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NATA

LumCAT: 3-1698-N
Luminaire: 92.70.045.00+92.70.089.00
Report No: NATA0100
Test No: GC2018110809
LampCAT: PHILIPS 1205 G7
Lamp flux(lm): 2969.0
Number of Lamps: 1
Length(mm): 79
Phm Type: C

Voltage(V): 35.8000
Current(A): 0.6000
Power (W): 21.4800
PF: 0.0000
Ballast type: DC
Width(mm): 79
Height(mm): 0

Photometric Results

Lumens(lm): 2369.11
Efficiency(%): 79.80%
Lumens(lm)/Power(W): 110.47
Central intensity(cd): 15901.880
Maximum intensity(cd): 15901.880
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=17.1
[C90/270]Total=17.1
Field angle(10%Imax): [C0/180]Total=33.1
[C90/270]Total=33.1
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(%): 79.92%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 97.877%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	15901.875	3.804	3.804	.128%	.161%
1.0	15804.141	30.247	34.051	1.019%	1.437%
2.0	15394.922	58.918	92.969	1.984%	3.924%
3.0	14797.969	84.929	177.898	2.861%	7.509%
4.0	13887.844	106.236	284.134	3.578%	11.993%
5.0	12831.188	122.635	406.769	4.131%	17.170%
6.0	11575.969	132.692	539.46	4.469%	22.771%
7.0	10206.352	136.401	675.861	4.594%	28.528%
8.0	8816.063	134.549	810.41	4.532%	34.207%
9.0	7294.359	125.133	935.543	4.215%	39.489%
10.0	6002.930	114.310	1049.854	3.850%	44.314%
11.0	4788.141	100.188	1150.042	3.374%	48.543%
12.0	3818.953	87.071	1237.113	2.933%	52.218%
13.0	3015.281	74.382	1311.495	2.505%	55.358%
14.0	2392.172	63.463	1374.958	2.138%	58.037%
15.0	2059.945	58.466	1433.424	1.969%	60.505%
16.0	1703.461	51.490	1484.914	1.734%	62.678%
17.0	1488.143	47.712	1532.626	1.607%	64.692%
18.0	1337.829	45.335	1577.961	1.527%	66.606%
19.0	1229.006	43.878	1621.84	1.478%	68.458%
20.0	1129.521	42.364	1664.204	1.427%	70.246%
21.0	1031.498	40.537	1704.74	1.365%	71.957%
22.0	959.773	39.427	1744.168	1.328%	73.621%
23.0	879.813	37.698	1781.866	1.270%	75.212%
24.0	807.736	36.028	1817.893	1.213%	76.733%
25.0	741.867	34.382	1852.275	1.158%	78.184%
26.0	680.618	32.719	1884.994	1.102%	79.565%
27.0	620.705	30.902	1915.895	1.041%	80.870%
28.0	572.372	29.467	1945.363	.992%	82.114%
29.0	521.648	27.733	1973.096	.934%	83.284%
30.0	475.376	26.065	1999.161	.878%	84.384%
31.0	433.793	24.500	2023.661	.825%	85.418%
32.0	392.948	22.835	2046.496	.769%	86.382%
33.0	357.982	21.381	2067.877	.720%	87.285%
34.0	328.163	20.123	2088	.678%	88.134%
35.0	298.406	18.769	2106.77	.632%	88.926%
36.0	272.412	17.559	2124.329	.591%	89.668%
37.0	252.204	16.644	2140.973	.561%	90.370%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	230.695	15.575	2156.548	.525%	91.028%
39.0	212.288	14.650	2171.199	.493%	91.646%
40.0	197.564	13.926	2185.125	.469%	92.234%
41.0	183.600	13.209	2198.333	.445%	92.791%
42.0	168.989	12.400	2210.733	.418%	93.315%
43.0	156.157	11.679	2222.412	.393%	93.808%
44.0	144.394	10.999	2233.412	.370%	94.272%
45.0	131.618	10.206	2243.618	.344%	94.703%
46.0	120.902	9.537	2253.155	.321%	95.105%
47.0	109.455	8.778	2261.933	.296%	95.476%
48.0	98.438	8.022	2269.955	.270%	95.815%
49.0	88.390	7.315	2277.271	.246%	96.123%
50.0	78.898	6.628	2283.898	.223%	96.403%
51.0	69.729	5.942	2289.841	.200%	96.654%
52.0	62.430	5.395	2295.236	.182%	96.882%
53.0	55.202	4.835	2300.07	.163%	97.086%
54.0	48.255	4.281	2304.351	.144%	97.266%
55.0	43.123	3.874	2308.225	.130%	97.430%
56.0	38.053	3.460	2311.685	.117%	97.576%
57.0	33.708	3.100	2314.785	.104%	97.707%
58.0	29.974	2.788	2317.572	.094%	97.824%
59.0	27.049	2.543	2320.115	.086%	97.932%
60.0	24.546	2.331	2322.446	.079%	98.030%
61.0	22.852	2.192	2324.638	.074%	98.123%
62.0	21.705	2.102	2326.739	.071%	98.211%
63.0	20.911	2.043	2328.782	.069%	98.298%
64.0	20.243	1.995	2330.778	.067%	98.382%
65.0	19.631	1.951	2332.729	.066%	98.464%
66.0	19.041	1.907	2334.636	.064%	98.545%
67.0	18.520	1.870	2336.506	.063%	98.624%
68.0	18.049	1.835	2338.341	.062%	98.701%
69.0	17.550	1.797	2340.138	.061%	98.777%
70.0	17.114	1.764	2341.901	.059%	98.851%
71.0	16.664	1.728	2343.629	.058%	98.924%
72.0	16.214	1.691	2345.32	.057%	98.996%
73.0	15.799	1.657	2346.977	.056%	99.066%
74.0	15.434	1.627	2348.604	.055%	99.134%
75.0	15.040	1.593	2350.197	.054%	99.202%

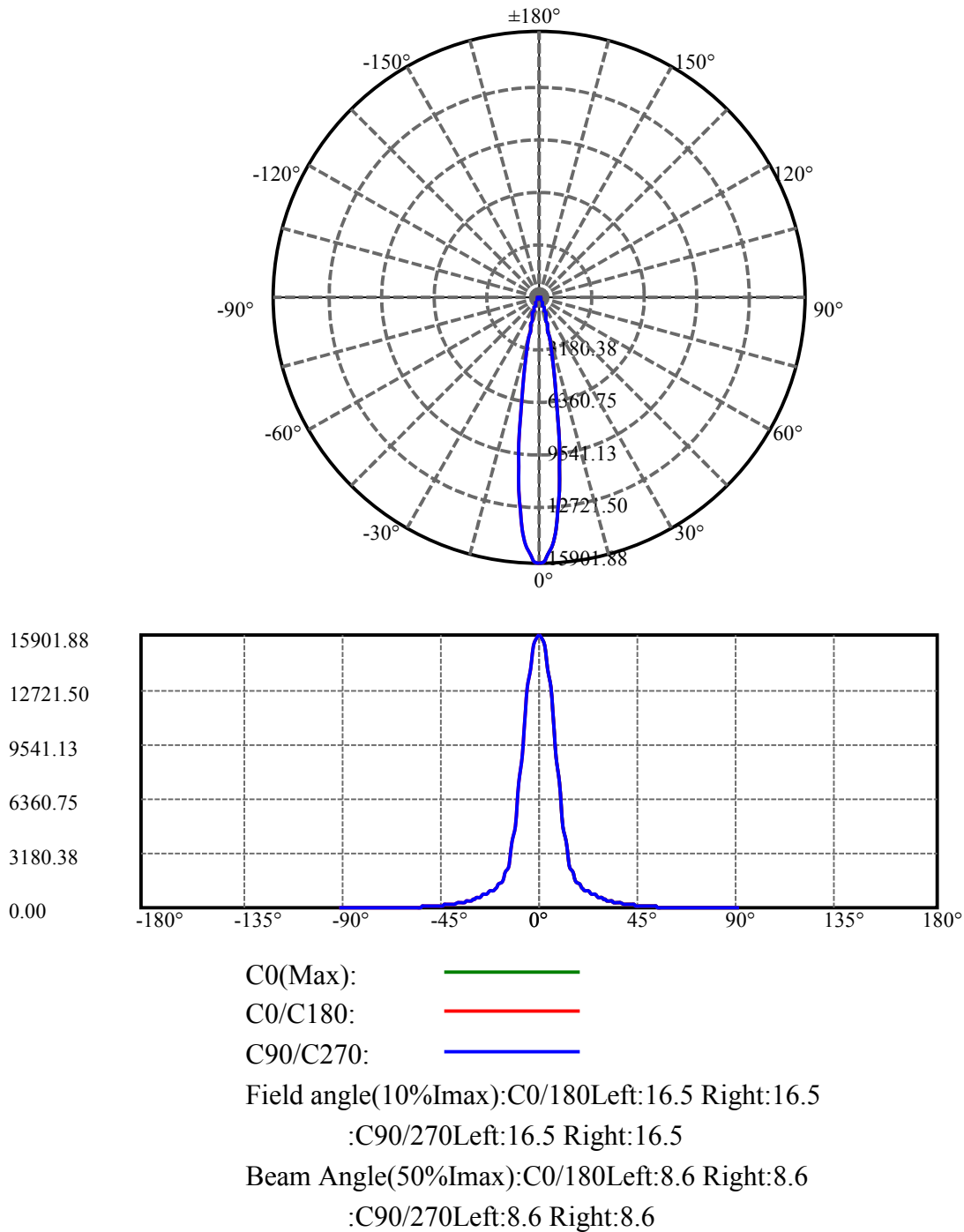
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	14.702	1.564	2351.761	.053%	99.268%
77.0	14.393	1.538	2353.299	.052%	99.332%
78.0	14.034	1.505	2354.804	.051%	99.396%
79.0	13.739	1.479	2356.283	.050%	99.458%
80.0	13.388	1.446	2357.729	.049%	99.519%
81.0	12.973	1.405	2359.134	.047%	99.579%
82.0	12.530	1.361	2360.495	.046%	99.636%
83.0	12.066	1.313	2361.808	.044%	99.692%
84.0	11.531	1.258	2363.066	.042%	99.745%
85.0	11.025	1.204	2364.27	.041%	99.796%
86.0	10.463	1.145	2365.415	.039%	99.844%
87.0	9.991	1.094	2366.509	.037%	99.890%
88.0	9.647	1.057	2367.566	.036%	99.935%
89.0	9.450	1.036	2368.602	.035%	99.978%
90.0	9.330	0.512	2369.114	.017%	100.000%

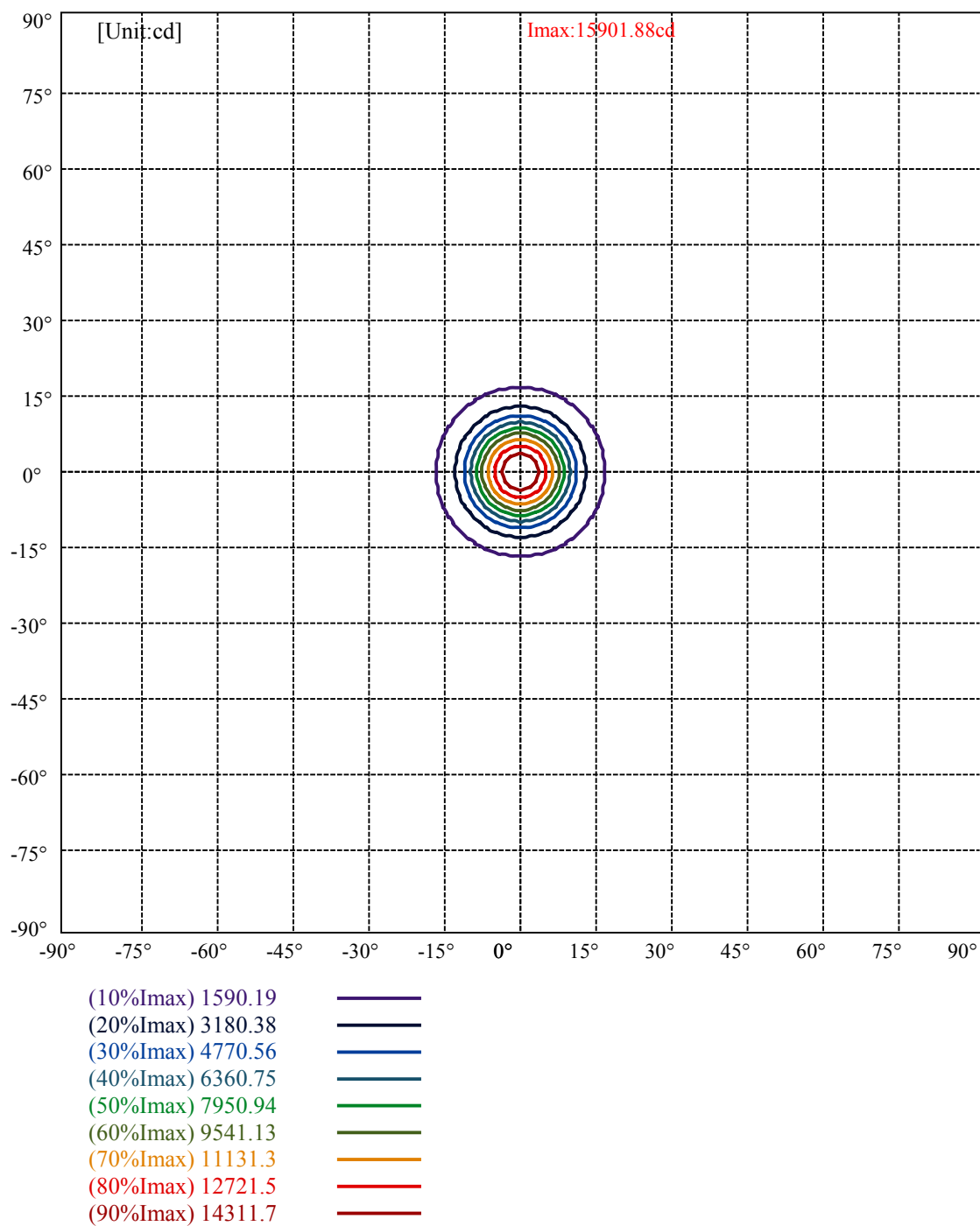
ZONAL LUMEN SUMMARY

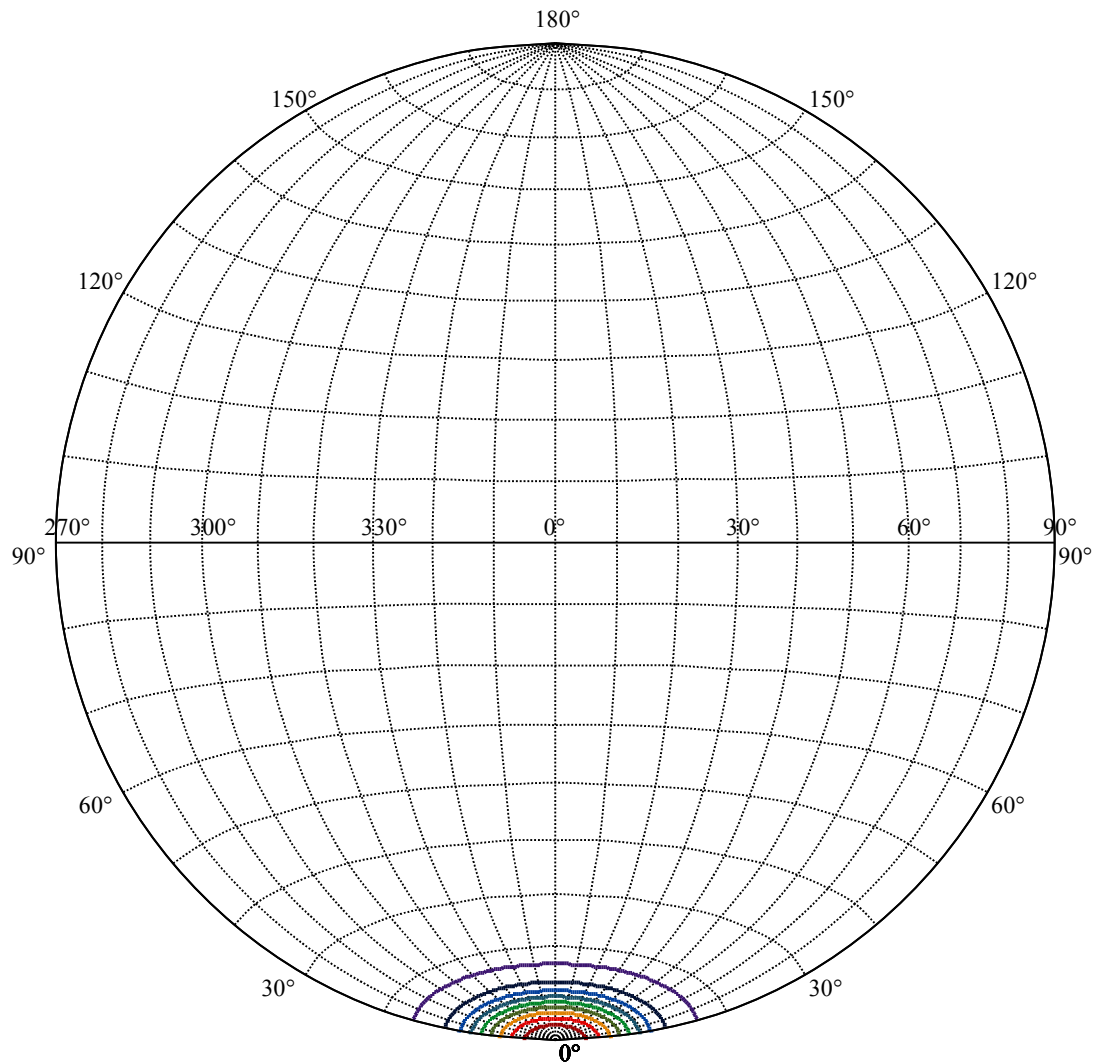
Zone	Lumens	%Lamp	%Fixt
0-30	1999.16	67.33%	84.38%
0-40	2185.12	73.60%	92.23%
0-60	2322.45	78.22%	98.03%
0-90	2368.60	79.78%	99.98%
0-120	2368.60	79.78%	99.98%
0-180	2369.11	79.80%	100.00%
60-90	48.49	1.63%	2.05%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-26.33	1895.29	63.84%	80.00%

ZONAL LUMEN SUMMARY

0-10	1049.85
10-20	614.35
20-30	334.96
30-40	185.96
40-50	98.77
50-60	38.55
60-70	19.46
70-80	15.83
80-90	10.87
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







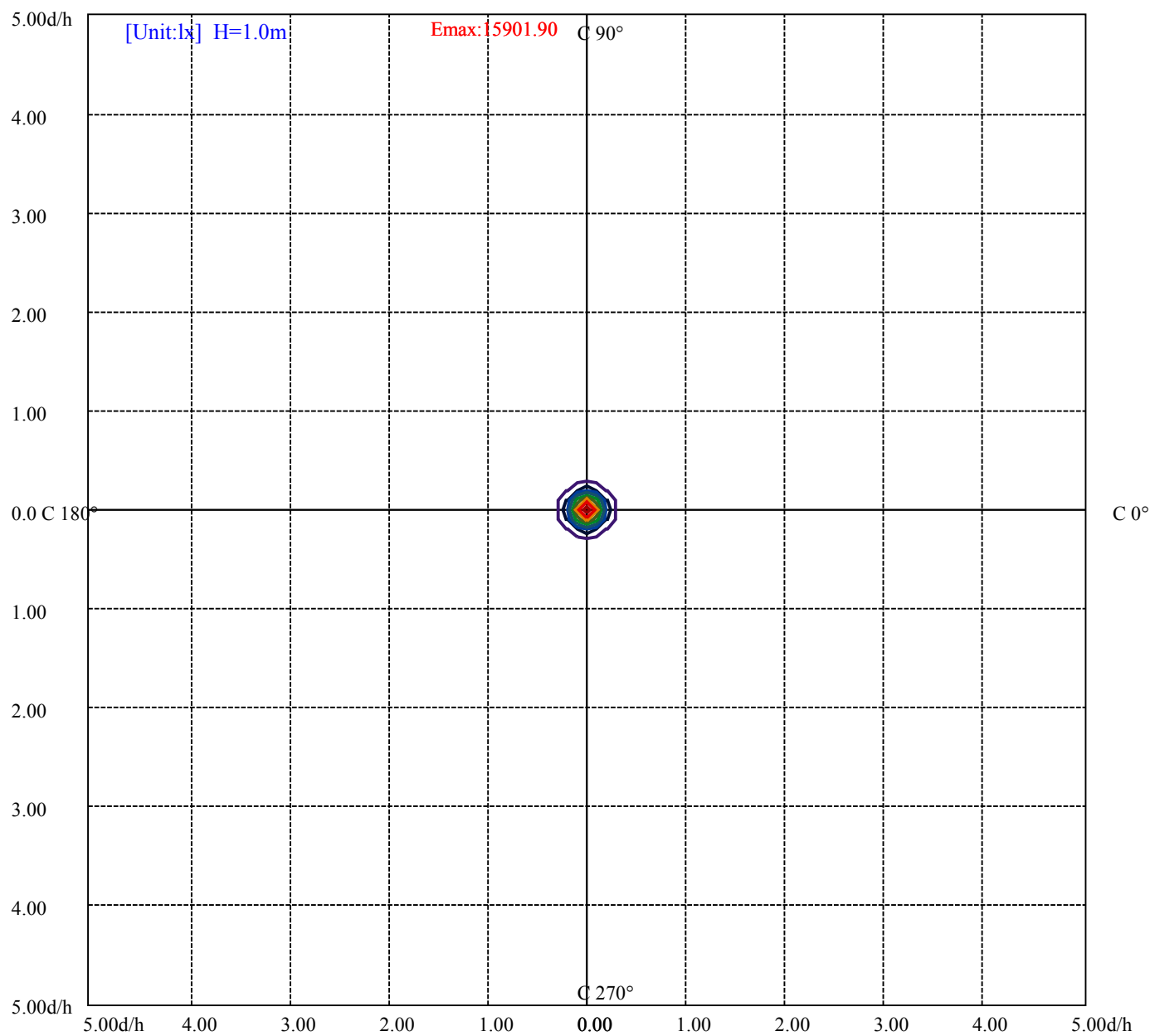
House

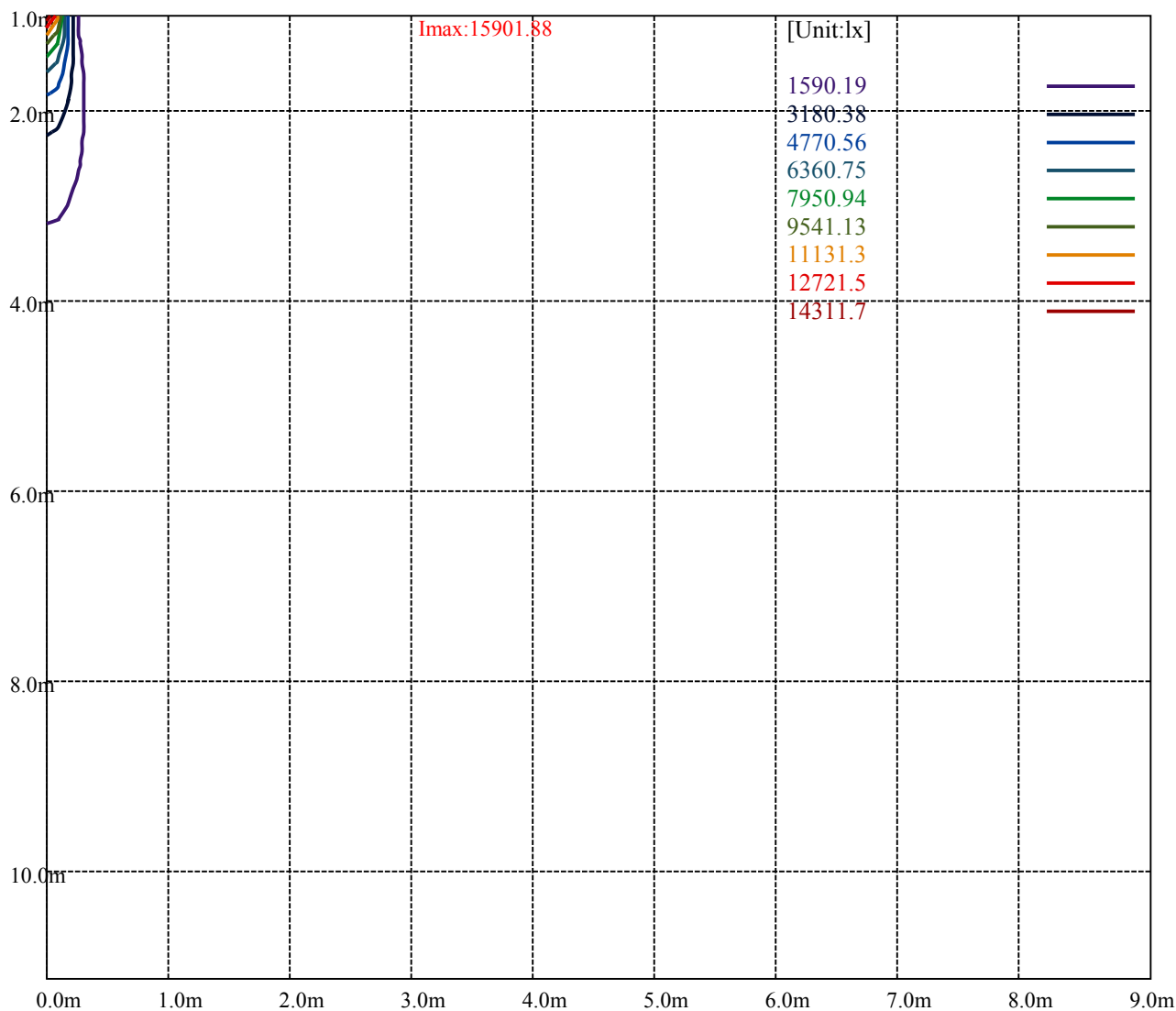
[Unit:cd]

Road

Imax:15901.88

(10%Imax)	1590.19	—
(20%Imax)	3180.38	—
(30%Imax)	4770.56	—
(40%Imax)	6360.75	—
(50%Imax)	7950.94	—
(60%Imax)	9541.13	—
(70%Imax)	11131.3	—
(80%Imax)	12721.5	—
(90%Imax)	14311.7	—

(10%E_{max}) 1590.19(20%E_{max}) 3180.37(30%E_{max}) 4770.56(40%E_{max}) 6360.74(50%E_{max}) 7950.93(60%E_{max}) 9541.12(70%E_{max}) 11131.3(80%E_{max}) 12721.5(90%E_{max}) 14311.7



Luminance Table

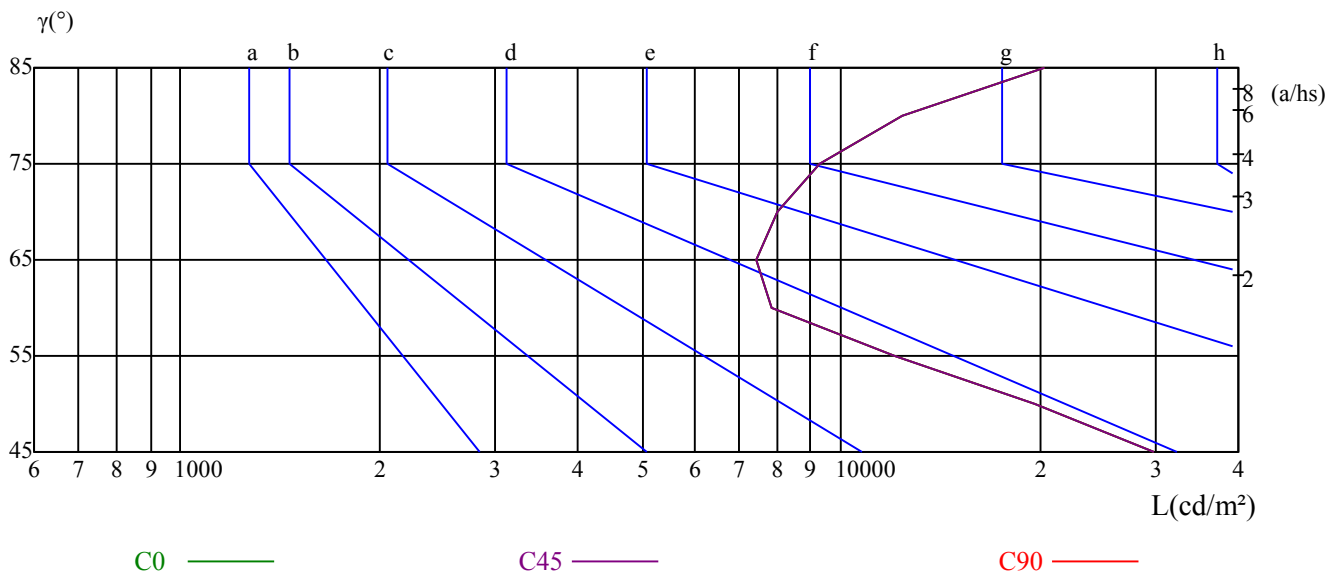
γ	45	50	55	60	65	70	75	80	85
C0	29825	19667	12046	7866	7443	8018	9311	12353	20269
C45	29825	19667	12046	7866	7443	8018	9311	12353	20269
C90	29825	19667	12046	7866	7443	8018	9311	12353	20269

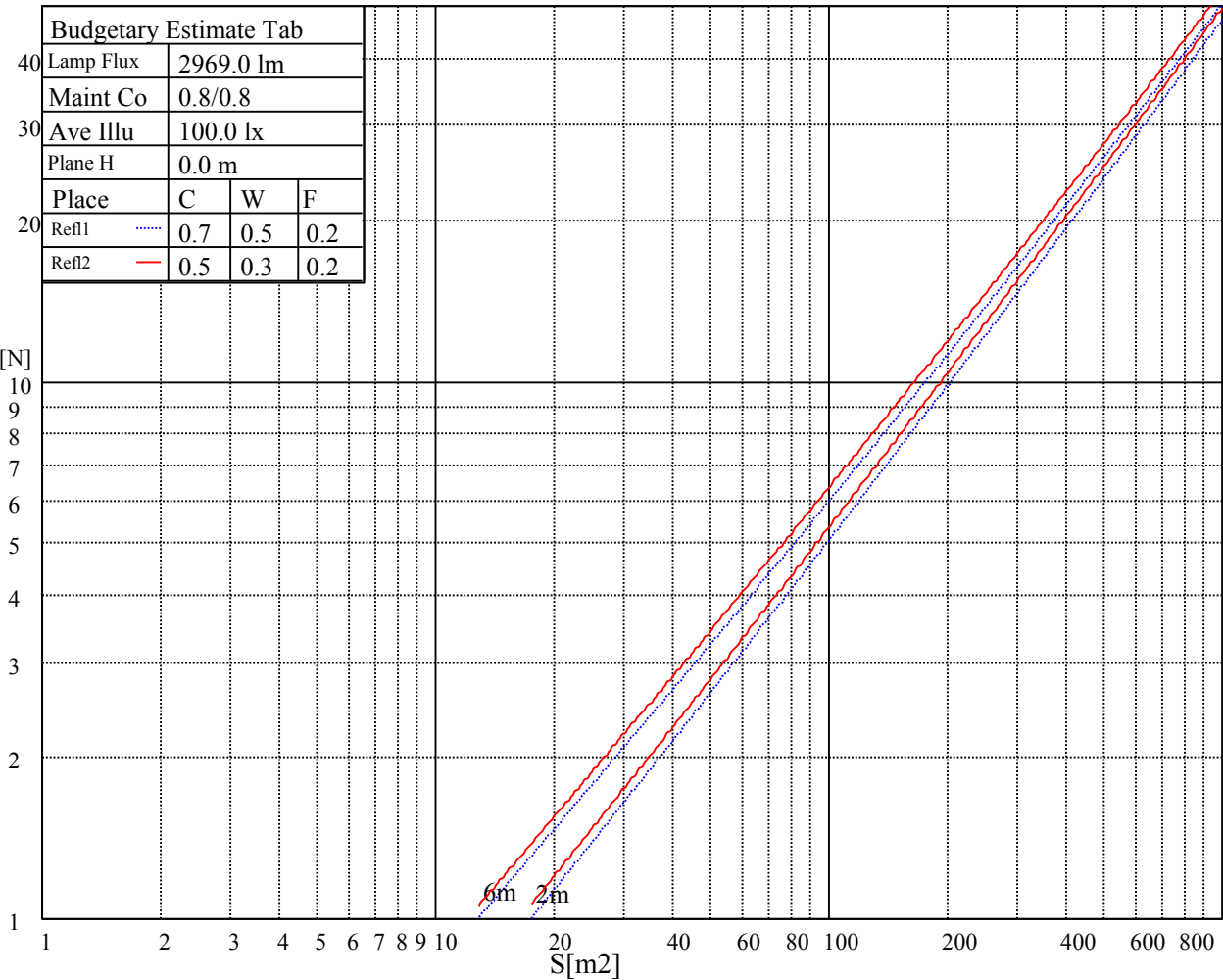
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
7443	7443	7443	9311	9311	9311	20269	20269	20269

Glare Table

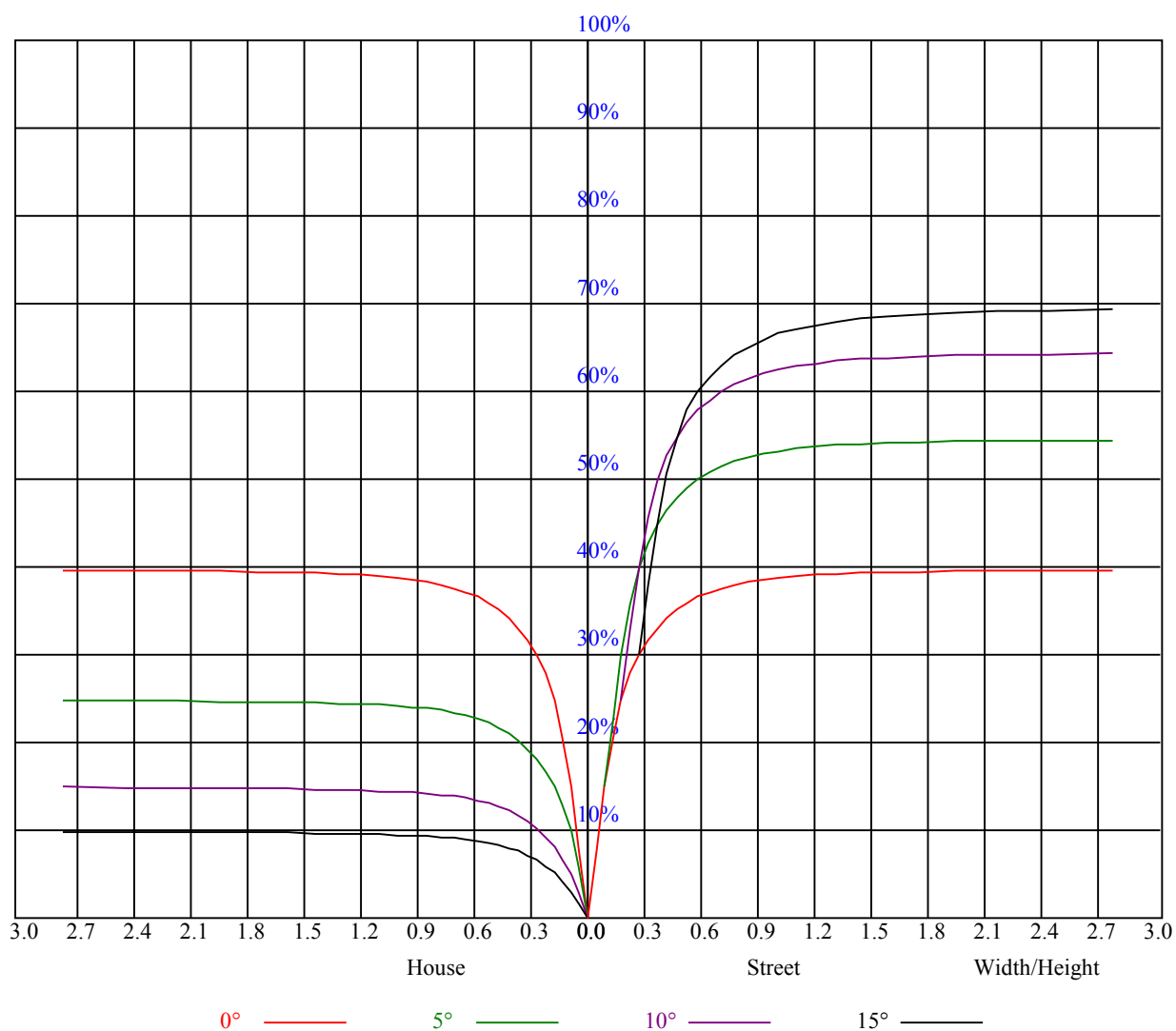
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

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



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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	15733.13	16031.25	16048.13	15901.88	15502.50	14675.63	13792.50	12735.00	11311.88
45.0	16042.50	15946.88	15530.63	14956.88	14068.13	12909.38	11671.88	10310.63	8707.50
90.0	15885.00	15525.00	14990.63	14006.25	13016.25	11179.13	10308.38	8696.81	7312.50
135.0	15946.88	15648.75	14850.00	14040.00	13185.00	11581.88	10220.63	8955.00	7228.13
180.0	15733.13	15226.88	14253.75	13320.00	11062.13	10886.63	9234.00	7594.31	6252.75
225.0	16042.50	15975.00	15643.13	14934.38	14141.25	13151.25	11156.63	10304.44	8854.31
270.0	15885.00	16014.38	15907.50	15592.50	15063.75	14073.75	13044.38	11885.63	10383.75
315.0	15946.88	16065.00	15935.63	15631.88	15063.75	14191.88	13179.38	11169.00	10477.69
360.0	15733.13	16031.25	16048.13	15901.88	15502.50	14675.63	13792.50	12735.00	11311.88
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	9703.13	8263.13	6721.88	5523.75	4370.63	3408.75	2885.63	2217.94	1879.88
45.0	7126.88	5833.13	4595.63	3678.75	2846.25	2265.75	1923.19	1692.56	1485.56
90.0	5863.50	4635.56	3722.63	2881.69	2325.94	1906.31	1642.50	1476.00	1341.00
135.0	5788.13	4792.50	3583.13	2908.13	2198.81	1802.25	1581.75	1402.31	1217.81
180.0	4914.00	3792.94	2985.75	2310.19	1903.50	1622.81	1433.81	1305.56	1107.96
225.0	7287.75	5982.75	4690.69	3613.50	2852.44	2218.50	1812.94	1593.00	1435.50
270.0	8786.25	7425.00	6001.88	4899.38	3825.00	2958.75	2874.38	1981.13	1668.94
315.0	8885.25	7298.44	6003.56	4736.25	3799.69	2954.25	2325.38	1959.19	1714.50
360.0	9703.13	8263.13	6721.88	5523.75	4370.63	3408.75	2885.63	2217.94	1879.88
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1675.69	1515.94	1355.06	1249.31	1154.25	1050.75	973.69	901.13	822.94
45.0	1363.50	1257.75	1139.63	1060.88	985.50	897.75	829.13	761.06	698.06
90.0	1121.46	1110.77	1028.59	937.18	867.32	801.17	724.89	669.38	618.13
135.0	1177.31	1091.81	997.31	926.44	856.13	775.13	712.69	655.88	598.50
180.0	1075.61	996.36	924.53	841.11	776.08	715.05	652.89	596.08	549.62
225.0	1285.88	1121.18	1100.31	993.49	929.76	859.67	783.90	712.46	654.81
270.0	1497.94	1363.50	1225.69	1131.75	1048.50	955.13	882.00	813.38	740.81
315.0	1505.25	1374.75	1265.06	1111.84	1060.65	983.87	902.70	825.58	762.08
360.0	1675.69	1515.94	1355.06	1249.31	1154.25	1050.75	973.69	901.13	822.94
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	751.50	694.13	636.19	589.50	541.13	494.44	455.63	414.00	375.19
45.0	636.75	585.56	536.06	488.81	441.56	400.50	367.31	334.13	303.75
90.0	560.87	523.13	474.64	423.34	391.16	353.64	317.03	294.75	271.69
135.0	546.75	502.31	453.38	410.06	370.13	334.69	306.00	286.31	250.93
180.0	502.31	461.81	419.18	379.35	346.39	313.82	284.34	260.94	240.64
225.0	595.74	547.76	497.36	449.83	409.22	369.79	335.59	307.58	282.32
270.0	675.00	621.00	568.69	525.38	478.69	432.00	394.31	357.19	324.00
315.0	696.71	643.28	587.70	536.74	492.08	444.71	403.65	370.41	338.74
360.0	751.50	694.13	636.19	589.50	541.13	494.44	455.63	414.00	375.19
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	343.13	313.31	286.31	256.28	237.54	223.59	204.41	190.24	178.03
45.0	286.31	256.89	233.94	218.53	204.81	189.51	174.15	161.78	148.50
90.0	243.45	227.70	212.51	197.72	182.93	169.14	155.42	142.59	131.34
135.0	232.26	215.83	200.36	187.14	175.44	161.66	147.26	136.58	125.21
180.0	219.32	204.98	192.71	178.99	163.74	150.41	137.98	126.45	116.38
225.0	254.25	235.07	218.31	201.21	188.94	177.13	163.52	148.89	137.93
270.0	297.00	284.63	243.51	224.16	208.69	192.54	180.62	167.91	154.91
315.0	303.58	279.23	257.91	234.28	218.42	204.81	188.55	174.83	162.84
360.0	343.13	313.31	286.31	256.28	237.54	223.59	204.41	190.24	178.03

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	160.71	148.50	136.24	122.91	109.97	99.96	86.63	77.29	69.13
45.0	135.06	123.58	110.93	99.84	88.31	78.64	69.92	62.89	54.45
90.0	119.31	108.96	97.43	86.46	77.79	68.46	60.36	53.89	47.87
135.0	113.79	104.29	95.01	85.22	76.39	68.85	61.43	54.79	47.48
180.0	105.58	96.36	86.57	77.34	69.75	61.88	54.62	48.66	43.20
225.0	127.52	115.71	104.46	94.89	84.88	75.54	67.95	60.36	54.23
270.0	142.59	131.68	119.76	109.41	97.93	87.02	77.79	69.58	60.64
315.0	148.39	138.15	125.27	111.43	102.09	90.84	79.14	72.00	64.63
360.0	160.71	148.50	136.24	122.91	109.97	99.96	86.63	77.29	69.13
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	60.30	54.11	48.21	41.63	37.07	33.24	29.14	26.33	24.08
45.0	48.49	43.31	37.24	33.02	29.53	26.33	23.51	22.16	21.21
90.0	41.01	36.34	32.40	29.14	25.65	23.57	22.28	21.26	20.59
135.0	41.96	37.46	33.13	29.36	26.49	24.19	22.33	21.43	20.70
180.0	37.29	33.41	30.15	27.06	24.58	23.12	22.11	21.26	20.64
225.0	46.91	41.57	37.01	33.19	29.03	26.10	23.85	22.28	21.38
270.0	54.51	48.60	41.79	37.29	33.24	29.36	26.16	23.96	22.50
315.0	55.58	50.18	44.49	38.98	34.20	30.49	27.00	24.13	22.56
360.0	60.30	54.11	48.21	41.63	37.07	33.24	29.14	26.33	24.08
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	22.67	21.83	21.15	20.48	19.86	19.35	18.79	18.28	17.78
45.0	20.59	19.97	19.35	18.73	18.23	17.66	17.27	16.88	16.37
90.0	20.03	19.41	18.84	18.34	17.89	17.44	16.99	16.59	16.14
135.0	20.03	19.41	18.84	18.28	17.78	17.44	16.88	16.48	16.03
180.0	19.97	19.52	18.90	18.39	17.94	17.49	16.93	16.54	16.14
225.0	20.70	19.97	19.35	18.79	18.28	17.83	17.33	16.88	16.48
270.0	21.71	20.93	20.36	19.74	19.13	18.62	18.17	17.72	17.21
315.0	21.60	20.93	20.25	19.58	19.07	18.56	18.06	17.55	17.16
360.0	22.67	21.83	21.15	20.48	19.86	19.35	18.79	18.28	17.78
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	17.21	16.76	16.37	15.86	15.47	15.08	14.57	14.23	13.89
45.0	15.98	15.53	15.13	14.74	14.40	14.01	13.67	13.39	13.05
90.0	15.75	15.30	14.96	14.63	14.29	13.95	13.67	13.39	12.94
135.0	15.58	15.24	14.96	14.57	14.34	14.06	13.67	13.39	13.05
180.0	15.69	15.36	14.96	14.63	14.34	14.06	13.73	13.39	12.99
225.0	16.03	15.58	15.24	14.96	14.63	14.40	14.12	13.84	13.56
270.0	16.82	16.37	15.98	15.47	15.13	14.85	14.51	14.29	13.95
315.0	16.65	16.26	15.86	15.47	15.02	14.74	14.34	14.01	13.67
360.0	17.21	16.76	16.37	15.86	15.47	15.08	14.57	14.23	13.89
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	13.44	13.05	12.54	12.09	11.64	11.14	10.69	10.18	9.84
45.0	12.60	12.21	11.76	11.25	10.69	10.18	9.79	9.45	9.28
90.0	12.60	12.09	11.64	10.91	10.41	9.90	9.51	9.28	9.28
135.0	12.54	12.04	11.48	11.03	10.52	9.90	9.56	9.28	9.28
180.0	12.49	11.98	11.48	10.86	10.24	9.79	9.51	9.34	9.39
225.0	13.16	12.77	12.32	11.76	11.19	10.58	10.01	9.68	9.39
270.0	13.61	13.28	12.88	12.43	12.09	11.25	10.46	9.96	9.56
315.0	13.33	12.83	12.43	11.93	11.42	10.97	10.41	10.01	9.56
360.0	13.44	13.05	12.54	12.09	11.64	11.14	10.69	10.18	9.84

Intensity data(cd)

Appendix Page: 18 Total:18

C/ $\gamma(^{\circ})$	90.0
0.0	9.51
45.0	9.28
90.0	9.23
135.0	9.34
180.0	9.34
225.0	9.28
270.0	9.34
315.0	9.34
360.0	9.51