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## NATA

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LumCAT: 1657-S	
Luminaire: 92.70.124.00	
Report No: NATA0100	Voltage(V): 33.9400
Test No: GC2019032307	Current(A): 0.3000
LampCAT: BRIDGELUX V10	Power (W): 10.1820
Lamp flux(lm): 1503.0	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 47	Width(mm): 47
Phm Type: C	Height(mm): 0

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## Photometric Results

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Lumens(lm): 1316.80  
Efficiency(%): 87.61%  
Lumens(lm)/Power(W): 129.33  
Central intensity(cd): 5116.500  
Maximum intensity(cd): 5116.500  
Angle of maximum intensity: C=0.0  $\gamma$ =0.0  
Beam Angle(50%Imax): [C0/180]Total=23.5  
                                  [C90/270]Total=23.5  
Field angle(10%Imax): [C0/180]Total=55.3  
                                  [C90/270]Total=55.3  
Maximum s/h(1/2): C0\_180=0.40 C90\_270=0.40  
Maximum s/h(1/4): C0\_180=0.40 C90\_270=0.40  
Up flux rate of lamp(%): 0.00%  
Down flux rate of lamp(%): 87.61%  
Up flux rate of LUM(%): - -  
Down flux rate of LUM(%): 100.00%  
CIE Type : Direct lighting  
Output flux ratio in  $\pi$  solid angle : 98.629%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	5116.500	0.000	0	.000%	.000%
1.0	5094.633	4.886	4.886	.325%	.371%
2.0	5027.203	14.528	19.414	.967%	1.474%
3.0	4905.141	23.755	43.169	1.580%	3.278%
4.0	4747.781	32.311	75.48	2.150%	5.732%
5.0	4560.961	40.046	115.526	2.664%	8.773%
6.0	4311.703	46.628	162.154	3.102%	12.314%
7.0	4042.758	51.856	214.01	3.450%	16.252%
8.0	3766.922	55.892	269.902	3.719%	20.497%
9.0	3443.625	58.438	328.34	3.888%	24.935%
10.0	3097.336	59.193	387.533	3.938%	29.430%
11.0	2793.445	58.861	446.394	3.916%	33.900%
12.0	2488.641	57.741	504.135	3.842%	38.285%
13.0	2158.383	55.148	559.283	3.669%	42.473%
14.0	1901.883	51.971	611.254	3.458%	46.420%
15.0	1667.813	49.006	660.261	3.261%	50.141%
16.0	1426.556	45.341	705.602	3.017%	53.585%
17.0	1232.016	41.401	747.003	2.755%	56.729%
18.0	1072.005	37.988	784.991	2.527%	59.614%
19.0	941.871	35.037	820.029	2.331%	62.274%
20.0	834.061	32.504	852.533	2.163%	64.743%
21.0	744.180	30.305	882.839	2.016%	67.044%
22.0	676.533	28.550	911.388	1.900%	69.213%
23.0	627.947	27.372	938.76	1.821%	71.291%
24.0	588.199	26.589	965.349	1.769%	73.310%
25.0	558.098	26.064	991.414	1.734%	75.290%
26.0	538.327	25.881	1017.295	1.722%	77.255%
27.0	522.028	25.942	1043.237	1.726%	79.225%
28.0	506.152	26.031	1069.268	1.732%	81.202%
29.0	494.072	26.169	1095.437	1.741%	83.189%
30.0	477.506	26.232	1121.669	1.745%	85.182%
31.0	447.715	25.748	1147.417	1.713%	87.137%
32.0	408.066	24.517	1171.934	1.631%	88.999%
33.0	365.639	22.794	1194.727	1.517%	90.730%
34.0	315.802	20.622	1215.35	1.372%	92.296%
35.0	262.245	17.952	1233.302	1.194%	93.659%
36.0	206.866	14.937	1248.238	.994%	94.793%
37.0	154.125	11.774	1260.012	.783%	95.688%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	110.363	8.828	1268.84	.587%	96.358%
39.0	71.599	6.211	1275.051	.413%	96.830%
40.0	42.293	3.972	1279.023	.264%	97.131%
41.0	27.710	2.493	1281.516	.166%	97.321%
42.0	20.967	1.769	1283.284	.118%	97.455%
43.0	16.530	1.389	1284.673	.092%	97.560%
44.0	13.570	1.136	1285.81	.076%	97.647%
45.0	11.974	0.982	1286.791	.065%	97.721%
46.0	11.257	0.909	1287.7	.060%	97.790%
47.0	10.990	0.885	1288.585	.059%	97.857%
48.0	10.652	0.875	1289.459	.058%	97.924%
49.0	10.230	0.858	1290.317	.057%	97.989%
50.0	9.879	0.838	1291.155	.056%	98.053%
51.0	9.598	0.824	1291.979	.055%	98.115%
52.0	9.281	0.810	1292.79	.054%	98.177%
53.0	9.000	0.795	1293.585	.053%	98.237%
54.0	8.733	0.782	1294.366	.052%	98.297%
55.0	8.452	0.767	1295.133	.051%	98.355%
56.0	8.184	0.752	1295.885	.050%	98.412%
57.0	7.952	0.738	1296.623	.049%	98.468%
58.0	7.685	0.723	1297.346	.048%	98.523%
59.0	7.460	0.708	1298.054	.047%	98.577%
60.0	7.270	0.696	1298.75	.046%	98.629%
61.0	7.045	0.683	1299.433	.045%	98.681%
62.0	6.891	0.672	1300.105	.045%	98.732%
63.0	6.736	0.663	1300.768	.044%	98.783%
64.0	6.581	0.653	1301.421	.043%	98.832%
65.0	6.448	0.645	1302.066	.043%	98.881%
66.0	6.328	0.637	1302.703	.042%	98.930%
67.0	6.223	0.631	1303.334	.042%	98.978%
68.0	6.117	0.625	1303.959	.042%	99.025%
69.0	6.019	0.619	1304.579	.041%	99.072%
70.0	5.927	0.614	1305.192	.041%	99.119%
71.0	5.857	0.609	1305.801	.041%	99.165%
72.0	5.759	0.604	1306.405	.040%	99.211%
73.0	5.709	0.600	1307.005	.040%	99.256%
74.0	5.653	0.597	1307.602	.040%	99.302%
75.0	5.583	0.594	1308.196	.039%	99.347%

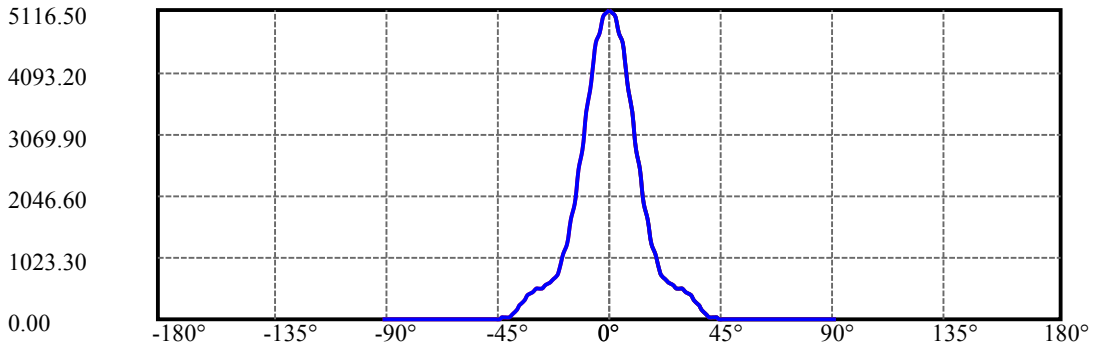
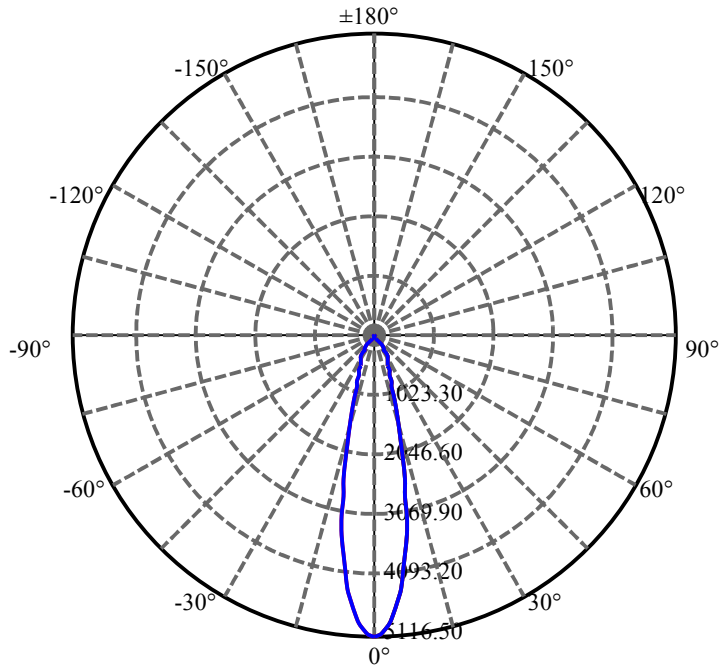
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	5.534	0.590	1308.786	.039%	99.392%
77.0	5.484	0.587	1309.373	.039%	99.436%
78.0	5.463	0.586	1309.959	.039%	99.481%
79.0	5.428	0.585	1310.545	.039%	99.525%
80.0	5.379	0.583	1311.127	.039%	99.569%
81.0	5.351	0.580	1311.707	.039%	99.613%
82.0	5.316	0.578	1312.286	.038%	99.657%
83.0	5.288	0.576	1312.862	.038%	99.701%
84.0	5.259	0.575	1313.437	.038%	99.745%
85.0	5.196	0.571	1314.007	.038%	99.788%
86.0	5.154	0.566	1314.573	.038%	99.831%
87.0	5.126	0.563	1315.136	.037%	99.874%
88.0	5.091	0.560	1315.695	.037%	99.916%
89.0	5.020	0.554	1316.25	.037%	99.958%
90.0	4.971	0.548	1316.797	.036%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1121.67	74.63%	85.18%
0-40	1279.02	85.10%	97.13%
0-60	1298.75	86.41%	98.63%
0-90	1316.25	87.57%	99.96%
0-120	1316.25	87.57%	99.96%
0-180	1316.80	87.61%	100.00%
60-90	18.20	1.21%	1.38%
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%
0-27.39	1053.44	70.09%	80.00%

ZONAL LUMEN SUMMARY

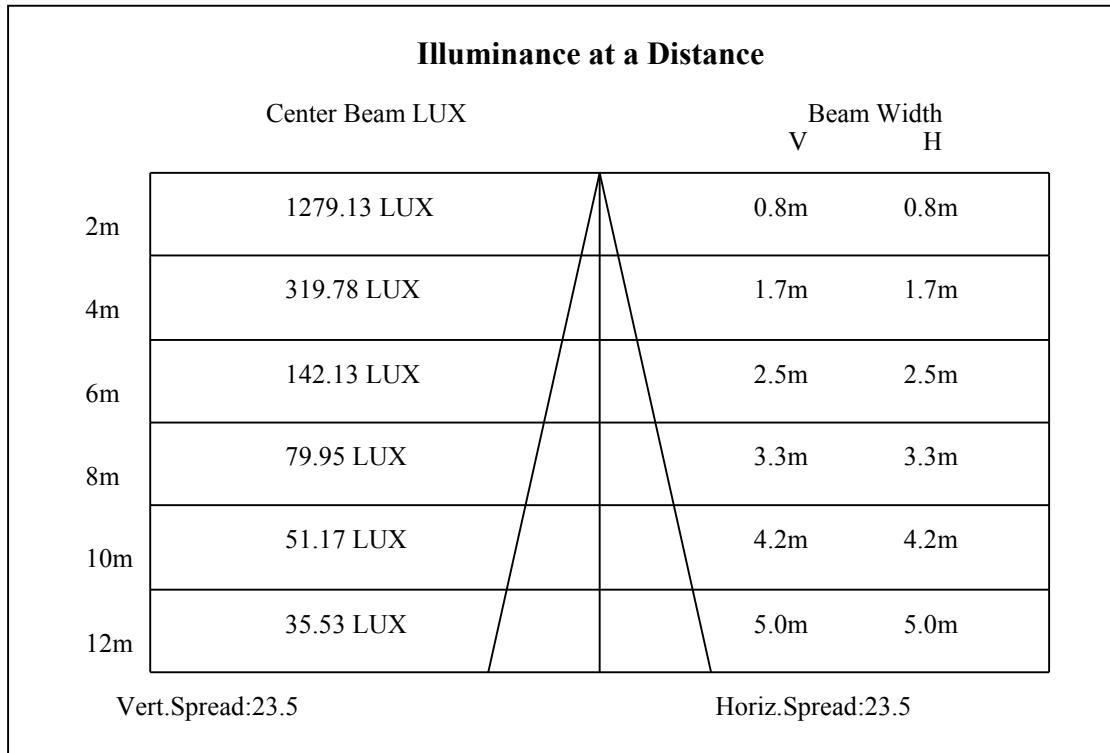
0-10	387.53
10-20	465.00
20-30	269.14
30-40	157.35
40-50	12.13
50-60	7.59
60-70	6.44
70-80	5.94
80-90	5.12
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

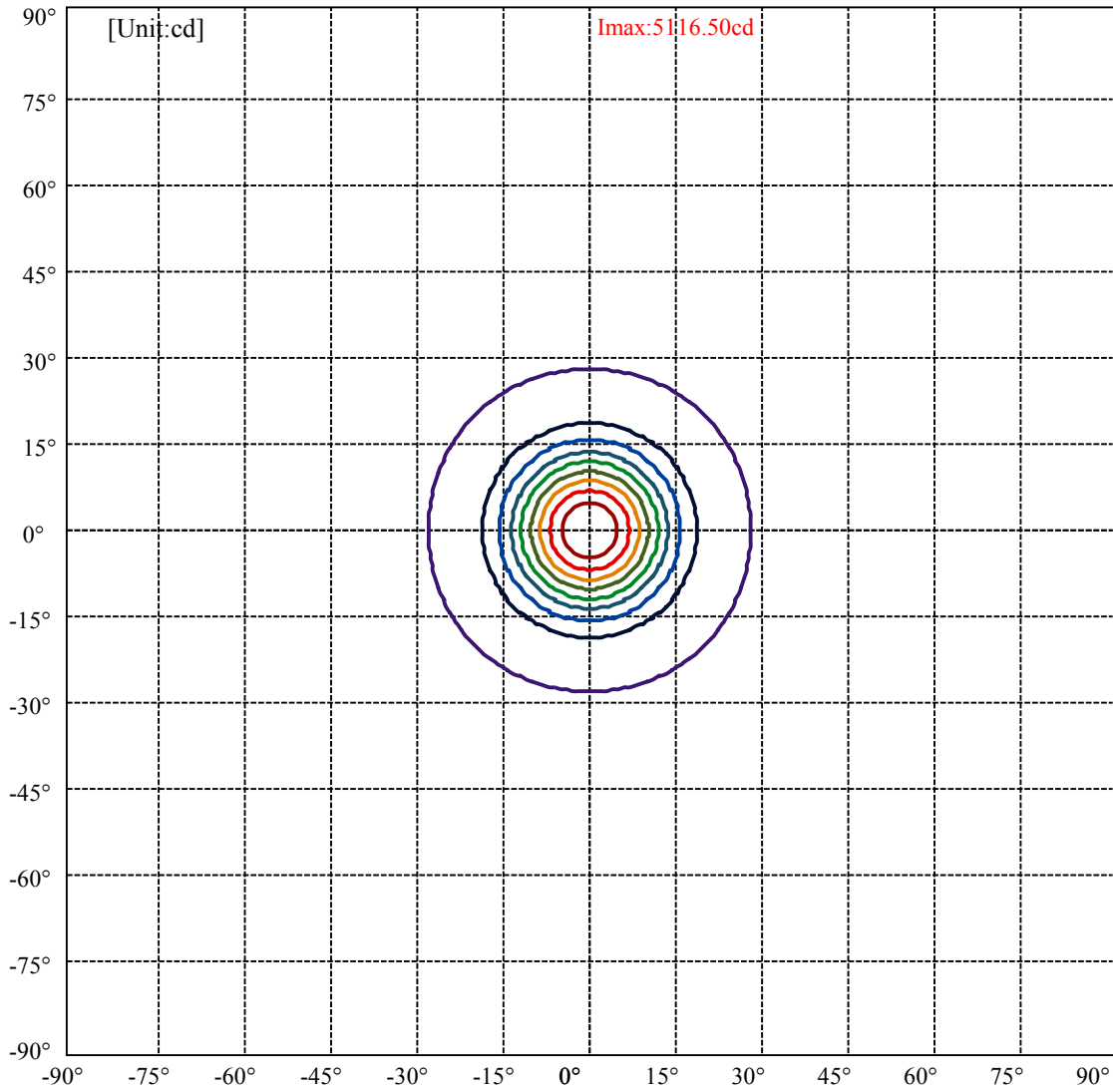


C0(Max): —————  
C0/C180: —————  
C90/C270: —————

Field angle(10%Imax):C0/180Left:27.7 Right:27.7  
:C90/270Left:27.7 Right:27.7

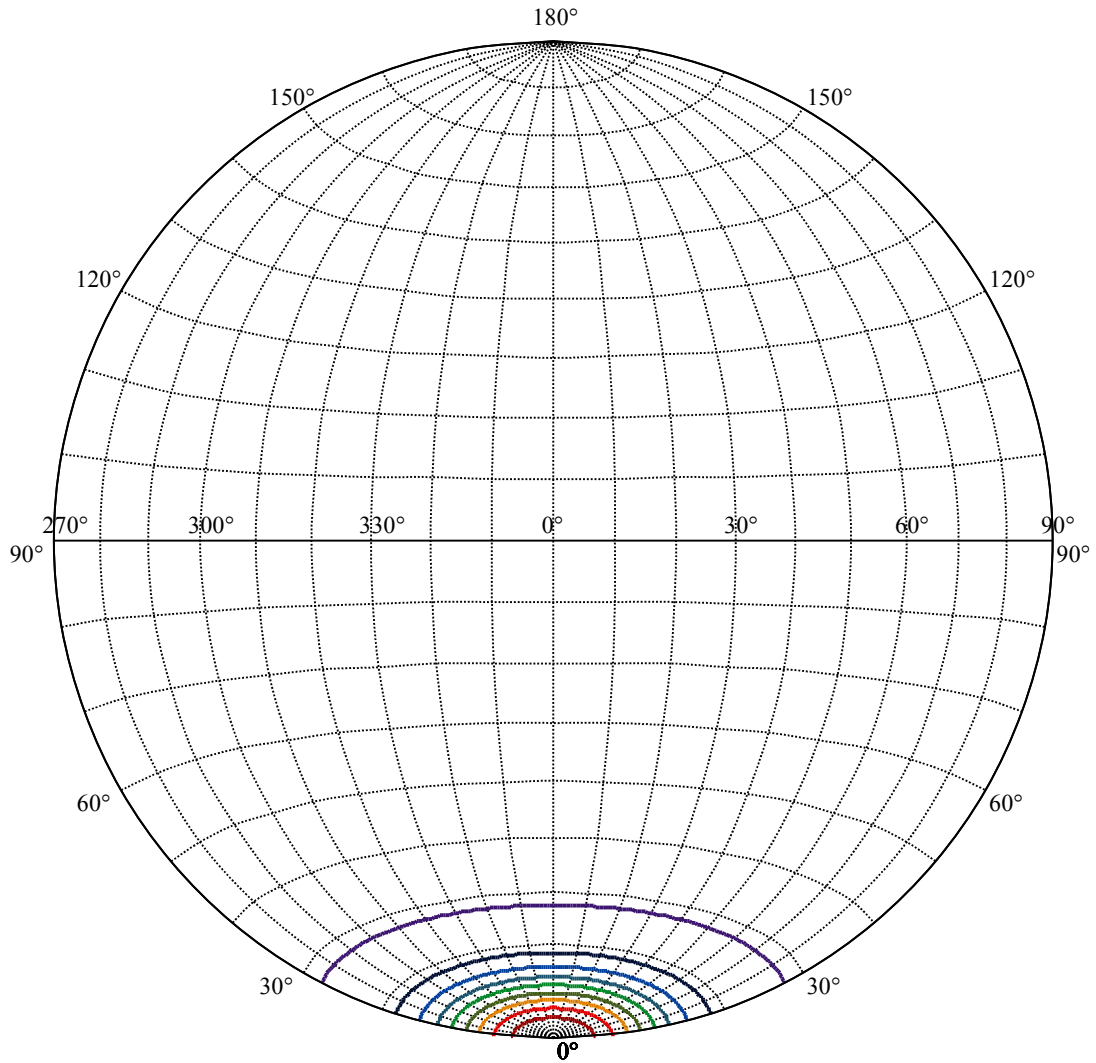
Beam Angle(50%Imax):C0/180Left:11.8 Right:11.8  
:C90/270Left:11.8 Right:11.8





(10%Imax) 511.65	—
(20%Imax) 1023.3	—
(30%Imax) 1534.95	—
(40%Imax) 2046.6	—
(50%Imax) 2558.25	—
(60%Imax) 3069.9	—
(70%Imax) 3581.55	—
(80%Imax) 4093.2	—
(90%Imax) 4604.85	—





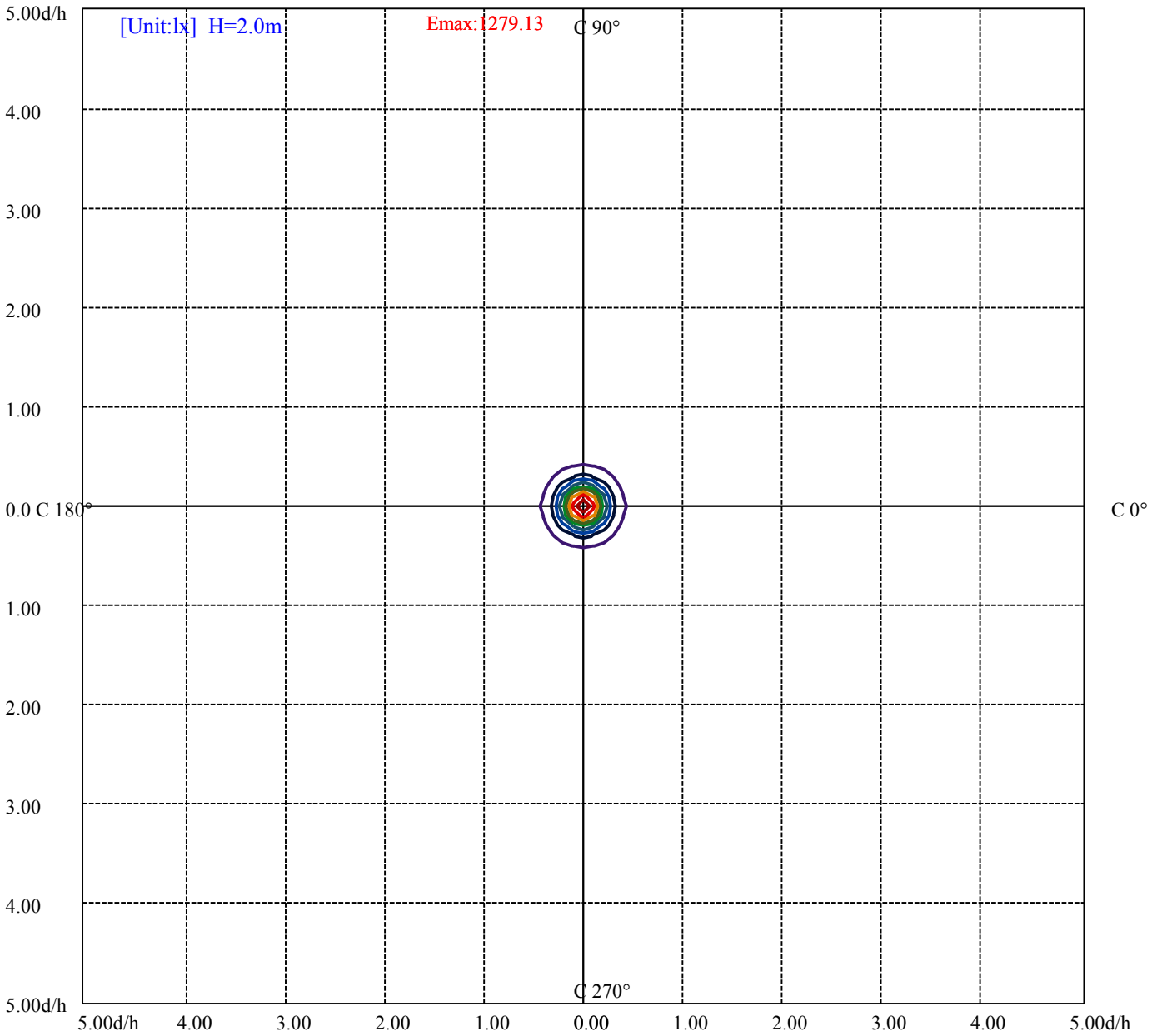
House

[Unit:cd]

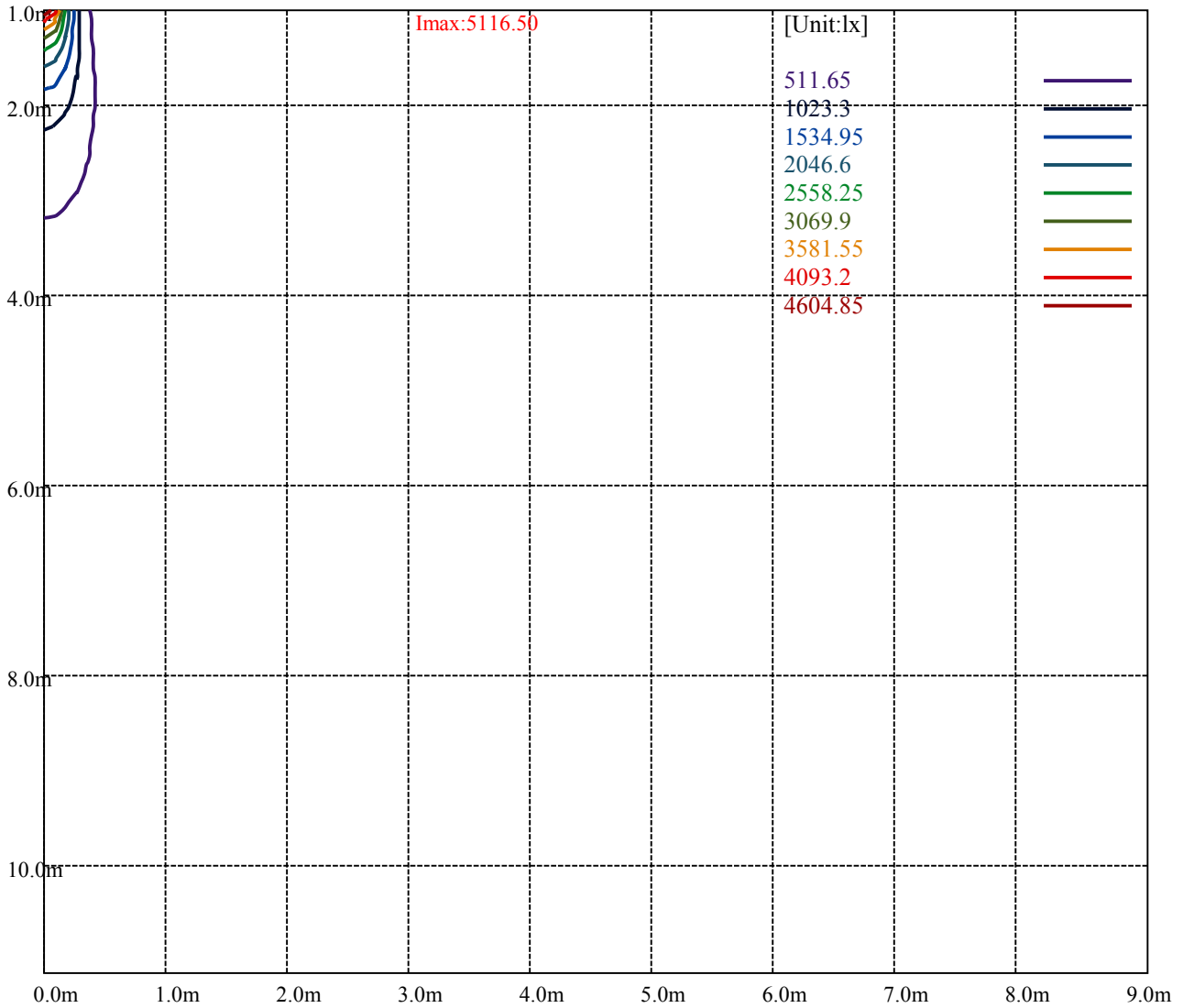
Road

**Imax:5116.50**

(10%Imax) 511.65	—
(20%Imax) 1023.3	—
(30%Imax) 1534.95	—
(40%Imax) 2046.6	—
(50%Imax) 2558.25	—
(60%Imax) 3069.9	—
(70%Imax) 3581.55	—
(80%Imax) 4093.2	—
(90%Imax) 4604.85	—



- (10%Emax) 127.9125
- (20%Emax) 255.825
- (30%Emax) 383.7375
- (40%Emax) 511.65
- (50%Emax) 639.5625
- (60%Emax) 767.475
- (70%Emax) 895.3875
- (80%Emax) 1023.3
- (90%Emax) 1151.213



Luminance Table

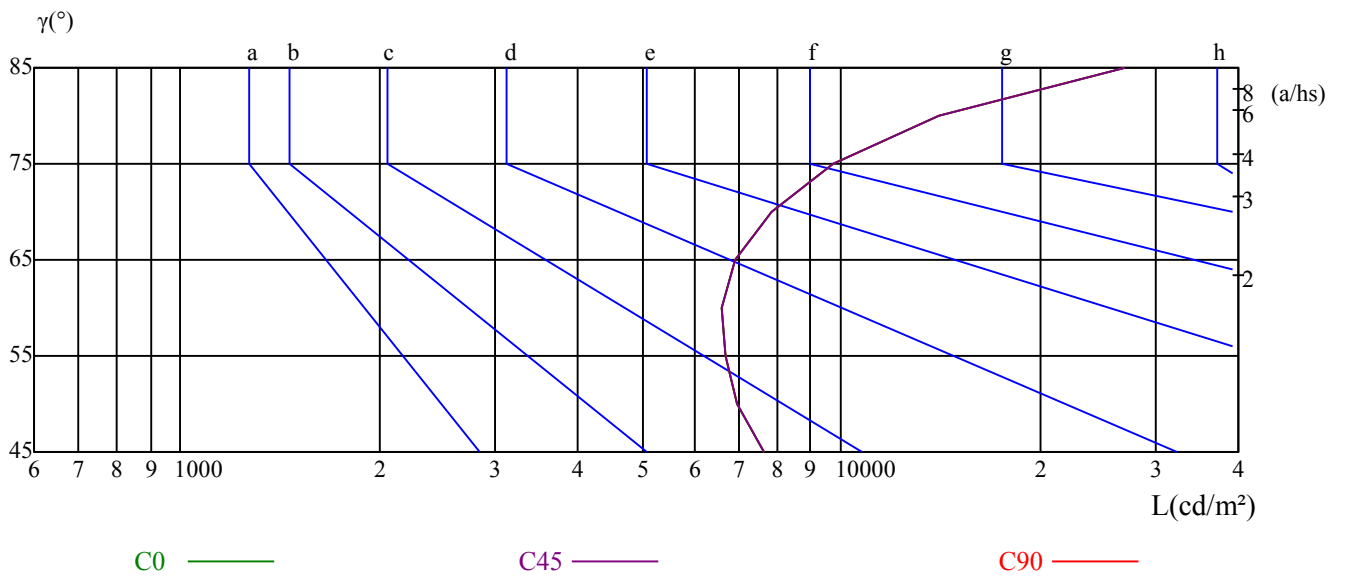
$\gamma$	45	50	55	60	65	70	75	80	85
C0	7666	6957	6670	6582	6906	7845	9765	14023	26989
C45	7666	6957	6670	6582	6906	7845	9765	14023	26989
C90	7666	6957	6670	6582	6906	7845	9765	14023	26989

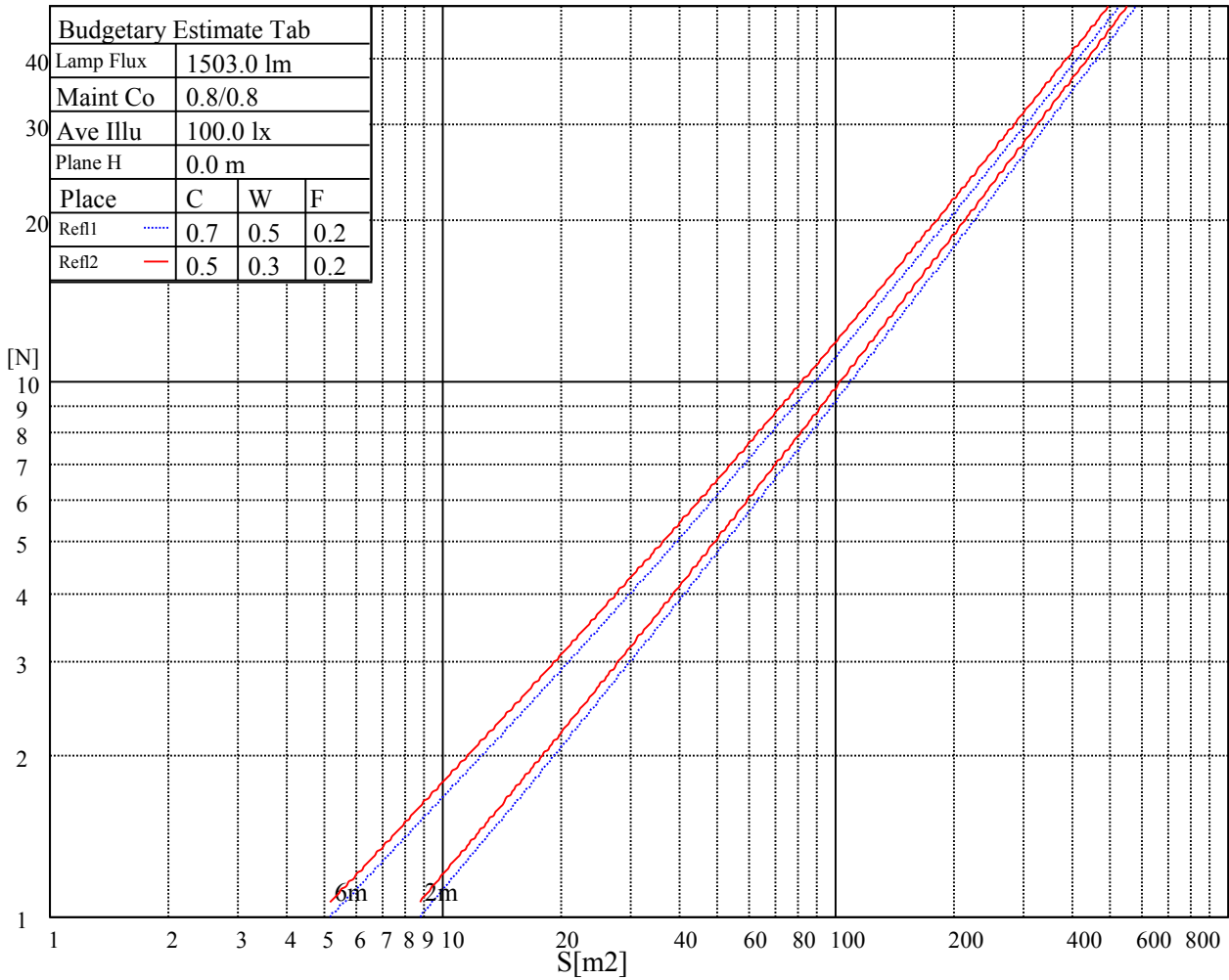
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
6906	6906	6906	9765	9765	9765	26989	26989	26989

Glare Table

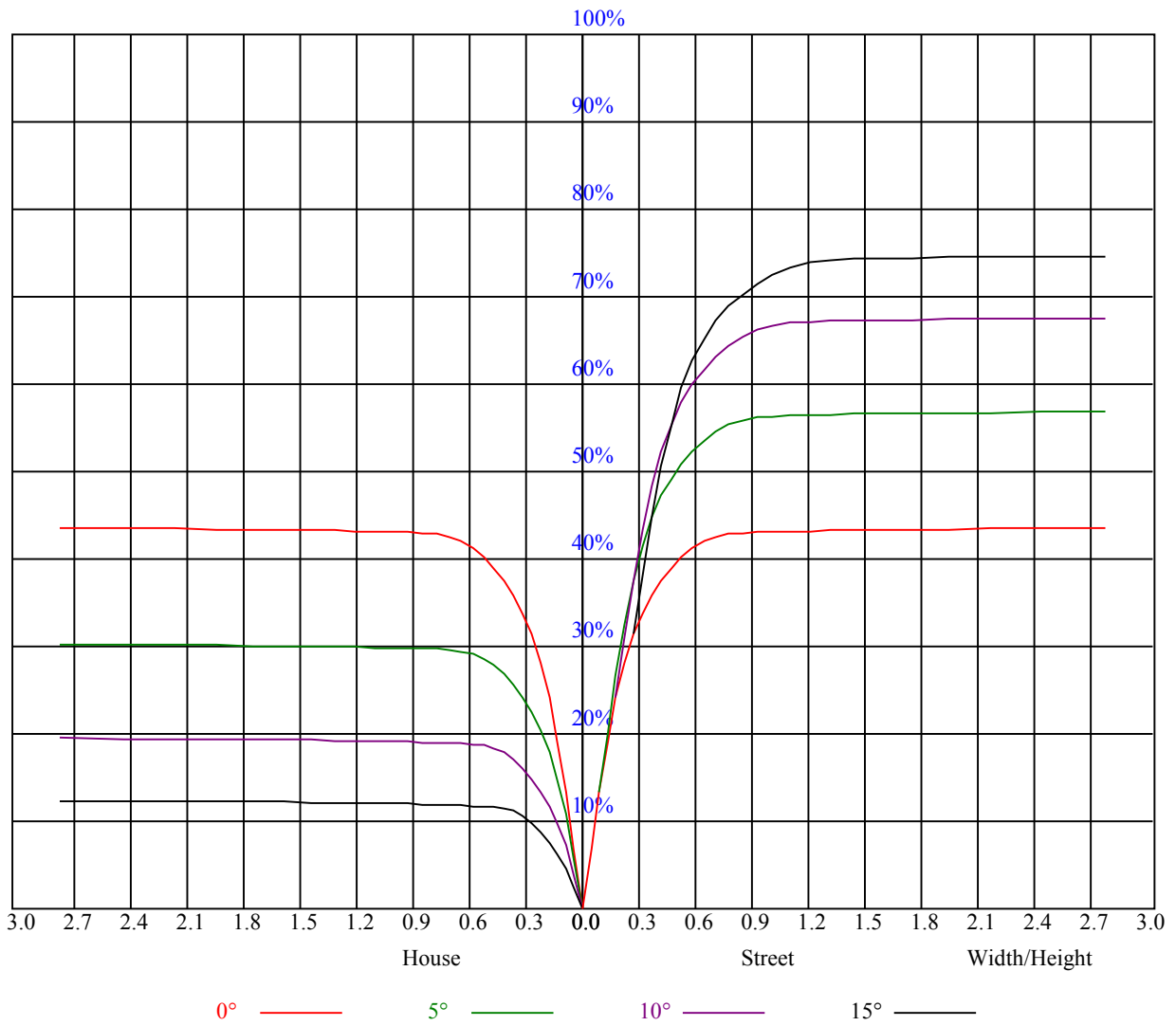
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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	1.04	1.04	1.04	1.02	1.02	1.02	0.97	0.97	0.97	0.93	0.93	0.93	0.89	0.89	0.89	0.88
1	0.98	0.96	0.94	0.96	0.94	0.93	0.93	0.91	0.90	0.89	0.88	0.87	0.86	0.86	0.85	0.83
2	0.93	0.90	0.87	0.91	0.88	0.86	0.88	0.86	0.84	0.86	0.84	0.82	0.83	0.82	0.81	0.79
3	0.88	0.84	0.81	0.87	0.83	0.81	0.85	0.82	0.80	0.82	0.80	0.78	0.81	0.79	0.77	0.76
4	0.84	0.80	0.77	0.83	0.79	0.76	0.81	0.78	0.75	0.79	0.77	0.75	0.78	0.76	0.74	0.73
5	0.80	0.76	0.73	0.79	0.75	0.73	0.78	0.74	0.72	0.76	0.74	0.71	0.75	0.73	0.71	0.70
6	0.77	0.72	0.69	0.76	0.72	0.69	0.75	0.71	0.69	0.74	0.71	0.68	0.73	0.70	0.68	0.67
7	0.74	0.69	0.66	0.73	0.69	0.66	0.72	0.69	0.66	0.71	0.68	0.66	0.70	0.67	0.65	0.64
8	0.71	0.67	0.64	0.70	0.66	0.64	0.69	0.66	0.63	0.69	0.65	0.63	0.68	0.65	0.63	0.62
9	0.68	0.64	0.61	0.68	0.64	0.61	0.67	0.64	0.61	0.66	0.63	0.61	0.66	0.63	0.61	0.60
10	0.66	0.62	0.59	0.66	0.62	0.59	0.65	0.61	0.59	0.64	0.61	0.59	0.64	0.61	0.59	0.58



NATA 1657-S

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	5117.06	5079.94	4984.31	4824.00	4650.75	4441.50	4140.56	3869.44	3576.38
45.0	5126.06	5121.56	5068.13	4973.63	4815.00	4640.06	4406.06	4122.56	3841.88
90.0	5124.94	5123.25	5084.44	4993.88	4843.69	4674.38	4471.31	4167.00	3895.31
135.0	5097.94	5134.50	5114.25	5051.81	4960.69	4830.75	4623.75	4416.19	4178.81
180.0	5117.06	5113.69	5069.25	4972.50	4844.25	4687.88	4467.94	4213.69	3949.88
225.0	5126.06	5086.69	5010.19	4865.06	4706.44	4513.50	4242.38	3993.19	3720.38
270.0	5124.94	5083.88	4990.50	4842.00	4667.06	4436.44	4169.25	3911.06	3627.56
315.0	5097.94	5013.56	4896.56	4718.25	4494.38	4263.19	3972.38	3648.94	3345.19
360.0	5117.06	5079.94	4984.31	4824.00	4650.75	4441.50	4140.56	3869.44	3576.38
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	3206.25	2900.81	2603.81	2283.19	1991.81	1752.19	1508.63	1316.25	1135.13
45.0	3502.69	3156.19	2845.69	2578.50	2191.50	1935.00	1730.25	1468.69	1263.38
90.0	3592.13	3202.88	2896.88	2600.44	2281.50	1983.94	1743.75	1499.06	1307.25
135.0	3849.75	3555.56	3245.63	2893.50	2553.19	2271.38	1974.38	1737.00	1494.56
180.0	3670.31	3301.31	3001.50	2699.44	2345.63	2081.81	1838.81	1566.56	1373.63
225.0	3433.50	3056.06	2745.00	2408.63	2099.81	1848.94	1620.00	1394.44	1119.38
270.0	3255.75	2947.50	2643.75	2352.38	2015.44	1771.88	1550.81	1308.94	1143.56
315.0	3038.63	2658.38	2365.31	2093.06	1788.19	1569.94	1375.88	1121.51	1019.25
360.0	3206.25	2900.81	2603.81	2283.19	1991.81	1752.19	1508.63	1316.25	1135.13
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	985.50	878.63	782.44	710.44	662.63	624.38	587.25	564.75	545.63
45.0	1106.44	958.50	842.63	761.06	693.00	645.75	609.19	573.19	551.81
90.0	1115.16	959.74	845.89	743.96	668.81	620.16	581.85	543.99	521.83
135.0	1303.88	1120.50	972.00	846.56	758.25	689.06	624.94	586.69	562.50
180.0	1106.94	1039.11	919.69	809.83	726.92	668.19	618.30	582.92	560.76
225.0	1049.23	911.87	809.72	715.73	646.03	596.87	560.14	534.77	516.66
270.0	1004.06	876.94	774.00	701.44	637.88	591.75	563.06	537.75	520.88
315.0	904.84	789.69	726.13	664.43	618.75	587.42	560.87	540.73	526.56
360.0	985.50	878.63	782.44	710.44	662.63	624.38	587.25	564.75	545.63
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	528.19	514.13	501.75	481.50	444.38	401.06	348.19	297.56	254.76
45.0	533.81	514.69	501.75	489.94	462.94	425.25	384.19	333.00	286.31
90.0	502.93	486.39	471.88	459.56	439.88	403.88	365.57	318.88	273.88
135.0	541.13	525.38	514.69	505.13	493.31	471.38	434.81	387.56	338.06
180.0	543.09	524.81	512.94	501.86	482.57	441.11	399.04	352.97	289.86
225.0	507.43	491.63	486.68	468.68	436.73	392.51	350.04	297.28	243.11
270.0	505.13	492.19	480.38	462.38	417.38	377.44	341.44	289.13	226.46
315.0	514.52	500.01	482.51	451.01	404.55	351.90	301.84	250.03	185.51
360.0	528.19	514.13	501.75	481.50	444.38	401.06	348.19	297.56	254.76
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	172.46	124.76	82.41	46.46	25.65	19.01	14.96	10.86	8.49
45.0	225.51	168.86	124.37	78.53	42.98	25.65	19.86	15.13	11.59
90.0	221.96	170.89	129.94	92.93	54.51	34.31	25.37	20.48	16.82
135.0	289.69	223.14	174.54	128.93	78.24	47.93	30.26	23.57	19.86
180.0	236.19	184.95	133.76	87.58	55.01	31.22	23.40	19.74	15.86
225.0	194.12	144.28	101.36	59.18	33.92	24.75	21.88	17.49	14.51
270.0	177.58	127.35	83.08	50.74	28.29	22.33	19.01	15.36	12.77
315.0	137.42	88.76	53.44	28.46	19.74	16.48	12.99	9.62	8.66
360.0	172.46	124.76	82.41	46.46	25.65	19.01	14.96	10.86	8.49



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	7.76	7.43	7.20	7.03	6.86	6.69	6.58	6.47	6.41
45.0	9.68	9.34	9.23	9.06	8.89	8.72	8.61	8.49	8.33
90.0	14.63	13.95	13.67	13.28	12.66	12.32	11.81	11.25	10.91
135.0	16.82	14.18	14.01	13.78	13.05	12.49	12.09	11.59	11.03
180.0	13.28	12.32	11.93	11.36	10.74	10.18	9.84	9.51	9.11
225.0	13.16	12.94	12.60	12.04	11.64	11.14	10.69	10.29	9.90
270.0	12.04	11.76	11.31	10.86	10.35	9.96	9.73	9.39	9.11
315.0	8.44	8.16	7.99	7.82	7.65	7.54	7.43	7.26	7.20
360.0	7.76	7.43	7.20	7.03	6.86	6.69	6.58	6.47	6.41
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	6.36	6.24	6.24	6.19	6.13	6.08	6.02	5.96	5.96
45.0	8.21	8.16	7.99	7.82	7.59	7.43	7.20	7.03	6.86
90.0	10.46	9.90	9.45	9.17	8.66	8.33	8.21	7.71	7.54
135.0	10.63	10.18	9.73	9.34	9.06	8.61	8.27	7.99	7.65
180.0	8.83	8.66	8.38	8.16	7.93	7.71	7.54	7.31	7.09
225.0	9.51	9.17	8.78	8.38	8.04	7.76	7.48	7.20	7.03
270.0	8.83	8.44	8.10	7.93	7.54	7.37	7.14	6.92	6.81
315.0	7.03	6.86	6.81	6.64	6.53	6.41	6.30	6.24	6.19
360.0	6.36	6.24	6.24	6.19	6.13	6.08	6.02	5.96	5.96
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	5.91	5.85	5.79	5.79	5.79	5.74	5.68	5.63	5.63
45.0	6.75	6.64	6.53	6.41	6.36	6.24	6.13	6.08	6.02
90.0	7.37	7.14	6.92	6.81	6.53	6.41	6.30	6.19	6.08
135.0	7.43	7.14	6.92	6.75	6.58	6.36	6.24	6.08	5.91
180.0	6.92	6.75	6.53	6.41	6.30	6.13	6.08	5.96	5.85
225.0	6.81	6.64	6.53	6.36	6.24	6.19	6.02	5.85	5.85
270.0	6.64	6.53	6.47	6.24	6.19	6.13	6.02	5.96	5.91
315.0	6.08	5.96	5.91	5.85	5.79	5.74	5.68	5.68	5.63
360.0	5.91	5.85	5.79	5.79	5.79	5.74	5.68	5.63	5.63
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	5.57	5.51	5.51	5.51	5.40	5.34	5.34	5.34	5.29
45.0	5.96	5.91	5.79	5.79	5.79	5.68	5.63	5.57	5.51
90.0	5.91	5.85	5.79	5.68	5.63	5.57	5.57	5.51	5.46
135.0	5.85	5.74	5.63	5.51	5.46	5.40	5.40	5.34	5.29
180.0	5.74	5.68	5.63	5.51	5.46	5.40	5.34	5.34	5.34
225.0	5.68	5.63	5.57	5.51	5.40	5.40	5.40	5.34	5.29
270.0	5.79	5.79	5.79	5.68	5.68	5.68	5.63	5.63	5.57
315.0	5.57	5.57	5.51	5.46	5.46	5.40	5.40	5.34	5.29
360.0	5.57	5.51	5.51	5.51	5.40	5.34	5.34	5.34	5.29
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	5.23	5.23	5.18	5.18	5.18	5.12	5.12	5.06	4.95
45.0	5.51	5.46	5.40	5.34	5.23	5.23	5.34	5.29	5.06
90.0	5.46	5.34	5.34	5.29	5.23	5.12	5.06	5.01	5.01
135.0	5.29	5.23	5.23	5.23	5.18	5.18	5.12	5.12	5.06
180.0	5.29	5.29	5.29	5.23	5.18	5.18	5.12	5.12	5.06
225.0	5.29	5.23	5.23	5.23	5.18	5.18	5.12	5.06	5.06
270.0	5.51	5.51	5.46	5.40	5.29	5.18	5.06	5.06	5.01
315.0	5.23	5.23	5.18	5.18	5.12	5.06	5.06	5.01	4.95
360.0	5.23	5.23	5.18	5.18	5.18	5.12	5.12	5.06	4.95

Intensity data(cd)

C/γ(°)	90.0
0.0	4.95
45.0	5.01
90.0	5.01
135.0	5.01
180.0	5.01
225.0	4.95
270.0	4.95
315.0	4.89
360.0	4.95