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Nata

LumCAT: 1-1006-M	
Luminaire: BJB 47.360.1020	
Report No: NATA0100	Voltage(V): 34.6600
Test No: GC2019101803	Current(A): 0.2970
LampCAT: CITIZEN CLU028	Power (W): 10.3000
Lamp flux(lm): 1562.0	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): 1139.71
Efficiency(%): 72.96%
Lumens(lm)/Power(W): 110.65
Central intensity(cd): 5963.204
Maximum intensity(cd): 5963.204
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=24.0
[C90/270]Total=24.0
Field angle(10%Imax): [C0/180]Total=42.7
[C90/270]Total=42.7
Maximum s/h(1/2): C0_180=0.41 C90_270=0.41
Maximum s/h(1/4): C0_180=0.40 C90_270=0.40
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 72.96%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.542%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	5963.203	0.000	0	.000%	.000%
1.0	5935.992	5.694	5.694	.365%	.500%
2.0	5855.063	16.924	22.617	1.083%	1.984%
3.0	5718.938	27.681	50.298	1.772%	4.413%
4.0	5547.516	37.712	88.011	2.414%	7.722%
5.0	5326.734	46.780	134.791	2.995%	11.827%
6.0	5069.883	54.637	189.428	3.498%	16.621%
7.0	4777.594	61.123	250.551	3.913%	21.984%
8.0	4448.461	66.029	316.58	4.227%	27.777%
9.0	4097.813	69.263	385.843	4.434%	33.855%
10.0	3720.305	70.751	456.594	4.530%	40.062%
11.0	3345.469	70.602	527.196	4.520%	46.257%
12.0	2985.680	69.209	596.405	4.431%	52.330%
13.0	2616.539	66.484	662.889	4.256%	58.163%
14.0	2264.766	62.480	725.369	4.000%	63.645%
15.0	1965.305	58.072	783.441	3.718%	68.740%
16.0	1668.410	53.244	836.685	3.409%	73.412%
17.0	1409.091	47.925	884.61	3.068%	77.617%
18.0	1199.405	43.008	927.619	2.753%	81.391%
19.0	992.299	38.131	965.75	2.441%	84.737%
20.0	817.088	33.117	998.867	2.120%	87.642%
21.0	642.530	28.028	1026.894	1.794%	90.101%
22.0	503.220	23.024	1049.919	1.474%	92.122%
23.0	375.574	18.439	1068.358	1.181%	93.740%
24.0	253.223	13.748	1082.106	.880%	94.946%
25.0	172.673	9.684	1091.79	.620%	95.796%
26.0	111.016	6.697	1098.486	.429%	96.383%
27.0	59.273	4.166	1102.653	.267%	96.749%
28.0	34.341	2.370	1105.023	.152%	96.957%
29.0	21.199	1.453	1106.476	.093%	97.084%
30.0	15.012	0.978	1107.454	.063%	97.170%
31.0	12.016	0.752	1108.206	.048%	97.236%
32.0	10.575	0.647	1108.853	.041%	97.293%
33.0	9.780	0.600	1109.453	.038%	97.345%
34.0	9.176	0.574	1110.026	.037%	97.396%
35.0	8.634	0.553	1110.579	.035%	97.444%
36.0	8.191	0.536	1111.115	.034%	97.491%
37.0	7.854	0.523	1111.638	.034%	97.537%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	7.530	0.514	1112.152	.033%	97.582%
39.0	7.242	0.504	1112.656	.032%	97.626%
40.0	7.031	0.498	1113.154	.032%	97.670%
41.0	6.841	0.494	1113.648	.032%	97.713%
42.0	6.666	0.491	1114.139	.031%	97.756%
43.0	6.525	0.489	1114.627	.031%	97.799%
44.0	6.391	0.488	1115.115	.031%	97.842%
45.0	6.265	0.486	1115.601	.031%	97.885%
46.0	6.166	0.486	1116.087	.031%	97.927%
47.0	6.075	0.487	1116.574	.031%	97.970%
48.0	5.998	0.488	1117.062	.031%	98.013%
49.0	5.927	0.490	1117.552	.031%	98.056%
50.0	5.850	0.491	1118.043	.031%	98.099%
51.0	5.808	0.493	1118.536	.032%	98.142%
52.0	5.752	0.496	1119.032	.032%	98.186%
53.0	5.688	0.498	1119.53	.032%	98.229%
54.0	5.660	0.500	1120.03	.032%	98.273%
55.0	5.618	0.503	1120.534	.032%	98.318%
56.0	5.583	0.506	1121.04	.032%	98.362%
57.0	5.555	0.509	1121.549	.033%	98.407%
58.0	5.527	0.512	1122.061	.033%	98.452%
59.0	5.491	0.515	1122.576	.033%	98.497%
60.0	5.470	0.518	1123.094	.033%	98.542%
61.0	5.435	0.520	1123.615	.033%	98.588%
62.0	5.442	0.524	1124.139	.034%	98.634%
63.0	5.428	0.529	1124.668	.034%	98.680%
64.0	5.414	0.532	1125.2	.034%	98.727%
65.0	5.393	0.535	1125.734	.034%	98.774%
66.0	5.358	0.536	1126.271	.034%	98.821%
67.0	5.365	0.539	1126.81	.035%	98.868%
68.0	5.351	0.543	1127.353	.035%	98.916%
69.0	5.351	0.546	1127.899	.035%	98.964%
70.0	5.323	0.548	1128.447	.035%	99.012%
71.0	5.316	0.550	1128.997	.035%	99.060%
72.0	5.295	0.552	1129.548	.035%	99.109%
73.0	5.302	0.554	1130.103	.035%	99.157%
74.0	5.288	0.557	1130.659	.036%	99.206%
75.0	5.288	0.559	1131.218	.036%	99.255%

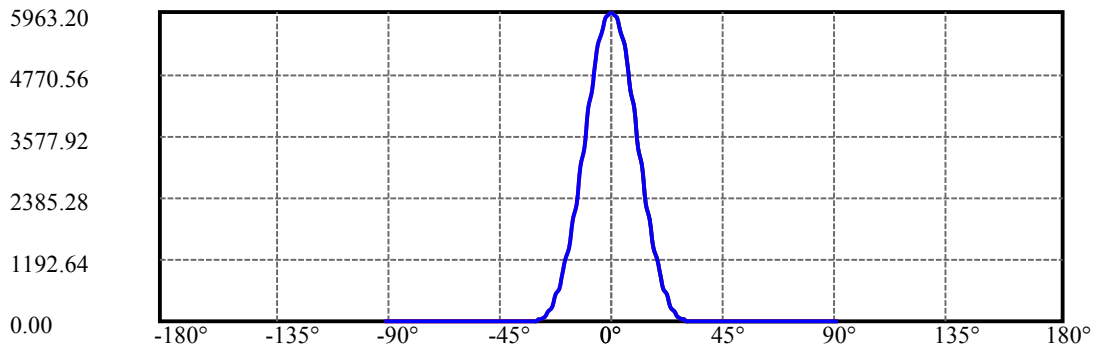
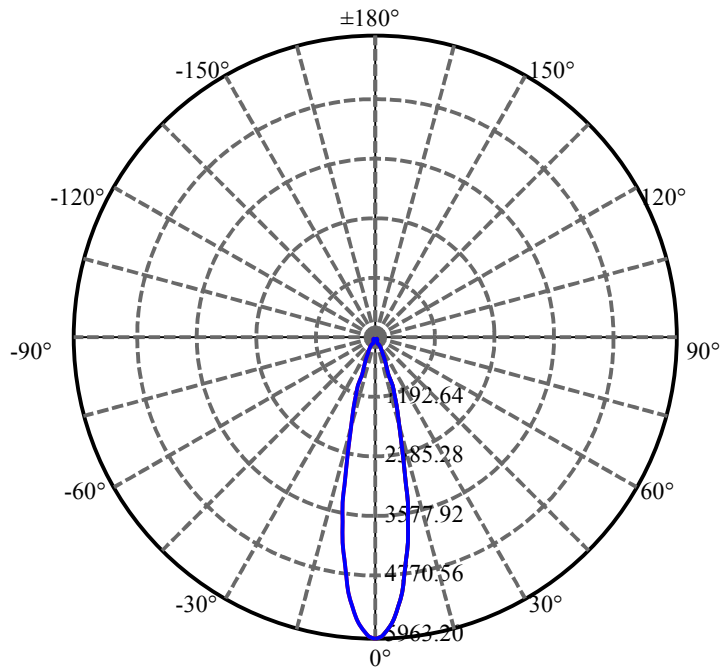
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	5.273	0.561	1131.779	.036%	99.304%
77.0	5.259	0.562	1132.34	.036%	99.353%
78.0	5.273	0.564	1132.904	.036%	99.403%
79.0	5.266	0.566	1133.47	.036%	99.453%
80.0	5.231	0.566	1134.036	.036%	99.502%
81.0	5.231	0.566	1134.602	.036%	99.552%
82.0	5.217	0.567	1135.169	.036%	99.602%
83.0	5.203	0.566	1135.735	.036%	99.651%
84.0	5.210	0.567	1136.302	.036%	99.701%
85.0	5.196	0.568	1136.87	.036%	99.751%
86.0	5.196	0.568	1137.438	.036%	99.801%
87.0	5.182	0.568	1138.006	.036%	99.851%
88.0	5.175	0.567	1138.574	.036%	99.900%
89.0	5.182	0.568	1139.141	.036%	99.950%
90.0	5.168	0.567	1139.709	.036%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1107.45	70.90%	97.17%
0-40	1113.15	71.26%	97.67%
0-60	1123.09	71.90%	98.54%
0-90	1139.14	72.93%	99.95%
0-120	1139.14	72.93%	99.95%
0-180	1139.71	72.96%	100.00%
60-90	16.56	1.06%	1.45%
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%
0-17.63	911.77	58.37%	80.00%

ZONAL LUMEN SUMMARY

0-10	456.59
10-20	542.27
20-30	108.59
30-40	5.70
40-50	4.89
50-60	5.05
60-70	5.35
70-80	5.59
80-90	5.11
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: —————

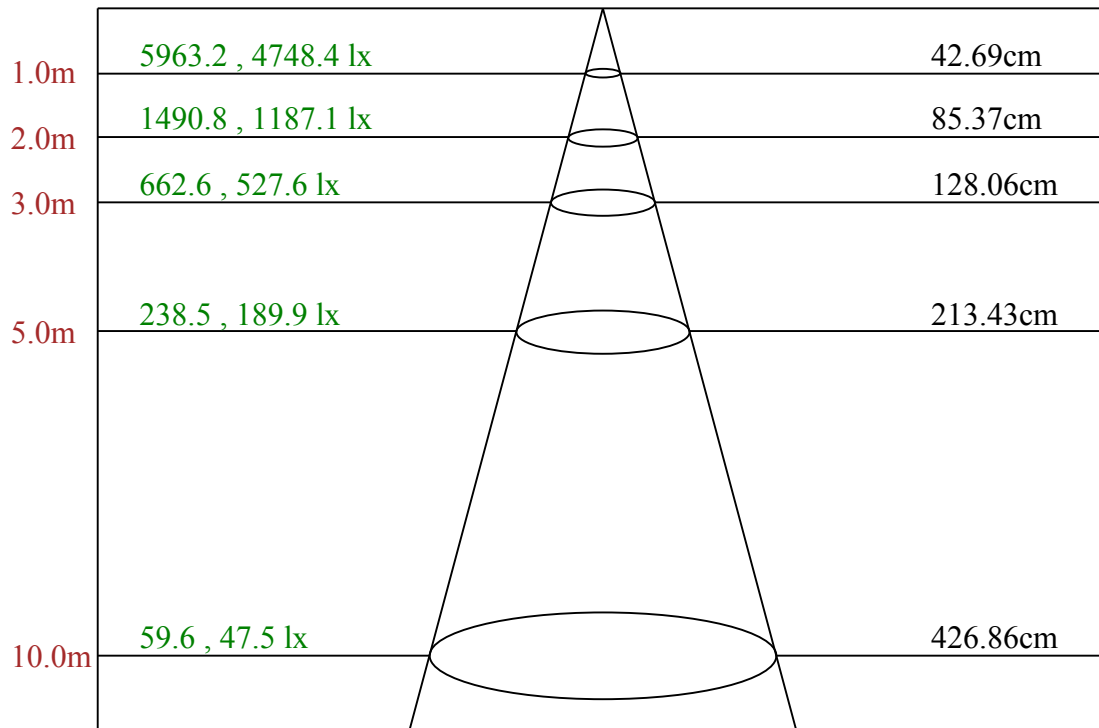
C90/C270: —————

Field angle(10%Imax):C0/180Left:21.3 Right:21.3

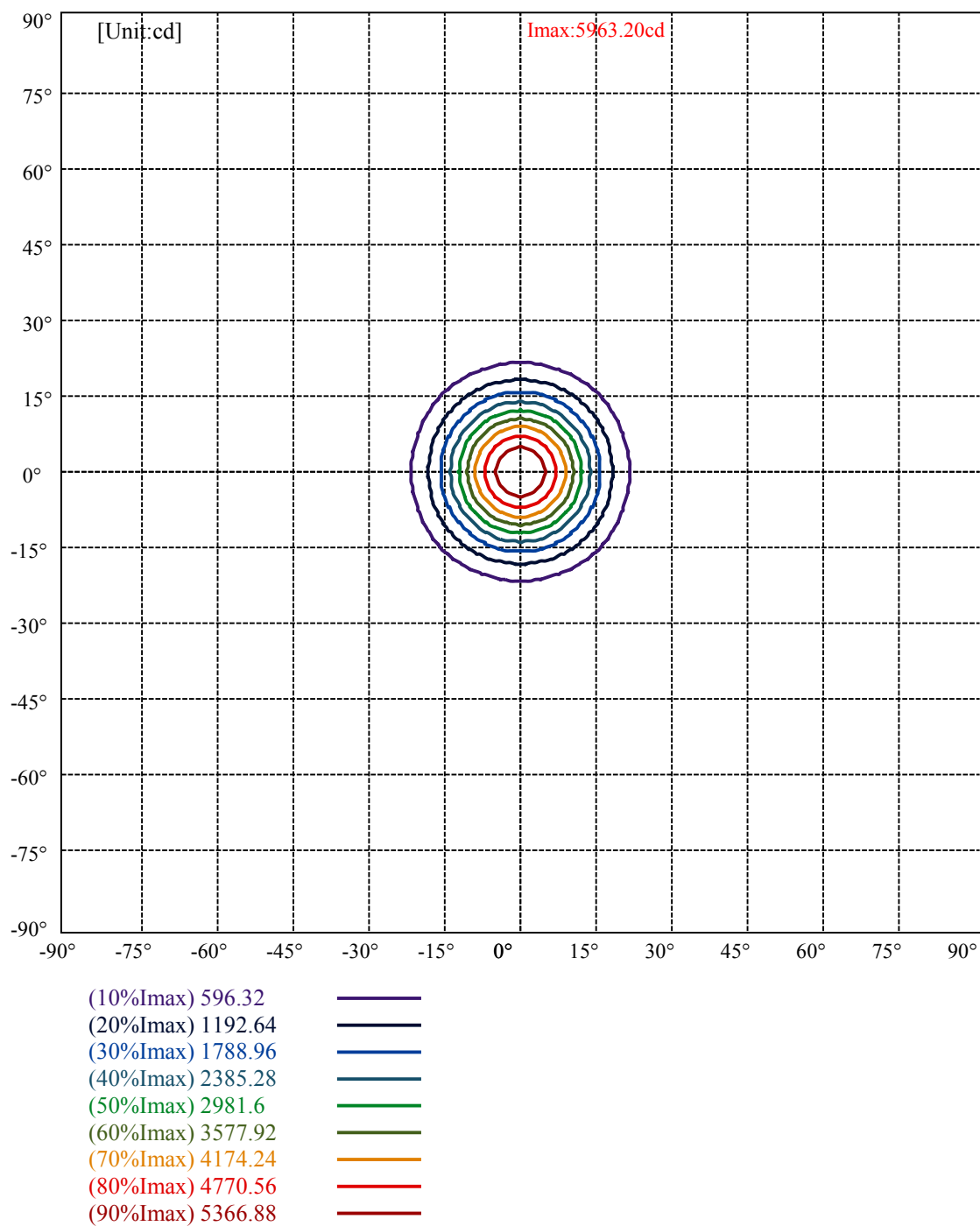
:C90/270Left:21.3 Right:21.3

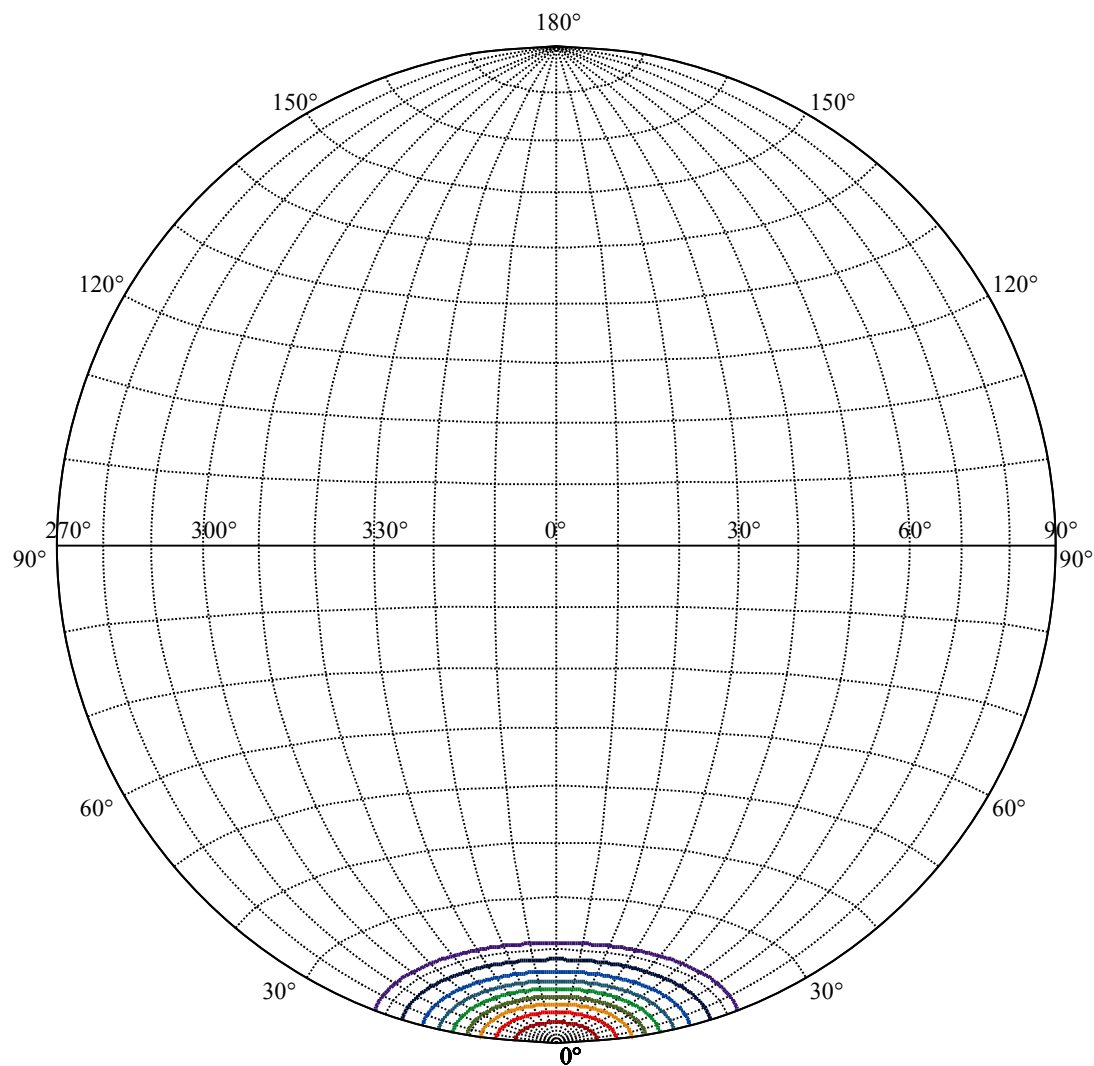
Beam Angle(50%Imax):C0/180Left:12.0 Right:12.0

:C90/270Left:12.0 Right:12.0



Max , Ave Beam angle of C0 plane 24.10





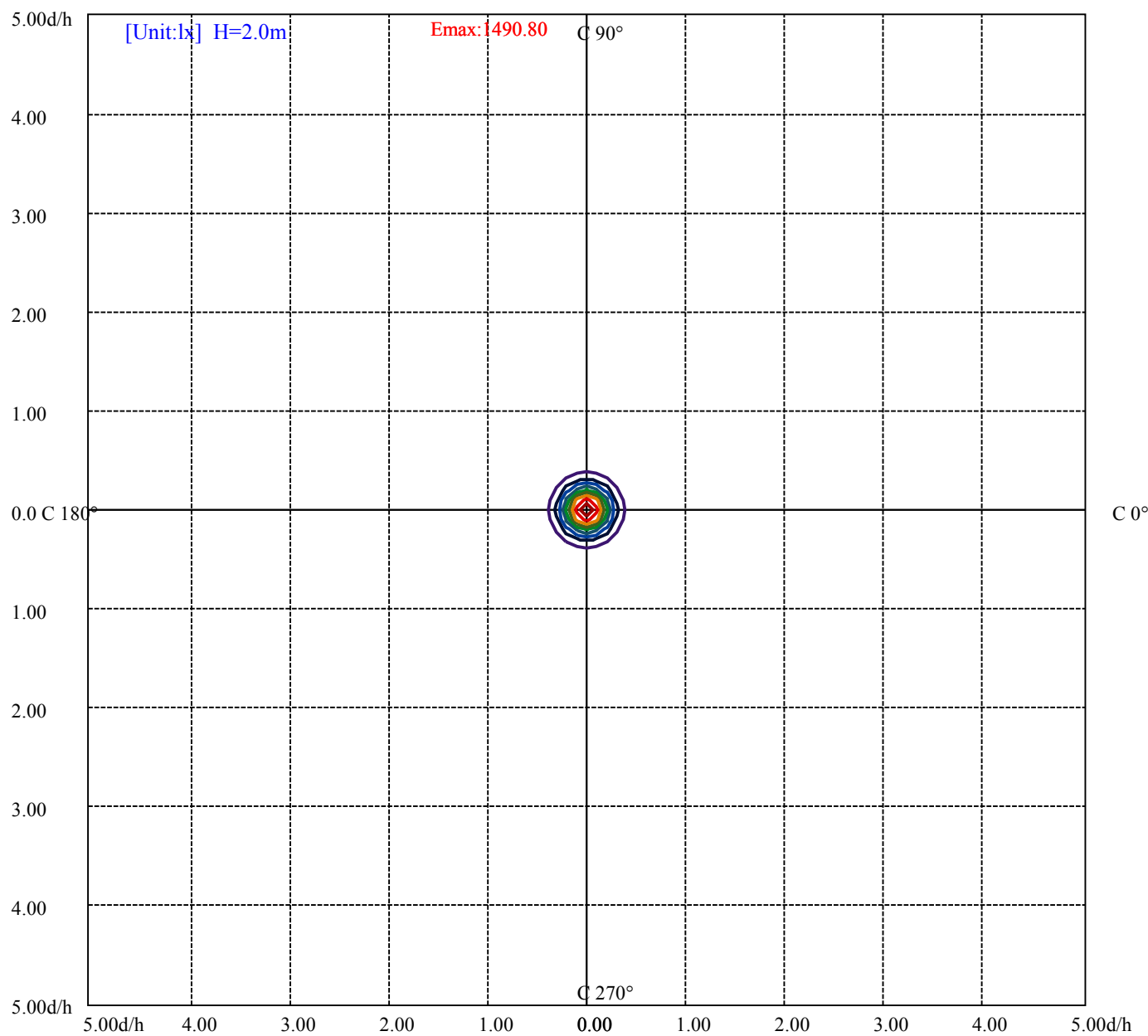
House

[Unit:cd]

Road

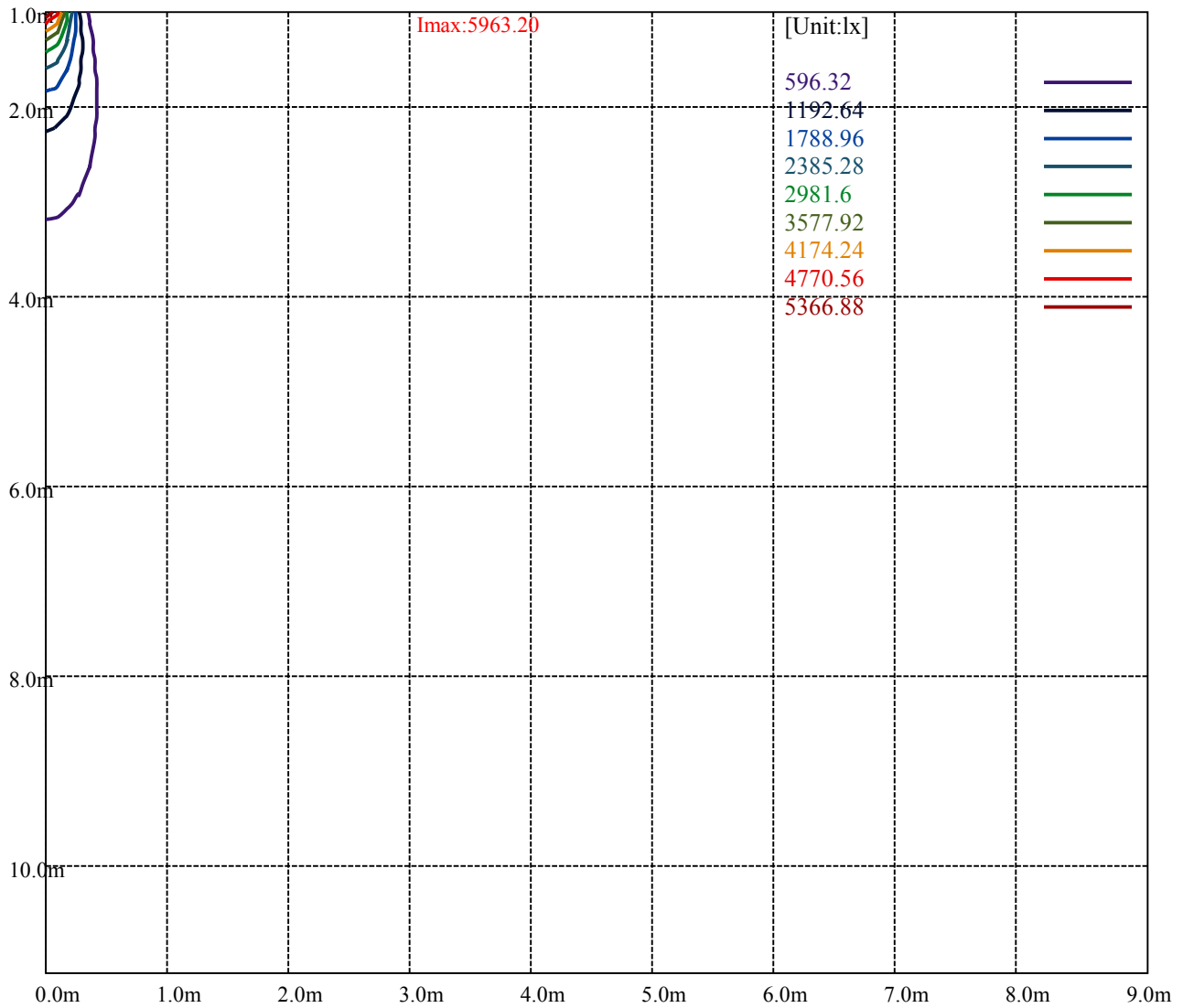
Imax:5963.20

(10%Imax)	596.32	—
(20%Imax)	1192.64	—
(30%Imax)	1788.96	—
(40%Imax)	2385.28	—
(50%Imax)	2981.6	—
(60%Imax)	3577.92	—
(70%Imax)	4174.24	—
(80%Imax)	4770.56	—
(90%Imax)	5366.88	—



(10%E_{max}) 149.08
(20%E_{max}) 298.16
(30%E_{max}) 447.24
(40%E_{max}) 596.32
(50%E_{max}) 745.4
(60%E_{max}) 894.48
(70%E_{max}) 1043.56
(80%E_{max}) 1192.64
(90%E_{max}) 1341.72





Luminance Table

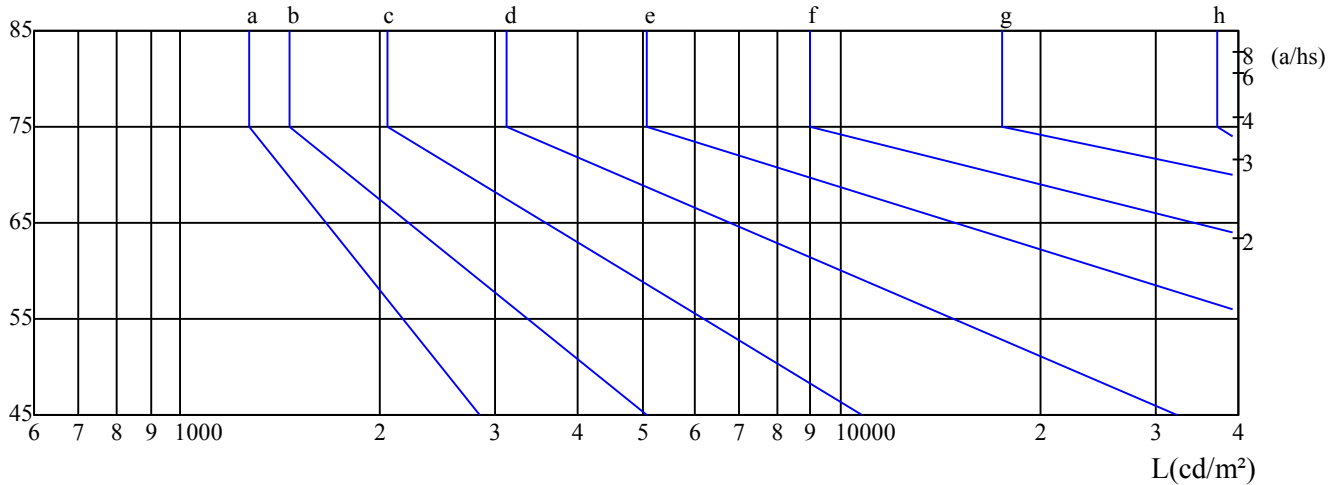
γ	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

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

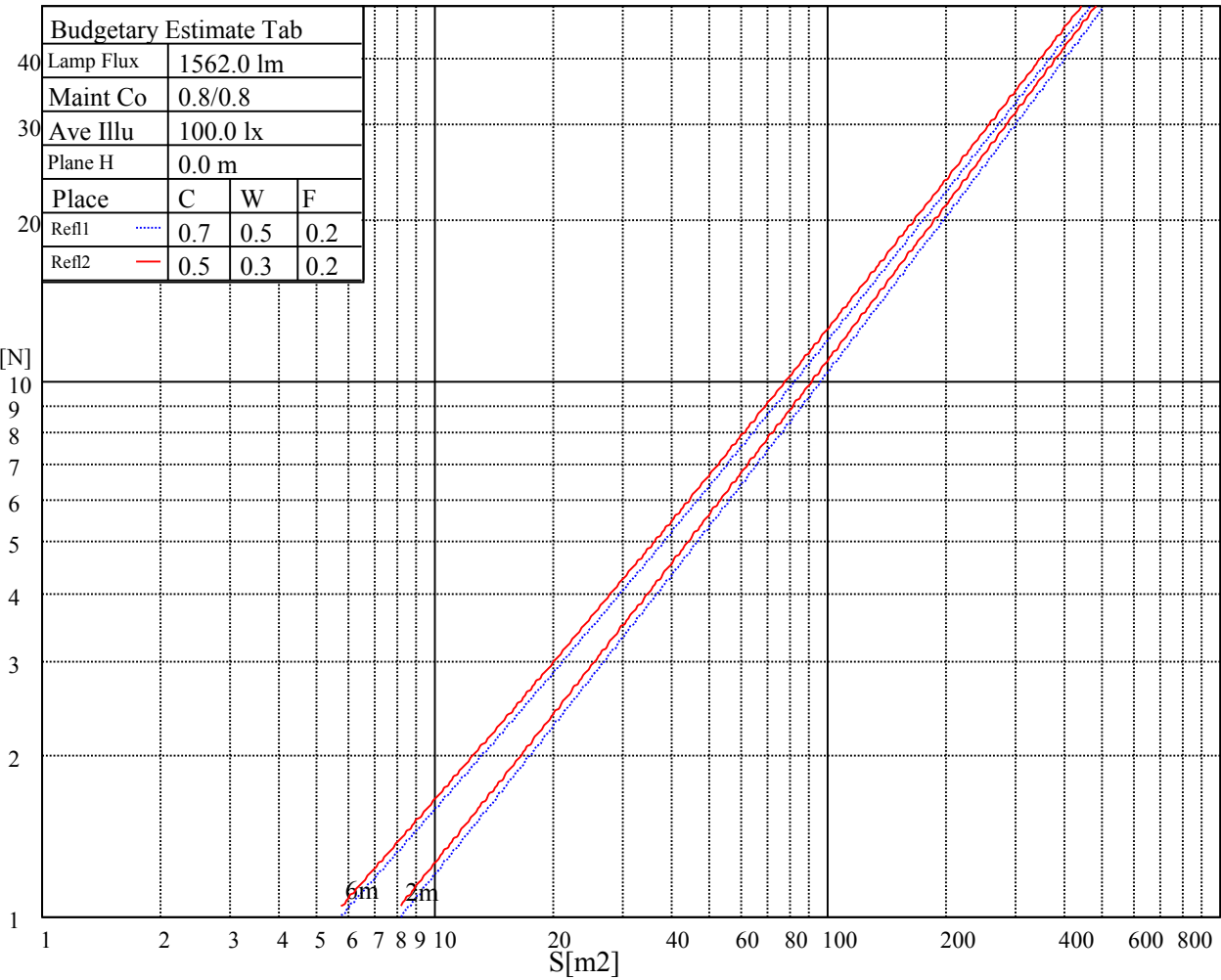
Luminance Limiting Curve

 $\gamma(^{\circ})$ 

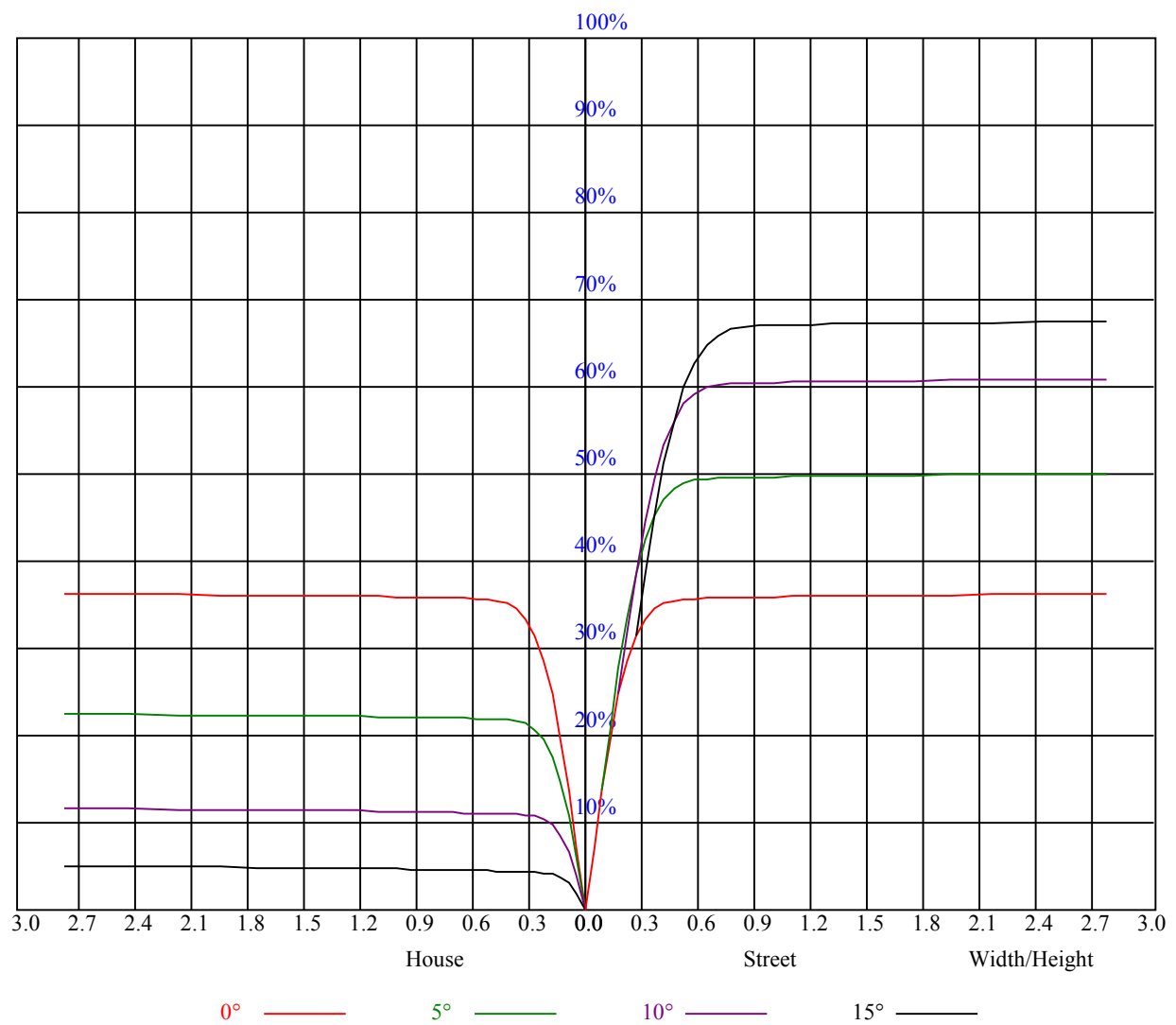
C0 ———

C45 ———

C90 ———



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	0.87	0.87	0.87	0.85	0.85	0.85	0.81	0.81	0.81	0.78	0.78	0.78	0.74	0.74	0.74	0.73
1	0.82	0.81	0.80	0.81	0.80	0.78	0.78	0.77	0.76	0.75	0.74	0.74	0.73	0.72	0.72	0.70
2	0.79	0.76	0.75	0.77	0.75	0.74	0.75	0.74	0.72	0.73	0.72	0.71	0.71	0.70	0.69	0.68
3	0.76	0.73	0.71	0.75	0.72	0.70	0.73	0.71	0.69	0.71	0.70	0.68	0.70	0.68	0.67	0.66
4	0.73	0.70	0.68	0.72	0.70	0.68	0.71	0.69	0.67	0.69	0.68	0.66	0.68	0.67	0.65	0.65
5	0.71	0.68	0.66	0.70	0.67	0.65	0.69	0.66	0.65	0.68	0.66	0.64	0.67	0.65	0.64	0.63
6	0.68	0.66	0.63	0.68	0.65	0.63	0.67	0.65	0.63	0.66	0.64	0.62	0.65	0.63	0.62	0.61
7	0.66	0.64	0.62	0.66	0.63	0.61	0.65	0.63	0.61	0.65	0.62	0.61	0.64	0.62	0.61	0.60
8	0.65	0.62	0.60	0.64	0.62	0.60	0.64	0.61	0.60	0.63	0.61	0.59	0.63	0.61	0.59	0.59
9	0.63	0.60	0.58	0.63	0.60	0.58	0.62	0.60	0.58	0.62	0.60	0.58	0.61	0.59	0.58	0.57
10	0.62	0.59	0.57	0.61	0.59	0.57	0.61	0.59	0.57	0.60	0.58	0.57	0.60	0.58	0.57	0.56



Nata 1-1006-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	5957.44	5964.19	5902.88	5792.63	5643.56	5435.44	5180.06	4921.31	4594.50
45.0	5978.81	5926.50	5817.94	5628.94	5437.69	5213.25	4885.88	4583.25	4258.69
90.0	5938.88	5814.00	5658.19	5438.81	5178.38	4910.06	4611.38	4239.00	3848.06
135.0	5977.69	5909.06	5755.50	5589.00	5389.88	5091.19	4816.13	4507.88	4138.88
180.0	5957.44	5906.25	5792.06	5627.25	5450.06	5175.00	4912.88	4615.88	4207.50
225.0	5978.81	5976.56	5938.88	5836.50	5661.56	5506.88	5271.19	4953.94	4699.13
270.0	5938.88	5998.50	6010.31	5964.19	5877.00	5725.69	5530.50	5321.25	5073.19
315.0	5977.69	5992.88	5964.75	5874.19	5742.00	5556.38	5351.06	5078.25	4767.75
360.0	5957.44	5964.19	5902.88	5792.63	5643.56	5435.44	5180.06	4921.31	4594.50
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	4241.81	3909.38	3522.38	3170.81	2784.94	2413.69	2108.25	1825.31	1510.31
45.0	3832.88	3475.13	3113.44	2718.00	2342.25	2043.00	1737.00	1496.25	1256.06
90.0	3484.13	3071.81	2678.63	2350.69	2047.50	1711.13	1472.06	1089.84	1042.93
135.0	3751.31	3392.44	2982.38	2631.94	2261.81	1931.06	1668.94	1407.38	1180.13
180.0	3906.00	3502.69	3054.94	2751.75	2379.38	2006.44	1769.06	1523.81	1104.36
225.0	4381.31	3911.06	3595.50	3233.81	2837.25	2463.19	2154.94	1837.69	1556.44
270.0	4719.94	4405.50	4111.88	3674.81	3274.88	2964.38	2539.13	2184.75	1936.69
315.0	4465.13	4094.44	3704.63	3353.63	3004.31	2585.25	2273.06	1982.25	1685.81
360.0	4241.81	3909.38	3522.38	3170.81	2784.94	2413.69	2108.25	1825.31	1510.31
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1292.06	1096.31	872.44	711.00	565.88	419.63	294.75	233.16	114.64
45.0	1040.06	858.94	690.75	531.56	399.38	290.25	174.49	104.68	60.98
90.0	845.04	685.91	527.46	385.09	277.76	176.96	107.83	58.89	34.43
135.0	992.25	812.81	644.63	484.88	358.88	288.56	144.90	85.50	52.93
180.0	1056.32	877.89	714.66	533.36	405.84	295.59	182.31	111.49	64.24
225.0	1337.06	1112.40	931.05	745.71	597.26	443.08	311.29	215.61	129.21
270.0	1615.50	1387.13	1185.19	951.19	781.88	628.31	457.31	335.25	294.75
315.0	1416.94	1107.00	970.54	797.46	638.89	462.21	352.91	236.81	136.97
360.0	1292.06	1096.31	872.44	711.00	565.88	419.63	294.75	233.16	114.64
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	67.61	39.26	23.29	15.92	12.88	11.53	10.69	10.01	9.28
45.0	36.56	20.53	14.06	11.48	10.41	9.73	9.11	8.61	8.21
90.0	21.43	14.51	11.42	10.46	9.79	9.06	8.61	8.21	7.88
135.0	27.84	17.16	13.28	10.86	10.01	9.39	8.78	8.33	7.99
180.0	35.04	21.09	14.06	11.08	10.18	9.39	8.78	8.38	7.99
225.0	73.35	38.81	23.74	15.36	12.09	10.58	9.79	9.11	8.44
270.0	124.88	72.11	41.96	25.88	16.48	12.99	11.42	10.46	9.73
315.0	87.47	51.24	27.79	19.07	14.29	11.93	11.08	10.29	9.56
360.0	67.61	39.26	23.29	15.92	12.88	11.53	10.69	10.01	9.28
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	8.83	8.44	8.04	7.71	7.43	7.20	6.98	6.81	6.64
45.0	7.88	7.59	7.31	7.09	6.92	6.75	6.58	6.47	6.36
90.0	7.54	7.31	7.09	6.86	6.69	6.58	6.47	6.36	6.19
135.0	7.65	7.37	7.14	6.92	6.75	6.58	6.47	6.36	6.30
180.0	7.59	7.37	7.14	6.86	6.75	6.58	6.47	6.36	6.24
225.0	7.99	7.65	7.31	7.03	6.81	6.64	6.41	6.30	6.19
270.0	9.06	8.55	8.10	7.71	7.43	7.20	6.98	6.75	6.58
315.0	9.00	8.55	8.10	7.76	7.48	7.20	6.98	6.81	6.64
360.0	8.83	8.44	8.04	7.71	7.43	7.20	6.98	6.81	6.64

Intensity data(cd)										Appendix Page: 17 Total:18	
C/ γ (°)	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0		
0.0	6.53	6.41	6.30	6.19	6.13	6.02	5.96	5.91	5.85		
45.0	6.24	6.13	6.02	5.96	5.85	5.79	5.74	5.68	5.63		
90.0	6.13	6.02	5.96	5.91	5.85	5.74	5.68	5.63	5.63		
135.0	6.13	6.08	6.02	5.96	5.91	5.85	5.79	5.74	5.68		
180.0	6.13	6.08	6.02	5.91	5.85	5.79	5.79	5.74	5.68		
225.0	6.08	5.96	5.85	5.79	5.74	5.68	5.63	5.57	5.51		
270.0	6.41	6.30	6.19	6.13	6.02	5.91	5.91	5.85	5.74		
315.0	6.47	6.36	6.24	6.13	6.08	6.02	5.96	5.91	5.79		
360.0	6.53	6.41	6.30	6.19	6.13	6.02	5.96	5.91	5.85		
C/ γ (°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0		
0.0	5.79	5.79	5.74	5.68	5.68	5.63	5.63	5.57	5.57		
45.0	5.57	5.51	5.51	5.51	5.46	5.40	5.40	5.34	5.34		
90.0	5.57	5.57	5.51	5.46	5.46	5.46	5.40	5.40	5.40		
135.0	5.68	5.63	5.57	5.57	5.51	5.51	5.51	5.46	5.51		
180.0	5.68	5.63	5.57	5.57	5.57	5.51	5.51	5.46	5.46		
225.0	5.51	5.46	5.46	5.40	5.34	5.34	5.34	5.29	5.29		
270.0	5.74	5.68	5.63	5.57	5.57	5.51	5.46	5.46	5.46		
315.0	5.74	5.68	5.68	5.68	5.63	5.57	5.51	5.51	5.51		
360.0	5.79	5.79	5.74	5.68	5.68	5.63	5.63	5.57	5.57		
C/ γ (°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0		
0.0	5.57	5.51	5.51	5.46	5.51	5.46	5.46	5.46	5.46		
45.0	5.34	5.34	5.34	5.29	5.29	5.29	5.29	5.23	5.23		
90.0	5.40	5.40	5.34	5.34	5.34	5.29	5.34	5.34	5.29		
135.0	5.46	5.46	5.40	5.40	5.40	5.40	5.34	5.34	5.34		
180.0	5.46	5.46	5.46	5.40	5.40	5.40	5.40	5.34	5.40		
225.0	5.29	5.29	5.23	5.23	5.23	5.23	5.23	5.18	5.18		
270.0	5.40	5.40	5.40	5.34	5.34	5.34	5.34	5.34	5.29		
315.0	5.51	5.46	5.46	5.40	5.40	5.40	5.40	5.34	5.34		
360.0	5.57	5.51	5.51	5.46	5.51	5.46	5.46	5.46	5.46		
C/ γ (°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0		
0.0	5.40	5.40	5.40	5.40	5.34	5.34	5.40	5.40	5.34		
45.0	5.23	5.23	5.18	5.23	5.23	5.18	5.18	5.18	5.12		
90.0	5.23	5.23	5.23	5.23	5.23	5.23	5.23	5.23	5.18		
135.0	5.34	5.34	5.34	5.29	5.34	5.29	5.34	5.29	5.29		
180.0	5.34	5.34	5.34	5.34	5.29	5.29	5.29	5.34	5.29		
225.0	5.18	5.23	5.18	5.18	5.18	5.18	5.18	5.18	5.12		
270.0	5.29	5.29	5.29	5.29	5.29	5.29	5.29	5.23	5.23		
315.0	5.34	5.34	5.34	5.34	5.29	5.29	5.29	5.29	5.29		
360.0	5.40	5.40	5.40	5.40	5.34	5.34	5.40	5.40	5.34		
C/ γ (°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0		
0.0	5.34	5.34	5.29	5.34	5.29	5.29	5.29	5.29	5.29		
45.0	5.12	5.12	5.06	5.06	5.06	5.06	5.06	5.01	5.06		
90.0	5.18	5.18	5.18	5.18	5.18	5.18	5.12	5.12	5.12		
135.0	5.29	5.29	5.29	5.29	5.23	5.29	5.23	5.23	5.23		
180.0	5.34	5.29	5.29	5.29	5.29	5.29	5.29	5.29	5.29		
225.0	5.06	5.06	5.06	5.06	5.06	5.06	5.06	5.06	5.06		
270.0	5.23	5.18	5.18	5.18	5.18	5.18	5.18	5.18	5.18		
315.0	5.29	5.29	5.29	5.29	5.29	5.23	5.23	5.23	5.23		
360.0	5.34	5.34	5.29	5.34	5.29	5.29	5.29	5.29	5.29		

Intensity data(cd)

Appendix Page: 18 Total:18

C/ $\gamma(^{\circ})$	90.0
0.0	5.29
45.0	5.06
90.0	5.12
135.0	5.23
180.0	5.29
225.0	5.01
270.0	5.12
315.0	5.23
360.0	5.29