
NATA

Client:

LumCAT: 3-1701-N

Luminaire: 92.70.065.00+92.70.061.00

Report No: nata-0100

Voltage(V): 35.3000

Test No: GC2018111403

Current(A): 0.5500

LampCAT: OSRAM SOLERIQ S15

Power (W): 19.9650

Lamp flux(lm): 2661.0

PF: 0.0000

Number of Lamps: 1

Ballast type: DC

Length(mm): 86

Width(mm): 86

Phm Type: C

Height(mm): 0

Photometric Results

Lumens(lm): 2117.88, Efficiency(%): 79.59% , Luminous Efficacy(lm/W): 106.08

Central intensity(cd): 13720.780, Maximum intensity(cd): 13720.780

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=17.4

[C90/270]Total=17.4

Field angle(10%Imax): [C0/180]Total=32.4

[C90/270]Total=32.4

Maximum s/h(1/2): C0_180=0.30 C90_270=0.30

Maximum s/h(1/4): C0_180=0.29 C90_270=0.29

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 79.71%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 97.576%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	13720.781	3.283	3.283	.123%	.155%
1.0	13609.688	26.047	29.329	.979%	1.385%
2.0	13293.984	50.878	80.207	1.912%	3.787%
3.0	12635.859	72.520	152.727	2.725%	7.211%
4.0	11928.164	91.245	243.972	3.429%	11.520%
5.0	10991.039	105.048	349.02	3.948%	16.480%
6.0	10005.891	114.694	463.714	4.310%	21.895%
7.0	8812.125	117.768	581.482	4.426%	27.456%
8.0	7722.703	117.863	699.345	4.429%	33.021%
9.0	6464.250	110.893	810.237	4.167%	38.257%
10.0	5210.156	99.214	909.451	3.728%	42.941%
11.0	4136.063	86.544	995.995	3.252%	47.028%
12.0	3310.453	75.478	1071.473	2.836%	50.592%
13.0	2402.156	59.257	1130.73	2.227%	53.390%
14.0	2006.930	53.243	1183.973	2.001%	55.904%
15.0	1613.813	45.804	1229.776	1.721%	58.066%
16.0	1395.352	42.177	1271.953	1.585%	60.058%
17.0	1259.051	40.367	1312.32	1.517%	61.964%
18.0	1149.525	38.954	1351.274	1.464%	63.803%
19.0	1060.095	37.848	1389.122	1.422%	65.590%
20.0	984.832	36.937	1426.059	1.388%	67.334%
21.0	915.560	35.981	1462.04	1.352%	69.033%
22.0	840.959	34.546	1496.586	1.298%	70.664%
23.0	778.148	33.342	1529.928	1.253%	72.239%
24.0	720.253	32.126	1562.054	1.207%	73.755%
25.0	656.163	30.410	1592.464	1.143%	75.191%
26.0	609.258	29.288	1621.752	1.101%	76.574%
27.0	563.611	28.059	1649.811	1.054%	77.899%
28.0	519.799	26.761	1676.572	1.006%	79.163%
29.0	481.402	25.594	1702.165	.962%	80.371%
30.0	448.530	24.593	1726.759	.924%	81.532%
31.0	413.817	23.372	1750.131	.878%	82.636%
32.0	384.019	22.316	1772.447	.839%	83.690%
33.0	359.198	21.453	1793.9	.806%	84.702%
34.0	332.522	20.391	1814.291	.766%	85.665%
35.0	311.562	19.597	1833.888	.736%	86.591%
36.0	292.648	18.863	1852.751	.709%	87.481%
37.0	271.188	17.897	1870.648	.673%	88.326%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	256.936	17.347	1887.995	.652%	89.145%
39.0	236.208	16.301	1904.296	.613%	89.915%
40.0	219.713	15.487	1919.783	.582%	90.646%
41.0	204.483	14.711	1934.495	.553%	91.341%
42.0	188.944	13.864	1948.359	.521%	91.996%
43.0	170.733	12.769	1961.128	.480%	92.598%
44.0	155.721	11.862	1972.99	.446%	93.159%
45.0	140.906	10.926	1983.916	.411%	93.674%
46.0	126.710	9.995	1993.911	.376%	94.146%
47.0	113.604	9.111	2003.023	.342%	94.577%
48.0	103.120	8.404	2011.426	.316%	94.973%
49.0	92.573	7.662	2019.088	.288%	95.335%
50.0	83.679	7.029	2026.117	.264%	95.667%
51.0	76.029	6.479	2032.597	.243%	95.973%
52.0	68.084	5.883	2038.48	.221%	96.251%
53.0	60.954	5.338	2043.818	.201%	96.503%
54.0	54.563	4.841	2048.659	.182%	96.731%
55.0	48.312	4.340	2052.999	.163%	96.936%
56.0	43.298	3.936	2056.935	.148%	97.122%
57.0	39.263	3.611	2060.546	.136%	97.293%
58.0	35.445	3.296	2063.842	.124%	97.448%
59.0	32.273	3.034	2066.876	.114%	97.592%
60.0	29.517	2.803	2069.679	.105%	97.724%
61.0	27.084	2.598	2072.277	.098%	97.847%
62.0	25.144	2.435	2074.711	.091%	97.962%
63.0	23.759	2.321	2077.033	.087%	98.071%
64.0	22.662	2.234	2079.266	.084%	98.177%
65.0	21.727	2.159	2081.426	.081%	98.279%
66.0	21.016	2.105	2083.531	.079%	98.378%
67.0	20.243	2.043	2085.575	.077%	98.474%
68.0	19.491	1.982	2087.556	.074%	98.568%
69.0	18.823	1.927	2089.483	.072%	98.659%
70.0	18.211	1.877	2091.36	.071%	98.748%
71.0	17.571	1.822	2093.182	.068%	98.834%
72.0	17.009	1.774	2094.956	.067%	98.917%
73.0	16.509	1.731	2096.687	.065%	98.999%
74.0	15.982	1.685	2098.372	.063%	99.079%
75.0	15.511	1.643	2100.015	.062%	99.156%

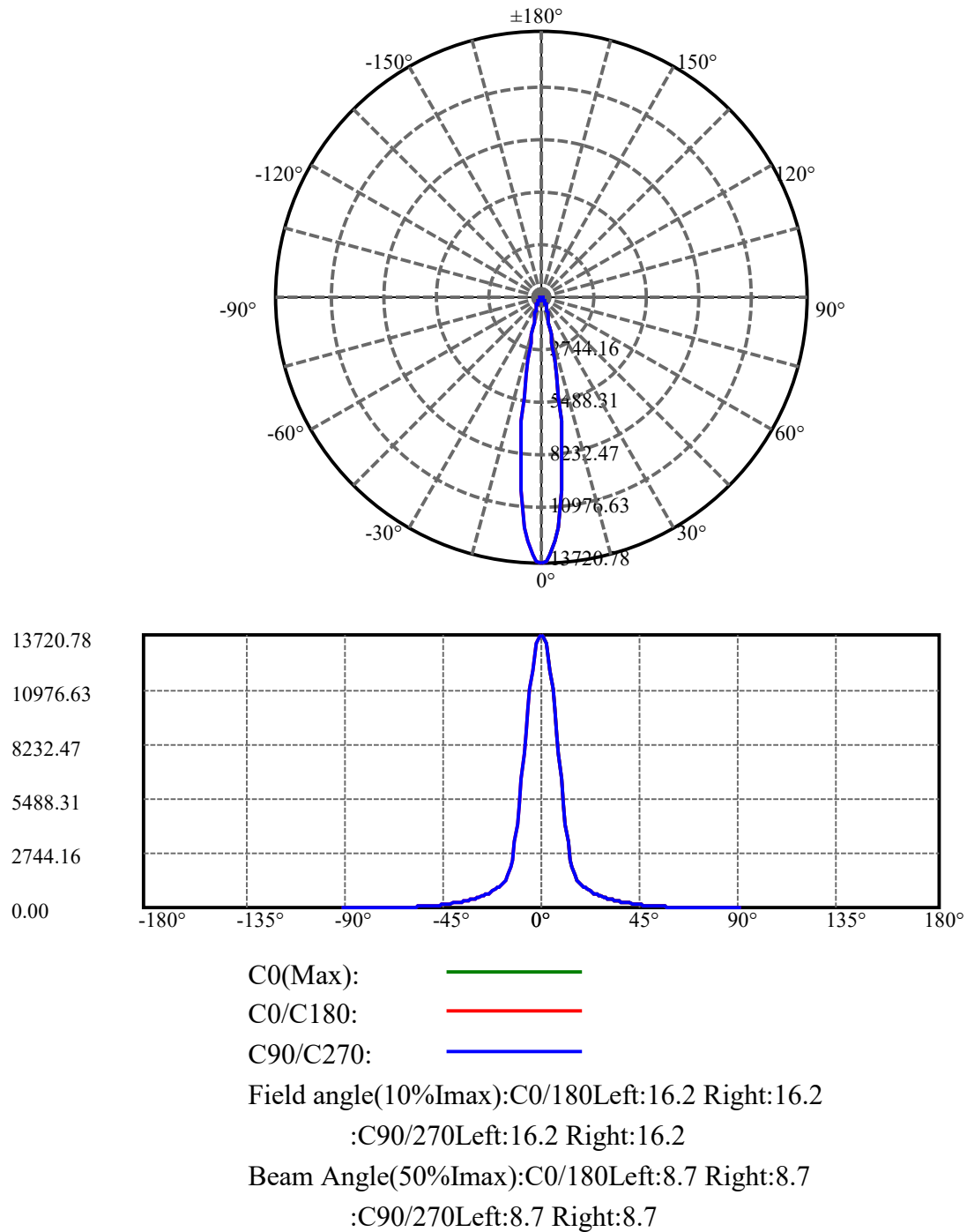
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	15.026	1.599	2101.613	.060%	99.232%
77.0	14.548	1.554	2103.168	.058%	99.305%
78.0	14.034	1.505	2104.673	.057%	99.376%
79.0	13.479	1.451	2106.124	.055%	99.445%
80.0	12.874	1.390	2107.515	.052%	99.510%
81.0	12.263	1.328	2108.843	.050%	99.573%
82.0	11.679	1.268	2110.111	.048%	99.633%
83.0	11.067	1.205	2111.316	.045%	99.690%
84.0	10.519	1.147	2112.463	.043%	99.744%
85.0	9.935	1.085	2113.548	.041%	99.795%
86.0	9.422	1.031	2114.579	.039%	99.844%
87.0	8.958	0.981	2115.56	.037%	99.890%
88.0	8.634	0.946	2116.506	.036%	99.935%
89.0	8.416	0.923	2117.429	.035%	99.979%
90.0	8.297	0.455	2117.884	.017%	100.000%

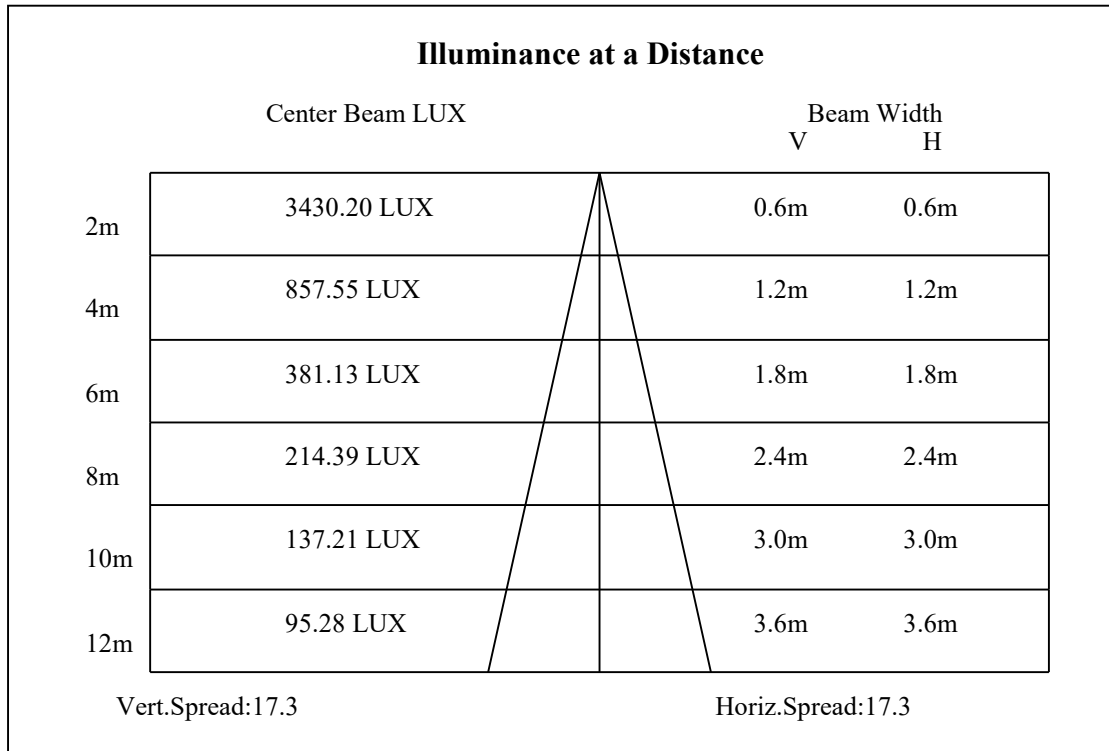
ZONAL LUMEN SUMMARY

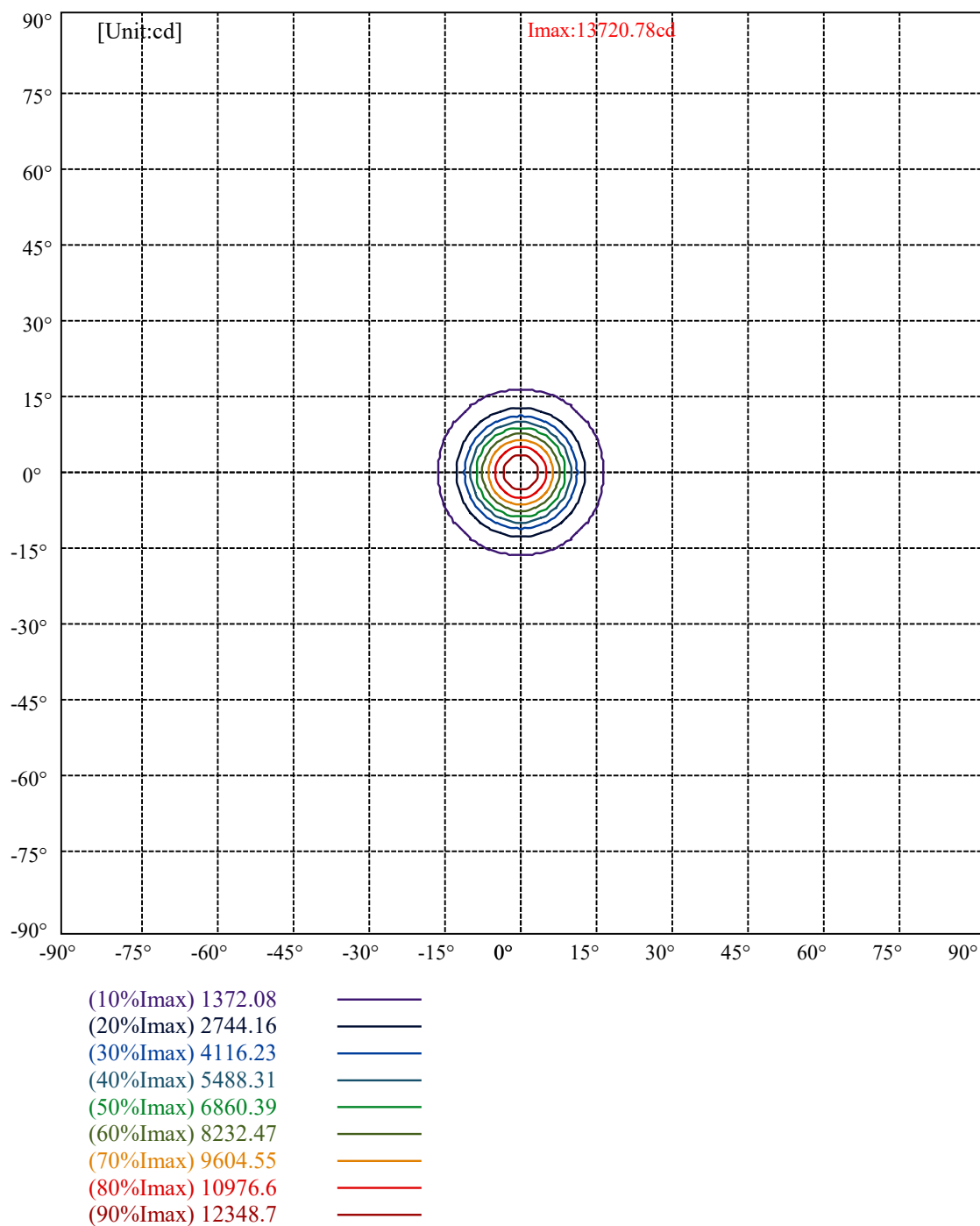
Zone	Lumens	%Lamp	%Fixt
0-30	1726.76	64.89%	81.53%
0-40	1919.78	72.15%	90.65%
0-60	2069.68	77.78%	97.72%
0-90	2117.43	79.57%	99.98%
0-120	2117.43	79.57%	99.98%
0-180	2117.88	79.59%	100.00%
60-90	50.55	1.90%	2.39%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-28.69	1694.31	63.67%	80.00%

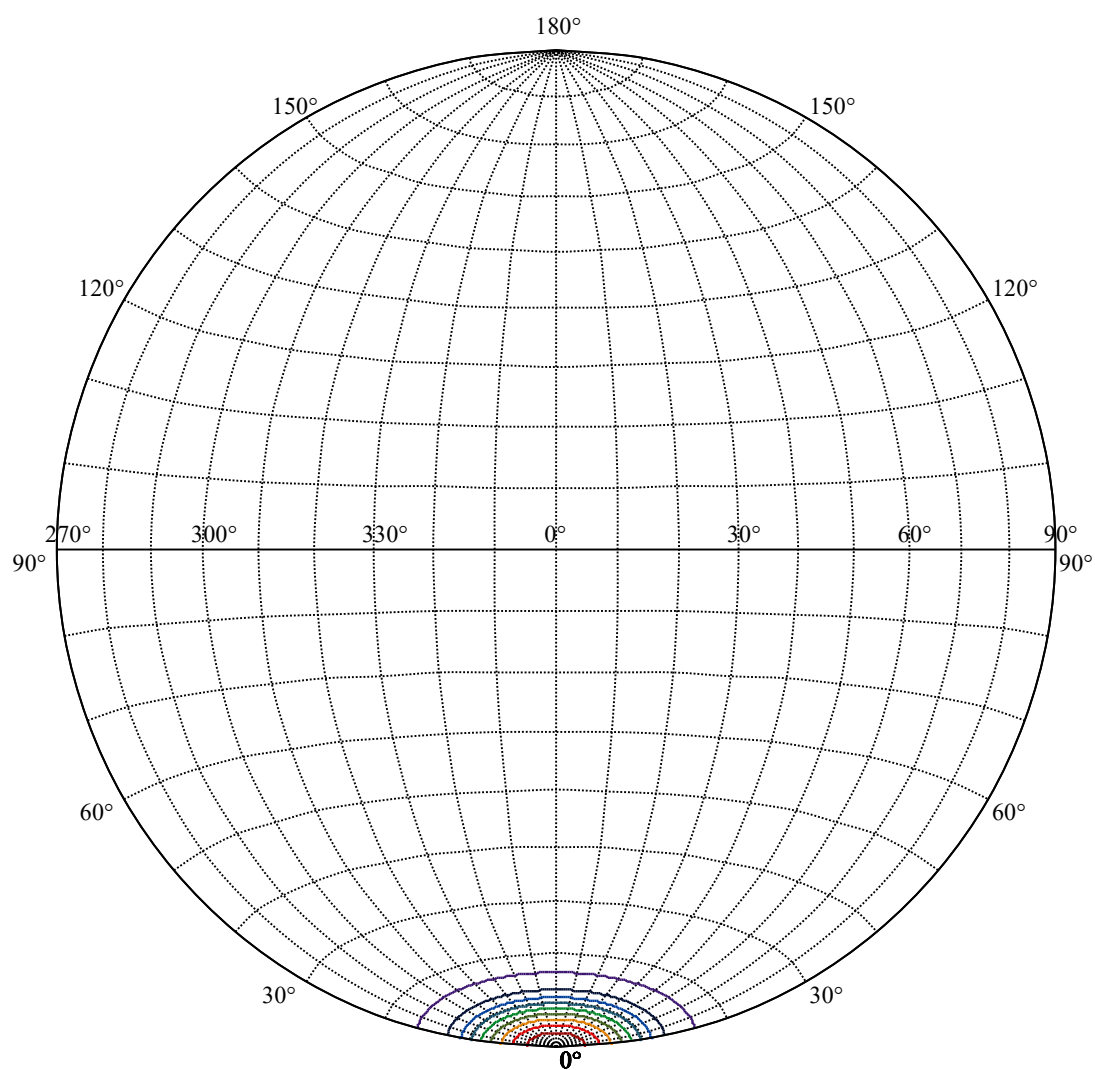
ZONAL LUMEN SUMMARY

0-10	909.45
10-20	516.61
20-30	300.70
30-40	193.02
40-50	106.33
50-60	43.56
60-70	21.68
70-80	16.15
80-90	9.91
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









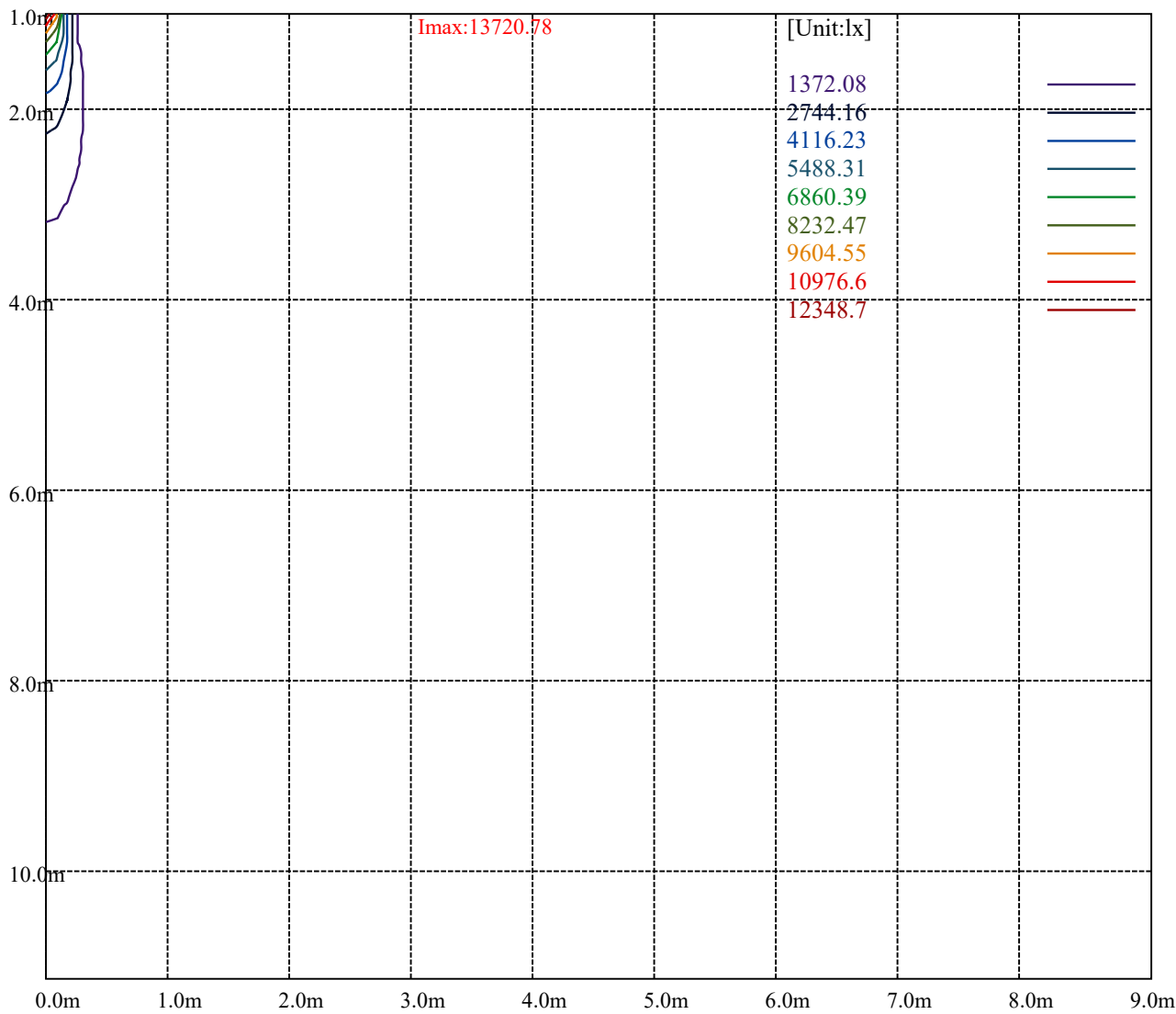
House

[Unit:cd]

Road

Imax:13720.78

(10%Imax)	1372.08	—
(20%Imax)	2744.16	—
(30%Imax)	4116.23	—
(40%Imax)	5488.31	—
(50%Imax)	6860.39	—
(60%Imax)	8232.47	—
(70%Imax)	9604.55	—
(80%Imax)	10976.6	—
(90%Imax)	12348.7	—



Luminance Table

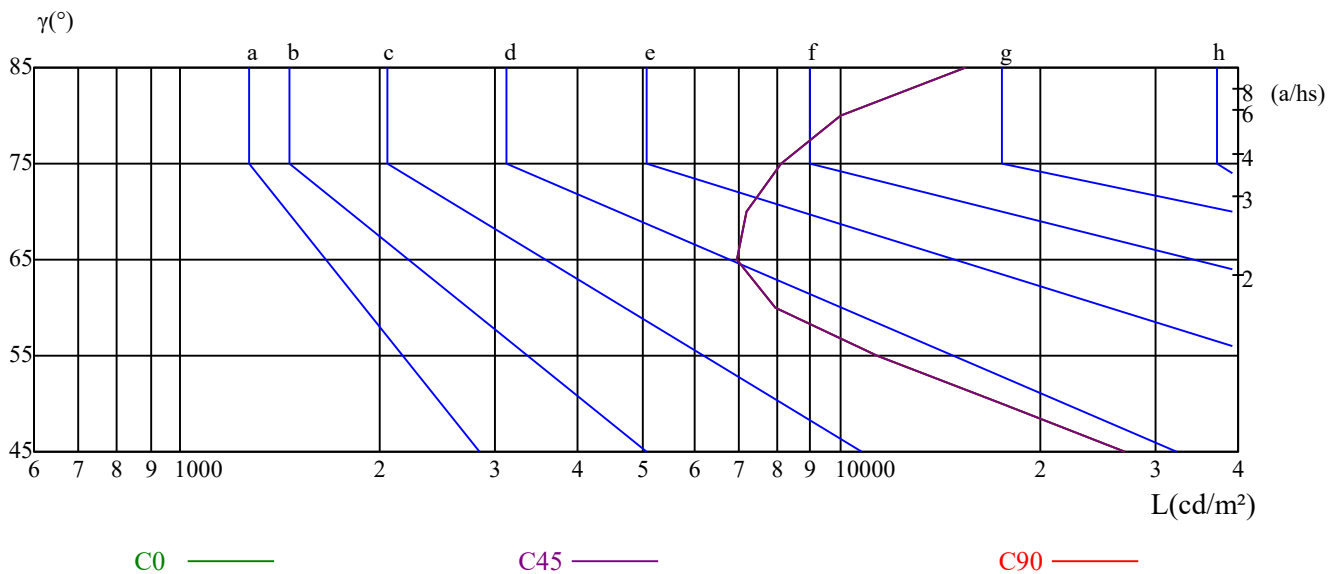
γ	45	50	55	60	65	70	75	80	85
C0	26943	17602	11388	7982	6951	7199	8103	10024	15413
C45	26943	17602	11388	7982	6951	7199	8103	10024	15413
C90	26943	17602	11388	7982	6951	7199	8103	10024	15413

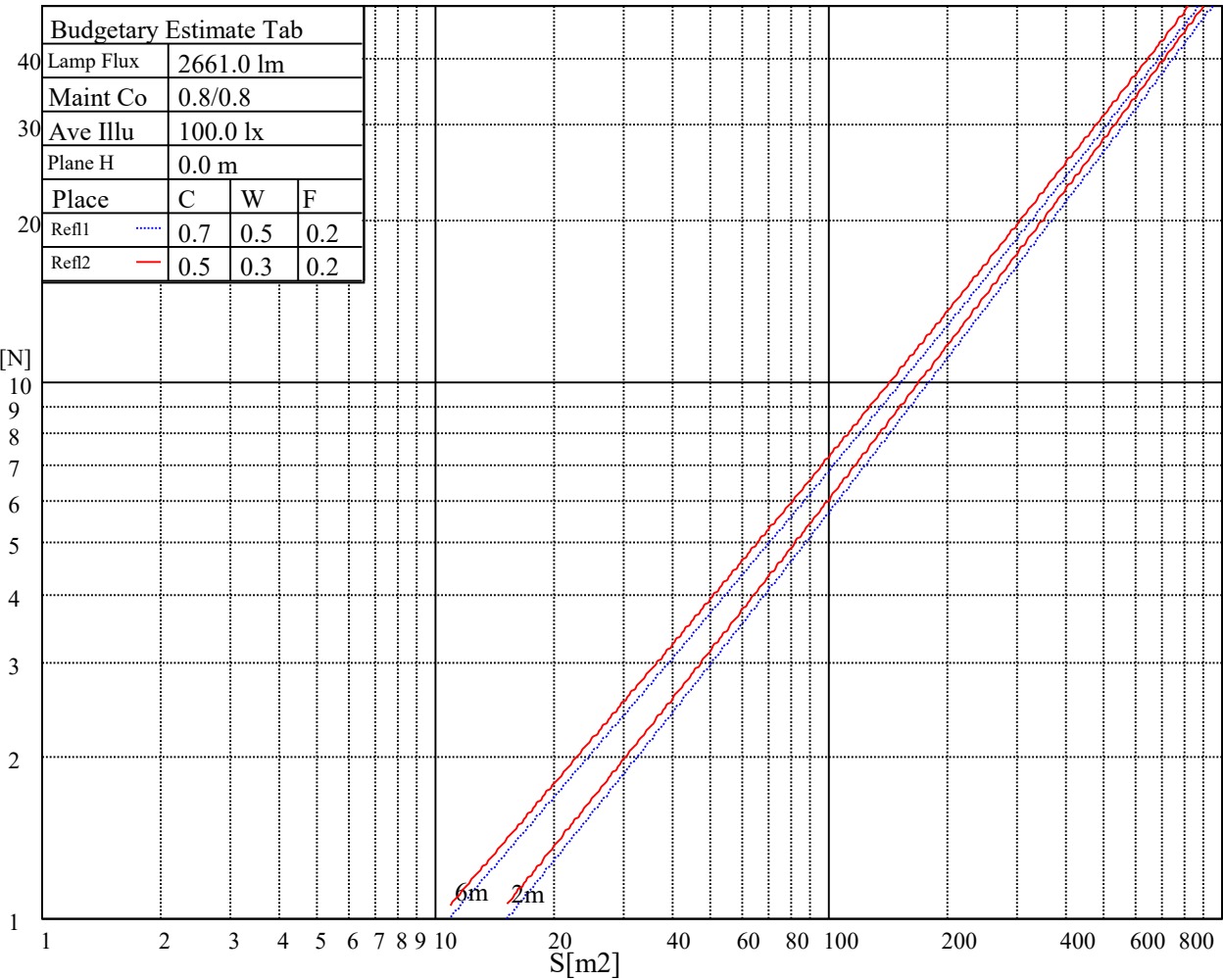
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
6951	6951	6951	8103	8103	8103	15413	15413	15413

Glare Table

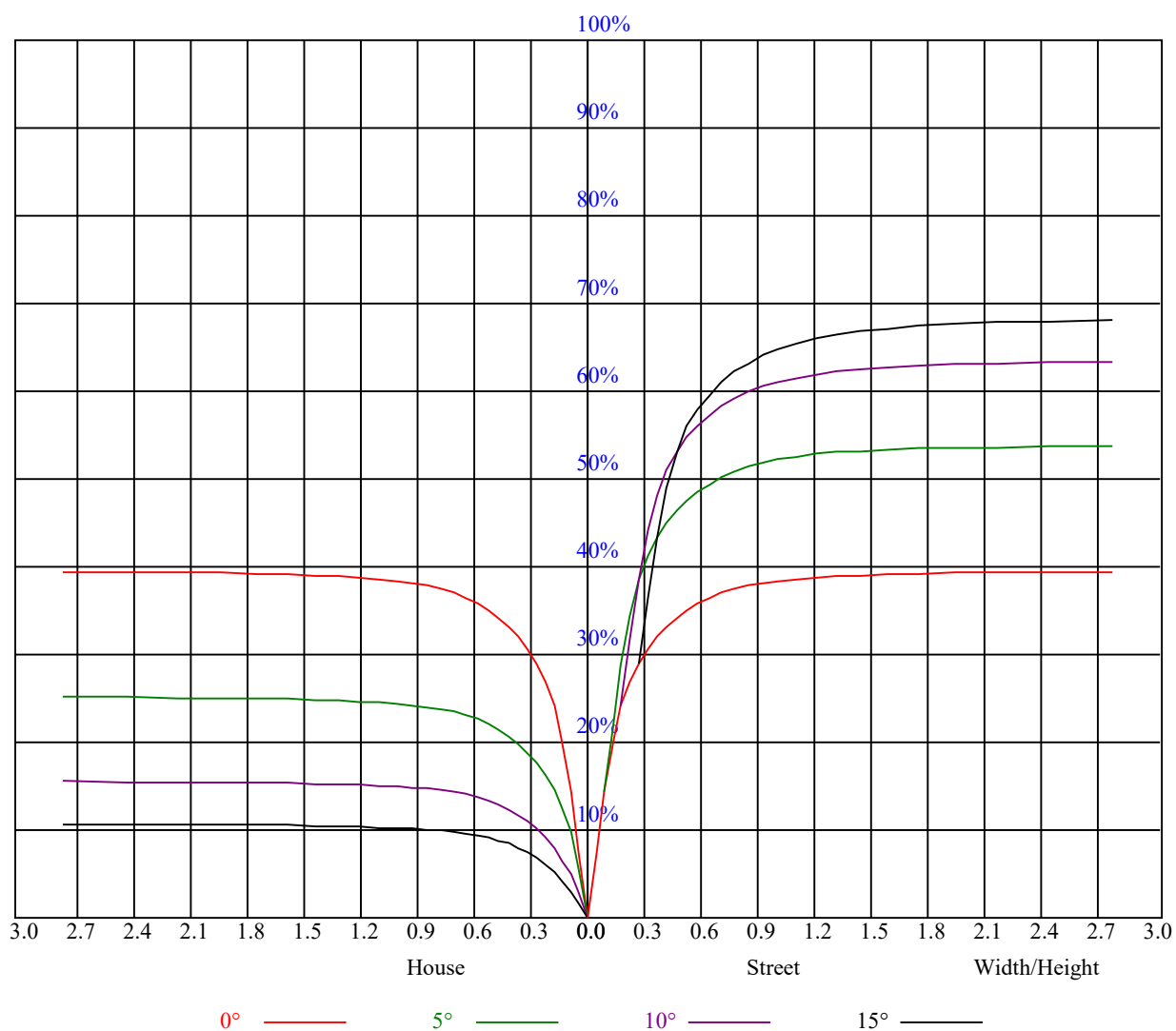
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

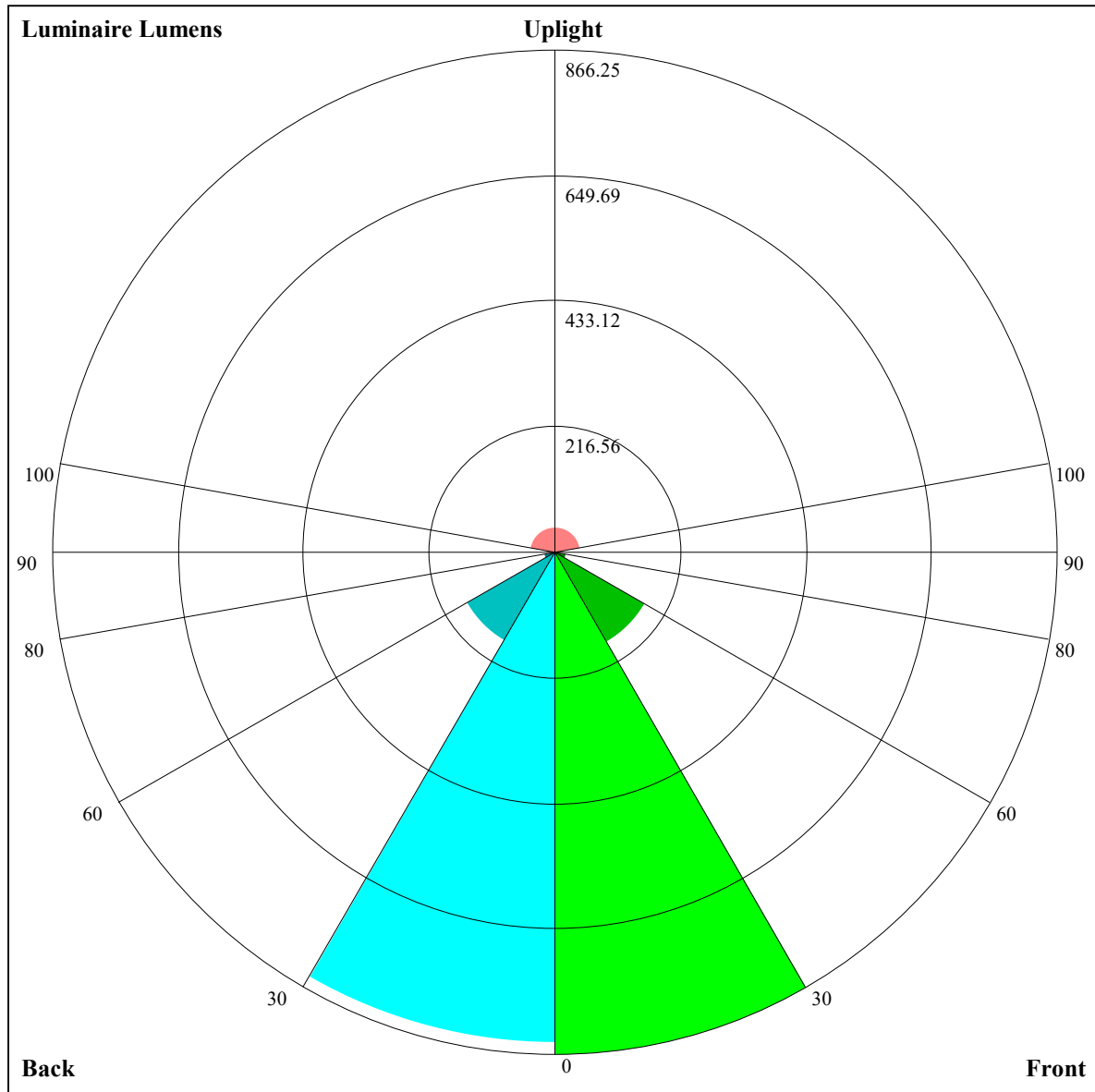
Luminance Limiting Curve





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	0.95	0.95	0.95	0.93	0.93	0.93	0.89	0.89	0.89	0.85	0.85	0.85	0.81	0.81	0.81	0.80
1	0.89	0.87	0.86	0.87	0.86	0.84	0.84	0.83	0.82	0.81	0.80	0.79	0.78	0.78	0.77	0.76
2	0.84	0.81	0.79	0.83	0.80	0.78	0.80	0.78	0.76	0.78	0.76	0.75	0.76	0.74	0.73	0.72
3	0.80	0.77	0.74	0.79	0.76	0.73	0.77	0.74	0.72	0.75	0.73	0.71	0.73	0.72	0.70	0.69
4	0.76	0.73	0.70	0.75	0.72	0.70	0.74	0.71	0.69	0.72	0.70	0.68	0.71	0.69	0.67	0.66
5	0.73	0.69	0.67	0.72	0.69	0.66	0.71	0.68	0.66	0.70	0.67	0.65	0.69	0.67	0.65	0.64
6	0.70	0.67	0.64	0.70	0.66	0.64	0.69	0.66	0.63	0.68	0.65	0.63	0.67	0.64	0.63	0.62
7	0.68	0.64	0.62	0.67	0.64	0.61	0.67	0.63	0.61	0.66	0.63	0.61	0.65	0.62	0.61	0.60
8	0.66	0.62	0.60	0.65	0.62	0.59	0.65	0.61	0.59	0.64	0.61	0.59	0.63	0.61	0.59	0.58
9	0.64	0.60	0.58	0.63	0.60	0.58	0.63	0.60	0.57	0.62	0.59	0.57	0.62	0.59	0.57	0.56
10	0.62	0.58	0.56	0.62	0.58	0.56	0.61	0.58	0.56	0.61	0.58	0.56	0.60	0.57	0.56	0.55





Luminaire Lumens:

FL=866.25,FM=179.79,FH=19.47,FVH=5.57

BL=846.72,BM=174.9,BH=19.2,BVH=5.52

UL=9.05,UH=43.08

BUG Rating:B2-U2-G0

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Intensity data(cd)										Appendix Page: 17 Total:19	
C/γ(°)	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0		
0.0	13770.00	13843.13	13635.00	13275.00	12600.00	11700.00	10816.88	9714.38	8713.13		
45.0	13691.25	13314.38	12667.50	11840.63	10923.75	9781.88	8595.00	7515.00	6412.50		
90.0	13606.88	13173.75	12594.38	11041.88	10650.38	9591.19	8490.94	7067.81	5908.50		
135.0	13815.00	13528.13	13111.88	12481.88	11632.50	10580.63	9545.63	8386.88	7306.88		
180.0	13770.00	13539.38	13128.75	12273.75	11154.94	10545.75	9365.06	8147.25	7010.44		
225.0	13691.25	13871.25	13815.00	13533.75	12931.88	12217.50	11203.88	9999.56	8917.88		
270.0	13606.88	13803.75	13786.88	13539.38	13100.63	12313.13	11306.25	10226.25	9101.25		
315.0	13815.00	13803.75	13612.50	13100.63	12431.25	11198.25	10723.50	9439.88	8411.06		
360.0	13770.00	13843.13	13635.00	13275.00	12600.00	11700.00	10816.88	9714.38	8713.13		
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0		
0.0	7526.25	6277.50	5124.38	4033.13	2908.13	2529.56	1869.75	1557.56	1395.56		
45.0	4972.50	3892.50	2975.63	2874.38	1809.00	1571.63	1427.06	1257.75	1158.75		
90.0	4734.56	3438.56	2625.75	2079.00	1706.06	1492.31	1357.31	1235.25	1121.51		
135.0	6001.88	4691.25	3616.88	2936.25	2022.19	1679.63	1474.31	1294.88	1179.00		
180.0	5648.06	4315.50	3287.25	2402.44	1899.00	1564.88	1374.19	1244.25	1112.46		
225.0	7818.19	6415.31	5248.69	4124.25	3013.31	2218.50	1785.94	1500.19	1345.50		
270.0	7678.13	6570.00	5416.88	4297.50	3093.75	2885.63	1902.38	1568.25	1409.06		
315.0	7334.44	6080.63	4793.06	3736.69	2765.81	2113.31	1719.56	1504.69	1350.56		
360.0	7526.25	6277.50	5124.38	4033.13	2908.13	2529.56	1869.75	1557.56	1395.56		
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0		
0.0	1269.56	1158.75	1069.88	1002.38	930.38	858.38	794.25	728.44	673.88		
45.0	1089.00	1002.38	928.69	870.75	785.25	724.50	676.69	621.56	579.94		
90.0	1057.28	969.81	910.41	834.53	755.49	705.26	652.89	588.60	552.26		
135.0	1087.88	1004.06	929.81	867.38	794.25	730.69	673.31	617.63	575.44		
180.0	1041.86	965.42	904.39	836.16	767.53	709.93	656.89	597.09	554.74		
225.0	1182.38	1101.49	1025.10	950.63	881.94	819.73	758.19	686.53	635.46		
270.0	1285.88	1173.38	1081.13	1009.13	930.94	857.25	792.00	722.25	665.44		
315.0	1182.38	1105.48	1029.26	953.55	881.89	819.45	757.80	687.21	636.92		
360.0	1269.56	1158.75	1069.88	1002.38	930.38	858.38	794.25	728.44	673.88		
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0		
0.0	618.19	568.69	529.31	487.13	448.88	416.25	386.44	358.31	333.00		
45.0	537.75	498.94	467.44	438.75	404.44	376.31	354.94	325.13	303.19		
90.0	513.79	473.29	435.77	405.96	375.75	348.53	326.93	304.14	286.31		
135.0	532.69	489.94	457.88	429.19	394.31	366.19	340.88	315.00	295.88		
180.0	516.49	474.75	436.28	404.10	369.28	342.45	321.36	299.59	282.49		
225.0	590.01	549.62	504.11	472.28	442.52	409.16	384.13	360.06	335.14		
270.0	608.06	558.00	517.50	480.94	440.44	410.63	383.63	353.25	331.31		
315.0	591.92	545.18	502.93	469.91	434.93	402.64	375.30	344.70	325.18		
360.0	618.19	568.69	529.31	487.13	448.88	416.25	386.44	358.31	333.00		
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0		
0.0	312.19	290.25	285.75	252.51	235.29	220.84	205.26	186.58	171.23		
45.0	284.63	259.71	239.40	223.82	207.11	189.68	171.17	154.01	139.95		
90.0	267.19	249.75	234.73	218.36	201.43	183.99	167.79	148.28	133.99		
135.0	286.31	258.19	238.28	221.96	208.07	192.71	174.26	159.36	142.99		
180.0	264.38	248.29	234.84	220.28	205.99	191.31	176.40	157.67	143.16		
225.0	312.64	294.02	272.70	253.91	237.09	220.61	208.41	190.46	173.36		
270.0	311.06	289.69	285.75	253.58	237.60	224.04	209.64	192.88	177.64		
315.0	302.79	279.62	264.04	245.25	225.11	212.68	198.62	176.63	163.46		
360.0	312.19	290.25	285.75	252.51	235.29	220.84	205.26	186.58	171.23		

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	156.38	138.71	125.83	114.19	101.42	92.25	83.93	76.44	67.61
45.0	125.44	114.47	104.12	94.05	83.81	76.22	69.30	61.26	56.76
90.0	121.28	109.74	97.88	89.61	81.84	72.56	65.42	58.39	51.53
135.0	127.52	115.31	102.99	93.94	84.88	76.73	69.53	61.71	53.89
180.0	129.60	116.04	104.23	95.18	85.67	76.84	69.53	61.54	54.96
225.0	157.95	142.93	125.83	113.79	103.61	92.59	84.32	76.73	68.34
270.0	160.54	143.78	129.94	117.39	104.18	95.06	86.63	77.91	69.81
315.0	148.56	132.69	118.01	106.82	95.18	87.19	79.59	70.71	64.74
360.0	156.38	138.71	125.83	114.19	101.42	92.25	83.93	76.44	67.61
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	60.98	55.07	49.16	43.93	39.83	35.89	32.51	29.81	27.11
45.0	51.86	42.53	38.31	34.93	31.67	29.03	26.49	24.41	23.23
90.0	45.90	41.74	37.63	34.48	31.33	28.52	26.33	24.30	23.23
135.0	48.49	44.16	39.04	35.38	32.96	29.76	27.28	25.65	23.68
180.0	48.77	43.59	39.60	36.06	32.34	29.70	27.34	24.81	23.46
225.0	60.30	53.83	47.70	43.14	38.76	34.88	31.95	29.14	26.61
270.0	62.72	55.29	48.88	44.33	39.88	36.45	33.02	30.04	27.68
315.0	57.49	50.29	46.07	41.85	36.79	33.98	31.22	28.52	26.16
360.0	60.98	55.07	49.16	43.93	39.83	35.89	32.51	29.81	27.11
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	25.14	23.79	22.84	21.99	21.32	20.31	19.63	19.07	18.23
45.0	22.33	21.43	20.64	20.03	19.18	18.56	18.00	17.44	16.88
90.0	22.39	21.60	20.64	20.03	19.35	18.68	18.00	17.44	16.88
135.0	22.73	21.99	21.04	20.42	19.74	18.96	18.34	17.78	17.16
180.0	22.61	21.77	20.93	20.25	19.46	18.84	18.17	17.55	17.04
225.0	24.75	23.51	22.39	21.66	20.87	20.08	19.35	18.73	18.06
270.0	25.59	23.74	22.89	22.11	21.21	20.42	19.74	19.07	18.34
315.0	24.53	23.46	22.44	21.66	20.81	20.08	19.35	18.62	18.00
360.0	25.14	23.79	22.84	21.99	21.32	20.31	19.63	19.07	18.23
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	17.61	17.16	16.48	15.98	15.64	15.08	14.63	14.18	13.50
45.0	16.43	15.92	15.47	15.02	14.51	14.01	13.39	12.77	12.21
90.0	16.31	15.86	15.41	14.91	14.40	13.84	13.28	12.71	12.04
135.0	16.65	16.20	15.58	15.19	14.74	14.23	13.61	13.05	12.49
180.0	16.48	15.98	15.53	15.08	14.57	14.12	13.61	12.88	12.32
225.0	17.44	16.93	16.37	15.92	15.47	14.96	14.51	14.01	13.44
270.0	17.72	17.21	16.71	16.20	15.69	15.30	14.85	14.34	13.78
315.0	17.44	16.82	16.31	15.81	15.19	14.85	14.40	13.89	13.22
360.0	17.61	17.16	16.48	15.98	15.64	15.08	14.63	14.18	13.50
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	12.83	12.26	11.64	11.03	10.41	9.84	9.34	8.89	8.55
45.0	11.53	10.91	10.41	9.90	9.34	8.83	8.49	8.27	8.27
90.0	11.48	10.91	10.29	9.73	9.17	8.72	8.38	8.21	8.21
135.0	11.81	11.31	10.63	10.13	9.56	9.00	8.61	8.33	8.27
180.0	11.76	11.14	10.52	10.01	9.45	9.00	8.55	8.33	8.27
225.0	12.88	12.32	11.64	11.14	10.52	10.01	9.45	9.06	8.61
270.0	13.16	12.49	11.93	11.36	10.74	10.13	9.56	9.11	8.66
315.0	12.66	12.09	11.48	10.86	10.29	9.84	9.28	8.89	8.49
360.0	12.83	12.26	11.64	11.03	10.41	9.84	9.34	8.89	8.55

Intensity data(cd)

Appendix Page: 19 Total:19

C/ γ (°)	90.0
0.0	8.33
45.0	8.27
90.0	8.21
135.0	8.27
180.0	8.27
225.0	8.33
270.0	8.38
315.0	8.33
360.0	8.33