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Nata

LumCAT: 3-1549-A3

Luminaire: 99.02.73.172+92.76.365.00

Report No: NATA0100

Test No: GC2018091214

LampCAT: LUMINUS CXM-11-AC30

Lamp flux(lm): 2496.0

Number of Lamps: 1

Length(mm): 79

Phm Type: C

Voltage(V): 34.7000

Current(A): 0.5000

Power (W): 17.3500

PF: 0.0000

Ballast type: DC

Width(mm): 79

Height(mm): 0

Photometric Results

Lumens(lm): 2263.07

Efficiency(%): 90.67%

Lumens(lm)/Power(W): 130.96

Central intensity(cd): 9830.531

Maximum intensity(cd): 9830.531

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=21.7

[C90/270]Total=21.7

Field angle(10%Imax): [C0/180]Total=48.3

[C90/270]Total=48.3

Maximum s/h(1/2): C0_180=0.37 C90_270=0.37

Maximum s/h(1/4): C0_180=0.38 C90_270=0.38

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 91.03%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 98.228%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	9830.531	9.407	9.407	.377%	.416%
2.0	9606.656	73.529	82.936	2.946%	3.665%
4.0	8966.039	137.167	220.103	5.495%	9.726%
6.0	7985.109	183.055	403.158	7.334%	17.815%
8.0	6798.234	207.499	610.657	8.313%	26.984%
10.0	5443.172	207.294	817.952	8.305%	36.143%
12.0	4186.266	190.885	1008.836	7.648%	44.578%
14.0	3069.914	162.880	1171.716	6.526%	51.776%
16.0	2266.734	137.026	1308.742	5.490%	57.830%
18.0	1710.914	115.951	1424.693	4.645%	62.954%
20.0	1374.188	103.077	1527.771	4.130%	67.509%
22.0	1142.360	93.852	1621.623	3.760%	71.656%
24.0	989.958	88.307	1709.93	3.538%	75.558%
26.0	897.982	86.333	1796.262	3.459%	79.373%
28.0	841.261	86.617	1882.88	3.470%	83.200%
30.0	797.407	87.441	1970.321	3.503%	87.064%
32.0	754.460	87.682	2058.003	3.513%	90.939%
34.0	601.854	73.810	2131.813	2.957%	94.200%
36.0	372.839	48.062	2179.876	1.926%	96.324%
38.0	174.270	23.530	2203.406	.943%	97.364%
40.0	38.327	5.403	2208.809	.216%	97.602%
42.0	26.409	3.876	2212.685	.155%	97.774%
44.0	20.391	3.106	2215.791	.124%	97.911%
46.0	13.528	2.134	2217.925	.086%	98.005%
48.0	11.967	1.950	2219.876	.078%	98.091%
50.0	11.644	1.956	2221.832	.078%	98.178%
52.0	11.419	1.973	2223.805	.079%	98.265%
54.0	11.201	1.987	2225.793	.080%	98.353%
56.0	11.039	2.007	2227.8	.080%	98.442%
58.0	10.891	2.026	2229.825	.081%	98.531%
60.0	10.723	2.037	2231.862	.082%	98.621%
62.0	10.624	2.057	2233.919	.082%	98.712%
64.0	10.512	2.072	2235.991	.083%	98.803%
66.0	10.470	2.098	2238.089	.084%	98.896%
68.0	10.399	2.115	2240.204	.085%	98.990%
70.0	10.343	2.132	2242.335	.085%	99.084%
72.0	10.287	2.146	2244.481	.086%	99.179%
74.0	10.245	2.160	2246.64	.087%	99.274%

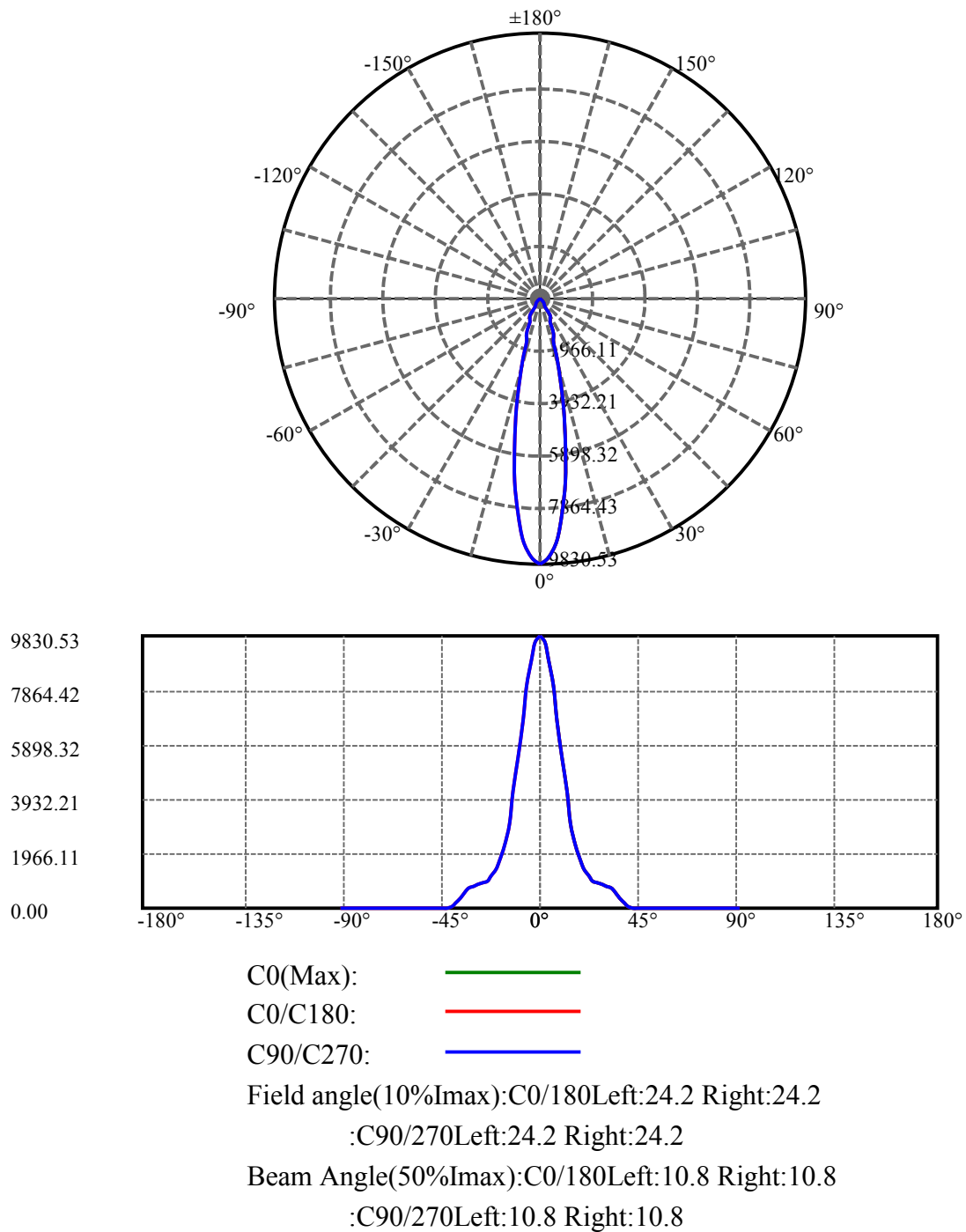
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	10.209	2.173	2248.813	.087%	99.370%
78.0	10.167	2.181	2250.994	.087%	99.466%
80.0	10.132	2.188	2253.182	.088%	99.563%
82.0	10.104	2.194	2255.377	.088%	99.660%
84.0	10.097	2.202	2257.579	.088%	99.757%
86.0	10.097	2.209	2259.788	.089%	99.855%
88.0	9.984	2.188	2261.976	.088%	99.952%
90.0	9.970	1.093	2263.07	.044%	100.000%

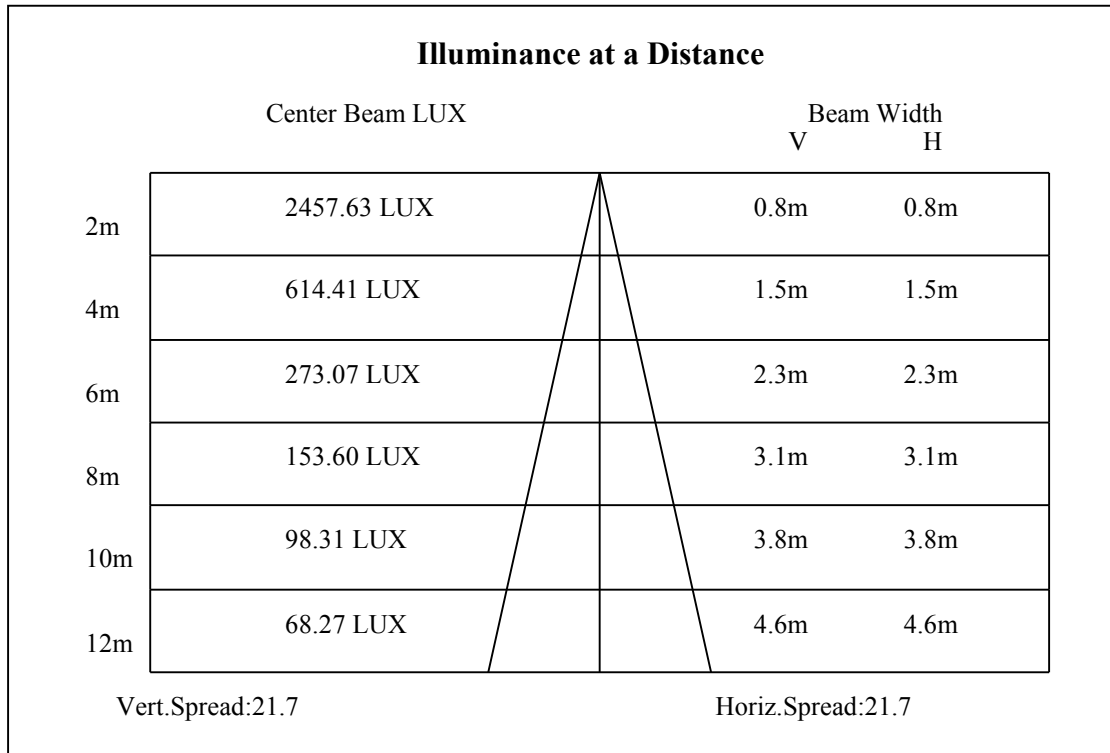
ZONAL LUMEN SUMMARY

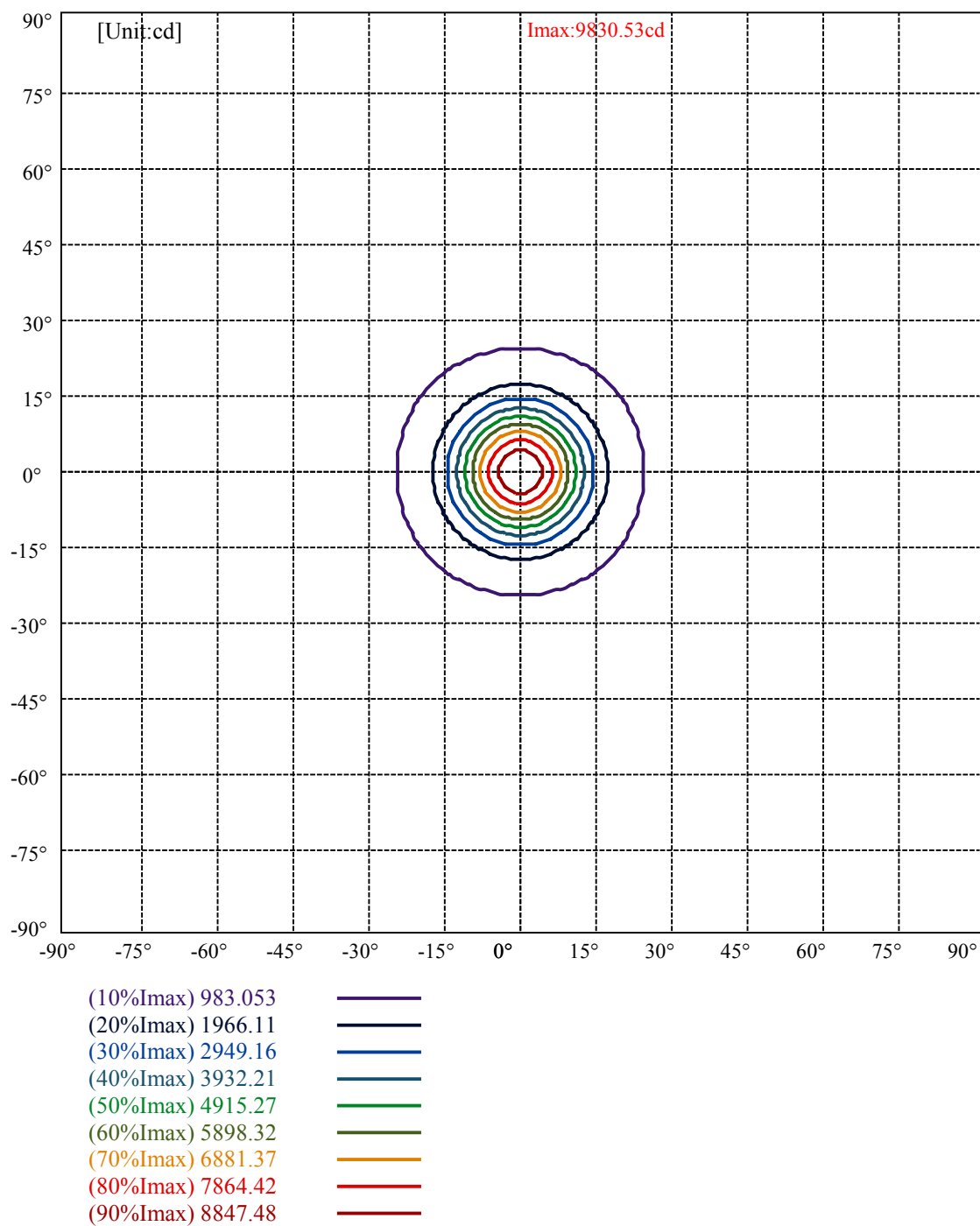
Zone	Lumens	%Lamp	%Fixt
0-30	1970.32	78.94%	87.06%
0-40	2208.81	88.49%	97.60%
0-60	2231.86	89.42%	98.62%
0-90	2261.98	90.62%	99.95%
0-120	2261.98	90.62%	99.95%
0-180	2263.07	90.67%	100.00%
60-90	32.15	1.29%	1.42%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-26.33	1810.46	72.53%	80.00%

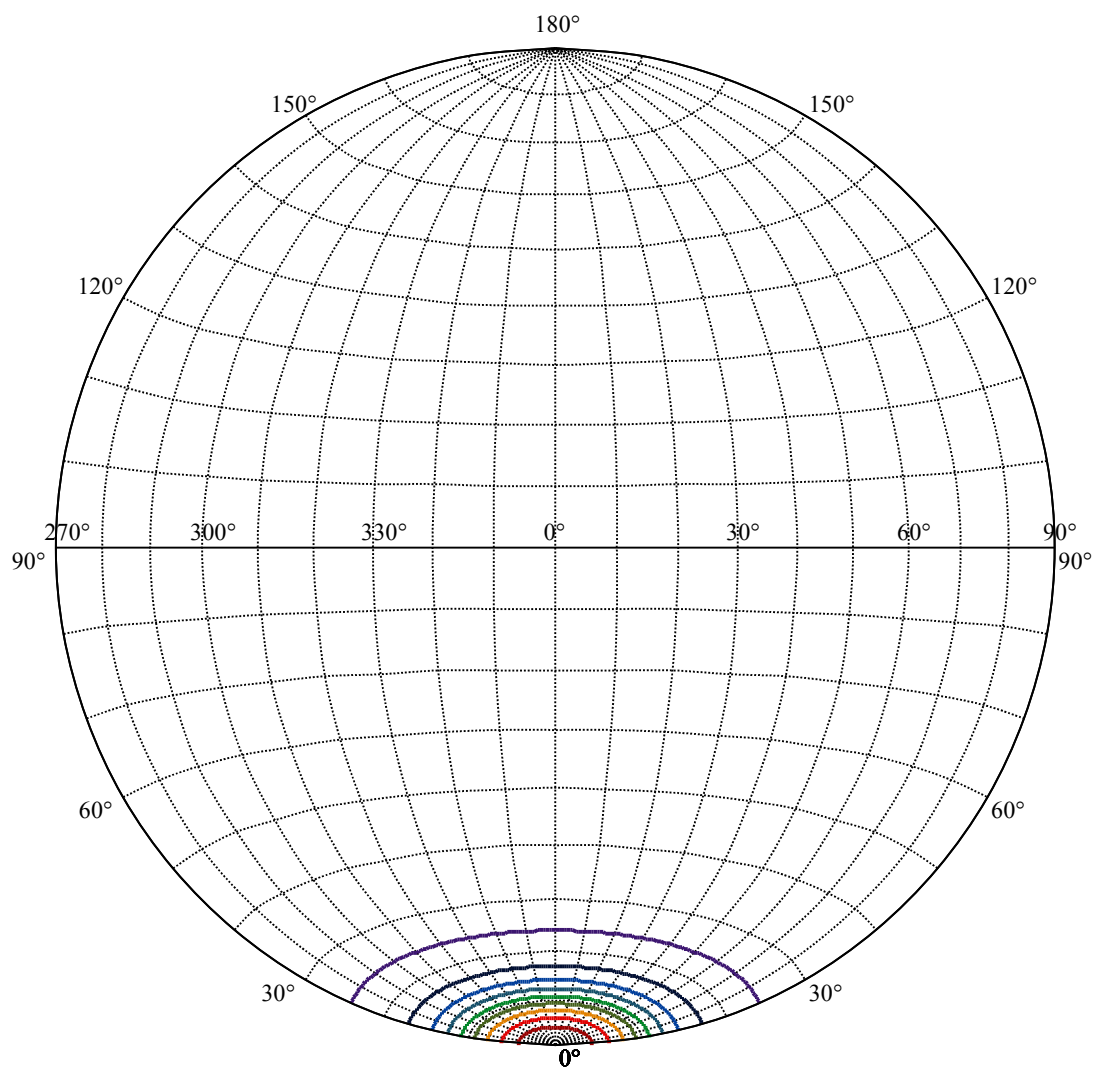
ZONAL LUMEN SUMMARY

0-10	817.95
10-20	709.82
20-30	442.55
30-40	238.49
40-50	13.02
50-60	10.03
60-70	10.47
70-80	10.85
80-90	8.79
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









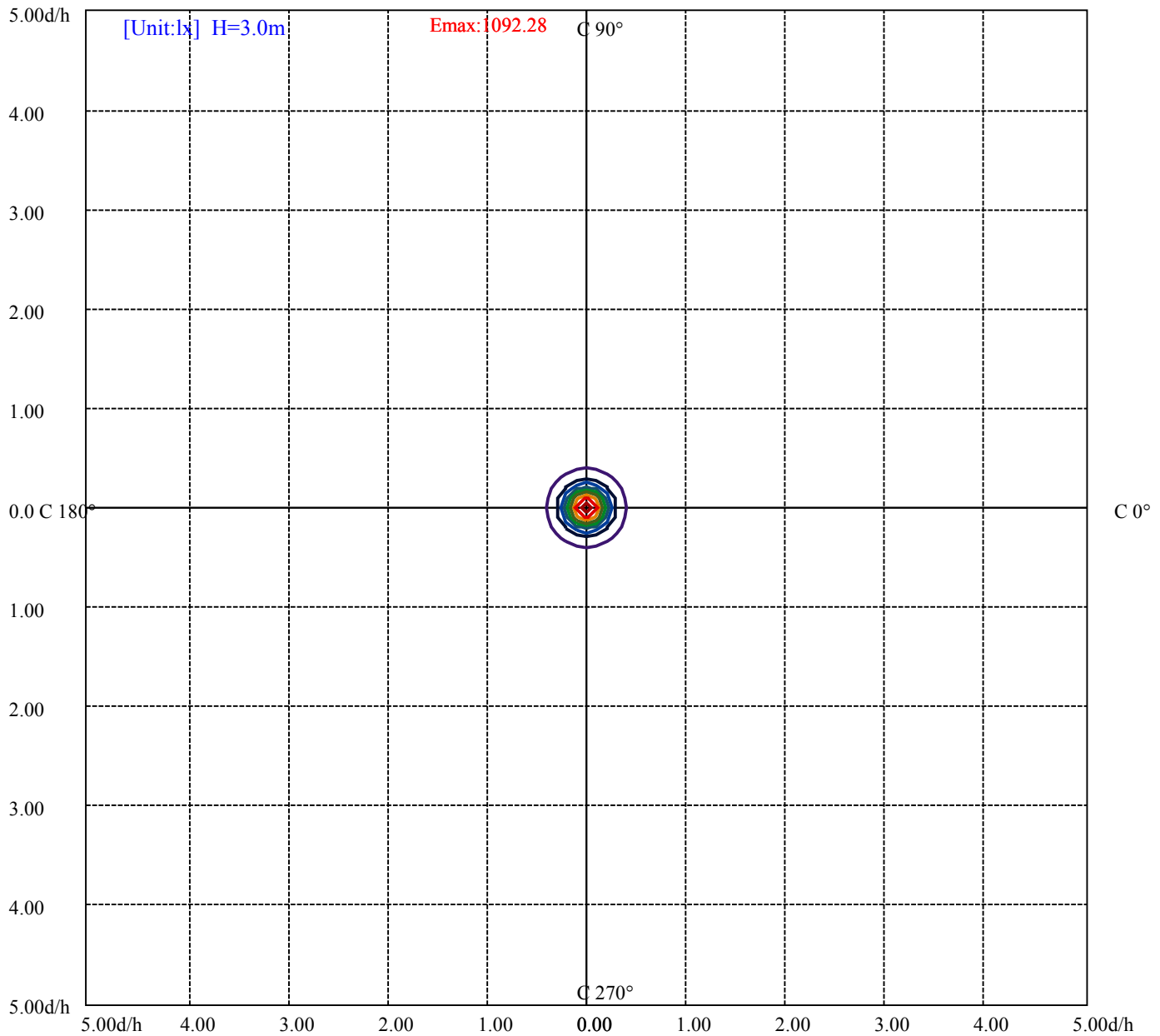
House

[Unit:cd]

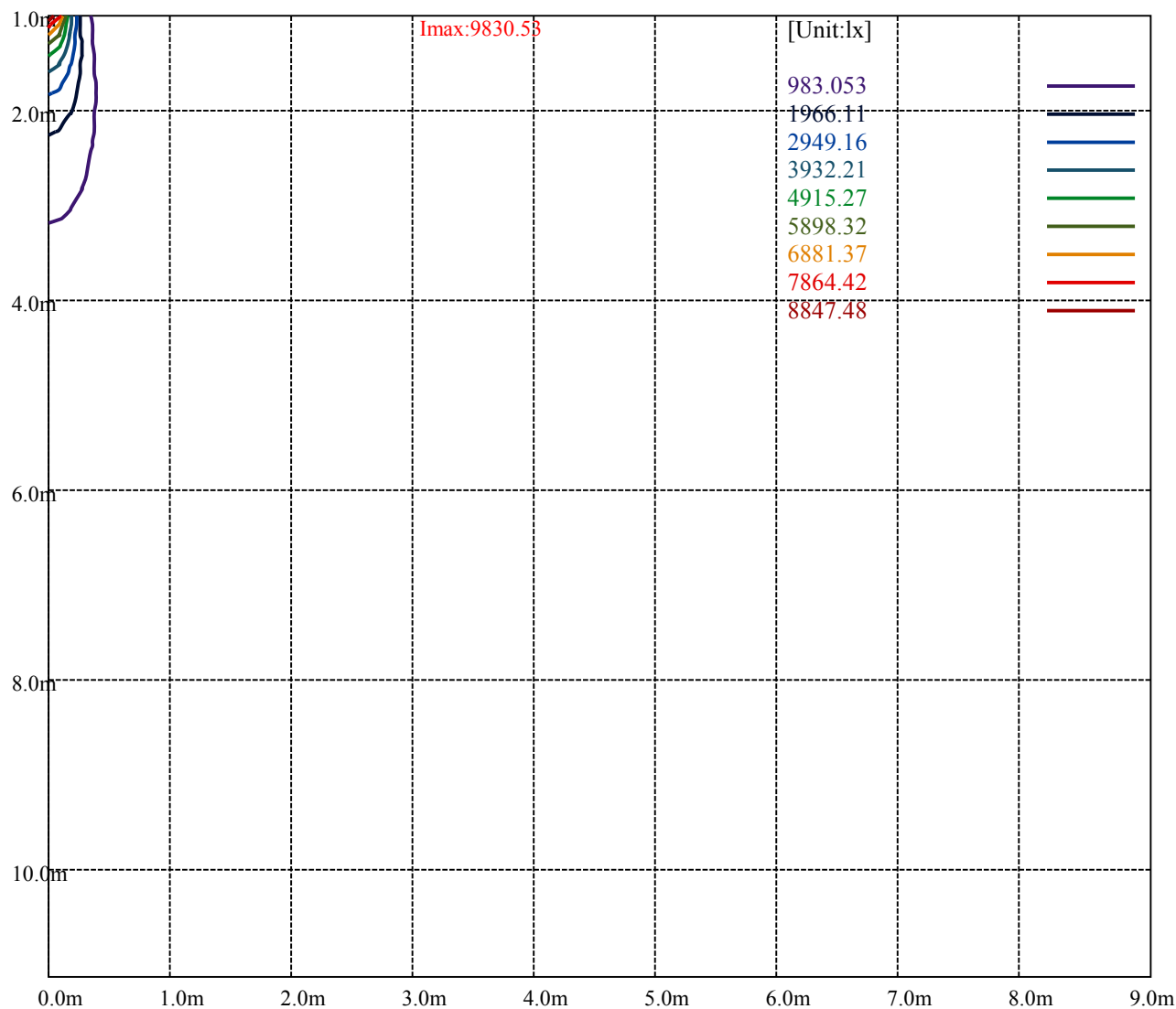
Road

Imax:9830.53

(10%Imax)	983.053	—
(20%Imax)	1966.11	—
(30%Imax)	2949.16	—
(40%Imax)	3932.21	—
(50%Imax)	4915.27	—
(60%Imax)	5898.32	—
(70%Imax)	6881.37	—
(80%Imax)	7864.42	—
(90%Imax)	8847.48	—



(10%Emax)	109.2279	—
(20%Emax)	218.4556	—
(30%Emax)	327.6833	—
(40%Emax)	436.9122	—
(50%Emax)	546.14	—
(60%Emax)	655.3678	—
(70%Emax)	764.5955	—
(80%Emax)	873.8234	—
(90%Emax)	983.0511	—



Luminance Table

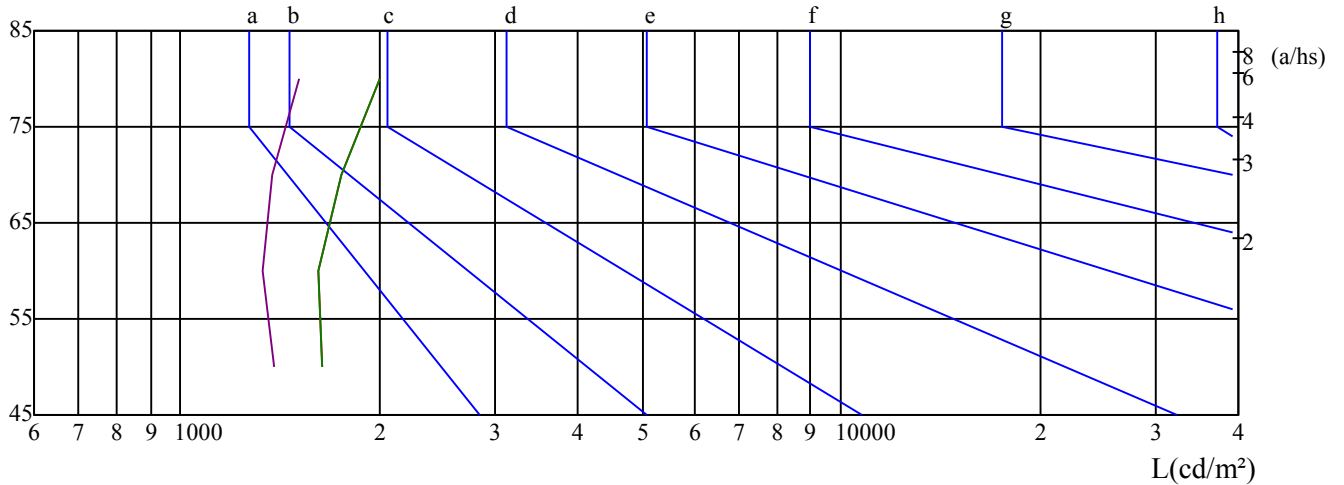
γ	45	50	55	60	65	70	75	80	85
C0	0	1640	0	1622	0	1747	0	2006	0
C45	0	1390	0	1331	0	1381	0	1513	0
C90	0	1640	0	1622	0	1747	0	2006	0

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
3916	3916	3916	6220	6220	6220	18265	18265	18265

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

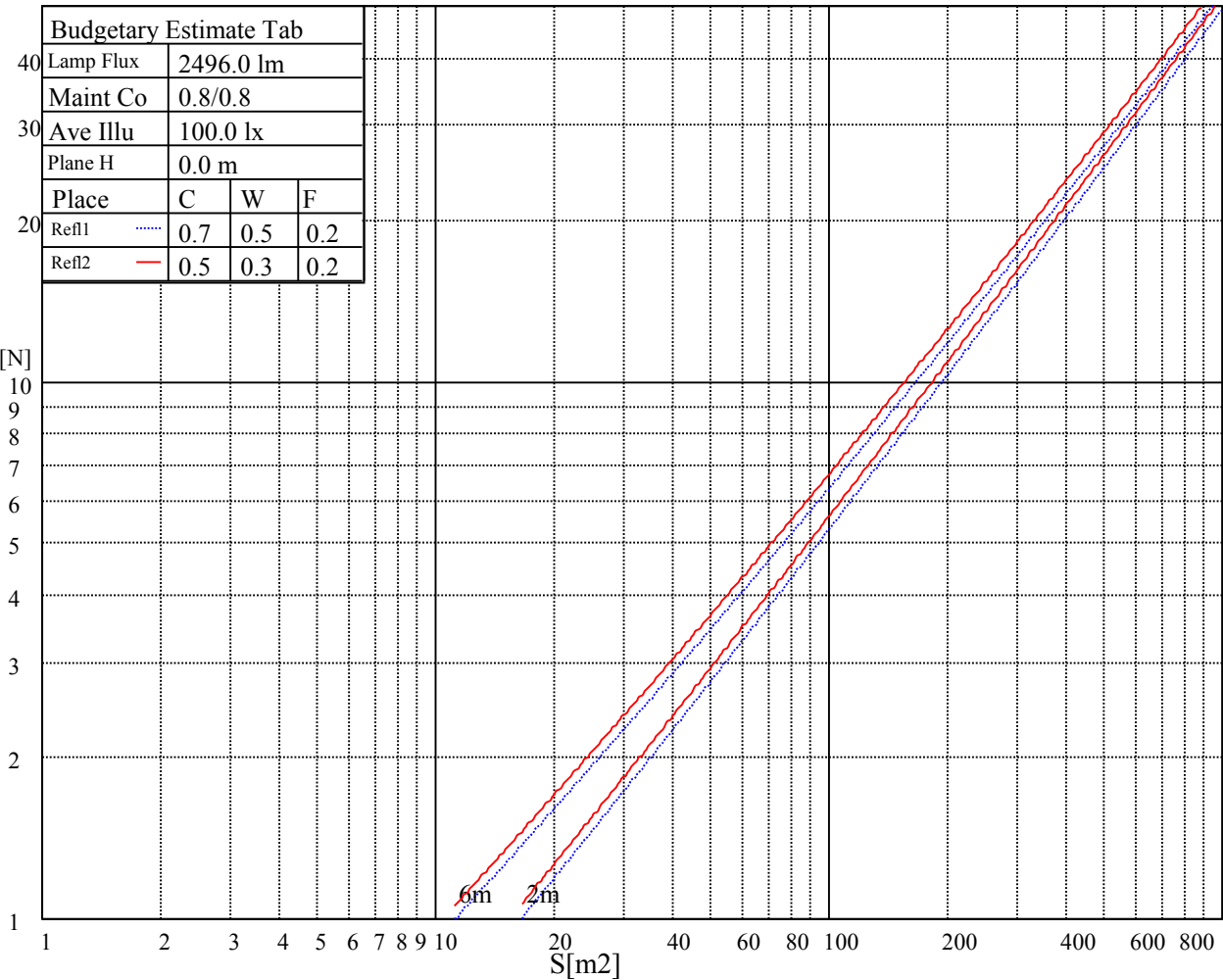
 $\gamma(^{\circ})$ 

C0 ———

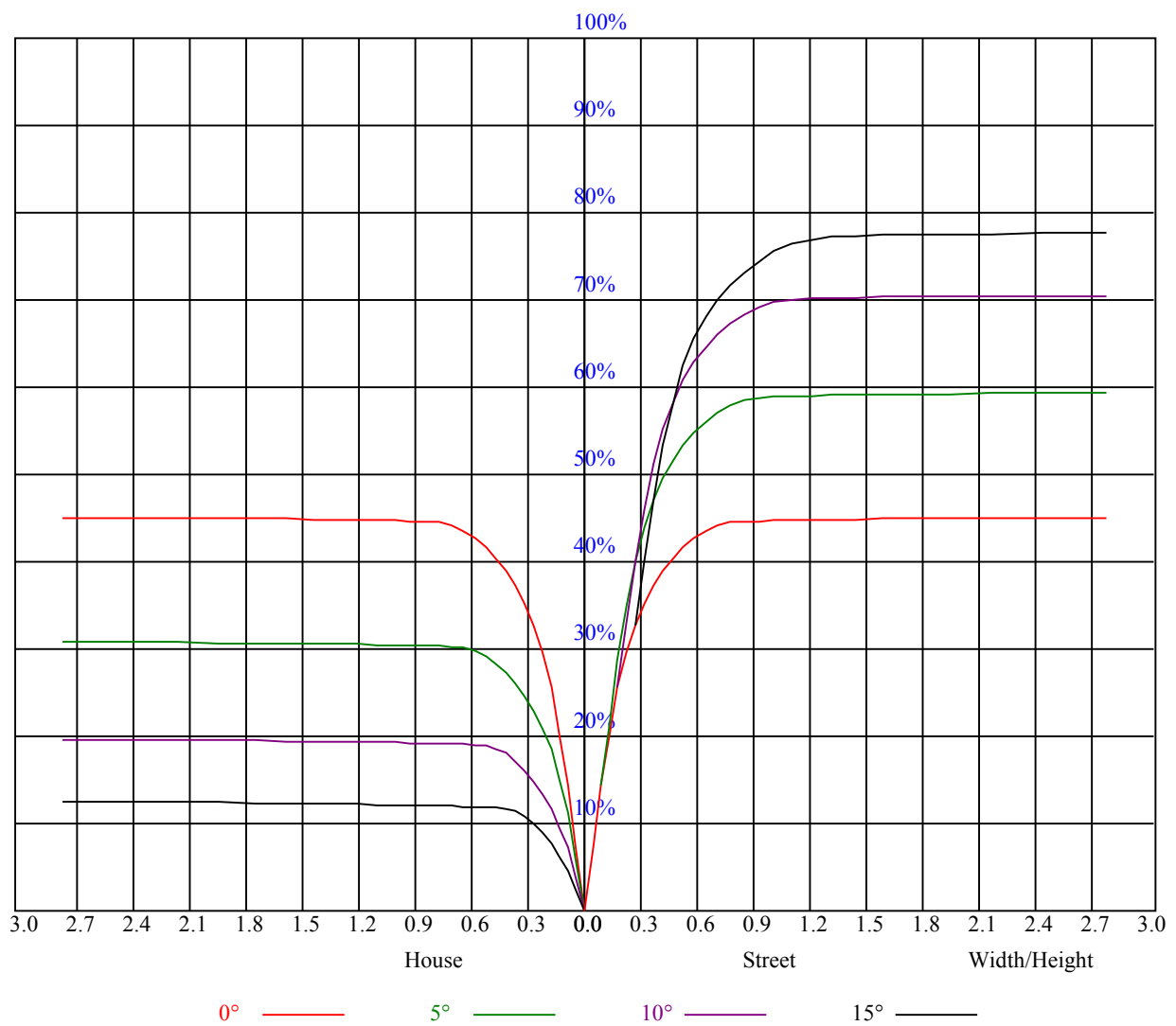
C45 ———

C90 ———

Illumination assessment according UGR											
Rf of Ceiling		70	70	50	50	30	70	70	50	50	30
Rf of Wall		50	30	50	30	30	50	30	50	30	30
Rf of Floor		20	20	20	20	20	20	20	20	20	20
Room dimensions		Viewed crosswise					Viewed endwise				
X	Y										
2H	2H	0.05	0.97	0.42	1.28	1.60	0.04	0.96	0.41	1.27	1.58
	3H	2.38	3.18	2.76	3.52	3.89	2.38	3.18	2.76	3.52	3.89
	4H	3.63	4.38	4.04	4.73	5.12	3.64	4.38	4.04	4.74	5.13
	6H	4.96	5.64	5.37	6.01	6.41	4.96	5.65	5.38	6.02	6.42
	8H	5.62	6.26	6.06	6.65	7.07	5.63	6.26	6.06	6.66	7.07
	12H	6.65	7.26	7.09	7.65	8.08	6.65	7.26	7.08	7.64	8.07
4H	2H	0.55	1.30	0.96	1.65	2.04	0.54	1.29	0.95	1.64	2.03
	3H	3.16	3.78	3.58	4.19	4.59	3.16	3.78	3.58	4.19	4.59
	4H	4.59	5.14	5.03	5.56	6.01	4.59	5.14	5.03	5.57	6.02
	6H	6.01	6.48	6.48	6.93	7.41	6.02	6.49	6.49	6.94	7.41
	8H	6.79	7.23	7.27	7.68	8.16	6.80	7.23	7.27	7.68	8.16
	12H	7.82	8.19	8.31	8.68	9.16	7.81	8.19	8.31	8.68	9.15
8H	4H	5.03	5.46	5.51	5.92	6.39	5.03	5.47	5.51	5.92	6.40
	6H	6.69	7.04	7.20	7.54	8.03	6.70	7.04	7.21	7.55	8.03
	8H	7.63	7.93	8.16	8.46	8.95	7.63	7.93	8.16	8.46	8.95
	12H	8.78	9.04	9.31	9.54	10.13	8.78	9.04	9.30	9.54	10.12
12H	4H	5.12	5.49	5.61	5.98	6.46	5.12	5.50	5.62	5.99	6.47
	6H	7.07	7.17	7.40	7.64	8.19	7.07	7.18	7.41	7.65	8.20
	8H	7.90	8.16	8.42	8.66	9.24	7.90	8.16	8.42	8.66	9.24
Variation with the observer position at spacings:											
S = 1.0H		6.0/-8.0					6.0/-8.0				
S = 1.5H		8.4/-6.3					8.4/-6.3				
S = 2.0H		10.0/-5.0					10.0/-5.0				
Standard tables:		BK1					BK1				
Uncorrected UGR		-3.1					-3.1				



RHOC	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	1.06	1.06	1.06	1.01	1.01	1.01	0.97	0.97	0.97	0.93	0.93	0.93	0.91
1	1.02	1.00	0.98	1.00	0.98	0.96	0.96	0.95	0.93	0.93	0.91	0.90	0.90	0.89	0.88	0.86
2	0.96	0.93	0.91	0.95	0.92	0.90	0.92	0.90	0.88	0.89	0.87	0.86	0.87	0.85	0.84	0.83
3	0.92	0.88	0.85	0.90	0.87	0.84	0.88	0.85	0.83	0.86	0.84	0.82	0.84	0.82	0.81	0.79
4	0.88	0.84	0.81	0.87	0.83	0.80	0.85	0.82	0.79	0.83	0.80	0.78	0.81	0.79	0.77	0.76
5	0.84	0.80	0.77	0.83	0.79	0.76	0.82	0.78	0.76	0.80	0.77	0.75	0.79	0.77	0.75	0.73
6	0.81	0.77	0.74	0.80	0.76	0.73	0.79	0.75	0.73	0.78	0.75	0.72	0.77	0.74	0.72	0.71
7	0.78	0.74	0.71	0.77	0.73	0.70	0.76	0.73	0.70	0.75	0.72	0.70	0.74	0.72	0.69	0.68
8	0.75	0.71	0.68	0.75	0.71	0.68	0.74	0.70	0.68	0.73	0.70	0.67	0.72	0.69	0.67	0.66
9	0.73	0.69	0.66	0.72	0.68	0.66	0.72	0.68	0.66	0.71	0.68	0.65	0.70	0.67	0.65	0.64
10	0.70	0.66	0.64	0.70	0.66	0.64	0.69	0.66	0.64	0.69	0.66	0.63	0.68	0.65	0.63	0.62



Intensity data(cd)									
Appendix Page: 16 Total:17									
C/γ(°)	0.0	2.0	4.0	6.0	8.0	10.0	12.0	14.0	16.0
0.0	9795.38	9401.63	8614.69	7489.69	6332.63	4949.44	3740.06	2764.69	2057.63
45.0	9847.13	9640.13	9041.63	8043.75	6959.81	5593.50	4298.63	3124.13	2337.75
90.0	9857.81	9516.94	8806.50	7812.56	6517.69	5185.69	3929.63	2837.25	2127.38
135.0	9821.81	9721.69	9187.88	8299.13	7166.25	5817.94	4496.06	3331.13	2388.38
180.0	9795.38	9740.25	9261.00	8391.94	7246.69	5872.50	4638.94	3409.31	2502.00
225.0	9847.13	9618.75	8925.75	7888.50	6669.56	5347.13	4055.06	2963.25	2196.00
270.0	9857.81	9723.94	9182.81	8208.00	7057.13	5752.13	4454.44	3286.13	2414.25
315.0	9821.81	9489.94	8708.06	7747.31	6436.13	5027.06	3877.31	2843.44	2110.50
360.0	9795.38	9401.63	8614.69	7489.69	6332.63	4949.44	3740.06	2764.69	2057.63
C/γ(°)	18.0	20.0	22.0	24.0	26.0	28.0	30.0	32.0	34.0
0.0	1591.31	1313.44	1117.13	971.44	896.06	835.31	794.25	730.69	546.19
45.0	1753.88	1409.63	1184.63	1007.44	906.75	848.25	803.25	767.81	636.19
90.0	1612.13	1321.31	1114.31	964.52	879.81	833.18	789.30	740.76	560.25
135.0	1776.94	1405.69	1180.69	1004.63	905.06	851.06	806.06	772.31	628.31
180.0	1843.88	1445.06	1113.02	1010.87	902.64	852.08	805.56	771.69	658.86
225.0	1645.31	1325.81	1107.28	950.85	874.46	821.31	783.00	743.74	578.98
270.0	1821.38	1431.00	1202.63	1021.50	920.25	852.75	806.06	770.06	649.69
315.0	1642.50	1341.56	1119.21	988.43	898.82	836.16	791.78	738.62	556.37
360.0	1591.31	1313.44	1117.13	971.44	896.06	835.31	794.25	730.69	546.19
C/γ(°)	36.0	38.0	40.0	42.0	44.0	46.0	48.0	50.0	52.0
0.0	302.63	104.85	29.98	22.28	18.90	12.43	12.04	11.64	11.42
45.0	393.75	226.01	36.06	26.21	20.31	12.88	11.87	11.59	11.42
90.0	319.95	127.69	33.08	26.66	20.87	12.15	11.81	11.53	11.25
135.0	428.06	229.67	41.85	27.79	20.64	15.19	11.98	11.64	11.48
180.0	445.16	220.28	54.62	26.61	18.90	15.47	11.98	11.70	11.48
225.0	336.77	137.87	29.93	23.51	18.39	12.38	11.87	11.53	11.31
270.0	429.19	226.58	46.07	30.88	23.57	15.19	12.15	11.81	11.53
315.0	327.21	121.22	35.04	27.34	21.54	12.54	12.04	11.70	11.48
360.0	302.63	104.85	29.98	22.28	18.90	12.43	12.04	11.64	11.42
C/γ(°)	54.0	56.0	58.0	60.0	62.0	64.0	66.0	68.0	70.0
0.0	11.25	11.03	10.91	10.74	10.69	10.58	10.52	10.46	10.41
45.0	11.14	11.03	10.86	10.69	10.58	10.46	10.41	10.35	10.29
90.0	11.08	10.91	10.80	10.63	10.58	10.46	10.41	10.35	10.29
135.0	11.19	11.08	10.91	10.74	10.63	10.52	10.46	10.41	10.35
180.0	11.25	11.08	10.91	10.74	10.63	10.52	10.46	10.41	10.35
225.0	11.08	10.91	10.80	10.63	10.52	10.41	10.41	10.29	10.24
270.0	11.31	11.14	10.97	10.80	10.69	10.58	10.52	10.46	10.41
315.0	11.31	11.14	10.97	10.80	10.69	10.58	10.58	10.46	10.41
360.0	11.25	11.03	10.91	10.74	10.69	10.58	10.52	10.46	10.41
C/γ(°)	72.0	74.0	76.0	78.0	80.0	82.0	84.0	86.0	88.0
0.0	10.35	10.29	10.29	10.24	10.18	10.18	10.18	10.18	10.01
45.0	10.24	10.18	10.18	10.13	10.07	10.07	10.07	10.13	9.96
90.0	10.24	10.24	10.18	10.13	10.13	10.07	10.07	10.18	9.96
135.0	10.29	10.24	10.18	10.18	10.13	10.13	10.13	10.07	10.01
180.0	10.29	10.24	10.24	10.18	10.13	10.13	10.07	10.07	10.01
225.0	10.18	10.18	10.13	10.07	10.07	10.01	10.01	10.01	9.90
270.0	10.35	10.29	10.24	10.24	10.18	10.13	10.13	10.07	10.01
315.0	10.35	10.29	10.24	10.18	10.18	10.13	10.13	10.07	10.01
360.0	10.35	10.29	10.29	10.24	10.18	10.18	10.18	10.18	10.01

Intensity data(cd)

Appendix Page: 17 Total:17

C/ γ (°)	90.0
0.0	10.01
45.0	9.90
90.0	9.96
135.0	10.01
180.0	10.01
225.0	9.90
270.0	9.96
315.0	10.01
360.0	10.01