
Nata

LumCAT: 3-2044-M
Luminaire: 92.70.131.00
Report No: GC2017042708
Test No: 2017050503
LampCAT: CITIZEN CLU038
Lamp flux(lm): 2365.0
Number of Lamps: 1
Length(mm): 84
Phm Type: C

Voltage(V): 34.2000
Current(A): 0.5000
Power (W): 17.1000
PF: 0.0000
Ballast type: DC
Width(mm): 84
Height(mm): 0

Photometric Results

Lumens(lm): 2114.87
Efficiency(%): 89.42%
Lumens(lm)/Power(W): 123.68
Central intensity(cd): 8050.347
Maximum intensity(cd): 8050.347
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=24.8
 [C90/270]Total=24.8
Field angle(10%Imax): [C0/180]Total=53.9
 [C90/270]Total=53.9
Maximum s/h(1/2): C0_180=0.42 C90_270=0.42
Maximum s/h(1/4): C0_180=0.41 C90_270=0.41
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 89.42%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.748%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	8050.347	0.000	0	.000%	.000%
1.0	8033.968	7.696	7.696	.325%	.364%
2.0	7985.931	22.993	30.689	.972%	1.451%
3.0	7869.349	37.921	68.61	1.603%	3.244%
4.0	7697.711	52.108	120.718	2.203%	5.708%
5.0	7470.465	65.253	185.971	2.759%	8.793%
6.0	7161.599	76.895	262.866	3.251%	12.429%
7.0	6769.184	86.468	349.334	3.656%	16.518%
8.0	6363.694	93.990	443.324	3.974%	20.962%
9.0	5858.414	99.054	542.377	4.188%	25.646%
10.0	5310.465	101.074	643.451	4.274%	30.425%
11.0	4803.533	101.060	744.511	4.273%	35.204%
12.0	4253.657	99.008	843.519	4.186%	39.885%
13.0	3698.551	94.373	937.892	3.990%	44.347%
14.0	3182.260	88.074	1025.966	3.724%	48.512%
15.0	2733.550	81.215	1107.18	3.434%	52.352%
16.0	2330.400	74.201	1181.381	3.137%	55.861%
17.0	2006.393	67.536	1248.917	2.856%	59.054%
18.0	1713.768	61.337	1310.254	2.594%	61.954%
19.0	1489.413	55.729	1365.983	2.356%	64.589%
20.0	1280.750	50.702	1416.685	2.144%	66.987%
21.0	1111.864	45.943	1462.628	1.943%	69.159%
22.0	1023.732	42.916	1505.544	1.815%	71.188%
23.0	946.075	41.332	1546.875	1.748%	73.143%
24.0	889.285	40.128	1587.003	1.697%	75.040%
25.0	852.301	39.600	1626.603	1.674%	76.913%
26.0	829.259	39.693	1666.296	1.678%	78.789%
27.0	804.250	39.964	1706.26	1.690%	80.679%
28.0	784.251	40.217	1746.478	1.701%	82.581%
29.0	767.858	40.608	1787.086	1.717%	84.501%
30.0	753.571	41.078	1828.164	1.737%	86.443%
31.0	730.585	41.302	1869.466	1.746%	88.396%
32.0	681.447	40.453	1909.919	1.710%	90.309%
33.0	605.097	37.902	1947.821	1.603%	92.101%
34.0	507.248	33.663	1981.484	1.423%	93.693%
35.0	409.097	28.458	2009.942	1.203%	95.038%
36.0	312.941	22.990	2032.932	.972%	96.125%
37.0	216.619	17.271	2050.203	.730%	96.942%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	116.761	11.128	2061.331	.471%	97.468%
39.0	55.552	5.882	2067.212	.249%	97.746%
40.0	27.927	2.911	2070.124	.123%	97.884%
41.0	20.219	1.714	2071.838	.072%	97.965%
42.0	15.939	1.314	2073.152	.056%	98.027%
43.0	12.911	1.069	2074.221	.045%	98.078%
44.0	11.493	0.921	2075.142	.039%	98.121%
45.0	10.722	0.854	2075.995	.036%	98.162%
46.0	10.474	0.829	2076.824	.035%	98.201%
47.0	10.240	0.824	2077.648	.035%	98.240%
48.0	10.075	0.821	2078.47	.035%	98.279%
49.0	9.883	0.820	2079.289	.035%	98.317%
50.0	9.745	0.818	2080.107	.035%	98.356%
51.0	9.621	0.819	2080.927	.035%	98.395%
52.0	9.511	0.821	2081.748	.035%	98.434%
53.0	9.428	0.824	2082.572	.035%	98.473%
54.0	9.318	0.826	2083.398	.035%	98.512%
55.0	9.208	0.827	2084.225	.035%	98.551%
56.0	9.126	0.828	2085.053	.035%	98.590%
57.0	9.057	0.831	2085.885	.035%	98.629%
58.0	8.960	0.833	2086.718	.035%	98.669%
59.0	8.905	0.835	2087.553	.035%	98.708%
60.0	8.864	0.839	2088.393	.035%	98.748%
61.0	8.823	0.844	2089.237	.036%	98.788%
62.0	8.768	0.848	2090.084	.036%	98.828%
63.0	8.726	0.851	2090.935	.036%	98.868%
64.0	8.671	0.854	2091.789	.036%	98.908%
65.0	8.603	0.855	2092.644	.036%	98.949%
66.0	8.561	0.856	2093.5	.036%	98.989%
67.0	8.548	0.860	2094.36	.036%	99.030%
68.0	8.520	0.865	2095.225	.037%	99.071%
69.0	8.506	0.869	2096.094	.037%	99.112%
70.0	8.465	0.872	2096.965	.037%	99.153%
71.0	8.424	0.873	2097.838	.037%	99.194%
72.0	8.396	0.875	2098.713	.037%	99.236%
73.0	8.396	0.878	2099.591	.037%	99.277%
74.0	8.382	0.882	2100.473	.037%	99.319%
75.0	8.341	0.884	2101.356	.037%	99.361%

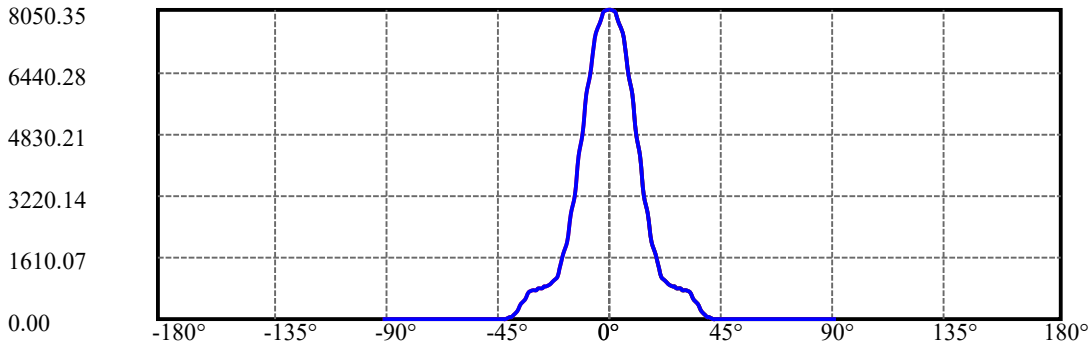
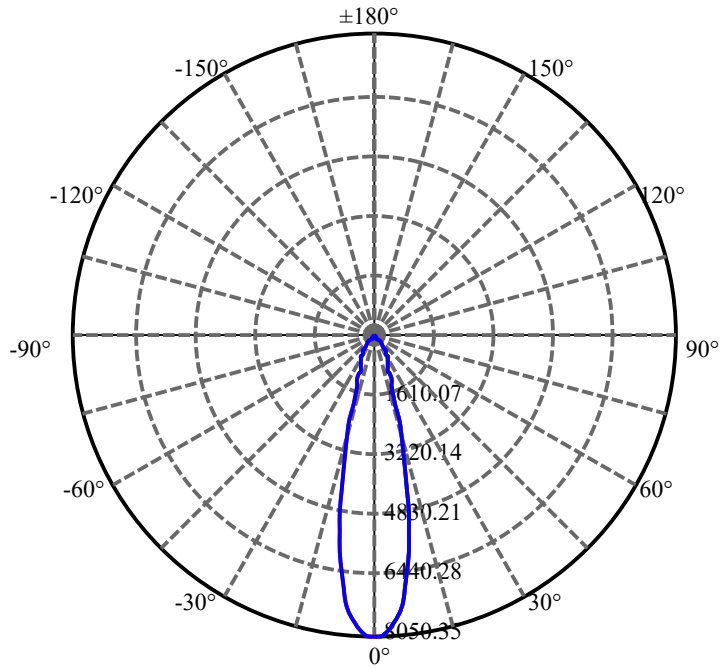
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	8.382	0.888	2102.244	.038%	99.403%
77.0	8.492	0.900	2103.144	.038%	99.445%
78.0	8.575	0.914	2104.057	.039%	99.489%
79.0	8.451	0.915	2104.972	.039%	99.532%
80.0	8.355	0.906	2105.878	.038%	99.575%
81.0	8.286	0.900	2106.778	.038%	99.617%
82.0	8.272	0.898	2107.676	.038%	99.660%
83.0	8.272	0.899	2108.576	.038%	99.702%
84.0	8.258	0.901	2109.476	.038%	99.745%
85.0	8.258	0.901	2110.378	.038%	99.787%
86.0	8.245	0.902	2111.28	.038%	99.830%
87.0	8.203	0.900	2112.18	.038%	99.873%
88.0	8.190	0.898	2113.078	.038%	99.915%
89.0	8.190	0.898	2113.976	.038%	99.958%
90.0	8.190	0.898	2114.874	.038%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1828.16	77.30%	86.44%
0-40	2070.12	87.53%	97.88%
0-60	2088.39	88.30%	98.75%
0-90	2113.98	89.39%	99.96%
0-120	2113.98	89.39%	99.96%
0-180	2114.87	89.42%	100.00%
60-90	26.42	1.12%	1.25%
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%
0-26.64	1691.90	71.54%	80.00%

ZONAL LUMEN SUMMARY

0-10	643.45
10-20	773.23
20-30	411.48
30-40	241.96
40-50	9.98
50-60	8.29
60-70	8.57
70-80	8.91
80-90	8.10
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: —————

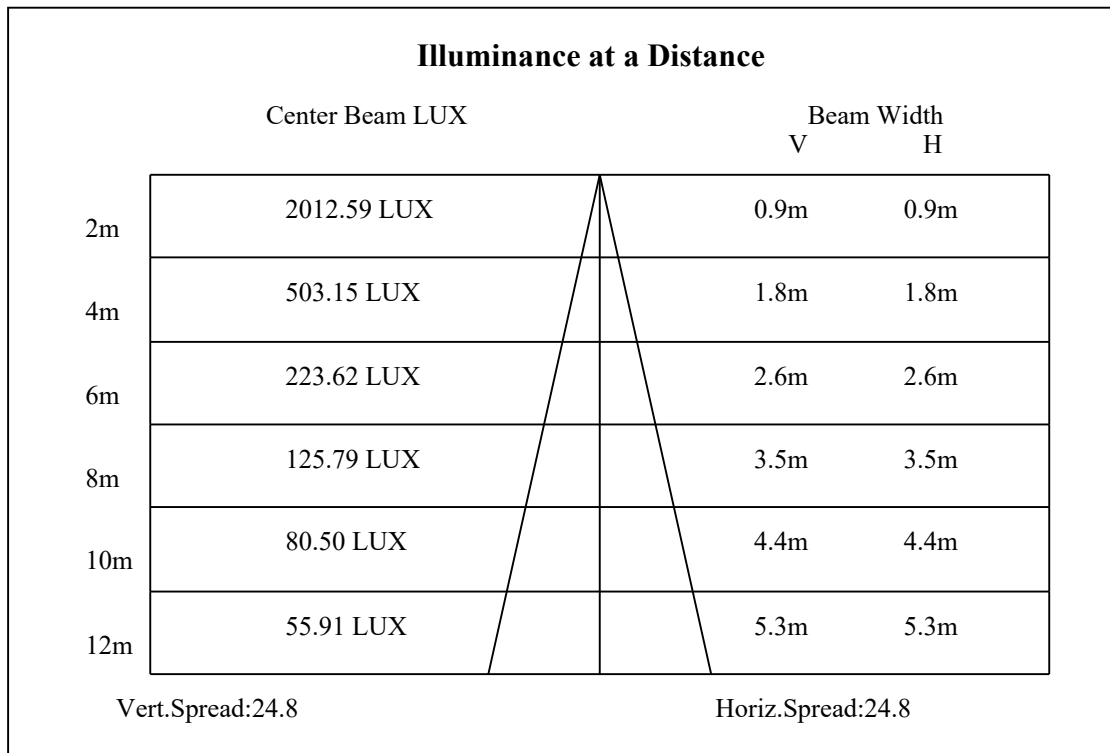
C90/C270: —————

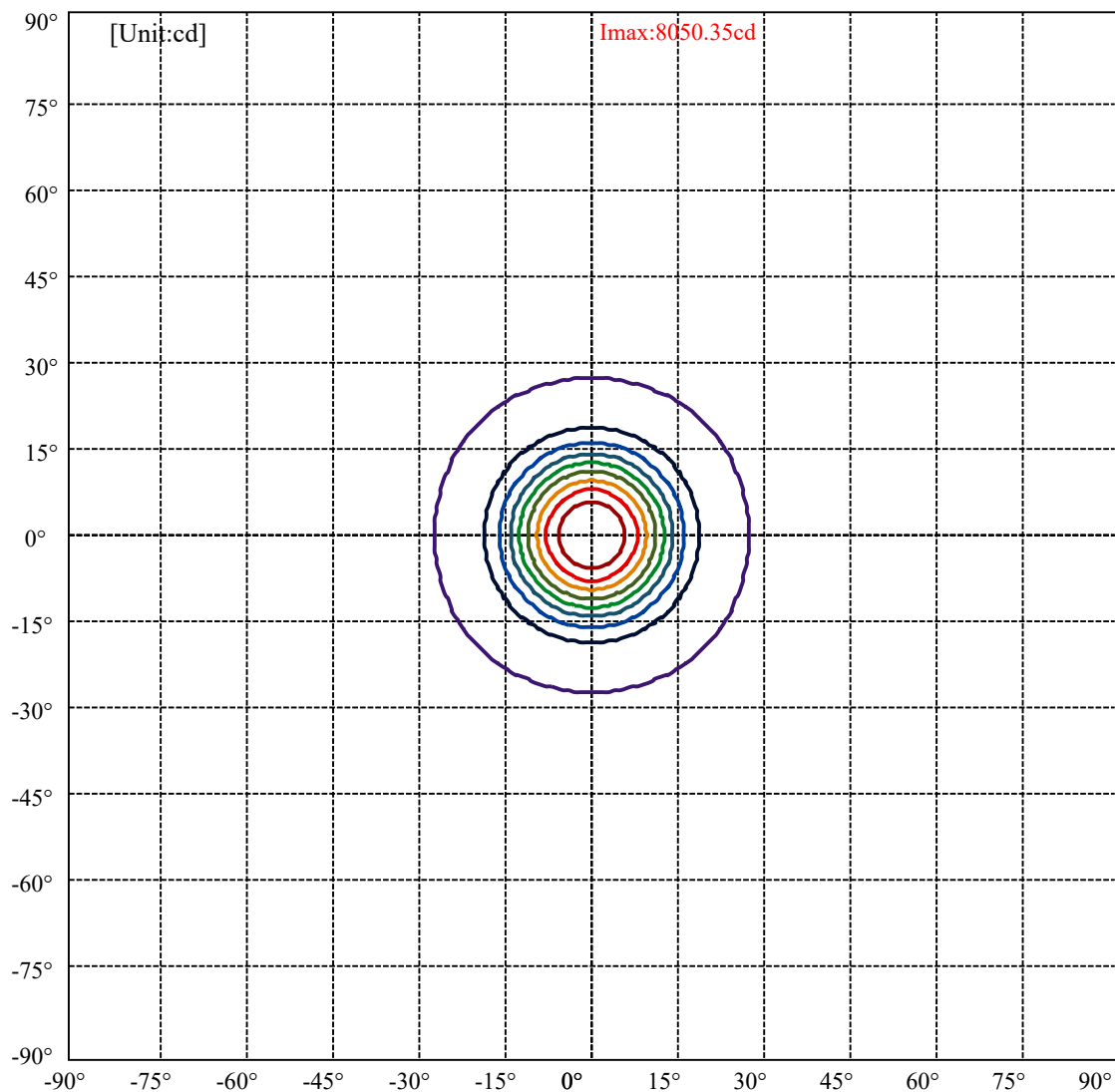
Field angle(10%Imax):C0/180Left:27.0 Right:27.0

:C90/270Left:27.0 Right:27.0

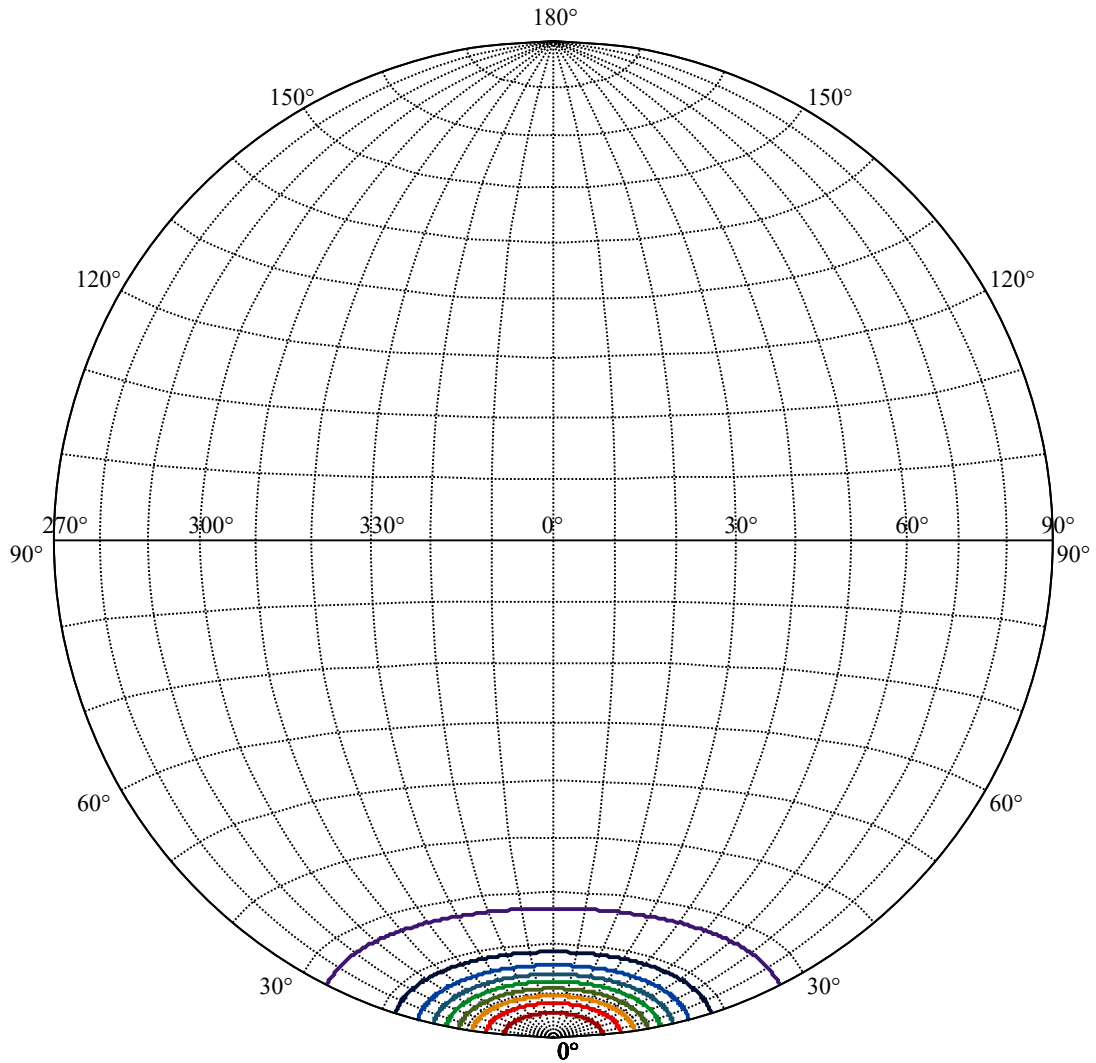
Beam Angle(50%Imax):C0/180Left:12.4 Right:12.4

:C90/270Left:12.4 Right:12.4





(10%Imax) 805.035	—
(20%Imax) 1610.07	—
(30%Imax) 2415.1	—
(40%Imax) 3220.14	—
(50%Imax) 4025.17	—
(60%Imax) 4830.21	—
(70%Imax) 5635.24	—
(80%Imax) 6440.28	—
(90%Imax) 7245.31	—



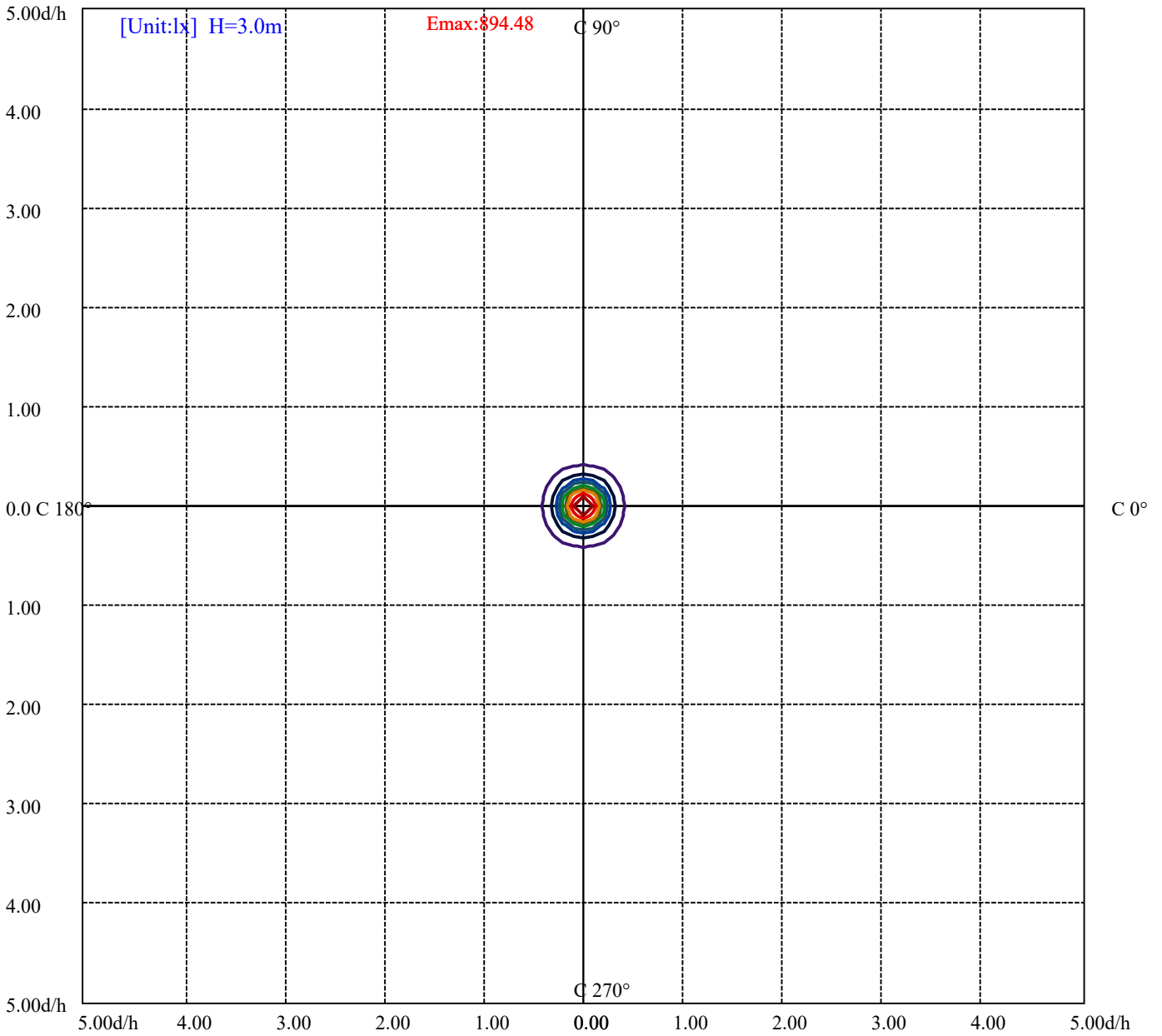
House

[Unit:cd]

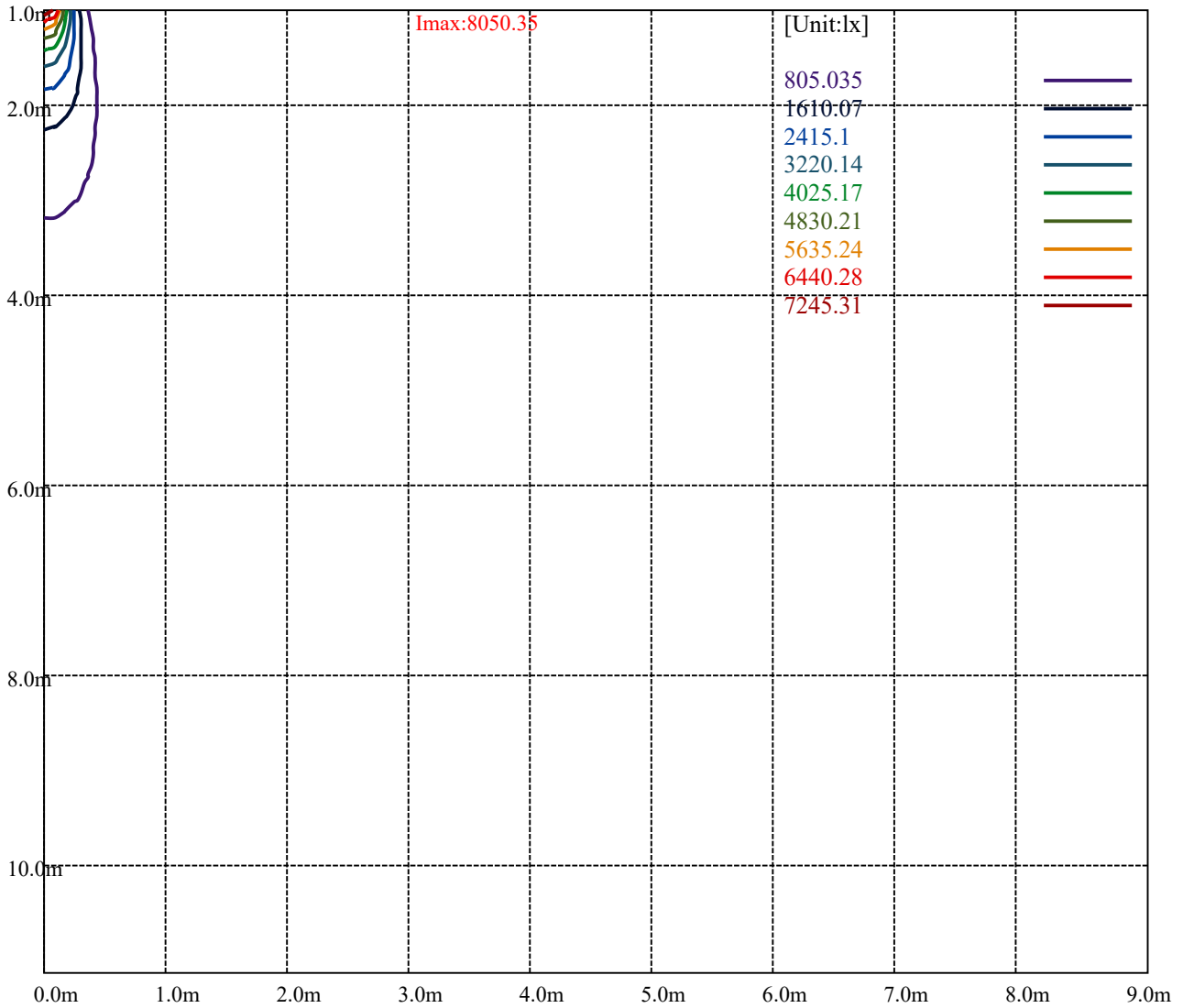
Road

Imax:8050.35

(10%Imax) 805.035	—
(20%Imax) 1610.07	—
(30%Imax) 2415.1	—
(40%Imax) 3220.14	—
(50%Imax) 4025.17	—
(60%Imax) 4830.21	—
(70%Imax) 5635.24	—
(80%Imax) 6440.28	—
(90%Imax) 7245.31	—



(10%Emax) 89.44822	—
(20%Emax) 178.8967	—
(30%Emax) 268.3445	—
(40%Emax) 357.7933	—
(50%Emax) 447.2411	—
(60%Emax) 536.69	—
(70%Emax) 626.1378	—
(80%Emax) 715.5867	—
(90%Emax) 805.0344	—



Luminance Table

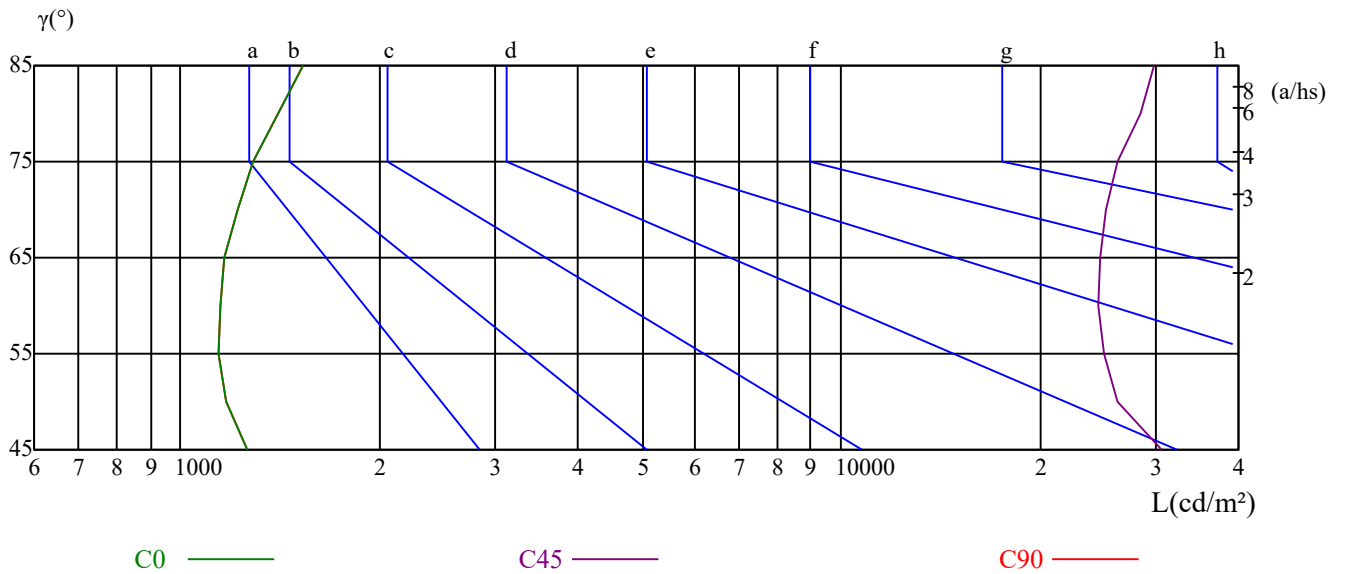
γ	45	50	55	60	65	70	75	80	85
C0	1265	1175	1145	1146	1168	1219	1290	1406	1537
C45	30513	26198	24946	24527	24704	25206	26261	28340	29693
C90	1265	1175	1145	1146	1168	1219	1290	1406	1537

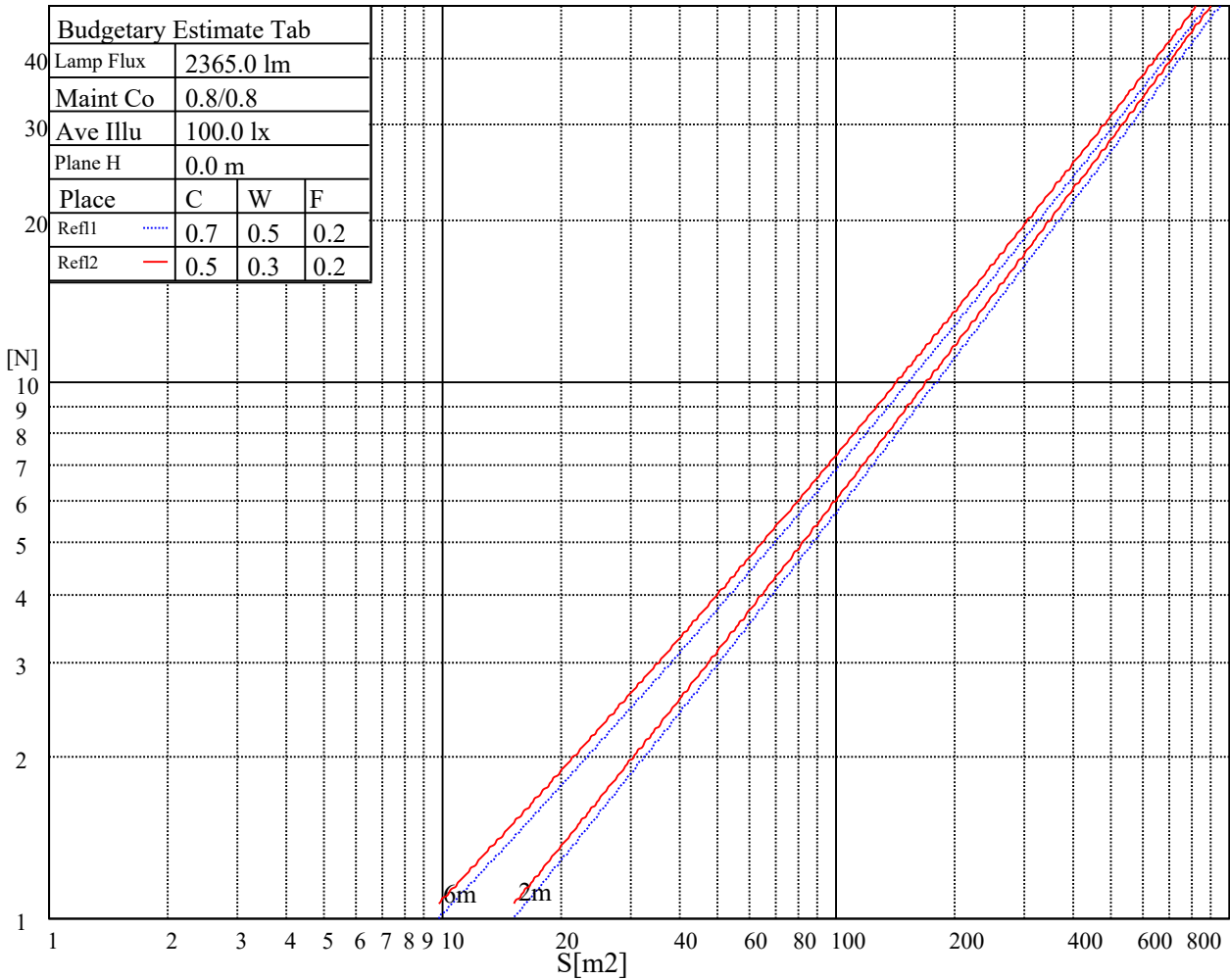
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
2817	2817	74065	4461	4461	117578	13115	13115	345906

Glare Table

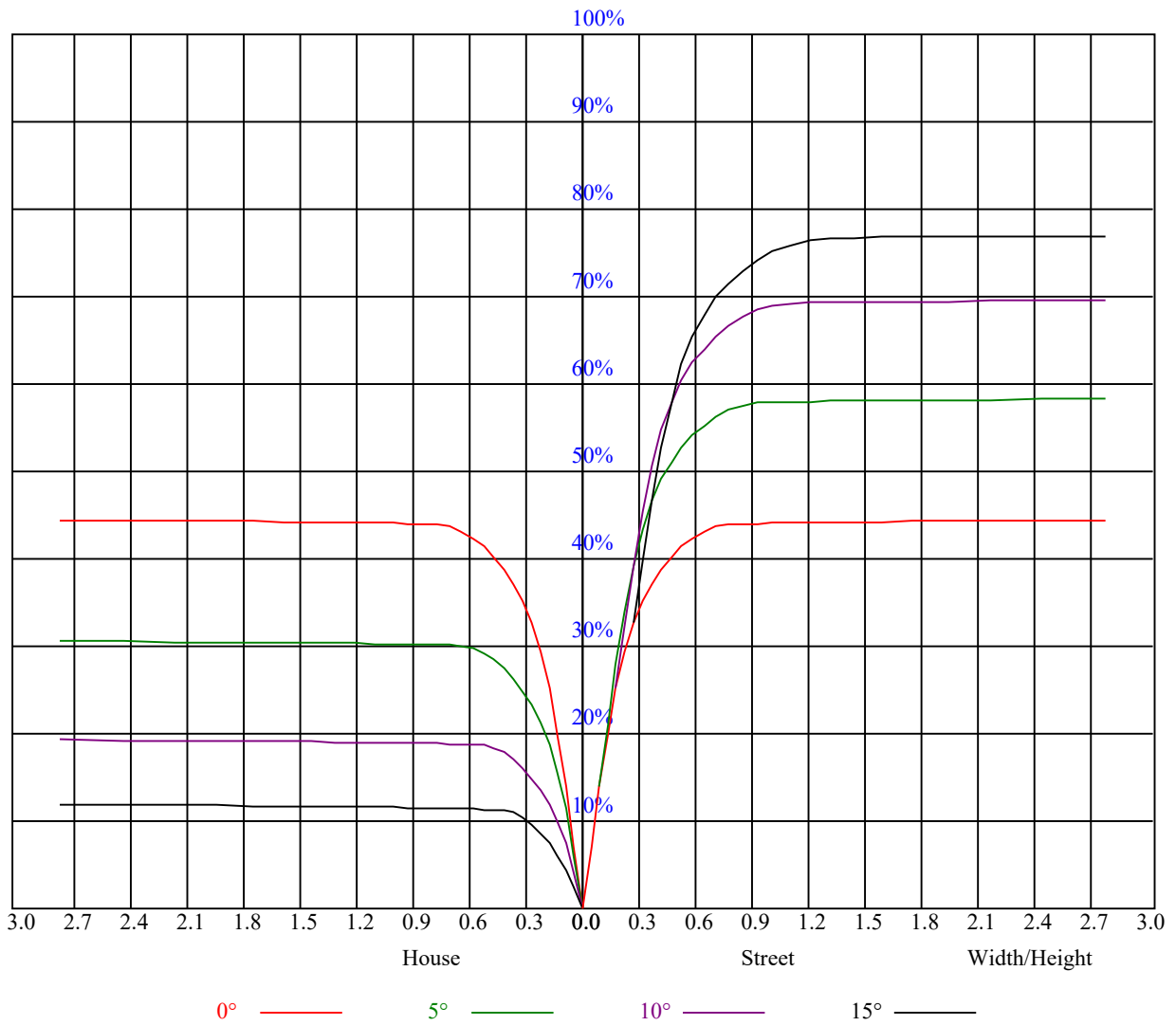
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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 RHOF=20 CU															
0	1.06	1.06	1.06	1.04	1.04	1.04	0.99	0.99	0.99	0.95	0.95	0.95	0.91	0.91	0.91	0.89
1	1.00	0.98	0.97	0.98	0.97	0.95	0.95	0.93	0.92	0.91	0.90	0.89	0.88	0.88	0.87	0.85
2	0.95	0.92	0.89	0.93	0.91	0.88	0.90	0.88	0.86	0.88	0.86	0.85	0.85	0.84	0.83	0.81
3	0.90	0.86	0.84	0.89	0.86	0.83	0.87	0.84	0.82	0.85	0.82	0.80	0.83	0.81	0.79	0.78
4	0.86	0.82	0.79	0.85	0.81	0.79	0.83	0.80	0.78	0.82	0.79	0.77	0.80	0.78	0.76	0.75
5	0.82	0.78	0.75	0.81	0.78	0.75	0.80	0.77	0.74	0.79	0.76	0.74	0.77	0.75	0.73	0.72
6	0.79	0.75	0.72	0.78	0.74	0.71	0.77	0.74	0.71	0.76	0.73	0.71	0.75	0.72	0.70	0.69
7	0.76	0.72	0.69	0.75	0.71	0.69	0.74	0.71	0.68	0.73	0.70	0.68	0.72	0.70	0.68	0.67
8	0.73	0.69	0.66	0.73	0.69	0.66	0.72	0.68	0.66	0.71	0.68	0.65	0.70	0.67	0.65	0.64
9	0.71	0.66	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
10	0.68	0.64	0.61	0.68	0.64	0.61	0.67	0.64	0.61	0.67	0.63	0.61	0.66	0.63	0.61	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	8042.64	8036.03	7985.93	7876.92	7718.36	7477.21	7180.46	6855.07	6479.59
90.0	8058.05	8020.62	7957.85	7805.35	7619.26	7381.41	6996.02	6615.58	6188.89
180.0	8042.64	8017.86	7963.91	7844.99	7648.44	7411.69	7107.23	6636.50	6193.85
270.0	8058.05	8061.36	8036.03	7950.14	7804.80	7611.55	7362.69	6969.59	6592.45
360.0	8042.64	8036.03	7985.93	7876.92	7718.36	7477.21	7180.46	6855.07	6479.59
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	5948.84	5489.67	5009.58	4444.70	3872.67	3376.61	2869.54	2432.94	2111.96
90.0	5607.49	5105.93	4584.55	3995.99	3428.36	2981.30	2543.06	2169.77	1885.68
180.0	5712.65	5076.20	4560.87	4048.30	3492.23	2989.01	2587.65	2192.90	1891.19
270.0	6164.67	5570.06	5059.13	4525.64	4000.95	3382.11	2933.96	2525.99	2136.74
360.0	5948.84	5489.67	5009.58	4444.70	3872.67	3376.61	2869.54	2432.94	2111.96
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1813.56	1585.07	1365.40	1190.32	1074.70	987.71	910.63	870.44	842.36
90.0	1610.95	1405.59	1225.00	1084.06	990.46	924.95	873.75	845.12	826.40
180.0	1614.25	1388.52	1177.11	1075.64	973.40	913.28	873.75	837.30	819.90
270.0	1816.31	1578.47	1355.49	1097.44	1056.37	958.37	899.02	856.35	828.38
360.0	1813.56	1585.07	1365.40	1190.32	1074.70	987.71	910.63	870.44	842.36
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	814.28	791.71	776.85	763.08	741.61	705.82	638.65	535.70	442.65
90.0	796.67	779.05	764.73	749.32	719.04	658.47	564.88	458.62	358.97
180.0	796.78	777.40	759.67	745.35	719.09	653.13	571.32	470.79	376.20
270.0	809.27	788.85	770.18	756.53	742.60	708.36	645.54	563.89	458.56
360.0	814.28	791.71	776.85	763.08	741.61	705.82	638.65	535.70	442.65
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	347.41	288.50	140.89	71.02	31.71	22.63	18.39	14.42	12.61
90.0	287.39	155.97	78.73	34.96	22.46	18.39	13.71	12.28	10.90
180.0	269.06	169.02	93.49	42.78	22.41	18.17	14.09	11.62	10.90
270.0	347.90	252.98	153.94	73.45	35.13	21.69	17.56	13.32	11.56
360.0	347.41	288.50	140.89	71.02	31.71	22.63	18.39	14.42	12.61
C/γ(°)	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0
0.0	11.12	10.85	10.57	10.35	10.13	9.97	9.86	9.74	9.58
90.0	10.30	10.08	9.91	9.80	9.63	9.58	9.41	9.30	9.25
180.0	10.68	10.46	10.30	10.13	9.91	9.80	9.69	9.58	9.52
270.0	10.79	10.52	10.19	10.02	9.86	9.63	9.52	9.41	9.36
360.0	11.12	10.85	10.57	10.35	10.13	9.97	9.86	9.74	9.58
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	9.47	9.36	9.30	9.19	9.14	9.03	8.97	8.92	8.86
90.0	9.19	9.08	8.97	8.92	8.81	8.81	8.75	8.70	8.64
180.0	9.36	9.25	9.19	9.14	9.03	8.97	8.92	8.92	8.86
270.0	9.25	9.14	9.03	8.97	8.86	8.81	8.81	8.75	8.70
360.0	9.47	9.36	9.30	9.19	9.14	9.03	8.97	8.92	8.86
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	8.86	8.75	8.70	8.64	8.70	8.64	8.59	8.53	8.48
90.0	8.59	8.53	8.53	8.53	8.42	8.42	8.42	8.37	8.37
180.0	8.81	8.75	8.64	8.59	8.59	8.53	8.53	8.53	8.48
270.0	8.64	8.64	8.53	8.48	8.48	8.48	8.48	8.42	8.37
360.0	8.86	8.75	8.70	8.64	8.70	8.64	8.59	8.53	8.48

Nata 3-2044-M

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	8.48	8.48	8.48	8.42	8.53	9.03	9.36	8.97	8.64	
90.0	8.37	8.37	8.31	8.26	8.31	8.37	8.37	8.26	8.26	
180.0	8.42	8.42	8.42	8.42	8.37	8.31	8.31	8.31	8.31	
270.0	8.31	8.31	8.31	8.26	8.31	8.26	8.26	8.26	8.20	
360.0	8.48	8.48	8.48	8.42	8.53	9.03	9.36	8.97	8.64	
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0	
0.0	8.42	8.37	8.31	8.31	8.31	8.31	8.26	8.26	8.26	
90.0	8.20	8.20	8.26	8.20	8.20	8.20	8.15	8.15	8.15	
180.0	8.31	8.31	8.31	8.31	8.31	8.26	8.26	8.20	8.26	
270.0	8.20	8.20	8.20	8.20	8.20	8.20	8.15	8.15	8.09	
360.0	8.42	8.37	8.31	8.31	8.31	8.31	8.26	8.26	8.26	
C/γ(°)	90.0									
0.0	8.26									
90.0	8.15									
180.0	8.20									
270.0	8.15									
360.0	8.26									