
Nata

LumCAT: 2-1674-M
Luminaire: 92.70.131.00
Report No: NT2017061707
Test No: GC2017061707
LampCAT: CITIZEN CLU038
Lamp flux(lm): 2365.0
Number of Lamps: 1
Length(mm): 70
Phm Type: C

Voltage(V): 34.2000
Current(A): 0.5000
Power (W): 17.1000
PF: 0.0000
Ballast type: DC
Width(mm): 70
Height(mm): 0

Photometric Results

Lumens(lm): 2136.39
Efficiency(%): 90.33%
Lumens(lm)/Power(W): 124.94
Central intensity(cd): 14956.070
Maximum intensity(cd): 14956.070
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=15.3
 [C90/270]Total=15.3
Field angle(10%Imax): [C0/180]Total=31.6
 [C90/270]Total=31.6
Maximum s/h(1/2): C0_180=0.26 C90_270=0.26
Maximum s/h(1/4): C0_180=0.26 C90_270=0.26
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 90.33%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.828%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	14956.071	0.000	0	.000%	.000%
1.0	14829.441	14.252	14.252	.603%	.667%
2.0	14416.518	41.977	56.228	1.775%	2.632%
3.0	13550.756	66.889	123.117	2.828%	5.763%
4.0	12652.126	87.709	210.826	3.709%	9.868%
5.0	11384.452	103.404	314.23	4.372%	14.708%
6.0	9880.697	111.754	425.984	4.725%	19.939%
7.0	8430.787	113.659	539.644	4.806%	25.260%
8.0	6991.888	110.377	650.021	4.667%	30.426%
9.0	5543.629	101.594	751.614	4.296%	35.181%
10.0	4384.306	89.844	841.458	3.799%	39.387%
11.0	3489.475	78.675	920.134	3.327%	43.069%
12.0	2902.849	69.877	990.011	2.955%	46.340%
13.0	2265.846	61.339	1051.35	2.594%	49.211%
14.0	2010.109	54.732	1106.082	2.314%	51.773%
15.0	1643.709	50.161	1156.243	2.121%	54.121%
16.0	1455.691	45.415	1201.658	1.920%	56.247%
17.0	1294.431	42.827	1244.485	1.811%	58.252%
18.0	1203.588	41.187	1285.672	1.742%	60.180%
19.0	1119.847	40.423	1326.095	1.709%	62.072%
20.0	1050.201	39.718	1365.813	1.679%	63.931%
21.0	991.841	39.211	1405.024	1.658%	65.766%
22.0	948.346	38.989	1444.013	1.649%	67.591%
23.0	911.789	39.031	1483.044	1.650%	69.418%
24.0	878.865	39.150	1522.194	1.655%	71.251%
25.0	854.530	39.414	1561.608	1.667%	73.096%
26.0	833.334	39.842	1601.45	1.685%	74.960%
27.0	812.853	40.274	1641.724	1.703%	76.846%
28.0	795.950	40.731	1682.456	1.722%	78.752%
29.0	779.764	41.225	1723.681	1.743%	80.682%
30.0	764.183	41.686	1765.367	1.763%	82.633%
31.0	745.849	42.022	1807.389	1.777%	84.600%
32.0	717.220	41.915	1849.304	1.772%	86.562%
33.0	672.789	40.950	1890.254	1.732%	88.479%
34.0	620.431	39.137	1929.391	1.655%	90.311%
35.0	547.701	36.278	1965.669	1.534%	92.009%
36.0	460.767	32.110	1997.779	1.358%	93.512%
37.0	386.771	27.642	2025.421	1.169%	94.806%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	306.609	23.144	2048.565	.979%	95.889%
39.0	214.114	17.774	2066.338	.752%	96.721%
40.0	153.002	12.804	2079.142	.541%	97.320%
41.0	90.568	8.673	2087.816	.367%	97.726%
42.0	50.707	5.133	2092.948	.217%	97.966%
43.0	29.235	2.961	2095.91	.125%	98.105%
44.0	19.160	1.827	2097.736	.077%	98.191%
45.0	15.251	1.322	2099.059	.056%	98.252%
46.0	12.828	1.098	2100.157	.046%	98.304%
47.0	11.011	0.948	2101.105	.040%	98.348%
48.0	10.130	0.855	2101.959	.036%	98.388%
49.0	9.745	0.816	2102.776	.035%	98.426%
50.0	9.305	0.794	2103.57	.034%	98.464%
51.0	9.084	0.778	2104.348	.033%	98.500%
52.0	8.974	0.775	2105.123	.033%	98.536%
53.0	8.809	0.774	2105.896	.033%	98.573%
54.0	8.754	0.774	2106.67	.033%	98.609%
55.0	8.644	0.777	2107.447	.033%	98.645%
56.0	8.534	0.776	2108.223	.033%	98.681%
57.0	8.479	0.778	2109.001	.033%	98.718%
58.0	8.424	0.782	2109.783	.033%	98.754%
59.0	8.369	0.785	2110.568	.033%	98.791%
60.0	8.314	0.788	2111.356	.033%	98.828%
61.0	8.258	0.791	2112.147	.033%	98.865%
62.0	8.203	0.793	2112.94	.034%	98.902%
63.0	8.203	0.798	2113.738	.034%	98.940%
64.0	8.148	0.802	2114.54	.034%	98.977%
65.0	8.148	0.807	2115.347	.034%	99.015%
66.0	8.148	0.813	2116.16	.034%	99.053%
67.0	8.038	0.814	2116.974	.034%	99.091%
68.0	8.038	0.814	2117.788	.034%	99.129%
69.0	7.983	0.817	2118.606	.035%	99.167%
70.0	7.983	0.820	2119.426	.035%	99.206%
71.0	7.983	0.825	2120.251	.035%	99.244%
72.0	7.983	0.830	2121.081	.035%	99.283%
73.0	7.983	0.835	2121.916	.035%	99.322%
74.0	7.928	0.836	2122.752	.035%	99.362%
75.0	7.928	0.838	2123.59	.035%	99.401%

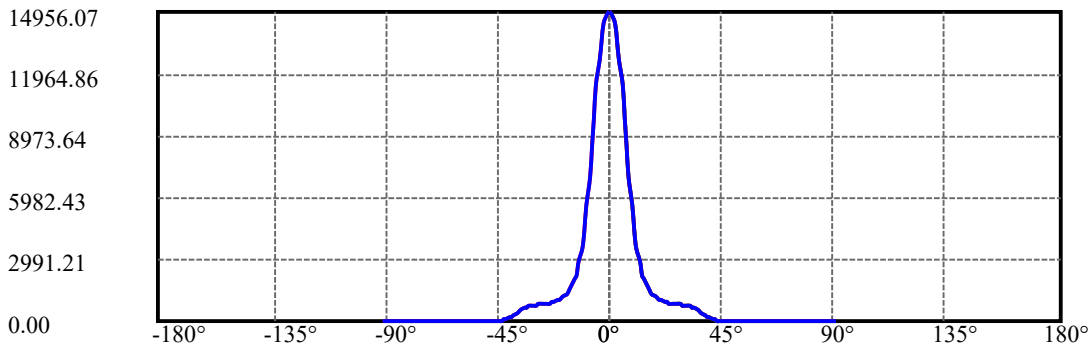
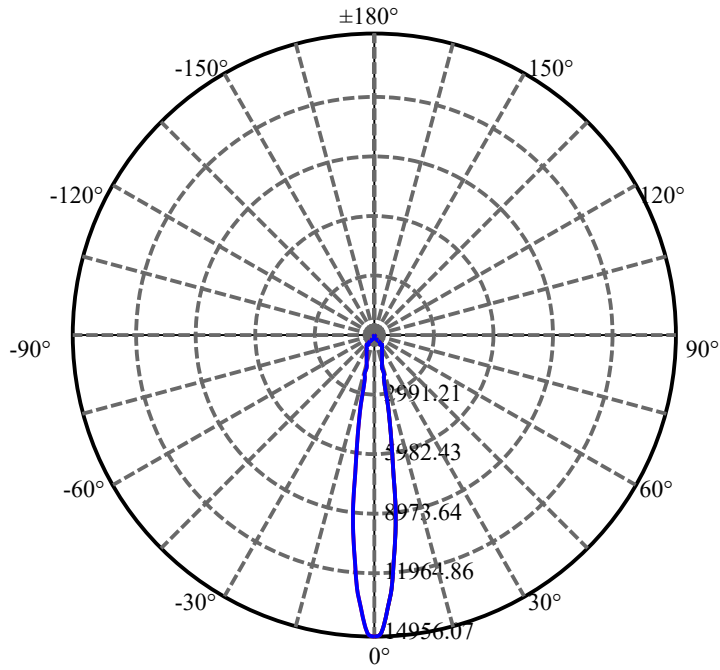
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	7.928	0.842	2124.432	.036%	99.440%
77.0	7.873	0.842	2125.274	.036%	99.480%
78.0	7.928	0.846	2126.12	.036%	99.519%
79.0	7.873	0.849	2126.969	.036%	99.559%
80.0	7.873	0.849	2127.818	.036%	99.599%
81.0	7.873	0.852	2128.67	.036%	99.638%
82.0	7.873	0.854	2129.524	.036%	99.678%
83.0	7.873	0.856	2130.379	.036%	99.719%
84.0	7.873	0.858	2131.237	.036%	99.759%
85.0	7.873	0.859	2132.097	.036%	99.799%
86.0	7.873	0.861	2132.957	.036%	99.839%
87.0	7.873	0.862	2133.819	.036%	99.880%
88.0	7.818	0.860	2134.679	.036%	99.920%
89.0	7.818	0.857	2135.536	.036%	99.960%
90.0	7.818	0.857	2136.393	.036%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1765.37	74.65%	82.63%
0-40	2079.14	87.91%	97.32%
0-60	2111.36	89.28%	98.83%
0-90	2135.54	90.30%	99.96%
0-120	2135.54	90.30%	99.96%
0-180	2136.39	90.33%	100.00%
60-90	24.97	1.06%	1.17%
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%
0-28.65	1709.11	72.27%	80.00%

ZONAL LUMEN SUMMARY

0-10	841.46
10-20	524.35
20-30	399.55
30-40	313.78
40-50	24.43
50-60	7.79
60-70	8.07
70-80	8.39
80-90	7.72
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



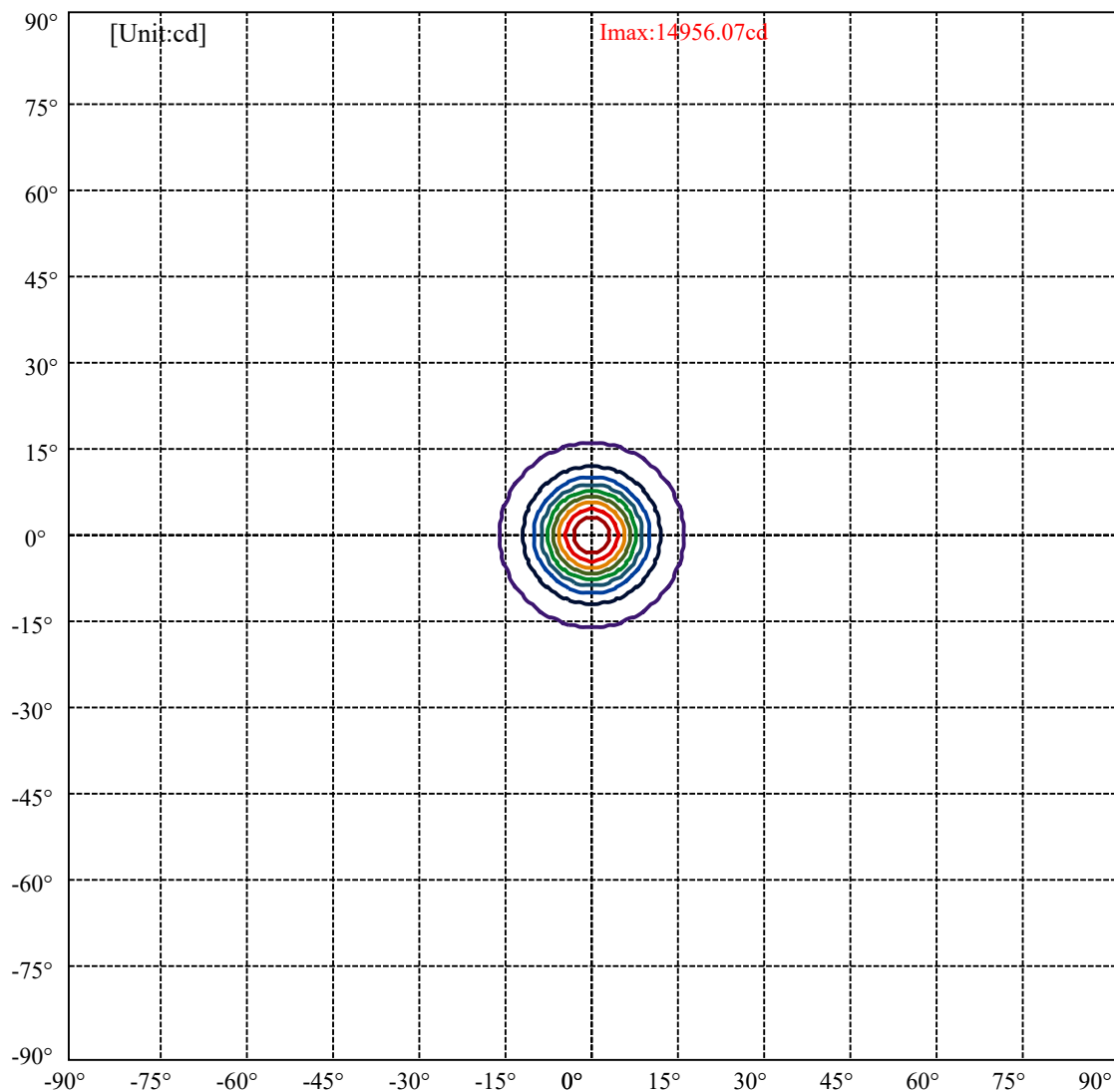
C0(Max): —————

C0/C180: —————

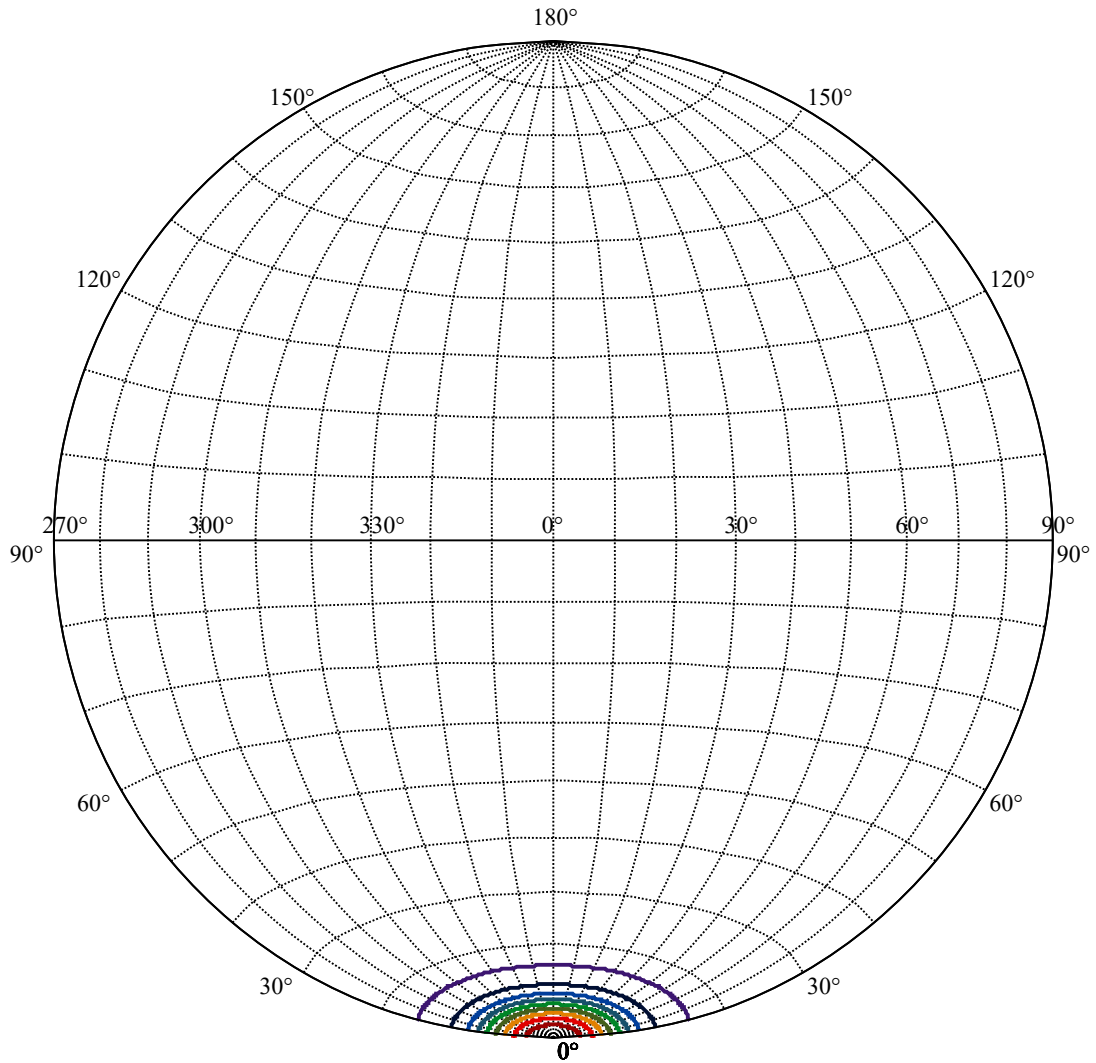
C90/C270: —————

Field angle(10%Imax):C0/180Left:15.8 Right:15.8
:C90/270Left:15.8 Right:15.8

Beam Angle(50%Imax):C0/180Left:7.7 Right:7.7
:C90/270Left:7.7 Right:7.7



(10%I _{max}) 1495.61	—
(20%I _{max}) 2991.21	—
(30%I _{max}) 4486.82	—
(40%I _{max}) 5982.43	—
(50%I _{max}) 7478.04	—
(60%I _{max}) 8973.64	—
(70%I _{max}) 10469.3	—
(80%I _{max}) 11964.9	—
(90%I _{max}) 13460.5	—



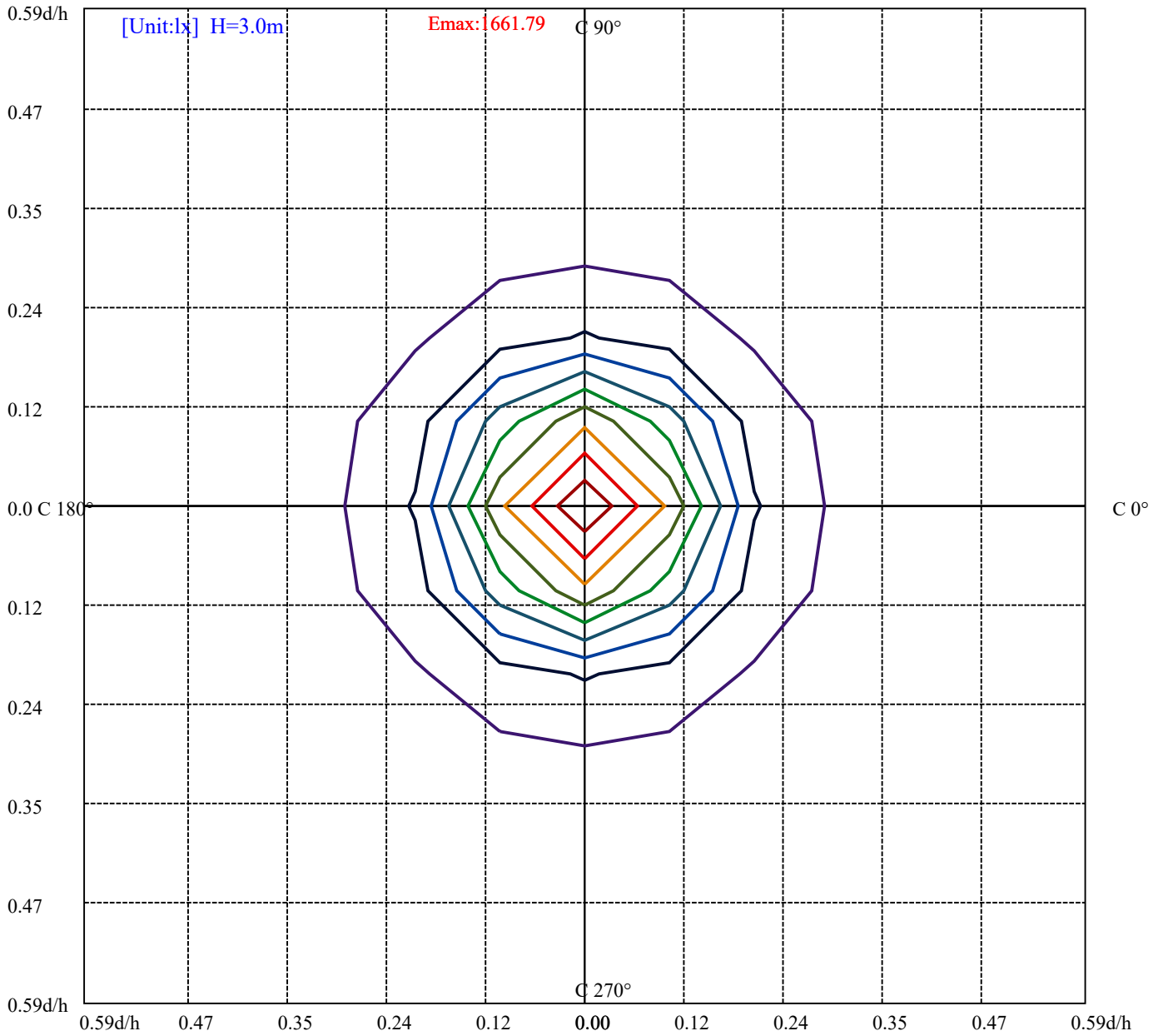
House

[Unit:cd]

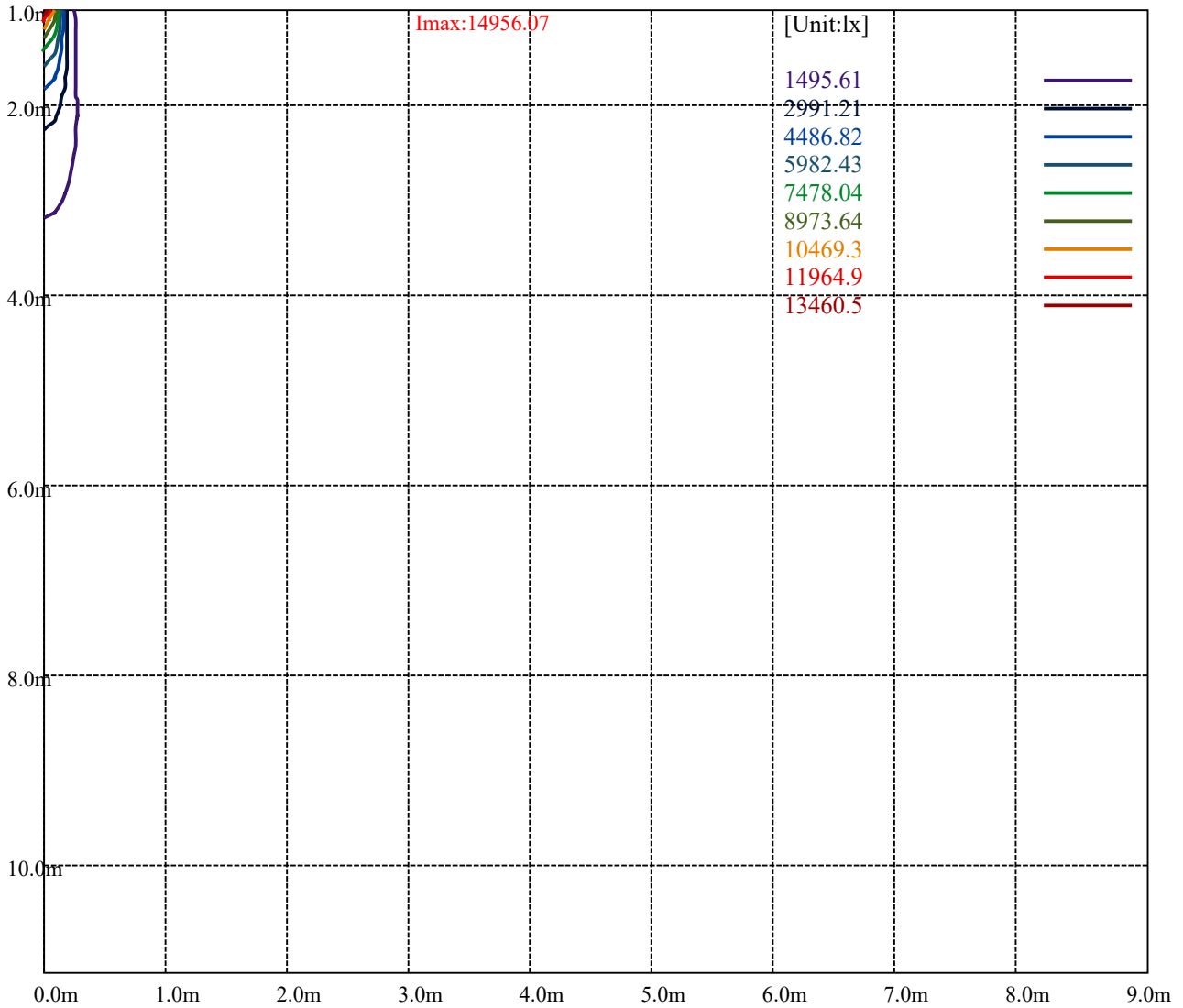
Road

Imax:14956.07

(10%Imax)	1495.61	—
(20%Imax)	2991.21	—
(30%Imax)	4486.82	—
(40%Imax)	5982.43	—
(50%Imax)	7478.04	—
(60%Imax)	8973.64	—
(70%Imax)	10469.3	—
(80%Imax)	11964.9	—
(90%Imax)	13460.5	—



- (10%Emax) 166.1789
- (20%Emax) 332.3567
- (30%Emax) 498.5355
- (40%Emax) 664.7133
- (50%Emax) 830.8922
- (60%Emax) 997.07
- (70%Emax) 1163.245
- (80%Emax) 1329.422
- (90%Emax) 1495.6



Luminance Table

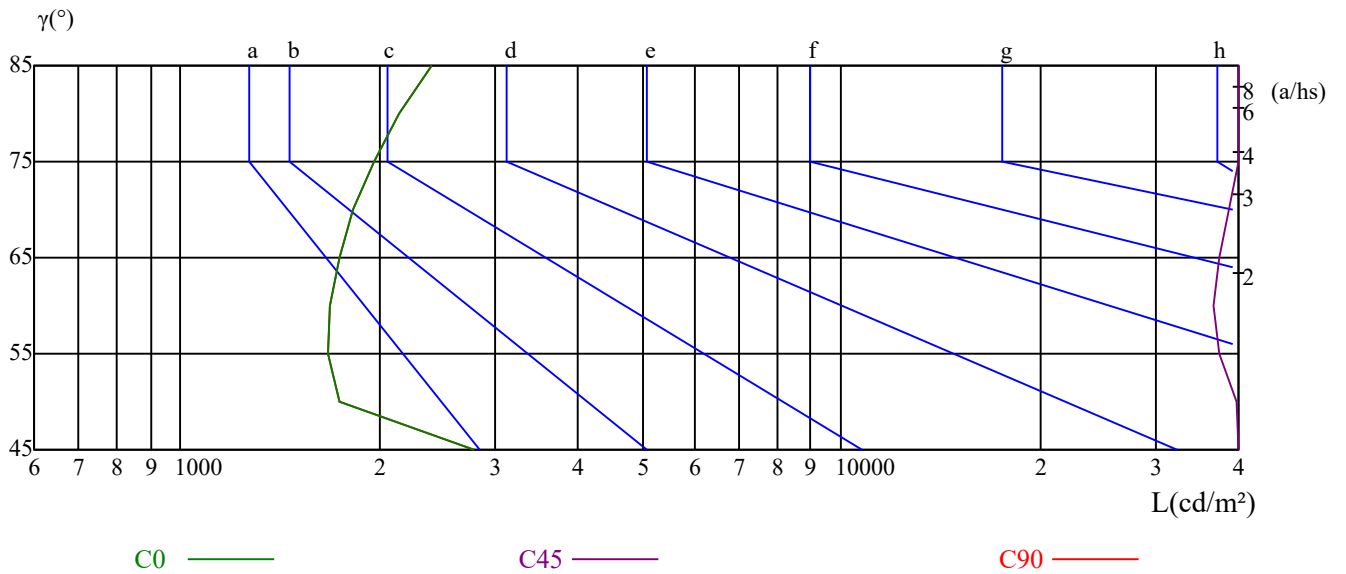
γ	45	50	55	60	65	70	75	80	85
C0	2776	1740	1675	1684	1744	1826	1962	2141	2396
C45	67111	39721	37328	36753	37311	38674	40561	43204	46778
C90	2776	1740	1675	1684	1744	1826	1962	2141	2396

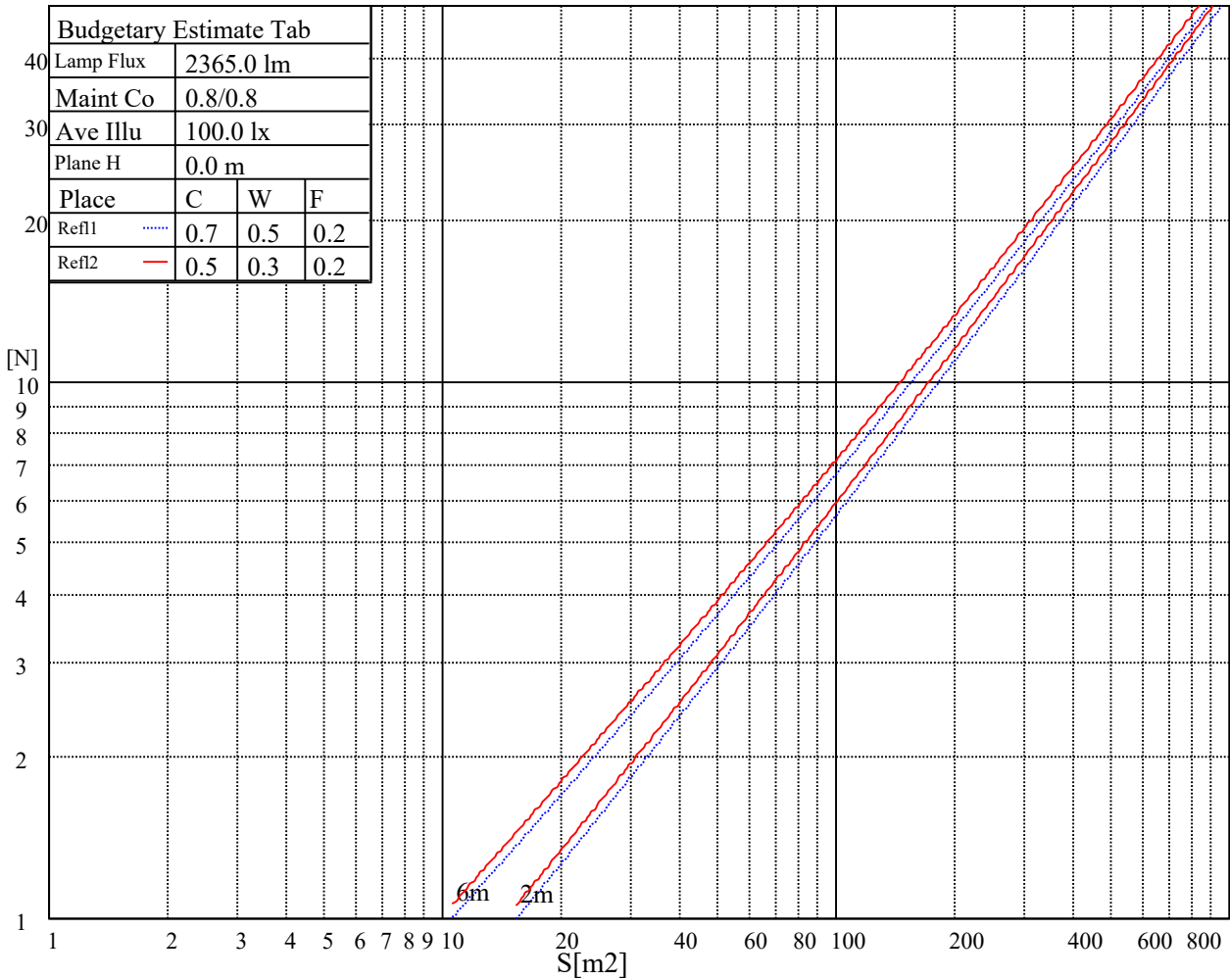
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
3935	3935	103588	6251	6251	165950	18435	18435	489665

Glare Table

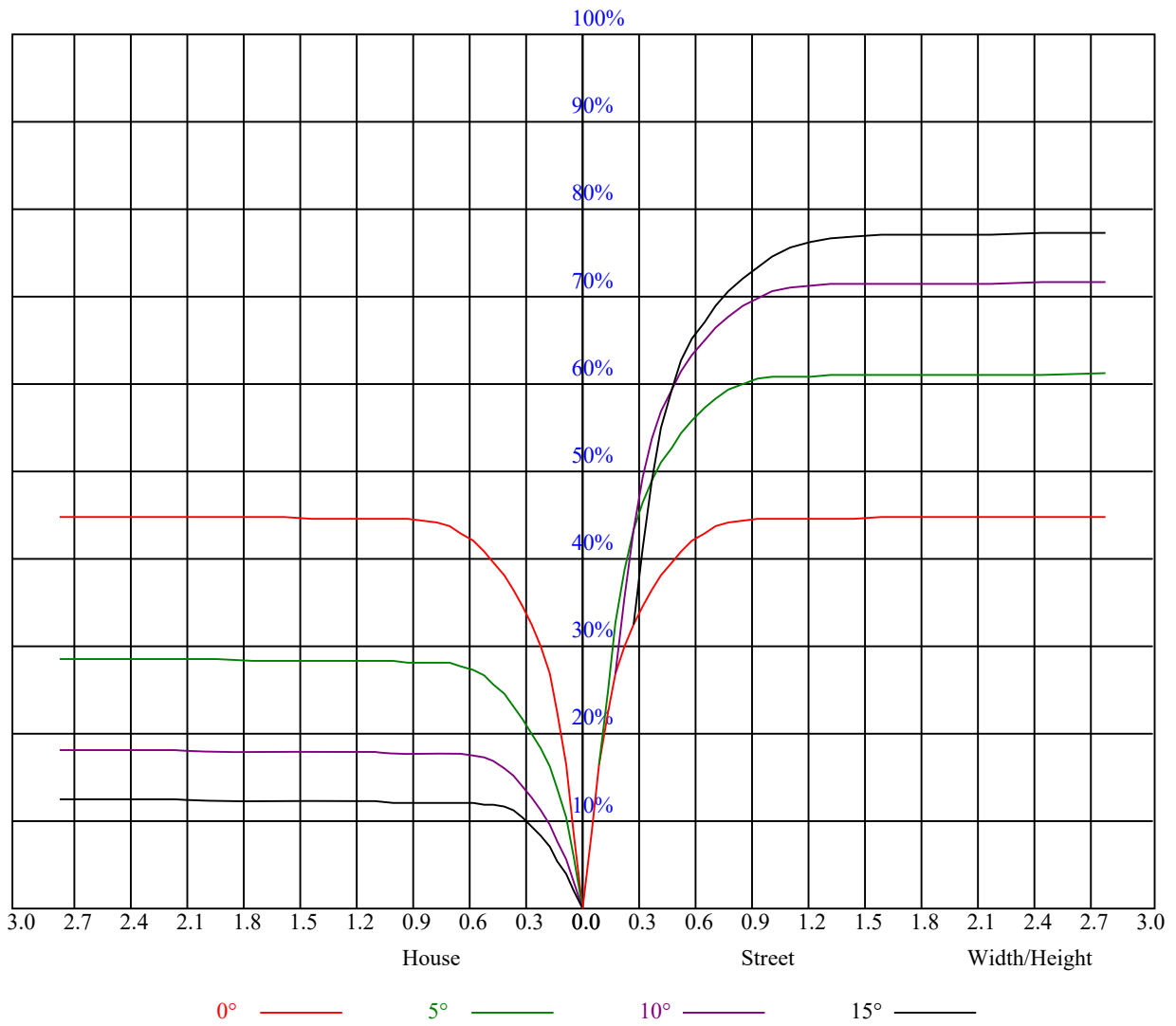
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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	1.08	1.08	1.08	1.05	1.05	1.05	1.00	1.00	1.00	0.96	0.96	0.96	0.92	0.92	0.92	0.90
1	1.01	0.99	0.98	0.99	0.98	0.96	0.96	0.94	0.93	0.92	0.91	0.90	0.89	0.89	0.88	0.86
2	0.96	0.93	0.90	0.94	0.92	0.89	0.92	0.89	0.88	0.89	0.87	0.86	0.87	0.85	0.84	0.83
3	0.91	0.88	0.85	0.90	0.87	0.84	0.88	0.85	0.83	0.86	0.83	0.82	0.84	0.82	0.80	0.79
4	0.87	0.83	0.80	0.86	0.83	0.80	0.84	0.81	0.79	0.83	0.80	0.78	0.81	0.79	0.77	0.76
5	0.84	0.79	0.76	0.83	0.79	0.76	0.81	0.78	0.75	0.80	0.77	0.75	0.79	0.76	0.74	0.73
6	0.80	0.76	0.73	0.80	0.76	0.73	0.78	0.75	0.72	0.77	0.74	0.72	0.76	0.74	0.72	0.70
7	0.77	0.73	0.70	0.77	0.73	0.70	0.76	0.72	0.70	0.75	0.72	0.69	0.74	0.71	0.69	0.68
8	0.75	0.71	0.68	0.74	0.70	0.68	0.73	0.70	0.67	0.72	0.69	0.67	0.72	0.69	0.67	0.66
9	0.72	0.68	0.65	0.72	0.68	0.65	0.71	0.68	0.65	0.70	0.67	0.65	0.70	0.67	0.65	0.64
10	0.70	0.66	0.63	0.70	0.66	0.63	0.69	0.66	0.63	0.68	0.65	0.63	0.68	0.65	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	14956.07	14829.44	14416.52	13550.76	12652.13	11384.45	9880.70	8430.79	6991.89
90.0	14956.07	14829.44	14416.52	13550.76	12652.13	11384.45	9880.70	8430.79	6991.89
180.0	14956.07	14829.44	14416.52	13550.76	12652.13	11384.45	9880.70	8430.79	6991.89
270.0	14956.07	14829.44	14416.52	13550.76	12652.13	11384.45	9880.70	8430.79	6991.89
360.0	14956.07	14829.44	14416.52	13550.76	12652.13	11384.45	9880.70	8430.79	6991.89
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	5543.63	4384.31	3489.47	2902.85	2265.85	2010.11	1643.71	1455.69	1294.43
90.0	5543.63	4384.31	3489.47	2902.85	2265.85	2010.11	1643.71	1455.69	1294.43
180.0	5543.63	4384.31	3489.47	2902.85	2265.85	2010.11	1643.71	1455.69	1294.43
270.0	5543.63	4384.31	3489.47	2902.85	2265.85	2010.11	1643.71	1455.69	1294.43
360.0	5543.63	4384.31	3489.47	2902.85	2265.85	2010.11	1643.71	1455.69	1294.43
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1203.59	1119.85	1050.20	991.84	948.35	911.79	878.87	854.53	833.33
90.0	1203.59	1119.85	1050.20	991.84	948.35	911.79	878.87	854.53	833.33
180.0	1203.59	1119.85	1050.20	991.84	948.35	911.79	878.87	854.53	833.33
270.0	1203.59	1119.85	1050.20	991.84	948.35	911.79	878.87	854.53	833.33
360.0	1203.59	1119.85	1050.20	991.84	948.35	911.79	878.87	854.53	833.33
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	812.85	795.95	779.76	764.18	745.85	717.22	672.79	620.43	547.70
90.0	812.85	795.95	779.76	764.18	745.85	717.22	672.79	620.43	547.70
180.0	812.85	795.95	779.76	764.18	745.85	717.22	672.79	620.43	547.70
270.0	812.85	795.95	779.76	764.18	745.85	717.22	672.79	620.43	547.70
360.0	812.85	795.95	779.76	764.18	745.85	717.22	672.79	620.43	547.70
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	460.77	386.77	306.61	214.11	153.00	90.57	50.71	29.23	19.16
90.0	460.77	386.77	306.61	214.11	153.00	90.57	50.71	29.23	19.16
180.0	460.77	386.77	306.61	214.11	153.00	90.57	50.71	29.23	19.16
270.0	460.77	386.77	306.61	214.11	153.00	90.57	50.71	29.23	19.16
360.0	460.77	386.77	306.61	214.11	153.00	90.57	50.71	29.23	19.16
C/γ(°)	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0
0.0	15.25	12.83	11.01	10.13	9.74	9.30	9.08	8.97	8.81
90.0	15.25	12.83	11.01	10.13	9.74	9.30	9.08	8.97	8.81
180.0	15.25	12.83	11.01	10.13	9.74	9.30	9.08	8.97	8.81
270.0	15.25	12.83	11.01	10.13	9.74	9.30	9.08	8.97	8.81
360.0	15.25	12.83	11.01	10.13	9.74	9.30	9.08	8.97	8.81
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	8.75	8.64	8.53	8.48	8.42	8.37	8.31	8.26	8.20
90.0	8.75	8.64	8.53	8.48	8.42	8.37	8.31	8.26	8.20
180.0	8.75	8.64	8.53	8.48	8.42	8.37	8.31	8.26	8.20
270.0	8.75	8.64	8.53	8.48	8.42	8.37	8.31	8.26	8.20
360.0	8.75	8.64	8.53	8.48	8.42	8.37	8.31	8.26	8.20
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	8.20	8.15	8.15	8.15	8.04	8.04	7.98	7.98	7.98
90.0	8.20	8.15	8.15	8.15	8.04	8.04	7.98	7.98	7.98
180.0	8.20	8.15	8.15	8.15	8.04	8.04	7.98	7.98	7.98
270.0	8.20	8.15	8.15	8.15	8.04	8.04	7.98	7.98	7.98
360.0	8.20	8.15	8.15	8.15	8.04	8.04	7.98	7.98	7.98

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Intensity data(cd)										Appendix Page: 17 Total:17
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0	
0.0	7.98	7.98	7.93	7.93	7.93	7.87	7.93	7.87	7.87	
90.0	7.98	7.98	7.93	7.93	7.93	7.87	7.93	7.87	7.87	
180.0	7.98	7.98	7.93	7.93	7.93	7.87	7.93	7.87	7.87	
270.0	7.98	7.98	7.93	7.93	7.93	7.87	7.93	7.87	7.87	
360.0	7.98	7.98	7.93	7.93	7.93	7.87	7.93	7.87	7.87	
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0	
0.0	7.87	7.87	7.87	7.87	7.87	7.87	7.87	7.82	7.82	
90.0	7.87	7.87	7.87	7.87	7.87	7.87	7.87	7.82	7.82	
180.0	7.87	7.87	7.87	7.87	7.87	7.87	7.87	7.82	7.82	
270.0	7.87	7.87	7.87	7.87	7.87	7.87	7.87	7.82	7.82	
360.0	7.87	7.87	7.87	7.87	7.87	7.87	7.87	7.82	7.82	
C/γ(°)	90.0									
0.0	7.82									
90.0	7.82									
180.0	7.82									
270.0	7.82									
360.0	7.82									