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Nata

LumCAT: 3-2500-L	
Luminaire: 92.70.131.00	
Report No: 200522-B003	Voltage(V): 34.2900
Test No: 200522-C003	Current(A): 0.5000
LampCAT: SEOUL AWx15	Power (W): 17.1450
Lamp flux(lm): 2501.7	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 0	Width(mm): 0
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 2418.45
Efficiency(%): 96.67%
Lumens(lm)/Power(W): 141.06
Central intensity(cd): 17661.090
Maximum intensity(cd): 17661.090
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=16.1
[C90/270]Total=16.1
Field angle(10%Imax): [C0/180]Total=33.3
[C90/270]Total=33.3
Maximum s/h(1/2): C0_180=0.28 C90_270=0.28
Maximum s/h(1/4): C0_180=0.27 C90_270=0.27
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 96.67%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.591%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	17661.094	0.000	0	.000%	.000%
1.0	17497.266	16.823	16.823	.672%	.696%
2.0	16987.500	49.496	66.318	1.978%	2.742%
3.0	16140.234	79.231	145.549	3.167%	6.018%
4.0	15093.984	104.551	250.1	4.179%	10.341%
5.0	13716.703	123.942	374.042	4.954%	15.466%
6.0	12036.727	135.341	509.383	5.410%	21.062%
7.0	10468.477	139.689	649.073	5.584%	26.838%
8.0	8875.828	138.444	787.516	5.534%	32.563%
9.0	7182.281	130.142	917.658	5.202%	37.944%
10.0	5722.453	116.783	1034.441	4.668%	42.773%
11.0	4623.469	103.377	1137.818	4.132%	47.047%
12.0	3746.953	91.501	1229.319	3.658%	50.831%
13.0	3070.195	80.902	1310.222	3.234%	54.176%
14.0	2621.953	72.859	1383.081	2.912%	57.189%
15.0	2248.313	66.861	1449.942	2.673%	59.953%
16.0	1925.648	61.160	1511.102	2.445%	62.482%
17.0	1673.438	56.047	1567.149	2.240%	64.800%
18.0	1488.445	52.133	1619.282	2.084%	66.955%
19.0	1341.724	49.239	1668.521	1.968%	68.991%
20.0	1223.466	46.950	1715.471	1.877%	70.933%
21.0	1119.902	44.997	1760.469	1.799%	72.793%
22.0	1046.869	43.542	1804.011	1.741%	74.594%
23.0	996.884	42.883	1846.894	1.714%	76.367%
24.0	942.300	42.398	1889.292	1.695%	78.120%
25.0	904.050	41.982	1931.274	1.678%	79.856%
26.0	871.995	41.924	1973.197	1.676%	81.589%
27.0	844.179	41.987	2015.184	1.678%	83.325%
28.0	816.455	42.044	2057.228	1.681%	85.064%
29.0	784.765	41.892	2099.12	1.675%	86.796%
30.0	744.237	41.283	2140.403	1.650%	88.503%
31.0	684.084	39.748	2180.151	1.589%	90.147%
32.0	608.386	37.028	2217.179	1.480%	91.678%
33.0	525.769	33.413	2250.591	1.336%	93.059%
34.0	439.144	29.201	2279.793	1.167%	94.267%
35.0	347.688	24.436	2304.229	.977%	95.277%
36.0	258.975	19.316	2323.545	.772%	96.076%
37.0	177.110	14.223	2337.768	.569%	96.664%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	109.737	9.575	2347.342	.383%	97.060%
39.0	59.899	5.790	2353.132	.231%	97.299%
40.0	35.262	3.319	2356.451	.133%	97.436%
41.0	25.643	2.169	2358.62	.087%	97.526%
42.0	22.373	1.745	2360.364	.070%	97.598%
43.0	20.384	1.584	2361.948	.063%	97.664%
44.0	19.399	1.502	2363.45	.060%	97.726%
45.0	18.570	1.459	2364.909	.058%	97.786%
46.0	17.796	1.422	2366.331	.057%	97.845%
47.0	17.079	1.387	2367.718	.055%	97.902%
48.0	16.495	1.357	2369.075	.054%	97.958%
49.0	15.996	1.334	2370.41	.053%	98.013%
50.0	15.588	1.317	2371.727	.053%	98.068%
51.0	15.026	1.295	2373.022	.052%	98.121%
52.0	14.709	1.276	2374.298	.051%	98.174%
53.0	14.344	1.264	2375.562	.051%	98.227%
54.0	14.091	1.253	2376.815	.050%	98.278%
55.0	13.852	1.247	2378.062	.050%	98.330%
56.0	13.760	1.248	2379.31	.050%	98.381%
57.0	13.676	1.254	2380.564	.050%	98.433%
58.0	13.669	1.265	2381.829	.051%	98.486%
59.0	13.577	1.274	2383.103	.051%	98.538%
60.0	13.528	1.281	2384.383	.051%	98.591%
61.0	13.451	1.287	2385.671	.051%	98.645%
62.0	13.247	1.286	2386.957	.051%	98.698%
63.0	13.043	1.279	2388.236	.051%	98.751%
64.0	12.684	1.262	2389.498	.050%	98.803%
65.0	12.410	1.242	2390.74	.050%	98.854%
66.0	12.255	1.231	2391.971	.049%	98.905%
67.0	12.052	1.222	2393.193	.049%	98.956%
68.0	11.876	1.212	2394.405	.048%	99.006%
69.0	11.693	1.202	2395.607	.048%	99.055%
70.0	11.454	1.189	2396.796	.048%	99.105%
71.0	11.166	1.169	2397.965	.047%	99.153%
72.0	10.842	1.144	2399.11	.046%	99.200%
73.0	10.596	1.121	2400.231	.045%	99.247%
74.0	10.385	1.103	2401.334	.044%	99.292%
75.0	10.245	1.090	2402.424	.044%	99.337%

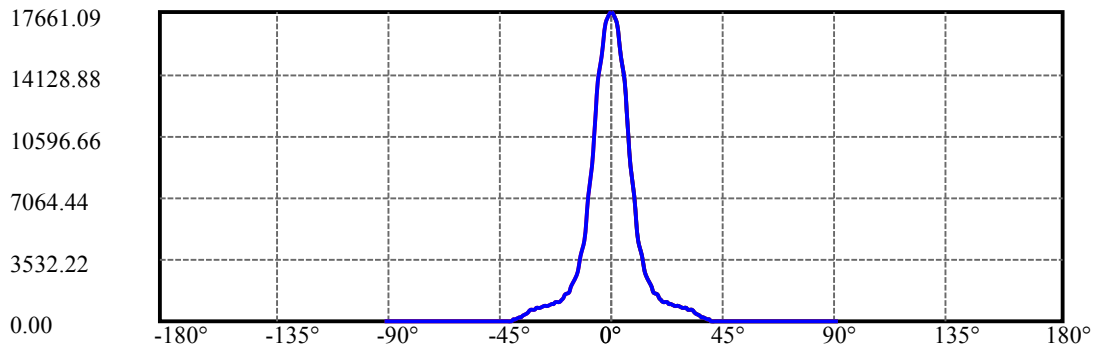
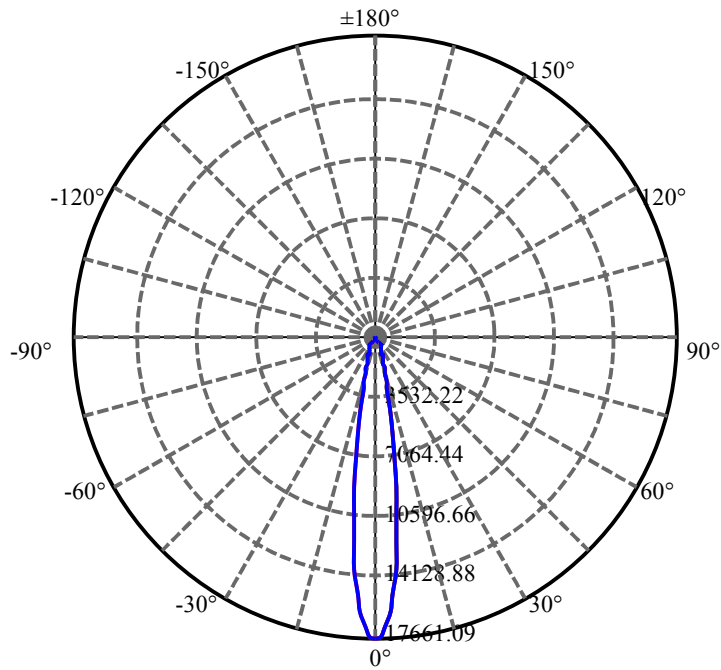
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	10.167	1.084	2403.507	.043%	99.382%
77.0	10.111	1.081	2404.588	.043%	99.427%
78.0	10.076	1.081	2405.669	.043%	99.471%
79.0	10.005	1.079	2406.748	.043%	99.516%
80.0	9.935	1.075	2407.823	.043%	99.560%
81.0	9.886	1.072	2408.895	.043%	99.605%
82.0	9.844	1.070	2409.965	.043%	99.649%
83.0	9.788	1.067	2411.032	.043%	99.693%
84.0	9.745	1.064	2412.096	.043%	99.737%
85.0	9.717	1.062	2413.158	.042%	99.781%
86.0	9.710	1.062	2414.22	.042%	99.825%
87.0	9.703	1.062	2415.283	.042%	99.869%
88.0	9.738	1.065	2416.348	.043%	99.913%
89.0	9.619	1.061	2417.409	.042%	99.957%
90.0	9.422	1.044	2418.453	.042%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	2140.40	85.56%	88.50%
0-40	2356.45	94.19%	97.44%
0-60	2384.38	95.31%	98.59%
0-90	2417.41	96.63%	99.96%
0-120	2417.41	96.63%	99.96%
0-180	2418.45	96.67%	100.00%
60-90	34.31	1.37%	1.42%
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%
0-25.08	1934.76	77.34%	80.00%

ZONAL LUMEN SUMMARY

0-10	1034.44
10-20	681.03
20-30	424.93
30-40	216.05
40-50	15.28
50-60	12.66
60-70	12.41
70-80	11.03
80-90	9.59
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:

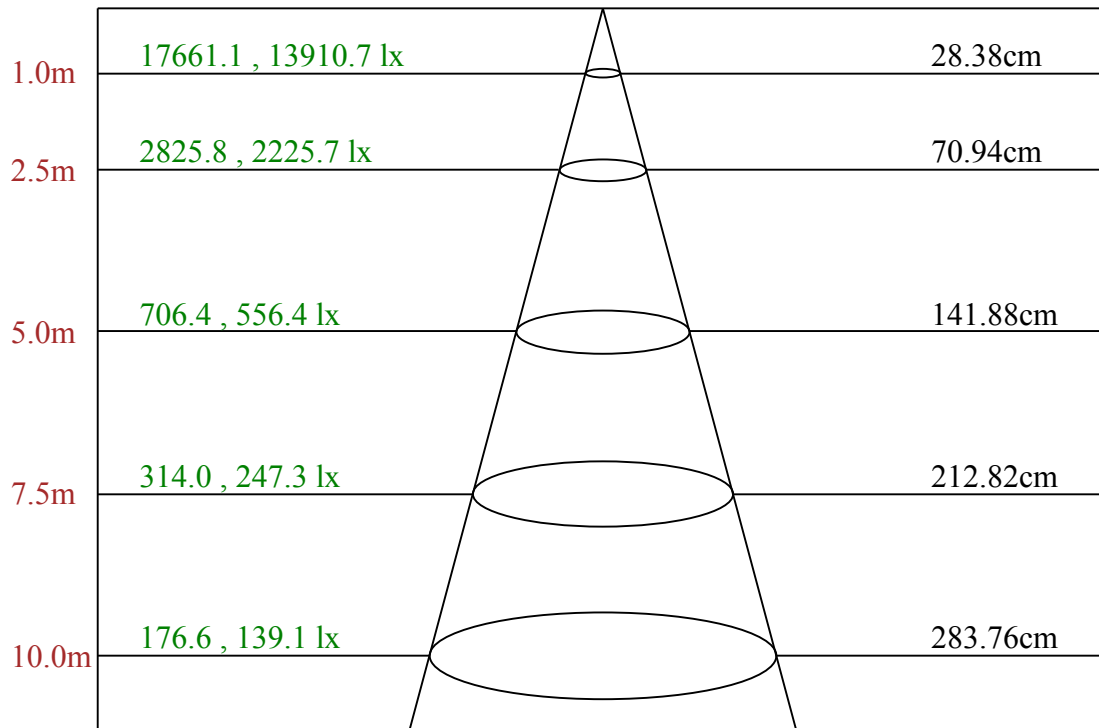
C90/C270:

Field angle(10%Imax):C0/180Left:16.6 Right:16.6

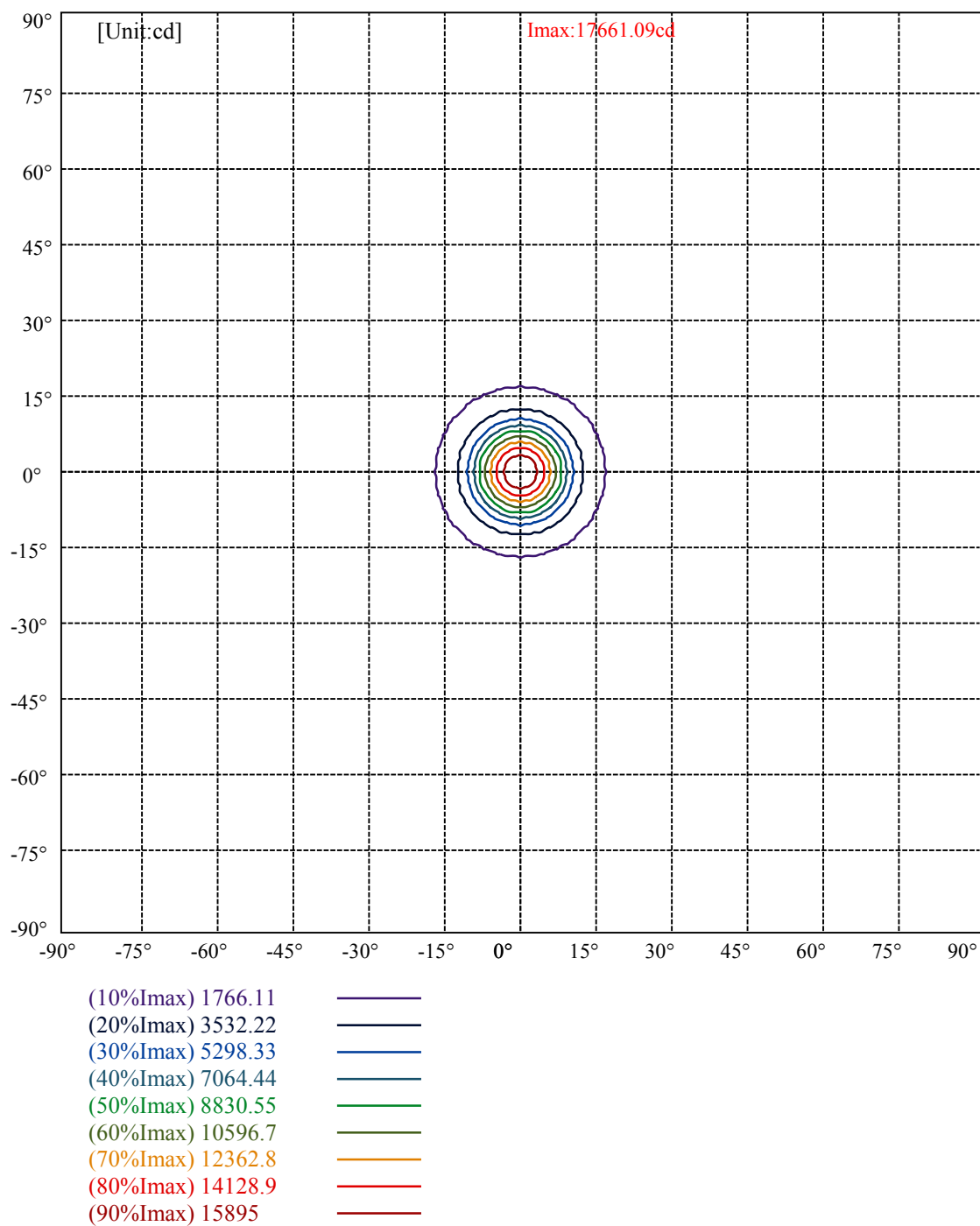
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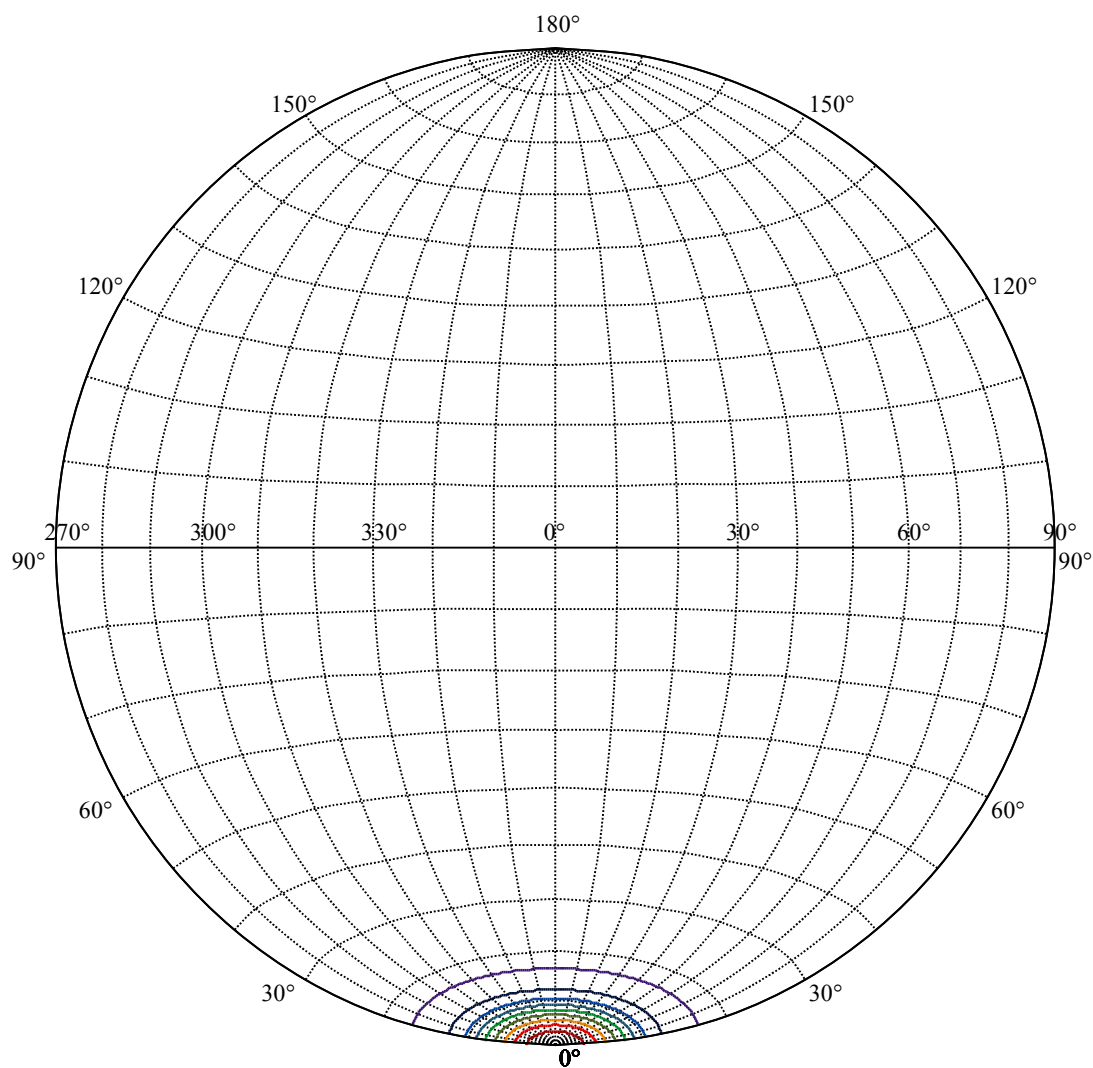
Beam Angle(50%Imax):C0/180Left:8.0 Right:8.0

:C90/270Left:8.0 Right:8.0



Max , Ave Beam angle of C0 plane 16.15





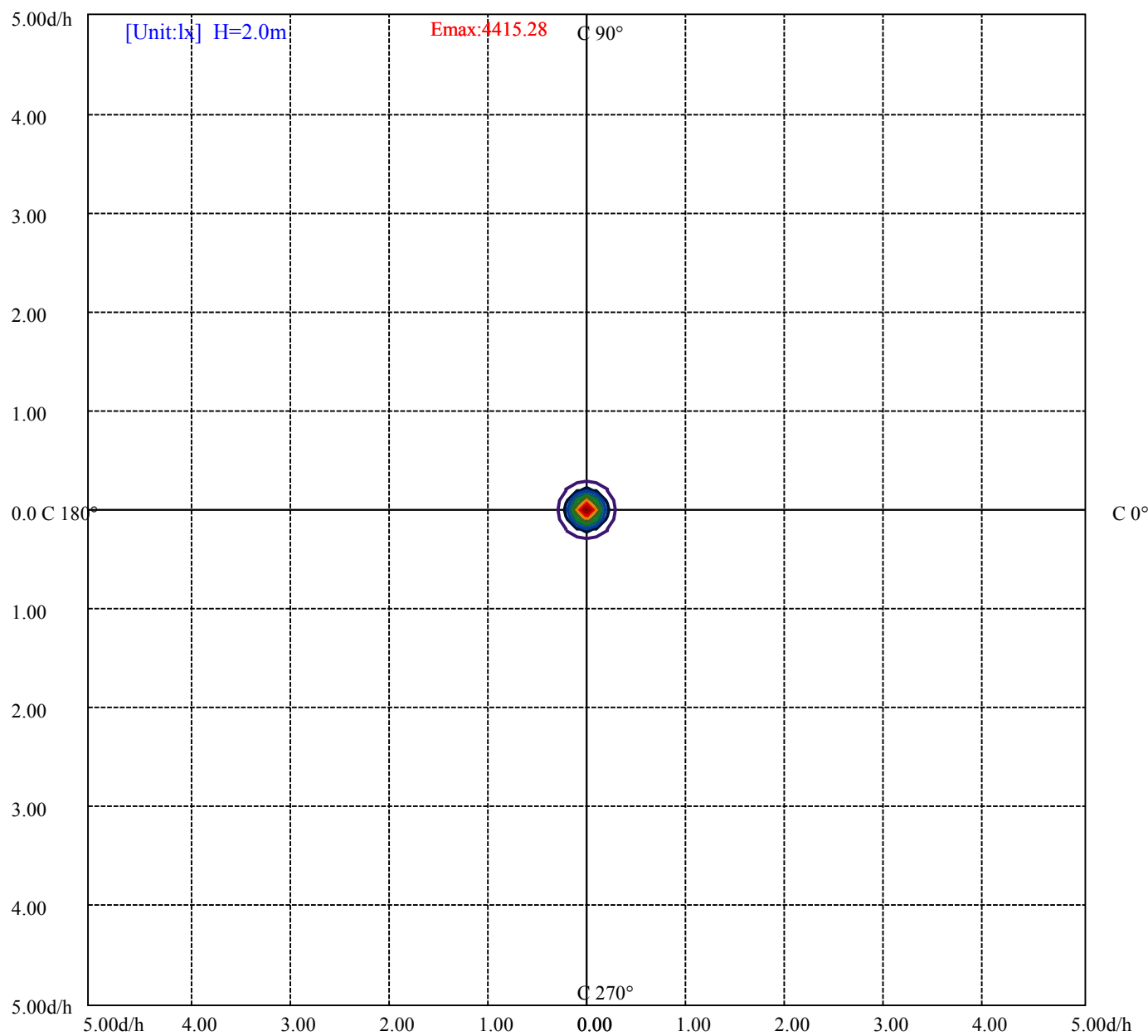
House

[Unit:cd]

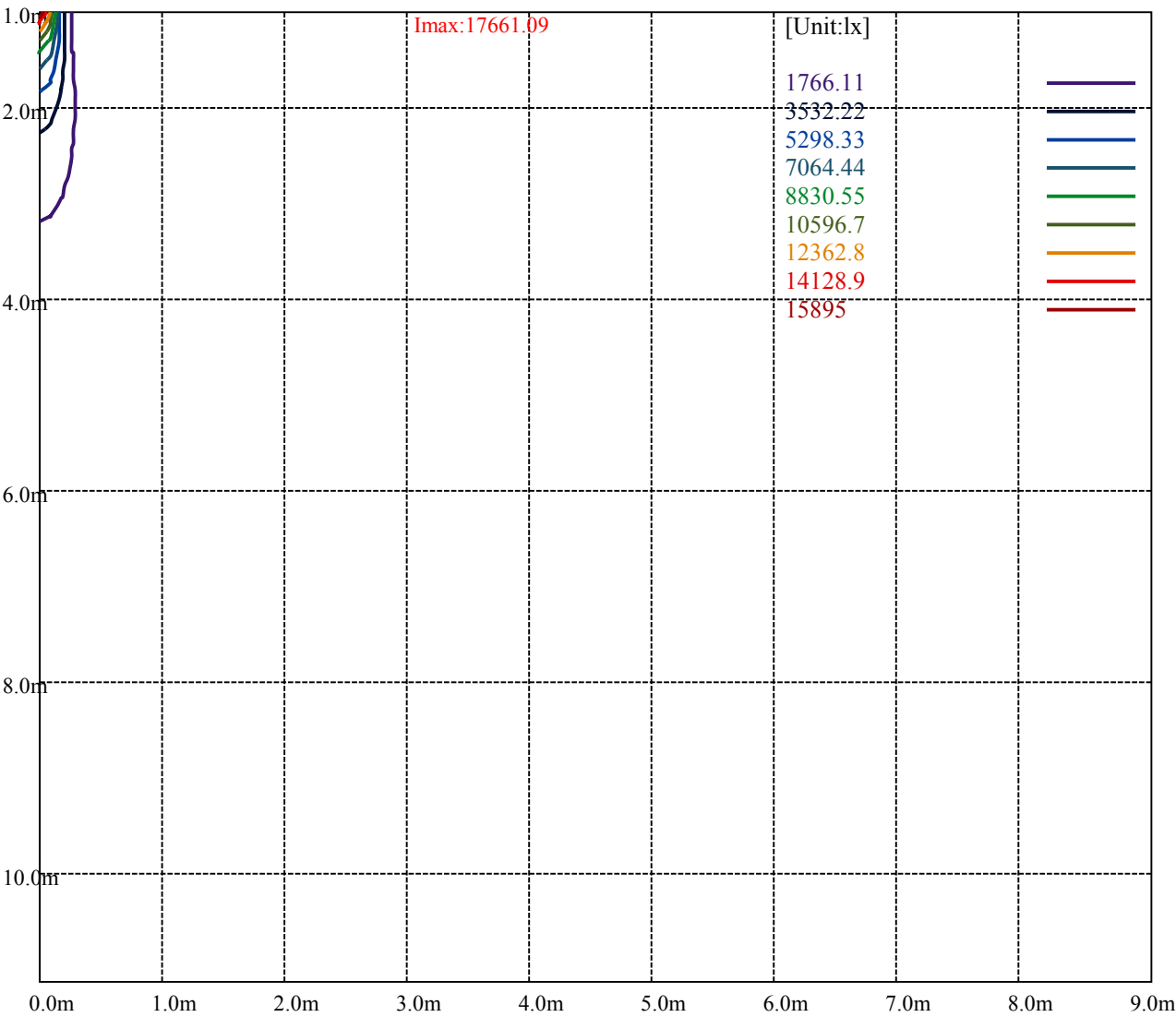
Road

Imax:17661.09

(10%Imax)	1766.11	—
(20%Imax)	3532.22	—
(30%Imax)	5298.33	—
(40%Imax)	7064.44	—
(50%Imax)	8830.55	—
(60%Imax)	10596.7	—
(70%Imax)	12362.8	—
(80%Imax)	14128.9	—
(90%Imax)	15895	—



(10%Emax)	441.5275	—
(20%Emax)	883.0525	—
(30%Emax)	1324.58	—
(40%Emax)	1766.108	—
(50%Emax)	2207.633	—
(60%Emax)	2649.15	—
(70%Emax)	3090.675	—
(80%Emax)	3532.225	—
(90%Emax)	3973.75	—



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

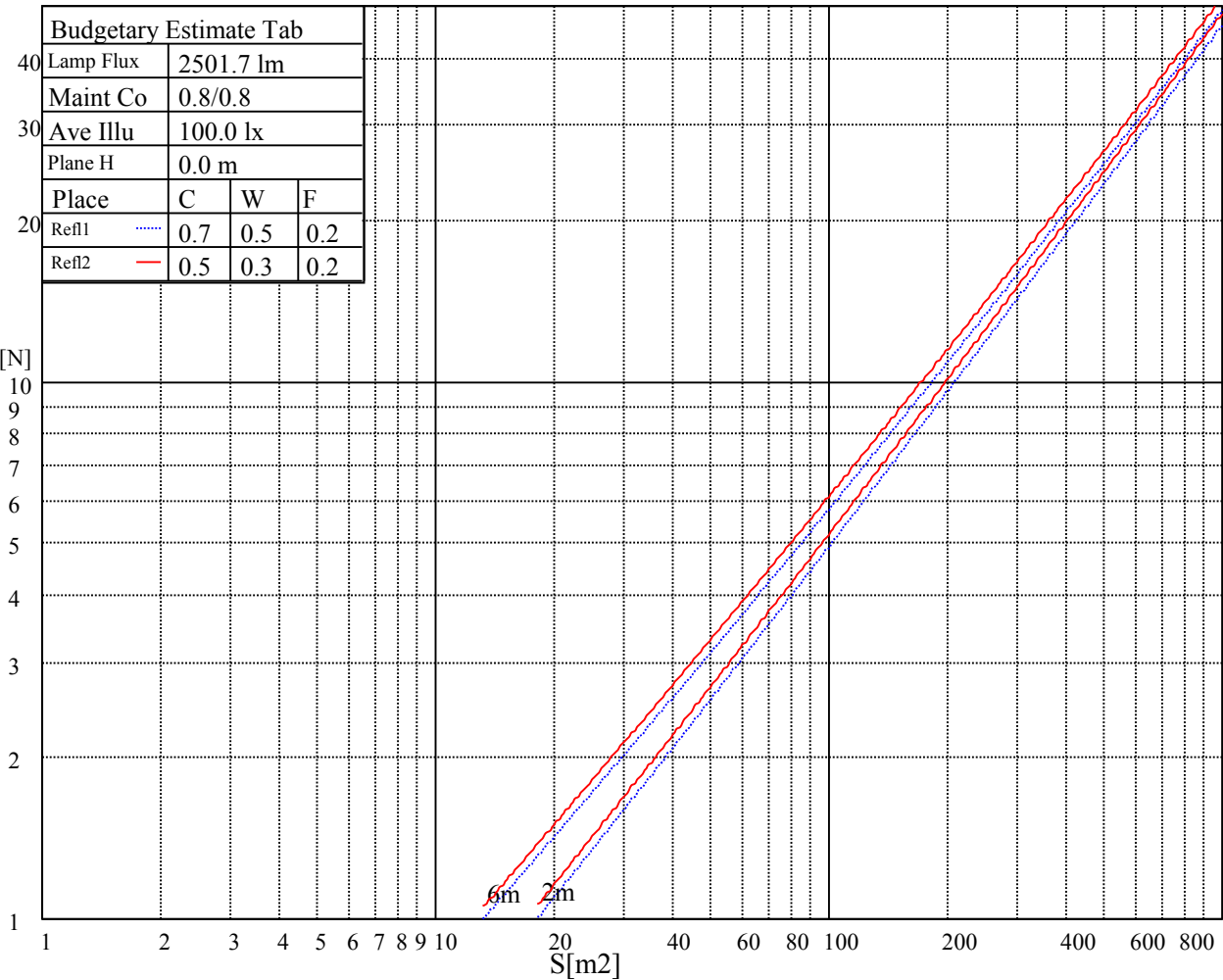
Luminance Limiting Curve

 $\gamma(^{\circ})$ 

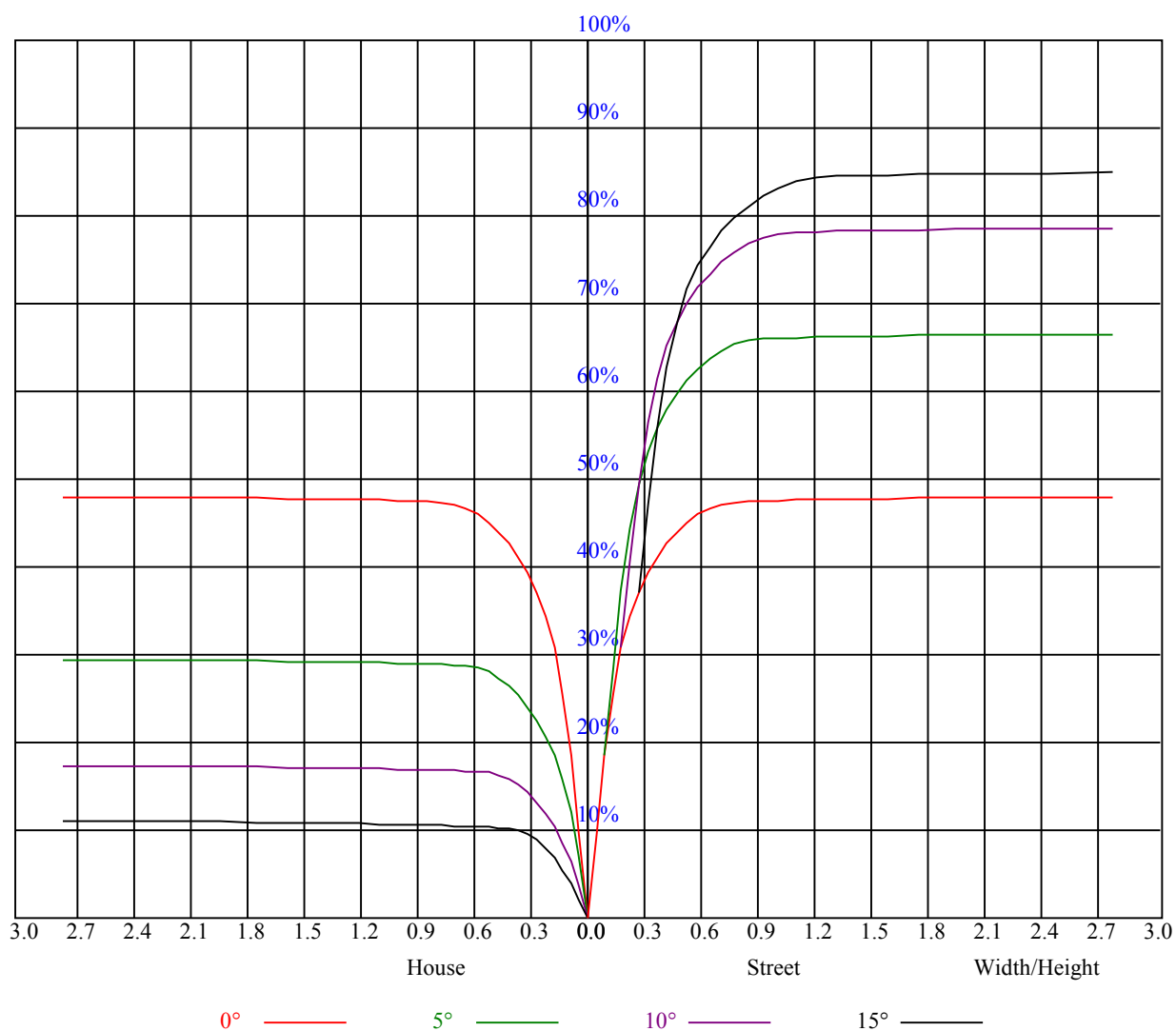
C0 ———

C45 ———

C90 ———



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	1.15	1.15	1.15	1.12	1.12	1.12	1.07	1.07	1.07	1.03	1.03	1.03	0.99	0.99	0.99	0.97
1	1.09	1.07	1.05	1.07	1.05	1.03	1.03	1.01	1.00	0.99	0.98	0.97	0.96	0.95	0.94	0.93
2	1.03	1.00	0.98	1.02	0.99	0.97	0.99	0.96	0.95	0.96	0.94	0.93	0.93	0.92	0.91	0.89
3	0.99	0.95	0.92	0.97	0.94	0.91	0.95	0.92	0.90	0.93	0.91	0.89	0.91	0.89	0.87	0.86
4	0.95	0.91	0.88	0.94	0.90	0.87	0.92	0.89	0.86	0.90	0.87	0.85	0.88	0.86	0.84	0.83
5	0.91	0.87	0.84	0.90	0.86	0.84	0.89	0.85	0.83	0.87	0.84	0.82	0.86	0.83	0.82	0.80
6	0.88	0.84	0.81	0.87	0.83	0.81	0.86	0.83	0.80	0.85	0.82	0.80	0.84	0.81	0.79	0.78
7	0.85	0.81	0.78	0.85	0.81	0.78	0.83	0.80	0.77	0.82	0.79	0.77	0.81	0.79	0.77	0.76
8	0.82	0.78	0.76	0.82	0.78	0.75	0.81	0.78	0.75	0.80	0.77	0.75	0.79	0.77	0.75	0.74
9	0.80	0.76	0.73	0.80	0.76	0.73	0.79	0.75	0.73	0.78	0.75	0.73	0.78	0.75	0.73	0.72
10	0.78	0.74	0.71	0.78	0.74	0.71	0.77	0.73	0.71	0.76	0.73	0.71	0.76	0.73	0.71	0.70



Nata 3-2500-L

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	17786.25	17589.38	16981.88	15890.63	14731.88	13331.25	11317.50	9663.75	8111.25		
45.0	17673.75	17184.38	16081.88	14928.75	13635.00	11936.25	10068.75	8431.88	6705.00		
90.0	17493.75	16925.63	16143.75	14956.88	13528.13	11059.88	10235.25	8579.81	6825.38		
135.0	17690.63	17448.75	17038.13	16323.75	15384.38	14231.25	12510.00	10929.38	9331.88		
180.0	17786.25	17685.00	17370.00	16661.25	15654.38	14625.00	13072.50	11112.19	9665.44		
225.0	17673.75	17870.63	17735.63	17240.63	16650.00	15615.00	14220.00	12836.25	11097.00		
270.0	17493.75	17763.75	17589.38	17122.50	16447.50	15547.50	13798.13	12330.00	10996.88		
315.0	17690.63	17510.63	16959.38	15997.50	14720.63	13387.50	11071.69	9864.56	8273.81		
360.0	17786.25	17589.38	16981.88	15890.63	14731.88	13331.25	11317.50	9663.75	8111.25		
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0		
0.0	6255.00	5017.50	4050.00	3256.88	2857.50	2320.88	2028.38	1764.00	1557.00		
45.0	5253.75	4230.00	3386.25	2851.88	2404.13	2119.50	1792.13	1593.56	1440.00		
90.0	5489.44	4335.19	3497.63	2944.69	2467.69	2093.63	1827.00	1602.56	1388.25		
135.0	7391.25	5979.38	4809.38	3841.88	3144.38	2891.25	2275.31	1989.00	1734.19		
180.0	8032.50	6193.13	5002.88	4095.00	3261.94	2767.50	2386.69	2017.13	1779.75		
225.0	9460.69	7648.31	6053.06	4917.38	3948.75	3243.94	2767.50	2395.13	2020.50		
270.0	8791.88	7250.63	6046.88	4651.88	3740.63	3189.38	2874.38	2257.88	1935.00		
315.0	6783.75	5125.50	4141.69	3416.06	2736.56	2349.56	2035.13	1785.94	1532.81		
360.0	6255.00	5017.50	4050.00	3256.88	2857.50	2320.88	2028.38	1764.00	1557.00		
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0		
0.0	1411.88	1277.44	1169.44	1094.63	1026.00	975.94	930.94	895.50	869.63		
45.0	1278.00	1180.13	1114.31	1032.75	984.94	943.88	900.00	873.56	849.94		
90.0	1252.69	1120.11	1046.31	974.87	922.39	872.61	832.84	807.47	783.23		
135.0	1522.13	1383.19	1262.25	1154.25	1081.69	1024.88	960.19	921.38	888.75		
180.0	1587.94	1404.00	1297.69	1116.96	1089.84	1027.46	967.89	917.78	882.73		
225.0	1789.88	1602.00	1431.00	1290.94	1117.63	1099.29	1029.15	977.79	928.80		
270.0	1678.50	1503.56	1348.88	1227.38	1143.56	1077.19	1009.69	962.44	924.19		
315.0	1386.56	1263.38	1117.86	1067.46	1008.90	953.83	907.71	876.49	848.70		
360.0	1411.88	1277.44	1169.44	1094.63	1026.00	975.94	930.94	895.50	869.63		
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0		
0.0	849.38	818.44	789.19	753.19	657.00	583.31	497.81	383.63	288.00		
45.0	821.81	797.06	750.38	676.69	593.44	502.31	404.44	320.06	285.75		
90.0	762.41	735.86	683.66	627.36	558.11	472.39	398.53	313.93	227.70		
135.0	856.69	829.13	806.63	770.63	707.63	636.19	550.69	469.69	372.94		
180.0	855.34	826.31	799.03	772.20	735.13	666.39	588.38	499.44	388.41		
225.0	895.73	862.99	836.83	811.35	784.63	724.84	650.03	570.99	463.16		
270.0	887.06	859.50	834.75	810.56	768.38	703.69	621.56	546.75	450.56		
315.0	825.02	802.35	777.66	731.93	668.36	577.97	494.72	408.66	304.99		
360.0	849.38	818.44	789.19	753.19	657.00	583.31	497.81	383.63	288.00		
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0		
0.0	230.40	110.53	65.76	32.79	24.19	21.54	18.56	17.66	17.27		
45.0	138.21	75.71	43.14	30.04	27.23	24.24	22.78	22.44	21.66		
90.0	160.48	97.09	47.25	36.45	31.33	26.27	25.03	24.02	23.06		
135.0	293.06	194.57	116.44	59.68	27.11	22.16	19.24	16.43	15.92		
180.0	300.60	210.09	128.03	62.89	32.06	21.83	18.79	16.14	15.19		
225.0	369.28	282.88	201.99	109.86	56.64	31.05	23.91	19.86	17.49		
270.0	353.81	289.13	192.38	104.85	52.76	29.87	24.98	21.66	19.91		
315.0	225.96	156.88	82.91	42.64	30.77	28.18	25.71	24.86	24.69		
360.0	230.40	110.53	65.76	32.79	24.19	21.54	18.56	17.66	17.27		

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	16.76	15.98	15.41	14.91	14.68	14.46	14.06	13.78	13.50
45.0	20.14	19.35	19.01	18.39	17.66	17.10	16.09	15.58	15.36
90.0	21.94	21.54	20.31	19.69	19.29	18.17	17.10	16.93	16.71
135.0	15.64	14.68	14.01	13.73	13.56	13.28	13.16	13.05	12.66
180.0	14.57	14.06	13.56	13.28	12.94	12.71	12.77	12.77	12.54
225.0	16.54	15.81	15.13	14.51	14.01	13.50	13.11	12.88	12.60
270.0	19.80	19.24	17.89	17.16	16.54	15.92	15.30	15.36	15.02
315.0	23.18	21.71	21.32	20.31	19.29	19.58	18.62	17.33	16.37
360.0	16.76	15.98	15.41	14.91	14.68	14.46	14.06	13.78	13.50
C/ γ (°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	13.39	13.28	13.28	13.39	13.33	13.28	13.05	12.88	12.60
45.0	15.02	14.85	14.74	14.29	13.95	13.61	13.44	13.28	12.99
90.0	16.20	15.86	16.31	16.20	15.92	15.86	15.64	15.02	14.18
135.0	12.43	12.32	12.43	12.49	12.43	12.38	12.49	12.54	12.49
180.0	12.21	11.98	11.98	11.98	12.15	12.21	12.26	12.21	12.09
225.0	12.38	12.15	12.04	11.93	11.98	12.04	12.04	11.87	11.76
270.0	14.57	14.40	14.01	13.61	13.50	13.78	14.01	14.29	14.23
315.0	16.54	15.98	15.30	15.53	16.09	15.47	15.30	15.53	15.64
360.0	13.39	13.28	13.28	13.39	13.33	13.28	13.05	12.88	12.60
C/ γ (°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	12.38	12.32	12.26	12.15	11.98	11.93	11.76	11.31	10.86
45.0	12.77	12.66	12.38	12.21	12.15	11.81	11.31	11.03	10.63
90.0	13.89	13.44	12.43	12.09	11.81	11.36	11.25	11.03	10.74
135.0	12.38	12.09	11.98	11.87	11.70	11.70	11.59	11.48	11.19
180.0	11.93	11.76	11.64	11.64	11.64	11.64	11.53	11.42	11.19
225.0	11.70	11.59	11.53	11.48	11.53	11.53	11.59	11.53	11.42
270.0	14.29	13.61	13.16	12.99	12.83	12.38	12.32	12.09	11.93
315.0	15.02	14.01	13.89	13.61	12.77	12.66	12.21	11.76	11.36
360.0	12.38	12.32	12.26	12.15	11.98	11.93	11.76	11.31	10.86
C/ γ (°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	10.52	10.24	10.07	9.96	9.90	9.84	9.79	9.79	9.73
45.0	10.29	10.13	10.01	9.96	9.90	9.84	9.79	9.73	9.68
90.0	10.52	10.41	10.29	10.18	10.13	10.07	10.01	9.90	9.90
135.0	10.97	10.63	10.46	10.29	10.24	10.24	10.18	10.13	10.01
180.0	10.86	10.63	10.35	10.18	10.13	10.07	10.01	9.96	9.84
225.0	11.08	10.80	10.52	10.35	10.24	10.18	10.13	10.01	9.96
270.0	11.53	11.31	11.08	10.91	10.80	10.74	10.80	10.74	10.63
315.0	10.97	10.63	10.29	10.13	10.01	9.90	9.90	9.79	9.73
360.0	10.52	10.24	10.07	9.96	9.90	9.84	9.79	9.79	9.73
C/ γ (°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	9.68	9.62	9.62	9.56	9.56	9.56	9.56	9.56	9.45
45.0	9.68	9.68	9.62	9.62	9.68	9.79	9.79	9.73	9.39
90.0	9.84	9.84	9.79	9.79	9.73	9.84	9.90	9.90	9.39
135.0	9.96	9.90	9.84	9.73	9.68	9.62	9.62	9.68	9.62
180.0	9.79	9.79	9.73	9.73	9.68	9.68	9.62	9.62	9.68
225.0	9.90	9.84	9.79	9.73	9.73	9.68	9.68	9.56	9.56
270.0	10.52	10.41	10.24	10.18	10.07	9.96	9.90	10.24	10.35
315.0	9.73	9.68	9.68	9.62	9.62	9.56	9.56	9.62	9.51
360.0	9.68	9.62	9.62	9.56	9.56	9.56	9.56	9.56	9.45

Intensity data(cd)

Appendix Page: 18 Total:18

C/ $\gamma(^{\circ})$	90.0
0.0	9.28
45.0	9.34
90.0	9.39
135.0	9.34
180.0	9.39
225.0	9.62
270.0	9.62
315.0	9.39
360.0	9.28