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## Nata

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LumCAT: 1436-N  
Luminaire: 92.70.064.00+92.70.147.00  
Report No: NATA0100  
Test No: GC20180712307  
LampCAT: CITIZEN CLU028  
Lamp flux(lm): 1840.0  
Number of Lamps: 1  
Length(mm): 46  
Phm Type: C

Voltage(V): 36.4000  
Current(A): 0.4000  
Power (W): 14.5600  
PF: 0.0000  
Ballast type: DC  
Width(mm): 46  
Height(mm): 0

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## Photometric Results

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Lumens(lm): 1504.50  
Efficiency(%): 81.77%  
Lumens(lm)/Power(W): 103.33  
Central intensity(cd): 5193.333  
Maximum intensity(cd): 5193.333  
Angle of maximum intensity: C=0.0  $\gamma$ =0.0  
Beam Angle(50%Imax): [C0/180]Total=23.9  
                                  [C90/270]Total=23.9  
Field angle(10%Imax): [C0/180]Total=51.8  
                                  [C90/270]Total=51.8  
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(%): 82.02%  
Up flux rate of LUM(%): - -  
Down flux rate of LUM(%): 100.00%  
CIE Type : Direct lighting  
Output flux ratio in  $\pi$  solid angle : 96.509%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	5193.333	4.970	4.97	.270%	.330%
2.0	5094.369	38.992	43.962	2.119%	2.922%
4.0	4806.630	73.534	117.496	3.996%	7.810%
6.0	4343.950	99.583	217.079	5.412%	14.429%
8.0	3761.109	114.799	331.878	6.239%	22.059%
10.0	3161.338	120.394	452.272	6.543%	30.061%
12.0	2582.352	117.750	570.022	6.399%	37.888%
14.0	2023.529	107.362	677.383	5.835%	45.024%
16.0	1584.730	95.798	773.182	5.206%	51.391%
18.0	1202.246	81.478	854.66	4.428%	56.807%
20.0	930.350	69.785	924.445	3.793%	61.445%
22.0	737.776	60.613	985.058	3.294%	65.474%
24.0	606.735	54.122	1039.181	2.941%	69.072%
26.0	513.752	49.392	1088.573	2.684%	72.355%
28.0	437.272	45.022	1133.595	2.447%	75.347%
30.0	373.558	40.963	1174.558	2.226%	78.070%
32.0	318.563	37.023	1211.581	2.012%	80.531%
34.0	275.729	33.815	1245.396	1.838%	82.778%
36.0	234.547	30.235	1275.631	1.643%	84.788%
38.0	203.406	27.464	1303.096	1.493%	86.613%
40.0	174.900	24.656	1327.752	1.340%	88.252%
42.0	148.026	21.723	1349.475	1.181%	89.696%
44.0	126.699	19.302	1368.777	1.049%	90.979%
46.0	108.537	17.123	1385.9	.931%	92.117%
48.0	92.963	15.151	1401.051	.823%	93.124%
50.0	79.371	13.335	1414.386	.725%	94.011%
52.0	67.995	11.751	1426.136	.639%	94.792%
54.0	56.096	9.953	1436.089	.541%	95.453%
56.0	45.683	8.306	1444.395	.451%	96.005%
58.0	36.434	6.776	1451.172	.368%	96.456%
60.0	28.327	5.380	1456.552	.292%	96.813%
62.0	22.518	4.360	1460.912	.237%	97.103%
64.0	18.898	3.725	1464.637	.202%	97.351%
66.0	17.026	3.411	1468.049	.185%	97.577%
68.0	16.310	3.317	1471.365	.180%	97.798%
70.0	15.980	3.293	1474.659	.179%	98.017%
72.0	15.877	3.312	1477.97	.180%	98.237%
74.0	15.884	3.349	1481.319	.182%	98.459%

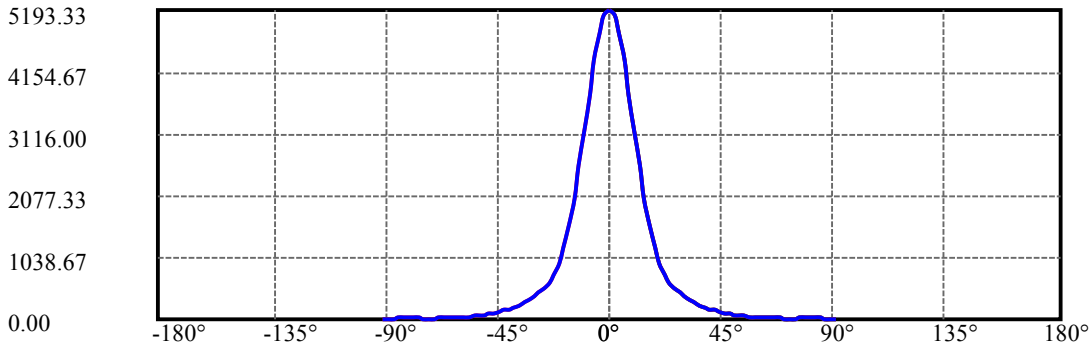
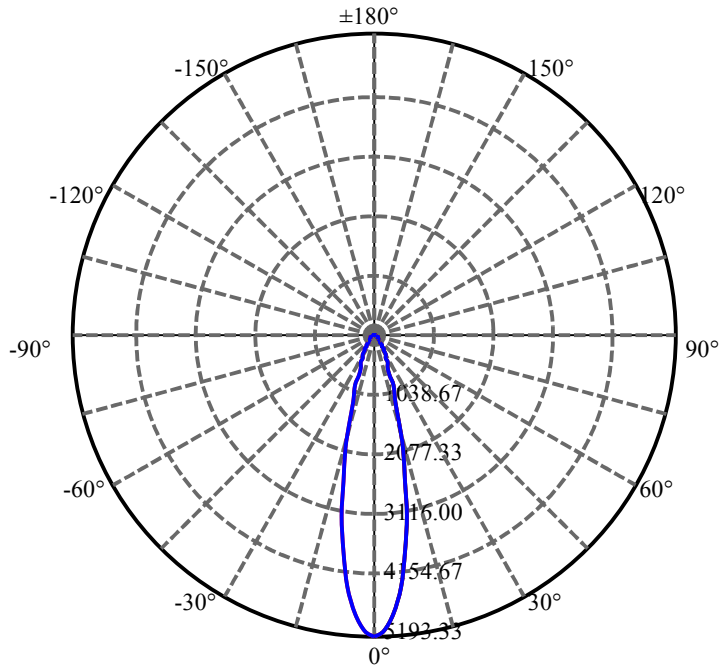
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	16.180	3.443	1484.762	.187%	98.688%
78.0	16.675	3.577	1488.339	.194%	98.926%
80.0	17.267	3.729	1492.068	.203%	99.174%
82.0	17.591	3.820	1495.889	.208%	99.428%
84.0	16.324	3.561	1499.449	.194%	99.664%
86.0	13.083	2.862	1502.311	.156%	99.855%
88.0	6.765	1.483	1503.794	.081%	99.953%
90.0	6.407	0.703	1504.497	.038%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1174.56	63.83%	78.07%
0-40	1327.75	72.16%	88.25%
0-60	1456.55	79.16%	96.81%
0-90	1503.79	81.73%	99.95%
0-120	1503.79	81.73%	99.95%
0-180	1504.50	81.77%	100.00%
60-90	52.62	2.86%	3.50%
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%
0-31.57	1203.60	65.41%	80.00%

ZONAL LUMEN SUMMARY

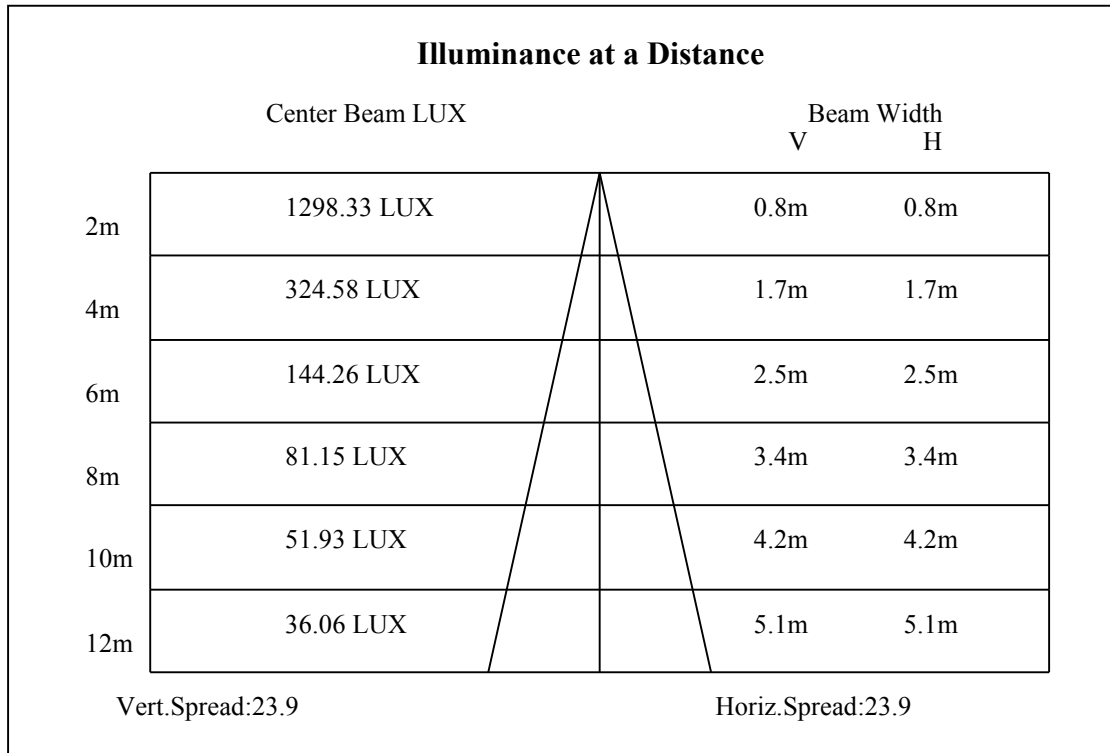
0-10	452.27
10-20	472.17
20-30	250.11
30-40	153.19
40-50	86.63
50-60	42.17
60-70	18.11
70-80	17.41
80-90	11.73
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

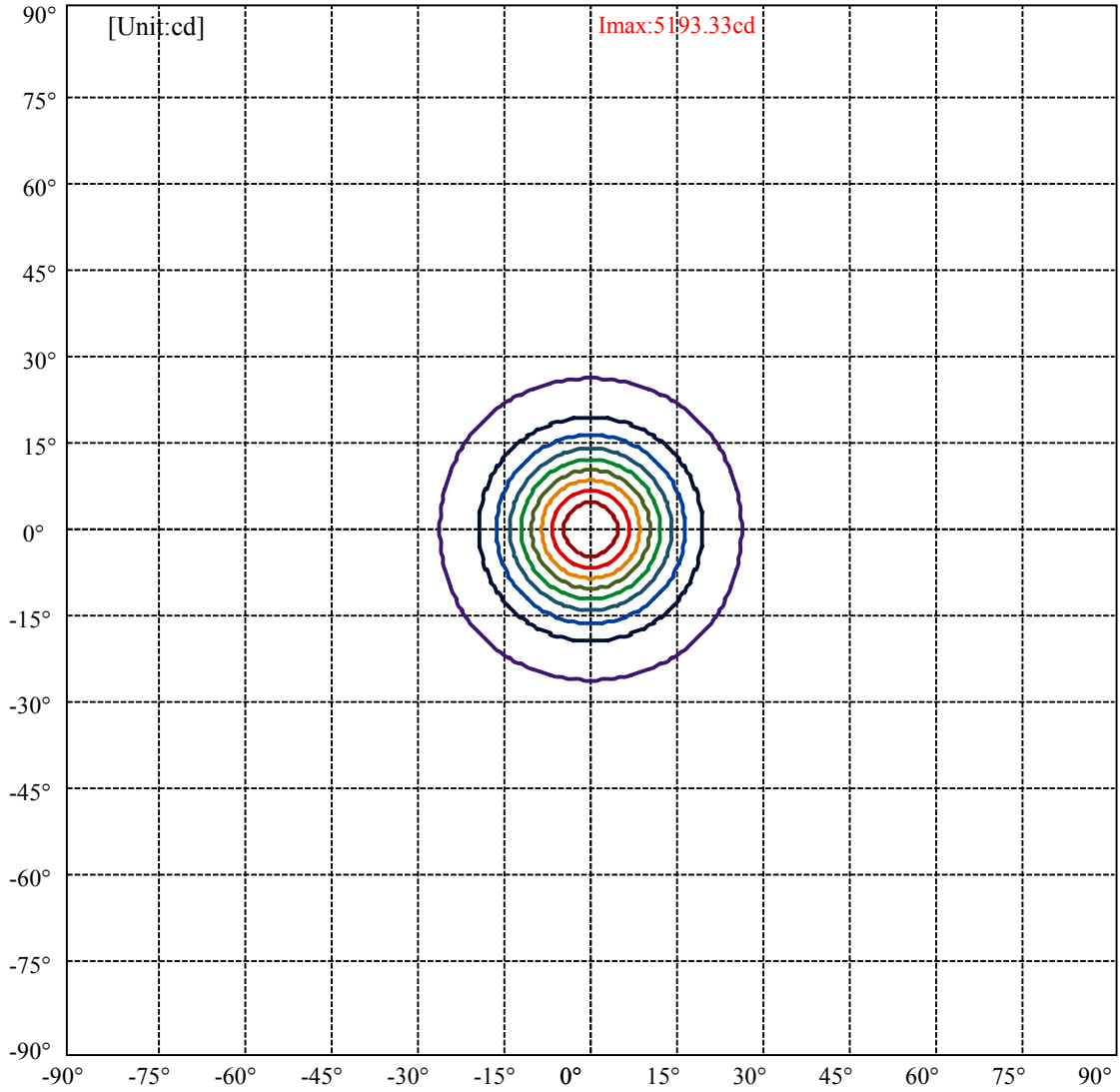


C0(Max): —————  
C0/C180: —————  
C90/C270: —————

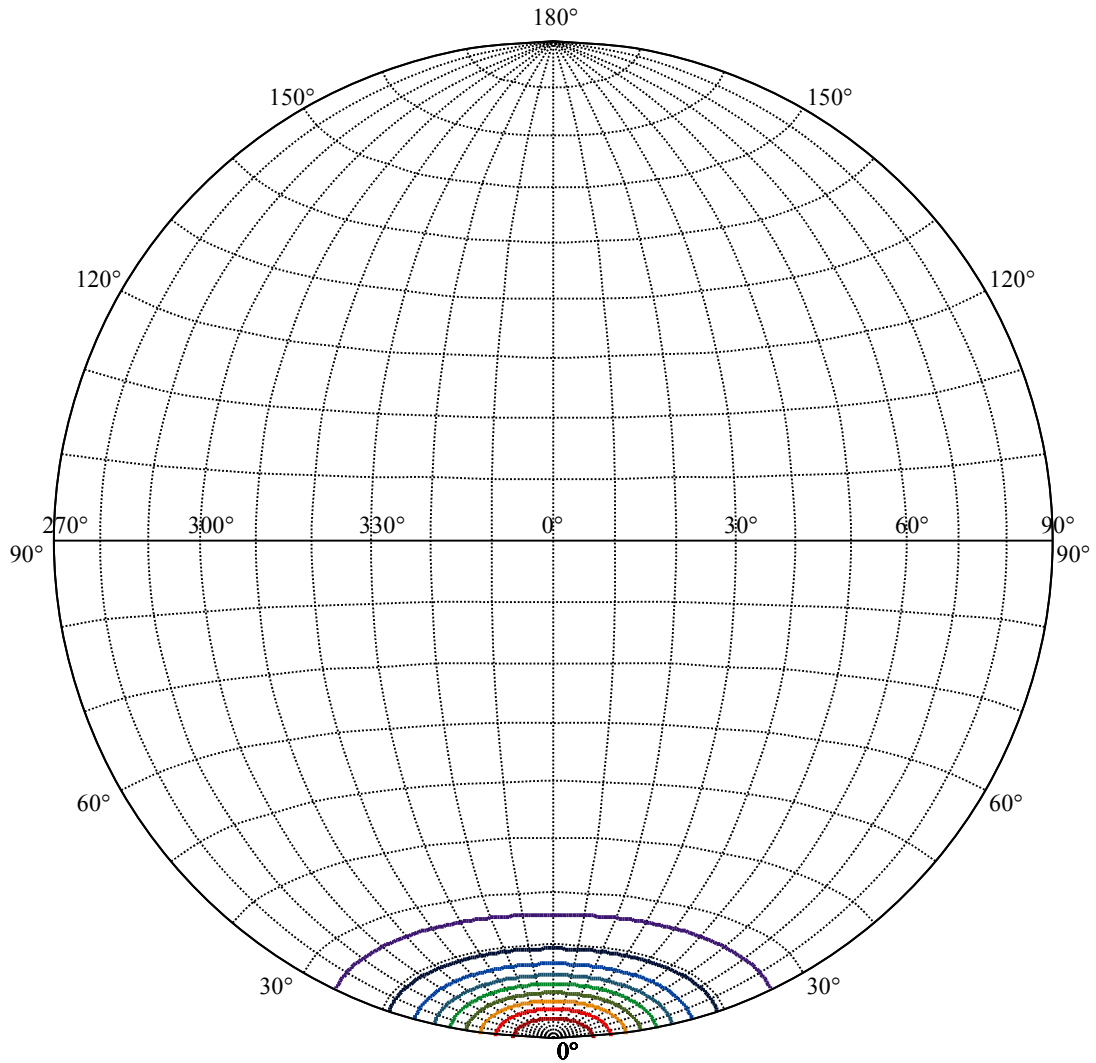
Field angle(10%Imax):C0/180Left:25.9 Right:25.9  
:C90/270Left:25.9 Right:25.9

Beam Angle(50%Imax):C0/180Left:12.0 Right:12.0  
:C90/270Left:12.0 Right:12.0





(10%Imax) 519.333	—
(20%Imax) 1038.67	—
(30%Imax) 1558	—
(40%Imax) 2077.33	—
(50%Imax) 2596.67	—
(60%Imax) 3116	—
(70%Imax) 3635.33	—
(80%Imax) 4154.67	—
(90%Imax) 4674	—



House

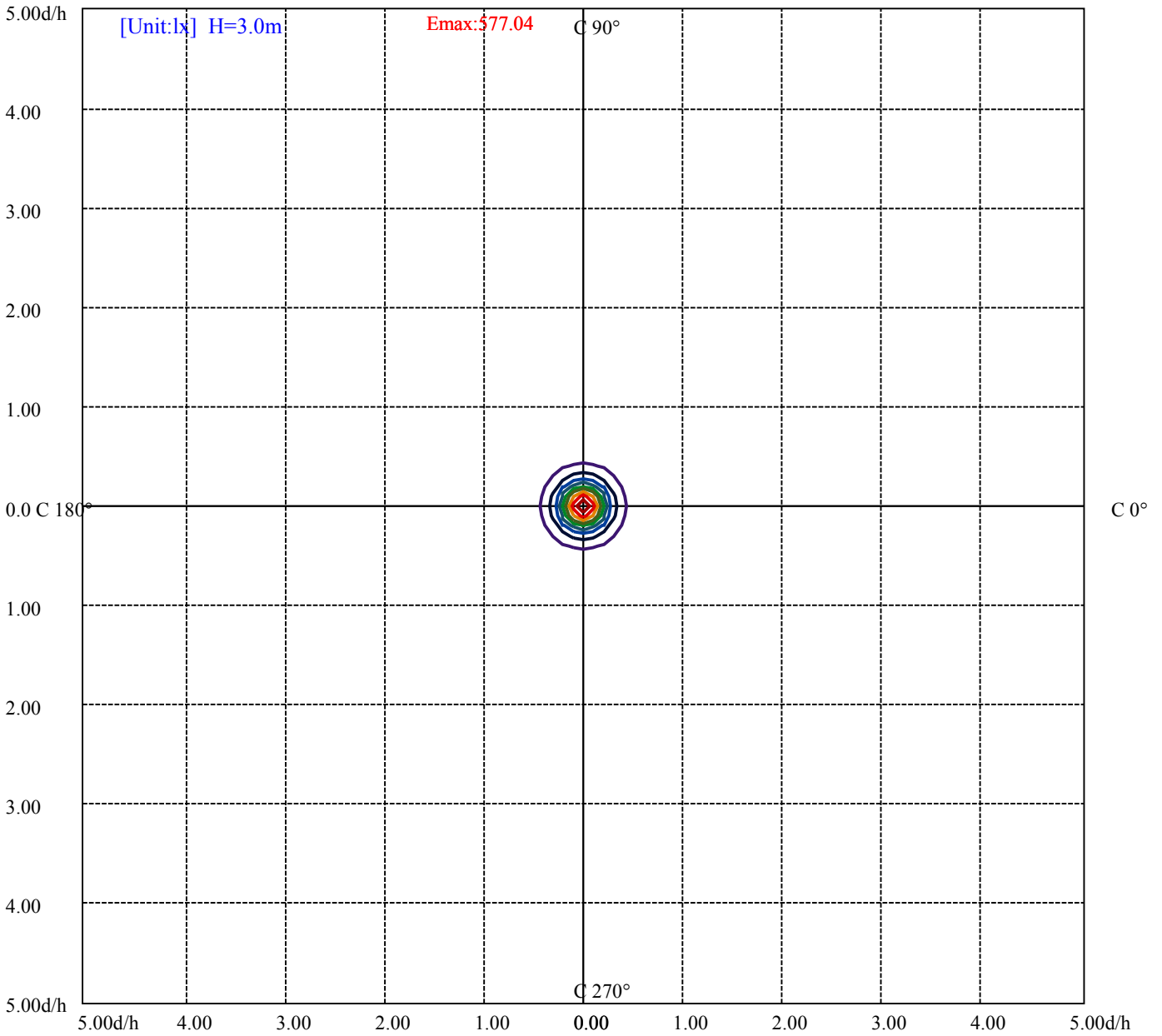
[Unit:cd]

Road

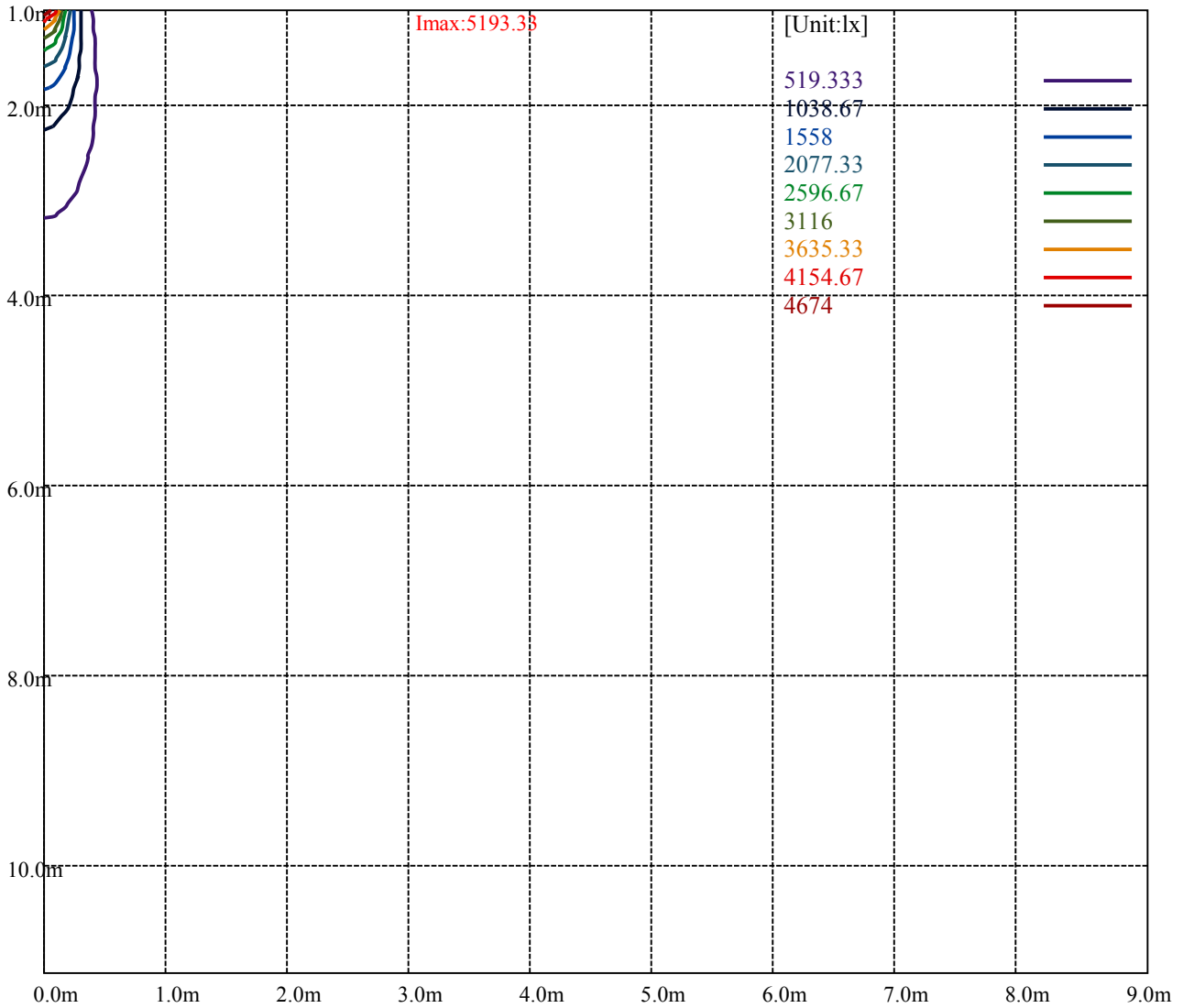
**Imax:5193.33**

(10%Imax) 519.333	—
(20%Imax) 1038.67	—
(30%Imax) 1558	—
(40%Imax) 2077.33	—
(50%Imax) 2596.67	—
(60%Imax) 3116	—
(70%Imax) 3635.33	—
(80%Imax) 4154.67	—
(90%Imax) 4674	—





(10%Emax) 57.70367	—
(20%Emax) 115.4078	—
(30%Emax) 173.1111	—
(40%Emax) 230.8145	—
(50%Emax) 288.5178	—
(60%Emax) 346.2222	—
(70%Emax) 403.9256	—
(80%Emax) 461.6289	—
(90%Emax) 519.3323	—



Luminance Table

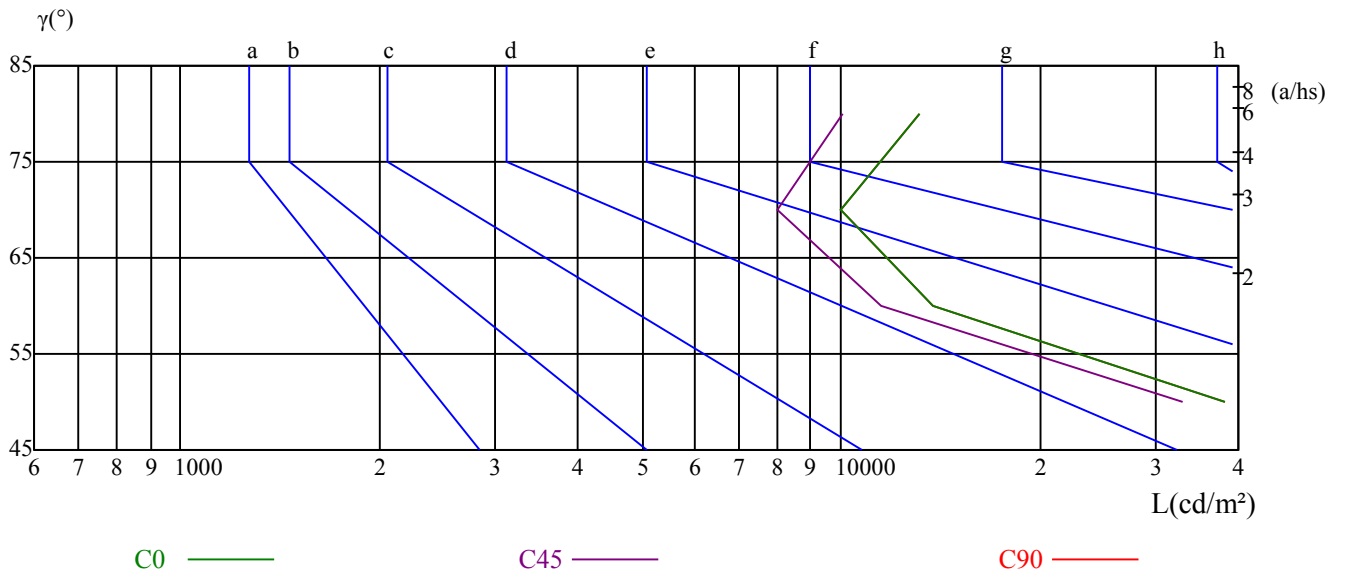
$\gamma$	45	50	55	60	65	70	75	80	85
C0	0	38241	0	13811	0	9996	0	13190	0
C45	0	33000	0	11542	0	8035	0	10072	0
C90	0	38241	0	13811	0	9996	0	13190	0

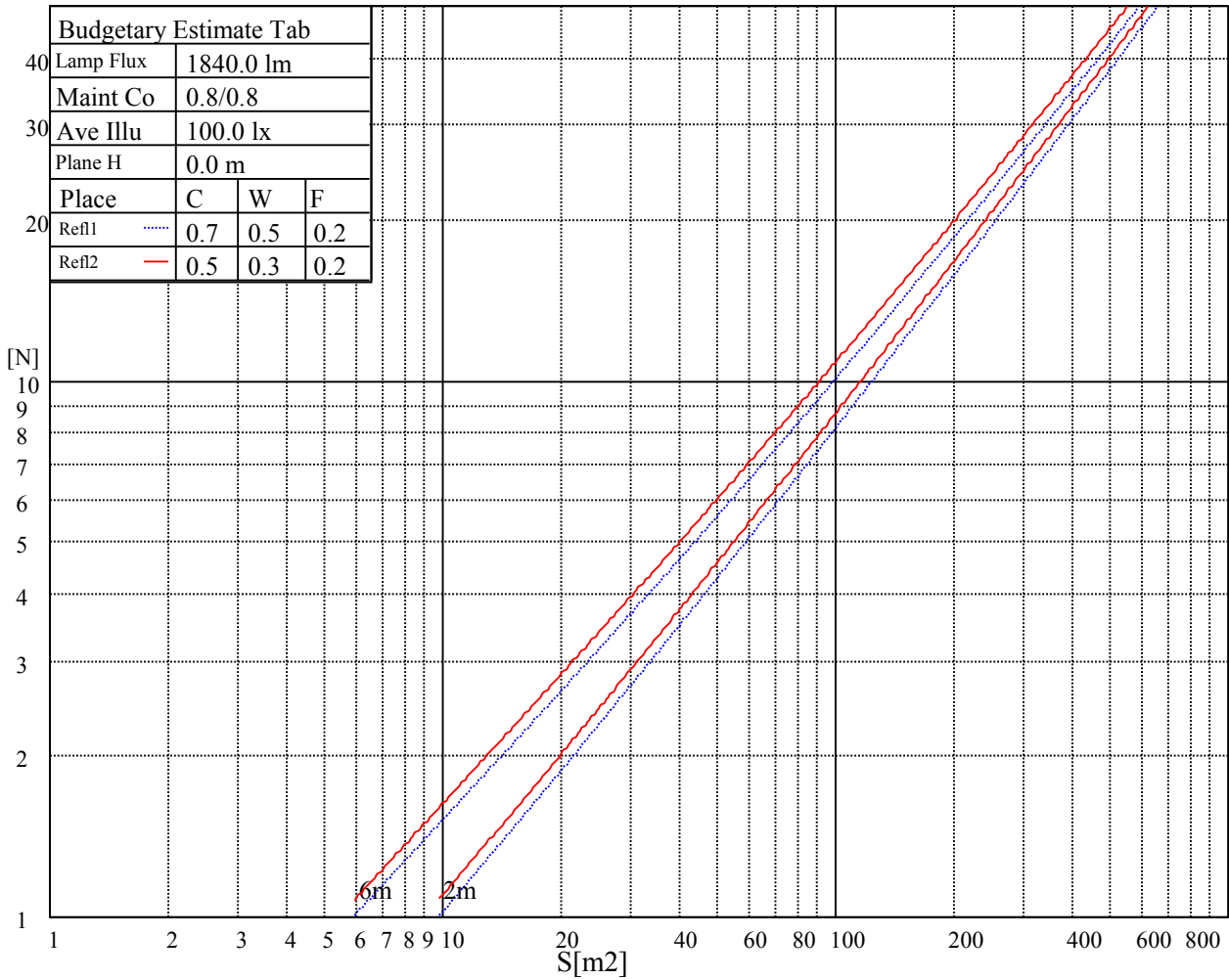
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
248698	251591	249005	169192	170097	169217	82993	82993	83665

Glare Table

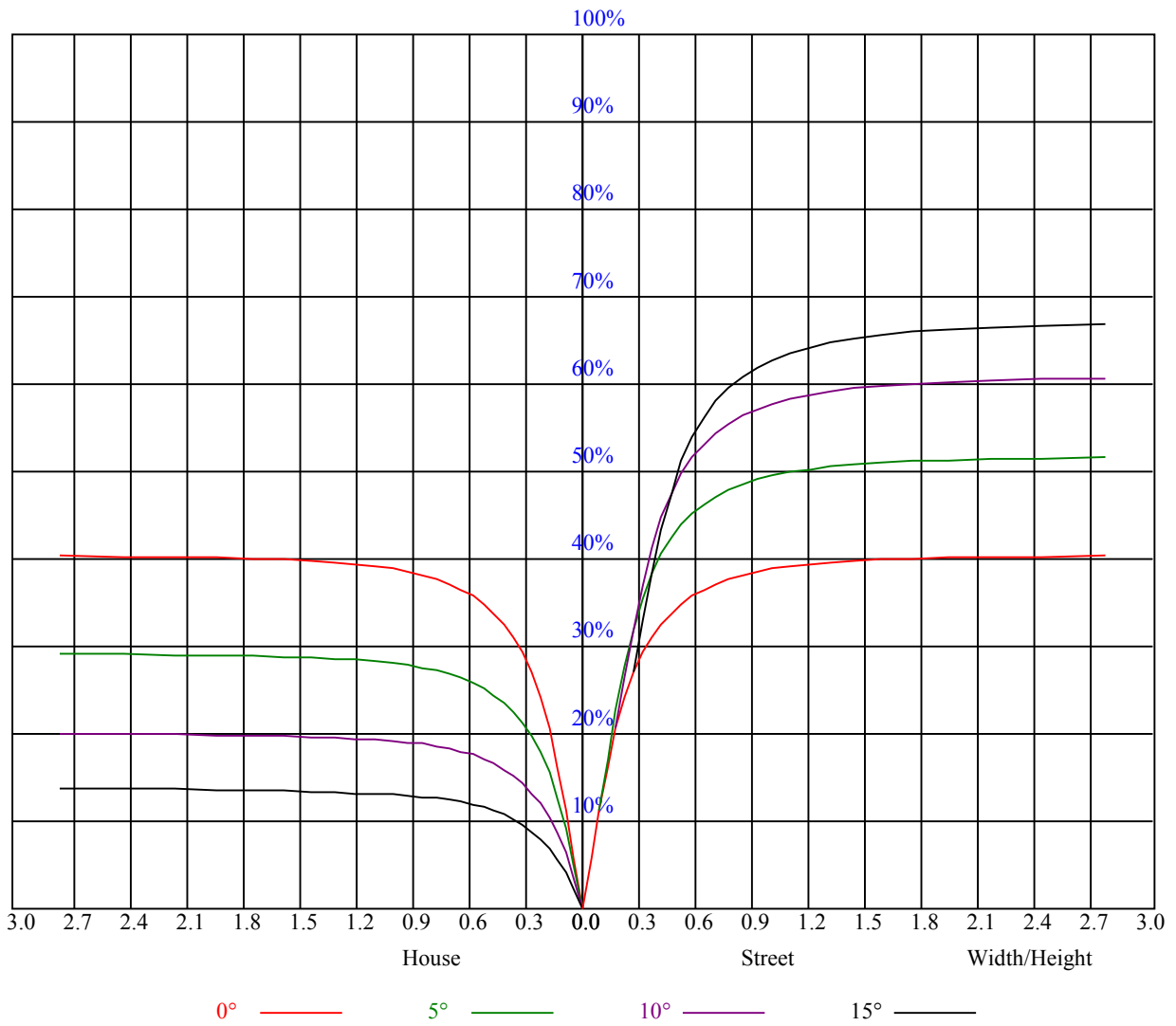
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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	0.98	0.98	0.98	0.95	0.95	0.95	0.91	0.91	0.91	0.87	0.87	0.87	0.84	0.84	0.84	0.82
1	0.91	0.89	0.87	0.89	0.87	0.85	0.86	0.84	0.83	0.83	0.81	0.80	0.80	0.79	0.78	0.76
2	0.85	0.82	0.79	0.84	0.81	0.78	0.81	0.79	0.77	0.79	0.77	0.75	0.76	0.75	0.73	0.72
3	0.80	0.76	0.73	0.79	0.76	0.73	0.77	0.74	0.72	0.75	0.73	0.71	0.73	0.71	0.69	0.68
4	0.76	0.72	0.69	0.75	0.71	0.68	0.73	0.70	0.67	0.72	0.69	0.67	0.70	0.68	0.66	0.65
5	0.72	0.68	0.65	0.72	0.68	0.65	0.70	0.67	0.64	0.69	0.66	0.63	0.68	0.65	0.63	0.62
6	0.69	0.65	0.62	0.68	0.64	0.61	0.67	0.64	0.61	0.66	0.63	0.61	0.65	0.62	0.60	0.59
7	0.66	0.62	0.59	0.66	0.61	0.59	0.65	0.61	0.58	0.64	0.60	0.58	0.63	0.60	0.58	0.57
8	0.63	0.59	0.56	0.63	0.59	0.56	0.62	0.59	0.56	0.61	0.58	0.56	0.61	0.58	0.56	0.55
9	0.61	0.57	0.54	0.61	0.57	0.54	0.60	0.56	0.54	0.59	0.56	0.54	0.59	0.56	0.54	0.53
10	0.59	0.55	0.52	0.59	0.55	0.52	0.58	0.54	0.52	0.57	0.54	0.52	0.57	0.54	0.52	0.51



Intensity data(cd)

C/γ(°)	0.0	2.0	4.0	6.0	8.0	10.0	12.0	14.0	16.0
0.0	5213.84	5064.64	4723.29	4220.07	3641.98	3018.74	2477.54	1924.77	1471.66
45.0	5191.82	4982.05	4621.43	4075.27	3465.25	2862.93	2285.94	1753.00	1348.88
90.0	5178.05	5026.65	4672.09	4167.77	3504.89	2936.16	2366.87	1806.40	1440.83
135.0	5189.62	5151.08	4919.29	4511.87	3948.09	3367.25	2782.55	2194.00	1741.43
180.0	5213.84	5149.43	4895.06	4470.03	3901.85	3264.29	2672.44	2129.03	1664.35
225.0	5191.82	5191.82	5001.32	4615.38	4047.20	3446.53	2830.45	2229.78	1770.61
270.0	5178.05	5137.86	4929.20	4499.76	3959.66	3386.52	2805.12	2219.87	1736.48
315.0	5189.62	5051.42	4691.36	4191.44	3619.96	3008.28	2437.90	1931.38	1503.59
360.0	5213.84	5064.64	4723.29	4220.07	3641.98	3018.74	2477.54	1924.77	1471.66
C/γ(°)	18.0	20.0	22.0	24.0	26.0	28.0	30.0	32.0	34.0
0.0	1147.38	879.80	703.07	584.15	496.06	419.53	366.13	313.27	280.24
45.0	1030.11	785.65	639.76	537.90	457.52	394.75	341.90	291.25	250.89
90.0	1079.38	849.58	673.34	565.76	482.07	412.26	349.55	299.84	257.33
135.0	1321.90	999.82	794.46	645.26	545.06	464.13	395.86	332.54	286.84
180.0	1256.94	983.25	767.16	622.58	532.23	451.85	377.74	325.93	279.69
225.0	1343.38	1030.88	805.70	651.76	544.12	465.28	394.42	334.74	290.04
270.0	1341.72	1020.75	813.18	655.17	550.01	466.88	399.16	338.05	290.15
315.0	1097.16	893.07	705.55	591.31	502.94	423.49	363.70	312.89	270.66
360.0	1147.38	879.80	703.07	584.15	496.06	419.53	366.13	313.27	280.24
C/γ(°)	36.0	38.0	40.0	42.0	44.0	46.0	48.0	50.0	52.0
0.0	231.84	200.24	173.92	146.89	125.75	108.68	93.32	79.06	68.44
45.0	216.10	187.47	159.55	133.62	115.84	98.17	84.18	72.89	61.55
90.0	220.61	193.58	163.46	138.36	117.55	100.31	84.84	72.12	61.22
135.0	245.06	209.43	183.28	152.34	128.56	109.40	94.04	79.12	67.83
180.0	236.63	208.72	181.30	156.14	135.49	118.21	102.57	88.64	76.03
225.0	246.71	213.95	183.83	158.23	136.26	116.99	100.81	87.15	75.04
270.0	247.42	211.20	184.99	156.25	134.12	113.75	97.61	82.36	70.64
315.0	232.01	202.66	168.86	142.38	120.02	102.79	86.33	73.61	63.20
360.0	231.84	200.24	173.92	146.89	125.75	108.68	93.32	79.06	68.44
C/γ(°)	54.0	56.0	58.0	60.0	62.0	64.0	66.0	68.0	70.0
0.0	55.66	44.54	35.90	27.69	22.13	19.16	17.67	17.23	17.01
45.0	49.50	40.91	31.99	25.38	21.09	18.50	17.45	16.96	16.68
90.0	49.66	40.80	31.77	24.94	19.82	16.96	15.64	15.20	14.92
135.0	57.20	45.97	37.77	29.29	22.74	18.55	16.08	15.09	14.76
180.0	62.54	51.04	40.08	31.16	24.00	19.88	17.62	16.68	16.30
225.0	63.37	51.81	41.29	32.15	25.33	21.09	18.55	17.51	17.12
270.0	59.13	47.57	38.92	29.90	23.89	19.32	17.01	16.08	15.64
315.0	51.70	42.83	33.75	26.10	21.14	17.73	16.19	15.75	15.42
360.0	55.66	44.54	35.90	27.69	22.13	19.16	17.67	17.23	17.01
C/γ(°)	72.0	74.0	76.0	78.0	80.0	82.0	84.0	86.0	88.0
0.0	16.90	16.79	17.67	17.84	17.07	16.79	15.75	13.76	6.66
45.0	16.57	16.57	16.63	17.18	17.40	16.57	15.47	7.16	6.55
90.0	14.81	14.76	15.42	16.74	16.52	16.52	15.14	7.10	6.50
135.0	14.59	14.53	14.59	14.70	16.68	20.10	15.42	14.42	6.83
180.0	16.19	16.30	16.52	16.96	17.40	17.40	16.35	13.21	6.77
225.0	16.96	17.12	17.40	17.89	18.22	18.50	18.88	18.66	7.10
270.0	15.64	15.69	15.64	16.02	16.74	17.40	17.45	16.74	6.99
315.0	15.36	15.31	15.58	16.08	18.11	17.45	16.13	13.60	6.72
360.0	16.90	16.79	17.67	17.84	17.07	16.79	15.75	13.76	6.66

Intensity data(cd)

C/γ(°)	90.0
0.0	6.39
45.0	6.44
90.0	6.33
135.0	6.33
180.0	6.28
225.0	6.61
270.0	6.50
315.0	6.39
360.0	6.39