
Nata

Client:

LumCAT: 1656-S

Luminaire: 92.70.124.00

Report No: nata-0100

Test No:

LampCAT: CREE CMT1420

Lamp flux(lm): 1956.5

Number of Lamps: 1

Length(mm): 47

Phm Type: C

Voltage(V): 35.1000

Current(A): 0.3900

Power (W): 13.6890

PF: 0.0000

Ballast type: DC

Width(mm): 47

Height(mm): 0

Photometric Results

Lumens(lm): 1778.02, Efficiency(%): 90.88% , Luminous Efficacy(lm/W): 129.89

Central intensity(cd): 10981.000, Maximum intensity(cd): 10981.000

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=16.4

[C90/270]Total=16.4

Field angle(10%Imax): [C0/180]Total=37.2

[C90/270]Total=37.2

Maximum s/h(1/2): C0_180=0.28 C90_270=0.28

Maximum s/h(1/4): C0_180=0.30 C90_270=0.30

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 91.40%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 98.013%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	10980.999	10.508	10.508	.537%	.591%
2.0	10612.052	81.224	91.732	4.152%	5.159%
4.0	9375.898	143.437	235.17	7.331%	13.227%
6.0	7515.680	172.293	407.463	8.806%	22.917%
8.0	5627.177	171.756	579.219	8.779%	32.577%
10.0	3985.739	151.790	731.009	7.758%	41.114%
12.0	2917.026	133.010	864.019	6.798%	48.594%
14.0	2041.560	108.318	972.337	5.536%	54.687%
16.0	1502.283	90.814	1063.152	4.642%	59.794%
18.0	1166.067	79.026	1142.178	4.039%	64.239%
20.0	953.811	71.545	1213.723	3.657%	68.263%
22.0	826.472	67.900	1281.623	3.471%	72.082%
24.0	747.342	66.665	1348.288	3.407%	75.831%
26.0	695.810	66.896	1415.184	3.419%	79.593%
28.0	659.094	67.861	1483.045	3.469%	83.410%
30.0	616.480	67.601	1550.646	3.455%	87.212%
32.0	527.330	61.285	1611.931	3.132%	90.659%
34.0	403.873	49.530	1661.462	2.532%	93.445%
36.0	273.493	35.256	1696.718	1.802%	95.427%
38.0	150.221	20.283	1717.001	1.037%	96.568%
40.0	61.574	8.680	1725.681	.444%	97.056%
42.0	30.061	4.411	1730.092	.225%	97.305%
44.0	20.653	3.146	1733.239	.161%	97.481%
46.0	17.040	2.688	1735.927	.137%	97.633%
48.0	15.877	2.588	1738.515	.132%	97.778%
50.0	14.755	2.479	1740.994	.127%	97.918%
52.0	13.984	2.417	1743.41	.124%	98.054%
54.0	13.372	2.373	1745.783	.121%	98.187%
56.0	12.938	2.352	1748.135	.120%	98.319%
58.0	12.470	2.319	1750.455	.119%	98.450%
60.0	11.927	2.265	1752.72	.116%	98.577%
62.0	11.046	2.139	1754.859	.109%	98.697%
64.0	10.062	1.983	1756.842	.101%	98.809%
66.0	9.181	1.839	1758.682	.094%	98.912%
68.0	8.596	1.748	1760.429	.089%	99.011%
70.0	8.348	1.720	1762.15	.088%	99.108%
72.0	8.210	1.712	1763.862	.088%	99.204%
74.0	8.128	1.713	1765.576	.088%	99.300%

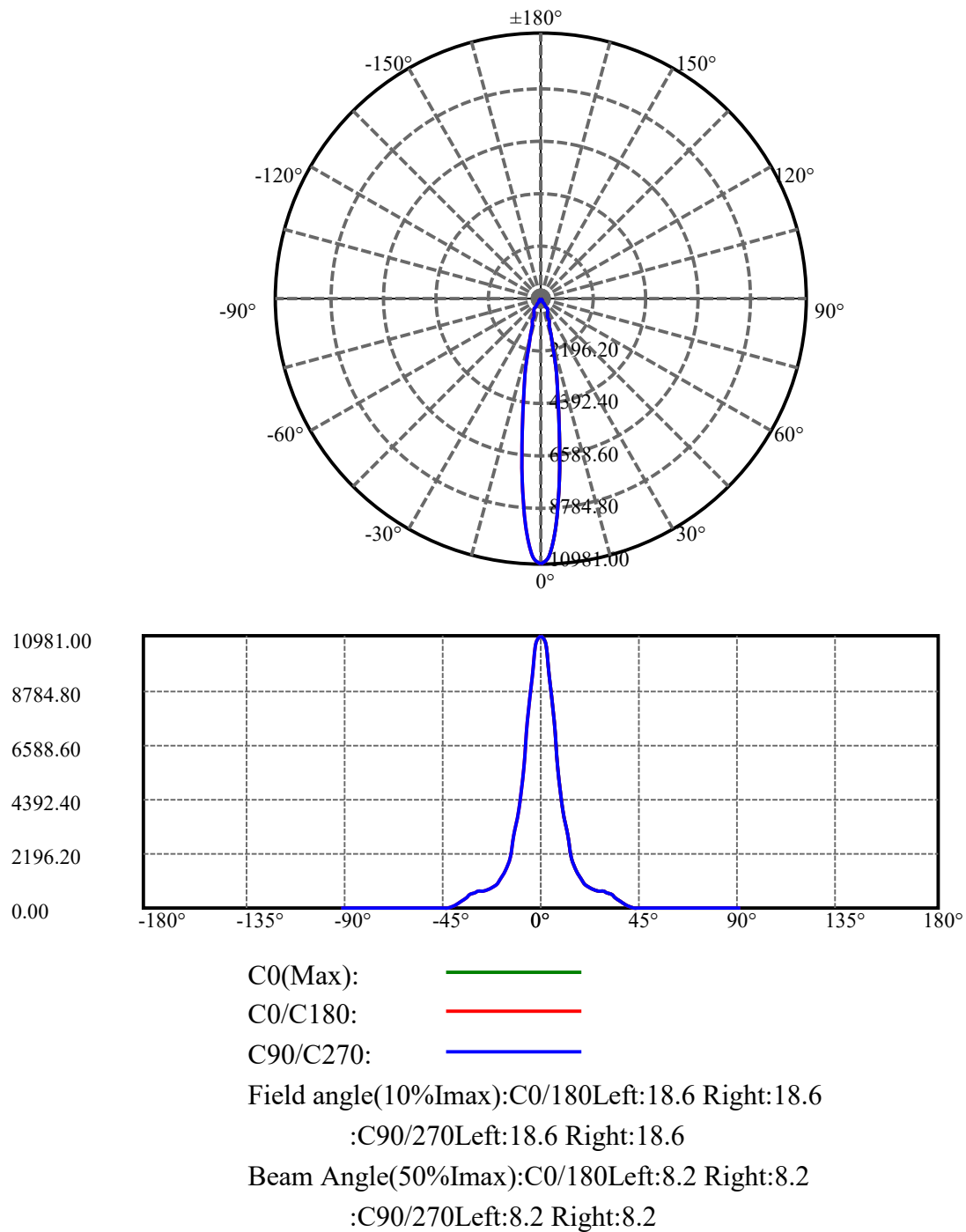
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	8.031	1.709	1767.285	.087%	99.396%
78.0	7.907	1.696	1768.981	.087%	99.492%
80.0	7.777	1.680	1770.661	.086%	99.586%
82.0	7.660	1.664	1772.324	.085%	99.680%
84.0	7.556	1.648	1773.973	.084%	99.772%
86.0	7.577	1.658	1775.63	.085%	99.866%
88.0	7.302	1.600	1777.231	.082%	99.956%
90.0	7.185	0.788	1778.019	.040%	100.000%

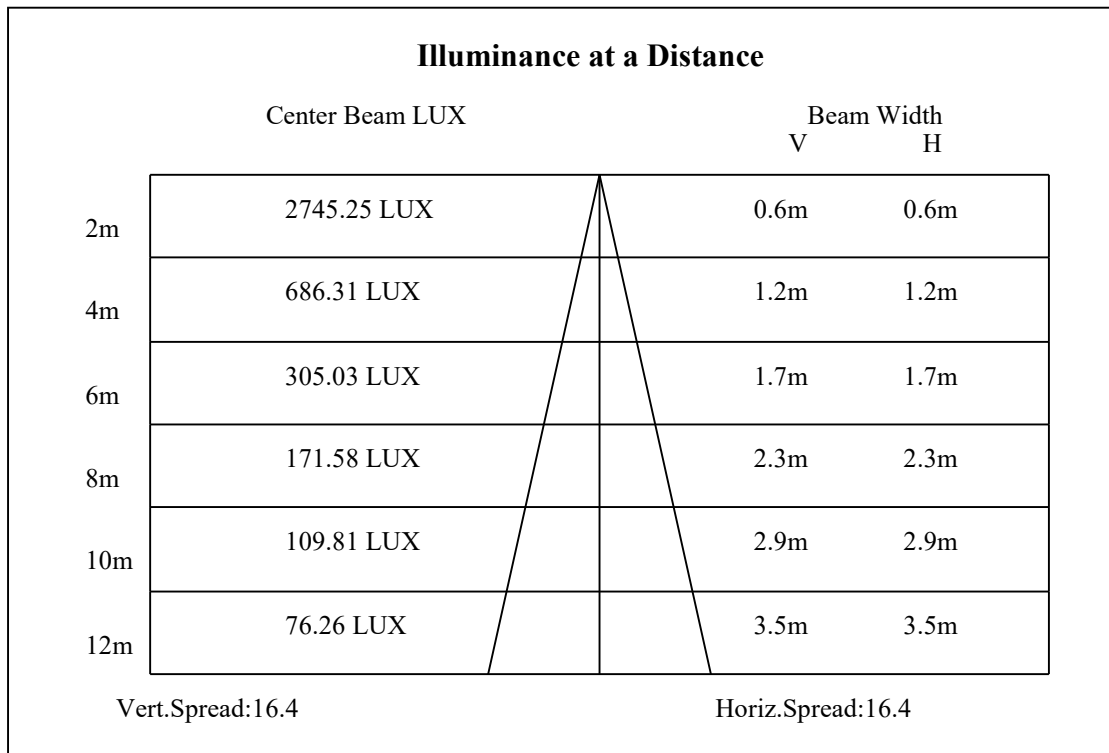
ZONAL LUMEN SUMMARY

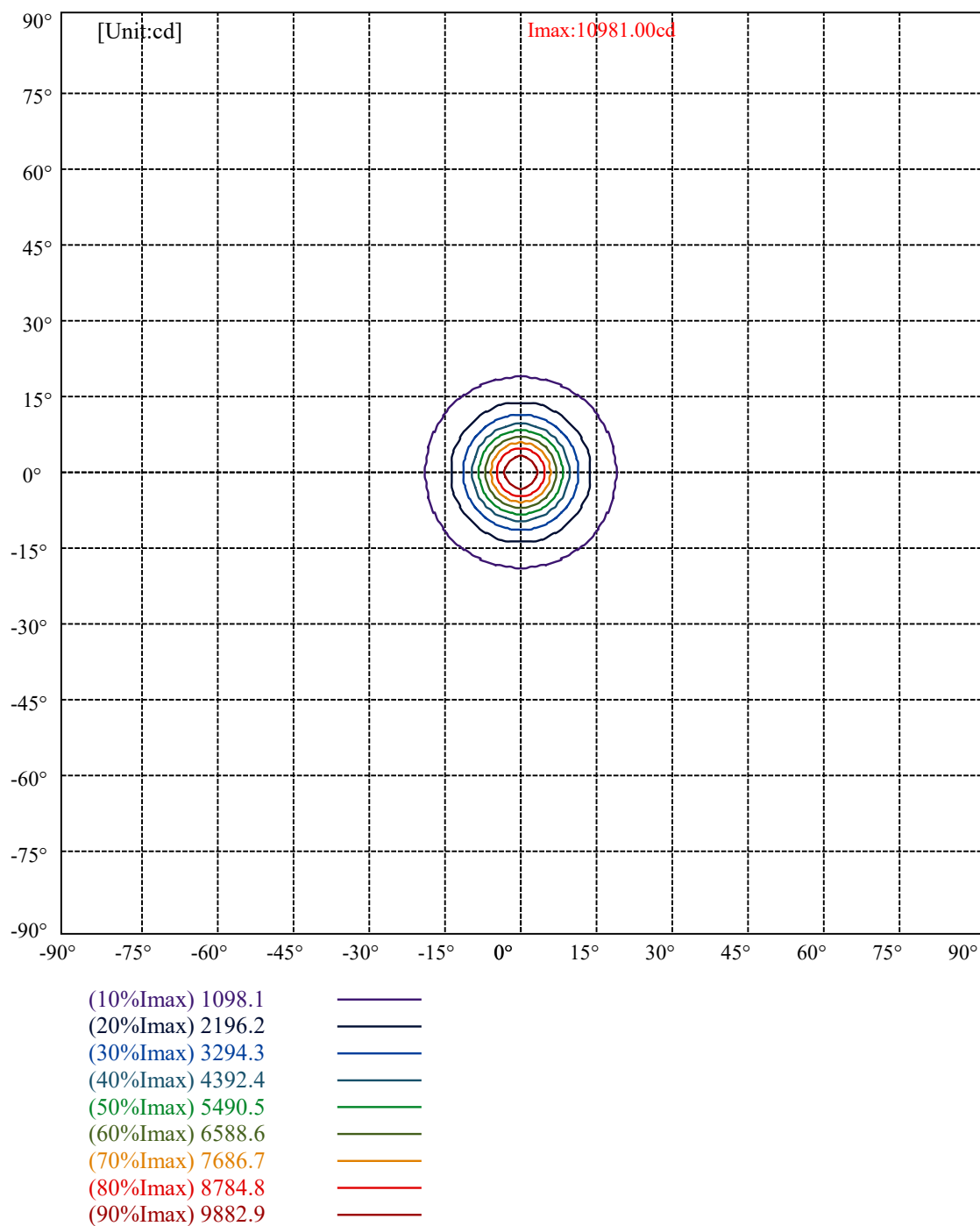
Zone	Lumens	%Lamp	%Fixt
0-30	1550.65	79.26%	87.21%
0-40	1725.68	88.20%	97.06%
0-60	1752.72	89.59%	98.58%
0-90	1777.23	90.84%	99.96%
0-120	1777.23	90.84%	99.96%
0-180	1778.02	90.88%	100.00%
60-90	26.78	1.37%	1.51%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-26.21	1422.42	72.70%	80.00%

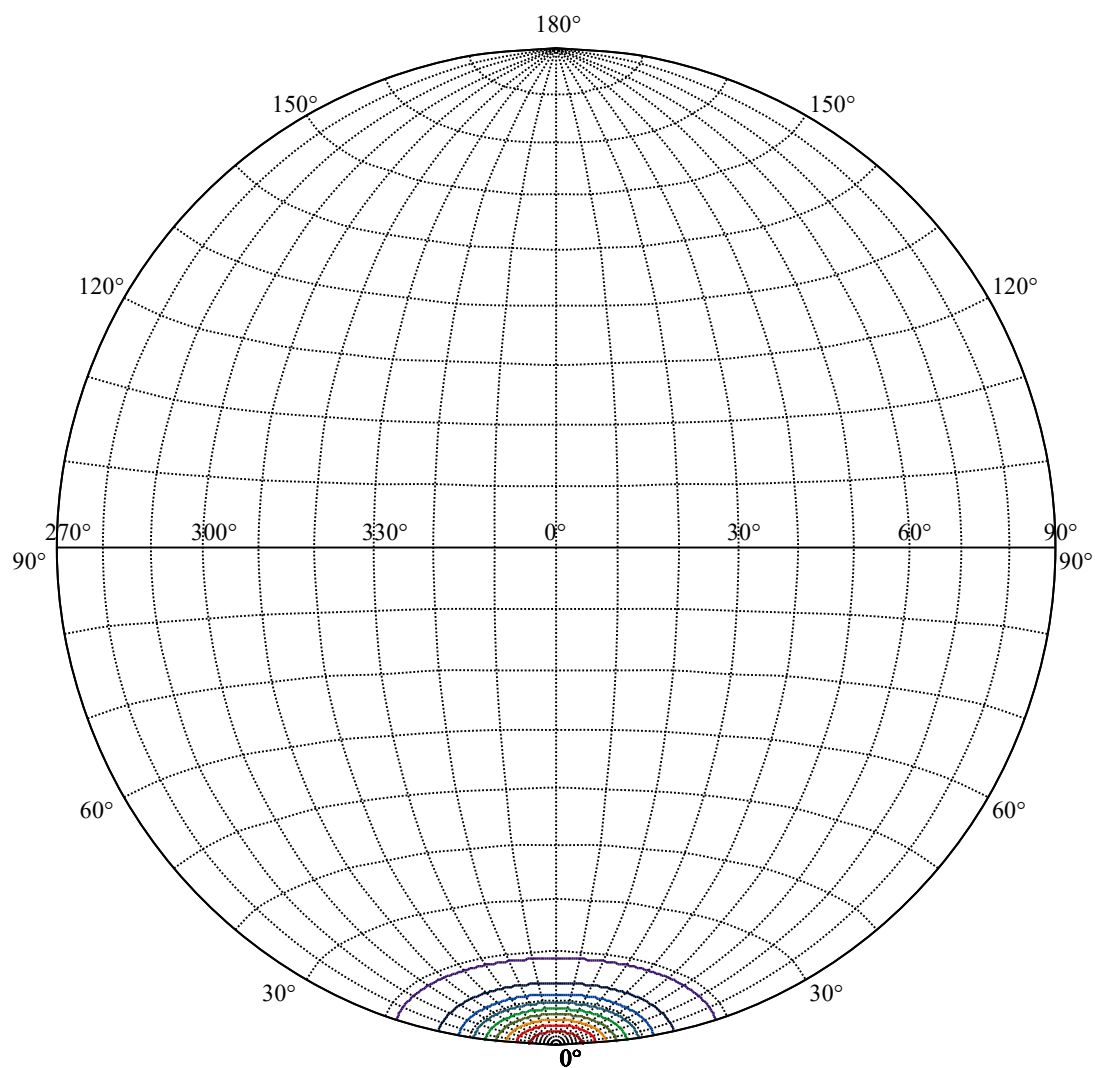
ZONAL LUMEN SUMMARY

0-10	731.01
10-20	482.71
20-30	336.92
30-40	175.04
40-50	15.31
50-60	11.73
60-70	9.43
70-80	8.51
80-90	6.57
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









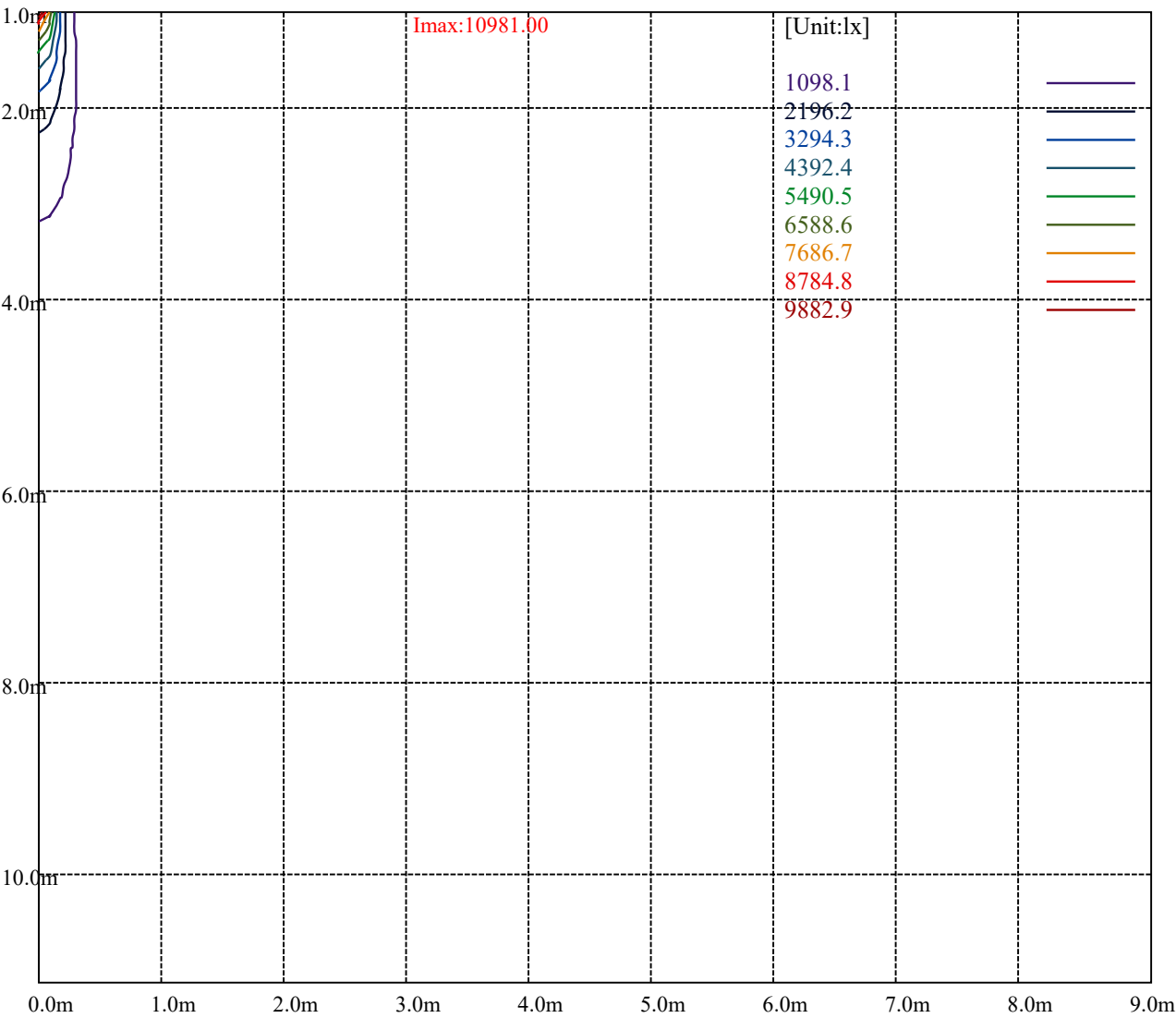
House

[Unit:cd]

Road

Imax:10981.00

(10%Imax)	1098.1	—
(20%Imax)	2196.2	—
(30%Imax)	3294.3	—
(40%Imax)	4392.4	—
(50%Imax)	5490.5	—
(60%Imax)	6588.6	—
(70%Imax)	7686.7	—
(80%Imax)	8784.8	—
(90%Imax)	9882.9	—



Luminance Table

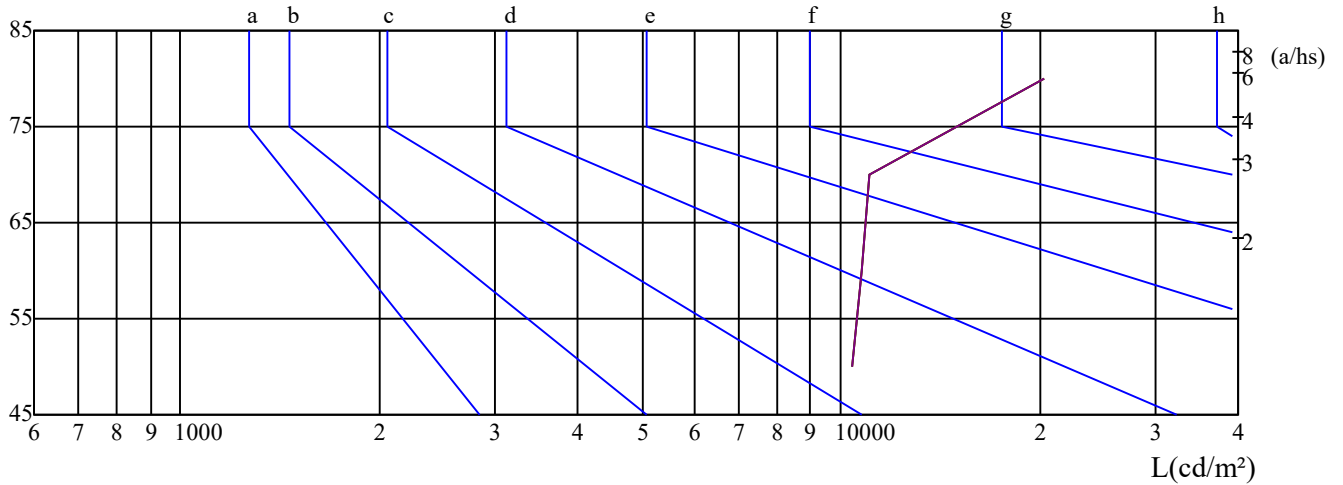
γ	45	50	55	60	65	70	75	80	85
C0	0	10392	0	10798	0	11049	0	20274	0
C45	0	10392	0	10798	0	11049	0	20274	0
C90	0	10392	0	10798	0	11049	0	20274	0

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
13763	13763	13763	17586	17586	17586	41179	41179	41179

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

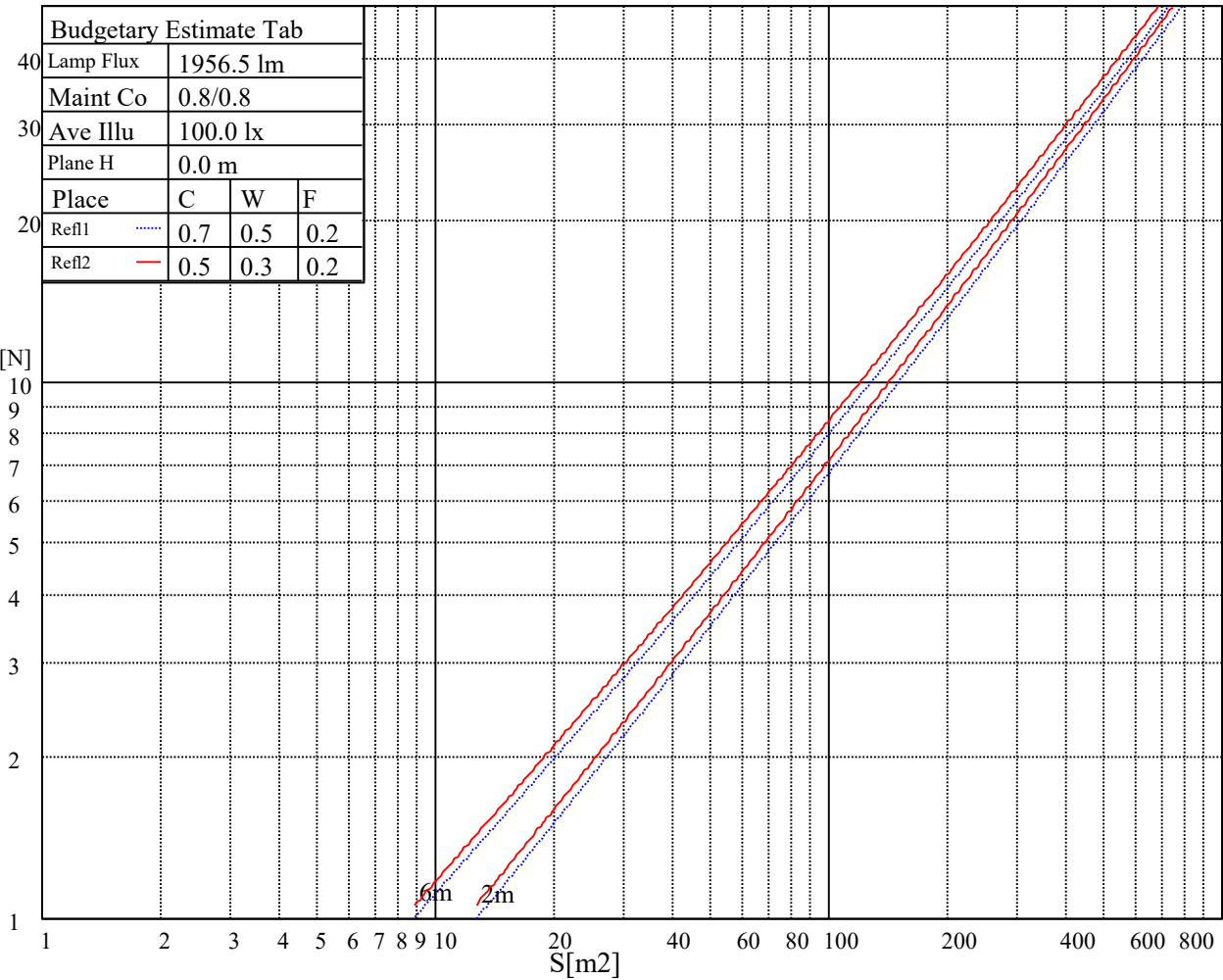
Luminance Limiting Curve

 $\gamma(^{\circ})$ 

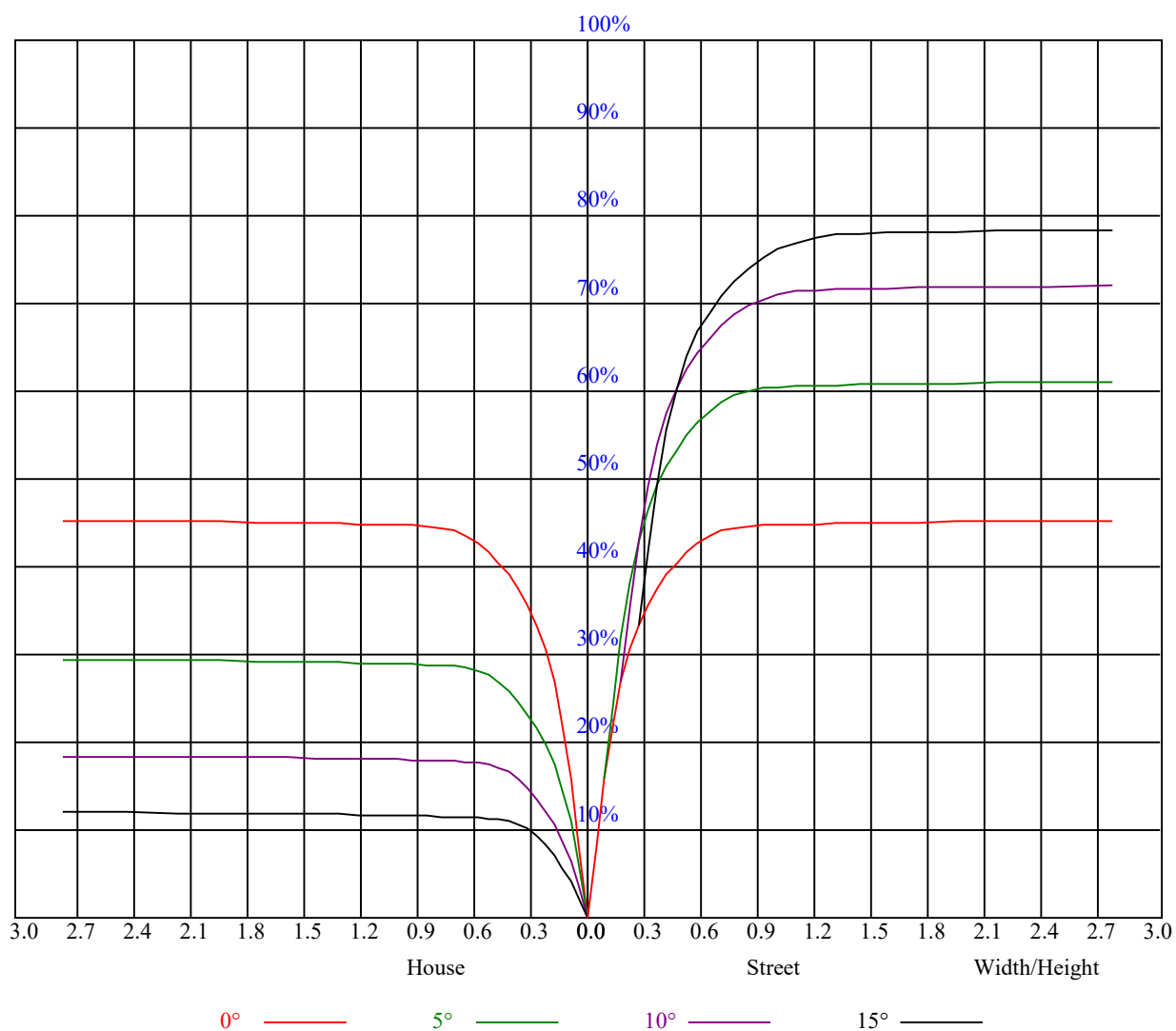
C0 ———

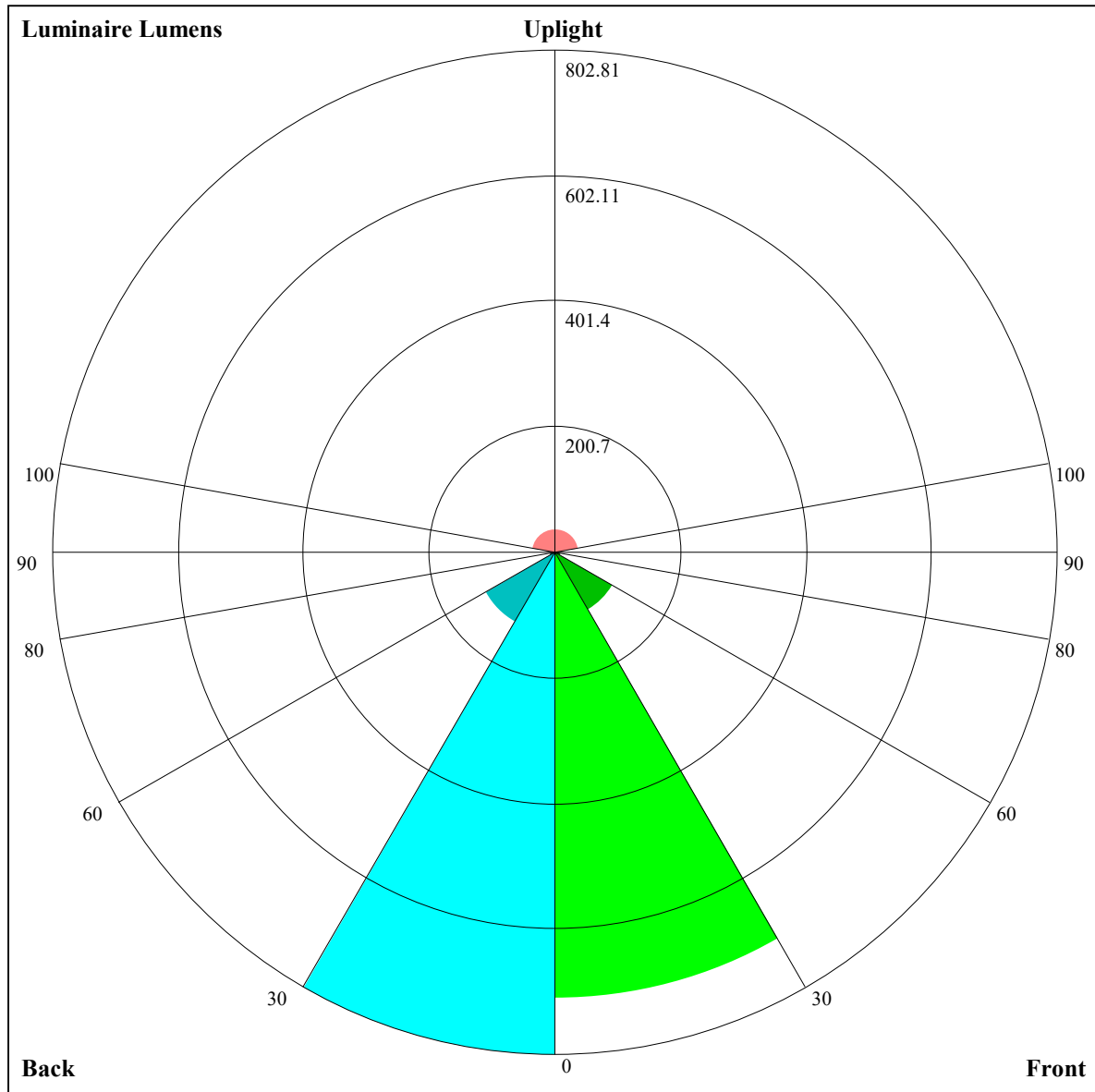
C45 ———

C90 ———



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	1.09	1.09	1.09	1.06	1.06	1.06	1.02	1.02	1.02	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	0.92	0.91	0.90	0.89	0.88	0.86
2	0.97	0.94	0.91	0.95	0.92	0.90	0.92	0.90	0.88	0.90	0.88	0.86	0.87	0.86	0.84	0.83
3	0.92	0.88	0.86	0.91	0.88	0.85	0.89	0.86	0.84	0.87	0.84	0.82	0.85	0.83	0.81	0.80
4	0.88	0.84	0.81	0.87	0.84	0.81	0.85	0.82	0.80	0.84	0.81	0.79	0.82	0.80	0.78	0.77
5	0.85	0.81	0.78	0.84	0.80	0.77	0.82	0.79	0.77	0.81	0.78	0.76	0.80	0.77	0.75	0.74
6	0.82	0.77	0.74	0.81	0.77	0.74	0.80	0.76	0.74	0.79	0.76	0.73	0.77	0.75	0.73	0.72
7	0.79	0.75	0.72	0.78	0.74	0.72	0.77	0.74	0.71	0.76	0.73	0.71	0.75	0.73	0.71	0.70
8	0.76	0.72	0.69	0.76	0.72	0.69	0.75	0.71	0.69	0.74	0.71	0.69	0.73	0.71	0.68	0.68
9	0.74	0.70	0.67	0.74	0.70	0.67	0.73	0.69	0.67	0.72	0.69	0.67	0.71	0.69	0.67	0.66
10	0.72	0.68	0.65	0.71	0.68	0.65	0.71	0.67	0.65	0.70	0.67	0.65	0.70	0.67	0.65	0.64





Luminaire Lumens:

FL=712.53,FM=106.76,FH=9.26,FVH=4.09

BL=802.81,BM=129.71,BH=9.16,BVH=4.11

UL=7.84,UH=37.3

BUG Rating:B2-U2-G0

Nata 1656-S

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	11016.79	10317.57	8704.42	6683.85	4922.04	3468.55	2802.37	1835.03	1359.89
45.0	10972.74	10212.96	8561.27	6430.59	4756.87	3319.90	2367.98	1721.61	1292.17
90.0	10969.99	10396.85	8835.45	6798.91	4946.82	3344.68	2452.21	1717.21	1283.36
135.0	10972.74	10901.17	10091.84	8274.98	6348.00	4520.13	3226.31	2217.12	1572.41
180.0	11000.27	10983.20	10134.78	8540.90	6376.08	4569.13	3322.10	2332.74	1713.91
225.0	10972.74	10985.95	10177.18	8620.73	6519.78	4707.32	3429.46	2414.77	1798.14
270.0	10969.99	10796.56	9855.10	7961.16	6177.33	4454.06	3182.26	2284.84	1651.69
315.0	10972.74	10302.15	8647.16	6814.33	4970.49	3502.14	2553.52	1809.15	1346.68
360.0	11016.79	10317.57	8704.42	6683.85	4922.04	3468.55	2802.37	1835.03	1359.89
C/γ(°)	18.0	20.0	22.0	24.0	26.0	28.0	30.0	32.0	34.0
0.0	1095.07	915.59	814.28	744.36	698.12	660.68	600.67	480.64	340.80
45.0	1044.97	893.01	799.42	730.05	690.41	656.27	589.10	470.18	328.69
90.0	1008.85	844.90	746.90	684.74	647.24	620.27	581.23	475.14	362.11
135.0	1221.70	978.90	839.61	754.82	699.22	660.68	635.35	583.60	465.23
180.0	1320.80	1067.60	905.40	811.92	742.44	695.36	662.05	598.90	474.31
225.0	1352.19	1087.53	923.41	816.32	744.58	698.56	664.81	600.89	491.93
270.0	1241.52	984.96	841.26	749.87	700.32	664.53	637.55	559.37	443.75
315.0	1043.43	858.00	741.50	686.66	644.16	616.41	561.08	449.92	324.17
360.0	1095.07	915.59	814.28	744.36	698.12	660.68	600.67	480.64	340.80
C/γ(°)	36.0	38.0	40.0	42.0	44.0	46.0	48.0	50.0	52.0
0.0	212.85	91.89	33.36	22.35	14.76	13.10	11.95	11.01	10.57
45.0	197.32	85.72	32.21	21.86	14.65	12.88	11.67	10.68	10.13
90.0	228.43	117.44	46.91	32.15	24.17	23.29	22.19	21.20	20.21
135.0	343.00	200.35	88.53	35.68	24.94	19.38	18.61	17.34	16.41
180.0	345.86	211.80	83.08	32.43	19.43	12.33	10.79	9.74	9.25
225.0	347.35	214.78	97.84	32.43	19.99	12.61	10.90	9.86	9.36
270.0	312.17	180.64	70.91	33.20	23.29	19.21	18.28	16.68	15.75
315.0	200.96	99.16	39.75	30.39	24.00	23.51	22.63	21.53	20.21
360.0	212.85	91.89	33.36	22.35	14.76	13.10	11.95	11.01	10.57
C/γ(°)	54.0	56.0	58.0	60.0	62.0	64.0	66.0	68.0	70.0
0.0	10.35	10.63	10.96	11.12	10.68	9.91	8.92	8.48	8.15
45.0	9.91	10.13	10.57	11.12	11.29	10.63	9.58	8.64	8.31
90.0	19.05	17.67	16.13	14.37	12.33	10.41	9.14	8.59	8.42
135.0	15.80	15.03	14.26	13.27	12.00	10.52	9.36	8.64	8.42
180.0	8.97	8.92	8.97	9.14	9.41	9.52	9.14	8.64	8.26
225.0	9.08	8.92	8.86	8.92	8.97	8.97	8.86	8.53	8.37
270.0	15.09	14.76	14.31	13.71	12.17	10.52	9.41	8.75	8.48
315.0	18.72	17.45	15.69	13.76	11.51	10.02	9.03	8.48	8.37
360.0	10.35	10.63	10.96	11.12	10.68	9.91	8.92	8.48	8.15
C/γ(°)	72.0	74.0	76.0	78.0	80.0	82.0	84.0	86.0	88.0
0.0	7.98	7.87	7.76	7.60	7.54	7.49	7.43	7.82	7.32
45.0	8.09	7.98	7.87	7.76	7.65	7.60	7.54	7.76	7.32
90.0	8.26	8.20	8.09	7.98	7.76	7.65	7.49	7.32	7.16
135.0	8.37	8.37	8.26	8.15	8.04	7.87	7.71	7.49	7.27
180.0	8.09	7.93	7.82	7.71	7.54	7.43	7.43	7.43	7.38
225.0	8.15	8.09	7.98	7.87	7.76	7.65	7.60	7.60	7.49
270.0	8.48	8.42	8.37	8.26	8.15	7.98	7.76	7.54	7.32
315.0	8.26	8.15	8.09	7.93	7.76	7.60	7.49	7.65	7.16
360.0	7.98	7.87	7.76	7.60	7.54	7.49	7.43	7.82	7.32

Intensity data(cd)

Appendix Page: 17 Total:17

C/ γ (°)	90.0
0.0	7.05
45.0	7.10
90.0	7.10
135.0	7.16
180.0	7.32
225.0	7.49
270.0	7.21
315.0	7.05
360.0	7.05