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Nata

LumCAT: 2-1793-N
Luminaire: 92.70.131.00
Report No: NATA0100
Test No: GC2020010625
LampCAT: LUMINUS CXM-14-AC40
Lamp flux(lm): 2579.0
Number of Lamps: 1
Length(mm): 0
Phm Type: C

Voltage(V): 34.3600
Current(A): 0.6000
Power (W): 20.6160
PF: 0.0000
Ballast type: DC
Width(mm): 0
Height(mm): 0

Photometric Results

Lumens(lm): 2153.40
Efficiency(%): 83.50%
Lumens(lm)/Power(W): 104.45
Central intensity(cd): 11118.660
Maximum intensity(cd): 11118.660
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=18.9
[C90/270]Total=18.9
Field angle(10%Imax): [C0/180]Total=46.9
[C90/270]Total=46.9
Maximum s/h(1/2): C0_180=0.32 C90_270=0.32
Maximum s/h(1/4): C0_180=0.35 C90_270=0.35
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 83.50%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 97.845%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	11118.656	0.000	0	.000%	.000%
1.0	10966.008	10.567	10.567	.410%	.491%
2.0	10698.820	31.095	41.663	1.206%	1.935%
3.0	10233.422	50.063	91.726	1.941%	4.260%
4.0	9661.219	66.594	158.319	2.582%	7.352%
5.0	9022.359	80.376	238.695	3.117%	11.085%
6.0	8213.063	90.577	329.272	3.512%	15.291%
7.0	7442.438	97.173	426.445	3.768%	19.803%
8.0	6710.906	101.293	527.738	3.928%	24.507%
9.0	5887.406	102.102	629.84	3.959%	29.249%
10.0	5121.281	99.625	729.465	3.863%	33.875%
11.0	4484.953	95.986	825.451	3.722%	38.332%
12.0	3880.617	91.448	916.899	3.546%	42.579%
13.0	3325.711	85.521	1002.42	3.316%	46.551%
14.0	2938.148	80.177	1082.597	3.109%	50.274%
15.0	2549.180	75.332	1157.929	2.921%	53.772%
16.0	2300.695	71.064	1228.993	2.755%	57.072%
17.0	2022.961	67.331	1296.324	2.611%	60.199%
18.0	1822.008	63.395	1359.719	2.458%	63.143%
19.0	1664.648	60.661	1420.38	2.352%	65.960%
20.0	1516.008	58.215	1478.595	2.257%	68.663%
21.0	1372.296	55.461	1534.056	2.150%	71.239%
22.0	1264.191	52.981	1587.038	2.054%	73.699%
23.0	1158.377	50.832	1637.87	1.971%	76.060%
24.0	1059.082	48.482	1686.351	1.880%	78.311%
25.0	985.873	46.498	1732.849	1.803%	80.470%
26.0	907.727	44.699	1777.548	1.733%	82.546%
27.0	826.973	42.440	1819.987	1.646%	84.517%
28.0	737.290	39.604	1859.591	1.536%	86.356%
29.0	648.612	36.259	1895.85	1.406%	88.040%
30.0	558.232	32.585	1928.435	1.263%	89.553%
31.0	464.738	28.468	1956.903	1.104%	90.875%
32.0	376.573	24.103	1981.005	.935%	91.994%
33.0	307.772	20.161	2001.166	.782%	92.930%
34.0	232.031	16.336	2017.502	.633%	93.689%
35.0	167.238	12.400	2029.902	.481%	94.265%
36.0	125.416	9.318	2039.22	.361%	94.698%
37.0	88.636	6.981	2046.202	.271%	95.022%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	68.920	5.259	2051.461	.204%	95.266%
39.0	59.048	4.368	2055.828	.169%	95.469%
40.0	53.353	3.920	2059.749	.152%	95.651%
41.0	48.157	3.615	2063.363	.140%	95.819%
42.0	43.882	3.344	2066.707	.130%	95.974%
43.0	40.240	3.116	2069.823	.121%	96.119%
44.0	36.942	2.913	2072.736	.113%	96.254%
45.0	34.186	2.734	2075.47	.106%	96.381%
46.0	31.795	2.580	2078.05	.100%	96.501%
47.0	29.672	2.445	2080.495	.095%	96.614%
48.0	28.013	2.332	2082.827	.090%	96.723%
49.0	26.634	2.244	2085.071	.087%	96.827%
50.0	25.305	2.166	2087.237	.084%	96.927%
51.0	24.307	2.099	2089.336	.081%	97.025%
52.0	23.555	2.054	2091.389	.080%	97.120%
53.0	22.795	2.016	2093.406	.078%	97.214%
54.0	22.226	1.984	2095.39	.077%	97.306%
55.0	21.783	1.964	2097.355	.076%	97.397%
56.0	21.389	1.951	2099.305	.076%	97.488%
57.0	20.974	1.937	2101.242	.075%	97.578%
58.0	20.665	1.926	2103.168	.075%	97.667%
59.0	20.341	1.917	2105.085	.074%	97.756%
60.0	20.060	1.909	2106.994	.074%	97.845%
61.0	19.835	1.904	2108.897	.074%	97.933%
62.0	19.568	1.899	2110.796	.074%	98.021%
63.0	19.315	1.891	2112.687	.073%	98.109%
64.0	18.998	1.880	2114.567	.073%	98.197%
65.0	18.591	1.860	2116.428	.072%	98.283%
66.0	18.169	1.834	2118.262	.071%	98.368%
67.0	17.740	1.806	2120.067	.070%	98.452%
68.0	17.234	1.772	2121.839	.069%	98.534%
69.0	16.819	1.737	2123.576	.067%	98.615%
70.0	16.411	1.707	2125.283	.066%	98.694%
71.0	15.982	1.674	2126.957	.065%	98.772%
72.0	15.581	1.641	2128.598	.064%	98.848%
73.0	15.216	1.610	2130.208	.062%	98.923%
74.0	14.857	1.581	2131.789	.061%	98.996%
75.0	14.505	1.551	2133.341	.060%	99.068%

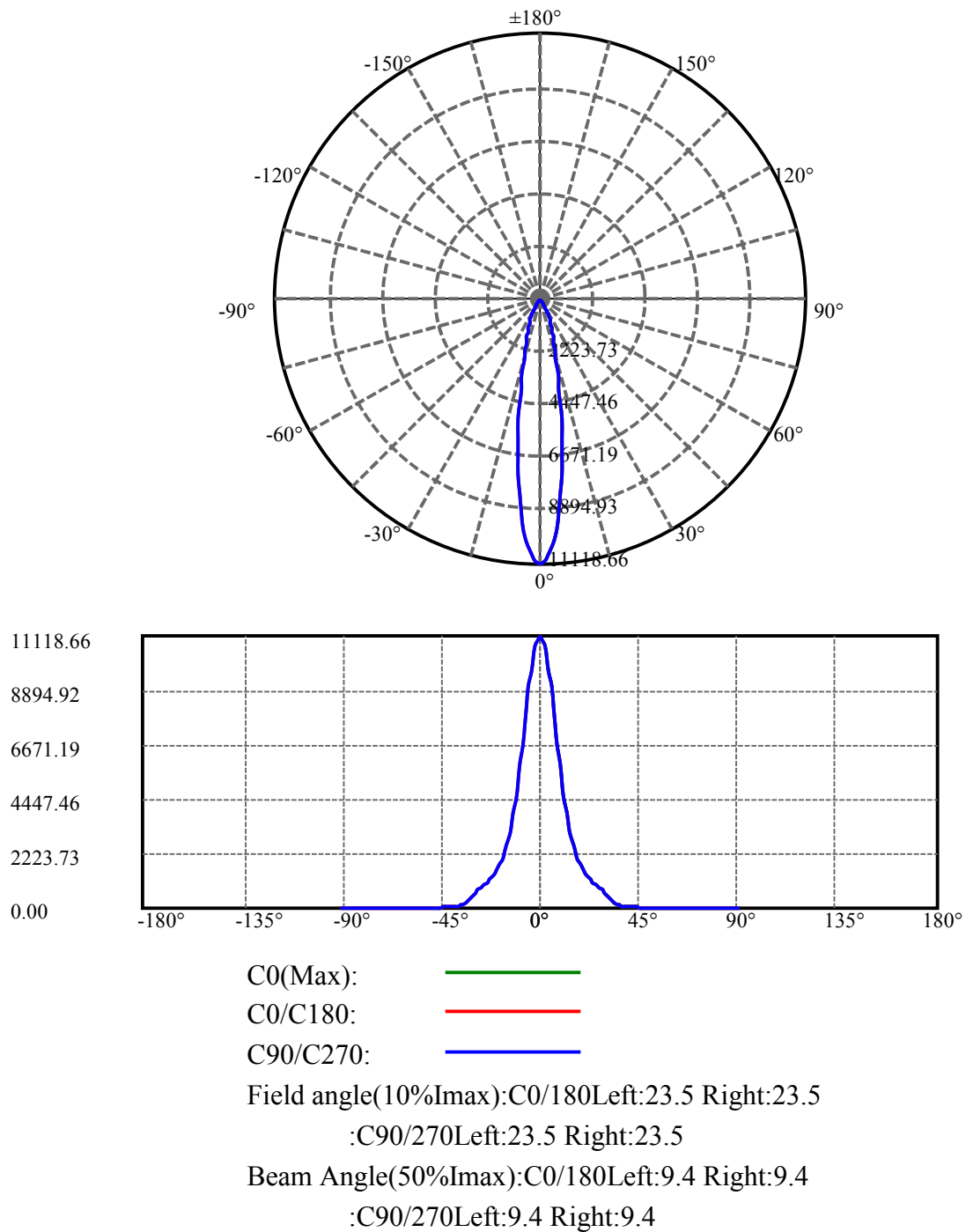
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	14.203	1.524	2134.865	.059%	99.139%
77.0	13.880	1.497	2136.362	.058%	99.209%
78.0	13.584	1.470	2137.832	.057%	99.277%
79.0	13.275	1.443	2139.275	.056%	99.344%
80.0	12.994	1.416	2140.692	.055%	99.410%
81.0	12.734	1.391	2142.083	.054%	99.474%
82.0	12.480	1.367	2143.45	.053%	99.538%
83.0	12.227	1.343	2144.793	.052%	99.600%
84.0	11.960	1.318	2146.111	.051%	99.661%
85.0	11.742	1.294	2147.405	.050%	99.722%
86.0	11.377	1.264	2148.668	.049%	99.780%
87.0	11.088	1.229	2149.898	.048%	99.837%
88.0	10.737	1.196	2151.093	.046%	99.893%
89.0	10.505	1.164	2152.258	.045%	99.947%
90.0	10.357	1.144	2153.401	.044%	100.000%

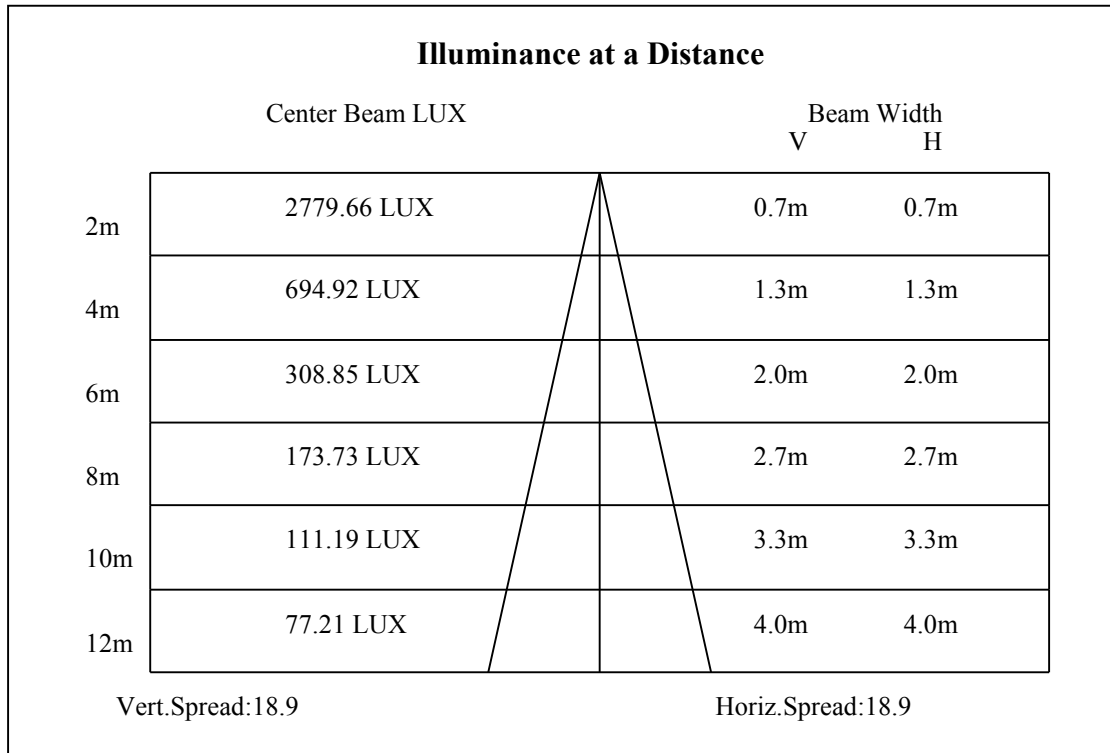
ZONAL LUMEN SUMMARY

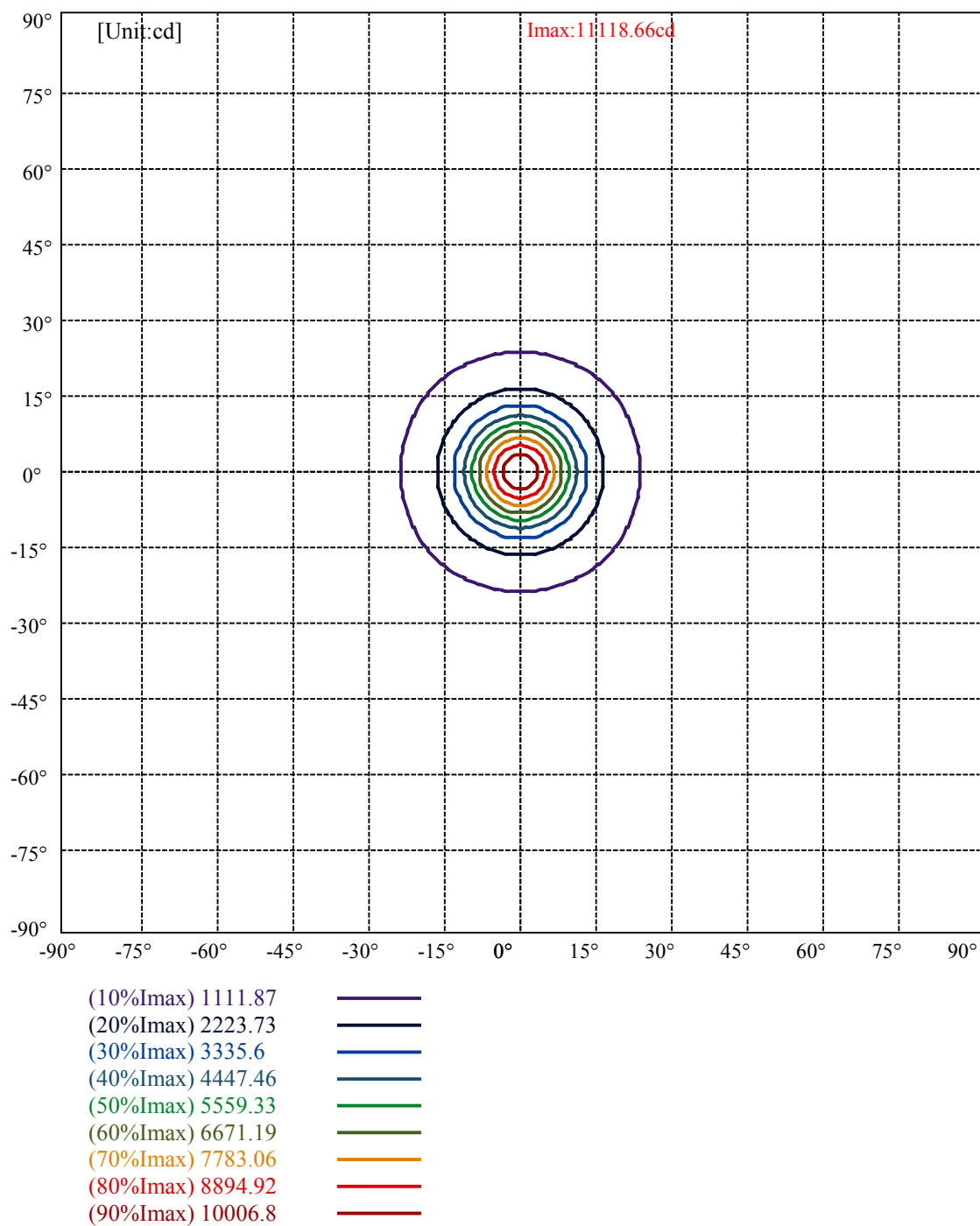
Zone	Lumens	%Lamp	%Fixt
0-30	1928.43	74.77%	89.55%
0-40	2059.75	79.87%	95.65%
0-60	2106.99	81.70%	97.84%
0-90	2152.26	83.45%	99.95%
0-120	2152.26	83.45%	99.95%
0-180	2153.40	83.50%	100.00%
60-90	47.17	1.83%	2.19%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-24.78	1722.72	66.80%	80.00%

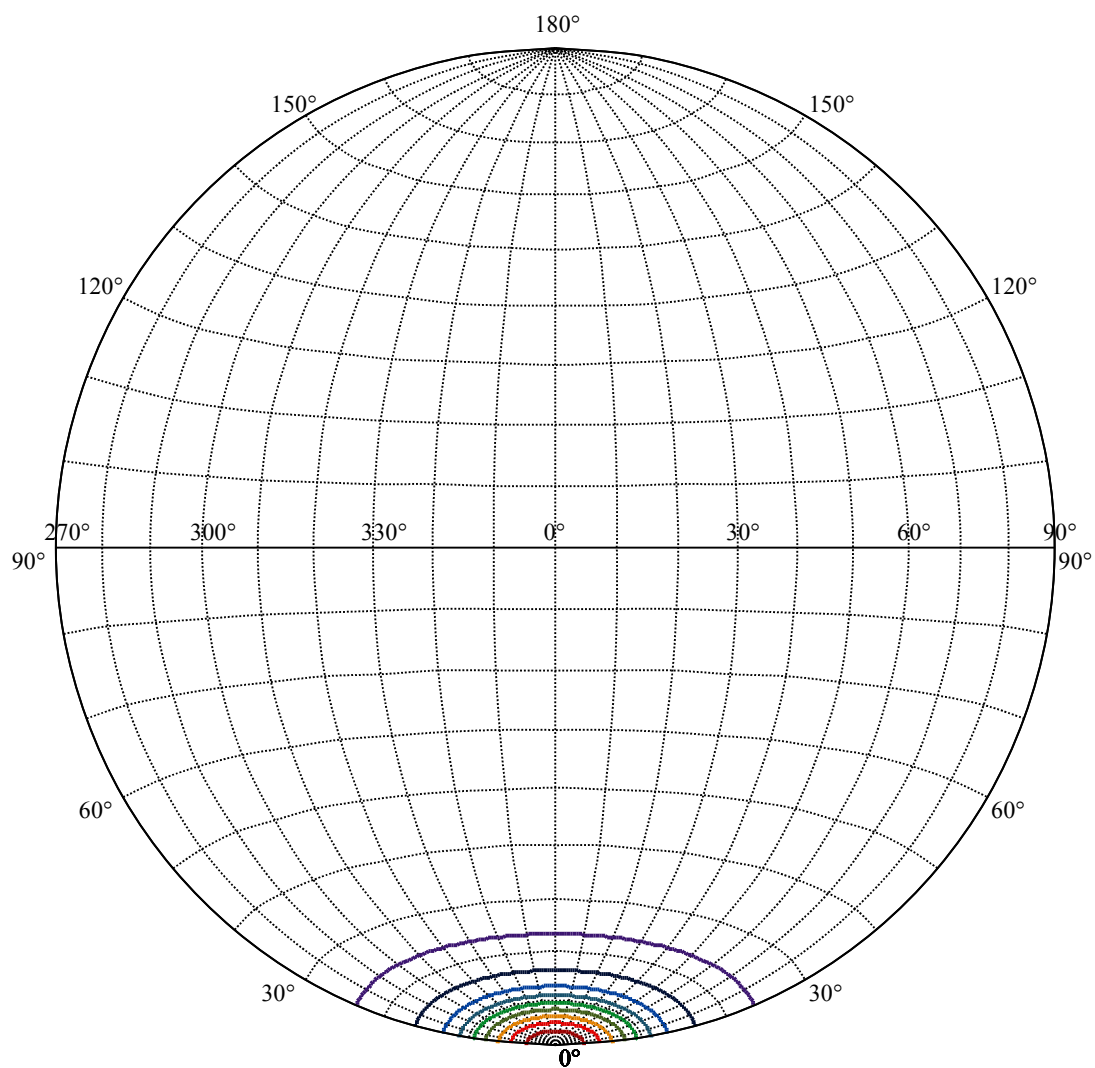
ZONAL LUMEN SUMMARY

0-10	729.47
10-20	749.13
20-30	449.84
30-40	131.31
40-50	27.49
50-60	19.76
60-70	18.29
70-80	15.41
80-90	11.57
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









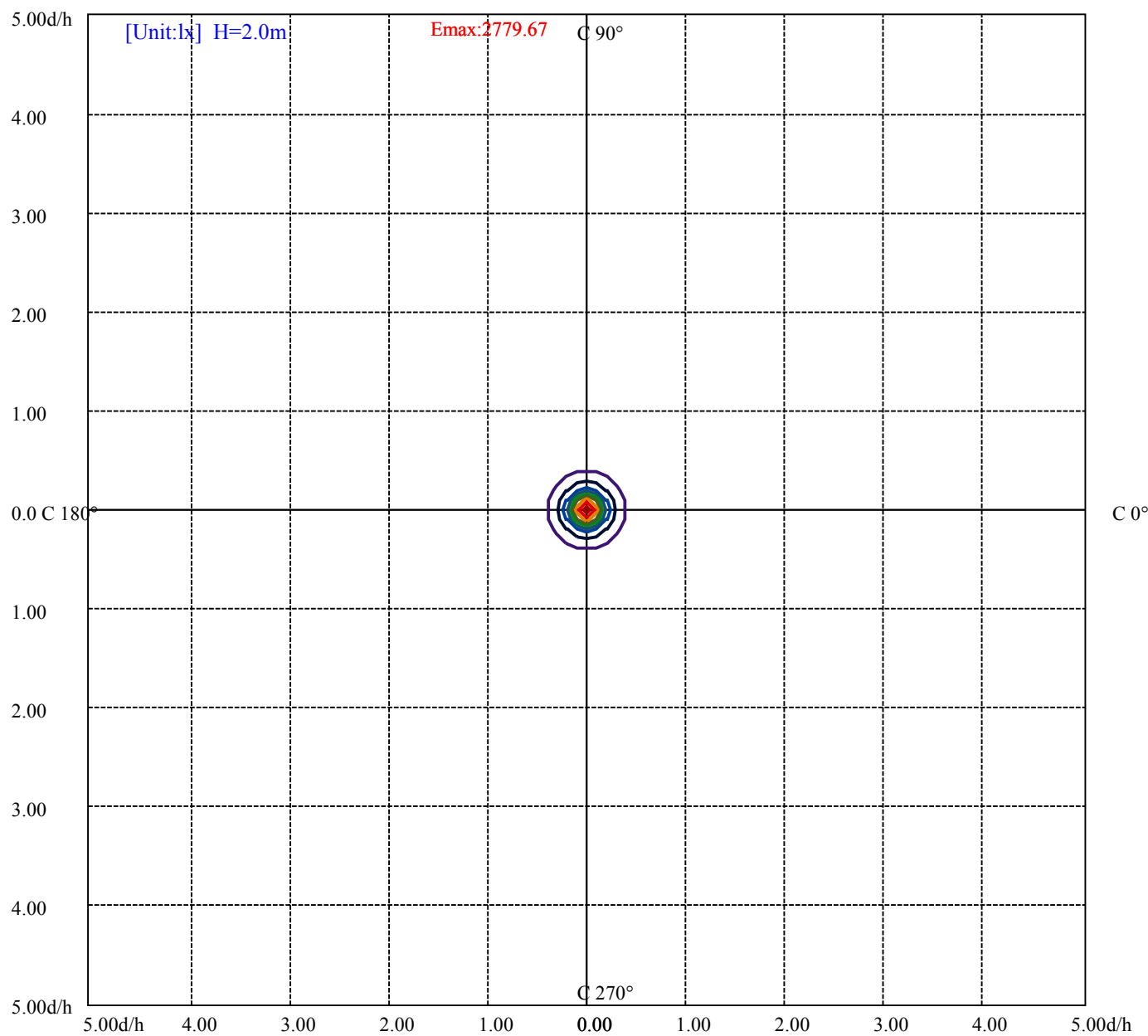
House

[Unit:cd]

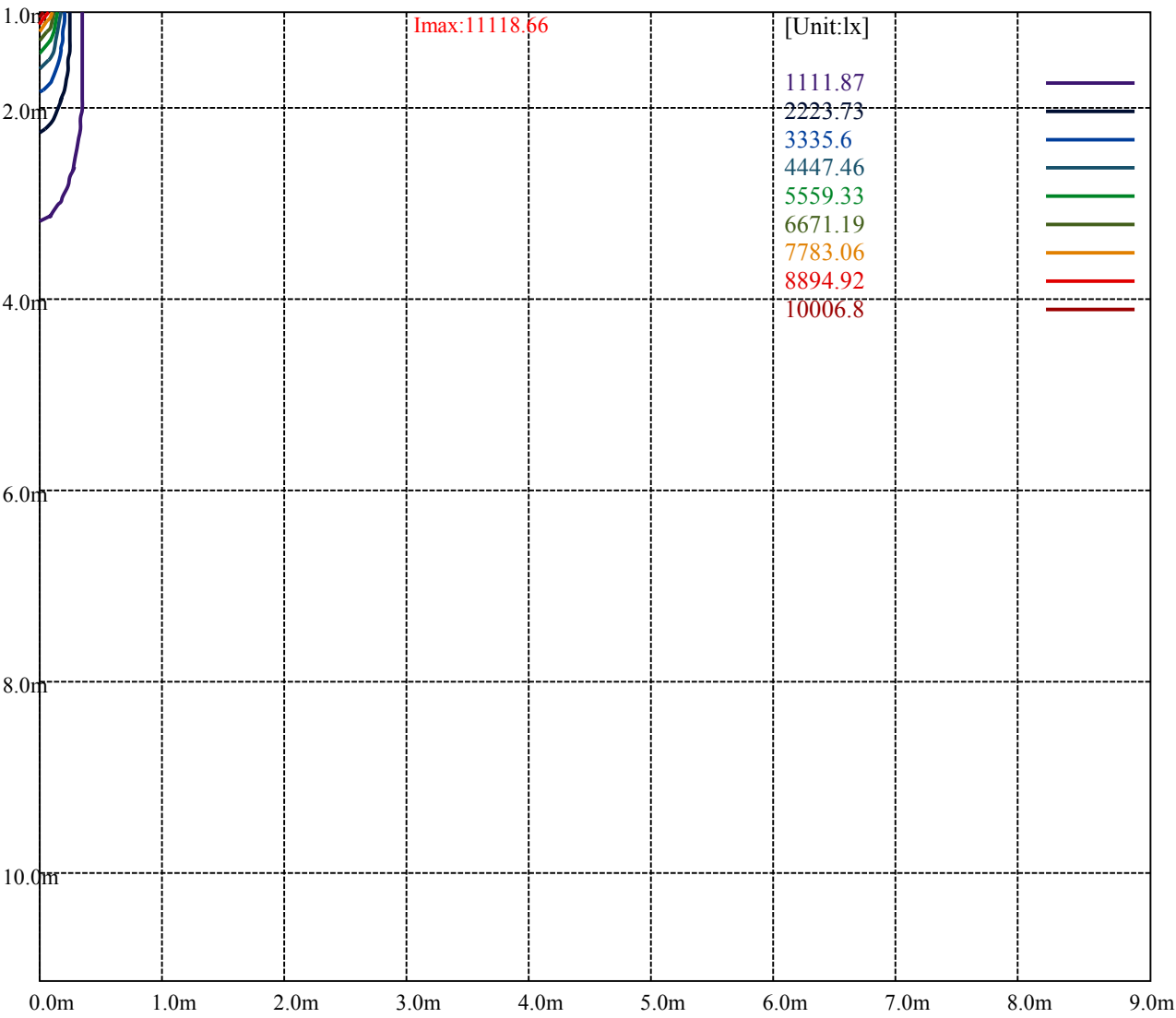
Road

Imax:11118.66

(10%Imax)	1111.87	
(20%Imax)	2223.73	
(30%Imax)	3335.6	
(40%Imax)	4447.46	
(50%Imax)	5559.33	
(60%Imax)	6671.19	
(70%Imax)	7783.06	
(80%Imax)	8894.92	
(90%Imax)	10006.8	



(10%Emax) 277.965	—
(20%Emax) 555.9325	—
(30%Emax) 833.8975	—
(40%Emax) 1111.863	—
(50%Emax) 1389.83	—
(60%Emax) 1667.795	—
(70%Emax) 1945.76	—
(80%Emax) 2223.728	—
(90%Emax) 2501.7	—



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

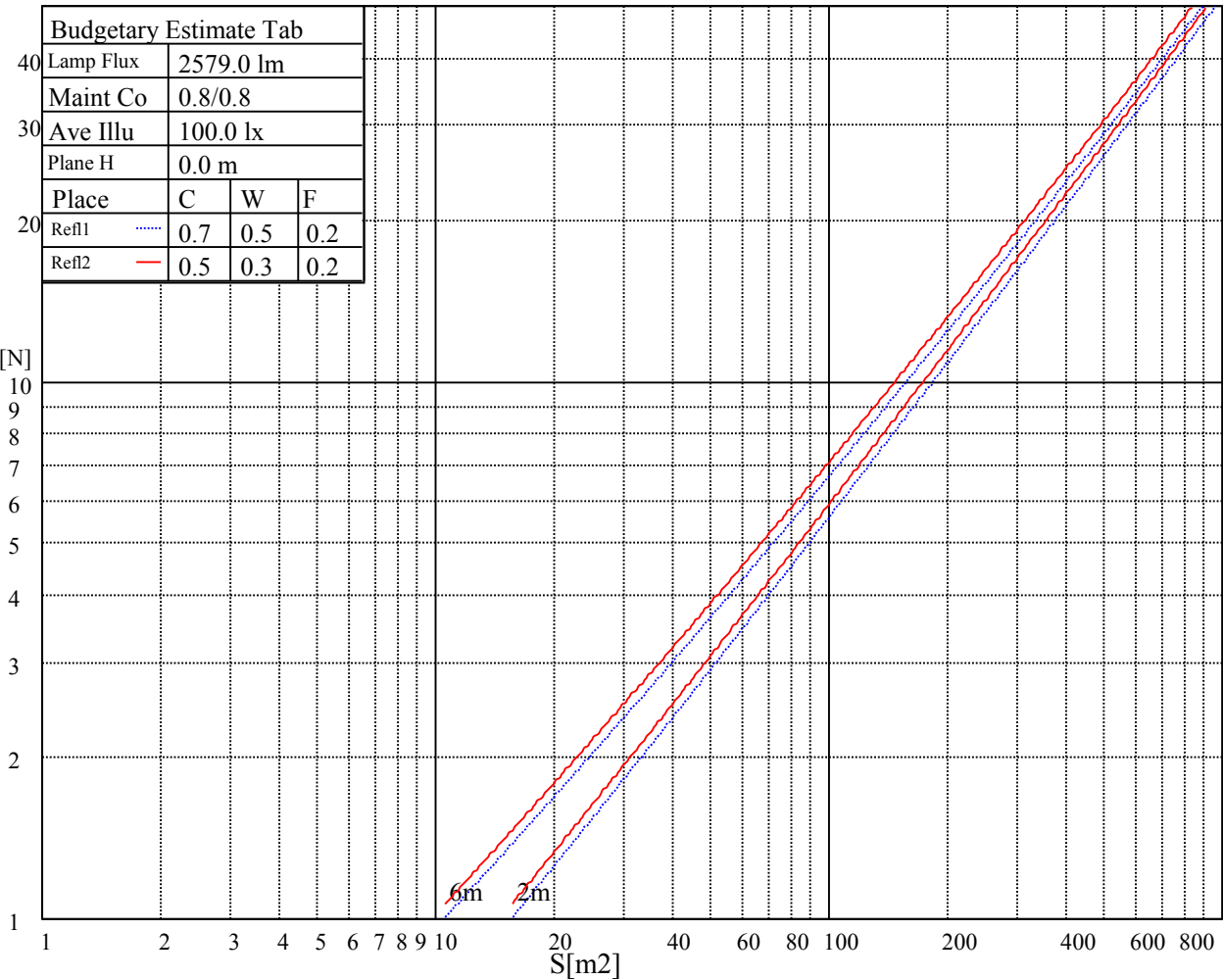
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

Glare Table

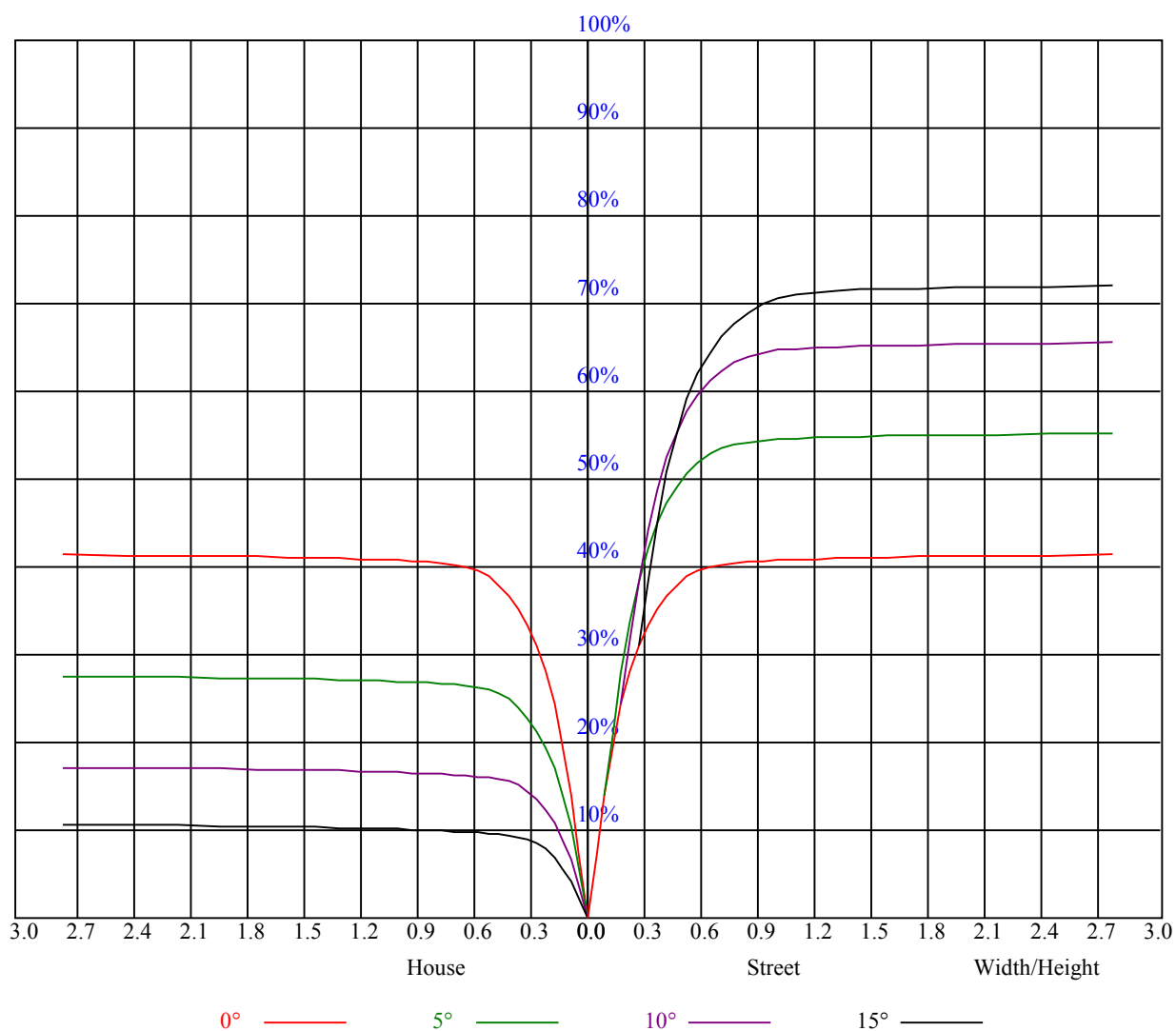
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

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	0.99	0.99	0.99	0.97	0.97	0.97	0.93	0.93	0.93	0.89	0.89	0.89	0.85	0.85	0.85	0.83
1	0.93	0.92	0.90	0.92	0.90	0.89	0.88	0.87	0.86	0.85	0.84	0.83	0.82	0.82	0.81	0.79
2	0.88	0.86	0.83	0.87	0.85	0.82	0.84	0.82	0.81	0.82	0.80	0.79	0.80	0.78	0.77	0.76
3	0.84	0.81	0.78	0.83	0.80	0.78	0.81	0.78	0.76	0.79	0.77	0.75	0.77	0.76	0.74	0.73
4	0.80	0.77	0.74	0.80	0.76	0.74	0.78	0.75	0.73	0.76	0.74	0.72	0.75	0.73	0.71	0.70
5	0.77	0.73	0.71	0.76	0.73	0.70	0.75	0.72	0.70	0.74	0.71	0.69	0.73	0.70	0.69	0.68
6	0.74	0.70	0.68	0.74	0.70	0.67	0.72	0.69	0.67	0.71	0.69	0.67	0.70	0.68	0.66	0.65
7	0.72	0.68	0.65	0.71	0.67	0.65	0.70	0.67	0.65	0.69	0.66	0.64	0.68	0.66	0.64	0.63
8	0.69	0.65	0.63	0.69	0.65	0.63	0.68	0.65	0.62	0.67	0.64	0.62	0.66	0.64	0.62	0.61
9	0.67	0.63	0.61	0.66	0.63	0.61	0.66	0.63	0.60	0.65	0.62	0.60	0.65	0.62	0.60	0.59
10	0.65	0.61	0.59	0.64	0.61	0.59	0.64	0.61	0.59	0.63	0.60	0.58	0.63	0.60	0.58	0.57



Intensity data(cd)

C/γ(°)	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0
0.0	10945.13	11204.44	11435.63	11300.63	10912.50	10423.13	9736.88	8977.50	8257.50
45.0	11036.25	11210.63	11266.88	11030.63	10591.88	10074.38	9393.75	8611.88	7880.63
90.0	11130.75	11024.44	10740.94	10175.63	9594.56	8964.56	8087.63	7347.38	6603.75
135.0	11362.50	10873.13	10417.50	9871.88	9168.75	8392.50	7661.25	6817.50	6091.88
180.0	10945.13	10505.25	9861.75	9118.13	8410.50	7675.31	6733.69	5968.13	5234.63
225.0	11036.25	10657.69	10064.25	9380.81	8701.31	7971.75	7042.50	6301.69	5578.88
270.0	11130.75	11026.69	10710.56	10289.81	9684.00	9041.63	8255.25	7441.88	6717.38
315.0	11362.50	11225.81	11093.06	10699.88	10226.25	9635.63	8793.56	8073.56	7322.63
360.0	10945.13	11204.44	11435.63	11300.63	10912.50	10423.13	9736.88	8977.50	8257.50
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	7413.75	6570.00	5844.38	5146.88	4410.00	3768.75	3285.00	2891.25	2510.44
45.0	7048.13	6198.75	5456.25	4764.38	3982.50	3436.88	3003.75	2851.88	2266.88
90.0	5764.50	4971.94	4325.63	3701.81	3176.44	2793.94	2451.94	2215.13	1988.44
135.0	5298.75	4550.63	3960.00	3448.13	2925.00	2880.00	2316.94	2043.56	1857.38
180.0	4483.13	3830.63	3335.63	2885.06	2520.56	2261.81	2026.13	1851.19	1677.94
225.0	4811.63	4122.00	3598.88	3102.75	2696.06	2409.19	2151.00	1959.19	1773.00
270.0	5906.81	5116.50	4463.44	3887.44	3277.13	2868.75	2532.94	2233.13	1989.00
315.0	6372.56	5609.81	4895.44	4108.50	3618.00	3085.88	2625.75	2360.25	2120.63
360.0	7413.75	6570.00	5844.38	5146.88	4410.00	3768.75	3285.00	2891.25	2510.44
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	2271.38	2072.25	1865.25	1716.75	1583.44	1441.13	1308.38	1211.06	1098.56
45.0	2019.94	1816.88	1625.06	1476.00	1346.63	1216.69	1090.13	996.75	925.31
90.0	1792.69	1645.88	1514.25	1362.94	1255.50	1112.34	1056.15	990.84	930.77
135.0	1693.13	1546.31	1401.75	1282.50	1171.13	1067.06	999.56	936.56	862.31
180.0	1522.13	1398.38	1282.50	1117.74	1067.46	995.51	917.78	840.66	749.93
225.0	1614.38	1487.81	1371.38	1232.44	1115.94	1061.10	971.10	912.26	830.36
270.0	1798.88	1618.88	1466.44	1342.13	1213.31	1109.25	1010.81	927.00	861.75
315.0	1863.56	1730.81	1601.44	1447.88	1360.13	1263.94	1118.76	1071.84	1002.83
360.0	2271.38	2072.25	1865.25	1716.75	1583.44	1441.13	1308.38	1211.06	1098.56
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	1026.00	957.38	876.38	790.31	690.19	588.38	499.50	413.44	309.94
45.0	870.75	811.69	741.38	665.44	576.56	486.56	405.56	331.31	288.00
90.0	850.78	753.36	662.34	569.70	468.90	374.91	287.89	217.69	146.31
135.0	763.88	672.19	571.50	478.69	380.81	298.13	289.69	149.91	97.43
180.0	645.30	542.76	454.95	360.90	284.01	205.71	145.52	94.11	73.97
225.0	729.17	623.31	530.38	427.67	345.94	259.99	180.68	123.75	80.38
270.0	789.19	684.56	598.50	514.69	415.69	344.25	285.19	246.32	136.91
315.0	940.73	853.09	753.47	658.46	555.81	454.67	368.16	279.73	204.98
360.0	1026.00	957.38	876.38	790.31	690.19	588.38	499.50	413.44	309.94
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	290.81	161.78	101.53	74.76	67.28	59.57	53.89	50.06	45.23
45.0	179.83	130.11	90.79	77.63	68.68	60.02	54.39	49.61	44.78
90.0	99.79	74.42	66.43	57.99	52.71	48.71	43.82	40.44	37.52
135.0	74.93	66.32	56.93	51.58	47.36	42.58	38.87	35.66	32.79
180.0	65.25	58.16	53.33	48.04	44.16	40.95	38.03	35.10	33.02
225.0	65.53	57.66	51.24	45.68	41.79	38.25	34.88	32.01	29.59
270.0	93.83	73.74	61.43	54.28	49.95	44.83	40.67	37.01	34.26
315.0	133.37	86.91	69.69	62.44	54.90	50.34	46.52	42.02	38.36
360.0	290.81	161.78	101.53	74.76	67.28	59.57	53.89	50.06	45.23

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	41.51	38.03	34.93	32.68	30.71	28.74	27.28	26.38	25.20
45.0	41.12	37.80	35.10	32.85	30.88	29.42	27.96	27.00	25.93
90.0	34.26	32.29	30.04	28.01	26.78	25.26	24.08	23.34	22.61
135.0	30.32	28.35	26.72	25.48	24.13	23.23	22.33	21.71	20.98
180.0	31.28	29.70	28.35	27.34	26.38	25.43	24.75	24.19	23.68
225.0	27.73	25.71	24.53	23.18	22.28	21.49	20.87	20.31	19.97
270.0	31.89	29.93	27.68	26.38	25.14	23.79	22.89	22.16	21.38
315.0	35.38	32.57	30.04	28.18	26.78	25.09	24.30	23.34	22.61
360.0	41.51	38.03	34.93	32.68	30.71	28.74	27.28	26.38	25.20
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	24.53	23.96	23.29	22.95	22.56	22.22	22.05	21.71	21.60
45.0	25.20	24.53	24.13	23.40	22.95	22.33	21.71	21.26	20.76
90.0	21.77	21.49	21.04	20.70	20.42	20.08	19.91	19.69	19.41
135.0	20.64	20.25	19.86	19.58	19.24	19.07	18.90	18.68	18.56
180.0	23.18	22.78	22.39	21.88	21.71	21.49	21.26	21.21	20.87
225.0	19.58	19.18	19.13	18.73	18.68	18.51	18.23	18.23	18.06
270.0	20.93	20.59	20.14	19.80	19.46	19.07	18.79	18.56	18.23
315.0	21.99	21.49	21.15	20.76	20.31	19.97	19.63	19.35	19.07
360.0	24.53	23.96	23.29	22.95	22.56	22.22	22.05	21.71	21.60
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	21.43	21.26	21.04	20.70	20.31	19.74	19.13	18.68	18.11
45.0	20.25	19.80	19.46	18.84	18.34	17.78	17.16	16.71	16.20
90.0	19.24	18.96	18.45	18.00	17.44	16.93	16.54	16.03	15.64
135.0	18.39	18.00	17.61	17.21	16.71	16.31	15.92	15.64	15.13
180.0	20.53	20.19	19.63	19.24	18.84	18.39	18.06	17.61	17.27
225.0	17.78	17.44	17.04	16.59	16.26	15.75	15.47	15.13	14.79
270.0	18.06	17.72	17.21	16.88	16.48	15.98	15.69	15.30	14.91
315.0	18.84	18.62	18.28	17.89	17.55	16.99	16.59	16.20	15.81
360.0	21.43	21.26	21.04	20.70	20.31	19.74	19.13	18.68	18.11
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	17.55	17.16	16.71	16.26	15.92	15.53	15.24	14.91	14.63
45.0	15.81	15.53	15.08	14.63	14.34	13.95	13.61	13.28	12.99
90.0	15.13	14.79	14.46	14.06	13.67	13.33	13.05	12.71	12.43
135.0	14.79	14.46	14.06	13.78	13.56	13.22	12.94	12.66	12.38
180.0	16.88	16.48	16.20	15.86	15.58	15.36	15.08	14.74	14.51
225.0	14.51	14.12	13.84	13.56	13.28	12.99	12.71	12.43	12.15
270.0	14.51	14.23	13.84	13.56	13.28	12.99	12.71	12.43	12.15
315.0	15.47	14.96	14.68	14.34	14.01	13.67	13.33	13.05	12.71
360.0	17.55	17.16	16.71	16.26	15.92	15.53	15.24	14.91	14.63
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	14.40	14.18	13.95	13.78	13.56	13.11	12.66	12.38	12.04
45.0	12.71	12.43	12.21	11.93	11.76	11.48	11.14	10.80	10.58
90.0	12.15	11.87	11.53	11.25	10.97	10.63	10.46	10.24	10.07
135.0	12.09	11.87	11.59	11.36	11.14	10.91	10.74	10.41	10.24
180.0	14.29	14.12	13.84	13.56	13.39	12.43	11.81	10.80	10.41
225.0	11.93	11.64	11.48	11.08	10.86	10.58	10.41	10.18	10.07
270.0	11.87	11.59	11.31	11.08	10.86	10.63	10.41	10.24	10.07
315.0	12.43	12.15	11.93	11.64	11.42	11.25	11.08	10.86	10.58
360.0	14.40	14.18	13.95	13.78	13.56	13.11	12.66	12.38	12.04

Intensity data(cd)

Appendix Page: 18 Total:18

C/ γ (°)	90.0
0.0	11.81
45.0	10.35
90.0	9.96
135.0	10.13
180.0	10.35
225.0	9.96
270.0	9.96
315.0	10.35
360.0	11.81