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NATA

LumCAT: 1322-E	
Luminaire: 92.70.046.00	
Report No: NATA0100	Voltage(V): 35.1000
Test No: GC2019030604	Current(A): 0.3000
LampCAT: CREE CXA1512	Power (W): 10.5300
Lamp flux(lm): 1440.0	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 41	Width(mm): 41
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 1245.86
Efficiency(%): 86.52%
Lumens(lm)/Power(W): 118.47
Central intensity(cd): 6802.172
Maximum intensity(cd): 6802.172
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=18.9
 [C90/270]Total=18.9
Field angle(10%Imax): [C0/180]Total=42.5
 [C90/270]Total=42.5
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(%): 86.63%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.374%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	6802.172	1.627	1.627	.113%	.131%
1.0	6760.336	12.938	14.566	.898%	1.169%
2.0	6624.141	25.351	39.917	1.761%	3.204%
3.0	6405.820	36.764	76.681	2.553%	6.155%
4.0	6112.477	46.758	123.439	3.247%	9.908%
5.0	5704.313	54.519	177.958	3.786%	14.284%
6.0	5243.484	60.104	238.063	4.174%	19.108%
7.0	4723.594	63.128	301.19	4.384%	24.175%
8.0	4185.773	63.883	365.073	4.436%	29.303%
9.0	3640.570	62.453	427.526	4.337%	34.316%
10.0	3126.516	59.536	487.062	4.134%	39.095%
11.0	2663.227	55.726	542.788	3.870%	43.567%
12.0	2272.711	51.817	594.606	3.598%	47.727%
13.0	1911.094	47.143	641.749	3.274%	51.511%
14.0	1625.133	43.114	684.863	2.994%	54.971%
15.0	1380.628	39.185	724.048	2.721%	58.116%
16.0	1205.698	36.444	760.493	2.531%	61.042%
17.0	1034.079	33.154	793.647	2.302%	63.703%
18.0	932.084	31.586	825.233	2.193%	66.238%
19.0	840.966	30.024	855.257	2.085%	68.648%
20.0	758.166	28.436	883.693	1.975%	70.930%
21.0	693.021	27.235	910.928	1.891%	73.116%
22.0	642.558	26.396	937.324	1.833%	75.235%
23.0	597.586	25.605	962.929	1.778%	77.290%
24.0	560.552	25.002	987.932	1.736%	79.297%
25.0	530.311	24.577	1012.509	1.707%	81.270%
26.0	505.807	24.315	1036.824	1.689%	83.222%
27.0	480.030	23.898	1060.722	1.660%	85.140%
28.0	453.354	23.340	1084.062	1.621%	87.013%
29.0	418.985	22.275	1106.337	1.547%	88.801%
30.0	379.680	20.818	1127.155	1.446%	90.472%
31.0	334.146	18.872	1146.028	1.311%	91.987%
32.0	285.061	16.565	1162.593	1.150%	93.317%
33.0	237.016	14.156	1176.749	.983%	94.453%
34.0	185.217	11.358	1188.107	.789%	95.364%
35.0	139.676	8.785	1196.892	.610%	96.070%
36.0	96.645	6.229	1203.122	.433%	96.570%
37.0	63.823	4.212	1207.334	.293%	96.908%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	39.382	2.659	1209.992	.185%	97.121%
39.0	24.047	1.660	1211.652	.115%	97.254%
40.0	17.156	1.209	1212.861	.084%	97.351%
41.0	14.344	1.032	1213.893	.072%	97.434%
42.0	12.129	0.890	1214.783	.062%	97.506%
43.0	11.032	0.825	1215.608	.057%	97.572%
44.0	10.315	0.786	1216.394	.055%	97.635%
45.0	9.640	0.747	1217.142	.052%	97.695%
46.0	9.288	0.733	1217.874	.051%	97.754%
47.0	8.866	0.711	1218.585	.049%	97.811%
48.0	8.557	0.697	1219.283	.048%	97.867%
49.0	8.269	0.684	1219.967	.048%	97.922%
50.0	8.009	0.673	1220.64	.047%	97.976%
51.0	7.784	0.663	1221.303	.046%	98.029%
52.0	7.636	0.660	1221.963	.046%	98.082%
53.0	7.446	0.652	1222.615	.045%	98.134%
54.0	7.313	0.649	1223.264	.045%	98.186%
55.0	7.193	0.646	1223.91	.045%	98.238%
56.0	7.116	0.647	1224.557	.045%	98.290%
57.0	7.045	0.648	1225.205	.045%	98.342%
58.0	6.968	0.648	1225.853	.045%	98.394%
59.0	6.940	0.652	1226.505	.045%	98.447%
60.0	6.891	0.654	1227.16	.045%	98.499%
61.0	6.863	0.658	1227.818	.046%	98.552%
62.0	6.806	0.659	1228.477	.046%	98.605%
63.0	6.757	0.660	1229.137	.046%	98.658%
64.0	6.652	0.656	1229.793	.046%	98.710%
65.0	6.567	0.653	1230.445	.045%	98.763%
66.0	6.441	0.645	1231.091	.045%	98.815%
67.0	6.314	0.637	1231.728	.044%	98.866%
68.0	6.195	0.630	1232.358	.044%	98.916%
69.0	6.089	0.623	1232.981	.043%	98.966%
70.0	5.991	0.617	1233.598	.043%	99.016%
71.0	5.913	0.613	1234.212	.043%	99.065%
72.0	5.850	0.610	1234.822	.042%	99.114%
73.0	5.787	0.607	1235.429	.042%	99.163%
74.0	5.759	0.607	1236.036	.042%	99.212%
75.0	5.759	0.610	1236.646	.042%	99.260%

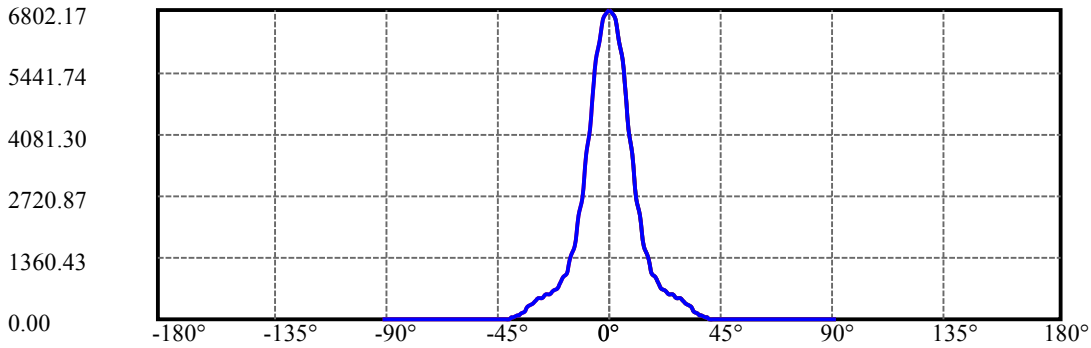
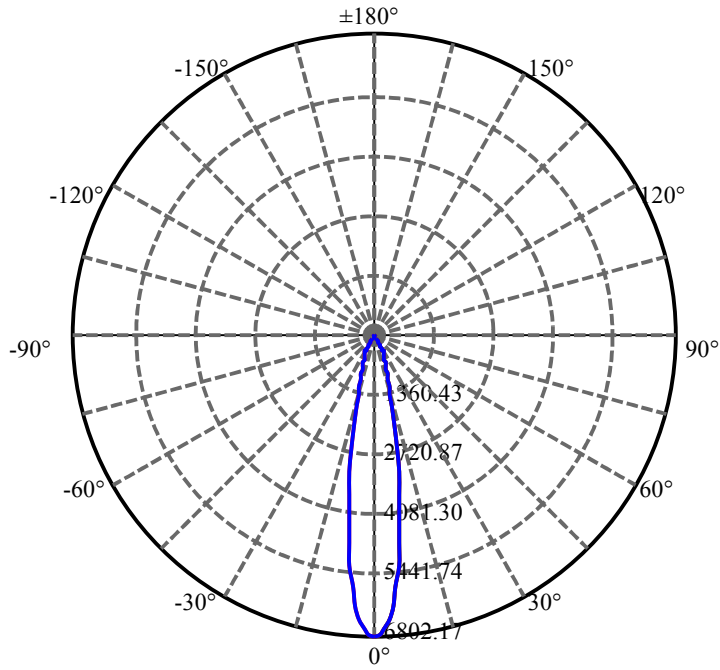
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	5.780	0.615	1237.26	.043%	99.310%
77.0	5.892	0.630	1237.89	.044%	99.360%
78.0	6.131	0.658	1238.548	.046%	99.413%
79.0	6.398	0.689	1239.237	.048%	99.468%
80.0	6.673	0.721	1239.957	.050%	99.526%
81.0	7.080	0.767	1240.724	.053%	99.588%
82.0	6.961	0.756	1241.48	.052%	99.649%
83.0	6.265	0.682	1242.162	.047%	99.703%
84.0	5.766	0.629	1242.791	.044%	99.754%
85.0	5.730	0.626	1243.417	.043%	99.804%
86.0	5.105	0.558	1243.975	.039%	99.849%
87.0	4.936	0.541	1244.516	.038%	99.892%
88.0	4.922	0.539	1245.055	.037%	99.935%
89.0	4.894	0.537	1245.592	.037%	99.979%
90.0	4.873	0.267	1245.859	.019%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1127.16	78.27%	90.47%
0-40	1212.86	84.23%	97.35%
0-60	1227.16	85.22%	98.50%
0-90	1245.59	86.50%	99.98%
0-120	1245.59	86.50%	99.98%
0-180	1245.86	86.52%	100.00%
60-90	19.09	1.33%	1.53%
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%
0-24.36	996.69	69.21%	80.00%

ZONAL LUMEN SUMMARY

0-10	487.06
10-20	396.63
20-30	243.46
30-40	85.71
40-50	7.78
50-60	6.52
60-70	6.44
70-80	6.36
80-90	5.63
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



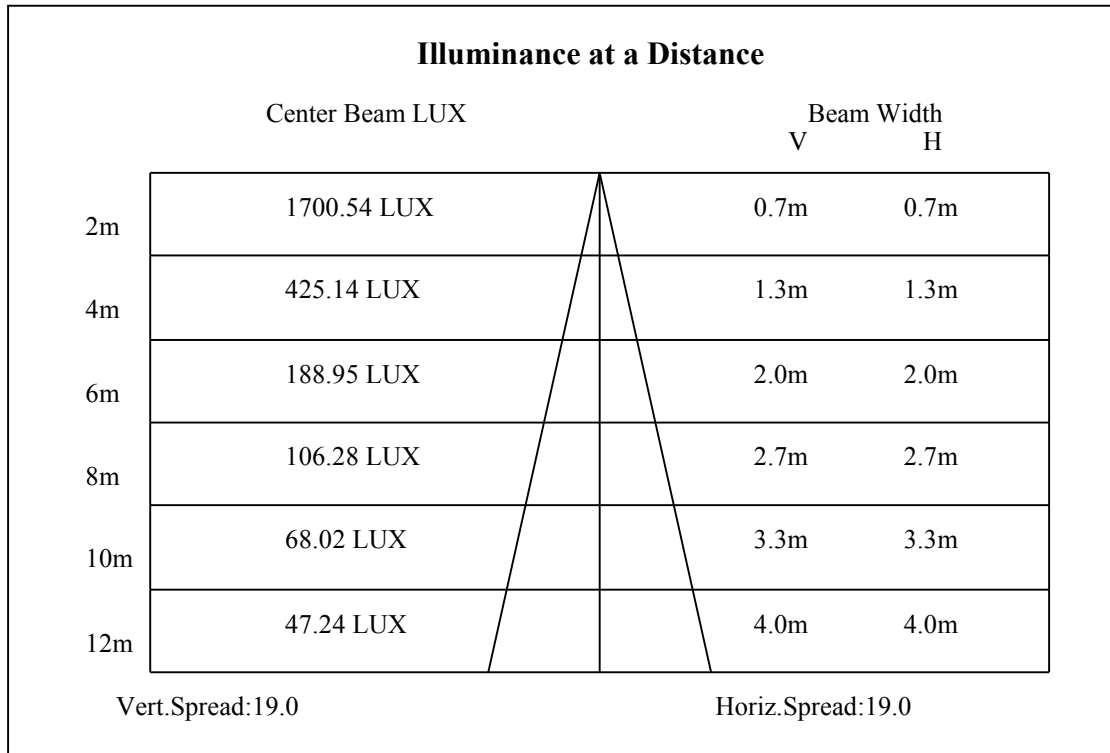
C0(Max): —————

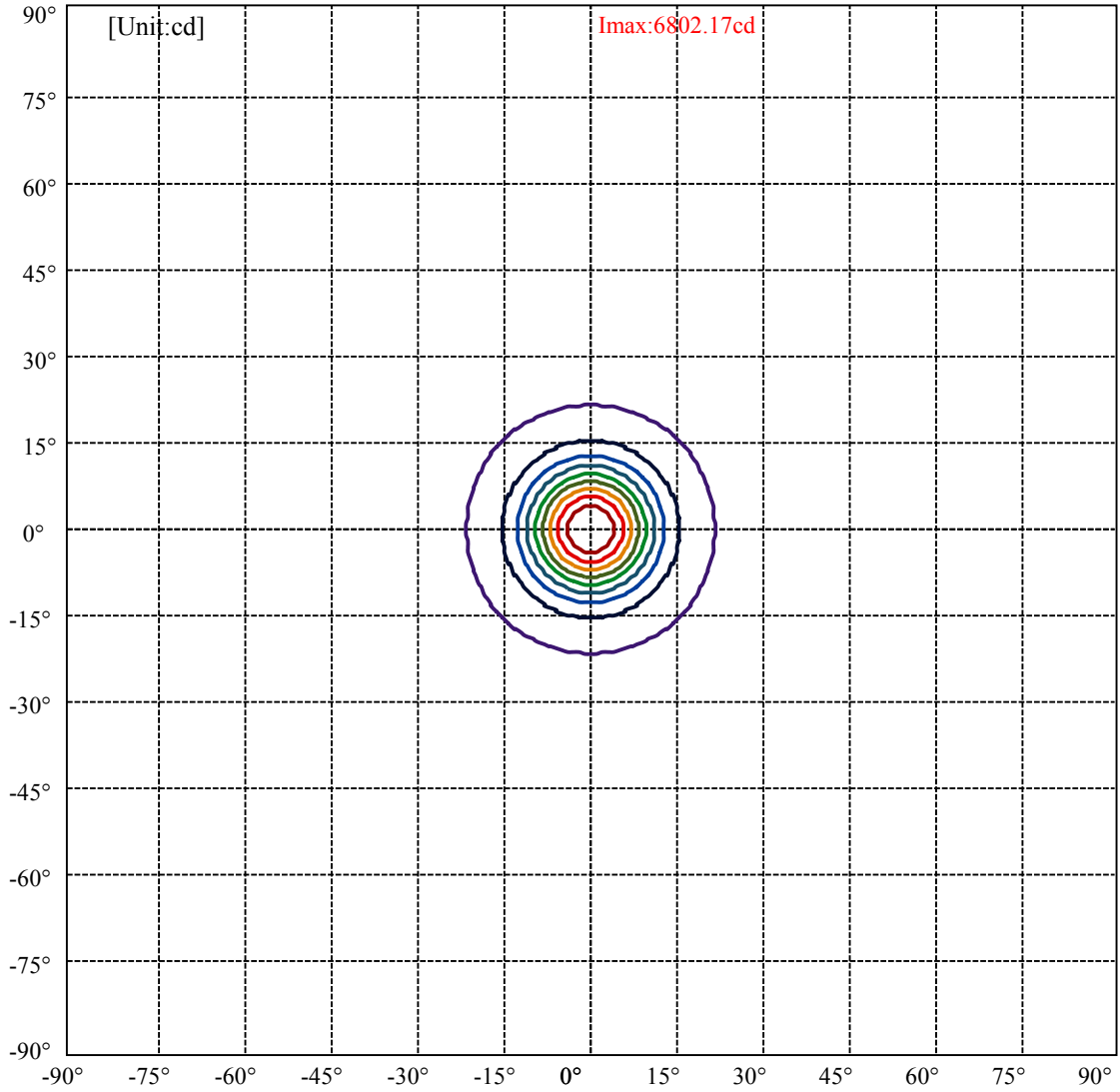
C0/C180: —————

C90/C270: —————

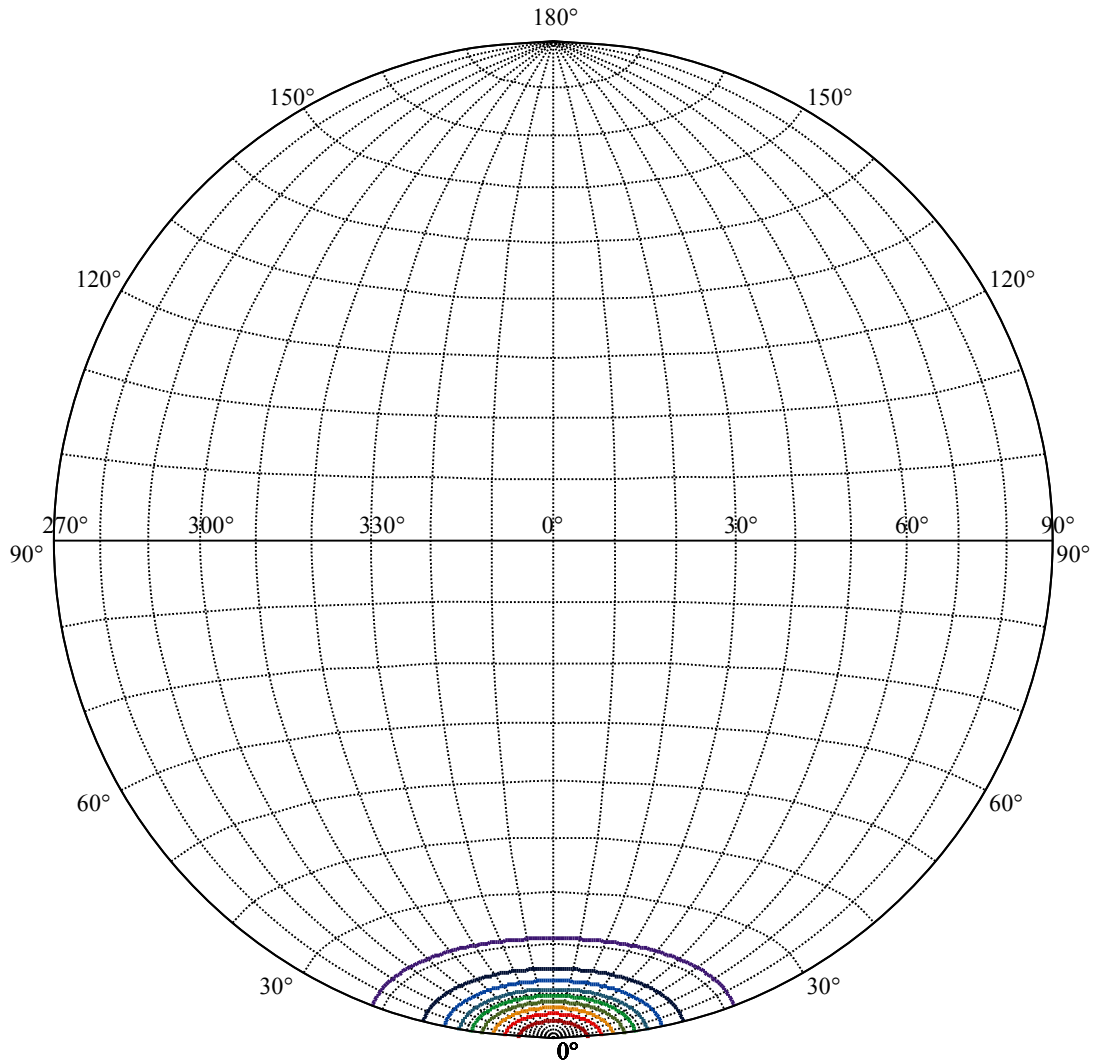
Field angle(10%Imax):C0/180Left:21.3 Right:21.3
:C90/270Left:21.3 Right:21.3

Beam Angle(50%Imax):C0/180Left:9.5 Right:9.5
:C90/270Left:9.5 Right:9.5





(10%Imax) 680.217	—
(20%Imax) 1360.43	—
(30%Imax) 2040.65	—
(40%Imax) 2720.87	—
(50%Imax) 3401.09	—
(60%Imax) 4081.3	—
(70%Imax) 4761.52	—
(80%Imax) 5441.74	—
(90%Imax) 6121.95	—



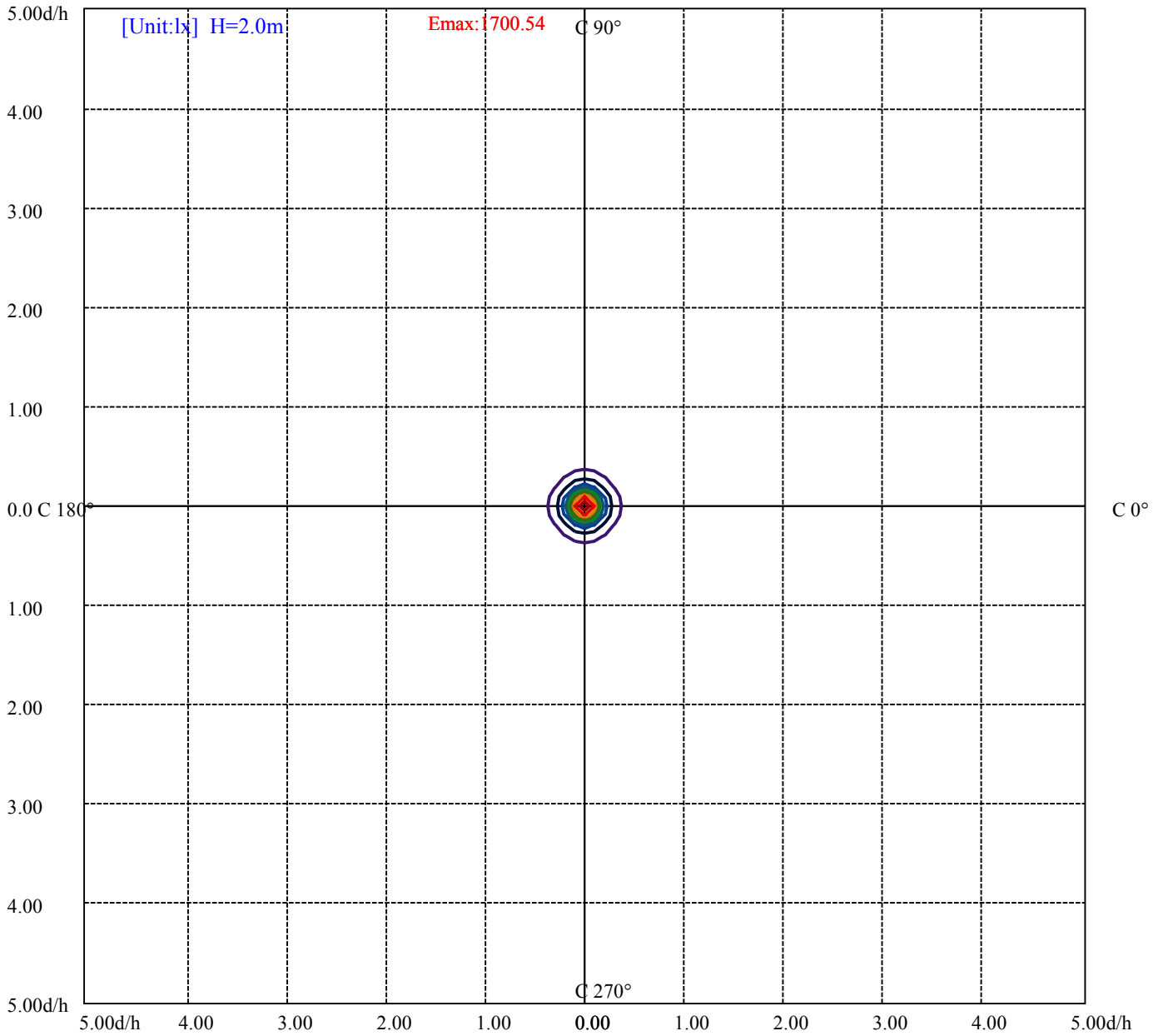
House

[Unit:cd]

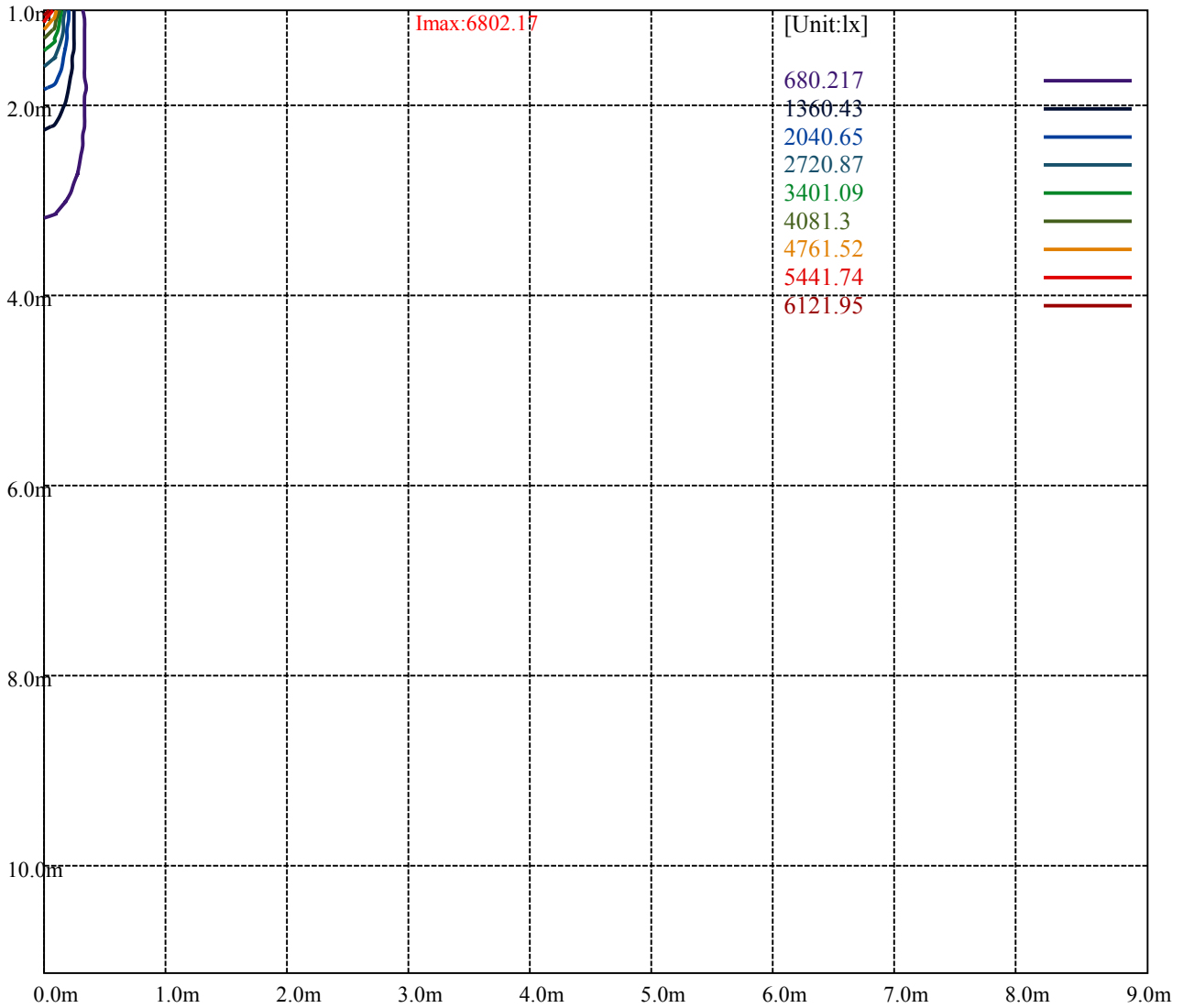
Road

I_{max}:6802.17

(10%I _{max}) 680.217	—
(20%I _{max}) 1360.43	—
(30%I _{max}) 2040.65	—
(40%I _{max}) 2720.87	—
(50%I _{max}) 3401.09	—
(60%I _{max}) 4081.3	—
(70%I _{max}) 4761.52	—
(80%I _{max}) 5441.74	—
(90%I _{max}) 6121.95	—



(10%Emax) 170.0542	—
(20%Emax) 340.1075	—
(30%Emax) 510.1625	—
(40%Emax) 680.2175	—
(50%Emax) 850.27	—
(60%Emax) 1020.325	—
(70%Emax) 1190.38	—
(80%Emax) 1360.432	—
(90%Emax) 1530.488	—



Luminance Table

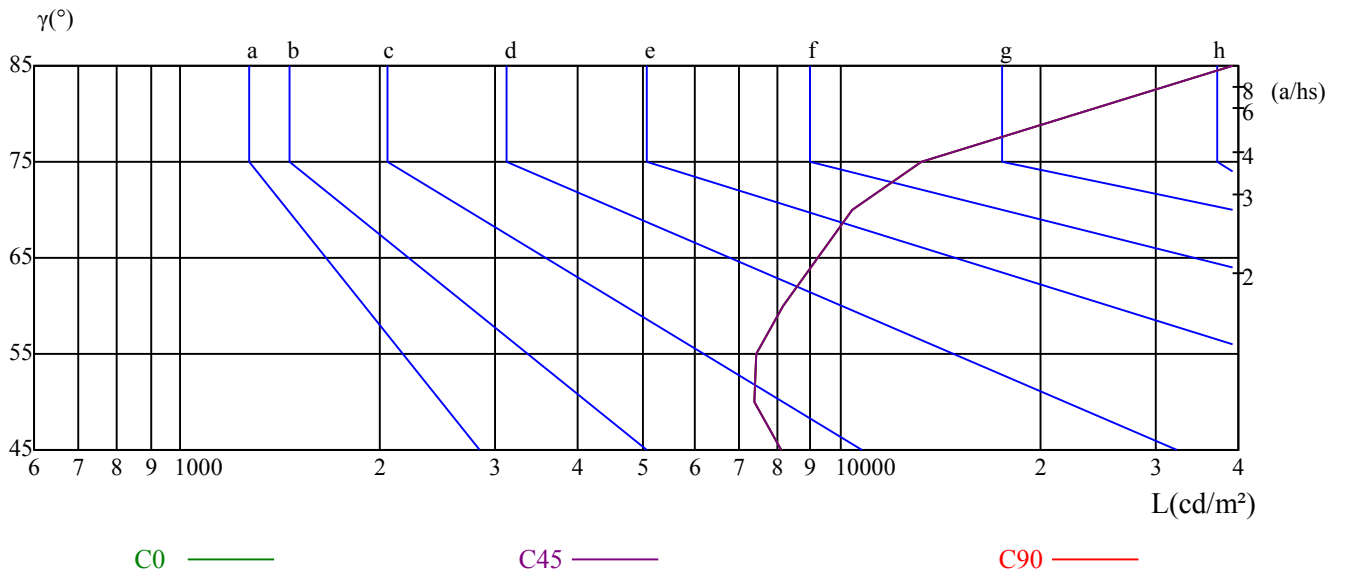
γ	45	50	55	60	65	70	75	80	85
C0	8110	7412	7460	8198	9244	10420	13236	22859	39113
C45	8110	7412	7460	8198	9244	10420	13236	22859	39113
C90	8110	7412	7460	8198	9244	10420	13236	22859	39113

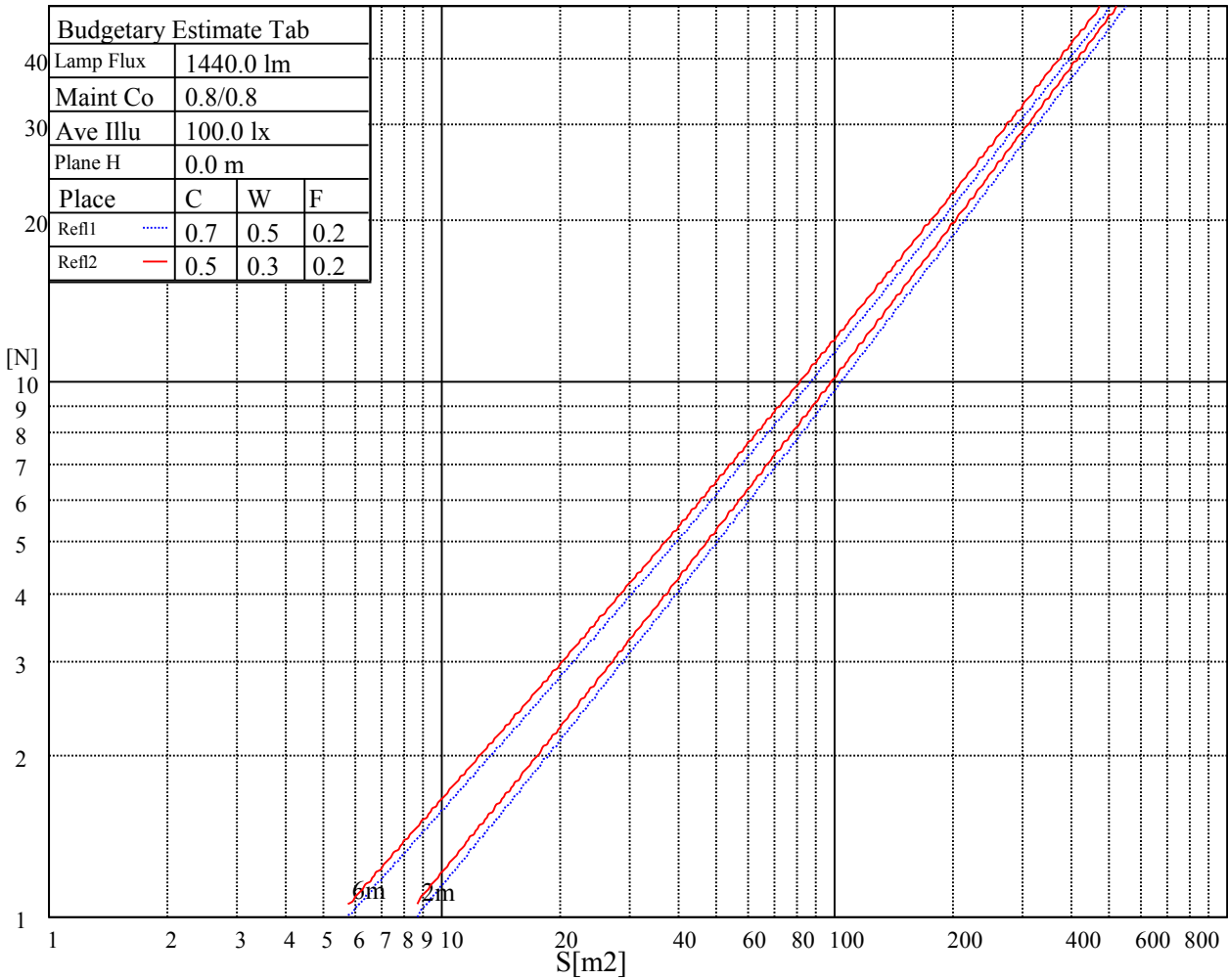
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
9244	9244	9244	13236	13236	13236	39113	39113	39113

Glare Table

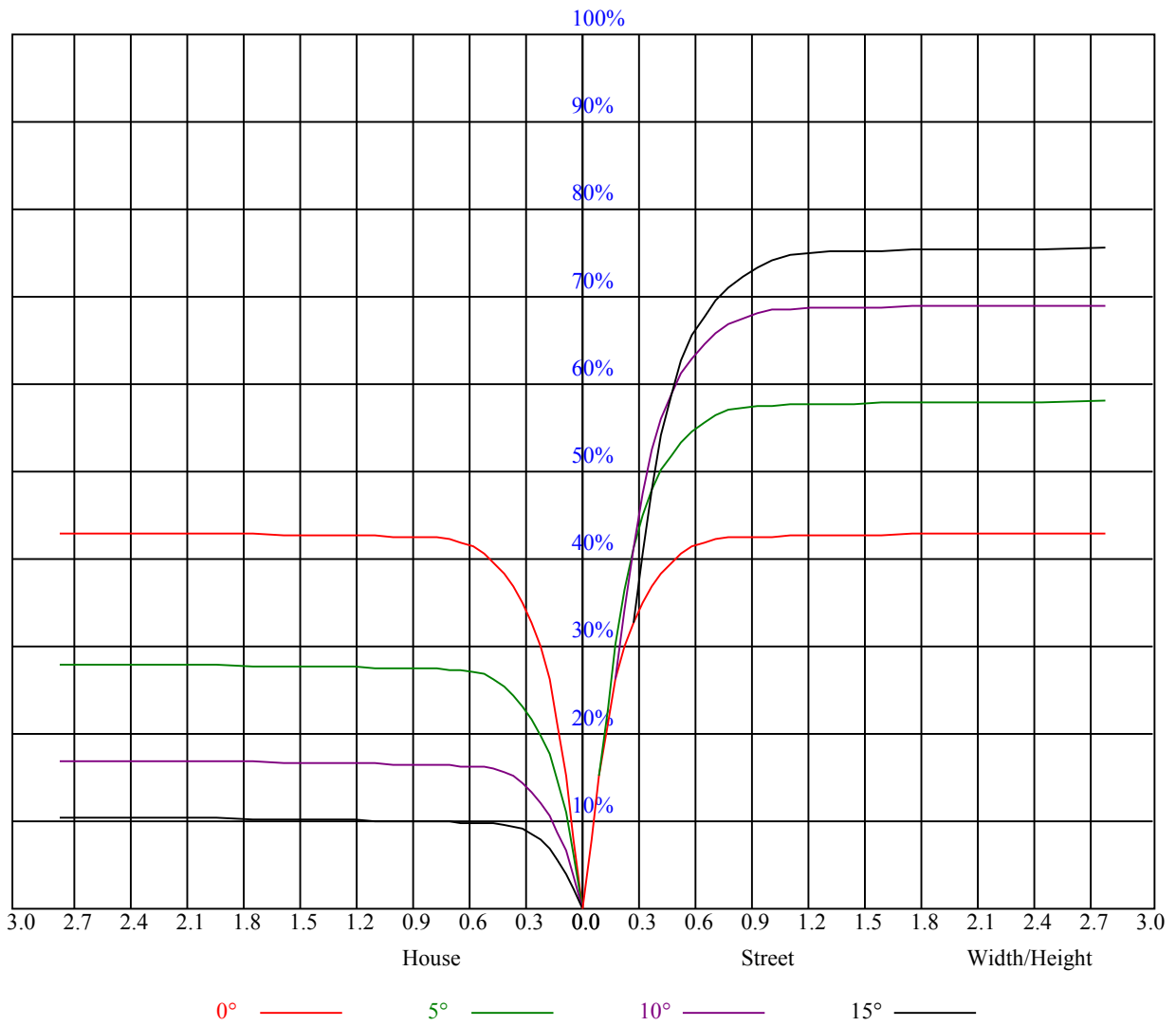
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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	1.03	1.03	1.03	1.01	1.01	1.01	0.96	0.96	0.96	0.92	0.92	0.92	0.88	0.88	0.88	0.87
1	0.97	0.95	0.94	0.95	0.94	0.92	0.92	0.91	0.89	0.89	0.88	0.87	0.86	0.85	0.84	0.83
2	0.92	0.89	0.87	0.91	0.88	0.86	0.88	0.86	0.84	0.86	0.84	0.83	0.83	0.82	0.81	0.80
3	0.88	0.85	0.82	0.87	0.84	0.81	0.85	0.82	0.80	0.83	0.81	0.79	0.81	0.79	0.78	0.77
4	0.84	0.81	0.78	0.84	0.80	0.78	0.82	0.79	0.77	0.80	0.78	0.76	0.79	0.77	0.75	0.74
5	0.81	0.77	0.75	0.80	0.77	0.74	0.79	0.76	0.74	0.78	0.75	0.73	0.77	0.74	0.73	0.71
6	0.78	0.74	0.72	0.78	0.74	0.72	0.77	0.73	0.71	0.75	0.73	0.71	0.74	0.72	0.70	0.69
7	0.76	0.72	0.69	0.75	0.72	0.69	0.74	0.71	0.69	0.73	0.70	0.68	0.72	0.70	0.68	0.67
8	0.73	0.70	0.67	0.73	0.69	0.67	0.72	0.69	0.67	0.71	0.68	0.66	0.71	0.68	0.66	0.65
9	0.71	0.67	0.65	0.71	0.67	0.65	0.70	0.67	0.65	0.69	0.66	0.64	0.69	0.66	0.64	0.63
10	0.69	0.65	0.63	0.69	0.65	0.63	0.68	0.65	0.63	0.68	0.65	0.63	0.67	0.64	0.63	0.62



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	6820.31	6662.25	6351.19	6011.44	5592.38	4981.50	4452.19	3918.38	3347.44
45.0	6828.75	6665.63	6387.19	6021.56	5622.19	5095.69	4514.06	3976.31	3454.31
90.0	6782.63	6626.25	6416.44	6141.38	5741.44	5308.88	4755.94	4164.75	3637.13
135.0	6777.00	6820.31	6769.69	6643.69	6446.25	6087.38	5711.63	5263.31	4703.63
180.0	6820.31	6903.56	6912.00	6829.88	6672.38	6396.19	6061.50	5591.81	5037.75
225.0	6828.75	6924.94	6932.81	6851.81	6670.69	6420.38	6085.13	5556.38	5065.88
270.0	6782.63	6823.69	6794.44	6644.81	6430.50	6131.25	5653.13	5196.94	4695.75
315.0	6777.00	6656.06	6429.38	6102.00	5724.00	5213.25	4714.31	4120.88	3544.31
360.0	6820.31	6662.25	6351.19	6011.44	5592.38	4981.50	4452.19	3918.38	3347.44
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	2834.44	2428.31	2040.75	1750.50	1484.44	1270.69	1124.44	994.50	894.94
45.0	2870.44	2453.63	2094.19	1757.25	1481.06	1285.88	1115.44	984.94	892.13
90.0	3142.69	2594.25	2221.88	1904.63	1577.25	1365.75	1119.54	1053.79	917.83
135.0	4115.81	3596.63	3048.19	2613.94	2194.31	1882.69	1592.44	1359.56	1193.63
180.0	4503.94	3895.88	3324.38	2863.69	2457.56	2025.00	1738.13	1501.88	1225.69
225.0	4541.06	3870.00	3349.13	2869.31	2350.13	2005.31	1707.19	1401.19	1108.29
270.0	4051.13	3540.94	3061.69	2572.31	2153.25	1833.75	1535.06	1315.69	1119.94
315.0	3065.06	2632.50	2165.63	1850.06	1590.75	1332.00	1112.79	1034.04	920.19
360.0	2834.44	2428.31	2040.75	1750.50	1484.44	1270.69	1124.44	994.50	894.94
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	822.38	759.94	695.25	649.13	610.88	574.88	546.19	523.69	501.19
45.0	803.81	740.81	677.81	626.06	586.69	553.50	520.31	498.38	481.50
90.0	829.58	757.80	687.94	630.17	586.74	547.20	514.52	489.83	468.11
135.0	1042.31	936.00	829.69	761.06	700.88	644.63	599.06	565.88	540.00
180.0	1102.05	979.76	870.02	782.66	719.33	660.49	617.46	576.11	543.09
225.0	1055.87	920.98	829.07	746.49	680.85	629.83	589.78	548.61	520.82
270.0	968.63	865.69	772.88	697.50	644.06	596.81	551.81	520.88	495.00
315.0	832.05	766.74	702.68	651.09	611.04	573.36	545.29	519.13	496.74
360.0	822.38	759.94	695.25	649.13	610.88	574.88	546.19	523.69	501.19
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	470.25	433.69	385.88	339.19	285.75	254.64	181.35	130.78	94.84
45.0	451.69	419.63	379.69	332.44	284.63	229.22	176.96	130.50	93.09
90.0	449.04	419.68	378.39	337.67	293.85	236.93	192.94	150.24	101.87
135.0	507.38	488.25	467.44	429.19	380.25	338.63	285.19	225.23	180.11
180.0	518.34	495.28	470.31	439.37	400.61	344.08	297.23	249.19	202.16
225.0	499.39	480.77	454.28	424.24	382.95	334.91	289.35	243.06	190.01
270.0	471.94	450.56	426.94	391.50	348.75	306.00	284.63	209.70	160.48
315.0	472.22	438.98	388.97	343.86	296.38	236.08	188.49	143.04	94.84
360.0	470.25	433.69	385.88	339.19	285.75	254.64	181.35	130.78	94.84
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	53.27	32.12	20.93	18.00	15.64	13.56	10.74	10.46	10.07
45.0	60.58	34.48	21.83	19.13	16.59	14.68	11.08	10.80	10.41
90.0	68.06	42.24	25.03	17.83	15.58	13.39	12.04	10.58	10.18
135.0	131.51	88.31	53.49	29.14	17.83	14.40	11.76	10.52	9.56
180.0	145.41	102.99	66.66	34.31	19.91	14.51	12.77	10.86	10.01
225.0	139.44	99.84	60.19	32.34	18.73	14.96	13.50	11.76	10.80
270.0	118.80	77.23	47.08	24.81	17.89	16.26	14.18	12.83	11.42
315.0	56.08	33.36	19.86	16.82	15.08	12.99	10.97	10.46	10.07
360.0	53.27	32.12	20.93	18.00	15.64	13.56	10.74	10.46	10.07

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	9.68	9.39	9.06	8.72	8.44	8.16	7.82	7.59	7.26
45.0	9.90	9.51	9.17	9.00	8.83	8.72	8.61	8.49	8.33
90.0	9.79	9.28	8.89	8.61	8.38	8.21	8.04	8.04	7.99
135.0	8.72	8.38	7.99	7.65	7.37	7.14	6.86	6.69	6.53
180.0	8.61	8.33	7.88	7.59	7.26	6.98	6.75	6.58	6.41
225.0	9.84	9.62	9.11	8.72	8.38	7.99	7.76	7.54	7.43
270.0	10.91	10.46	9.96	9.51	9.11	8.83	8.55	8.49	8.33
315.0	9.68	9.34	8.89	8.66	8.38	8.04	7.88	7.65	7.31
360.0	9.68	9.39	9.06	8.72	8.44	8.16	7.82	7.59	7.26
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	6.98	6.75	6.58	6.41	6.30	6.24	6.19	6.19	6.13
45.0	8.27	8.10	7.99	7.88	7.76	7.59	7.54	7.37	7.31
90.0	7.99	8.04	8.10	8.21	8.27	8.38	8.33	8.38	8.21
135.0	6.41	6.30	6.24	6.19	6.08	6.08	6.02	5.96	6.02
180.0	6.24	6.13	6.08	6.02	5.96	5.91	5.91	5.85	5.85
225.0	7.26	7.20	7.20	7.20	7.20	7.31	7.37	7.54	7.59
270.0	8.27	8.21	8.16	8.04	7.93	7.82	7.65	7.54	7.37
315.0	7.09	6.81	6.58	6.41	6.24	6.19	6.13	6.08	5.96
360.0	6.98	6.75	6.58	6.41	6.30	6.24	6.19	6.19	6.13
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	6.08	6.08	6.08	6.02	5.96	5.96	5.96	5.91	5.91
45.0	7.09	6.92	6.69	6.53	6.36	6.24	6.13	6.08	6.02
90.0	8.10	7.76	7.48	7.09	6.81	6.53	6.41	6.30	6.19
135.0	6.02	6.02	6.02	6.02	6.02	6.02	5.96	5.91	5.85
180.0	5.85	5.85	5.85	5.85	5.85	5.85	5.79	5.79	5.74
225.0	7.71	7.65	7.59	7.48	7.20	6.92	6.58	6.30	6.08
270.0	7.26	7.03	6.92	6.69	6.47	6.24	6.08	5.91	5.85
315.0	5.96	5.91	5.91	5.85	5.85	5.79	5.79	5.74	5.68
360.0	6.08	6.08	6.08	6.02	5.96	5.96	5.96	5.91	5.91
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	5.85	5.91	5.85	5.85	5.91	6.13	7.31	8.38	9.34
45.0	5.91	5.63	5.57	5.79	6.08	6.92	7.99	9.45	10.58
90.0	6.19	6.13	6.19	6.13	6.13	6.08	5.79	5.57	5.68
135.0	5.85	5.79	5.79	5.79	5.74	5.74	5.74	5.68	5.68
180.0	5.68	5.68	5.63	5.57	5.57	5.51	5.51	5.51	5.46
225.0	5.91	5.79	5.74	5.68	5.63	5.63	5.57	5.57	5.51
270.0	5.74	5.68	5.68	5.63	5.63	5.57	5.57	5.51	5.46
315.0	5.68	5.68	5.63	5.63	5.57	5.57	5.57	5.51	5.68
360.0	5.85	5.91	5.85	5.85	5.91	6.13	7.31	8.38	9.34
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	9.96	9.45	7.48	6.19	6.41	4.95	4.89	4.89	4.89
45.0	11.03	10.24	7.88	6.41	6.64	5.01	4.89	4.89	4.84
90.0	7.65	8.10	7.37	6.30	6.30	5.18	4.89	4.89	4.78
135.0	5.68	5.63	5.63	5.68	5.68	5.68	5.01	4.95	5.01
180.0	5.40	5.40	5.34	5.34	5.29	5.01	4.89	4.89	4.89
225.0	5.46	5.40	5.40	5.34	5.29	5.01	5.01	4.95	4.89
270.0	5.46	5.40	5.40	5.29	5.23	5.01	4.95	4.95	4.89
315.0	6.02	6.08	5.63	5.57	5.01	5.01	4.95	4.95	4.95
360.0	9.96	9.45	7.48	6.19	6.41	4.95	4.89	4.89	4.89

Intensity data(cd)

C/ γ (°)	90.0
0.0	4.84
45.0	4.78
90.0	4.78
135.0	5.01
180.0	4.95
225.0	4.89
270.0	4.84
315.0	4.89
360.0	4.84