071	4.028%	16.001%
7.0	8624.953	115.266	503.338	4.456%	20.754%
8.0	8122.289	123.961	627.299	4.792%	25.865%
9.0	7520.063	129.005	756.303	4.987%	31.184%
10.0	6829.664	130.053	886.357	5.027%	36.547%
11.0	6146.508	128.611	1014.968	4.971%	41.849%
12.0	5397.609	123.064	1138.032	4.757%	46.924%
13.0	4581.984	113.030	1251.062	4.369%	51.584%
14.0	3843.633	101.969	1353.031	3.942%	55.789%
15.0	3204.492	90.951	1443.982	3.516%	59.539%
16.0	2651.133	80.135	1524.117	3.098%	62.843%
17.0	2209.641	70.845	1594.962	2.738%	65.764%
18.0	1847.742	62.615	1657.577	2.420%	68.346%
19.0	1555.172	55.523	1713.099	2.146%	70.635%
20.0	1273.163	47.752	1760.851	1.846%	72.604%
21.0	1107.394	43.519	1804.37	1.682%	74.398%
22.0	958.331	39.368	1843.738	1.522%	76.022%
23.0	833.569	35.717	1879.455	1.381%	77.494%
24.0	727.038	32.428	1911.883	1.254%	78.831%
25.0	639.049	29.617	1941.5	1.145%	80.052%
26.0	565.706	27.195	1968.694	1.051%	81.174%
27.0	498.614	24.823	1993.518	.960%	82.197%
28.0	442.252	22.768	2016.286	.880%	83.136%
29.0	388.505	20.655	2036.941	.798%	83.988%
30.0	346.676	19.008	2055.949	.735%	84.772%
31.0	309.902	17.503	2073.452	.677%	85.493%
32.0	280.603	16.306	2089.759	.630%	86.166%
33.0	256.029	15.291	2105.05	.591%	86.796%
34.0	235.828	14.461	2119.512	.559%	87.392%
35.0	216.323	13.607	2133.118	.526%	87.953%
36.0	202.732	13.068	2146.186	.505%	88.492%
37.0	189.900	12.533	2158.718	.484%	89.009%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	177.455	11.981	2170.699	.463%	89.503%
39.0	166.303	11.477	2182.176	.444%	89.976%
40.0	156.270	11.015	2193.191	.426%	90.430%
41.0	146.707	10.555	2203.746	.408%	90.865%
42.0	138.185	10.140	2213.885	.392%	91.284%
43.0	130.289	9.744	2223.629	.377%	91.685%
44.0	123.279	9.391	2233.02	.363%	92.073%
45.0	116.156	9.007	2242.027	.348%	92.444%
46.0	108.759	8.579	2250.607	.332%	92.798%
47.0	101.496	8.140	2258.747	.315%	93.133%
48.0	95.688	7.798	2266.545	.301%	93.455%
49.0	89.810	7.433	2273.978	.287%	93.761%
50.0	84.333	7.084	2281.062	.274%	94.053%
51.0	79.882	6.808	2287.87	.263%	94.334%
52.0	75.720	6.543	2294.413	.253%	94.604%
53.0	71.620	6.272	2300.685	.242%	94.863%
54.0	68.280	6.058	2306.743	.234%	95.112%
55.0	65.306	5.866	2312.609	.227%	95.354%
56.0	62.473	5.680	2318.289	.220%	95.588%
57.0	59.470	5.469	2323.759	.211%	95.814%
58.0	56.412	5.246	2329.005	.203%	96.030%
59.0	53.297	5.010	2334.014	.194%	96.237%
60.0	49.985	4.747	2338.762	.183%	96.432%
61.0	46.955	4.503	2343.265	.174%	96.618%
62.0	44.466	4.305	2347.57	.166%	96.796%
63.0	42.265	4.130	2351.7	.160%	96.966%
64.0	40.064	3.949	2355.649	.153%	97.129%
65.0	38.159	3.792	2359.441	.147%	97.285%
66.0	36.619	3.668	2363.11	.142%	97.436%
67.0	35.205	3.554	2366.664	.137%	97.583%
68.0	34.073	3.464	2370.128	.134%	97.726%
69.0	33.082	3.387	2373.515	.131%	97.865%
70.0	32.140	3.312	2376.827	.128%	98.002%
71.0	31.205	3.236	2380.062	.125%	98.135%
72.0	30.277	3.158	2383.22	.122%	98.266%
73.0	29.355	3.078	2386.298	.119%	98.393%
74.0	28.491	3.003	2389.302	.116%	98.516%
75.0	27.612	2.925	2392.226	.113%	98.637%

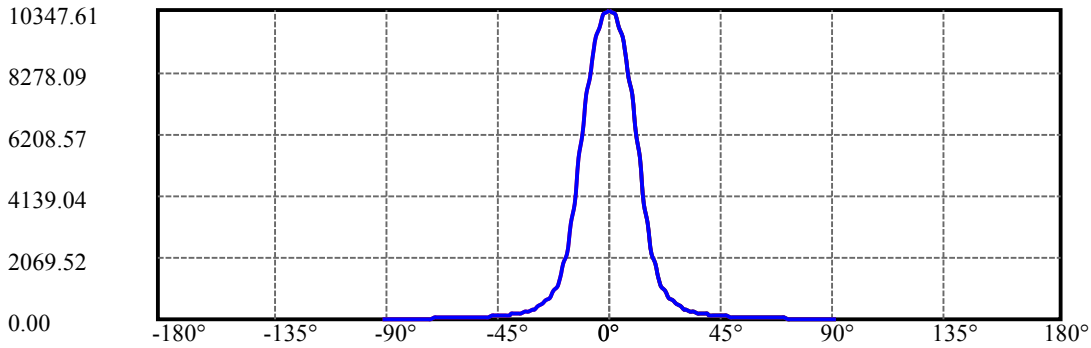
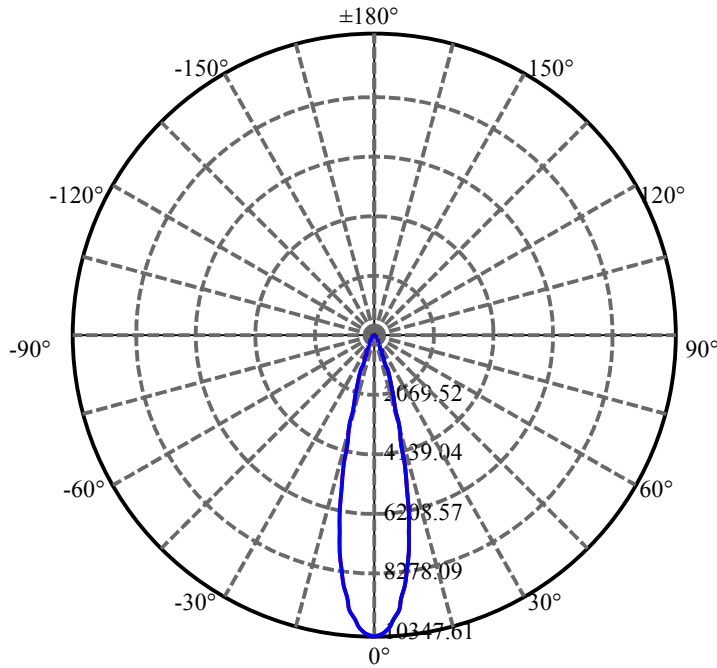
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	26.719	2.843	2395.069	.110%	98.754%
77.0	25.931	2.771	2397.84	.107%	98.868%
78.0	25.144	2.697	2400.537	.104%	98.980%
79.0	24.328	2.619	2403.156	.101%	99.088%
80.0	23.484	2.536	2405.692	.098%	99.192%
81.0	22.613	2.449	2408.141	.095%	99.293%
82.0	21.698	2.356	2410.498	.091%	99.390%
83.0	20.820	2.266	2412.764	.088%	99.484%
84.0	19.976	2.179	2414.942	.084%	99.574%
85.0	19.111	2.088	2417.03	.081%	99.660%
86.0	18.127	1.983	2419.013	.077%	99.741%
87.0	17.086	1.871	2420.884	.072%	99.819%
88.0	16.404	1.798	2422.682	.069%	99.893%
89.0	15.905	1.744	2424.426	.067%	99.965%
90.0	15.645	0.858	2425.284	.033%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	2055.95	79.47%	84.77%
0-40	2193.19	84.78%	90.43%
0-60	2338.76	90.40%	96.43%
0-90	2424.43	93.72%	99.96%
0-120	2424.43	93.72%	99.96%
0-180	2425.28	93.75%	100.00%
60-90	90.41	3.49%	3.73%
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%
0-24.96	1940.23	75.00%	80.00%

ZONAL LUMEN SUMMARY

0-10	886.36
10-20	874.49
20-30	295.10
30-40	137.24
40-50	87.87
50-60	57.70
60-70	38.07
70-80	28.87
80-90	18.73
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: —————

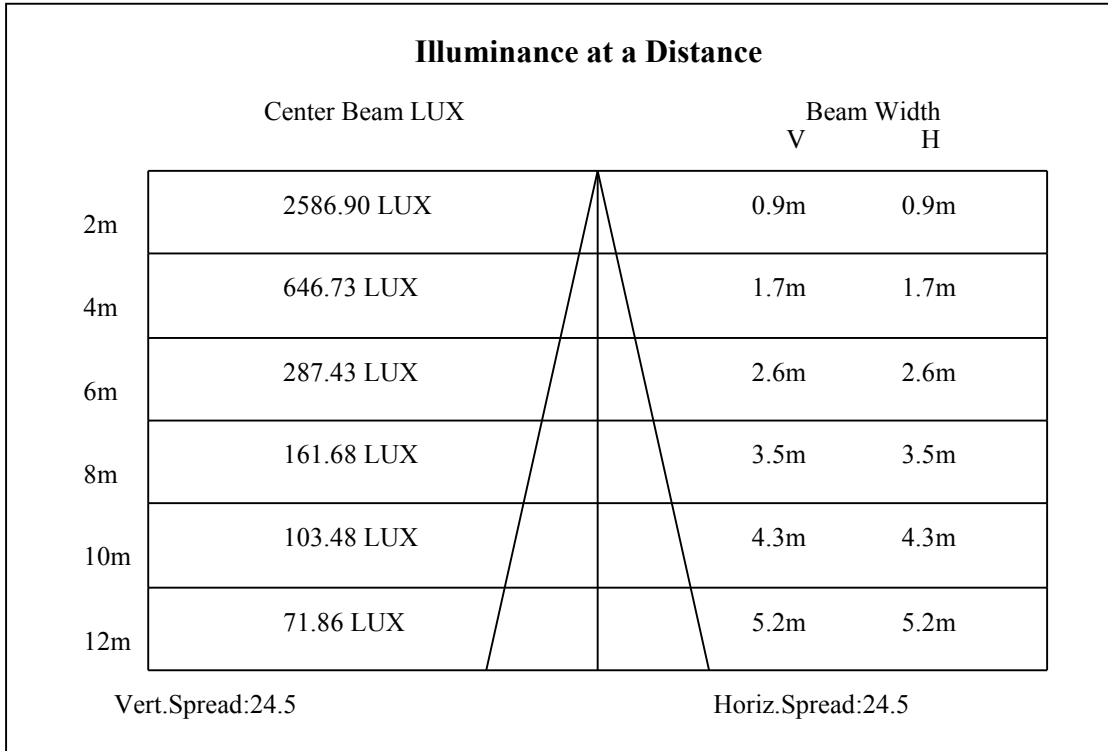
C90/C270: —————

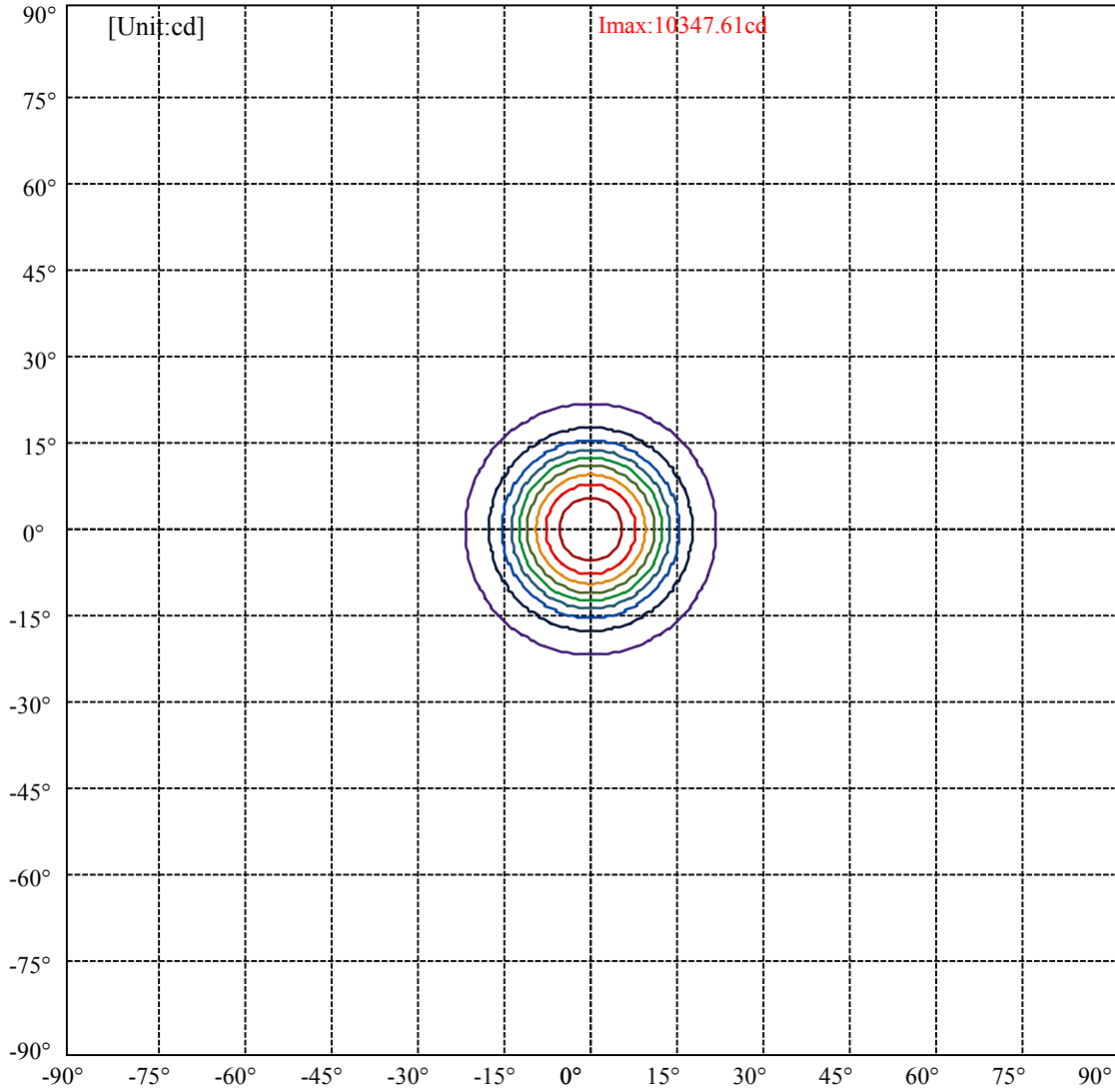
Field angle(10%Imax):C0/180Left:21.5 Right:21.5

:C90/270Left:21.5 Right:21.5

Beam Angle(50%Imax):C0/180Left:12.3 Right:12.3

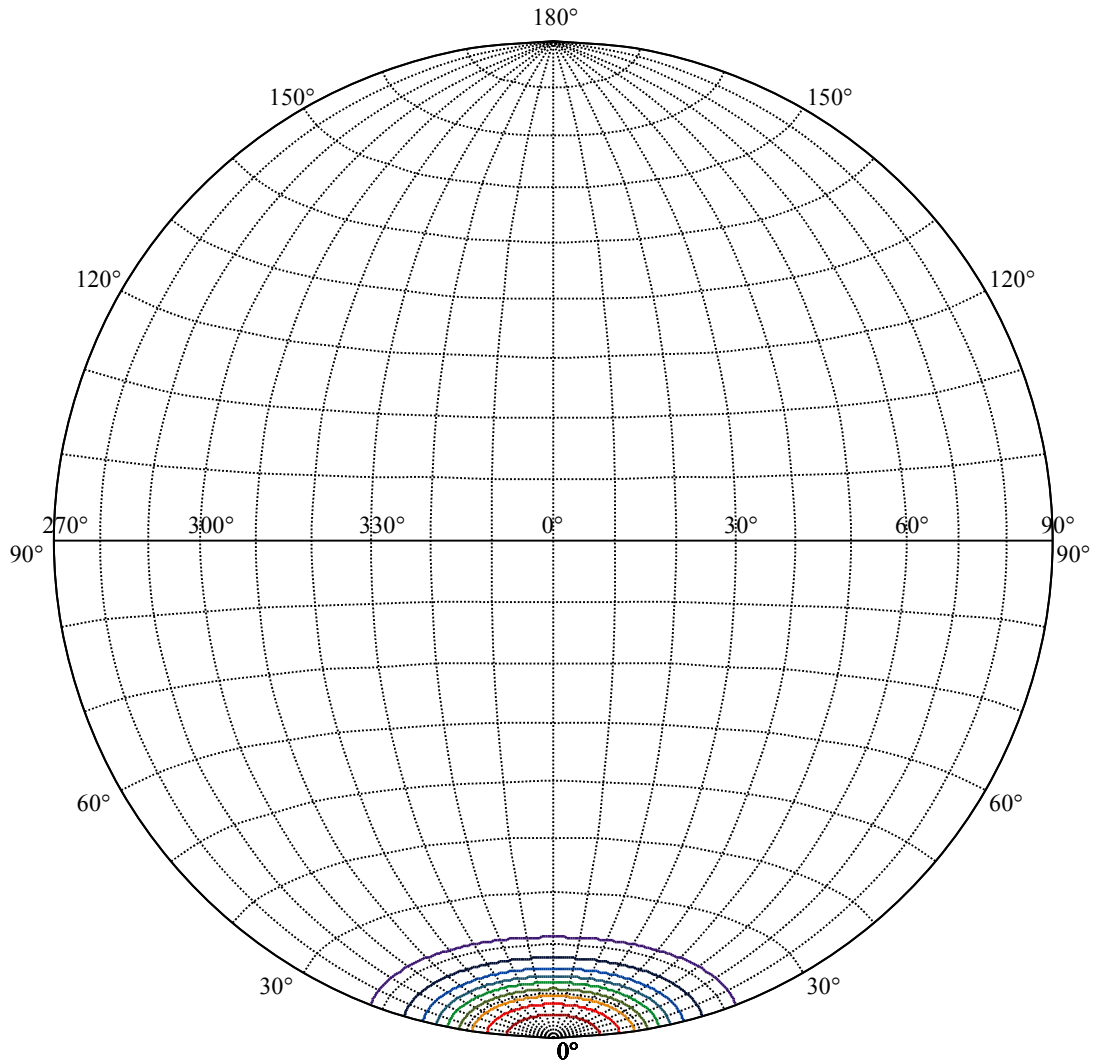
:C90/270Left:12.3 Right:12.3





(10%Imax) 1034.76	—
(20%Imax) 2069.52	—
(30%Imax) 3104.28	—
(40%Imax) 4139.04	—
(50%Imax) 5173.8	—
(60%Imax) 6208.57	—
(70%Imax) 7243.33	—
(80%Imax) 8278.09	—
(90%Imax) 9312.85	—





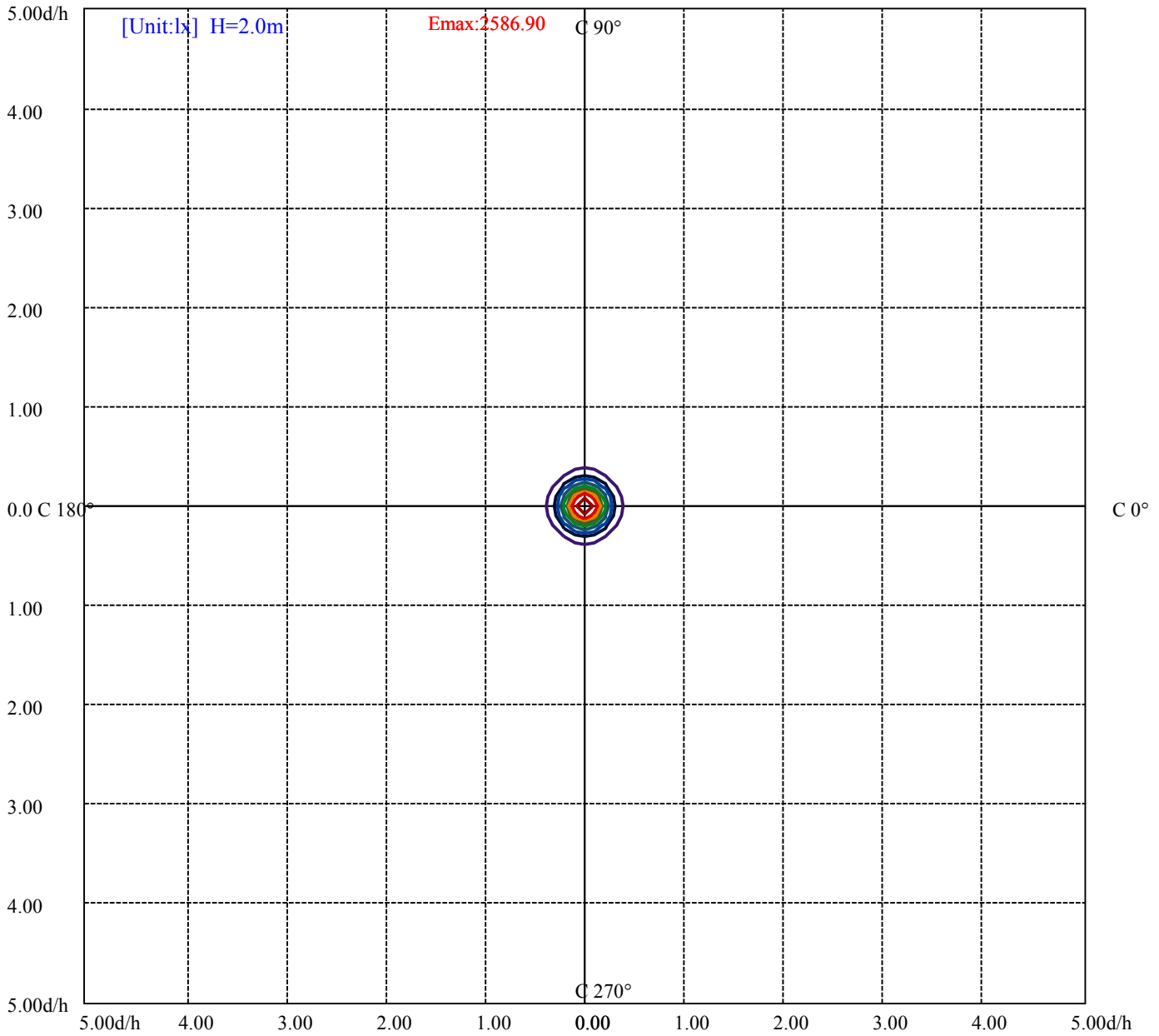
House

[Unit:cd]

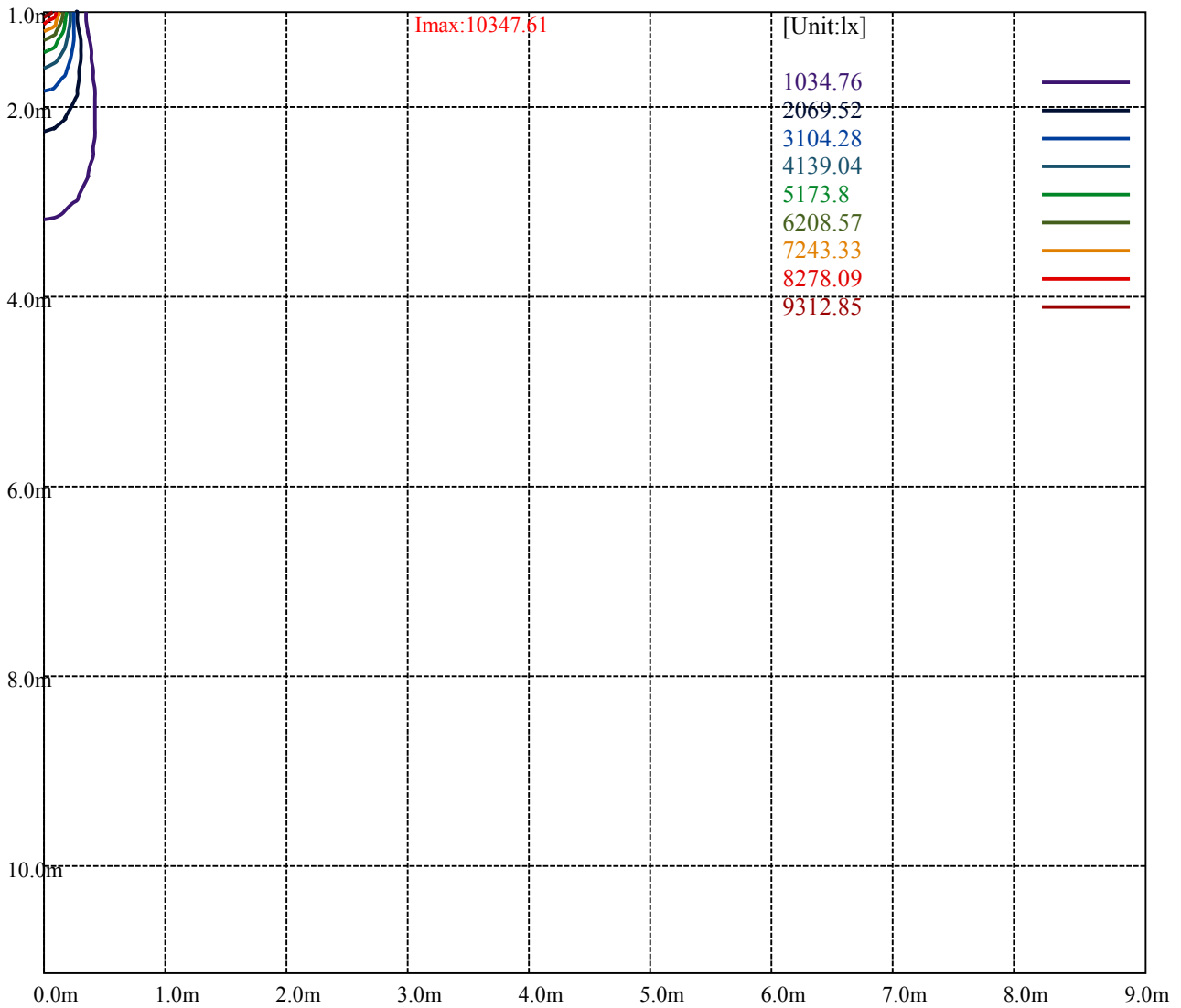
Road

I<sub>max</sub>:10347.61

(10%I <sub>max</sub> ) 1034.76	—
(20%I <sub>max</sub> ) 2069.52	—
(30%I <sub>max</sub> ) 3104.28	—
(40%I <sub>max</sub> ) 4139.04	—
(50%I <sub>max</sub> ) 5173.8	—
(60%I <sub>max</sub> ) 6208.57	—
(70%I <sub>max</sub> ) 7243.33	—
(80%I <sub>max</sub> ) 8278.09	—
(90%I <sub>max</sub> ) 9312.85	—



(10%Emax) 258.69	—
(20%Emax) 517.38	—
(30%Emax) 776.07	—
(40%Emax) 1034.76	—
(50%Emax) 1293.45	—
(60%Emax) 1552.14	—
(70%Emax) 1810.83	—
(80%Emax) 2069.52	—
(90%Emax) 2328.21	—



Luminance Table

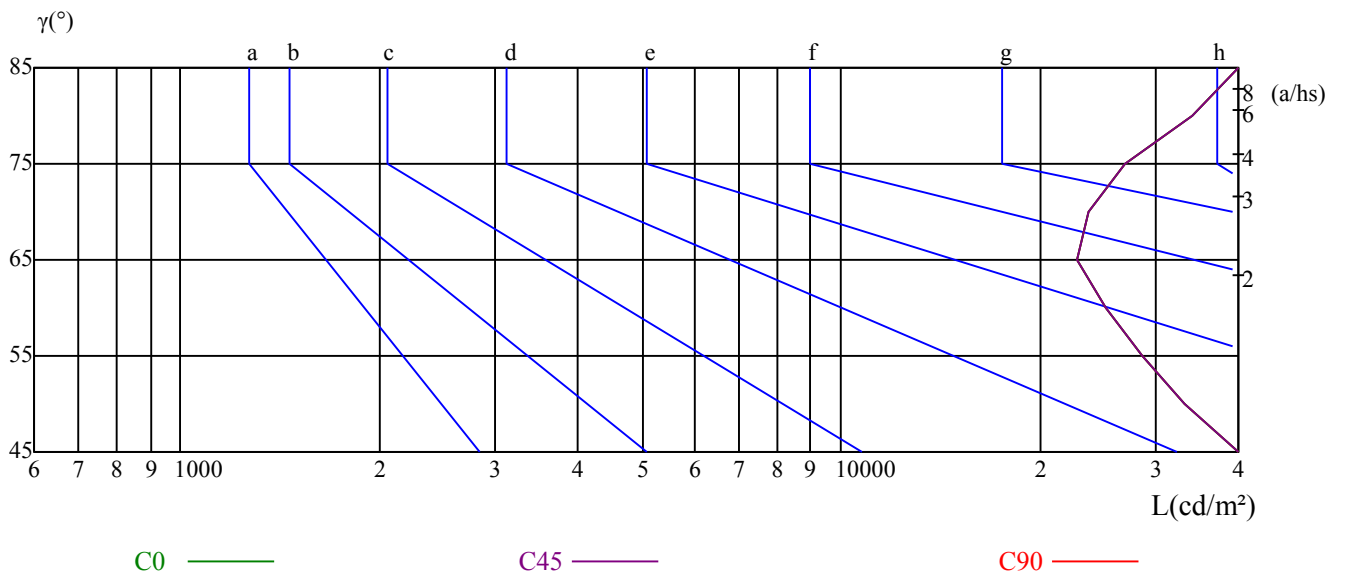
$\gamma$	45	50	55	60	65	70	75	80	85
C0	41388	33056	28687	25188	22749	23676	26879	34074	55247
C45	41388	33056	28687	25188	22749	23676	26879	34074	55247
C90	41388	33056	28687	25188	22749	23676	26879	34074	55247

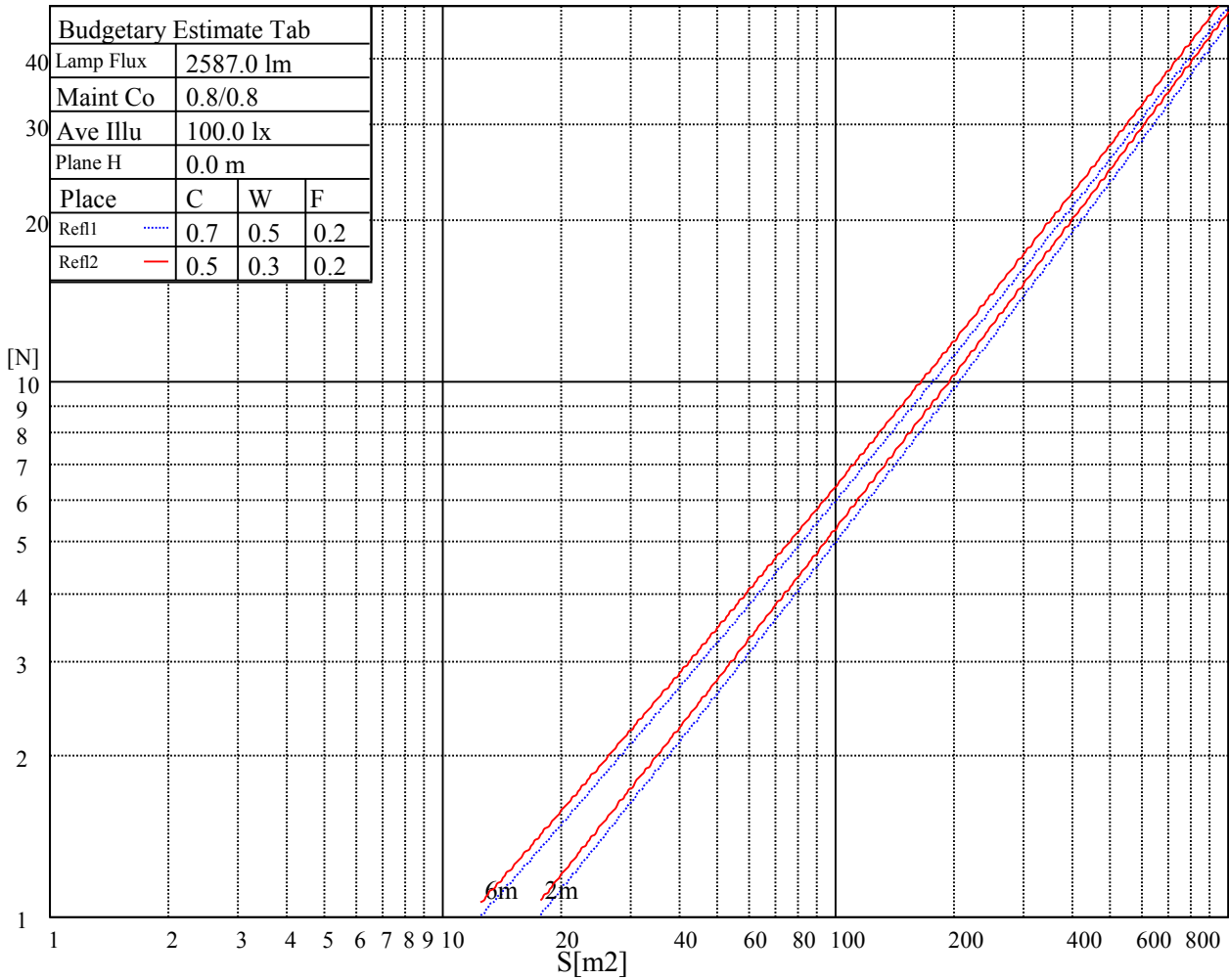
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
22749	22749	22749	26879	26879	26879	55247	55247	55247

Glare Table

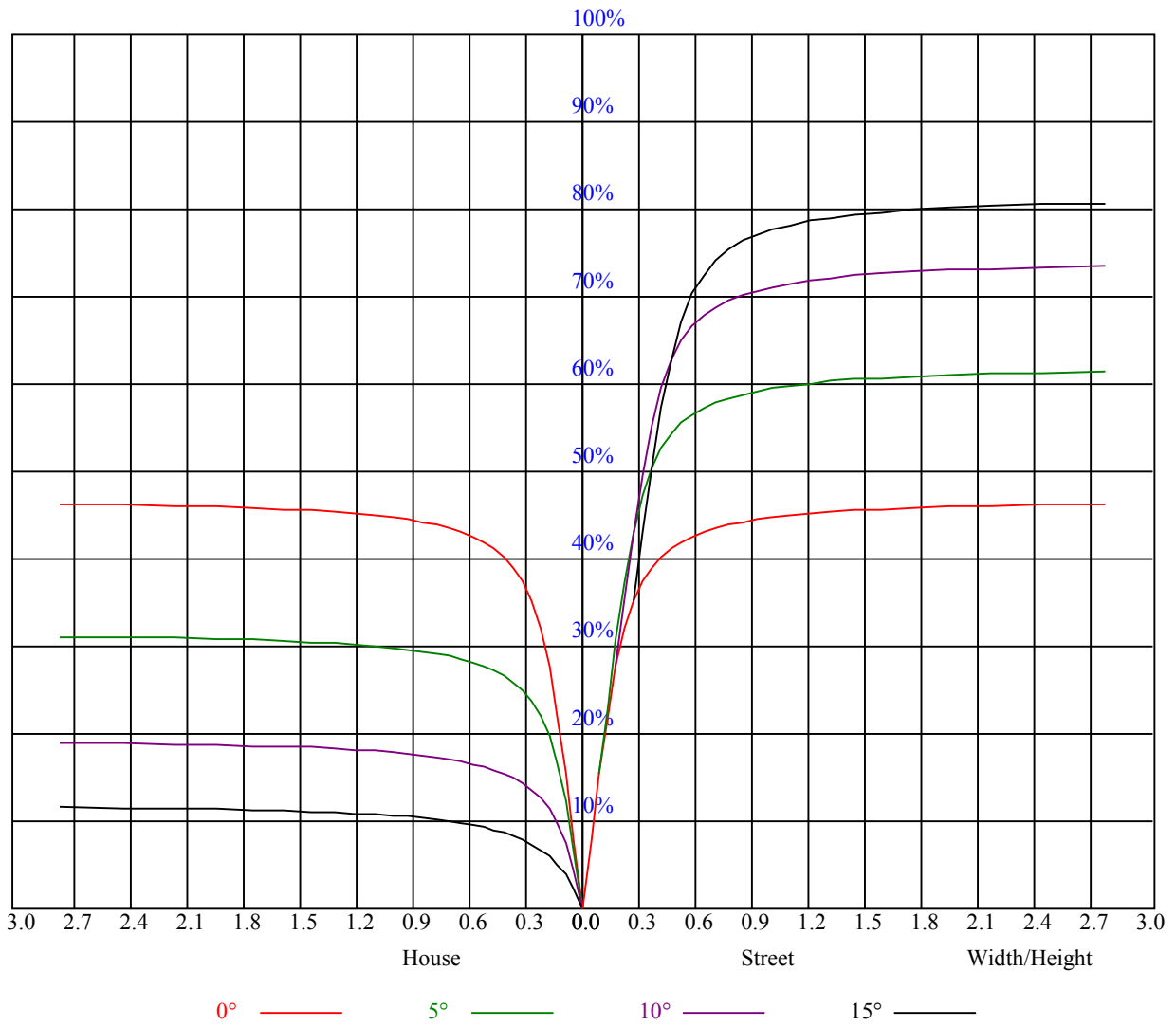
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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	1.12	1.12	1.12	1.09	1.09	1.09	1.04	1.04	1.04	1.00	1.00	1.00	0.96	0.96	0.96	0.94
1	1.05	1.02	1.00	1.03	1.01	0.99	0.99	0.97	0.96	0.95	0.94	0.93	0.92	0.91	0.90	0.89
2	0.99	0.95	0.93	0.97	0.94	0.92	0.94	0.92	0.90	0.91	0.89	0.88	0.89	0.87	0.86	0.84
3	0.94	0.90	0.87	0.92	0.89	0.86	0.90	0.87	0.85	0.88	0.85	0.83	0.86	0.84	0.82	0.81
4	0.89	0.85	0.82	0.88	0.85	0.81	0.87	0.83	0.81	0.85	0.82	0.80	0.83	0.81	0.79	0.78
5	0.86	0.81	0.78	0.85	0.81	0.78	0.83	0.80	0.77	0.82	0.79	0.76	0.81	0.78	0.76	0.75
6	0.83	0.78	0.75	0.82	0.78	0.75	0.81	0.77	0.74	0.79	0.76	0.74	0.78	0.75	0.73	0.72
7	0.80	0.75	0.72	0.79	0.75	0.72	0.78	0.74	0.72	0.77	0.74	0.71	0.76	0.73	0.71	0.70
8	0.77	0.73	0.70	0.77	0.72	0.70	0.76	0.72	0.69	0.75	0.71	0.69	0.74	0.71	0.69	0.68
9	0.75	0.70	0.68	0.74	0.70	0.67	0.73	0.70	0.67	0.73	0.69	0.67	0.72	0.69	0.67	0.66
10	0.73	0.68	0.66	0.72	0.68	0.66	0.72	0.68	0.65	0.71	0.68	0.65	0.70	0.67	0.65	0.64



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	10375.88	10350.56	10225.13	10058.63	9827.44	9502.88	9124.88	8717.06	8191.13
45.0	10293.75	10311.75	10251.00	10122.75	9946.69	9677.25	9337.50	8957.81	8512.88
90.0	10349.44	10294.31	10181.81	9984.38	9710.44	9423.00	9066.38	8514.56	8007.75
135.0	10371.38	10352.25	10245.38	10062.56	9836.44	9518.06	9136.69	8718.75	8241.19
180.0	10375.88	10331.44	10185.75	10004.06	9757.69	9426.94	9027.56	8585.44	8015.63
225.0	10293.75	10197.00	10060.88	9834.75	9522.56	9179.44	8789.63	8196.75	7656.75
270.0	10349.44	10325.81	10227.38	10049.63	9829.69	9514.69	9142.88	8741.81	8280.00
315.0	10371.38	10305.56	10183.50	10001.25	9743.06	9444.38	9097.31	8567.44	8073.00
360.0	10375.88	10350.56	10225.13	10058.63	9827.44	9502.88	9124.88	8717.06	8191.13
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	7589.81	6989.63	6251.63	5547.38	4733.44	3951.56	3328.31	2796.75	2262.38
45.0	7879.50	7316.44	6687.56	5925.38	5130.56	4425.75	3679.31	3047.63	2566.13
90.0	7448.06	6666.19	5991.75	5295.94	4510.13	3769.31	3187.13	2632.50	2225.25
135.0	7576.88	6983.44	6329.25	5537.81	4727.25	4034.81	3329.44	2754.56	2328.19
180.0	7457.63	6761.25	5995.69	5268.94	4446.56	3671.44	3074.63	2578.50	2081.25
225.0	7059.38	6233.63	5509.13	4757.63	3950.44	3240.56	2709.56	2225.25	1848.38
270.0	7628.06	7030.13	6364.13	5538.94	4678.88	3942.56	3208.50	2610.56	2195.44
315.0	7521.19	6656.63	6042.94	5308.88	4478.63	3713.06	3119.06	2563.31	2170.13
360.0	7589.81	6989.63	6251.63	5547.38	4733.44	3951.56	3328.31	2796.75	2262.38
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1927.13	1649.25	1359.00	1170.00	1015.88	874.13	757.69	670.50	591.75
45.0	2109.38	1776.94	1473.75	1234.13	1067.06	932.63	806.63	722.81	649.69
90.0	1839.94	1493.44	1227.38	1089.23	930.26	819.96	729.51	634.89	569.48
135.0	1931.63	1636.31	1367.44	1146.94	984.94	850.50	714.94	626.63	550.13
180.0	1760.63	1491.75	1108.18	1049.51	915.24	780.19	692.61	614.98	529.09
225.0	1571.63	1314.00	1104.81	963.73	835.48	743.57	665.27	570.60	517.78
270.0	1829.25	1560.38	1308.38	1107.00	965.25	849.94	731.81	649.13	575.44
315.0	1812.38	1519.31	1236.38	1098.62	952.54	817.65	717.86	622.86	542.31
360.0	1927.13	1649.25	1359.00	1170.00	1015.88	874.13	757.69	670.50	591.75
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	515.81	448.88	392.06	348.75	308.25	285.75	250.48	230.91	212.63
45.0	576.56	515.25	463.50	412.88	366.19	333.56	304.31	286.31	249.41
90.0	510.75	458.49	398.53	356.06	320.57	284.57	260.10	240.69	222.69
135.0	469.13	416.25	370.13	324.00	284.63	266.23	231.86	214.71	198.45
180.0	476.89	419.46	363.15	329.68	296.83	261.39	243.23	225.11	204.98
225.0	462.77	414.90	365.91	333.68	306.28	277.82	258.98	239.34	224.38
270.0	497.81	443.25	394.88	349.88	312.19	284.63	269.38	236.25	220.56
315.0	479.19	421.54	359.89	318.49	284.29	250.88	229.89	213.30	197.49
360.0	515.81	448.88	392.06	348.75	308.25	285.75	250.48	230.91	212.63
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	197.61	185.68	175.22	162.96	153.96	145.01	134.89	127.91	121.22
45.0	233.10	216.34	200.98	187.59	174.38	163.18	153.28	143.55	136.80
90.0	206.89	194.57	181.29	169.14	159.30	148.56	140.68	133.03	125.44
135.0	187.65	175.61	164.59	154.63	146.53	138.88	129.66	122.85	116.44
180.0	193.67	182.25	170.21	159.30	150.53	140.96	133.14	125.21	118.01
225.0	210.21	197.33	183.38	171.11	161.44	150.69	142.59	134.72	126.62
270.0	208.52	193.39	180.84	171.79	159.64	150.64	142.65	133.71	127.29
315.0	184.22	174.04	163.13	153.90	144.39	135.73	128.59	121.33	114.41
360.0	197.61	185.68	175.22	162.96	153.96	145.01	134.89	127.91	121.22



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	114.02	107.10	101.03	94.61	89.27	83.76	78.86	75.04	71.27
45.0	128.93	118.29	108.73	102.09	94.78	89.78	85.33	80.33	75.71
90.0	117.17	110.42	101.03	95.29	90.28	84.32	79.99	76.11	72.11
135.0	109.80	103.33	98.04	92.81	86.57	82.13	78.13	73.86	69.75
180.0	111.83	105.13	98.83	93.54	88.65	82.86	78.64	74.59	70.03
225.0	118.63	111.54	103.28	97.14	91.18	84.54	80.10	76.16	72.28
270.0	120.43	111.66	105.30	99.39	92.19	86.85	82.24	77.63	73.46
315.0	108.45	102.60	95.74	90.62	85.56	80.44	75.77	72.06	68.34
360.0	114.02	107.10	101.03	94.61	89.27	83.76	78.86	75.04	71.27
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	68.01	65.36	63.11	59.51	56.59	54.06	50.74	47.87	45.56
45.0	72.17	68.96	66.04	63.28	59.96	56.81	52.76	49.11	46.24
90.0	68.57	65.81	62.83	59.68	56.42	52.65	49.67	46.52	43.82
135.0	66.54	63.28	60.19	57.60	54.96	52.48	49.73	47.25	45.11
180.0	66.83	63.84	61.14	57.88	55.29	52.71	49.73	47.03	44.78
225.0	68.85	65.93	63.17	59.79	56.53	51.64	48.09	44.83	42.19
270.0	70.31	67.22	64.35	61.48	57.99	55.52	51.08	47.59	44.94
315.0	64.97	62.04	58.95	56.53	53.55	50.51	48.09	45.45	43.09
360.0	68.01	65.36	63.11	59.51	56.59	54.06	50.74	47.87	45.56
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	43.26	41.12	39.43	37.74	36.51	35.27	34.20	33.19	32.12
45.0	43.76	41.06	38.98	37.18	35.44	34.31	33.30	32.34	31.39
90.0	41.68	39.66	37.52	36.00	34.71	33.58	32.51	31.67	30.77
135.0	43.37	40.73	38.93	37.52	35.61	34.48	33.75	32.63	31.73
180.0	42.41	40.22	38.53	36.84	35.55	34.37	33.30	32.40	31.56
225.0	40.16	38.31	36.23	34.88	33.75	32.68	31.67	30.88	29.93
270.0	42.36	40.11	38.31	36.79	35.21	34.14	33.19	32.12	31.16
315.0	41.12	39.32	37.35	36.00	34.88	33.75	32.74	31.89	30.99
360.0	43.26	41.12	39.43	37.74	36.51	35.27	34.20	33.19	32.12
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	31.11	30.15	29.31	28.24	27.39	26.61	25.71	24.81	23.96
45.0	30.54	29.64	28.91	28.07	27.11	26.38	25.65	24.81	24.08
90.0	29.93	29.03	28.13	27.28	26.44	25.71	25.09	24.47	23.57
135.0	30.94	29.81	29.03	28.13	27.11	26.27	25.54	24.53	23.79
180.0	30.43	29.53	28.63	27.56	26.72	25.88	24.92	24.02	23.23
225.0	28.97	28.24	27.34	26.61	25.76	24.92	24.19	23.51	22.50
270.0	30.26	29.31	28.41	27.62	26.72	25.99	25.14	24.30	23.51
315.0	30.04	29.14	28.18	27.39	26.49	25.71	24.92	24.19	23.23
360.0	31.11	30.15	29.31	28.24	27.39	26.61	25.71	24.81	23.96
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	23.06	22.11	21.21	20.25	19.35	18.28	17.27	16.54	16.09
45.0	23.12	22.33	21.54	20.70	19.91	19.07	17.94	17.10	16.48
90.0	22.78	21.77	20.81	20.03	19.07	18.11	17.16	16.54	16.09
135.0	22.84	21.77	20.98	20.08	19.24	18.23	17.10	16.37	15.86
180.0	22.33	21.54	20.59	19.80	19.01	17.94	16.93	16.20	15.75
225.0	21.71	20.93	20.03	19.24	18.34	17.33	16.37	15.86	15.41
270.0	22.61	21.54	20.81	19.86	19.01	18.11	16.93	16.31	15.69
315.0	22.44	21.60	20.59	19.86	18.96	17.94	16.99	16.31	15.86
360.0	23.06	22.11	21.21	20.25	19.35	18.28	17.27	16.54	16.09

Intensity data(cd)

C/ $\gamma$ (°)	90.0
0.0	15.92
45.0	16.14
90.0	16.09
135.0	15.47
180.0	15.41
225.0	15.13
270.0	15.36
315.0	15.64
360.0	15.92