
LumCAT: 1653-S	
Luminaire: 92.70.043.00	
Report No: NATA0100	Voltage(V): 34.9200
Test No: GC2019112612	Current(A): 0.1470
LampCAT: LUMINUS CXM-4-AC40	Power (W): 5.1300
Lamp flux(lm): 599.0	PF: 1.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 0	Width(mm): 0
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 517.83
Efficiency(%): 86.45%
Lumens(lm)/Power(W): 100.94
Central intensity(cd): 5299.875
Maximum intensity(cd): 5299.875
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=12.6
[C90/270]Total=12.6
Field angle(10%Imax): [C0/180]Total=25.4
[C90/270]Total=25.4
Maximum s/h(1/2): C0_180=0.22 C90_270=0.22
Maximum s/h(1/4): C0_180=0.22 C90_270=0.22
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 86.45%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.201%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	5299.875	0.000	0	.000%	.000%
1.0	5223.727	5.035	5.035	.841%	.972%
2.0	4940.367	14.588	19.624	2.435%	3.790%
3.0	4538.109	22.669	42.293	3.785%	8.167%
4.0	4060.195	28.781	71.074	4.805%	13.725%
5.0	3452.766	32.320	103.395	5.396%	19.967%
6.0	2822.344	32.977	136.372	5.505%	26.335%
7.0	2279.672	31.668	168.04	5.287%	32.451%
8.0	1731.459	28.707	196.747	4.792%	37.995%
9.0	1314.696	24.687	221.435	4.121%	42.762%
10.0	988.390	20.842	242.277	3.479%	46.787%
11.0	779.752	17.667	259.944	2.949%	50.199%
12.0	618.652	15.287	275.231	2.552%	53.151%
13.0	489.691	13.153	288.384	2.196%	55.691%
14.0	403.720	11.436	299.82	1.909%	57.899%
15.0	347.112	10.308	310.127	1.721%	59.890%
16.0	308.138	9.601	319.729	1.603%	61.744%
17.0	280.216	9.162	328.891	1.530%	63.513%
18.0	258.715	8.886	337.777	1.483%	65.229%
19.0	243.548	8.738	346.515	1.459%	66.917%
20.0	232.755	8.718	355.233	1.455%	68.600%
21.0	224.388	8.778	364.011	1.465%	70.295%
22.0	218.348	8.897	372.908	1.485%	72.014%
23.0	212.646	9.043	381.951	1.510%	73.760%
24.0	207.591	9.188	391.139	1.534%	75.534%
25.0	203.963	9.358	400.497	1.562%	77.341%
26.0	200.334	9.543	410.04	1.593%	79.184%
27.0	196.980	9.720	419.761	1.623%	81.062%
28.0	192.762	9.867	429.628	1.647%	82.967%
29.0	189.120	9.991	439.619	1.668%	84.897%
30.0	183.579	10.063	449.682	1.680%	86.840%
31.0	172.638	9.913	459.595	1.655%	88.754%
32.0	153.513	9.344	468.939	1.560%	90.559%
33.0	128.735	8.315	477.254	1.388%	92.164%
34.0	103.788	7.037	484.291	1.175%	93.523%
35.0	73.610	5.509	489.8	.920%	94.587%
36.0	49.268	3.912	493.713	.653%	95.343%
37.0	31.120	2.622	496.334	.438%	95.849%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	18.309	1.650	497.984	.275%	96.168%
39.0	11.848	1.029	499.014	.172%	96.366%
40.0	9.837	0.756	499.77	.126%	96.512%
41.0	8.859	0.666	500.436	.111%	96.641%
42.0	7.812	0.606	501.041	.101%	96.758%
43.0	6.863	0.544	501.585	.091%	96.863%
44.0	6.117	0.490	502.075	.082%	96.958%
45.0	5.632	0.452	502.526	.075%	97.045%
46.0	5.309	0.428	502.954	.071%	97.127%
47.0	5.112	0.414	503.369	.069%	97.207%
48.0	4.922	0.406	503.774	.068%	97.286%
49.0	4.697	0.395	504.169	.066%	97.362%
50.0	4.627	0.389	504.558	.065%	97.437%
51.0	4.549	0.388	504.946	.065%	97.512%
52.0	4.479	0.387	505.334	.065%	97.587%
53.0	4.556	0.393	505.727	.066%	97.663%
54.0	4.486	0.399	506.125	.067%	97.740%
55.0	4.416	0.397	506.523	.066%	97.817%
56.0	4.423	0.399	506.922	.067%	97.894%
57.0	4.359	0.402	507.324	.067%	97.971%
58.0	4.268	0.399	507.722	.067%	98.048%
59.0	4.205	0.396	508.119	.066%	98.125%
60.0	4.163	0.395	508.514	.066%	98.201%
61.0	4.022	0.391	508.904	.065%	98.276%
62.0	3.923	0.383	509.287	.064%	98.350%
63.0	3.825	0.377	509.664	.063%	98.423%
64.0	3.691	0.369	510.033	.062%	98.494%
65.0	3.558	0.359	510.392	.060%	98.564%
66.0	3.417	0.348	510.74	.058%	98.631%
67.0	3.298	0.338	511.077	.056%	98.696%
68.0	3.164	0.327	511.405	.055%	98.759%
69.0	3.066	0.318	511.723	.053%	98.821%
70.0	3.009	0.312	512.035	.052%	98.881%
71.0	2.967	0.309	512.343	.052%	98.941%
72.0	2.925	0.306	512.65	.051%	99.000%
73.0	2.918	0.306	512.955	.051%	99.059%
74.0	2.876	0.305	513.26	.051%	99.118%
75.0	2.855	0.303	513.563	.051%	99.176%

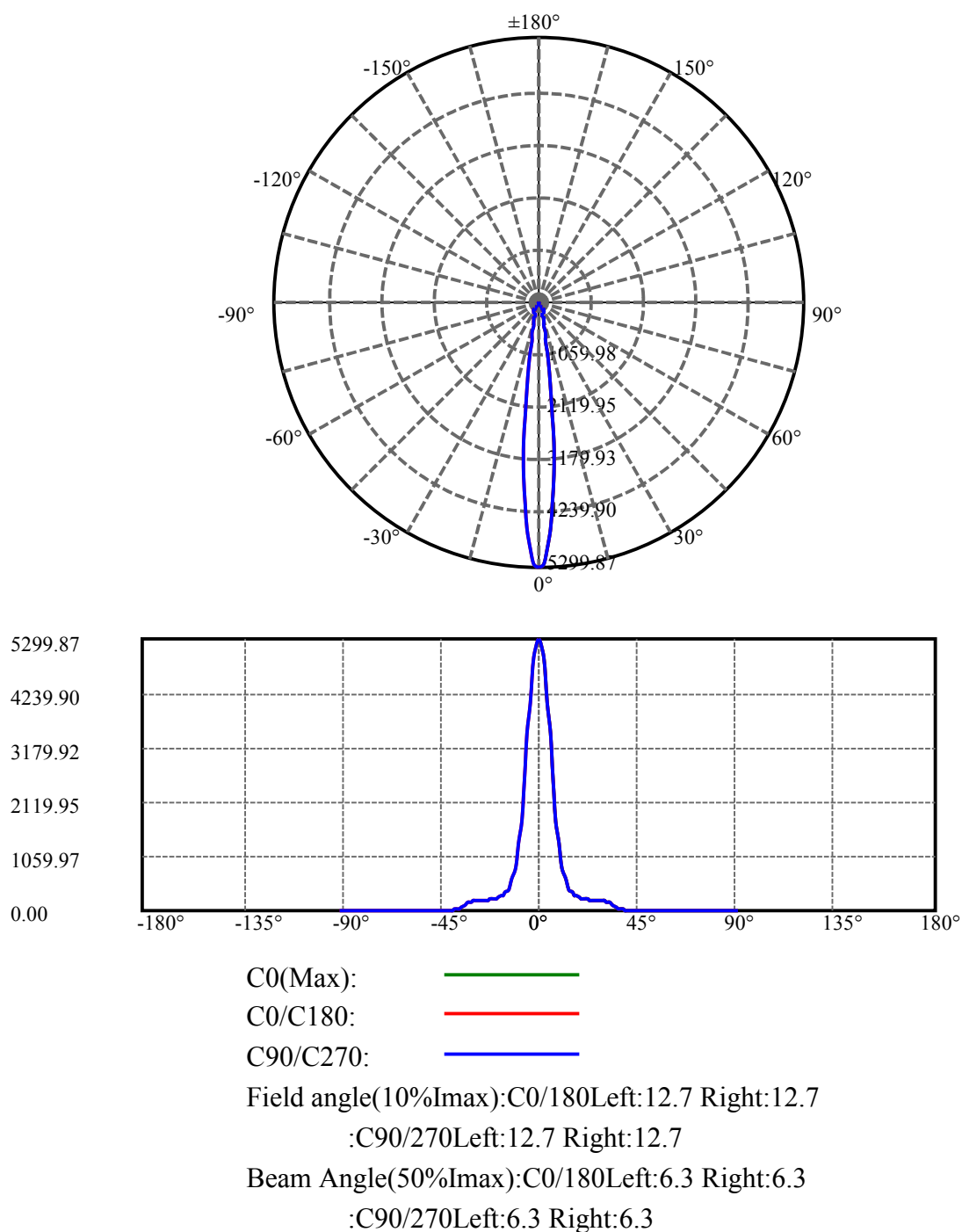
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	2.820	0.301	513.864	.050%	99.234%
77.0	2.805	0.300	514.164	.050%	99.292%
78.0	2.763	0.298	514.462	.050%	99.350%
79.0	2.749	0.296	514.758	.049%	99.407%
80.0	2.707	0.294	515.052	.049%	99.464%
81.0	2.665	0.291	515.343	.048%	99.520%
82.0	2.637	0.287	515.63	.048%	99.575%
83.0	2.602	0.285	515.915	.048%	99.630%
84.0	2.573	0.282	516.197	.047%	99.685%
85.0	2.545	0.279	516.476	.047%	99.739%
86.0	2.517	0.277	516.753	.046%	99.792%
87.0	2.482	0.274	517.027	.046%	99.845%
88.0	2.454	0.270	517.297	.045%	99.897%
89.0	2.426	0.267	517.564	.045%	99.949%
90.0	2.405	0.265	517.829	.044%	100.000%

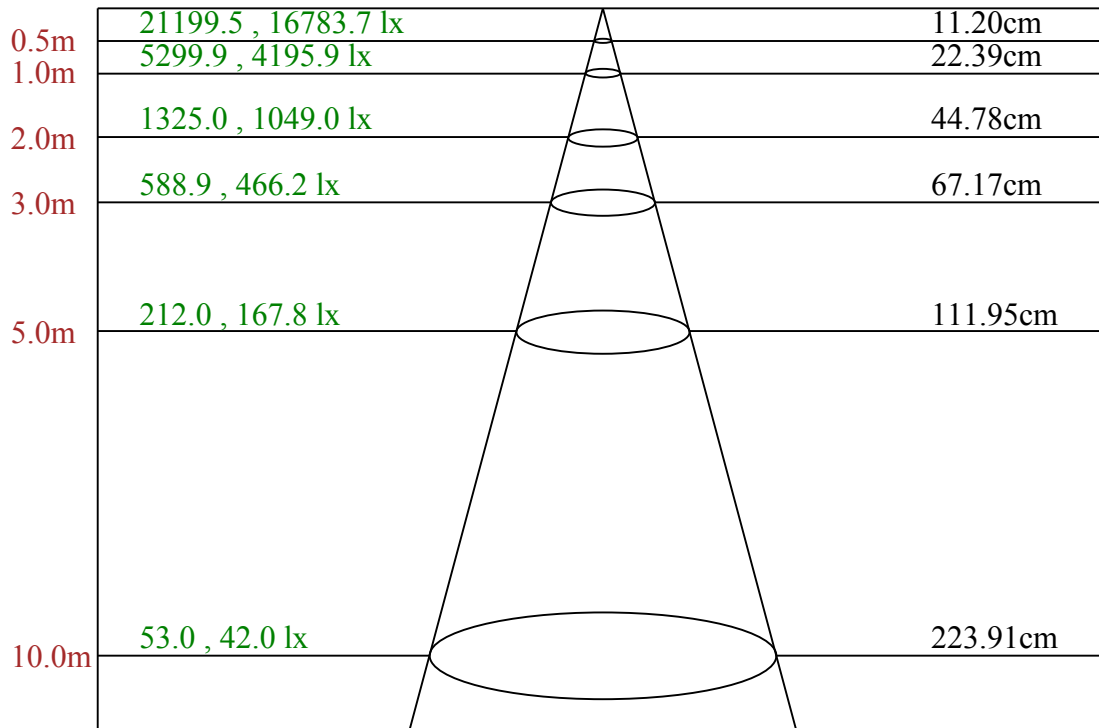
ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	449.68	75.07%	86.84%
0-40	499.77	83.43%	96.51%
0-60	508.51	84.89%	98.20%
0-90	517.56	86.40%	99.95%
0-120	517.56	86.40%	99.95%
0-180	517.83	86.45%	100.00%
60-90	9.45	1.58%	1.82%
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%
0-26.43	414.26	69.16%	80.00%

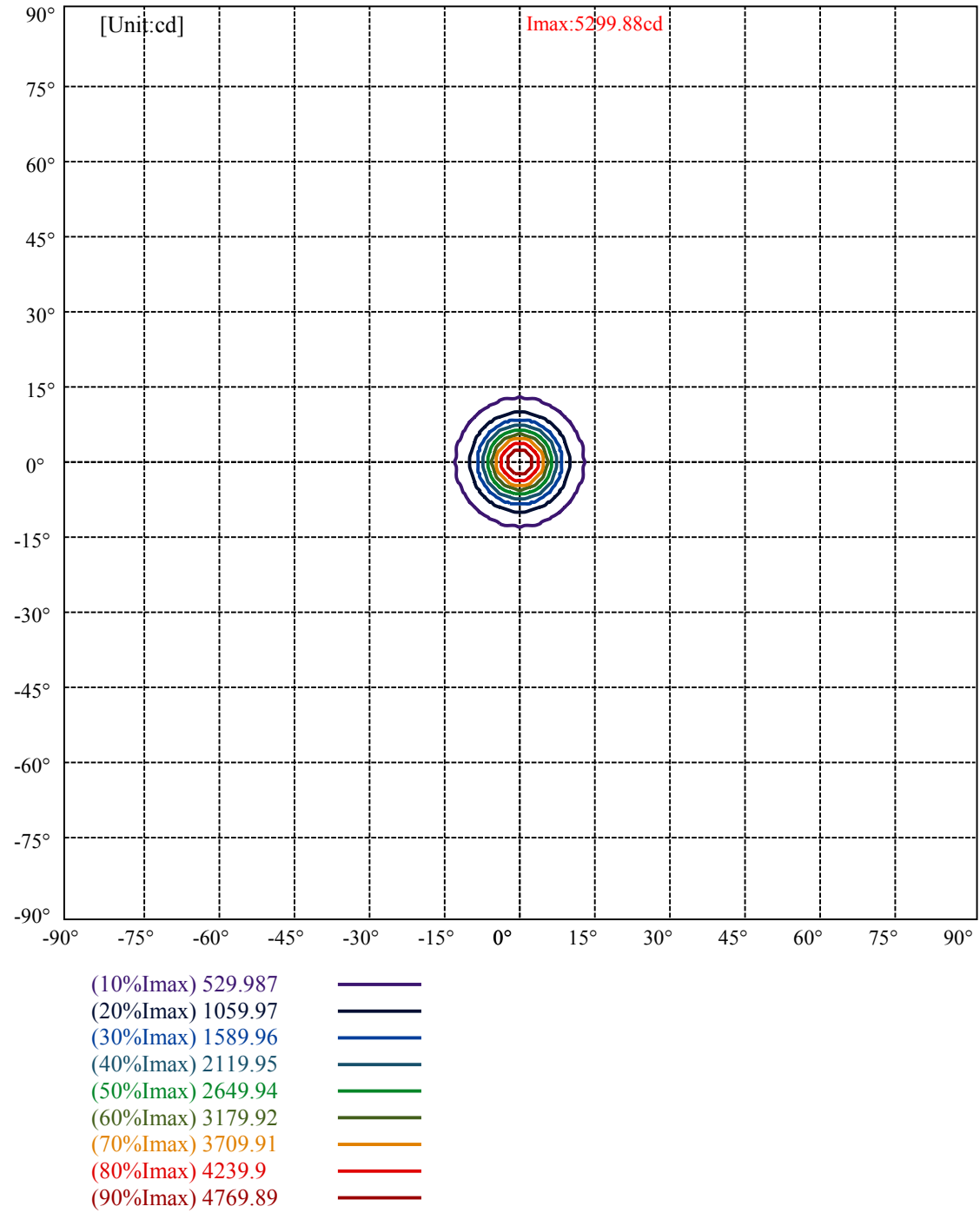
ZONAL LUMEN SUMMARY

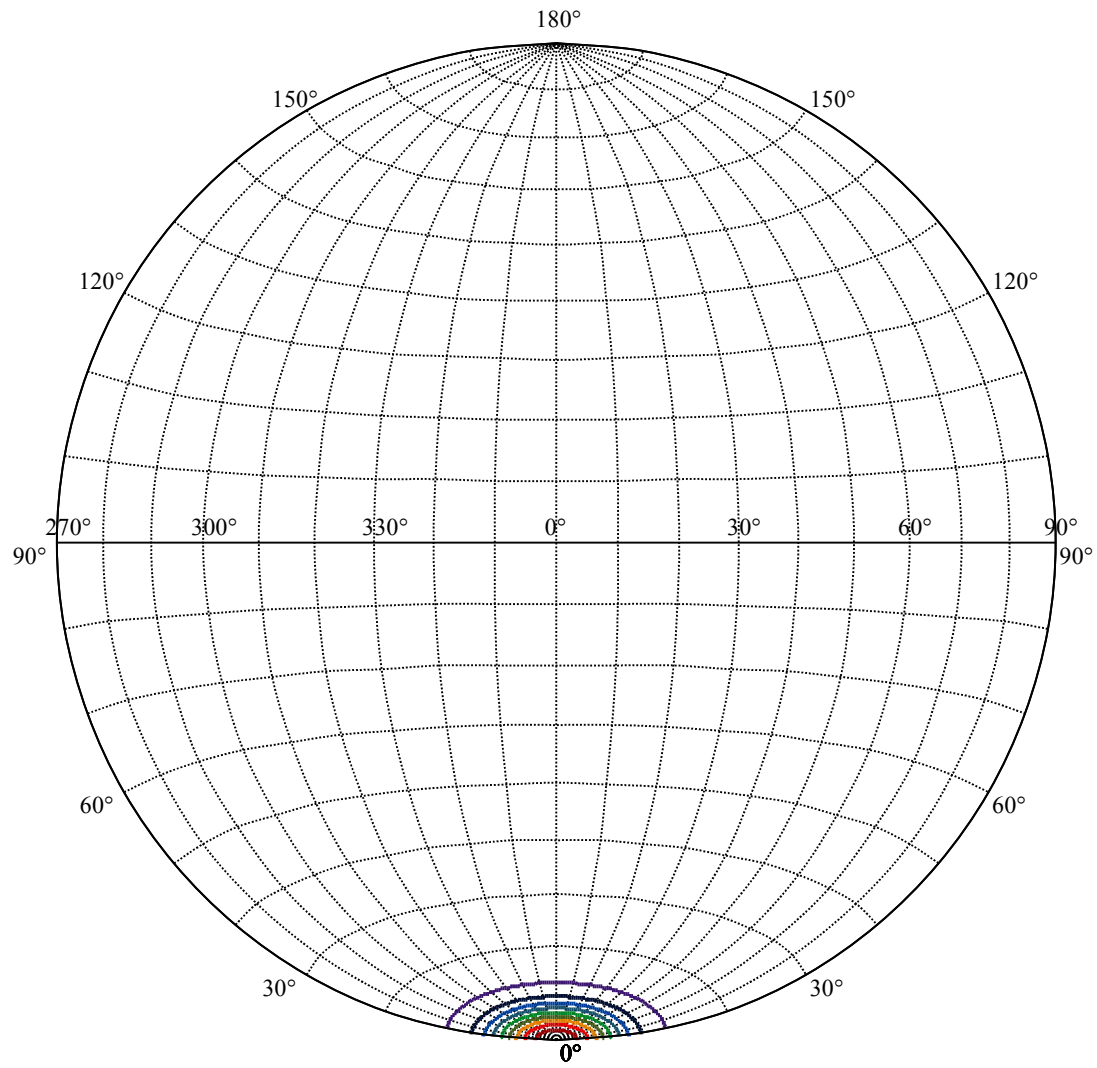
0-10	242.28
10-20	112.96
20-30	94.45
30-40	50.09
40-50	4.79
50-60	3.96
60-70	3.52
70-80	3.02
80-90	2.51
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00





Max , Ave Beam angle of C0 plane 12.78



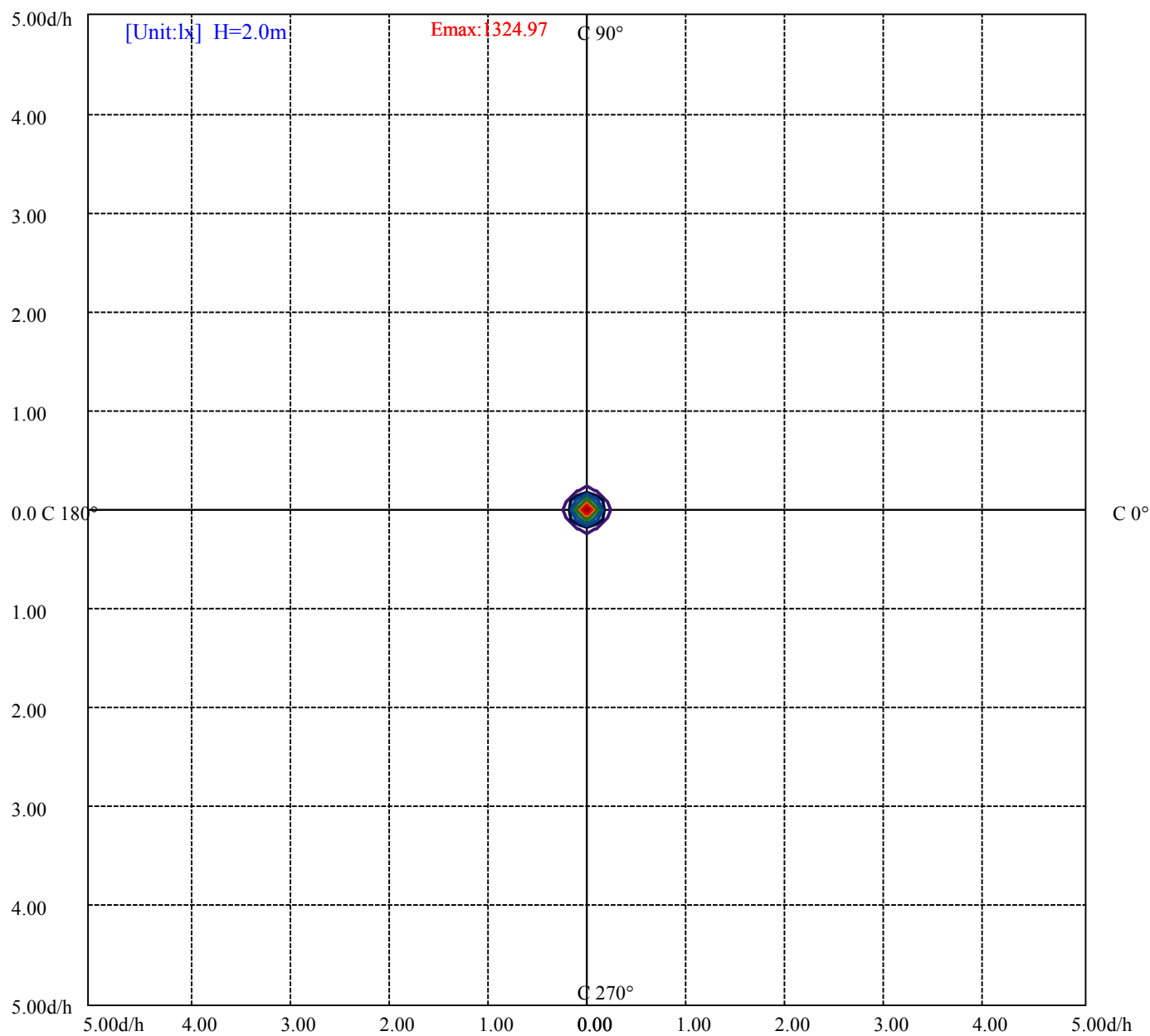


House

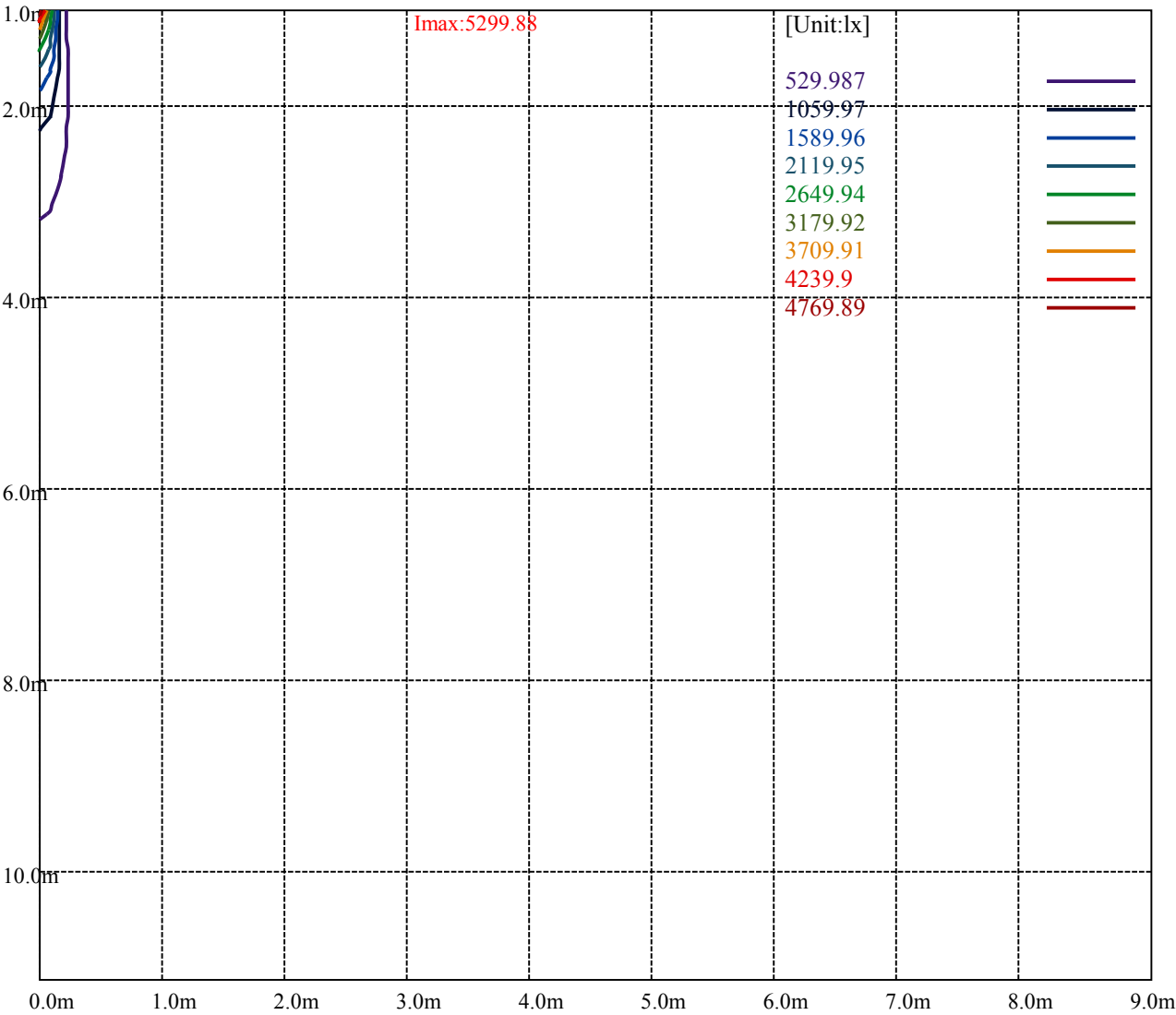
[Unit:cd]

Road

Imax:5299.88	
(10%Imax) 529.987	
(20%Imax) 1059.97	
(30%Imax) 1589.96	
(40%Imax) 2119.95	
(50%Imax) 2649.94	
(60%Imax) 3179.92	
(70%Imax) 3709.91	
(80%Imax) 4239.9	
(90%Imax) 4769.89	



(10%E _{max}) 132.4965	—
(20%E _{max}) 264.9925	—
(30%E _{max}) 397.49	—
(40%E _{max}) 529.9875	—
(50%E _{max}) 662.4825	—
(60%E _{max}) 794.98	—
(70%E _{max}) 927.475	—
(80%E _{max}) 1059.973	—
(90%E _{max}) 1192.47	—



Luminance Table

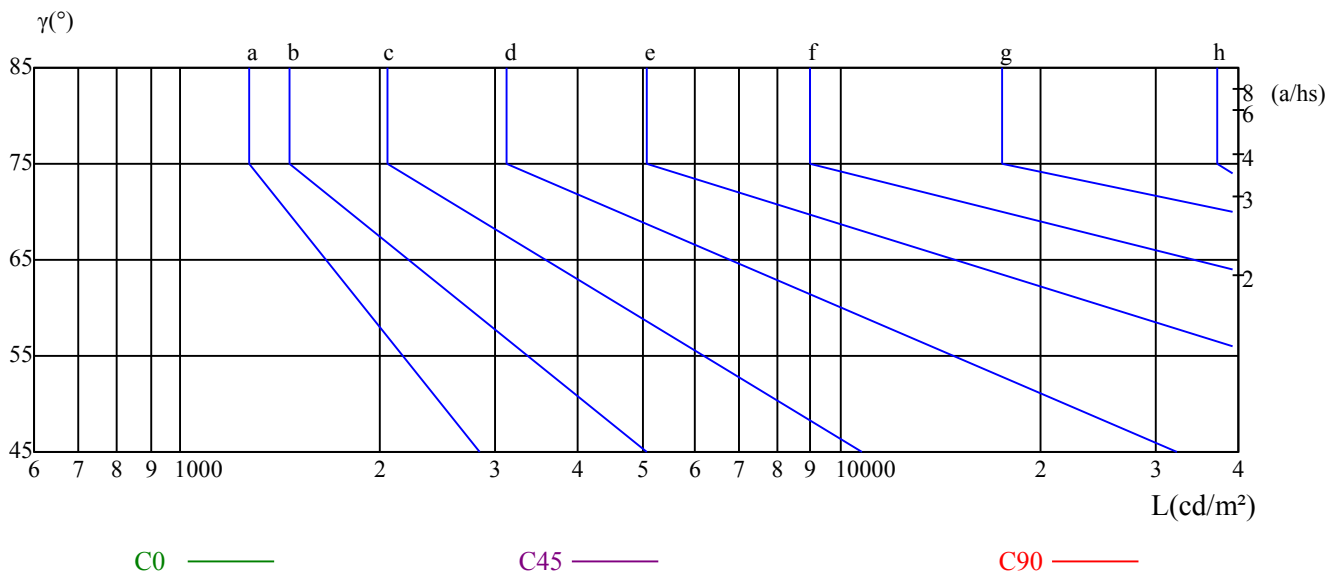
γ	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

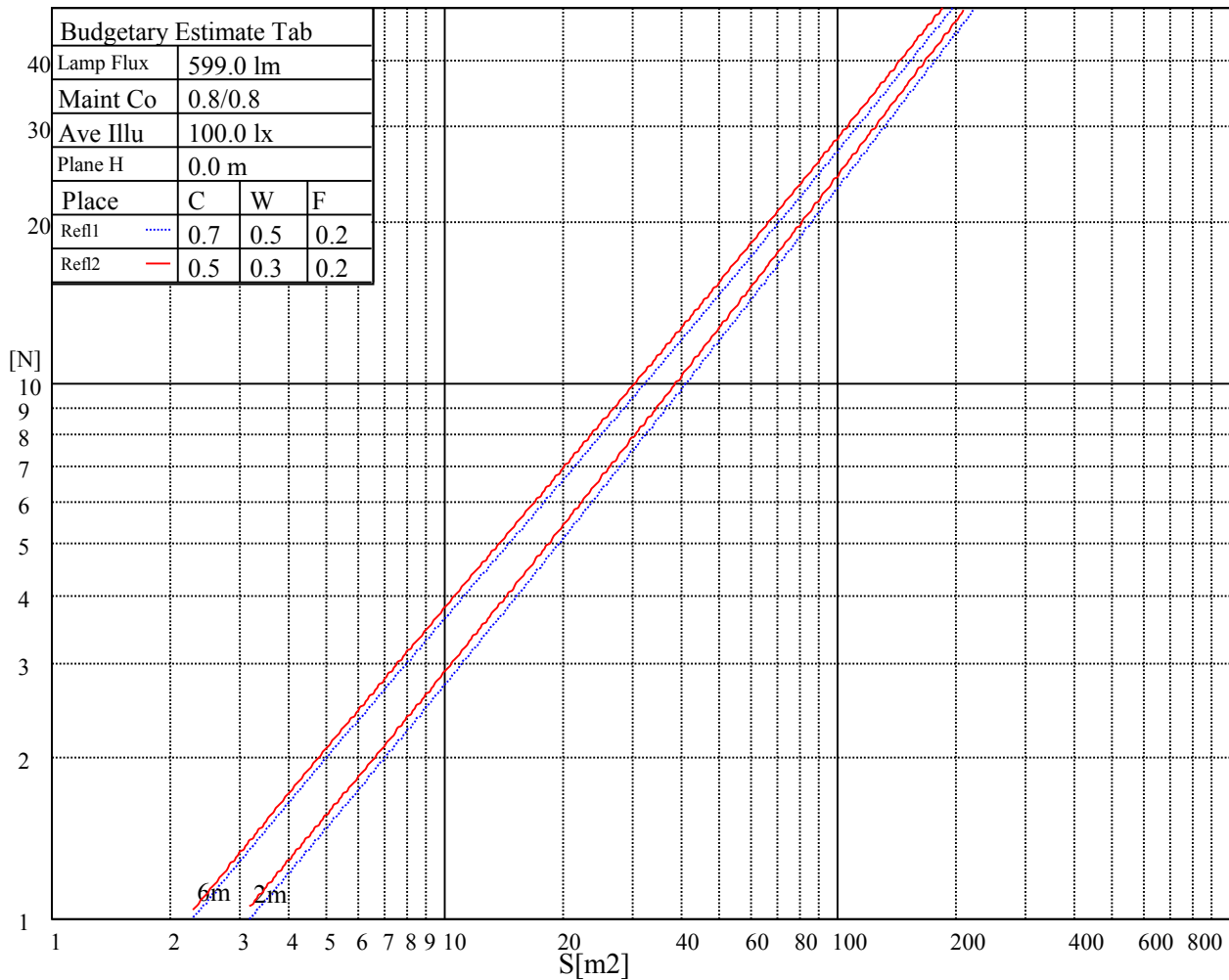
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

Glare Table

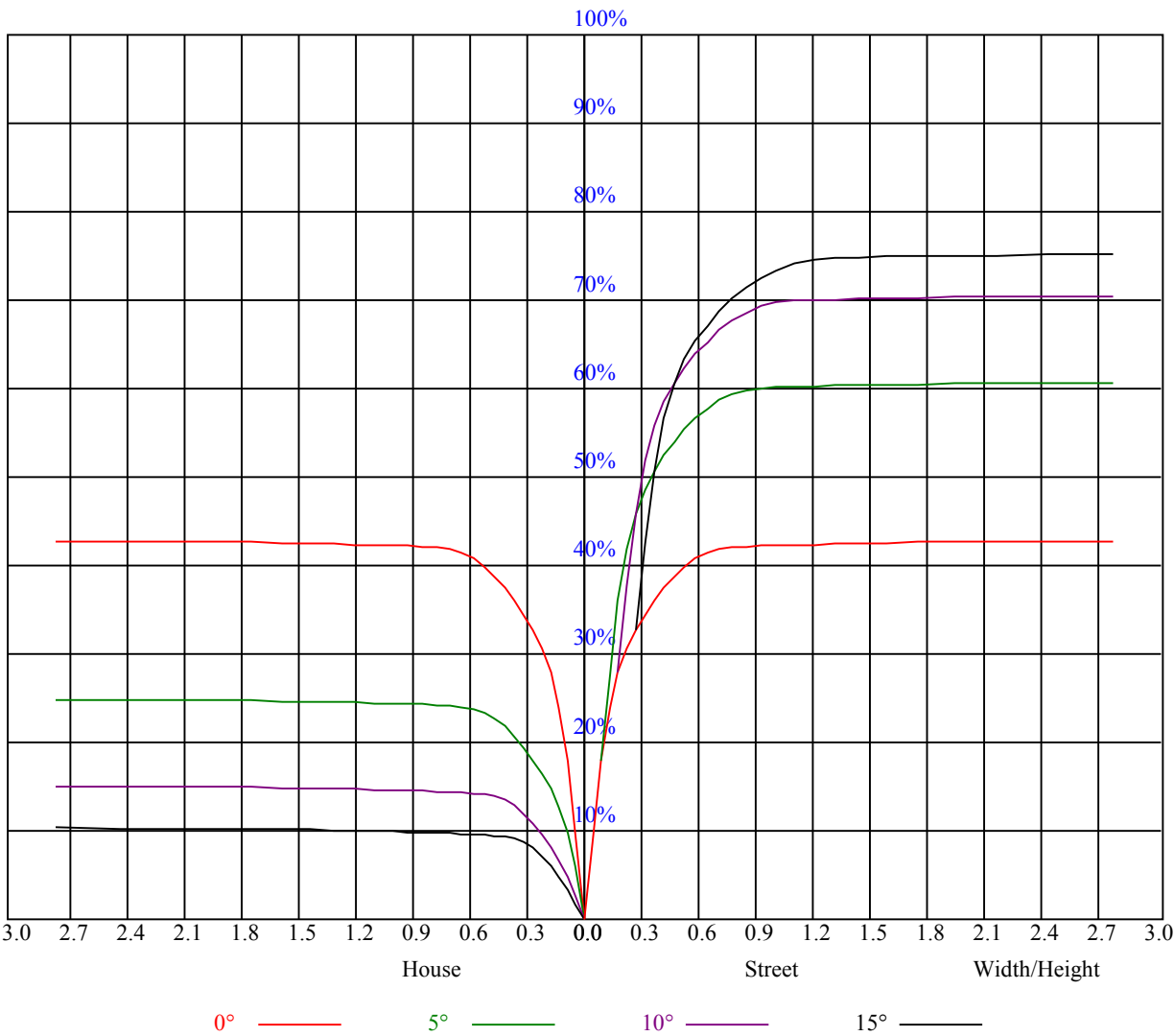
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

Luminance Limiting Curve





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	1.03	1.03	1.03	1.01	1.01	1.01	0.96	0.96	0.96	0.92	0.92	0.92	0.88	0.88	0.88	0.86
1	0.97	0.95	0.94	0.95	0.94	0.92	0.92	0.91	0.89	0.89	0.88	0.87	0.86	0.85	0.84	0.83
2	0.92	0.90	0.87	0.91	0.88	0.86	0.88	0.86	0.84	0.86	0.84	0.83	0.83	0.82	0.81	0.80
3	0.88	0.85	0.82	0.87	0.84	0.82	0.85	0.82	0.80	0.83	0.81	0.79	0.81	0.79	0.78	0.77
4	0.85	0.81	0.78	0.84	0.80	0.78	0.82	0.79	0.77	0.80	0.78	0.76	0.79	0.77	0.75	0.74
5	0.81	0.78	0.75	0.81	0.77	0.75	0.79	0.76	0.74	0.78	0.75	0.73	0.77	0.75	0.73	0.72
6	0.79	0.75	0.72	0.78	0.74	0.72	0.77	0.74	0.71	0.76	0.73	0.71	0.75	0.72	0.71	0.70
7	0.76	0.72	0.70	0.76	0.72	0.70	0.75	0.72	0.69	0.74	0.71	0.69	0.73	0.70	0.69	0.68
8	0.74	0.70	0.68	0.73	0.70	0.68	0.73	0.69	0.67	0.72	0.69	0.67	0.71	0.69	0.67	0.66
9	0.72	0.68	0.66	0.71	0.68	0.66	0.71	0.68	0.65	0.70	0.67	0.65	0.69	0.67	0.65	0.64
10	0.70	0.66	0.64	0.70	0.66	0.64	0.69	0.66	0.64	0.68	0.66	0.64	0.68	0.65	0.64	0.63



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	5387.06	5110.88	4602.94	4093.31	3509.44	2829.94	2185.88	1690.31	1271.81
45.0	5290.88	5083.88	4649.06	4190.63	3663.00	3030.19	2395.69	1870.88	1391.63
90.0	5286.94	5203.13	4887.56	4497.75	4020.75	3348.56	2770.31	2206.69	1598.63
135.0	5234.63	5425.31	5432.63	5224.50	4874.06	4364.44	3762.00	3173.63	2511.00
180.0	5387.06	5514.19	5461.31	5132.81	4736.81	4242.94	3535.31	2930.63	2257.88
225.0	5290.88	5332.50	5180.06	4833.00	4407.75	3831.19	3204.56	2632.50	2021.63
270.0	5286.94	5213.25	4897.69	4511.25	4023.00	3398.63	2754.56	2210.06	1686.94
315.0	5234.63	4906.69	4411.69	3821.63	3246.75	2576.25	1970.44	1522.69	1112.18
360.0	5387.06	5110.88	4602.94	4093.31	3509.44	2829.94	2185.88	1690.31	1271.81
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	978.75	783.00	616.50	514.69	431.44	371.81	335.81	311.06	284.63
45.0	1057.50	832.50	648.00	527.06	429.19	364.50	325.69	298.13	285.19
90.0	1110.77	947.98	743.51	573.86	453.26	382.50	323.78	287.04	260.89
135.0	1906.31	1445.06	1072.13	828.56	628.88	494.44	407.25	347.06	299.25
180.0	1729.69	1114.48	983.19	748.29	570.83	459.28	378.73	329.74	296.16
225.0	1561.50	1090.63	846.17	684.45	531.90	415.07	355.56	307.18	271.52
270.0	1275.19	1000.13	768.38	618.19	487.69	400.50	347.06	307.13	285.19
315.0	897.86	693.34	560.14	454.11	384.36	341.66	303.02	277.76	258.92
360.0	978.75	783.00	616.50	514.69	431.44	371.81	335.81	311.06	284.63
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	261.96	249.13	236.93	229.11	222.81	217.18	212.29	208.24	203.96
45.0	259.88	247.89	236.25	229.44	223.31	218.14	213.13	209.14	205.93
90.0	240.69	229.22	221.18	212.12	204.30	197.55	192.94	189.90	187.71
135.0	285.19	251.83	237.60	228.60	219.94	208.86	199.13	194.12	191.08
180.0	272.70	258.08	250.09	239.91	236.48	231.92	225.79	219.94	215.33
225.0	256.33	242.83	232.93	224.61	219.21	216.90	214.26	214.14	211.22
270.0	251.33	237.54	223.14	213.47	206.94	199.97	194.91	190.63	184.22
315.0	241.65	231.86	223.93	217.86	213.81	210.66	208.29	205.59	203.23
360.0	261.96	249.13	236.93	229.11	222.81	217.18	212.29	208.24	203.96
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	200.31	196.88	193.22	184.33	163.13	136.29	108.39	80.89	49.16
45.0	202.11	198.51	194.79	188.94	170.38	146.70	116.72	89.55	57.77
90.0	184.11	177.41	174.09	170.89	163.63	145.13	120.15	97.09	71.61
135.0	189.39	186.19	181.80	179.27	176.91	170.04	154.07	133.03	104.63
180.0	210.49	205.65	201.66	197.55	194.12	182.48	158.68	134.04	102.49
225.0	209.48	204.53	200.14	196.26	192.15	174.71	151.54	124.76	90.06
270.0	180.06	176.79	175.05	172.63	163.74	144.73	123.41	101.25	71.78
315.0	199.91	196.14	192.21	178.76	157.05	128.03	96.92	69.69	41.40
360.0	200.31	196.88	193.22	184.33	163.13	136.29	108.39	80.89	49.16
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	27.39	14.34	9.62	8.55	7.88	6.92	5.74	4.84	4.50
45.0	34.48	18.17	10.58	9.28	8.44	7.65	6.36	5.29	4.84
90.0	47.48	30.04	18.34	12.60	11.08	9.90	8.83	7.59	6.58
135.0	80.89	57.32	33.47	18.84	12.15	10.86	9.90	9.06	8.04
180.0	71.55	47.42	27.17	13.44	10.35	9.34	8.49	7.65	6.69
225.0	63.34	39.94	22.11	11.36	10.29	9.39	8.55	7.65	6.58
270.0	48.21	30.15	15.24	11.87	10.52	9.73	8.72	7.71	6.92
315.0	20.81	11.59	9.96	8.83	7.99	7.09	5.91	5.12	4.78
360.0	27.39	14.34	9.62	8.55	7.88	6.92	5.74	4.84	4.50

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	4.33	4.05	3.88	3.77	3.60	3.54	3.38	3.32	3.26
45.0	4.61	4.39	4.16	3.99	3.88	3.77	3.66	3.54	3.54
90.0	5.96	5.63	5.29	5.01	4.78	4.67	4.44	4.28	4.28
135.0	7.14	6.58	6.41	6.13	5.74	5.51	5.40	5.34	5.51
180.0	5.85	5.51	5.40	5.23	5.12	5.40	5.57	5.68	5.85
225.0	5.79	5.57	5.51	5.40	5.23	5.23	5.34	5.40	5.63
270.0	6.69	6.41	6.08	5.79	5.40	5.18	4.95	4.73	4.89
315.0	4.67	4.33	4.16	4.05	3.83	3.71	3.66	3.54	3.49
360.0	4.33	4.05	3.88	3.77	3.60	3.54	3.38	3.32	3.26
C/ γ (°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	3.21	3.15	3.15	3.09	3.15	3.09	3.09	3.09	3.09
45.0	3.43	3.38	3.32	3.32	3.26	3.26	3.26	3.26	3.26
90.0	4.22	4.16	4.33	4.56	4.61	4.73	4.67	4.61	4.50
135.0	5.51	5.51	5.51	5.40	5.18	4.95	4.73	4.39	4.16
180.0	5.74	5.46	5.18	4.73	4.28	3.99	3.71	3.49	3.26
225.0	5.40	5.18	5.23	4.84	4.39	4.22	3.99	3.66	3.49
270.0	4.95	5.06	5.18	5.29	5.46	5.46	5.40	5.06	4.89
315.0	3.43	3.43	3.49	3.66	3.83	3.94	4.44	4.61	4.73
360.0	3.21	3.15	3.15	3.09	3.15	3.09	3.09	3.09	3.09
C/ γ (°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	3.15	3.09	3.04	3.04	3.04	2.98	2.93	2.98	2.87
45.0	3.32	3.26	3.32	3.26	3.21	3.09	3.04	2.98	2.98
90.0	4.44	4.28	4.05	3.83	3.49	3.32	3.21	3.09	3.04
135.0	3.83	3.66	3.49	3.43	3.32	3.26	3.15	3.04	3.04
180.0	3.21	3.21	3.21	3.09	3.09	3.04	2.98	2.93	2.93
225.0	3.43	3.32	3.26	3.32	3.38	3.21	3.21	3.09	2.98
270.0	4.67	4.39	4.05	3.66	3.43	3.26	3.09	3.04	2.98
315.0	4.56	4.33	4.05	3.71	3.43	3.15	2.93	2.93	2.93
360.0	3.15	3.09	3.04	3.04	3.04	2.98	2.93	2.98	2.87
C/ γ (°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	2.87	2.81	2.81	2.81	2.76	2.70	2.64	2.70	2.59
45.0	2.93	2.93	2.87	2.87	2.81	2.81	2.76	2.76	2.76
90.0	3.04	3.04	2.98	2.98	2.93	2.93	2.87	2.87	2.81
135.0	2.93	2.98	2.93	2.87	2.81	2.81	2.81	2.76	2.76
180.0	2.87	2.87	2.81	2.81	2.76	2.76	2.76	2.70	2.64
225.0	2.87	2.87	2.81	2.81	2.76	2.76	2.70	2.70	2.64
270.0	2.98	2.98	2.93	2.87	2.93	2.93	2.81	2.81	2.76
315.0	2.93	2.87	2.87	2.81	2.81	2.76	2.76	2.70	2.70
360.0	2.87	2.81	2.81	2.81	2.76	2.70	2.64	2.70	2.59
C/ γ (°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	2.59	2.53	2.53	2.53	2.53	2.53	2.48	2.42	2.36
45.0	2.70	2.70	2.59	2.59	2.53	2.53	2.48	2.48	2.48
90.0	2.76	2.76	2.70	2.64	2.59	2.48	2.48	2.48	2.42
135.0	2.70	2.64	2.70	2.59	2.59	2.53	2.48	2.48	2.42
180.0	2.59	2.59	2.53	2.53	2.53	2.53	2.53	2.48	2.48
225.0	2.64	2.59	2.59	2.59	2.53	2.59	2.53	2.53	2.48
270.0	2.70	2.70	2.59	2.59	2.53	2.48	2.48	2.42	2.42
315.0	2.64	2.59	2.59	2.53	2.53	2.48	2.42	2.36	2.36
360.0	2.59	2.53	2.53	2.53	2.53	2.53	2.48	2.42	2.36

1653-S

Intensity data(cd)

Appendix Page: 18 Total:18

C/ $\gamma(^{\circ})$	90.0
0.0	2.31
45.0	2.42
90.0	2.36
135.0	2.42
180.0	2.48
225.0	2.48
270.0	2.42
315.0	2.36
360.0	2.31