
LumCAT: 2-2164-M
Luminaire: 92.70.278.00
Report No: 221221-B010
Test No: 221221-C010
LampCAT: CREE CXA 1830 LES12
Lamp flux(lm): 1965.3
Number of Lamps: 1
Length(mm): 0
Phm Type: C

Voltage(V): 34.6300
Current(A): 0.4310
Power (W): 14.9250
PF: 0.0000
Ballast type: DC
Width(mm): 0
Height(mm): 0

Photometric Results

Lumens(lm): 1594.40
Efficiency(%): 81.13%
Lumens(lm)/Power(W): 106.83
Central intensity(cd): 7172.738
Maximum intensity(cd): 7172.738
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=25.0
 [C90/270]Total=25.0
Field angle(10%Imax): [C0/180]Total=47.6
 [C90/270]Total=47.6
Maximum s/h(1/2): C0_180=0.42 C90_270=0.42
Maximum s/h(1/4): C0_180=0.43 C90_270=0.43
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 81.13%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.505%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	7172.738	0.000	0	.000%	.000%
1.0	7144.131	6.850	6.85	.349%	.430%
2.0	7037.921	20.355	27.206	1.036%	1.706%
3.0	6891.302	33.314	60.52	1.695%	3.796%
4.0	6697.852	45.487	106.007	2.315%	6.649%
5.0	6421.047	56.437	162.444	2.872%	10.188%
6.0	6100.174	65.802	228.246	3.348%	14.316%
7.0	5784.604	73.769	302.015	3.754%	18.942%
8.0	5384.334	79.934	381.949	4.067%	23.956%
9.0	5024.621	84.359	466.308	4.292%	29.247%
10.0	4606.650	87.159	553.467	4.435%	34.713%
11.0	4165.300	87.650	641.117	4.460%	40.211%
12.0	3793.488	87.001	728.118	4.427%	45.667%
13.0	3394.488	85.303	813.421	4.340%	51.017%
14.0	2990.931	81.733	895.154	4.159%	56.144%
15.0	2674.839	77.782	972.936	3.958%	61.022%
16.0	2376.672	74.019	1046.955	3.766%	65.665%
17.0	2032.719	68.666	1115.621	3.494%	69.971%
18.0	1789.151	63.014	1178.635	3.206%	73.924%
19.0	1581.898	58.649	1237.285	2.984%	77.602%
20.0	1353.015	53.717	1291.002	2.733%	80.971%
21.0	1157.645	48.210	1339.212	2.453%	83.995%
22.0	992.518	43.208	1382.42	2.199%	86.705%
23.0	849.007	38.640	1421.06	1.966%	89.128%
24.0	684.679	33.532	1454.592	1.706%	91.231%
25.0	546.933	28.004	1482.596	1.425%	92.988%
26.0	410.764	22.607	1505.203	1.150%	94.406%
27.0	295.560	17.280	1522.483	.879%	95.490%
28.0	188.132	12.246	1534.729	.623%	96.258%
29.0	115.136	7.934	1542.664	.404%	96.755%
30.0	58.491	4.688	1547.351	.239%	97.049%
31.0	31.370	2.501	1549.852	.127%	97.206%
32.0	16.544	1.373	1551.225	.070%	97.292%
33.0	12.496	0.856	1552.08	.044%	97.346%
34.0	11.719	0.733	1552.813	.037%	97.392%
35.0	11.032	0.707	1553.52	.036%	97.436%
36.0	10.531	0.687	1554.206	.035%	97.479%
37.0	10.143	0.674	1554.881	.034%	97.521%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	9.814	0.666	1555.547	.034%	97.563%
39.0	9.471	0.658	1556.205	.033%	97.605%
40.0	9.224	0.652	1556.857	.033%	97.645%
41.0	9.068	0.651	1557.508	.033%	97.686%
42.0	8.858	0.651	1558.16	.033%	97.727%
43.0	8.716	0.651	1558.811	.033%	97.768%
44.0	8.597	0.653	1559.464	.033%	97.809%
45.0	8.470	0.656	1560.12	.033%	97.850%
46.0	8.388	0.659	1560.779	.034%	97.891%
47.0	8.306	0.664	1561.443	.034%	97.933%
48.0	8.216	0.668	1562.111	.034%	97.975%
49.0	8.171	0.673	1562.784	.034%	98.017%
50.0	8.104	0.679	1563.463	.035%	98.060%
51.0	8.052	0.684	1564.146	.035%	98.103%
52.0	8.007	0.689	1564.835	.035%	98.146%
53.0	7.955	0.694	1565.53	.035%	98.189%
54.0	7.940	0.701	1566.23	.036%	98.233%
55.0	7.895	0.707	1566.937	.036%	98.278%
56.0	7.872	0.712	1567.649	.036%	98.322%
57.0	7.843	0.719	1568.368	.037%	98.367%
58.0	7.828	0.725	1569.093	.037%	98.413%
59.0	7.813	0.731	1569.824	.037%	98.459%
60.0	7.775	0.736	1570.56	.037%	98.505%
61.0	7.753	0.741	1571.301	.038%	98.551%
62.0	7.738	0.746	1572.048	.038%	98.598%
63.0	7.716	0.752	1572.799	.038%	98.645%
64.0	7.701	0.756	1573.556	.038%	98.693%
65.0	7.693	0.762	1574.318	.039%	98.741%
66.0	7.686	0.767	1575.085	.039%	98.789%
67.0	7.671	0.772	1575.857	.039%	98.837%
68.0	7.656	0.776	1576.633	.040%	98.886%
69.0	7.656	0.781	1577.415	.040%	98.935%
70.0	7.641	0.786	1578.2	.040%	98.984%
71.0	7.611	0.788	1578.989	.040%	99.034%
72.0	7.611	0.792	1579.78	.040%	99.083%
73.0	7.611	0.796	1580.576	.041%	99.133%
74.0	7.604	0.800	1581.376	.041%	99.183%
75.0	7.589	0.803	1582.179	.041%	99.234%

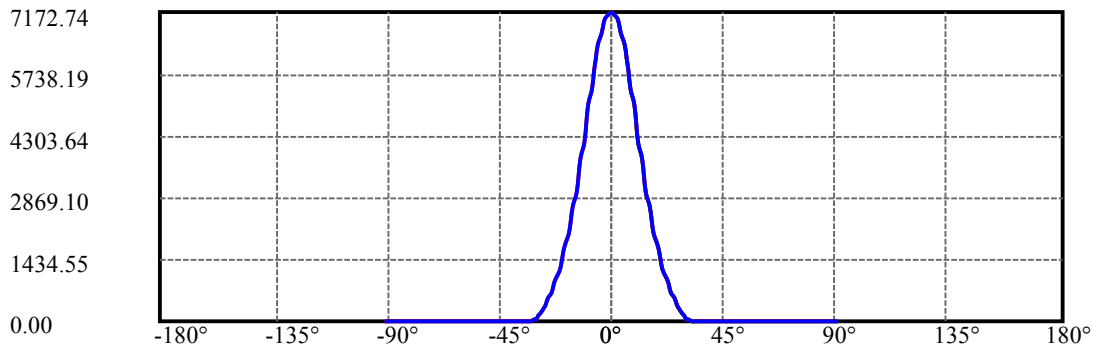
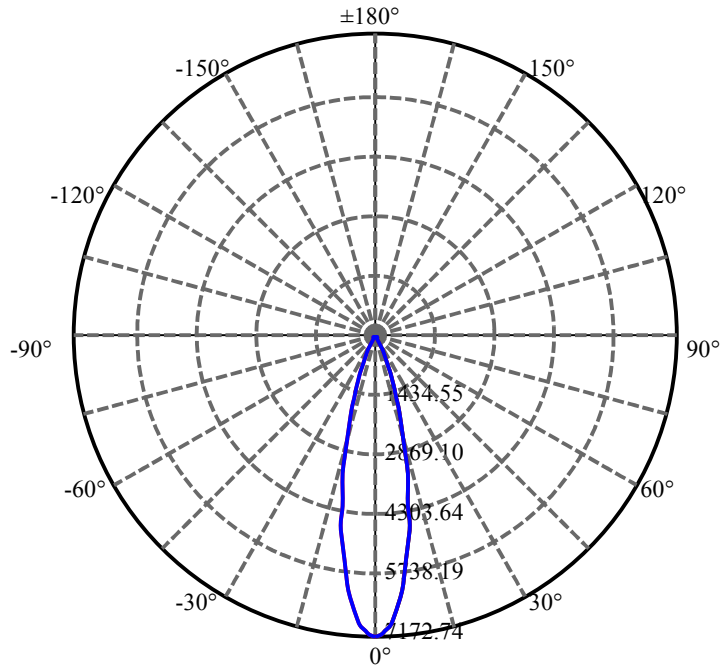
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	7.581	0.805	1582.984	.041%	99.284%
77.0	7.596	0.809	1583.793	.041%	99.335%
78.0	7.581	0.812	1584.606	.041%	99.386%
79.0	7.574	0.814	1585.42	.041%	99.437%
80.0	7.559	0.816	1586.236	.042%	99.488%
81.0	7.536	0.816	1587.052	.042%	99.539%
82.0	7.521	0.817	1587.868	.042%	99.590%
83.0	7.499	0.817	1588.685	.042%	99.642%
84.0	7.492	0.817	1589.502	.042%	99.693%
85.0	7.477	0.817	1590.319	.042%	99.744%
86.0	7.462	0.817	1591.135	.042%	99.795%
87.0	7.447	0.816	1591.951	.042%	99.847%
88.0	7.439	0.815	1592.766	.041%	99.898%
89.0	7.439	0.816	1593.582	.041%	99.949%
90.0	7.439	0.816	1594.398	.042%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1547.35	78.73%	97.05%
0-40	1556.86	79.22%	97.65%
0-60	1570.56	79.91%	98.50%
0-90	1593.58	81.09%	99.95%
0-120	1593.58	81.09%	99.95%
0-180	1594.40	81.13%	100.00%
60-90	23.76	1.21%	1.49%
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%
0-19.71	1275.52	64.90%	80.00%

ZONAL LUMEN SUMMARY

0-10	553.47
10-20	737.53
20-30	256.35
30-40	9.51
40-50	6.61
50-60	7.10
60-70	7.64
70-80	8.04
80-90	7.35
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: —————

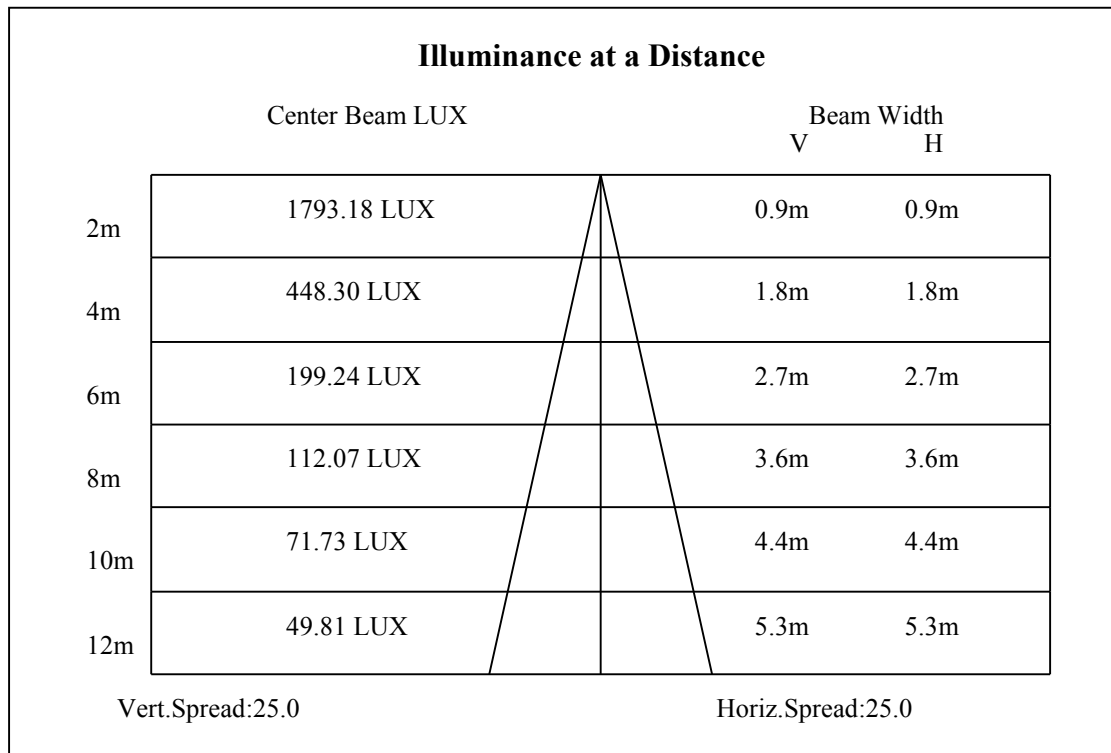
C90/C270: —————

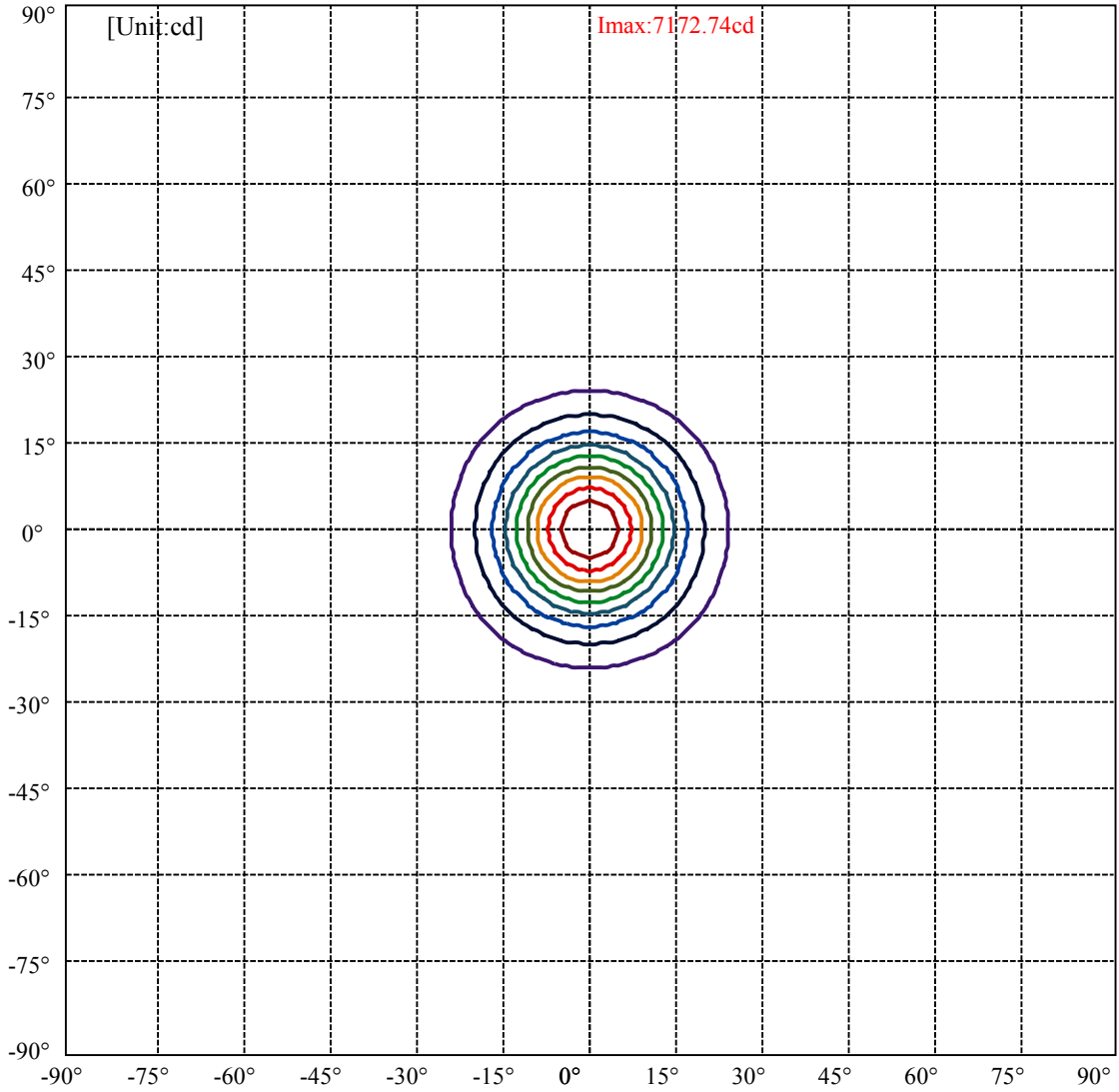
Field angle(10%Imax):C0/180Left:23.8 Right:23.8

:C90/270Left:23.8 Right:23.8

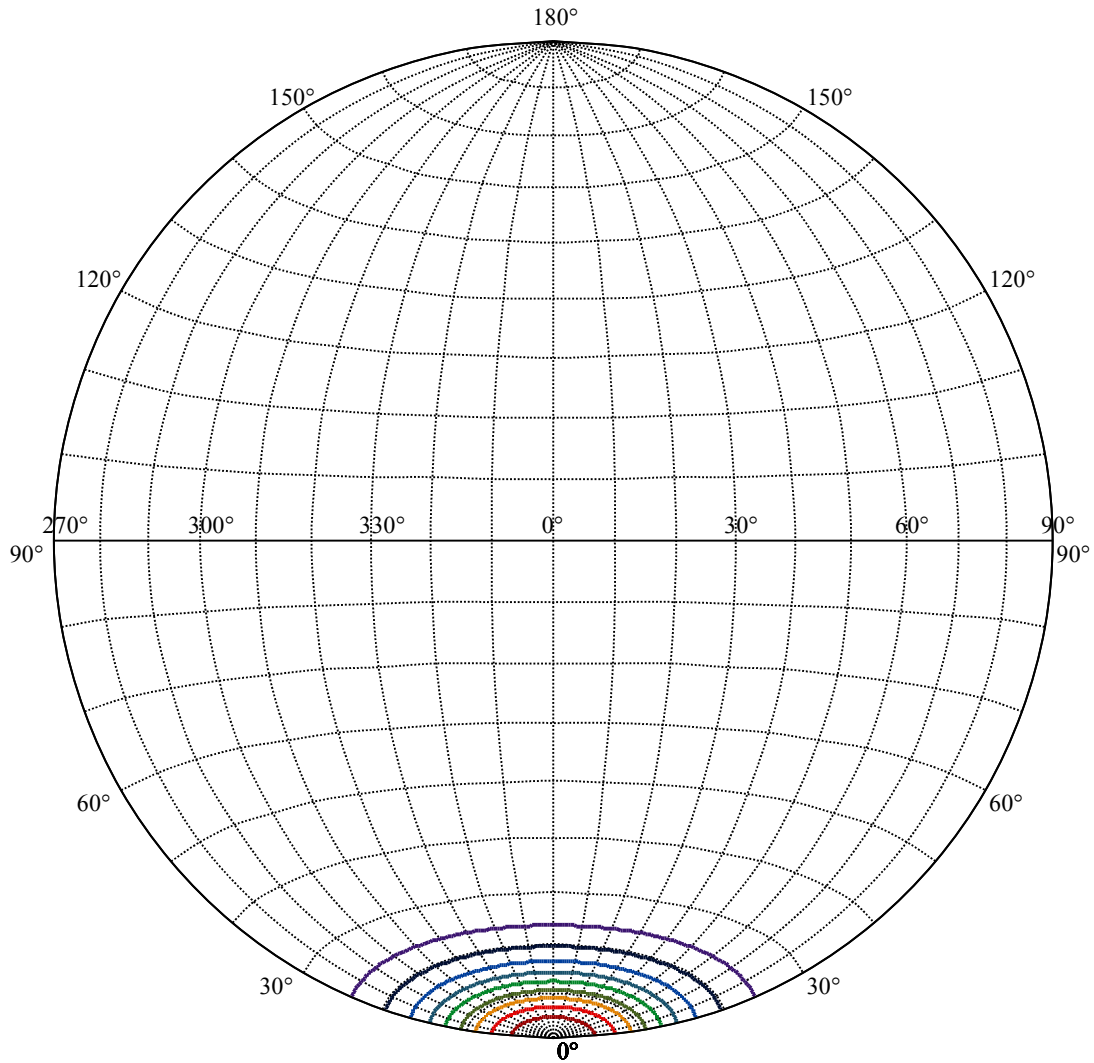
Beam Angle(50%Imax):C0/180Left:12.5 Right:12.5

:C90/270Left:12.5 Right:12.5





(10%Imax) 717.274	—
(20%Imax) 1434.55	—
(30%Imax) 2151.82	—
(40%Imax) 2869.1	—
(50%Imax) 3586.37	—
(60%Imax) 4303.64	—
(70%Imax) 5020.92	—
(80%Imax) 5738.19	—
(90%Imax) 6455.46	—



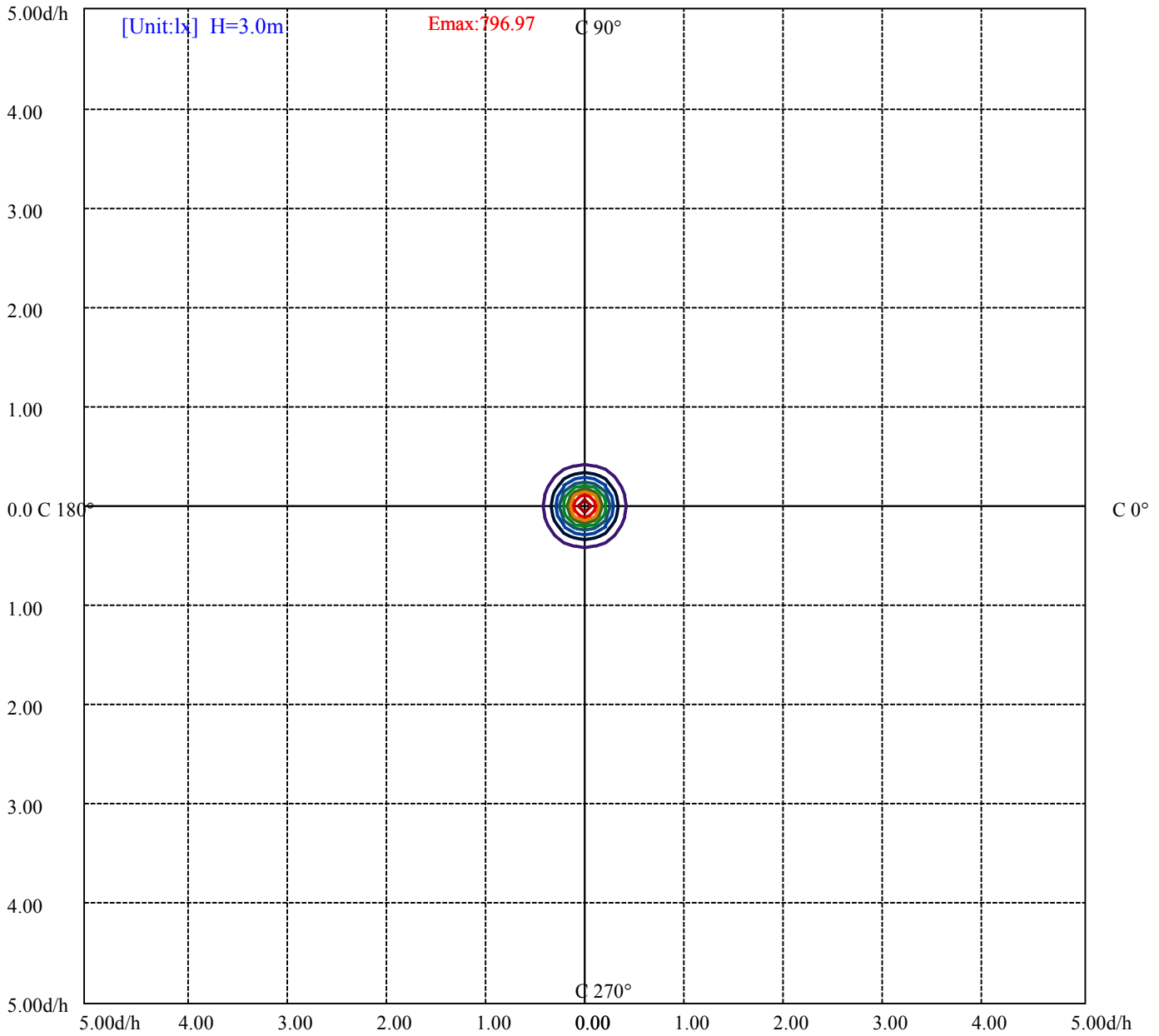
House

[Unit:cd]

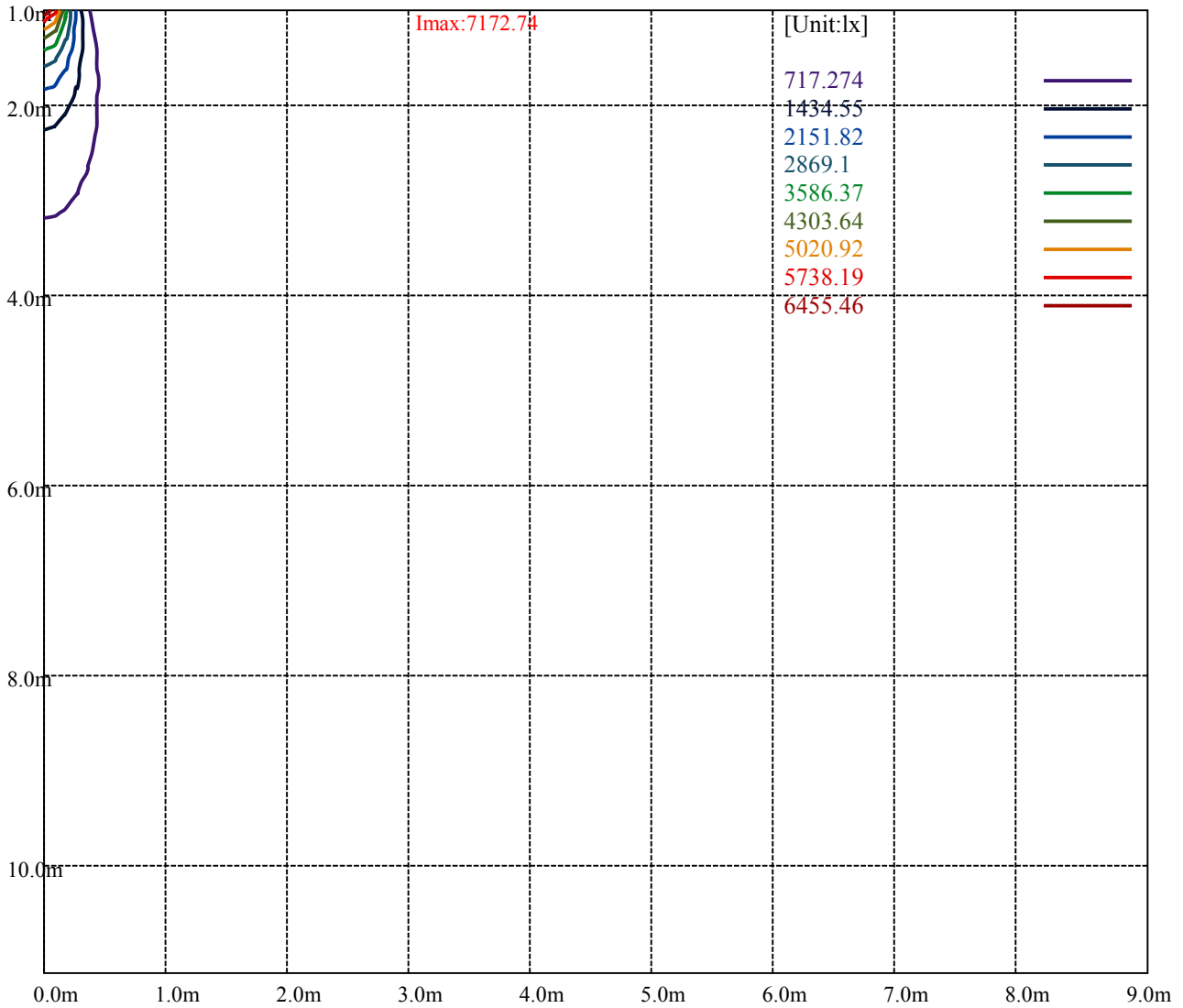
Road

Imax:7172.74

(10%Imax) 717.274	—
(20%Imax) 1434.55	—
(30%Imax) 2151.82	—
(40%Imax) 2869.1	—
(50%Imax) 3586.37	—
(60%Imax) 4303.64	—
(70%Imax) 5020.92	—
(80%Imax) 5738.19	—
(90%Imax) 6455.46	—



- (10%E_{max}) 79.697
- (20%E_{max}) 159.3945
- (30%E_{max}) 239.0911
- (40%E_{max}) 318.7878
- (50%E_{max}) 398.4856
- (60%E_{max}) 478.1823
- (70%E_{max}) 557.8789
- (80%E_{max}) 637.5767
- (90%E_{max}) 717.2733



Luminance Table

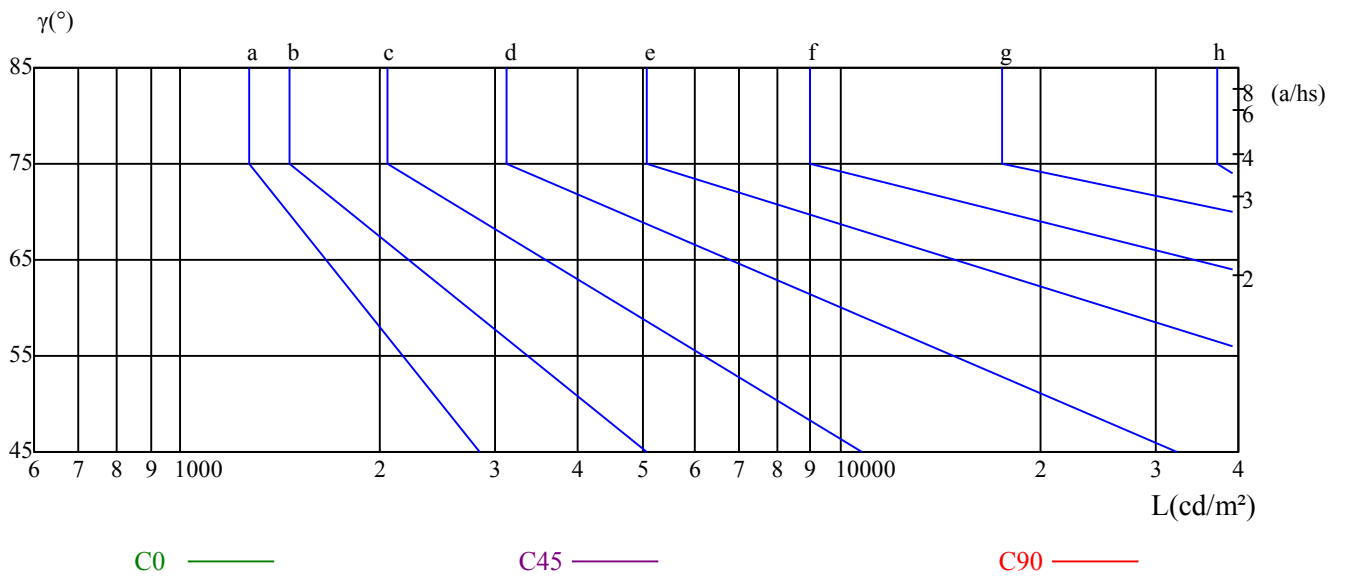
γ	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

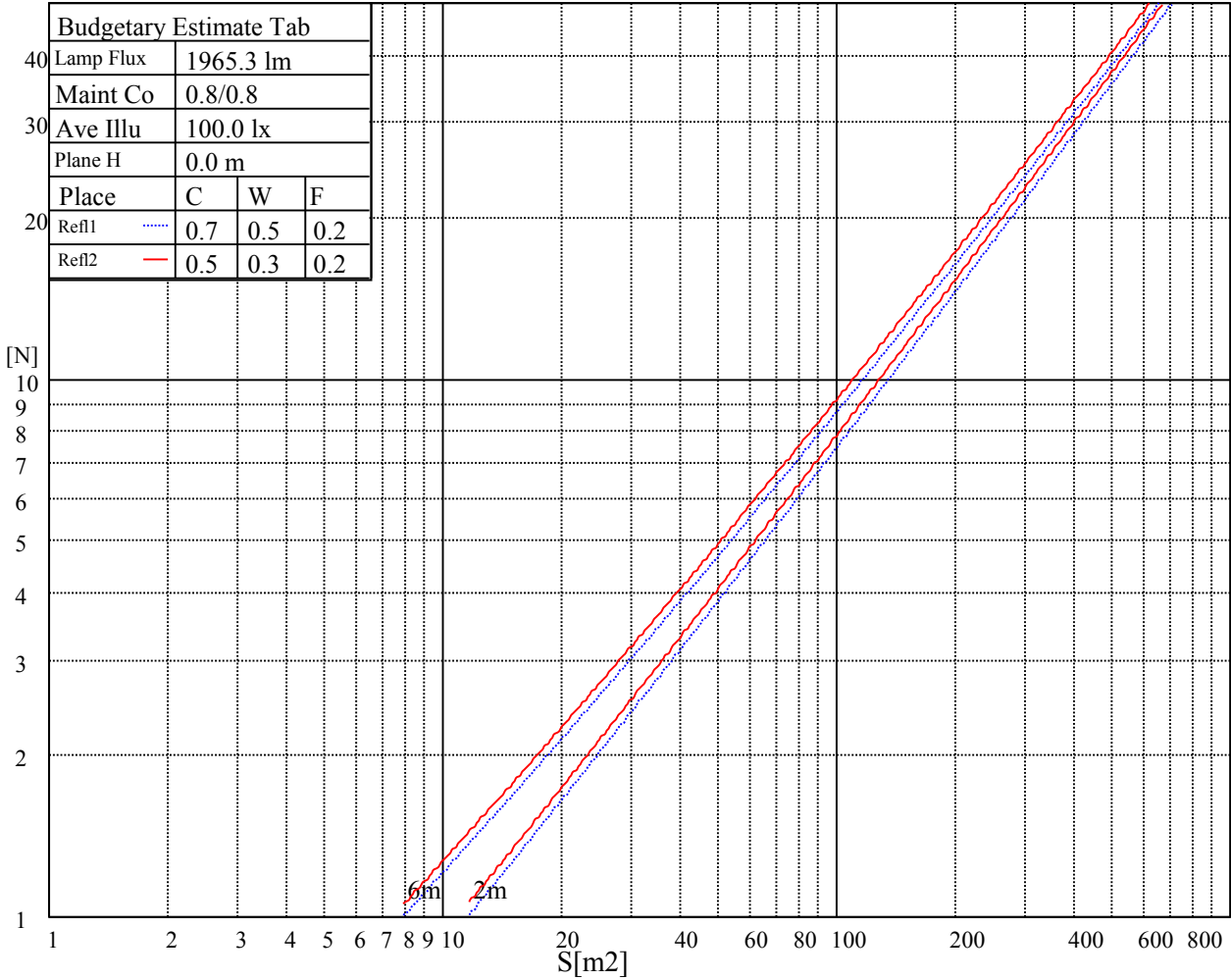
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

Glare Table

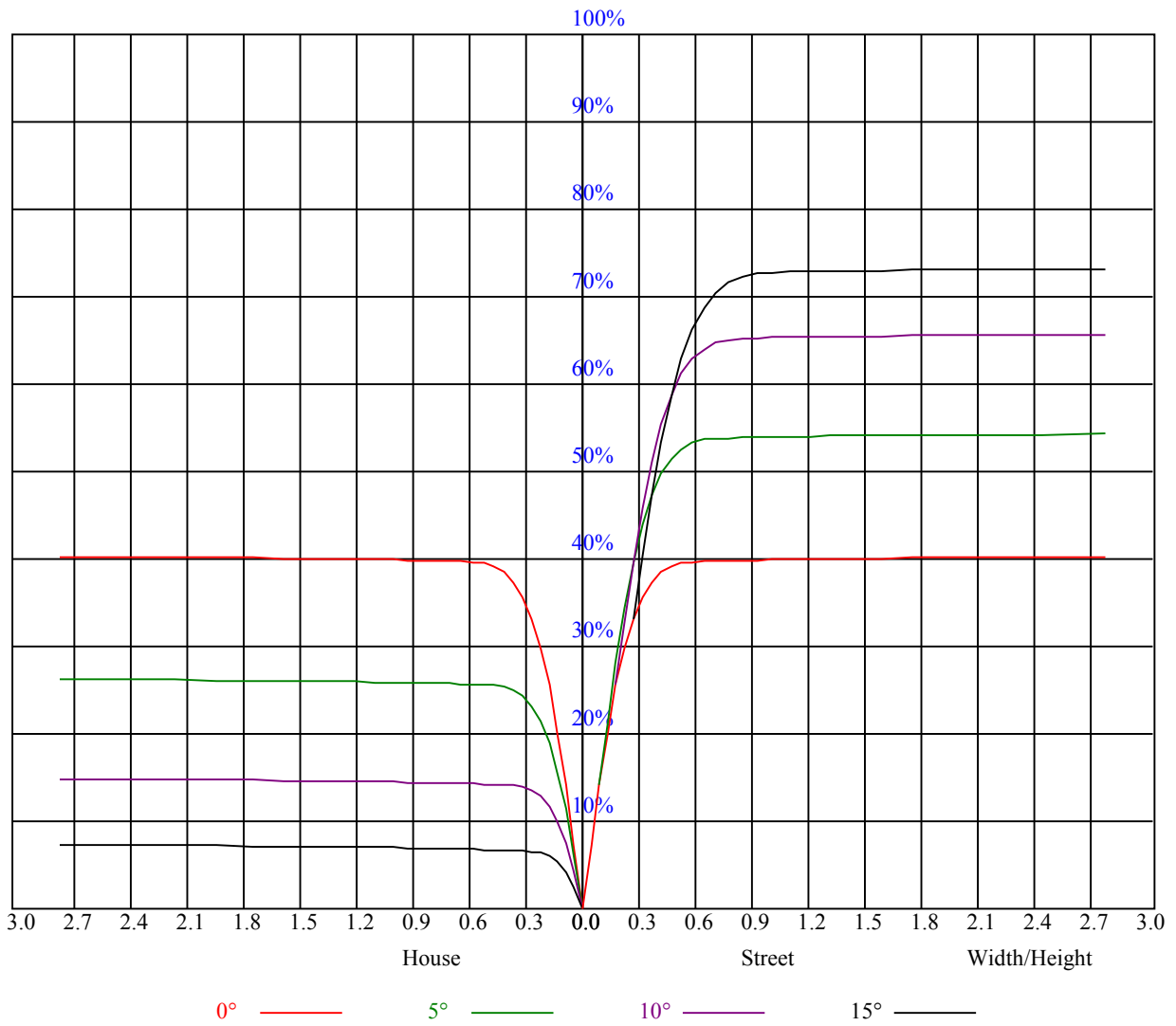
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

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



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	7233.09	7232.49	7158.40	7030.53	6856.65	6604.49	6297.36	6026.08	5600.64
45.0	7146.45	7007.22	6769.41	6535.17	6261.51	5910.76	5509.81	5133.37	4698.97
90.0	7105.81	6961.81	6725.19	6490.96	6214.90	5812.16	5457.23	5084.97	4600.38
135.0	7205.60	7132.11	6968.38	6792.71	6574.01	6278.83	5926.29	5582.12	5176.99
180.0	7233.09	7166.76	7030.53	6836.93	6614.65	6345.76	5962.74	5622.75	5257.66
225.0	7146.45	7235.48	7267.15	7221.14	7115.97	6930.14	6679.18	6419.85	6087.03
270.0	7105.81	7199.03	7238.47	7198.43	7094.46	6910.42	6664.24	6406.11	6078.66
315.0	7205.60	7218.15	7145.85	7024.55	6850.67	6575.81	6304.53	6001.58	5574.35
360.0	7233.09	7232.49	7158.40	7030.53	6856.65	6604.49	6297.36	6026.08	5600.64
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	5236.74	4859.70	4367.34	3977.75	3595.93	3142.41	2801.81	2486.92	2136.17
45.0	4300.42	3856.45	3432.21	3074.29	2697.84	2358.45	2091.35	1849.95	1573.29
90.0	4257.99	3821.80	3365.88	3061.74	2694.26	2320.80	2083.58	1835.61	1533.86
135.0	4801.15	4366.74	3933.53	3557.09	3156.15	2783.89	2475.56	2190.54	1859.51
180.0	4832.81	4402.00	4023.76	3604.29	3202.16	2866.94	2513.21	2222.21	1923.45
225.0	5761.37	5362.82	4934.99	4541.82	4149.84	3673.61	3310.31	2963.74	2556.83
270.0	5754.20	5361.63	4936.19	4546.00	4105.02	3674.21	3305.53	2957.17	2553.24
315.0	5252.28	4822.06	4328.50	3984.92	3554.70	3107.15	2817.35	2507.23	2125.41
360.0	5236.74	4859.70	4367.34	3977.75	3595.93	3142.41	2801.81	2486.92	2136.17
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1890.58	1674.87	1456.78	1258.99	1095.87	932.74	765.43	617.84	459.50
45.0	1381.49	1206.41	1022.37	857.45	713.45	560.48	411.10	301.75	187.74
90.0	1302.02	1184.42	986.34	842.28	700.84	562.81	401.24	284.42	187.03
135.0	1633.05	1431.08	1217.76	1032.53	890.32	734.36	579.01	438.59	307.73
180.0	1661.73	1455.58	1179.58	1057.09	911.29	769.56	594.48	462.67	341.01
225.0	2267.03	2003.51	1740.60	1507.57	1187.05	1124.19	953.84	808.40	648.02
270.0	2264.63	2005.31	1746.58	1517.72	1334.28	1146.06	997.28	834.75	667.44
315.0	1912.69	1693.99	1474.10	1187.53	1107.04	961.84	775.05	627.05	487.64
360.0	1890.58	1674.87	1456.78	1258.99	1095.87	932.74	765.43	617.84	459.50
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	329.84	244.93	105.88	47.68	20.14	13.92	12.97	12.19	11.41
45.0	94.41	34.96	15.54	12.85	11.95	11.29	10.70	10.34	9.92
90.0	98.83	39.80	16.55	12.91	12.01	11.35	10.76	10.34	9.98
135.0	244.33	107.85	42.13	18.05	13.50	12.43	11.71	11.11	10.58
180.0	220.73	123.45	59.16	21.63	13.98	12.91	12.01	11.35	10.82
225.0	509.21	365.09	241.16	150.94	78.40	26.65	14.82	13.32	12.13
270.0	523.44	369.87	311.91	147.11	78.16	29.82	14.16	13.09	12.13
315.0	343.70	219.11	128.77	56.77	22.83	13.98	12.85	12.01	11.29
360.0	329.84	244.93	105.88	47.68	20.14	13.92	12.97	12.19	11.41
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	10.88	10.46	10.04	9.68	9.38	9.20	8.96	8.84	8.66
45.0	9.62	9.38	9.20	8.96	8.78	8.72	8.60	8.48	8.43
90.0	9.68	9.44	9.20	9.02	8.84	8.78	8.60	8.54	8.43
135.0	10.22	9.86	9.62	9.32	9.14	8.96	8.78	8.66	8.54
180.0	10.34	9.98	9.68	9.38	9.14	8.96	8.78	8.66	8.54
225.0	11.47	10.93	10.46	9.92	9.62	9.38	9.14	8.90	8.78
270.0	11.35	10.82	10.40	9.92	9.56	9.38	9.08	8.90	8.78
315.0	10.70	10.28	9.92	9.56	9.32	9.14	8.90	8.72	8.60
360.0	10.88	10.46	10.04	9.68	9.38	9.20	8.96	8.84	8.66

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	8.54	8.43	8.37	8.25	8.19	8.13	8.13	8.07	8.01
45.0	8.31	8.25	8.19	8.13	8.13	8.07	8.01	7.95	7.89
90.0	8.37	8.25	8.25	8.19	8.13	8.07	8.01	8.01	7.95
135.0	8.48	8.43	8.31	8.25	8.19	8.13	8.07	8.01	8.01
180.0	8.43	8.37	8.25	8.19	8.13	8.07	8.01	7.95	7.89
225.0	8.60	8.48	8.37	8.25	8.19	8.13	8.07	8.01	7.95
270.0	8.60	8.48	8.43	8.31	8.25	8.19	8.13	8.07	8.01
315.0	8.43	8.43	8.31	8.19	8.19	8.07	8.01	8.01	7.95
360.0	8.54	8.43	8.37	8.25	8.19	8.13	8.13	8.07	8.01
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	7.95	7.95	7.89	7.89	7.89	7.83	7.77	7.77	7.77
45.0	7.89	7.83	7.83	7.83	7.83	7.77	7.77	7.77	7.71
90.0	7.95	7.89	7.89	7.83	7.83	7.83	7.83	7.77	7.77
135.0	8.01	7.95	7.89	7.89	7.83	7.83	7.77	7.77	7.77
180.0	7.89	7.83	7.83	7.77	7.77	7.77	7.71	7.71	7.65
225.0	7.89	7.89	7.83	7.83	7.83	7.83	7.77	7.71	7.71
270.0	8.01	7.95	7.95	7.89	7.83	7.83	7.83	7.77	7.77
315.0	7.95	7.89	7.89	7.83	7.83	7.83	7.77	7.77	7.77
360.0	7.95	7.95	7.89	7.89	7.89	7.83	7.77	7.77	7.77
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	7.71	7.71	7.71	7.71	7.65	7.65	7.71	7.65	7.65
45.0	7.71	7.71	7.71	7.71	7.71	7.65	7.65	7.65	7.65
90.0	7.77	7.71	7.71	7.71	7.71	7.71	7.71	7.65	7.65
135.0	7.71	7.71	7.71	7.71	7.71	7.71	7.65	7.65	7.59
180.0	7.71	7.65	7.65	7.59	7.59	7.59	7.59	7.59	7.53
225.0	7.65	7.71	7.65	7.65	7.59	7.65	7.59	7.65	7.59
270.0	7.77	7.71	7.71	7.71	7.71	7.65	7.71	7.65	7.65
315.0	7.71	7.71	7.71	7.71	7.71	7.65	7.65	7.65	7.59
360.0	7.71	7.71	7.71	7.71	7.65	7.65	7.71	7.65	7.65
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	7.59	7.65	7.65	7.65	7.65	7.65	7.65	7.65	7.59
45.0	7.65	7.65	7.65	7.59	7.59	7.65	7.59	7.59	7.59
90.0	7.65	7.65	7.65	7.65	7.59	7.59	7.59	7.59	7.59
135.0	7.65	7.59	7.59	7.53	7.59	7.59	7.59	7.53	7.59
180.0	7.59	7.53	7.53	7.53	7.53	7.53	7.53	7.53	7.47
225.0	7.59	7.59	7.53	7.59	7.53	7.59	7.53	7.53	7.53
270.0	7.59	7.65	7.65	7.59	7.59	7.59	7.59	7.59	7.59
315.0	7.59	7.59	7.59	7.59	7.59	7.59	7.59	7.59	7.53
360.0	7.59	7.65	7.65	7.65	7.65	7.65	7.65	7.65	7.59
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	7.59	7.53	7.47	7.47	7.47	7.47	7.41	7.41	7.41
45.0	7.53	7.47	7.47	7.47	7.41	7.41	7.41	7.41	7.41
90.0	7.53	7.53	7.53	7.47	7.53	7.47	7.53	7.47	7.47
135.0	7.53	7.53	7.53	7.53	7.47	7.47	7.47	7.47	7.47
180.0	7.47	7.47	7.41	7.41	7.41	7.41	7.41	7.41	7.41
225.0	7.47	7.53	7.47	7.47	7.47	7.47	7.41	7.41	7.41
270.0	7.59	7.53	7.59	7.59	7.53	7.47	7.47	7.47	7.47
315.0	7.59	7.59	7.53	7.53	7.53	7.53	7.47	7.47	7.47
360.0	7.59	7.53	7.47	7.47	7.47	7.47	7.41	7.41	7.41

Intensity data(cd)

C/γ(°)	90.0
0.0	7.41
45.0	7.41
90.0	7.47
135.0	7.47
180.0	7.41
225.0	7.41
270.0	7.47
315.0	7.47
360.0	7.41