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Nata

LumCAT: 2-2186-M	
Luminaire: 92.70.129.00	
Report No: NATA0100	Voltage(V): 35.7200
Test No: GC20200211713	Current(A): 0.6000
LampCAT: CREE CXA1830	Power (W): 21.4300
Lamp flux(lm): 3098.0	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 0	Width(mm): 0
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 2474.52
Efficiency(%): 79.87%
Lumens(lm)/Power(W): 115.47
Central intensity(cd): 16520.630
Maximum intensity(cd): 16520.630
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=17.8
 [C90/270]Total=17.8
Field angle(10%Imax): [C0/180]Total=41.7
 [C90/270]Total=41.7
Maximum s/h(1/2): C0_180=0.30 C90_270=0.30
Maximum s/h(1/4): C0_180=0.34 C90_270=0.34
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 79.87%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.757%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	16520.625	0.000	0	.000%	.000%
1.0	16377.891	15.741	15.741	.508%	.636%
2.0	15861.094	46.272	62.014	1.494%	2.506%
3.0	15067.969	73.972	135.986	2.388%	5.495%
4.0	14082.891	97.577	233.563	3.150%	9.439%
5.0	12803.203	115.663	349.226	3.733%	14.113%
6.0	11478.234	127.605	476.831	4.119%	19.270%
7.0	10377.000	135.655	612.486	4.379%	24.752%
8.0	9193.781	140.064	752.551	4.521%	30.412%
9.0	8132.203	140.418	892.968	4.533%	36.087%
10.0	7178.063	138.552	1031.521	4.472%	41.686%
11.0	6324.609	134.919	1166.44	4.355%	47.138%
12.0	5607.141	130.431	1296.871	4.210%	52.409%
13.0	4925.180	124.992	1421.863	4.035%	57.460%
14.0	4324.922	118.400	1540.264	3.822%	62.245%
15.0	3827.883	111.925	1652.189	3.613%	66.768%
16.0	3391.383	105.782	1757.971	3.415%	71.043%
17.0	2935.055	98.520	1856.491	3.180%	75.024%
18.0	2679.961	92.579	1949.071	2.988%	78.766%
19.0	2253.375	85.830	2034.901	2.770%	82.234%
20.0	1916.648	76.323	2111.224	2.464%	85.319%
21.0	1613.531	67.787	2179.01	2.188%	88.058%
22.0	1277.873	58.104	2237.114	1.876%	90.406%
23.0	1089.548	49.675	2286.789	1.603%	92.414%
24.0	818.438	41.715	2328.504	1.347%	94.099%
25.0	606.157	32.392	2360.897	1.046%	95.408%
26.0	409.943	23.985	2384.882	.774%	96.378%
27.0	257.091	16.319	2401.201	.527%	97.037%
28.0	121.177	9.577	2410.778	.309%	97.424%
29.0	47.665	4.417	2415.195	.143%	97.603%
30.0	20.559	1.842	2417.037	.059%	97.677%
31.0	18.049	1.074	2418.112	.035%	97.721%
32.0	16.678	0.995	2419.107	.032%	97.761%
33.0	15.602	0.951	2420.058	.031%	97.799%
34.0	14.780	0.919	2420.977	.030%	97.836%
35.0	14.013	0.894	2421.871	.029%	97.873%
36.0	13.409	0.873	2422.744	.028%	97.908%
37.0	12.916	0.859	2423.603	.028%	97.943%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	12.502	0.848	2424.451	.027%	97.977%
39.0	12.136	0.841	2425.292	.027%	98.011%
40.0	11.855	0.837	2426.129	.027%	98.045%
41.0	11.616	0.836	2426.965	.027%	98.078%
42.0	11.377	0.835	2427.8	.027%	98.112%
43.0	11.194	0.836	2428.636	.027%	98.146%
44.0	11.046	0.839	2429.476	.027%	98.180%
45.0	10.920	0.844	2430.32	.027%	98.214%
46.0	10.793	0.849	2431.169	.027%	98.248%
47.0	10.695	0.855	2432.023	.028%	98.283%
48.0	10.596	0.861	2432.884	.028%	98.318%
49.0	10.533	0.868	2433.752	.028%	98.353%
50.0	10.441	0.874	2434.626	.028%	98.388%
51.0	10.371	0.881	2435.507	.028%	98.424%
52.0	10.322	0.888	2436.395	.029%	98.459%
53.0	10.280	0.896	2437.291	.029%	98.496%
54.0	10.223	0.904	2438.195	.029%	98.532%
55.0	10.167	0.910	2439.105	.029%	98.569%
56.0	10.125	0.917	2440.022	.030%	98.606%
57.0	10.076	0.924	2440.945	.030%	98.643%
58.0	10.062	0.931	2441.877	.030%	98.681%
59.0	10.027	0.939	2442.816	.030%	98.719%
60.0	9.991	0.946	2443.761	.031%	98.757%
61.0	9.977	0.953	2444.714	.031%	98.796%
62.0	9.956	0.961	2445.675	.031%	98.834%
63.0	9.921	0.967	2446.642	.031%	98.874%
64.0	9.893	0.972	2447.614	.031%	98.913%
65.0	9.893	0.979	2448.593	.032%	98.952%
66.0	9.872	0.986	2449.579	.032%	98.992%
67.0	9.858	0.992	2450.571	.032%	99.032%
68.0	9.830	0.997	2451.569	.032%	99.073%
69.0	9.823	1.003	2452.571	.032%	99.113%
70.0	9.823	1.009	2453.58	.033%	99.154%
71.0	9.795	1.014	2454.594	.033%	99.195%
72.0	9.780	1.018	2455.612	.033%	99.236%
73.0	9.773	1.023	2456.634	.033%	99.277%
74.0	9.766	1.027	2457.662	.033%	99.319%
75.0	9.773	1.032	2458.694	.033%	99.361%

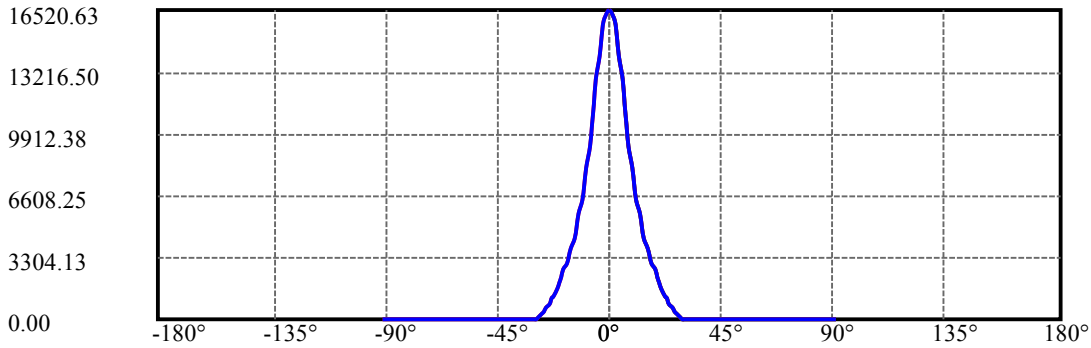
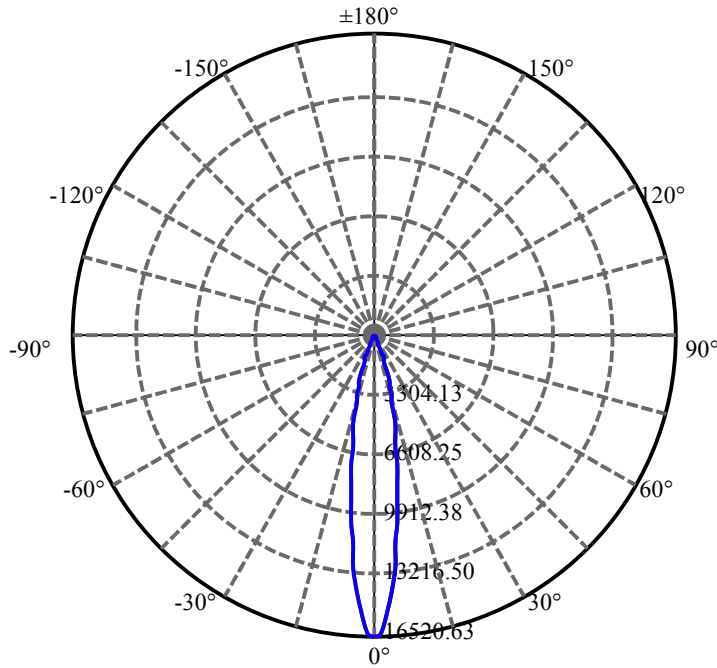
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	9.759	1.037	2459.731	.033%	99.403%
77.0	9.745	1.040	2460.771	.034%	99.445%
78.0	9.738	1.043	2461.814	.034%	99.487%
79.0	9.738	1.046	2462.86	.034%	99.529%
80.0	9.738	1.050	2463.91	.034%	99.571%
81.0	9.731	1.053	2464.963	.034%	99.614%
82.0	9.731	1.055	2466.019	.034%	99.657%
83.0	9.731	1.058	2467.077	.034%	99.699%
84.0	9.724	1.060	2468.137	.034%	99.742%
85.0	9.745	1.063	2469.199	.034%	99.785%
86.0	9.724	1.064	2470.263	.034%	99.828%
87.0	9.724	1.064	2471.328	.034%	99.871%
88.0	9.689	1.063	2472.391	.034%	99.914%
89.0	9.689	1.062	2473.453	.034%	99.957%
90.0	9.682	1.062	2474.515	.034%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	2417.04	78.02%	97.68%
0-40	2426.13	78.31%	98.04%
0-60	2443.76	78.88%	98.76%
0-90	2473.45	79.84%	99.96%
0-120	2473.45	79.84%	99.96%
0-180	2474.52	79.87%	100.00%
60-90	30.64	0.99%	1.24%
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%
0-18.36	1979.61	63.90%	80.00%

ZONAL LUMEN SUMMARY

0-10	1031.52
10-20	1079.70
20-30	305.81
30-40	9.09
40-50	8.50
50-60	9.14
60-70	9.82
70-80	10.33
80-90	9.54
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



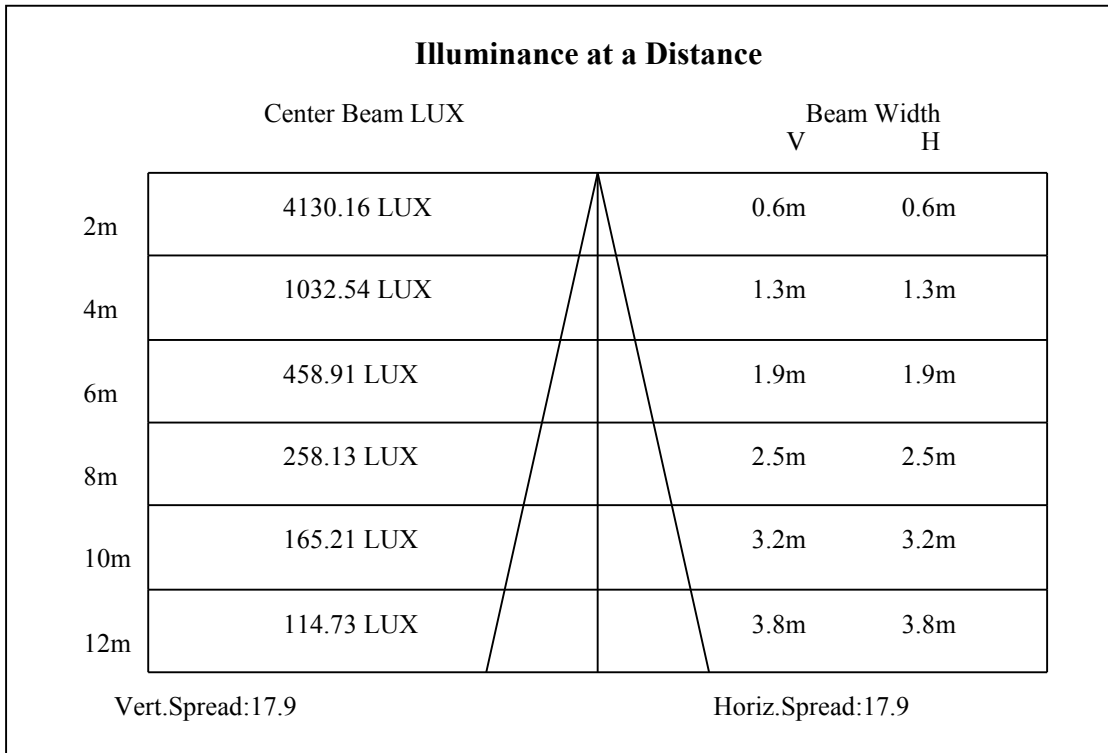
C0(Max): —————

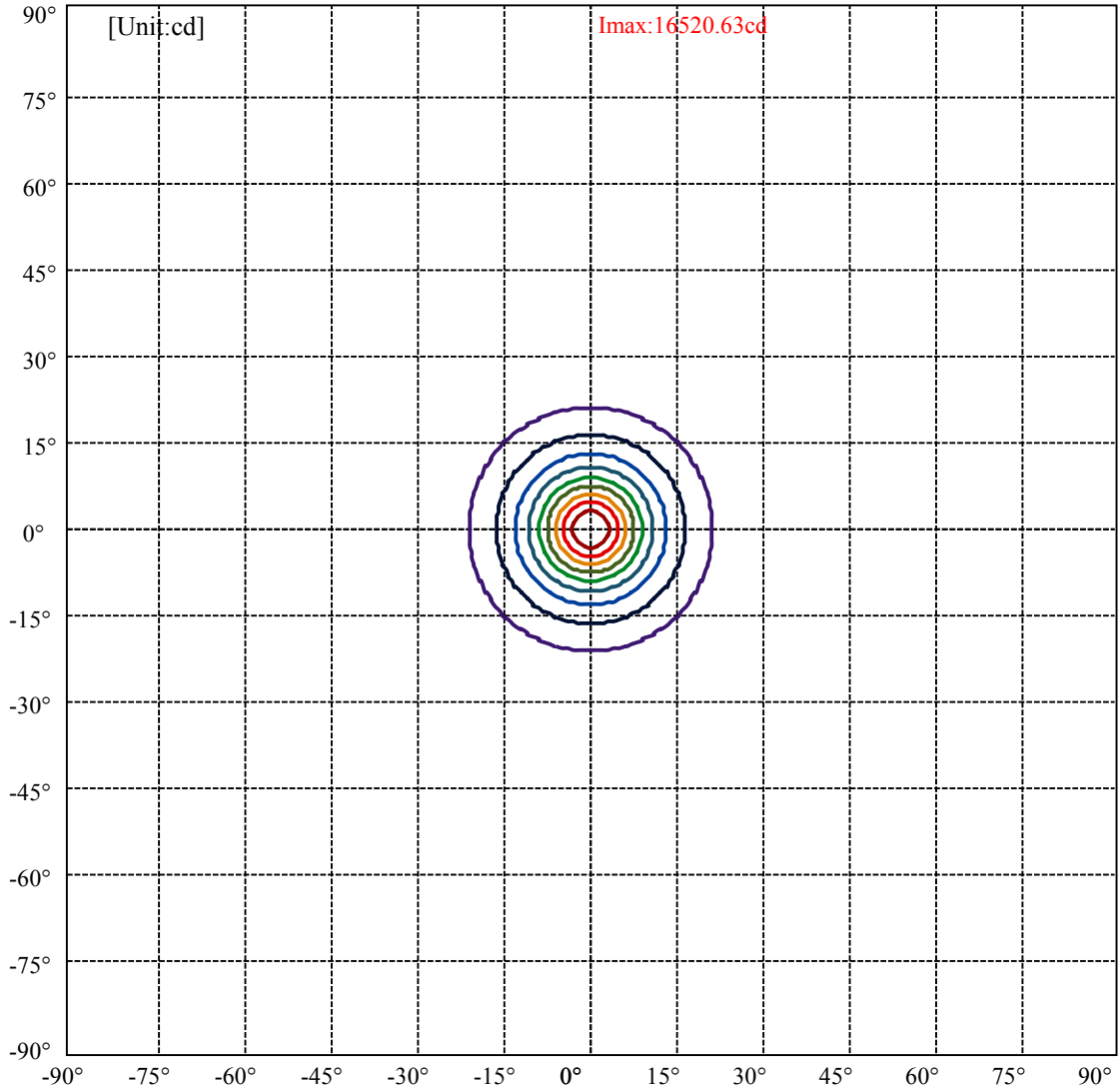
C0/C180: —————

C90/C270: —————

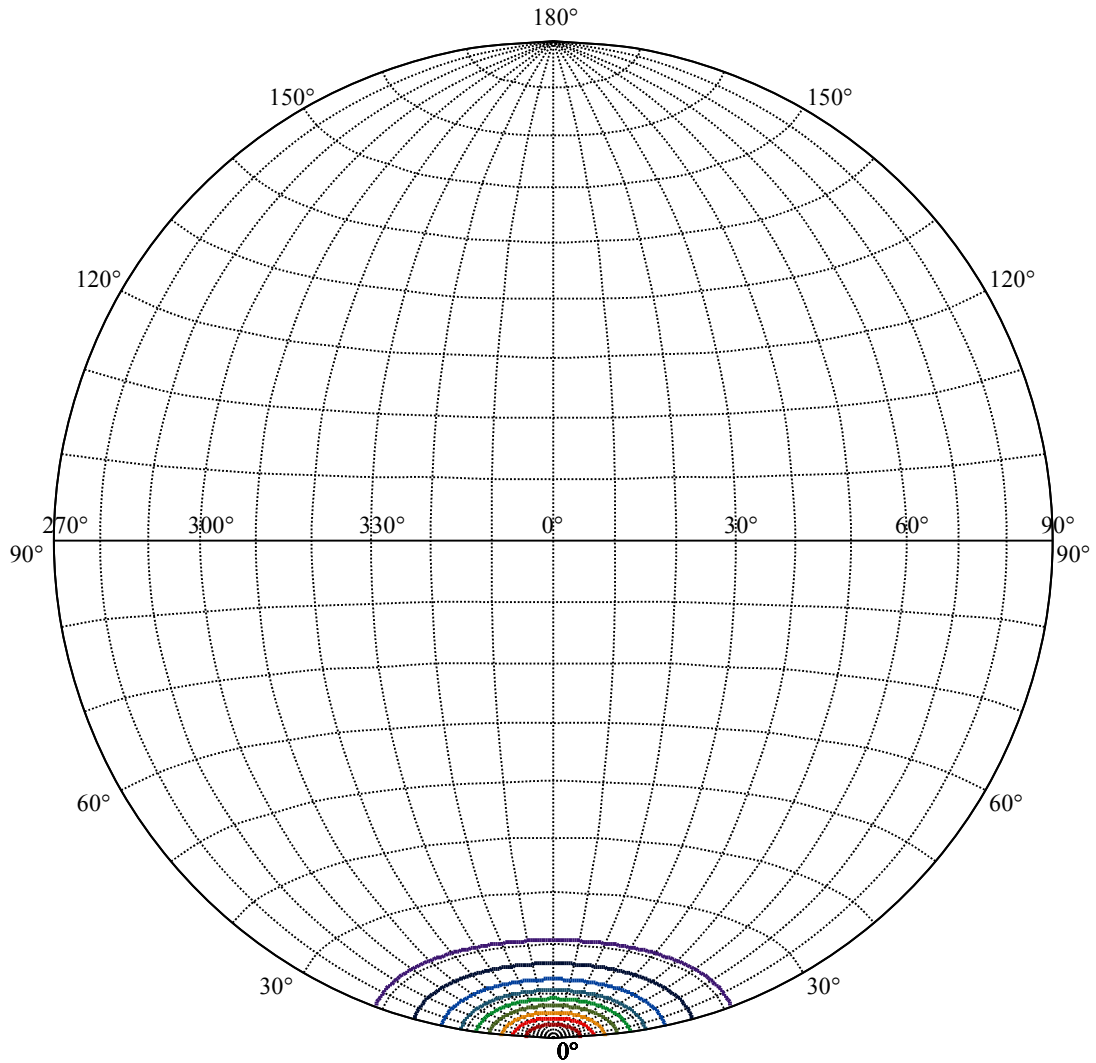
Field angle(10%Imax):C0/180Left:20.9 Right:20.9
:C90/270Left:20.9 Right:20.9

Beam Angle(50%Imax):C0/180Left:8.9 Right:8.9
:C90/270Left:8.9 Right:8.9





(10%Imax) 1652.06	—
(20%Imax) 3304.13	—
(30%Imax) 4956.19	—
(40%Imax) 6608.25	—
(50%Imax) 8260.31	—
(60%Imax) 9912.38	—
(70%Imax) 11564.4	—
(80%Imax) 13216.5	—
(90%Imax) 14868.6	—



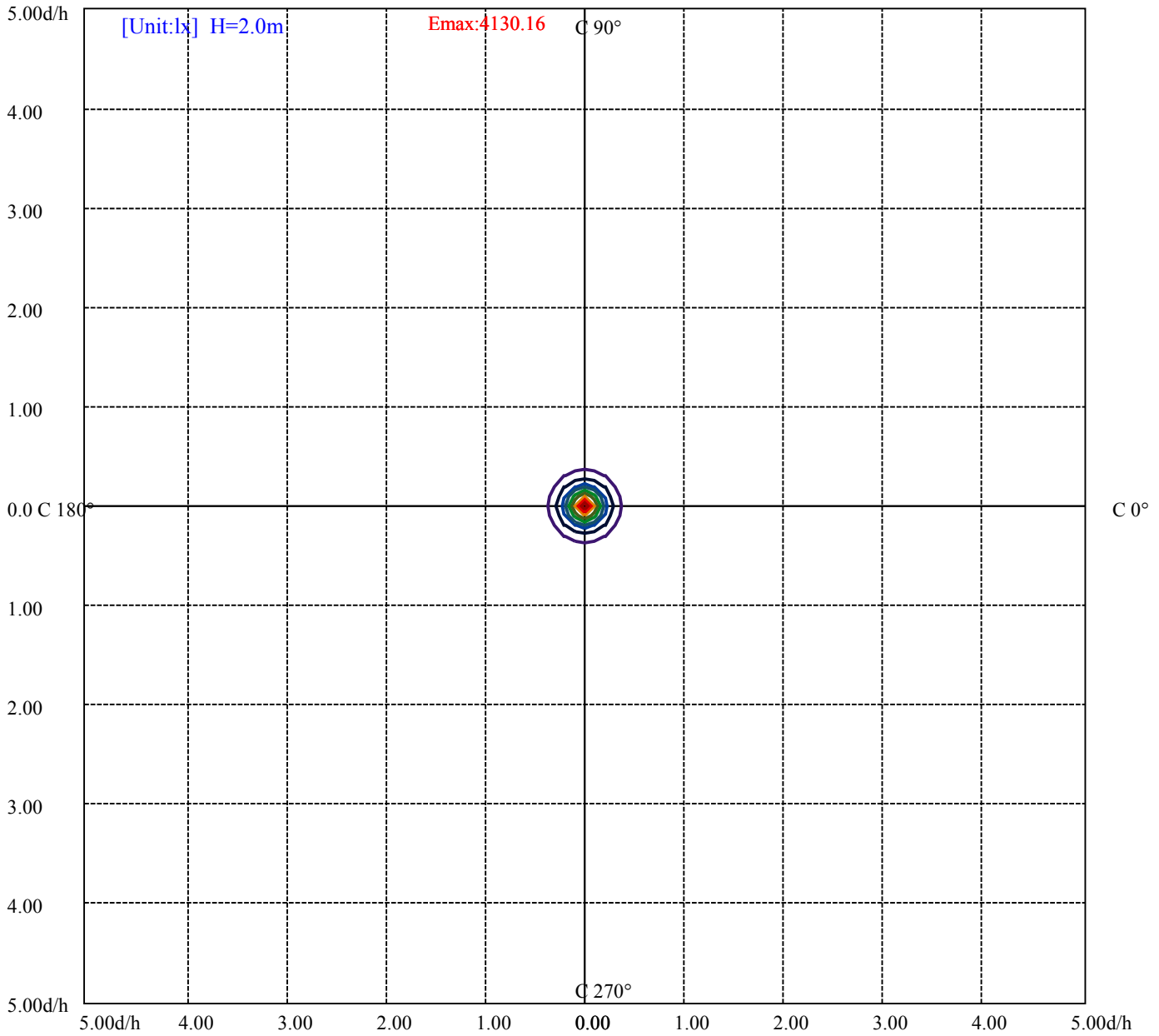
House

[Unit:cd]

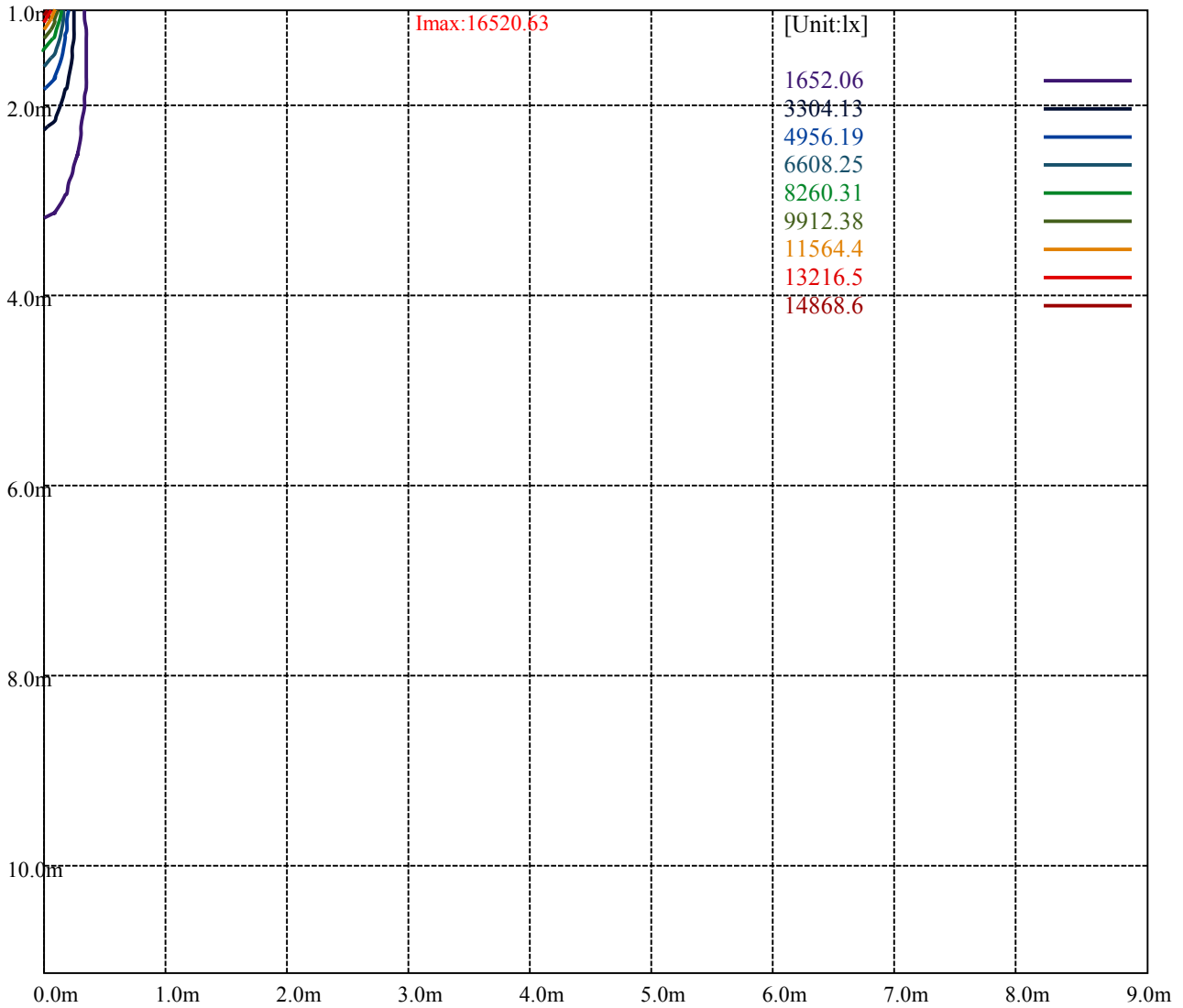
Road

Imax:16520.63

(10%Imax) 1652.06	—
(20%Imax) 3304.13	—
(30%Imax) 4956.19	—
(40%Imax) 6608.25	—
(50%Imax) 8260.31	—
(60%Imax) 9912.38	—
(70%Imax) 11564.4	—
(80%Imax) 13216.5	—
(90%Imax) 14868.6	—



- (10%Emax) 413.015
- (20%Emax) 826.03
- (30%Emax) 1239.045
- (40%Emax) 1652.06
- (50%Emax) 2065.075
- (60%Emax) 2478.09
- (70%Emax) 2891.1
- (80%Emax) 3304.125
- (90%Emax) 3717.125



Luminance Table

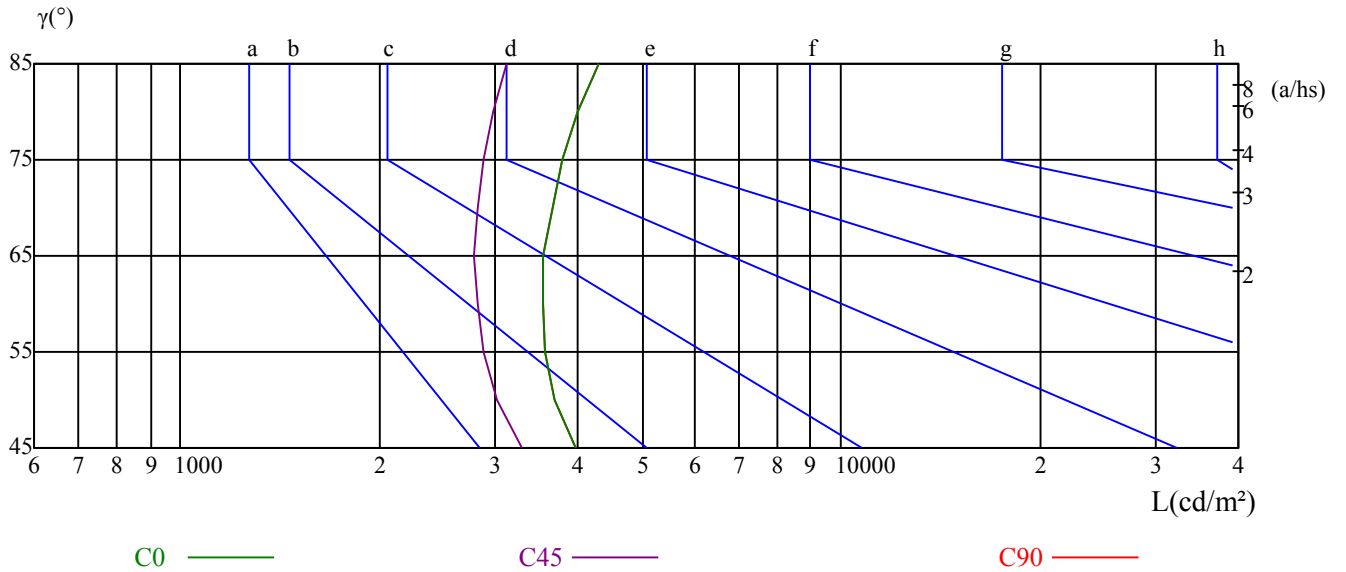
γ	45	50	55	60	65	70	75	80	85
C0	3955	3683	3556	3535	3547	3659	3797	4003	4302
C45	3296	3023	2875	2815	2780	2819	2873	2969	3120
C90	3955	3683	3556	3535	3547	3659	3797	4003	4302

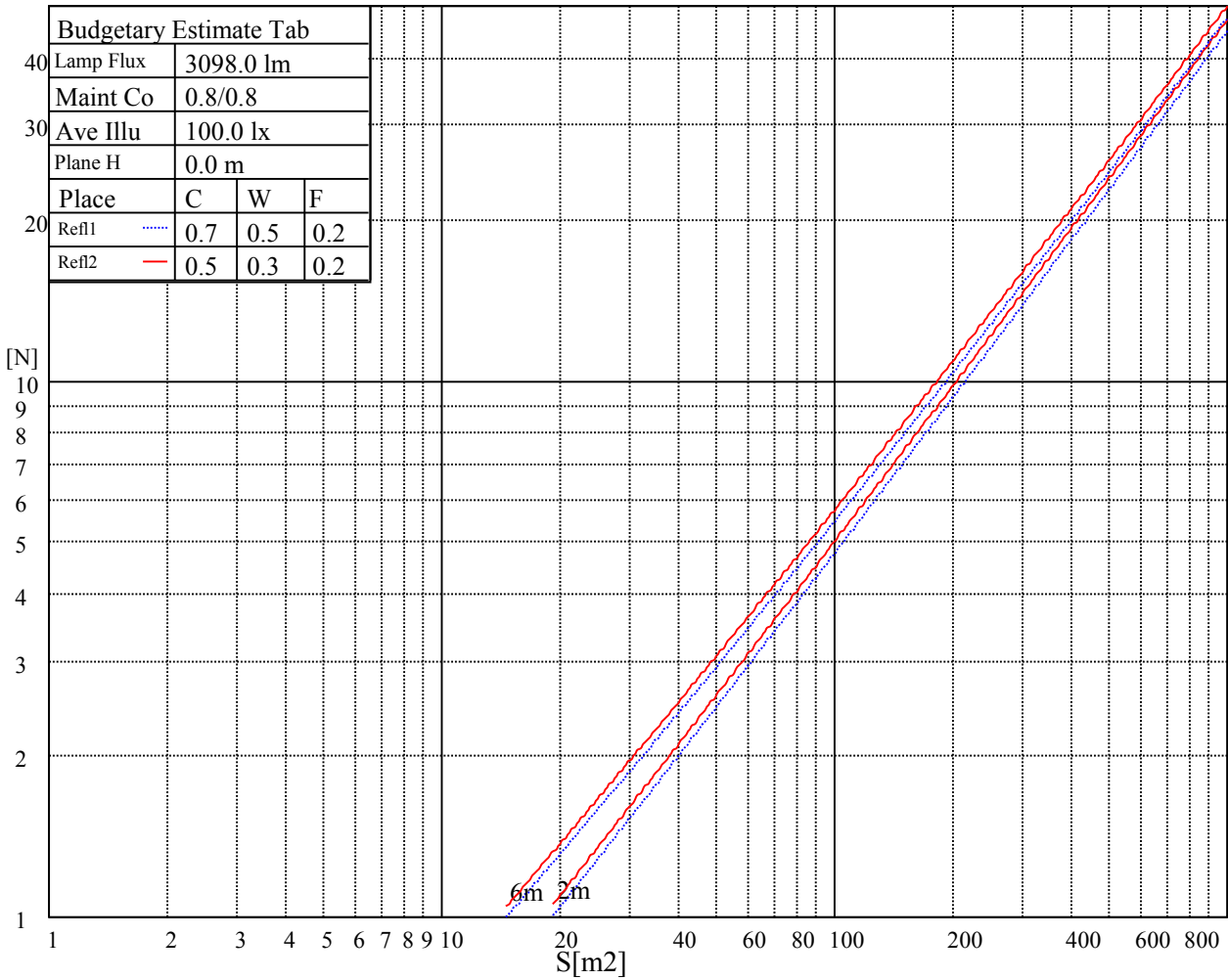
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
10648	10648	10648	17024	17024	17024	50197	50197	50197

Glare Table

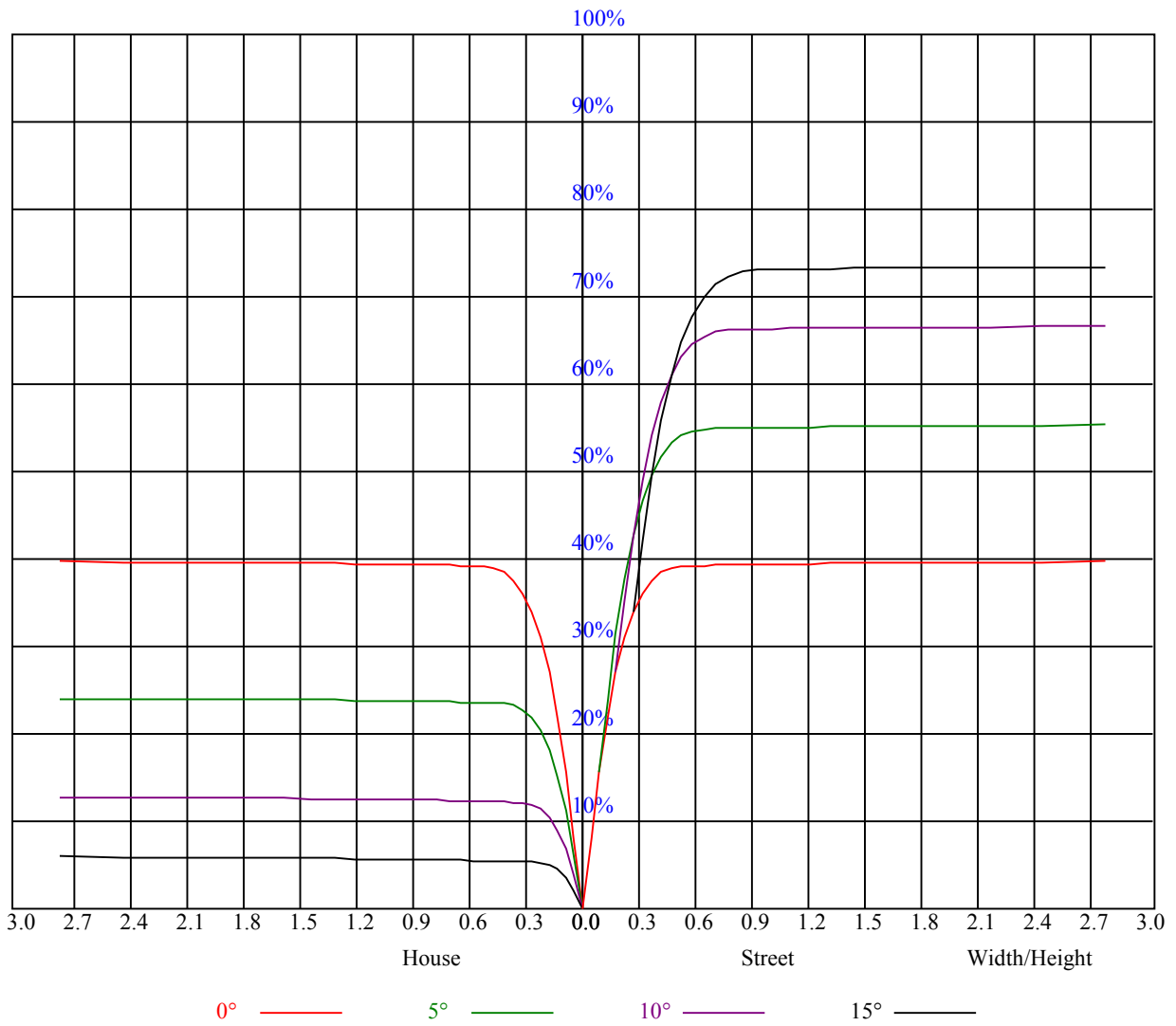
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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	0.95	0.95	0.95	0.93	0.93	0.93	0.89	0.89	0.89	0.85	0.85	0.85	0.82	0.82	0.82	0.80
1	0.90	0.89	0.87	0.88	0.87	0.86	0.85	0.84	0.83	0.82	0.82	0.81	0.80	0.79	0.78	0.77
2	0.86	0.84	0.82	0.85	0.83	0.81	0.82	0.81	0.79	0.80	0.79	0.78	0.78	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	0.76	0.75	0.74	0.73
4	0.80	0.77	0.75	0.79	0.76	0.74	0.77	0.75	0.73	0.76	0.74	0.73	0.75	0.73	0.72	0.71
5	0.77	0.74	0.72	0.77	0.74	0.72	0.75	0.73	0.71	0.74	0.72	0.70	0.73	0.71	0.70	0.69
6	0.75	0.72	0.70	0.74	0.72	0.69	0.73	0.71	0.69	0.72	0.70	0.69	0.72	0.70	0.68	0.67
7	0.73	0.70	0.68	0.72	0.70	0.67	0.72	0.69	0.67	0.71	0.69	0.67	0.70	0.68	0.66	0.66
8	0.71	0.68	0.66	0.71	0.68	0.66	0.70	0.67	0.65	0.69	0.67	0.65	0.69	0.67	0.65	0.64
9	0.69	0.66	0.64	0.69	0.66	0.64	0.68	0.66	0.64	0.68	0.65	0.64	0.67	0.65	0.64	0.63
10	0.68	0.65	0.63	0.67	0.64	0.63	0.67	0.64	0.62	0.66	0.64	0.62	0.66	0.64	0.62	0.61



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	16475.63	16447.50	16098.75	15367.50	14439.38	13488.75	11891.25	10755.00	9787.50
45.0	16571.25	16447.50	15896.25	15136.88	14169.38	12937.50	11638.13	10479.38	9270.00
90.0	16509.38	16239.38	15609.38	14670.00	13651.88	12031.88	11220.19	9925.31	8748.56
135.0	16526.25	16396.88	15918.75	15114.38	14180.63	13106.25	11660.63	10485.00	9399.38
180.0	16475.63	16177.50	15530.63	14692.50	13522.50	12071.25	11056.50	9897.19	8699.06
225.0	16571.25	16419.38	15907.50	15052.50	14062.50	12796.88	11172.38	10316.25	8969.63
270.0	16509.38	16520.63	16138.13	15485.63	14591.25	13218.75	12037.50	10873.13	9613.13
315.0	16526.25	16374.38	15789.38	15024.38	14045.63	12774.38	11149.31	10284.75	9063.00
360.0	16475.63	16447.50	16098.75	15367.50	14439.38	13488.75	11891.25	10755.00	9787.50
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	8510.63	7475.63	6761.25	5838.75	5118.75	4612.50	3971.25	3521.25	3110.63
45.0	8173.13	7278.75	6384.38	5686.88	4989.38	4376.25	3886.88	3453.75	2964.38
90.0	7810.31	6869.25	6039.56	5388.19	4802.06	4150.69	3688.88	3273.19	2849.63
135.0	8173.13	7290.00	6496.88	5703.75	5017.50	4471.88	3926.25	3493.13	3060.00
180.0	7748.44	6800.63	5976.56	5333.63	4686.19	4115.81	3666.38	3266.44	2817.00
225.0	8110.69	7112.25	6147.00	5546.81	4851.56	4185.00	3777.19	3350.81	2833.31
270.0	8460.00	7531.88	6609.38	5872.50	5141.25	4494.38	3982.50	3476.25	3026.25
315.0	8071.31	7066.13	6181.88	5486.63	4794.75	4192.88	3723.75	3296.25	2819.25
360.0	8510.63	7475.63	6761.25	5838.75	5118.75	4612.50	3971.25	3521.25	3110.63
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	2880.00	2342.25	2004.19	1692.00	1431.00	1181.25	888.19	670.50	472.50
45.0	2874.38	2282.06	1888.88	1611.56	1366.31	1102.50	808.88	605.81	408.38
90.0	2458.69	2138.63	1804.50	1510.88	1092.66	973.80	749.98	527.23	339.98
135.0	2880.00	2331.00	1978.31	1668.94	1420.88	1159.31	864.00	646.31	456.75
180.0	2484.00	2173.50	1847.25	1555.88	1107.84	1018.63	764.55	561.60	362.64
225.0	2540.81	2231.44	1904.06	1605.38	1248.19	1093.84	803.48	593.16	408.94
270.0	2840.63	2356.31	2059.31	1713.38	1454.06	1203.19	908.44	687.38	487.69
315.0	2481.19	2171.81	1846.69	1550.25	1102.05	983.87	759.99	557.27	342.68
360.0	2880.00	2342.25	2004.19	1692.00	1431.00	1181.25	888.19	670.50	472.50
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	286.88	142.03	60.19	23.79	18.45	17.10	15.86	14.96	14.12
45.0	294.19	123.13	56.76	19.29	17.38	16.37	15.19	14.46	13.78
90.0	204.98	103.73	32.06	19.01	17.49	16.20	15.30	14.51	13.95
135.0	295.31	138.15	58.50	20.25	17.83	16.59	15.53	14.74	14.01
180.0	220.16	102.49	33.64	18.34	17.04	15.64	14.79	14.12	13.44
225.0	239.91	115.76	46.63	20.08	18.39	16.93	15.75	14.91	14.06
270.0	298.69	148.44	63.79	23.68	19.35	17.89	16.59	15.58	14.74
315.0	216.62	95.68	29.76	20.03	18.45	16.71	15.81	14.96	14.01
360.0	286.88	142.03	60.19	23.79	18.45	17.10	15.86	14.96	14.12
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	13.44	12.94	12.49	12.09	11.76	11.59	11.31	11.14	10.97
45.0	13.22	12.77	12.38	12.04	11.81	11.59	11.31	11.14	11.03
90.0	13.28	12.83	12.49	12.21	11.87	11.64	11.42	11.25	11.08
135.0	13.39	12.88	12.49	12.15	11.87	11.64	11.36	11.19	11.08
180.0	12.99	12.54	12.15	11.87	11.64	11.36	11.19	11.03	10.91
225.0	13.44	12.94	12.54	12.09	11.87	11.64	11.42	11.19	11.03
270.0	14.01	13.44	12.94	12.49	12.15	11.87	11.59	11.42	11.25
315.0	13.50	12.99	12.54	12.15	11.87	11.59	11.42	11.19	11.03
360.0	13.44	12.94	12.49	12.09	11.76	11.59	11.31	11.14	10.97

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	10.86	10.74	10.63	10.52	10.46	10.35	10.29	10.24	10.18
45.0	10.91	10.74	10.63	10.58	10.52	10.46	10.41	10.35	10.29
90.0	10.97	10.80	10.74	10.63	10.58	10.52	10.41	10.35	10.29
135.0	10.91	10.86	10.74	10.63	10.58	10.46	10.41	10.35	10.35
180.0	10.80	10.69	10.58	10.52	10.46	10.35	10.29	10.24	10.24
225.0	10.91	10.80	10.69	10.58	10.52	10.41	10.35	10.35	10.29
270.0	11.08	10.97	10.86	10.74	10.63	10.58	10.46	10.41	10.35
315.0	10.91	10.74	10.69	10.58	10.52	10.41	10.35	10.29	10.24
360.0	10.86	10.74	10.63	10.52	10.46	10.35	10.29	10.24	10.18
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	10.18	10.07	10.01	10.01	10.01	9.96	9.96	9.90	9.90
45.0	10.24	10.18	10.18	10.07	10.07	10.07	10.01	10.01	9.96
90.0	10.24	10.24	10.18	10.13	10.07	10.07	10.01	10.01	10.01
135.0	10.24	10.18	10.13	10.13	10.07	10.07	10.01	10.01	9.96
180.0	10.18	10.13	10.07	10.01	10.01	9.96	9.96	9.96	9.90
225.0	10.24	10.13	10.13	10.07	10.07	10.01	10.01	9.96	9.96
270.0	10.29	10.24	10.18	10.13	10.13	10.07	10.01	10.01	10.01
315.0	10.18	10.18	10.13	10.07	10.07	10.01	9.96	9.96	9.96
360.0	10.18	10.07	10.01	10.01	10.01	9.96	9.96	9.90	9.90
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	9.84	9.84	9.84	9.84	9.84	9.79	9.79	9.73	9.73
45.0	9.96	9.90	9.90	9.90	9.90	9.84	9.84	9.84	9.84
90.0	9.96	9.96	9.90	9.84	9.84	9.84	9.84	9.84	9.79
135.0	9.96	9.90	9.90	9.90	9.90	9.84	9.84	9.84	9.79
180.0	9.90	9.84	9.84	9.84	9.79	9.79	9.79	9.79	9.73
225.0	9.96	9.90	9.90	9.90	9.84	9.84	9.84	9.84	9.84
270.0	9.96	9.96	9.96	9.90	9.90	9.84	9.84	9.84	9.84
315.0	9.84	9.84	9.90	9.84	9.84	9.84	9.79	9.84	9.79
360.0	9.84	9.84	9.84	9.84	9.84	9.79	9.79	9.73	9.73
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	9.73	9.73	9.73	9.73	9.73	9.68	9.73	9.68	9.68
45.0	9.79	9.79	9.79	9.79	9.79	9.73	9.73	9.79	9.73
90.0	9.79	9.79	9.79	9.79	9.73	9.79	9.73	9.73	9.73
135.0	9.84	9.84	9.79	9.79	9.79	9.79	9.79	9.73	9.79
180.0	9.79	9.73	9.73	9.73	9.73	9.68	9.68	9.73	9.73
225.0	9.79	9.79	9.79	9.79	9.79	9.79	9.79	9.73	9.73
270.0	9.79	9.79	9.79	9.79	9.79	9.79	9.73	9.79	9.79
315.0	9.73	9.73	9.73	9.79	9.73	9.73	9.73	9.73	9.73
360.0	9.73	9.73	9.73	9.73	9.73	9.68	9.73	9.68	9.68
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	9.68	9.68	9.68	9.68	9.68	9.68	9.68	9.68	9.62
45.0	9.73	9.73	9.73	9.68	9.73	9.73	9.68	9.73	9.73
90.0	9.73	9.73	9.73	9.73	9.73	9.68	9.68	9.68	9.68
135.0	9.73	9.73	9.73	9.73	9.73	9.68	9.68	9.68	9.68
180.0	9.73	9.68	9.73	9.68	9.73	9.73	9.73	9.62	9.68
225.0	9.79	9.79	9.79	9.79	9.79	9.84	9.90	9.73	9.73
270.0	9.73	9.79	9.73	9.73	9.73	9.73	9.73	9.73	9.68
315.0	9.73	9.73	9.73	9.79	9.84	9.73	9.73	9.68	9.73
360.0	9.68	9.68	9.68	9.68	9.68	9.68	9.68	9.68	9.62

Intensity data(cd)

C/ γ (°)	90.0
0.0	9.68
45.0	9.68
90.0	9.68
135.0	9.68
180.0	9.68
225.0	9.68
270.0	9.73
315.0	9.68
360.0	9.68