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Nata

LumCAT: 2-1258-N

Luminaire: 92.70.045.00+92.70.059.00

Report No: NATA0100

Test No: GC2018062208

LampCAT: NICHIA NFCWJ120B-V3

Lamp flux(lm): 2303.0

Number of Lamps: 1

Length(mm): 70

Phm Type: C

Voltage(V): 33.7000

Current(A): 0.5000

Power (W): 16.8500

PF: 0.0000

Ballast type: DC

Width(mm): 70

Height(mm): 0

Photometric Results

Lumens(lm): 1777.14

Efficiency(%): 77.17%

Lumens(lm)/Power(W): 105.47

Central intensity(cd): 8852.795

Maximum intensity(cd): 8852.795

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=19.9

[C90/270]Total=19.9

Field angle(10%Imax): [C0/180]Total=40.7

[C90/270]Total=40.7

Maximum s/h(1/2): C0_180=0.34 C90_270=0.34

Maximum s/h(1/4): C0_180=0.33 C90_270=0.33

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 77.26%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 97.495%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	8852.794	2.118	2.118	.092%	.119%
1.0	8825.816	16.891	19.009	.733%	1.070%
2.0	8714.809	33.353	52.362	1.448%	2.946%
3.0	8543.102	49.031	101.392	2.129%	5.705%
4.0	8290.874	63.422	164.814	2.754%	9.274%
5.0	7864.325	75.164	239.978	3.264%	13.504%
6.0	7306.535	83.752	323.73	3.637%	18.216%
7.0	6705.870	89.619	413.35	3.891%	23.259%
8.0	5925.376	90.432	503.782	3.927%	28.348%
9.0	5153.623	88.409	592.191	3.839%	33.323%
10.0	4385.242	83.506	675.696	3.626%	38.021%
11.0	3614.109	75.623	751.319	3.284%	42.277%
12.0	3029.203	69.065	820.384	2.999%	46.163%
13.0	2511.398	61.952	882.336	2.690%	49.649%
14.0	2053.328	54.474	936.81	2.365%	52.714%
15.0	1758.020	49.897	986.706	2.167%	55.522%
16.0	1521.215	45.981	1032.688	1.997%	58.109%
17.0	1303.495	41.792	1074.48	1.815%	60.461%
18.0	1153.081	39.075	1113.554	1.697%	62.660%
19.0	1034.138	36.921	1150.475	1.603%	64.737%
20.0	918.582	34.453	1184.928	1.496%	66.676%
21.0	829.755	32.608	1217.536	1.416%	68.511%
22.0	759.847	31.214	1248.751	1.355%	70.267%
23.0	693.952	29.734	1278.485	1.291%	71.940%
24.0	631.944	28.187	1306.672	1.224%	73.527%
25.0	584.878	27.106	1333.778	1.177%	75.052%
26.0	538.665	25.895	1359.672	1.124%	76.509%
27.0	497.042	24.745	1384.418	1.074%	77.901%
28.0	458.166	23.588	1408.005	1.024%	79.229%
29.0	421.464	22.407	1430.412	.973%	80.489%
30.0	387.521	21.248	1451.66	.923%	81.685%
31.0	357.268	20.178	1471.838	.876%	82.820%
32.0	328.157	19.070	1490.908	.828%	83.894%
33.0	303.650	18.136	1509.044	.787%	84.914%
34.0	283.417	17.380	1526.423	.755%	85.892%
35.0	260.073	16.358	1542.782	.710%	86.812%
36.0	237.782	15.327	1558.108	.666%	87.675%
37.0	223.384	14.742	1572.851	.640%	88.504%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	203.991	13.772	1586.623	.598%	89.279%
39.0	186.497	12.870	1599.493	.559%	90.004%
40.0	173.242	12.212	1611.705	.530%	90.691%
41.0	160.551	11.551	1623.256	.502%	91.341%
42.0	145.858	10.703	1633.958	.465%	91.943%
43.0	133.539	9.987	1643.946	.434%	92.505%
44.0	122.597	9.339	1653.285	.406%	93.030%
45.0	111.634	8.656	1661.941	.376%	93.518%
46.0	101.889	8.037	1669.978	.349%	93.970%
47.0	93.162	7.472	1677.45	.324%	94.390%
48.0	84.284	6.869	1684.319	.298%	94.777%
49.0	76.989	6.372	1690.691	.277%	95.135%
50.0	69.798	5.863	1696.554	.255%	95.465%
51.0	63.129	5.380	1701.934	.234%	95.768%
52.0	57.782	4.993	1706.927	.217%	96.049%
53.0	52.538	4.601	1711.528	.200%	96.308%
54.0	47.170	4.185	1715.713	.182%	96.543%
55.0	43.068	3.869	1719.582	.168%	96.761%
56.0	39.241	3.568	1723.149	.155%	96.962%
57.0	35.112	3.229	1726.379	.140%	97.143%
58.0	31.995	2.975	1729.354	.129%	97.311%
59.0	29.359	2.760	1732.114	.120%	97.466%
60.0	26.461	2.513	1734.627	.109%	97.608%
61.0	24.239	2.325	1736.951	.101%	97.738%
62.0	22.463	2.175	1739.126	.094%	97.861%
63.0	20.715	2.024	1741.15	.088%	97.975%
64.0	19.442	1.916	1743.067	.083%	98.082%
65.0	18.389	1.828	1744.894	.079%	98.185%
66.0	17.549	1.758	1746.652	.076%	98.284%
67.0	16.944	1.710	1748.363	.074%	98.380%
68.0	16.379	1.665	1750.028	.072%	98.474%
69.0	15.849	1.623	1751.651	.070%	98.566%
70.0	15.416	1.589	1753.239	.069%	98.655%
71.0	15.003	1.556	1754.795	.068%	98.742%
72.0	14.590	1.522	1756.316	.066%	98.828%
73.0	14.253	1.495	1757.811	.065%	98.912%
74.0	13.943	1.470	1759.281	.064%	98.995%
75.0	13.585	1.439	1760.72	.062%	99.076%

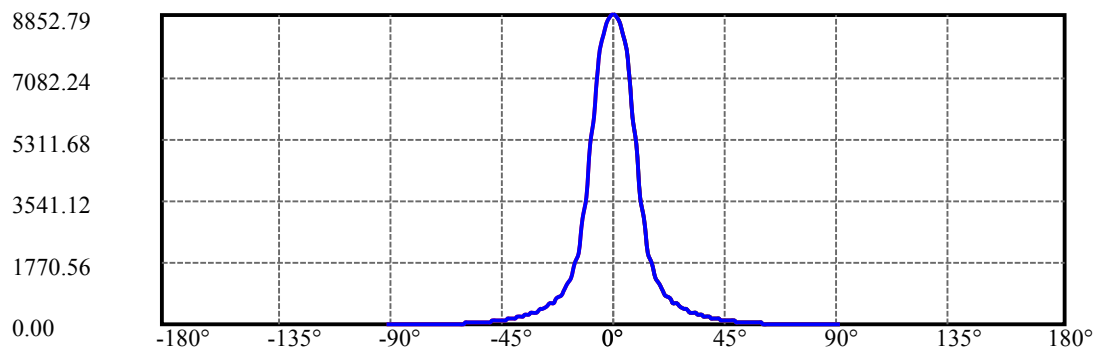
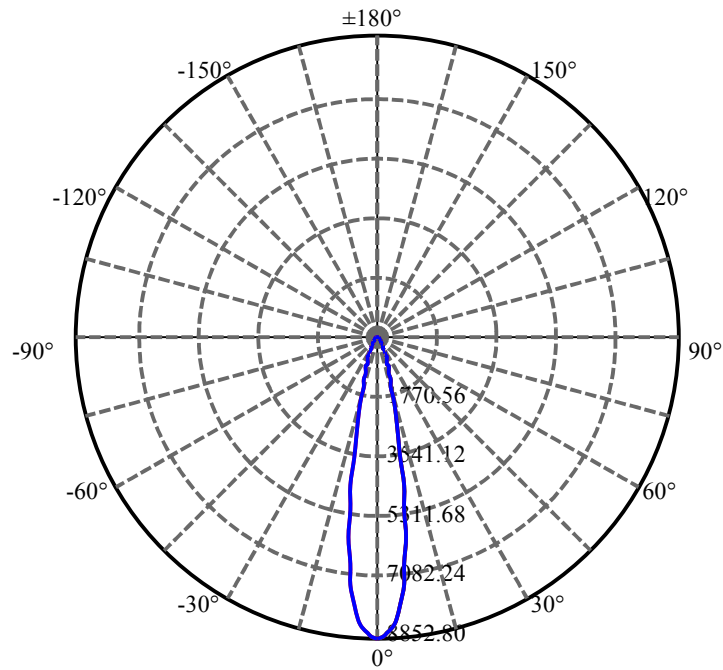
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	13.282	1.413	1762.133	.061%	99.155%
77.0	12.959	1.385	1763.518	.060%	99.233%
78.0	12.574	1.349	1764.867	.059%	99.309%
79.0	12.161	1.309	1766.176	.057%	99.383%
80.0	11.768	1.271	1767.447	.055%	99.454%
81.0	11.314	1.225	1768.672	.053%	99.523%
82.0	10.887	1.182	1769.854	.051%	99.590%
83.0	10.433	1.136	1770.99	.049%	99.654%
84.0	9.924	1.082	1772.072	.047%	99.715%
85.0	9.456	1.033	1773.105	.045%	99.773%
86.0	8.871	0.970	1774.076	.042%	99.827%
87.0	8.444	0.925	1775	.040%	99.879%
88.0	8.004	0.877	1775.877	.038%	99.929%
89.0	7.749	0.850	1776.727	.037%	99.977%
90.0	7.598	0.417	1777.144	.018%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1451.66	63.03%	81.69%
0-40	1611.71	69.98%	90.69%
0-60	1734.63	75.32%	97.61%
0-90	1776.73	77.15%	99.98%
0-120	1776.73	77.15%	99.98%
0-180	1777.14	77.17%	100.00%
60-90	44.61	1.94%	2.51%
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%
0-28.61	1421.72	61.73%	80.00%

ZONAL LUMEN SUMMARY

0-10	675.70
10-20	509.23
20-30	266.73
30-40	160.04
40-50	84.85
50-60	38.07
60-70	18.61
70-80	14.21
80-90	9.28
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:

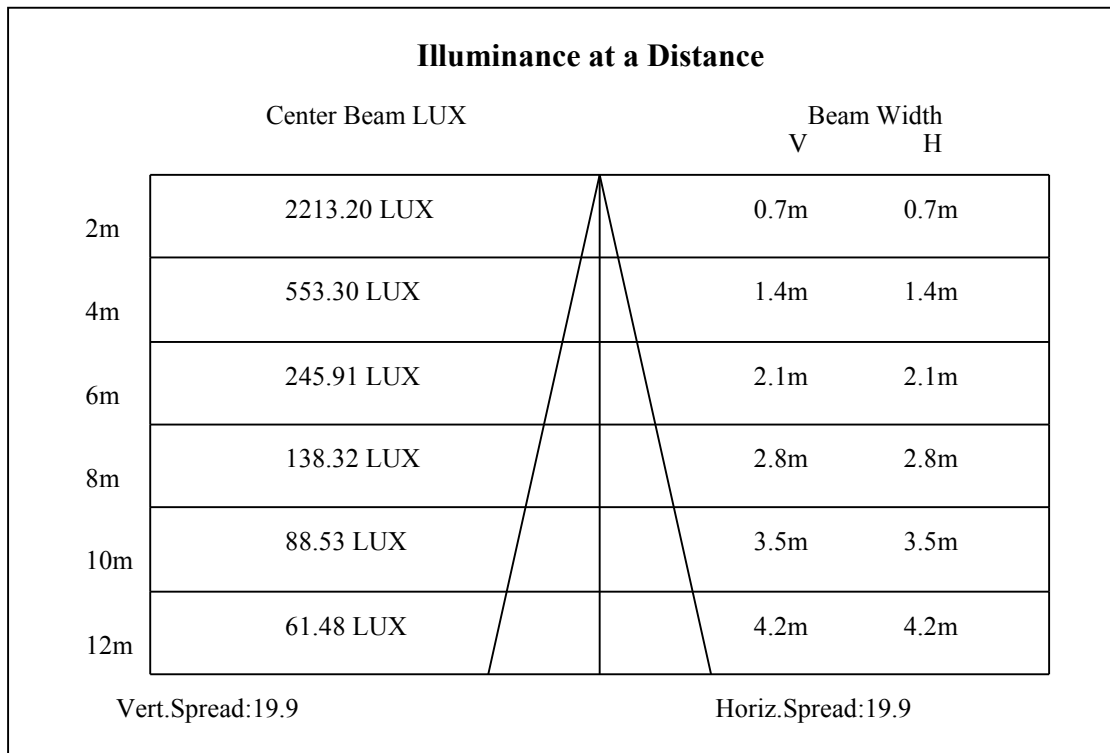
C90/C270:

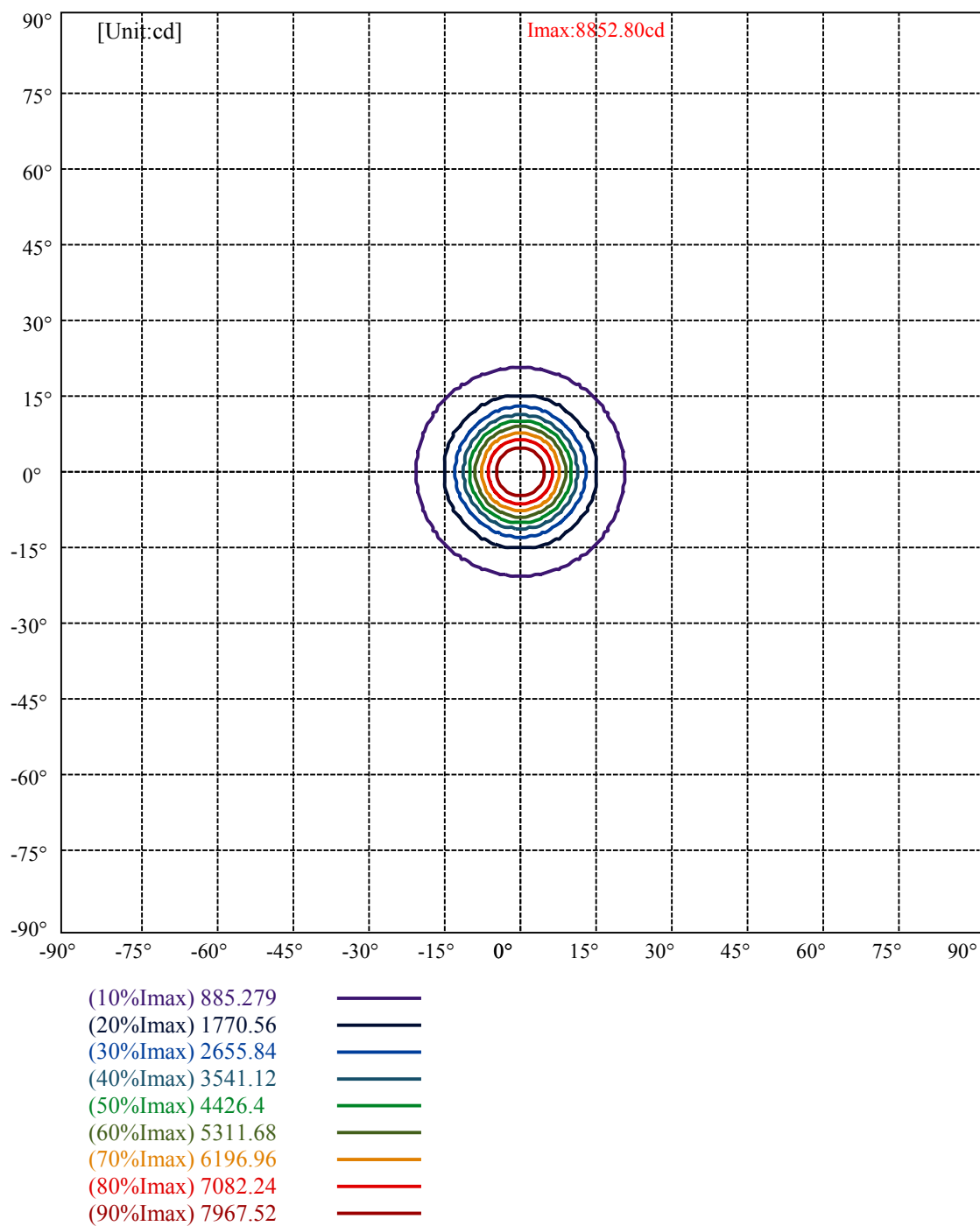
Field angle(10%Imax):C0/180Left:20.4 Right:20.4

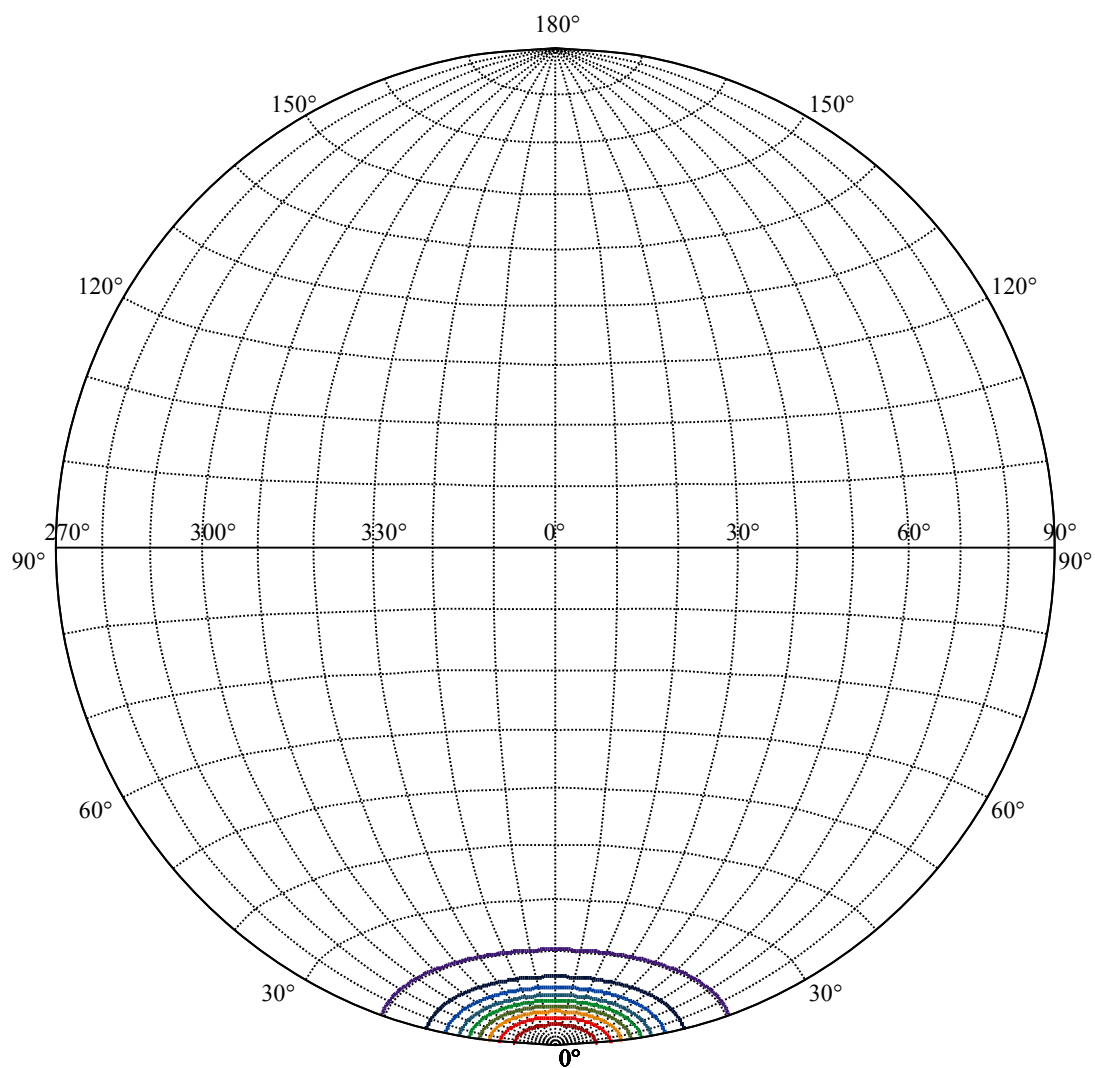
:C90/270Left:20.4 Right:20.4

Beam Angle(50%Imax):C0/180Left:9.9 Right:9.9

:C90/270Left:9.9 Right:9.9







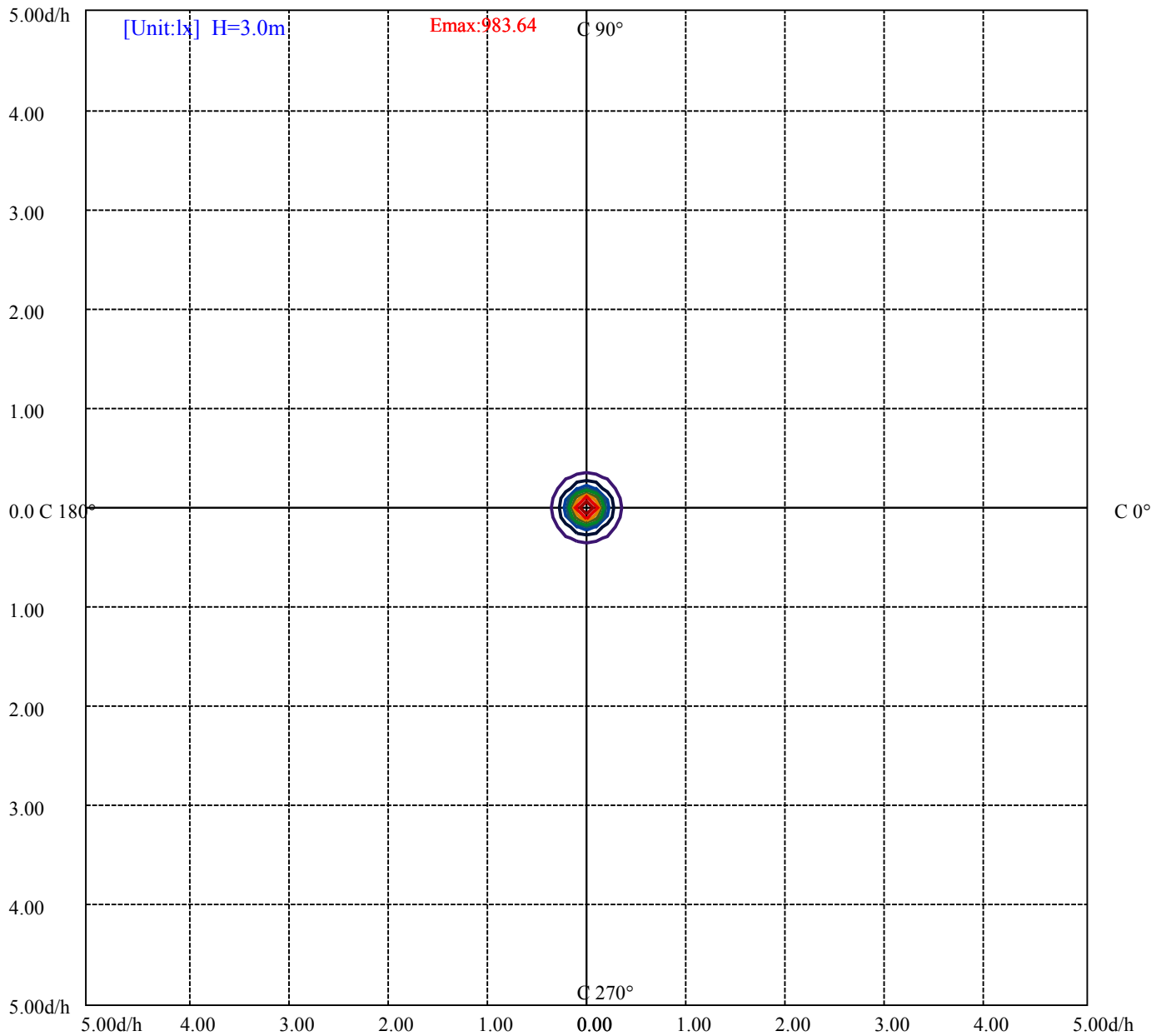
House

[Unit:cd]

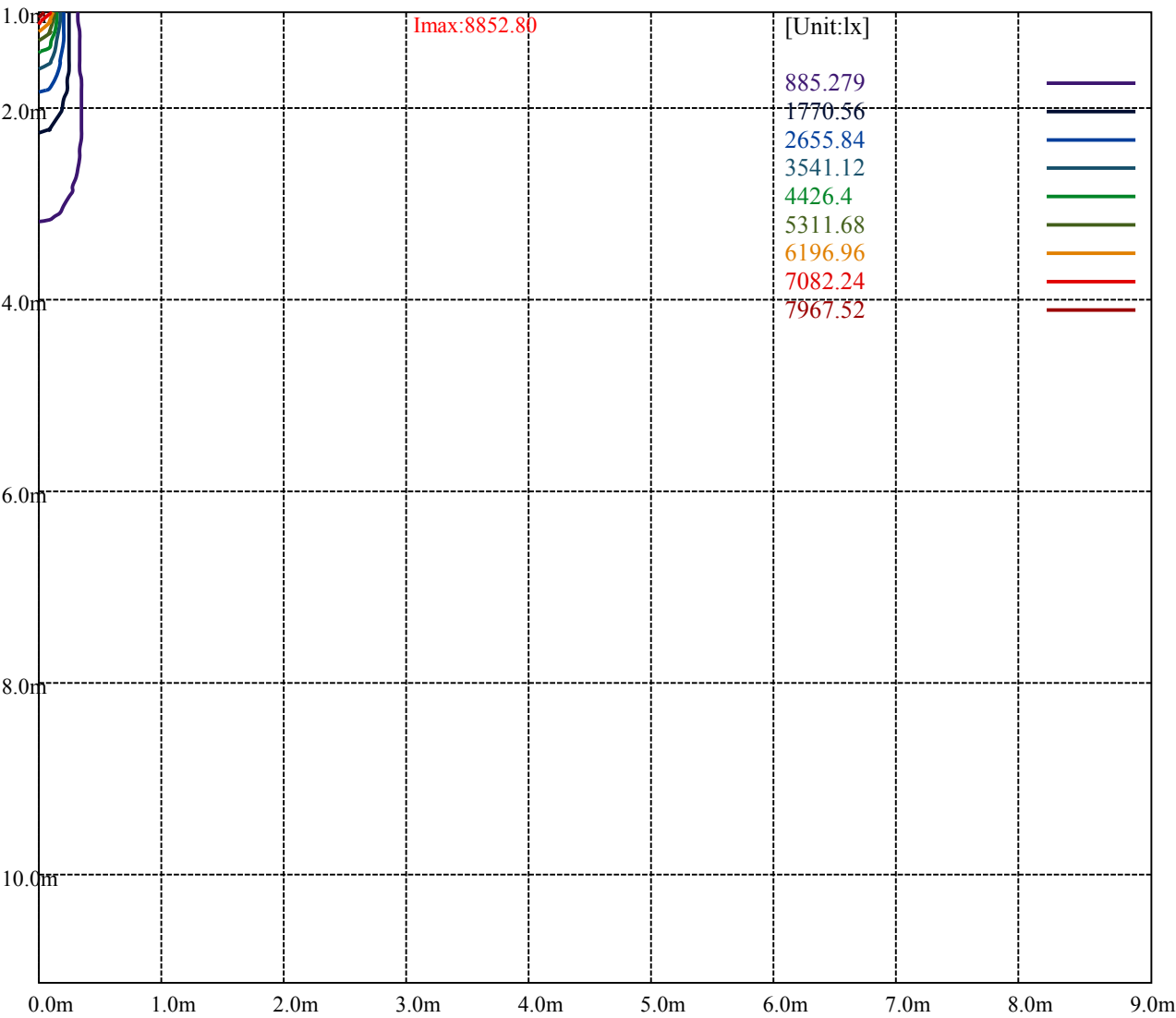
Road

Imax:8852.80

(10%Imax)	885.279	—
(20%Imax)	1770.56	—
(30%Imax)	2655.84	—
(40%Imax)	3541.12	—
(50%Imax)	4426.4	—
(60%Imax)	5311.68	—
(70%Imax)	6196.96	—
(80%Imax)	7082.24	—
(90%Imax)	7967.52	—



(10%Emax)	98.36433	—
(20%Emax)	196.7289	—
(30%Emax)	295.0934	—
(40%Emax)	393.4578	—
(50%Emax)	491.8222	—
(60%Emax)	590.1855	—
(70%Emax)	688.55	—
(80%Emax)	786.9144	—
(90%Emax)	885.2789	—



Luminance Table

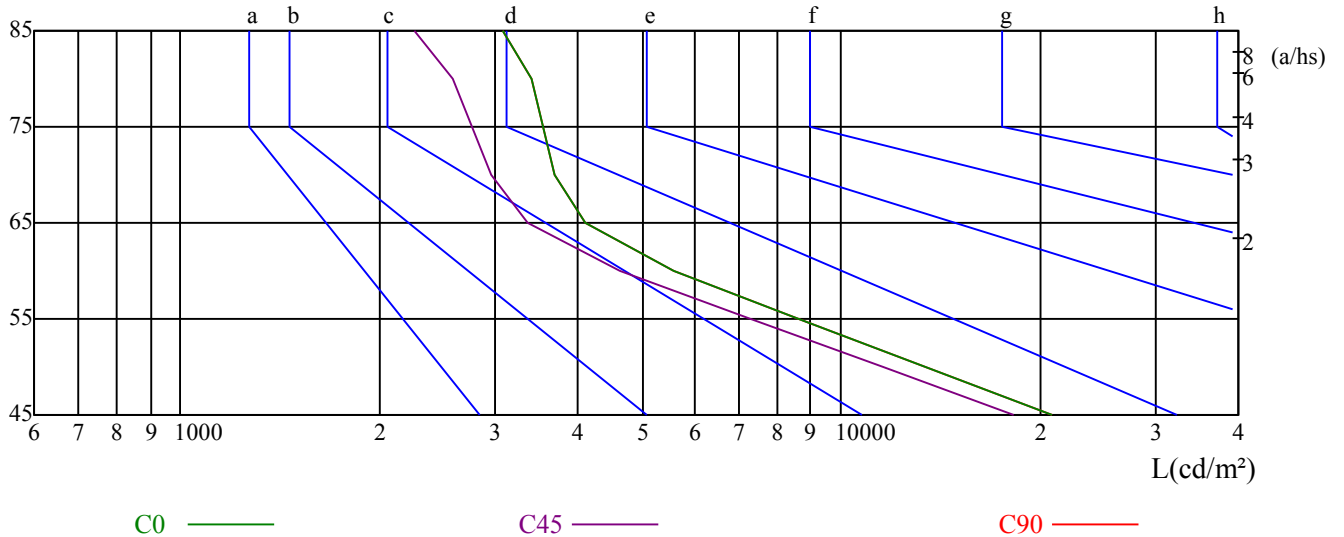
γ	45	50	55	60	65	70	75	80	85
C0	20883	13455	8632	5567	4103	3692	3540	3391	3073
C45	18226	11572	7310	4636	3356	2958	2771	2583	2265
C90	20883	13455	8632	5567	4103	3692	3540	3391	3073

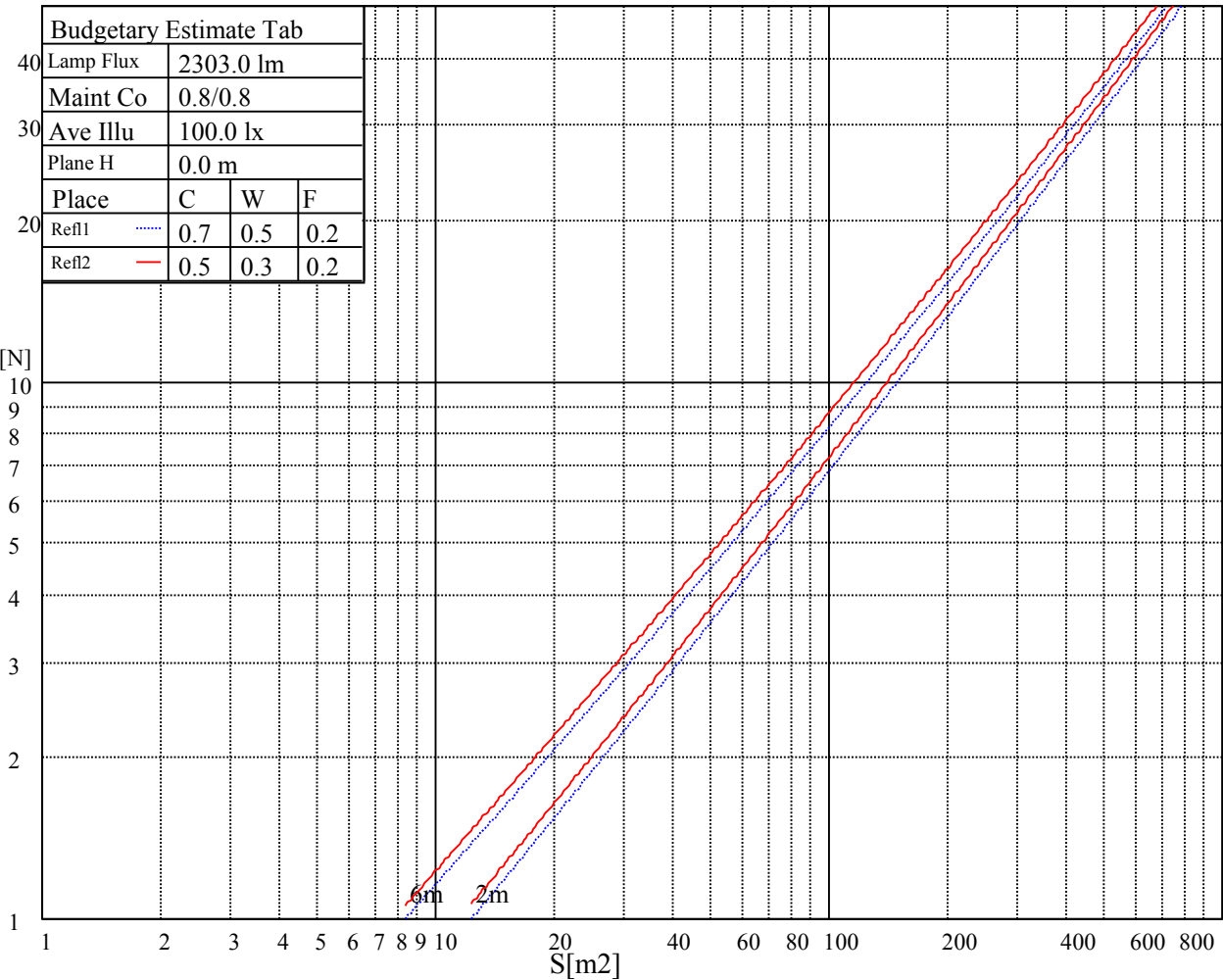
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
8880	8880	8880	10712	10712	10712	22142	22142	22142

Glare Table

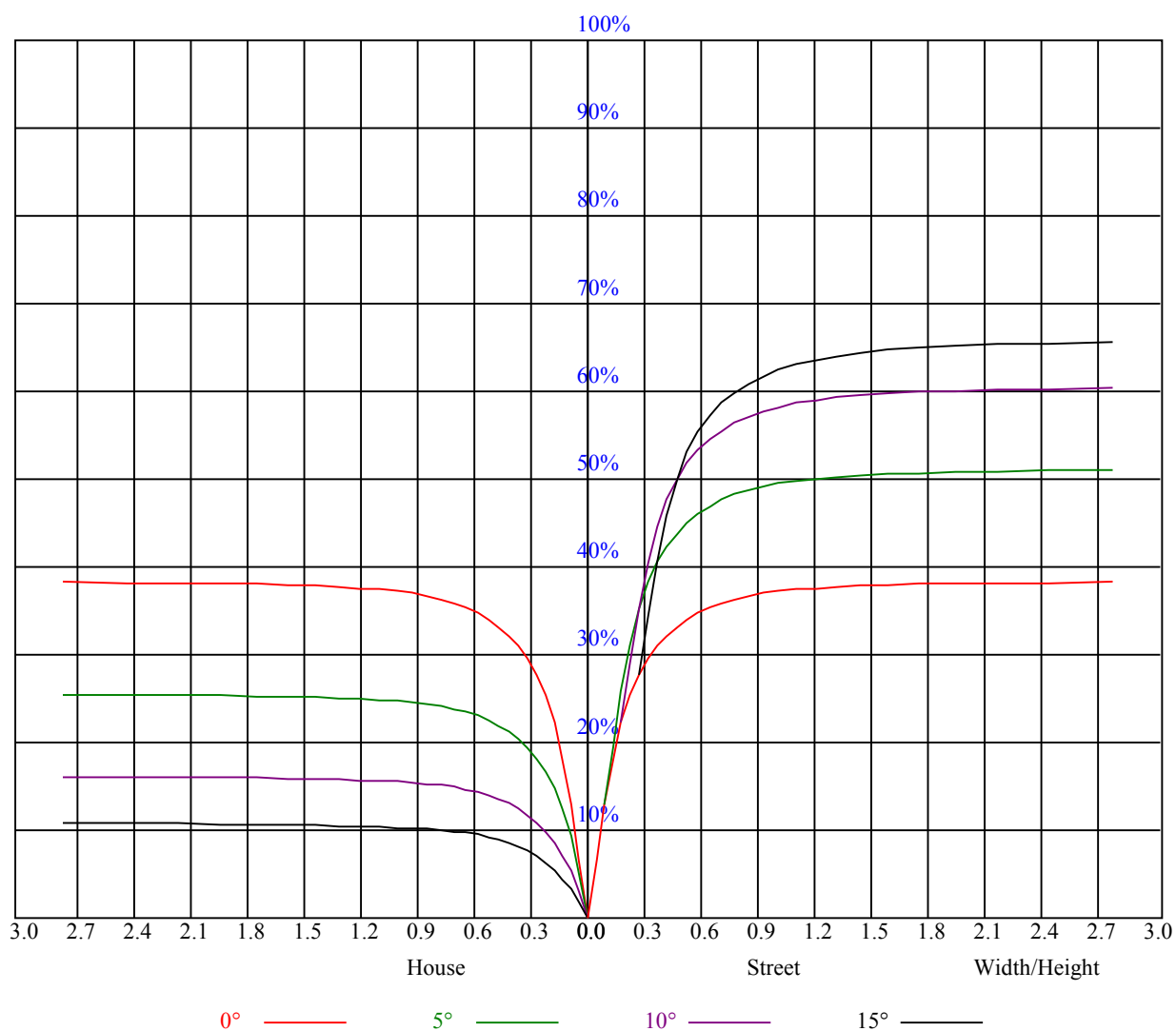
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

Luminance Limiting Curve

 $\gamma(^{\circ})$ 



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	0.92	0.92	0.92	0.90	0.90	0.90	0.86	0.86	0.86	0.82	0.82	0.82	0.79	0.79	0.79	0.77
1	0.86	0.84	0.83	0.85	0.83	0.82	0.81	0.80	0.79	0.79	0.78	0.77	0.76	0.75	0.74	0.73
2	0.81	0.79	0.76	0.80	0.78	0.75	0.78	0.76	0.74	0.75	0.74	0.72	0.73	0.72	0.71	0.70
3	0.77	0.74	0.71	0.76	0.73	0.71	0.74	0.72	0.70	0.72	0.70	0.69	0.71	0.69	0.67	0.66
4	0.74	0.70	0.67	0.73	0.69	0.67	0.71	0.68	0.66	0.70	0.67	0.65	0.68	0.66	0.65	0.64
5	0.70	0.67	0.64	0.70	0.66	0.64	0.68	0.65	0.63	0.67	0.65	0.63	0.66	0.64	0.62	0.61
6	0.68	0.64	0.61	0.67	0.63	0.61	0.66	0.63	0.61	0.65	0.62	0.60	0.64	0.62	0.60	0.59
7	0.65	0.61	0.59	0.65	0.61	0.59	0.64	0.61	0.58	0.63	0.60	0.58	0.62	0.60	0.58	0.57
8	0.63	0.59	0.57	0.62	0.59	0.57	0.62	0.59	0.56	0.61	0.58	0.56	0.60	0.58	0.56	0.55
9	0.61	0.57	0.55	0.60	0.57	0.55	0.60	0.57	0.55	0.59	0.56	0.54	0.59	0.56	0.54	0.53
10	0.59	0.55	0.53	0.59	0.55	0.53	0.58	0.55	0.53	0.58	0.55	0.53	0.57	0.55	0.53	0.52



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	8888.86	8887.20	8840.96	8723.14	8533.19	8170.37	7651.74	7057.13	6247.25
45.0	8831.60	8703.87	8417.57	8043.19	7548.78	6752.12	5959.30	5124.65	4223.38
90.0	8796.91	8659.27	8307.46	7972.17	7477.21	6749.36	5879.47	5055.83	4149.60
135.0	8893.81	8828.29	8689.00	8457.21	8165.97	7658.90	6999.87	6292.40	5411.49
180.0	8888.86	8850.32	8782.60	8588.80	8330.58	7929.77	7247.62	6561.62	5766.61
225.0	8831.60	8900.97	8921.89	8903.72	8840.41	8710.47	8439.60	8097.70	7536.12
270.0	8796.91	8883.90	8910.33	8891.06	8838.75	8693.41	8443.45	8143.94	7574.11
315.0	8893.81	8892.71	8848.66	8765.53	8592.10	8250.20	7831.22	7313.69	6494.45
360.0	8888.86	8887.20	8840.96	8723.14	8533.19	8170.37	7651.74	7057.13	6247.25
C/ γ (°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	5351.48	4550.96	3711.35	3076.00	2507.82	2070.67	1777.22	1574.06	1323.01
45.0	3405.79	2805.67	2281.54	1928.08	1625.26	1395.68	1235.47	1089.57	967.89
90.0	3427.81	2759.98	2256.76	1922.02	1636.83	1441.93	1261.34	1094.58	997.35
135.0	4502.51	3737.23	3004.98	2489.65	2050.85	1734.83	1523.96	1351.08	1172.15
180.0	4829.55	3950.30	3272.55	2657.02	2190.14	1878.52	1610.95	1418.25	1239.87
225.0	6906.27	6058.41	5121.90	4306.51	3563.80	2800.72	2334.94	1973.77	1636.83
270.0	6979.50	6282.49	5290.37	4482.69	3731.17	2929.55	2428.54	2032.68	1674.27
315.0	5826.07	4936.91	3973.42	3371.65	2785.30	2174.73	1891.74	1635.73	1416.60
360.0	5351.48	4550.96	3711.35	3076.00	2507.82	2070.67	1777.22	1574.06	1323.01
C/ γ (°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1178.21	1073.60	934.31	852.27	789.51	708.58	646.91	606.17	551.67
45.0	880.35	809.33	734.45	679.95	632.60	583.05	537.90	496.61	457.52
90.0	889.71	811.70	736.65	672.95	624.12	580.90	530.74	493.97	458.67
135.0	1057.08	957.98	852.27	777.95	713.53	652.97	597.36	553.32	509.82
180.0	1091.71	983.58	890.87	793.20	726.96	669.32	606.23	561.58	520.83
225.0	1428.71	1258.59	1086.15	977.09	884.37	807.90	736.10	675.10	620.76
270.0	1459.55	1287.77	1115.44	1002.58	905.68	815.94	739.96	679.95	622.14
315.0	1239.32	1090.56	998.50	882.06	802.01	732.97	660.35	612.34	567.91
360.0	1178.21	1073.60	934.31	852.27	789.51	708.58	646.91	606.17	551.67
C/ γ (°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	512.58	475.14	432.19	400.81	372.18	339.15	314.37	291.80	278.59
45.0	421.18	390.35	357.32	330.89	305.01	279.69	266.25	236.91	220.39
90.0	422.12	386.17	356.16	326.54	299.40	277.70	254.69	237.02	218.02
135.0	469.08	432.19	394.20	363.92	331.99	304.46	281.89	278.59	237.46
180.0	474.53	440.45	406.98	368.05	343.72	315.64	286.84	269.34	247.09
225.0	576.99	529.42	491.16	449.43	416.39	378.84	351.31	326.92	303.47
270.0	576.44	530.74	489.45	454.22	417.33	384.29	356.21	330.89	303.91
315.0	523.42	480.86	444.25	406.32	372.13	345.48	317.62	295.87	271.65
360.0	512.58	475.14	432.19	400.81	372.18	339.15	314.37	291.80	278.59
C/ γ (°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	245.39	227.71	209.43	192.97	178.93	162.58	147.44	135.77	124.10
45.0	203.38	189.28	173.26	157.96	145.68	136.32	121.45	111.71	103.67
90.0	200.96	186.97	170.90	155.53	143.75	132.85	120.02	110.61	101.52
135.0	218.24	201.89	185.87	171.39	158.18	146.34	133.07	123.05	113.58
180.0	225.07	211.36	196.66	178.99	166.00	152.18	138.58	127.35	116.88
225.0	277.26	257.99	239.83	219.07	204.09	191.87	176.68	159.77	146.39
270.0	281.89	280.24	240.43	221.71	206.24	192.53	177.67	160.49	145.62
315.0	250.07	231.62	215.55	194.35	183.06	169.74	151.96	139.57	129.00
360.0	245.39	227.71	209.43	192.97	178.93	162.58	147.44	135.77	124.10

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	114.57	104.22	94.26	86.11	77.90	70.14	64.20	58.75	52.74
45.0	92.27	83.14	77.24	68.82	62.54	58.08	52.03	47.62	43.60
90.0	90.95	83.08	75.87	68.16	62.43	57.26	51.31	47.40	42.61
135.0	103.78	94.20	86.66	78.18	70.97	65.08	58.97	53.85	48.78
180.0	106.75	96.79	88.53	79.94	72.89	66.01	59.74	54.62	49.99
225.0	133.73	123.11	111.60	101.19	92.55	83.63	75.15	68.71	62.87
270.0	133.84	122.34	111.76	102.85	94.20	83.69	76.36	69.59	63.09
315.0	117.16	108.24	99.38	89.03	82.42	74.49	67.28	61.72	56.60
360.0	114.57	104.22	94.26	86.11	77.90	70.14	64.20	58.75	52.74
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	48.34	44.16	39.64	35.68	32.59	29.51	26.76	24.61	22.41
45.0	38.59	35.07	31.71	28.52	26.04	23.95	21.64	20.04	18.94
90.0	37.66	34.63	31.60	28.02	26.04	24.00	21.53	20.21	19.10
135.0	43.99	39.81	36.39	32.32	29.57	27.47	24.39	22.46	20.98
180.0	44.71	40.58	36.94	32.98	30.23	27.75	25.27	23.01	21.25
225.0	56.10	51.37	47.02	42.34	37.93	34.63	31.44	28.52	26.26
270.0	57.20	52.41	48.12	43.22	39.26	36.23	32.32	29.29	27.09
315.0	50.76	46.52	42.50	37.82	34.30	31.33	28.35	25.77	23.67
360.0	48.34	44.16	39.64	35.68	32.59	29.51	26.76	24.61	22.41
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	20.70	19.21	18.11	17.45	16.90	16.30	15.80	15.36	14.92
45.0	18.06	17.34	16.79	16.24	15.69	15.31	14.92	14.53	14.20
90.0	18.28	17.56	16.96	16.41	15.97	15.47	15.09	14.76	14.37
135.0	19.32	18.44	17.89	17.23	16.74	16.30	15.75	15.36	14.98
180.0	19.66	18.50	17.84	17.18	16.68	16.13	15.64	15.20	14.81
225.0	23.95	22.13	20.37	18.94	18.11	17.34	16.68	16.19	15.69
270.0	24.39	22.30	20.54	19.21	18.39	17.67	17.01	16.46	16.02
315.0	21.36	20.04	18.61	17.73	17.07	16.52	15.91	15.47	15.03
360.0	20.70	19.21	18.11	17.45	16.90	16.30	15.80	15.36	14.92
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	14.59	14.26	13.93	13.60	13.38	13.10	12.77	12.39	12.00
45.0	13.87	13.60	13.32	12.94	12.61	12.22	11.67	11.23	10.74
90.0	14.04	13.76	13.43	13.10	12.72	12.33	11.89	11.34	10.96
135.0	14.59	14.26	13.93	13.54	13.21	12.83	12.44	12.00	11.51
180.0	14.37	14.09	13.76	13.43	13.16	12.88	12.44	12.00	11.56
225.0	15.25	14.81	14.53	14.15	13.87	13.54	13.27	12.94	12.61
270.0	15.42	15.03	14.70	14.31	14.04	13.76	13.49	13.16	12.88
315.0	14.59	14.20	13.93	13.60	13.27	12.99	12.61	12.22	11.89
360.0	14.59	14.26	13.93	13.60	13.38	13.10	12.77	12.39	12.00
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	11.51	11.01	10.46	9.97	9.47	9.08	8.64	7.98	7.71
45.0	10.19	9.80	9.41	8.86	8.31	7.82	7.54	7.43	7.43
90.0	10.46	10.08	9.69	9.08	8.37	7.87	7.49	7.49	7.49
135.0	11.07	10.68	10.24	9.74	9.30	8.42	7.98	7.65	7.49
180.0	11.18	10.68	10.24	9.80	9.41	8.59	8.09	7.71	7.38
225.0	12.17	11.78	11.29	10.74	10.35	9.80	9.36	8.75	8.31
270.0	12.50	12.06	11.56	11.12	10.68	10.08	9.52	8.75	8.31
315.0	11.45	11.01	10.57	10.08	9.74	9.30	8.92	8.26	7.87
360.0	11.51	11.01	10.46	9.97	9.47	9.08	8.64	7.98	7.71

Intensity data(cd)

Appendix Page: 18 Total:18

C/ γ (°)	90.0
0.0	7.43
45.0	7.43
90.0	7.49
135.0	7.49
180.0	7.43
225.0	7.93
270.0	7.93
315.0	7.65
360.0	7.43