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Nata

LumCAT: 1-1008-M	
Luminaire: BJB 47.360.1020	
Report No: NATA0100	Voltage(V): 34.6600
Test No: GC2019102416	Current(A): 0.2970
LampCAT: SAMSUNG LC009D	Power (W): 10.2900
Lamp flux(lm): 1482.0	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): 1041.15
Efficiency(%): 70.25%
Lumens(lm)/Power(W): 101.18
Central intensity(cd): 8447.203
Maximum intensity(cd): 8447.203
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=16.5
[C90/270]Total=16.5
Field angle(10%Imax): [C0/180]Total=37.5
[C90/270]Total=37.5
Maximum s/h(1/2): C0_180=0.28 C90_270=0.28
Maximum s/h(1/4): C0_180=0.32 C90_270=0.32
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 70.25%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.568%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	8447.203	0.000	0	.000%	.000%
1.0	8326.336	8.026	8.026	.542%	.771%
2.0	7965.352	23.383	31.409	1.578%	3.017%
3.0	7413.328	36.781	68.19	2.482%	6.549%
4.0	6841.547	47.716	115.906	3.220%	11.132%
5.0	6260.555	56.365	172.27	3.803%	16.546%
6.0	5596.102	62.310	234.58	4.204%	22.531%
7.0	4952.250	65.473	300.053	4.418%	28.819%
8.0	4365.773	66.687	366.741	4.500%	35.225%
9.0	3781.055	66.026	432.766	4.455%	41.566%
10.0	3285.492	63.950	496.716	4.315%	47.709%
11.0	2885.555	61.661	558.377	4.161%	53.631%
12.0	2511.773	59.001	617.378	3.981%	59.298%
13.0	2152.617	55.355	672.733	3.735%	64.615%
14.0	1871.227	51.505	724.237	3.475%	69.561%
15.0	1612.898	47.832	772.069	3.228%	74.156%
16.0	1347.216	43.374	815.443	2.927%	78.322%
17.0	1155.389	38.972	854.415	2.630%	82.065%
18.0	970.383	35.049	889.465	2.365%	85.431%
19.0	803.566	30.863	920.328	2.083%	88.396%
20.0	630.766	26.252	946.58	1.771%	90.917%
21.0	468.563	21.109	967.689	1.424%	92.945%
22.0	335.194	16.152	983.841	1.090%	94.496%
23.0	238.106	12.029	995.871	.812%	95.651%
24.0	134.044	8.137	1004.007	.549%	96.433%
25.0	58.184	4.371	1008.378	.295%	96.853%
26.0	25.545	1.976	1010.354	.133%	97.042%
27.0	14.393	0.977	1011.331	.066%	97.136%
28.0	11.749	0.662	1011.993	.045%	97.200%
29.0	10.463	0.581	1012.574	.039%	97.256%
30.0	9.506	0.539	1013.114	.036%	97.307%
31.0	8.712	0.507	1013.621	.034%	97.356%
32.0	8.065	0.481	1014.101	.032%	97.402%
33.0	7.573	0.461	1014.562	.031%	97.447%
34.0	7.165	0.446	1015.008	.030%	97.489%
35.0	6.827	0.435	1015.442	.029%	97.531%
36.0	6.553	0.426	1015.868	.029%	97.572%
37.0	6.335	0.420	1016.289	.028%	97.612%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	6.138	0.416	1016.705	.028%	97.652%
39.0	5.970	0.413	1017.118	.028%	97.692%
40.0	5.815	0.411	1017.529	.028%	97.732%
41.0	5.730	0.411	1017.941	.028%	97.771%
42.0	5.618	0.412	1018.353	.028%	97.811%
43.0	5.527	0.413	1018.766	.028%	97.850%
44.0	5.463	0.415	1019.18	.028%	97.890%
45.0	5.407	0.418	1019.598	.028%	97.930%
46.0	5.337	0.420	1020.018	.028%	97.971%
47.0	5.288	0.423	1020.441	.029%	98.011%
48.0	5.245	0.426	1020.867	.029%	98.052%
49.0	5.210	0.429	1021.296	.029%	98.093%
50.0	5.161	0.432	1021.728	.029%	98.135%
51.0	5.133	0.436	1022.164	.029%	98.177%
52.0	5.098	0.439	1022.603	.030%	98.219%
53.0	5.077	0.443	1023.046	.030%	98.261%
54.0	5.048	0.446	1023.492	.030%	98.304%
55.0	5.013	0.449	1023.941	.030%	98.347%
56.0	4.992	0.452	1024.393	.031%	98.391%
57.0	4.978	0.456	1024.849	.031%	98.435%
58.0	4.950	0.459	1025.308	.031%	98.479%
59.0	4.936	0.462	1025.77	.031%	98.523%
60.0	4.908	0.465	1026.235	.031%	98.568%
61.0	4.887	0.467	1026.703	.032%	98.613%
62.0	4.880	0.471	1027.173	.032%	98.658%
63.0	4.873	0.474	1027.648	.032%	98.703%
64.0	4.852	0.477	1028.125	.032%	98.749%
65.0	4.845	0.480	1028.605	.032%	98.795%
66.0	4.823	0.482	1029.087	.033%	98.842%
67.0	4.809	0.484	1029.571	.033%	98.888%
68.0	4.816	0.488	1030.059	.033%	98.935%
69.0	4.809	0.491	1030.55	.033%	98.982%
70.0	4.795	0.493	1031.043	.033%	99.030%
71.0	4.781	0.495	1031.538	.033%	99.077%
72.0	4.781	0.497	1032.035	.034%	99.125%
73.0	4.774	0.500	1032.535	.034%	99.173%
74.0	4.767	0.502	1033.037	.034%	99.221%
75.0	4.767	0.504	1033.541	.034%	99.269%

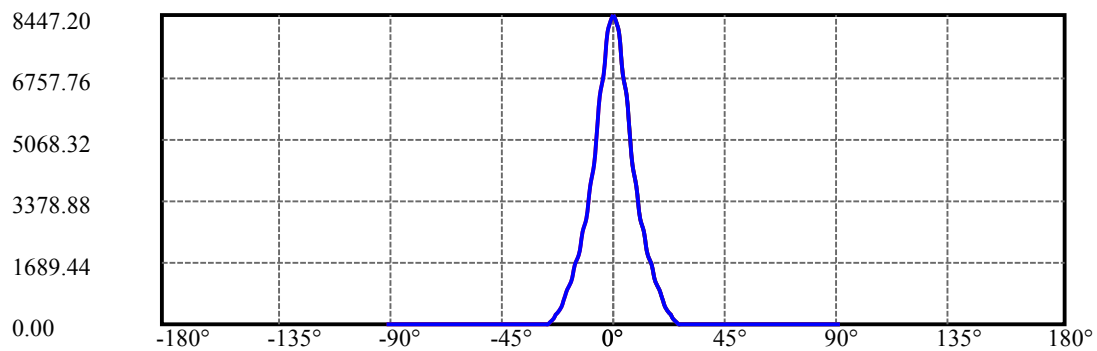
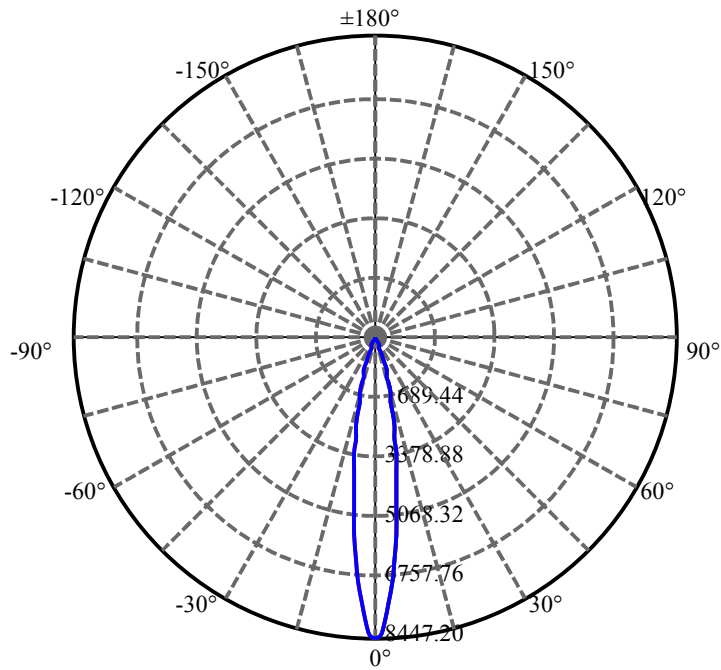
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	4.739	0.505	1034.045	.034%	99.318%
77.0	4.732	0.505	1034.55	.034%	99.366%
78.0	4.718	0.506	1035.056	.034%	99.415%
79.0	4.718	0.507	1035.563	.034%	99.464%
80.0	4.690	0.507	1036.07	.034%	99.512%
81.0	4.683	0.507	1036.577	.034%	99.561%
82.0	4.683	0.508	1037.085	.034%	99.610%
83.0	4.669	0.508	1037.593	.034%	99.659%
84.0	4.655	0.508	1038.101	.034%	99.707%
85.0	4.648	0.508	1038.609	.034%	99.756%
86.0	4.648	0.508	1039.117	.034%	99.805%
87.0	4.641	0.508	1039.625	.034%	99.854%
88.0	4.627	0.508	1040.133	.034%	99.903%
89.0	4.627	0.507	1040.64	.034%	99.951%
90.0	4.627	0.507	1041.148	.034%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1013.11	68.36%	97.31%
0-40	1017.53	68.66%	97.73%
0-60	1026.24	69.25%	98.57%
0-90	1040.64	70.22%	99.95%
0-120	1040.64	70.22%	99.95%
0-180	1041.15	70.25%	100.00%
60-90	14.87	1.00%	1.43%
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%
0-16.45	832.92	56.20%	80.00%

ZONAL LUMEN SUMMARY

0-10	496.72
10-20	449.86
20-30	66.53
30-40	4.42
40-50	4.20
50-60	4.51
60-70	4.81
70-80	5.03
80-90	4.57
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



C0(Max):

C0/C180:

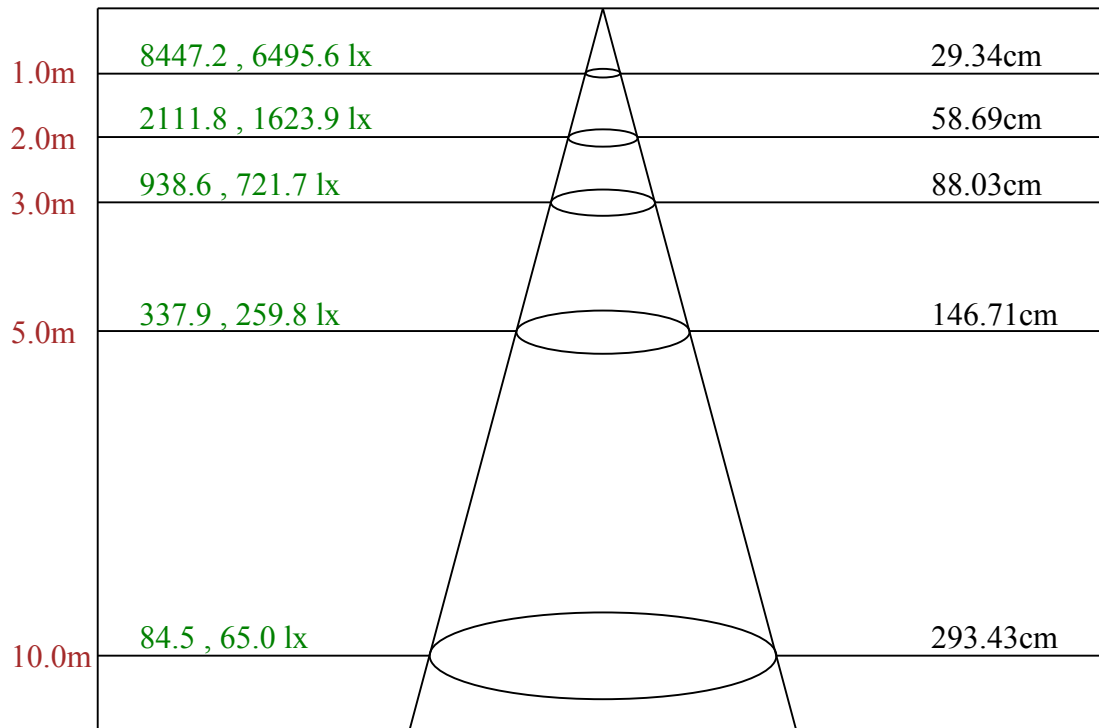
C90/C270:

Field angle(10%Imax):C0/180Left:18.8 Right:18.8

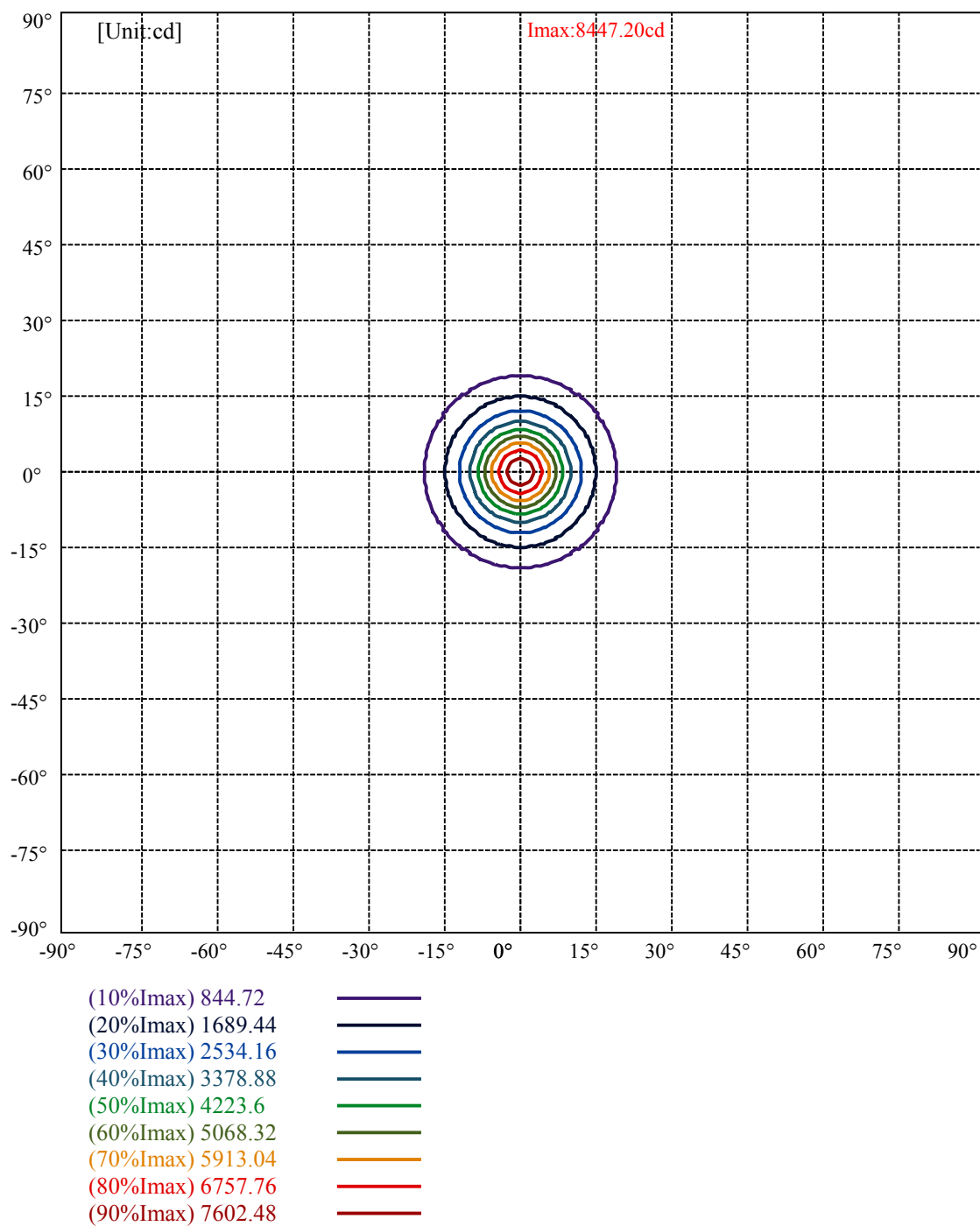
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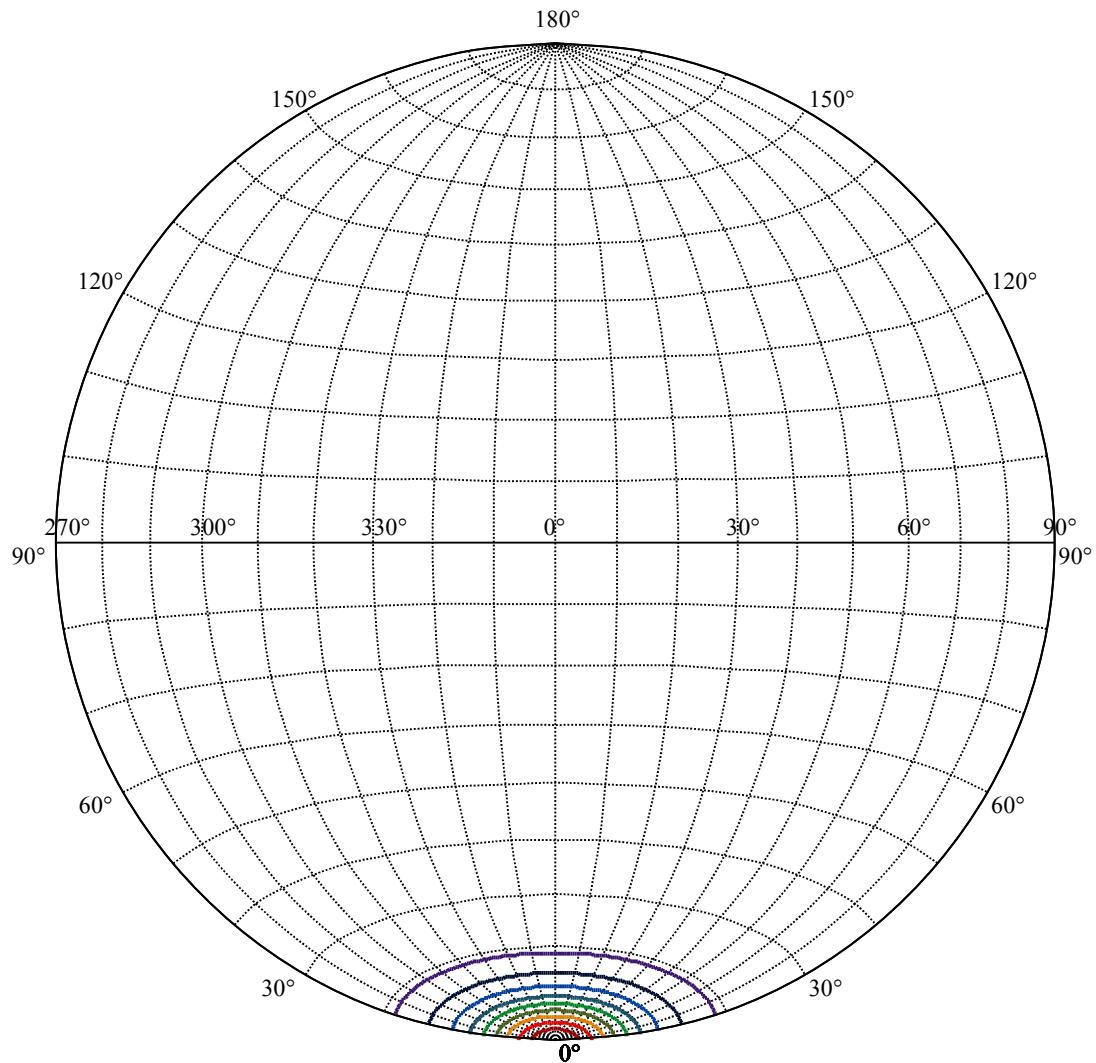
Beam Angle(50%Imax):C0/180Left:8.2 Right:8.2

:C90/270Left:8.2 Right:8.2



Max , Ave Beam angle of C0 plane 16.69





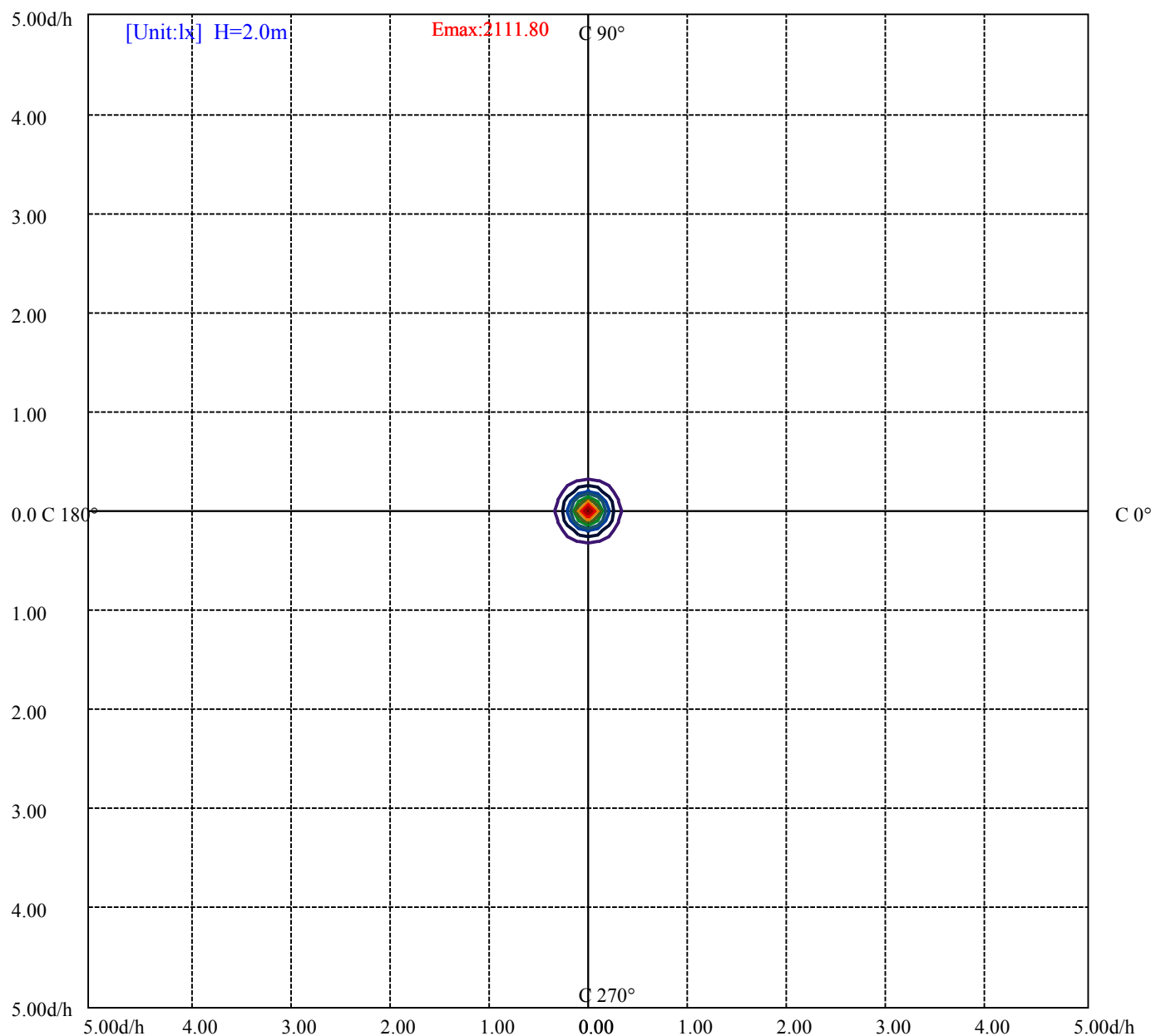
House

[Unit:cd]

Road

Imax:8447.20

(10%Imax)	844.72	—
(20%Imax)	1689.44	—
(30%Imax)	2534.16	—
(40%Imax)	3378.88	—
(50%Imax)	4223.6	—
(60%Imax)	5068.32	—
(70%Imax)	5913.04	—
(80%Imax)	6757.76	—
(90%Imax)	7602.48	—



(10%Emax)	211.1795	—
(20%Emax)	422.36	—
(30%Emax)	633.54	—
(40%Emax)	844.7175	—
(50%Emax)	1055.897	—
(60%Emax)	1267.078	—
(70%Emax)	1478.257	—
(80%Emax)	1689.438	—
(90%Emax)	1900.618	—

Luminance Table

γ	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

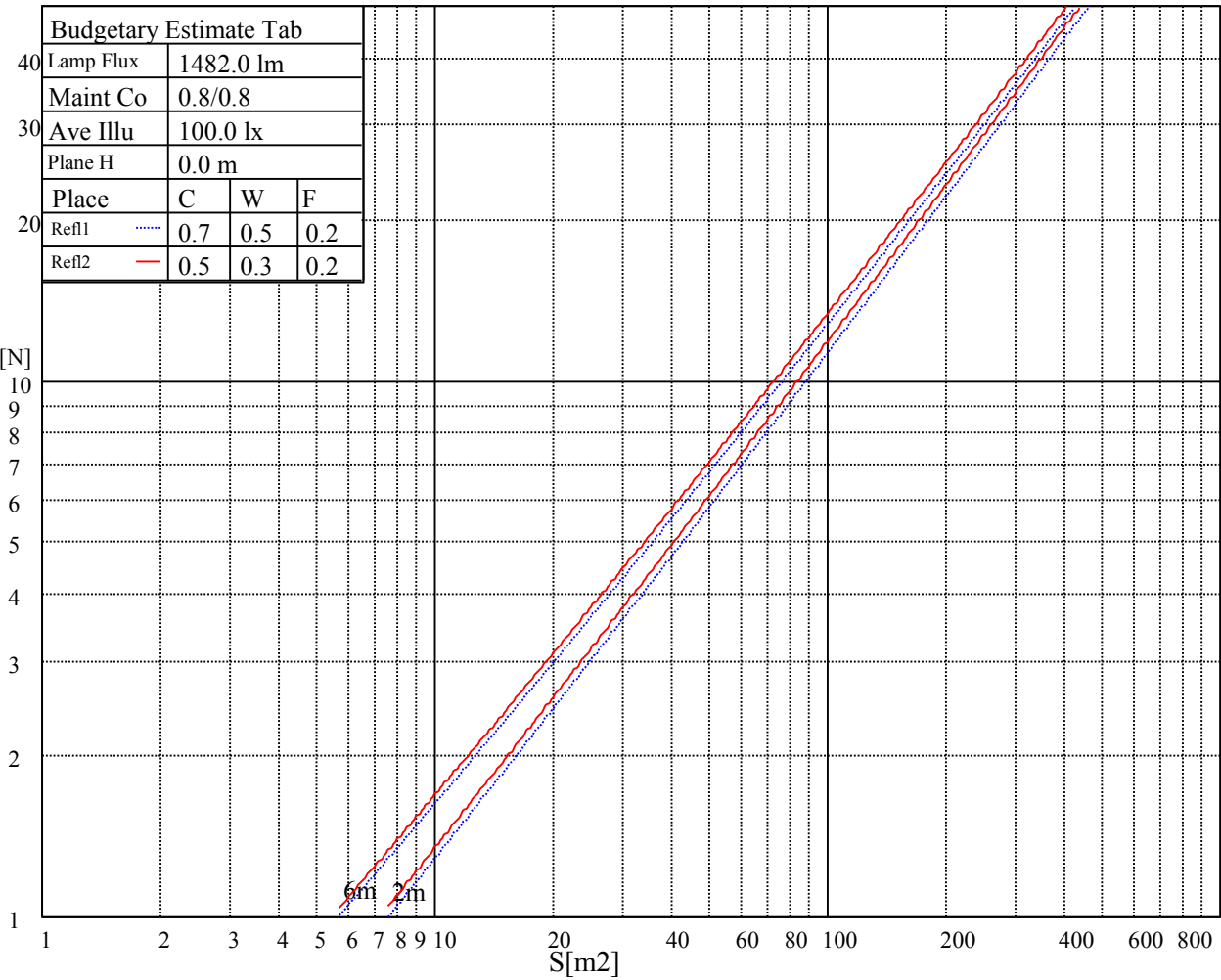
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

Glare Table

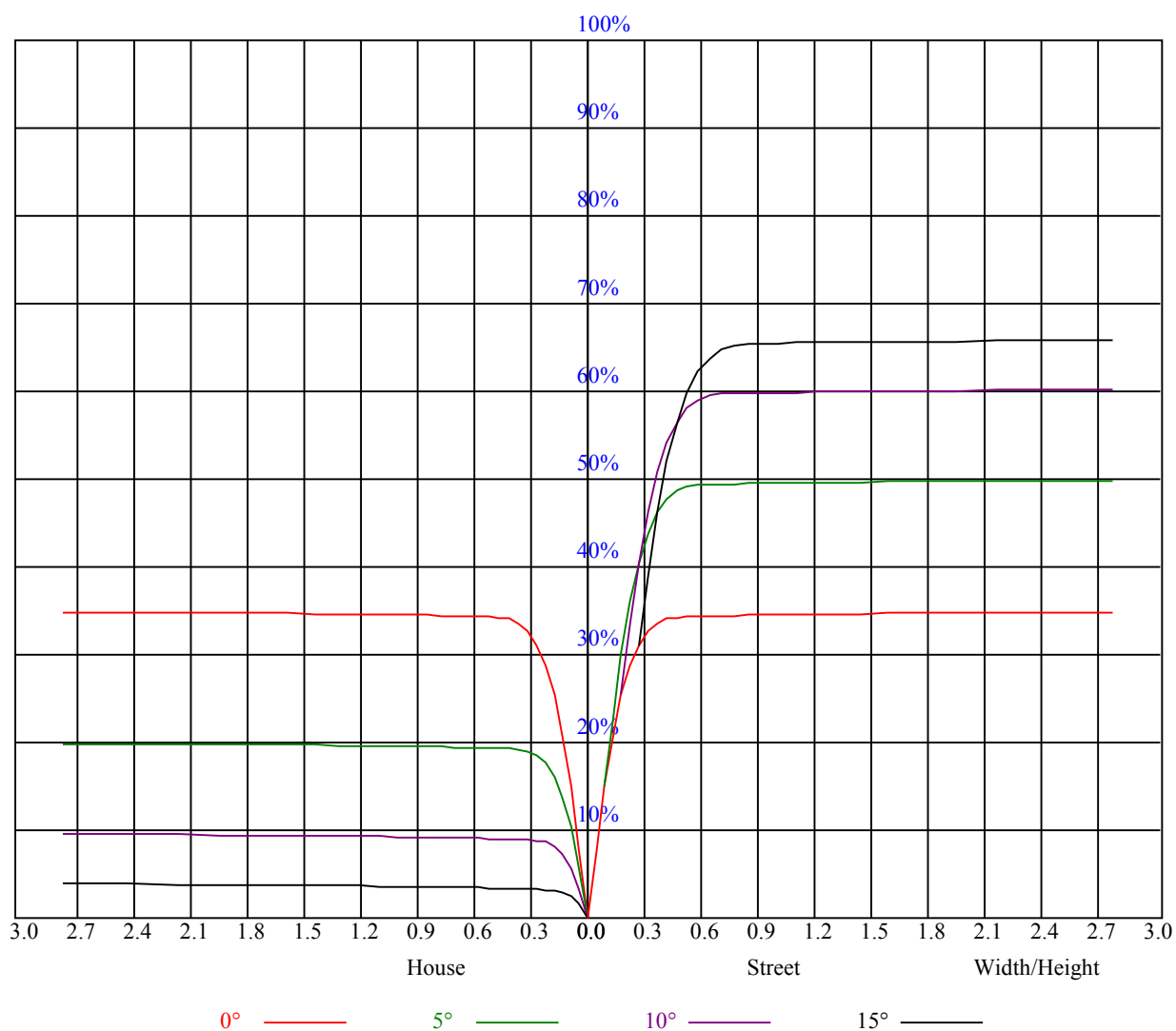
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

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	0.84	0.84	0.84	0.82	0.82	0.82	0.78	0.78	0.78	0.75	0.75	0.75	0.72	0.72	0.72	0.70
1	0.79	0.78	0.77	0.78	0.77	0.76	0.75	0.74	0.73	0.73	0.72	0.71	0.70	0.70	0.69	0.68
2	0.76	0.74	0.72	0.75	0.73	0.72	0.73	0.71	0.70	0.71	0.70	0.69	0.69	0.68	0.67	0.66
3	0.73	0.71	0.69	0.72	0.70	0.69	0.71	0.69	0.68	0.69	0.68	0.67	0.68	0.67	0.66	0.65
4	0.71	0.68	0.67	0.70	0.68	0.66	0.69	0.67	0.65	0.68	0.66	0.65	0.66	0.65	0.64	0.63
5	0.69	0.66	0.64	0.68	0.66	0.64	0.67	0.65	0.64	0.66	0.64	0.63	0.65	0.64	0.63	0.62
6	0.67	0.64	0.63	0.67	0.64	0.62	0.66	0.64	0.62	0.65	0.63	0.62	0.64	0.63	0.61	0.61
7	0.65	0.63	0.61	0.65	0.63	0.61	0.64	0.62	0.61	0.64	0.62	0.60	0.63	0.61	0.60	0.59
8	0.64	0.61	0.60	0.64	0.61	0.60	0.63	0.61	0.59	0.62	0.60	0.59	0.62	0.60	0.59	0.58
9	0.63	0.60	0.58	0.62	0.60	0.58	0.62	0.60	0.58	0.61	0.59	0.58	0.61	0.59	0.58	0.57
10	0.61	0.59	0.57	0.61	0.59	0.57	0.61	0.58	0.57	0.60	0.58	0.57	0.60	0.58	0.57	0.56



Nata 1-1008-M

Intensity data(cd)									
Appendix Page: 16 Total:18									
C/γ(°)	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0
0.0	8427.94	8457.19	8175.38	7686.56	7125.19	6583.50	5872.50	5292.00	4704.75
45.0	8426.25	8512.88	8342.44	7894.69	7400.25	6770.81	6139.13	5539.50	4929.75
90.0	8484.19	8431.31	8151.75	7643.25	7027.88	6478.88	5898.94	5134.50	4534.88
135.0	8450.44	8440.31	8187.19	7656.19	7134.75	6678.56	5885.44	5268.94	4660.31
180.0	8427.94	8195.63	7701.75	7107.75	6571.69	5918.63	5235.19	4624.88	3987.00
225.0	8426.25	8064.56	7567.88	6942.94	6305.63	5715.00	5119.88	4394.25	3861.00
270.0	8484.19	8315.44	7844.63	7240.50	6658.31	6004.69	5341.50	4748.63	4184.44
315.0	8450.44	8193.38	7751.81	7134.75	6508.69	5934.38	5276.25	4615.31	4064.06
360.0	8427.94	8457.19	8175.38	7686.56	7125.19	6583.50	5872.50	5292.00	4704.75
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	4030.31	3564.56	3150.56	2733.19	2365.31	2073.38	1774.69	1539.00	1306.69
45.0	4214.81	3700.69	3257.44	2818.13	2426.63	2117.25	1815.75	1551.38	1339.31
90.0	3969.56	3373.31	2966.63	2607.75	2200.50	1918.69	1666.69	1392.75	1116.73
135.0	3963.38	3480.75	3055.50	2634.75	2262.38	1971.00	1684.69	1460.81	1231.88
180.0	3499.88	3024.00	2614.50	2291.06	1969.88	1687.50	1464.75	1080.73	1036.46
225.0	3409.31	2912.63	2553.75	2231.44	1913.63	1640.25	1422.56	1121.12	1009.46
270.0	3576.38	3160.13	2787.75	2408.06	2072.81	1806.19	1544.63	1308.94	1116.56
315.0	3584.81	3067.88	2698.31	2369.81	2009.81	1755.56	1529.44	1323.00	1086.02
360.0	4030.31	3564.56	3150.56	2733.19	2365.31	2073.38	1774.69	1539.00	1306.69
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1096.31	927.00	743.63	570.38	430.88	320.63	170.72	93.94	39.32
45.0	1110.94	941.06	759.38	584.44	433.13	300.38	287.44	100.13	46.52
90.0	1000.35	833.34	657.23	492.02	347.12	235.86	145.35	62.78	26.38
135.0	1019.81	853.88	678.94	511.88	376.31	284.06	135.56	70.71	29.08
180.0	866.98	706.11	535.73	382.56	263.81	155.64	77.79	32.23	14.85
225.0	826.88	649.69	501.69	353.81	225.62	135.73	68.06	23.68	14.68
270.0	923.63	763.88	588.94	430.31	305.44	290.81	94.89	42.08	17.49
315.0	918.17	753.58	580.61	423.11	299.25	181.74	92.53	39.94	16.03
360.0	1096.31	927.00	743.63	570.38	430.88	320.63	170.72	93.94	39.32
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	15.98	12.83	11.36	10.13	9.23	8.55	7.88	7.48	7.03
45.0	19.69	12.88	11.31	10.13	9.17	8.44	7.93	7.37	7.03
90.0	14.40	11.93	10.35	9.39	8.66	7.88	7.43	7.09	6.75
135.0	14.40	11.87	10.58	9.45	8.66	8.04	7.54	7.14	6.81
180.0	12.38	10.91	9.79	9.00	8.38	7.76	7.31	7.03	6.69
225.0	12.66	11.08	10.07	9.34	8.49	7.99	7.54	7.09	6.86
270.0	12.83	11.36	10.29	9.45	8.61	8.04	7.59	7.14	6.81
315.0	12.83	11.14	9.96	9.17	8.49	7.82	7.37	6.98	6.64
360.0	15.98	12.83	11.36	10.13	9.23	8.55	7.88	7.48	7.03
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	6.69	6.47	6.24	6.02	5.85	5.74	5.63	5.51	5.46
45.0	6.75	6.53	6.30	6.13	5.96	5.85	5.68	5.63	5.57
90.0	6.47	6.30	6.08	5.91	5.74	5.68	5.57	5.46	5.40
135.0	6.53	6.30	6.13	5.96	5.79	5.74	5.63	5.51	5.46
180.0	6.47	6.30	6.13	5.96	5.85	5.74	5.63	5.51	5.46
225.0	6.58	6.36	6.19	6.02	5.85	5.79	5.68	5.63	5.57
270.0	6.58	6.30	6.08	5.96	5.79	5.74	5.63	5.57	5.46
315.0	6.36	6.13	5.96	5.79	5.68	5.57	5.51	5.40	5.34
360.0	6.69	6.47	6.24	6.02	5.85	5.74	5.63	5.51	5.46

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	5.40	5.34	5.29	5.23	5.18	5.12	5.12	5.06	5.06
45.0	5.51	5.40	5.34	5.29	5.29	5.23	5.18	5.18	5.12
90.0	5.34	5.29	5.23	5.18	5.18	5.12	5.06	5.06	5.01
135.0	5.40	5.34	5.29	5.23	5.18	5.18	5.12	5.06	5.06
180.0	5.40	5.34	5.29	5.23	5.23	5.18	5.12	5.12	5.06
225.0	5.51	5.40	5.34	5.34	5.29	5.23	5.23	5.18	5.18
270.0	5.40	5.34	5.34	5.29	5.23	5.18	5.18	5.12	5.12
315.0	5.29	5.23	5.18	5.18	5.12	5.06	5.06	5.01	5.01
360.0	5.40	5.34	5.29	5.23	5.18	5.12	5.12	5.06	5.06
C/ γ (°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	5.01	4.95	4.95	4.95	4.89	4.89	4.84	4.84	4.84
45.0	5.12	5.06	5.01	5.01	5.01	4.95	4.95	4.89	4.89
90.0	5.01	4.95	4.95	4.95	4.89	4.89	4.84	4.84	4.84
135.0	5.01	5.01	4.95	4.95	4.89	4.95	4.89	4.84	4.84
180.0	5.06	5.01	5.01	5.01	4.95	4.89	4.89	4.89	4.84
225.0	5.12	5.12	5.06	5.06	5.06	5.01	5.01	5.01	5.01
270.0	5.06	5.06	5.06	5.01	5.01	5.01	5.01	4.95	4.95
315.0	5.01	4.95	4.95	4.89	4.89	4.89	4.84	4.84	4.84
360.0	5.01	4.95	4.95	4.95	4.89	4.89	4.84	4.84	4.84
C/ γ (°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	4.84	4.78	4.78	4.78	4.73	4.73	4.78	4.73	4.73
45.0	4.89	4.89	4.89	4.84	4.84	4.84	4.84	4.78	4.78
90.0	4.84	4.84	4.84	4.78	4.78	4.78	4.78	4.78	4.73
135.0	4.84	4.78	4.78	4.78	4.78	4.78	4.73	4.73	4.73
180.0	4.84	4.84	4.78	4.78	4.78	4.78	4.73	4.78	4.78
225.0	4.95	4.95	4.95	4.89	4.89	4.89	4.95	4.89	4.89
270.0	4.95	4.95	4.95	4.95	4.95	4.95	4.95	4.95	4.89
315.0	4.84	4.78	4.78	4.78	4.73	4.78	4.73	4.73	4.73
360.0	4.84	4.78	4.78	4.78	4.73	4.73	4.78	4.73	4.73
C/ γ (°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	4.73	4.73	4.73	4.73	4.67	4.67	4.67	4.67	4.67
45.0	4.78	4.78	4.78	4.78	4.78	4.78	4.73	4.78	4.73
90.0	4.73	4.73	4.73	4.73	4.73	4.67	4.67	4.67	4.67
135.0	4.73	4.73	4.67	4.67	4.67	4.67	4.67	4.67	4.67
180.0	4.73	4.73	4.67	4.73	4.67	4.67	4.67	4.67	4.67
225.0	4.89	4.89	4.89	4.89	4.84	4.84	4.84	4.84	4.78
270.0	4.95	4.89	4.95	4.89	4.89	4.89	4.84	4.78	4.67
315.0	4.73	4.73	4.73	4.73	4.67	4.67	4.67	4.67	4.67
360.0	4.73	4.73	4.73	4.73	4.67	4.67	4.67	4.67	4.67
C/ γ (°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	4.67	4.67	4.67	4.67	4.67	4.61	4.67	4.61	4.61
45.0	4.73	4.73	4.73	4.67	4.67	4.67	4.67	4.67	4.67
90.0	4.67	4.67	4.61	4.61	4.61	4.61	4.67	4.61	4.61
135.0	4.67	4.67	4.67	4.61	4.61	4.61	4.61	4.61	4.61
180.0	4.67	4.67	4.61	4.67	4.61	4.61	4.61	4.61	4.61
225.0	4.73	4.73	4.73	4.73	4.73	4.78	4.67	4.67	4.67
270.0	4.67	4.67	4.67	4.67	4.67	4.67	4.61	4.67	4.67
315.0	4.67	4.67	4.67	4.61	4.61	4.61	4.61	4.56	4.56
360.0	4.67	4.67	4.67	4.67	4.67	4.61	4.67	4.61	4.61

Intensity data(cd)

Appendix Page: 18 Total:18

C/ $\gamma(^{\circ})$	90.0
0.0	4.61
45.0	4.67
90.0	4.61
135.0	4.61
180.0	4.61
225.0	4.67
270.0	4.61
315.0	4.61
360.0	4.61