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NATA

LumCAT: 3-2440-A
Luminaire: 92.70.151.00+92.70.153.00
Report No: NATA0100
Test No: GC2020011307
LampCAT: CITIZEN LCN-C03A
Lamp flux(lm): 2216.0
Number of Lamps: 1
Length(mm): 0
Phm Type: C

Voltage(V): 33.8800
Current(A): 0.4970
Power (W): 16.8000
PF: 0.0000
Ballast type: DC
Width(mm): 0
Height(mm): 0

Photometric Results

Lumens(lm): 1854.24
Efficiency(%): 83.68%
Lumens(lm)/Power(W): 110.37
Central intensity(cd): 7345.265
Maximum intensity(cd): 7345.265
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=21.5
[C90/270]Total=21.5
Field angle(10%Imax): [C0/180]Total=54.1
[C90/270]Total=54.1
Maximum s/h(1/2): C0_180=0.37 C90_270=0.37
Maximum s/h(1/4): C0_180=0.37 C90_270=0.37
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 83.68%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.526%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	7345.266	0.000	0	.000%	.000%
1.0	7312.570	7.013	7.013	.316%	.378%
2.0	7197.258	20.826	27.839	.940%	1.501%
3.0	7009.453	33.978	61.817	1.533%	3.334%
4.0	6762.797	46.100	107.917	2.080%	5.820%
5.0	6443.227	56.812	164.729	2.564%	8.884%
6.0	6037.031	65.587	230.316	2.960%	12.421%
7.0	5580.914	72.112	302.428	3.254%	16.310%
8.0	5111.438	76.523	378.952	3.453%	20.437%
9.0	4567.641	78.444	457.395	3.540%	24.667%
10.0	4023.281	77.745	535.14	3.508%	28.860%
11.0	3539.672	75.569	610.709	3.410%	32.936%
12.0	3067.383	72.225	682.934	3.259%	36.831%
13.0	2614.289	67.427	750.361	3.043%	40.467%
14.0	2249.367	62.254	812.615	2.809%	43.825%
15.0	1951.242	57.668	870.283	2.602%	46.935%
16.0	1708.945	53.632	923.915	2.420%	49.827%
17.0	1512.563	50.168	974.083	2.264%	52.533%
18.0	1352.187	47.234	1021.316	2.131%	55.080%
19.0	1224.949	44.837	1066.153	2.023%	57.498%
20.0	1117.308	42.870	1109.023	1.935%	59.810%
21.0	1036.828	41.364	1150.387	1.867%	62.041%
22.0	968.140	40.291	1190.677	1.818%	64.214%
23.0	905.702	39.318	1229.996	1.774%	66.334%
24.0	849.945	38.385	1268.38	1.732%	68.404%
25.0	806.344	37.660	1306.041	1.699%	70.435%
26.0	769.219	37.191	1343.232	1.678%	72.441%
27.0	735.877	36.822	1380.055	1.662%	74.427%
28.0	707.175	36.535	1416.59	1.649%	76.397%
29.0	682.713	36.363	1452.953	1.641%	78.358%
30.0	659.419	36.237	1489.19	1.635%	80.312%
31.0	632.848	35.962	1525.152	1.623%	82.252%
32.0	597.720	35.254	1560.407	1.591%	84.153%
33.0	556.917	34.016	1594.423	1.535%	85.988%
34.0	510.884	32.315	1626.737	1.458%	87.730%
35.0	456.708	30.050	1656.787	1.356%	89.351%
36.0	402.729	27.365	1684.152	1.235%	90.827%
37.0	354.495	24.696	1708.848	1.114%	92.159%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	303.124	21.950	1730.799	.991%	93.343%
39.0	251.613	18.935	1749.733	.854%	94.364%
40.0	202.542	15.839	1765.573	.715%	95.218%
41.0	163.498	13.035	1778.607	.588%	95.921%
42.0	118.913	10.260	1788.868	.463%	96.474%
43.0	89.163	7.708	1796.575	.348%	96.890%
44.0	64.962	5.817	1802.392	.263%	97.204%
45.0	45.766	4.255	1806.648	.192%	97.433%
46.0	32.013	3.042	1809.69	.137%	97.597%
47.0	22.177	2.155	1811.845	.097%	97.713%
48.0	16.995	1.584	1813.428	.071%	97.799%
49.0	14.527	1.294	1814.723	.058%	97.869%
50.0	13.908	1.186	1815.908	.053%	97.932%
51.0	13.598	1.164	1817.072	.053%	97.995%
52.0	13.352	1.156	1818.229	.052%	98.058%
53.0	13.015	1.147	1819.376	.052%	98.119%
54.0	12.713	1.134	1820.51	.051%	98.181%
55.0	12.410	1.121	1821.631	.051%	98.241%
56.0	12.030	1.104	1822.735	.050%	98.301%
57.0	11.665	1.083	1823.819	.049%	98.359%
58.0	11.236	1.059	1824.878	.048%	98.416%
59.0	10.821	1.031	1825.909	.047%	98.472%
60.0	10.399	1.003	1826.911	.045%	98.526%
61.0	10.027	0.975	1827.886	.044%	98.578%
62.0	9.717	0.951	1828.838	.043%	98.630%
63.0	9.478	0.934	1829.771	.042%	98.680%
64.0	9.295	0.921	1830.692	.042%	98.730%
65.0	9.148	0.913	1831.605	.041%	98.779%
66.0	9.084	0.910	1832.515	.041%	98.828%
67.0	9.014	0.910	1833.425	.041%	98.877%
68.0	8.937	0.909	1834.334	.041%	98.926%
69.0	8.902	0.910	1835.244	.041%	98.975%
70.0	8.852	0.912	1836.156	.041%	99.024%
71.0	8.824	0.914	1837.07	.041%	99.074%
72.0	8.782	0.915	1837.985	.041%	99.123%
73.0	8.747	0.917	1838.902	.041%	99.173%
74.0	8.705	0.917	1839.819	.041%	99.222%
75.0	8.655	0.917	1840.736	.041%	99.271%

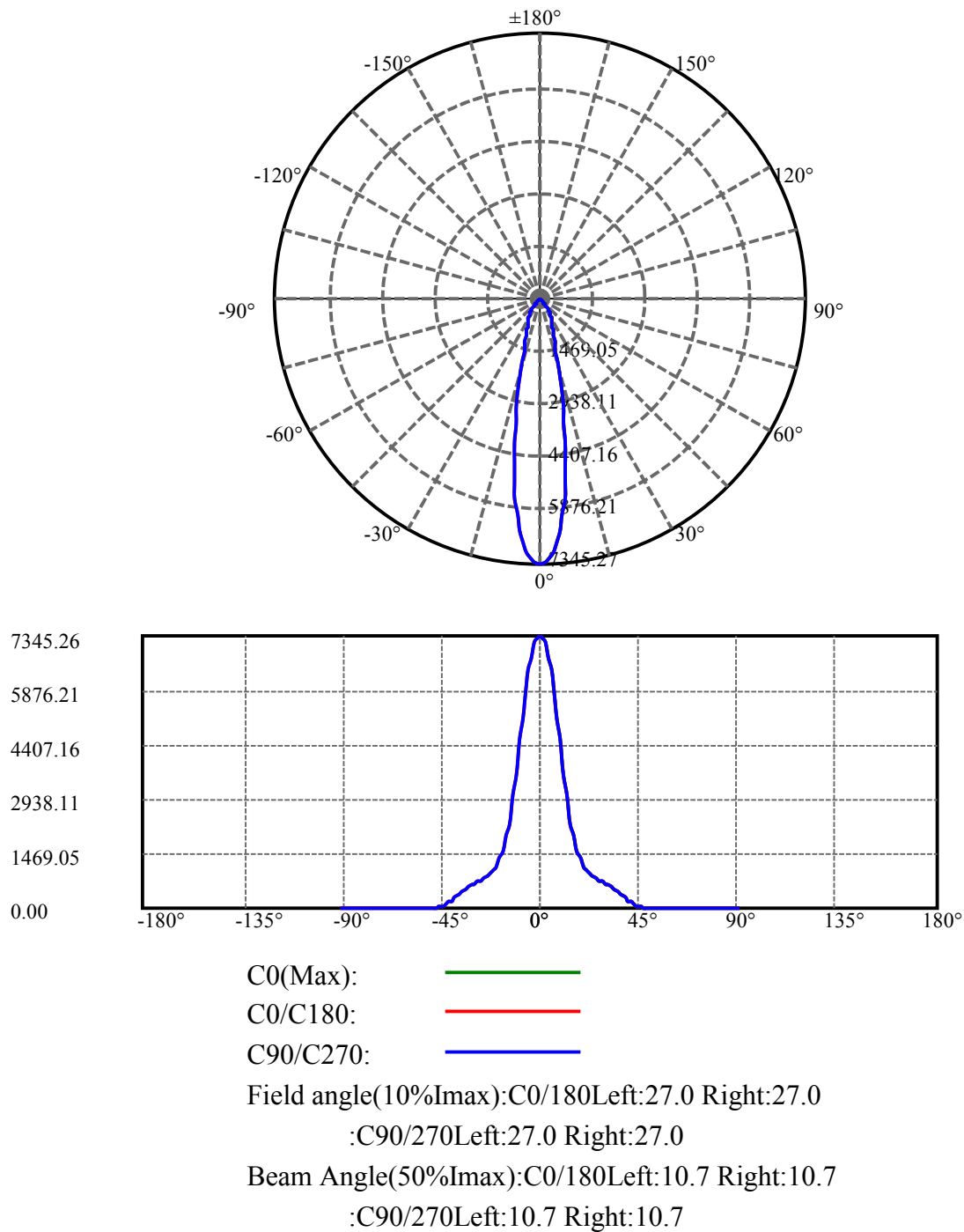
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	8.599	0.916	1841.652	.041%	99.321%
77.0	8.564	0.915	1842.567	.041%	99.370%
78.0	8.515	0.914	1843.482	.041%	99.420%
79.0	8.466	0.912	1844.394	.041%	99.469%
80.0	8.430	0.911	1845.305	.041%	99.518%
81.0	8.395	0.910	1846.215	.041%	99.567%
82.0	8.374	0.909	1847.124	.041%	99.616%
83.0	8.346	0.909	1848.033	.041%	99.665%
84.0	8.304	0.907	1848.94	.041%	99.714%
85.0	8.241	0.903	1849.843	.041%	99.763%
86.0	8.156	0.896	1850.739	.040%	99.811%
87.0	8.058	0.887	1851.627	.040%	99.859%
88.0	7.980	0.879	1852.505	.040%	99.906%
89.0	7.931	0.872	1853.378	.039%	99.953%
90.0	7.889	0.867	1854.245	.039%	100.000%

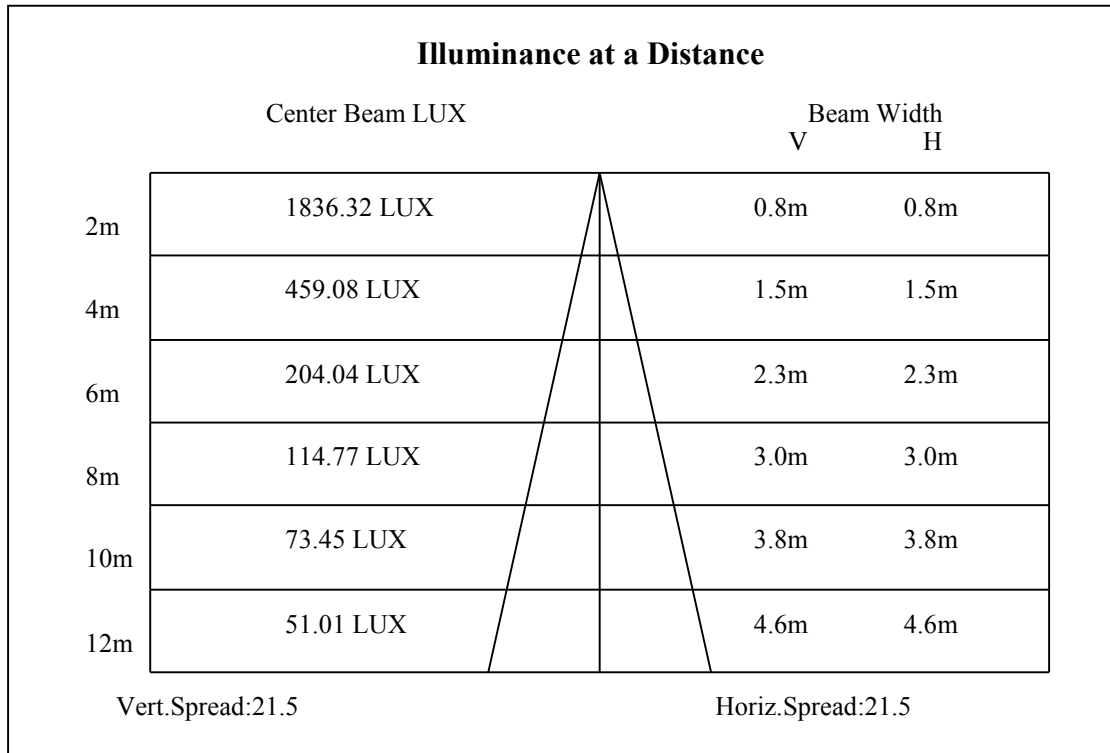
ZONAL LUMEN SUMMARY

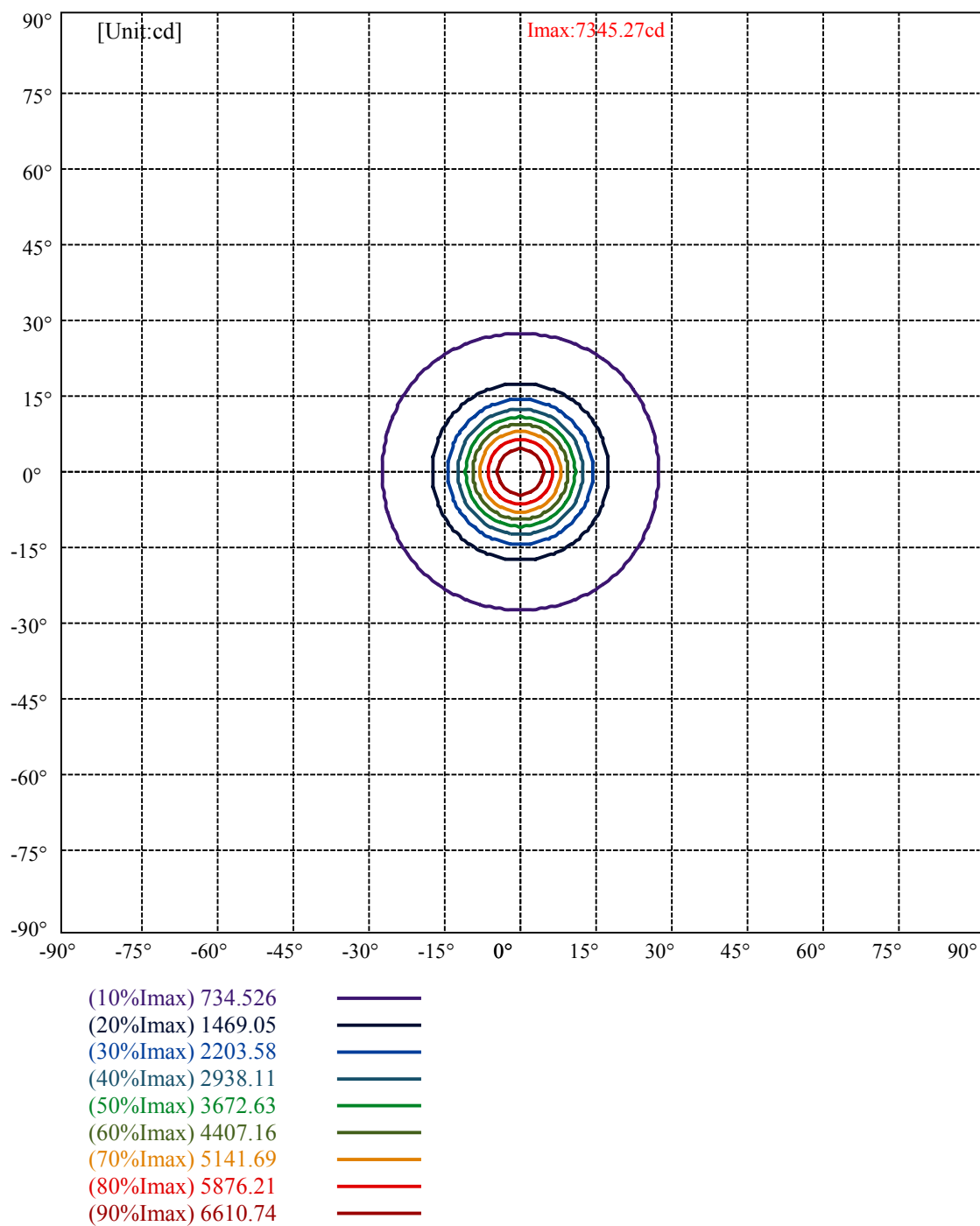
Zone	Lumens	%Lamp	%Fixt
0-30	1489.19	67.20%	80.31%
0-40	1765.57	79.67%	95.22%
0-60	1826.91	82.44%	98.53%
0-90	1853.38	83.64%	99.95%
0-120	1853.38	83.64%	99.95%
0-180	1854.24	83.68%	100.00%
60-90	27.47	1.24%	1.48%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-29.84	1483.40	66.94%	80.00%

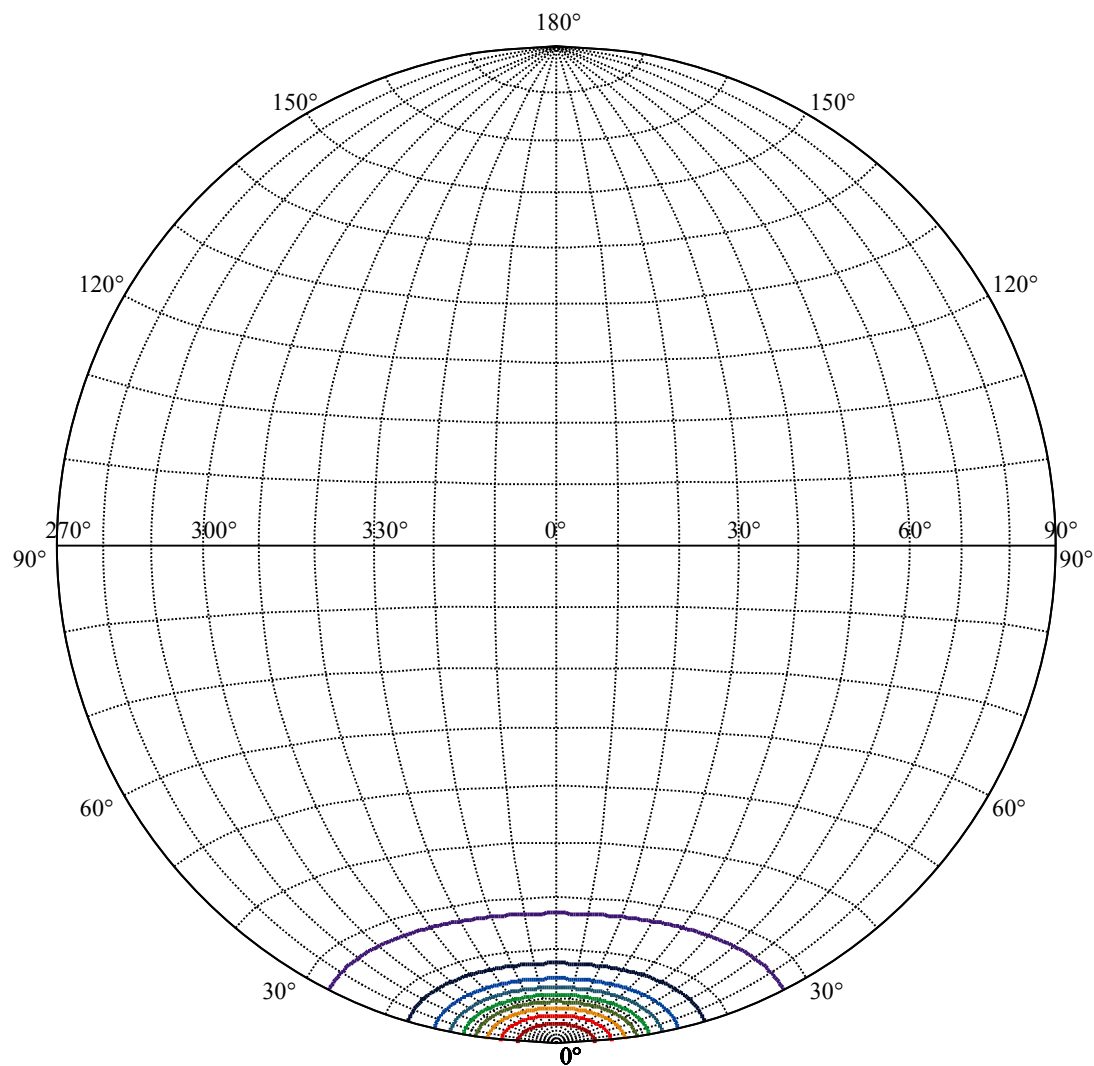
ZONAL LUMEN SUMMARY

0-10	535.14
10-20	573.88
20-30	380.17
30-40	276.38
40-50	50.34
50-60	11.00
60-70	9.24
70-80	9.15
80-90	8.07
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







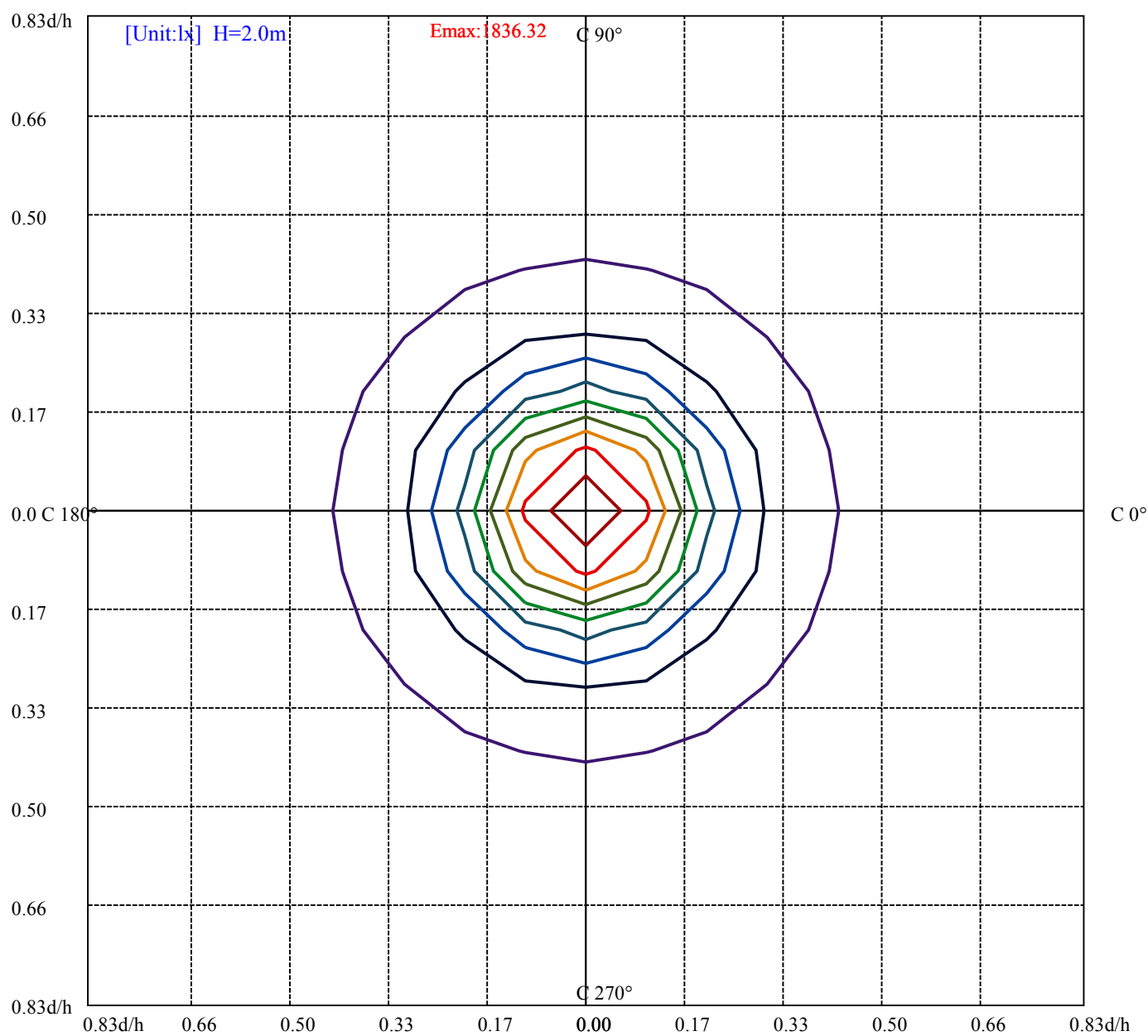


House

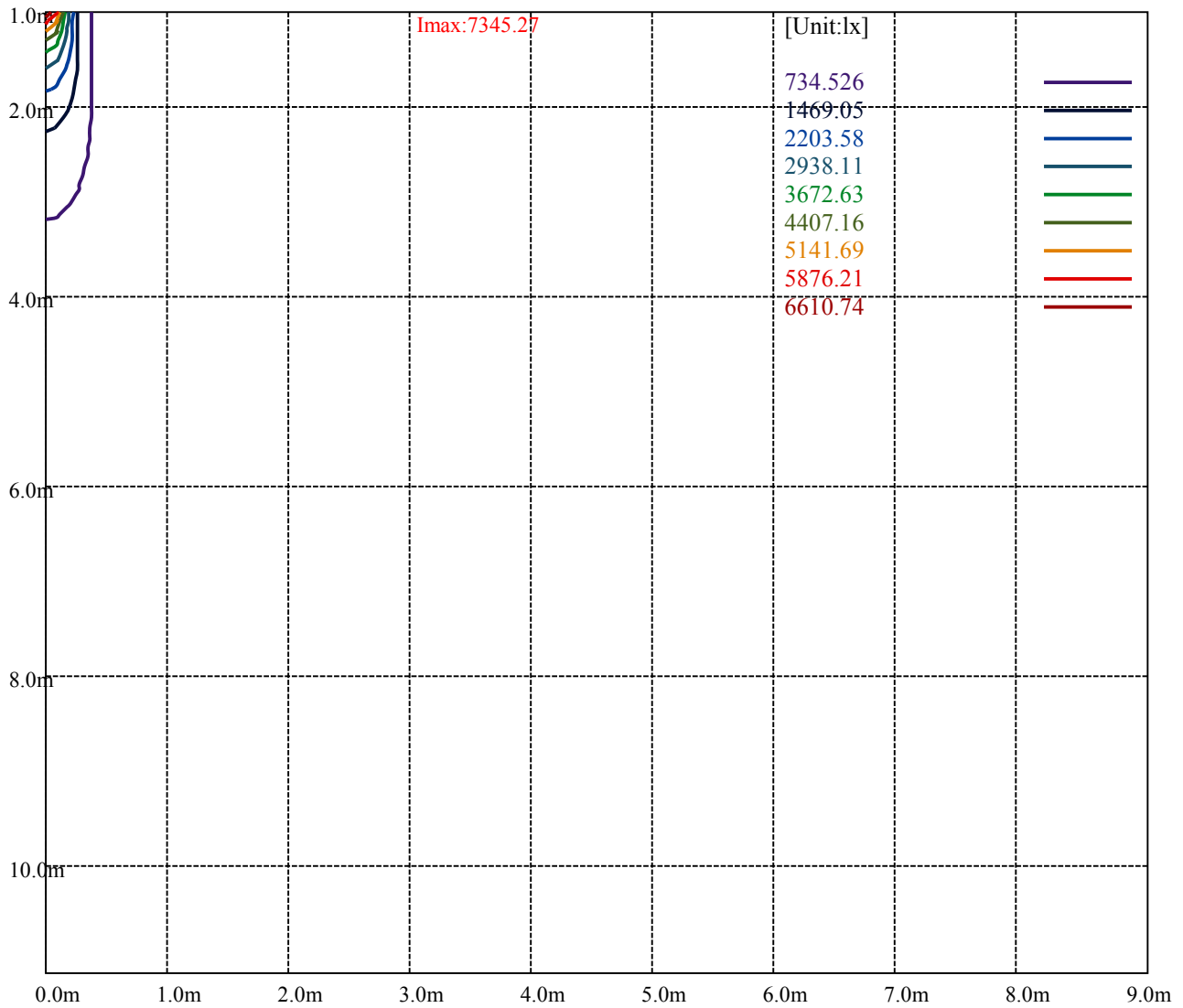
[Unit:cd]

Road

Imax:7345.27	
(10%Imax)	734.526
(20%Imax)	1469.05
(30%Imax)	2203.58
(40%Imax)	2938.11
(50%Imax)	3672.63
(60%Imax)	4407.16
(70%Imax)	5141.69
(80%Imax)	5876.21
(90%Imax)	6610.74



(10%Emax) 183.6315	—
(20%Emax) 367.2625	—
(30%Emax) 550.895	—
(40%Emax) 734.525	—
(50%Emax) 918.1575	—
(60%Emax) 1101.79	—
(70%Emax) 1285.42	—
(80%Emax) 1469.052	—
(90%Emax) 1652.682	—



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

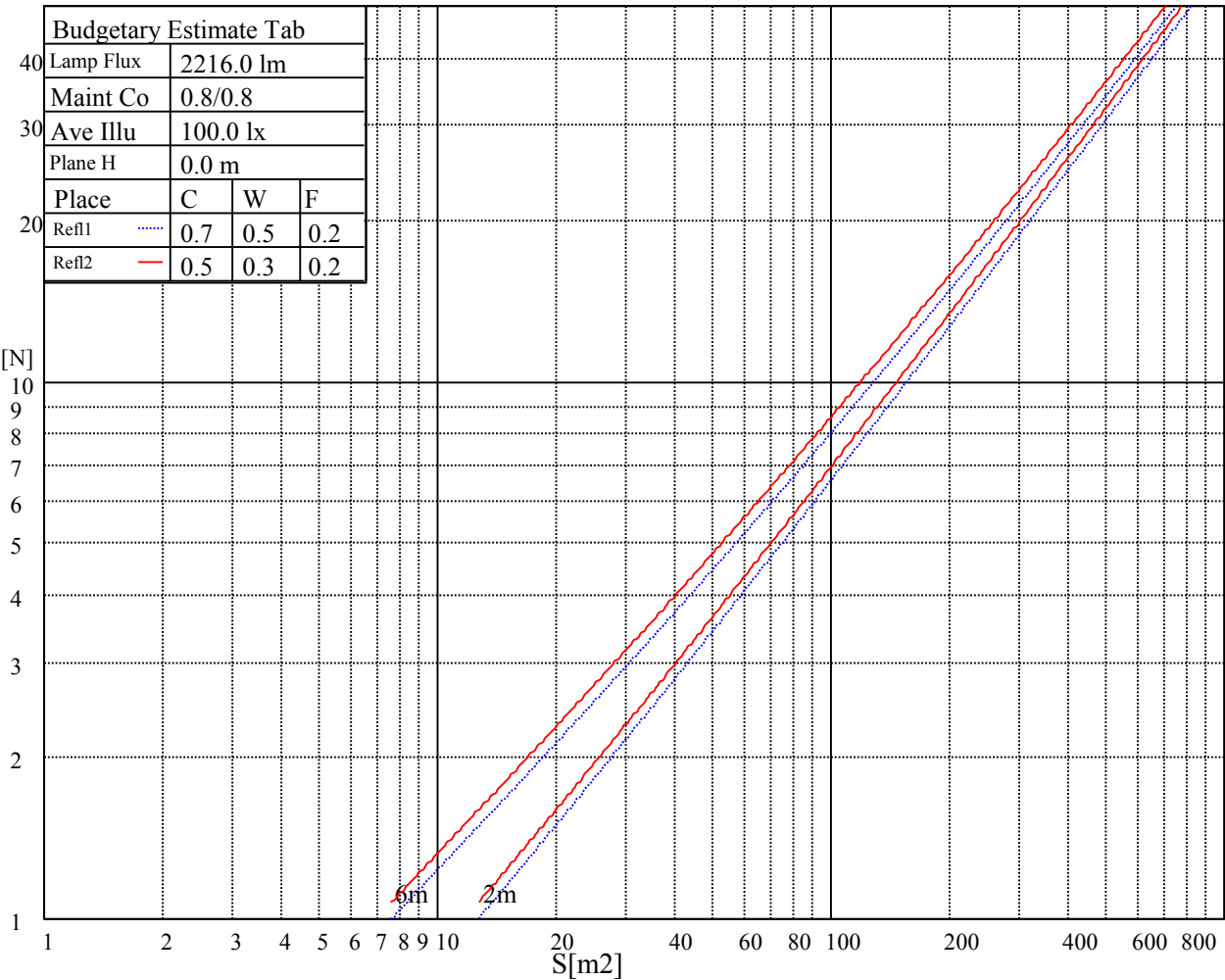
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

Glare Table

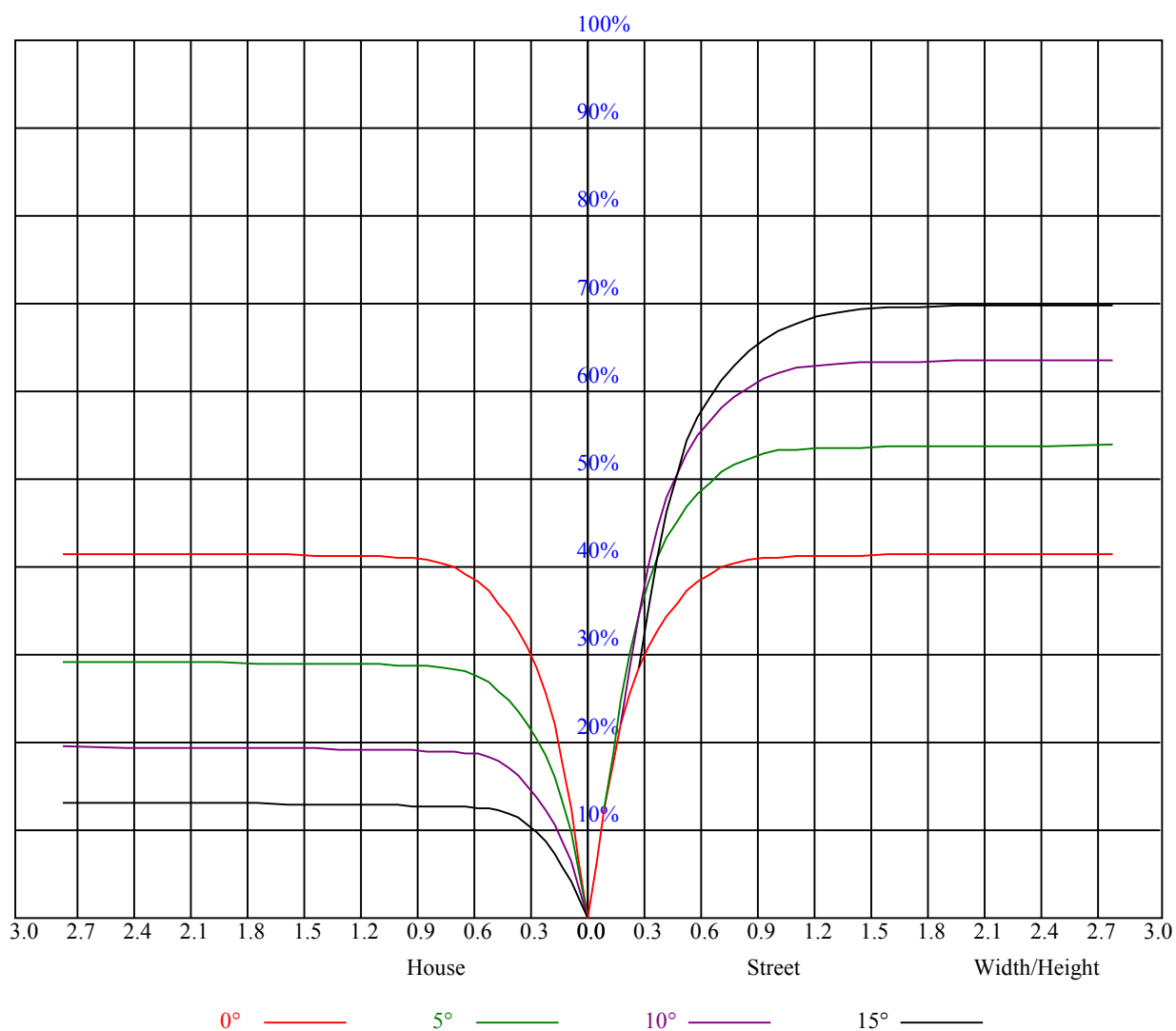
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

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	1.00	1.00	1.00	0.97	0.97	0.97	0.93	0.93	0.93	0.89	0.89	0.89	0.85	0.85	0.85	0.84
1	0.93	0.91	0.90	0.92	0.90	0.88	0.88	0.87	0.86	0.85	0.84	0.83	0.82	0.81	0.81	0.79
2	0.88	0.85	0.82	0.87	0.84	0.82	0.84	0.82	0.80	0.81	0.80	0.78	0.79	0.78	0.77	0.75
3	0.83	0.80	0.77	0.82	0.79	0.76	0.80	0.77	0.75	0.78	0.76	0.74	0.76	0.74	0.73	0.71
4	0.79	0.75	0.72	0.78	0.74	0.72	0.76	0.73	0.71	0.75	0.72	0.70	0.73	0.71	0.69	0.68
5	0.75	0.71	0.68	0.75	0.71	0.68	0.73	0.70	0.67	0.72	0.69	0.67	0.71	0.68	0.66	0.65
6	0.72	0.68	0.65	0.71	0.67	0.64	0.70	0.67	0.64	0.69	0.66	0.64	0.68	0.65	0.63	0.62
7	0.69	0.65	0.62	0.68	0.64	0.62	0.67	0.64	0.61	0.66	0.63	0.61	0.66	0.63	0.61	0.60
8	0.66	0.62	0.59	0.66	0.62	0.59	0.65	0.61	0.59	0.64	0.61	0.58	0.63	0.60	0.58	0.57
9	0.64	0.59	0.57	0.63	0.59	0.57	0.62	0.59	0.56	0.62	0.59	0.56	0.61	0.58	0.56	0.55
10	0.61	0.57	0.55	0.61	0.57	0.54	0.60	0.57	0.54	0.60	0.56	0.54	0.59	0.56	0.54	0.53



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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	7303.50	7431.75	7466.06	7418.25	7288.31	7068.94	6799.50	6417.00	6013.69
45.0	7335.56	7393.50	7370.44	7272.00	7107.19	6849.00	6507.00	6124.50	5628.94
90.0	7349.06	7271.44	7108.31	6868.69	6599.81	6278.06	5792.06	5346.56	4870.69
135.0	7392.94	7256.25	7045.31	6802.88	6470.44	6069.94	5661.56	5145.75	4667.06
180.0	7303.50	7132.50	6909.19	6547.50	6196.50	5796.56	5287.50	4731.75	4223.81
225.0	7335.56	7217.44	6983.44	6737.06	6422.06	5988.38	5494.50	5020.31	4526.44
270.0	7349.06	7358.63	7280.44	7141.50	6906.38	6628.50	6240.94	5778.56	5318.44
315.0	7392.94	7439.06	7414.88	7287.75	7111.69	6866.44	6513.19	6082.88	5642.44
360.0	7303.50	7431.75	7466.06	7418.25	7288.31	7068.94	6799.50	6417.00	6013.69
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	5496.19	4938.75	4434.19	3935.25	3328.31	2874.38	2468.81	2058.19	1803.94
45.0	5095.69	4593.94	4028.63	3552.19	3055.50	2613.38	2277.00	2003.06	1733.06
90.0	4322.25	3788.44	3331.13	2844.56	2414.25	2097.00	1807.88	1604.81	1420.88
135.0	4120.31	3562.31	3076.88	2621.25	2144.25	1851.19	1623.94	1411.31	1280.25
180.0	3671.44	3134.81	2704.50	2295.00	1998.56	1734.19	1533.38	1391.06	1272.94
225.0	3964.50	3429.00	2996.44	2561.06	2189.81	1927.69	1699.31	1533.94	1380.38
270.0	4770.00	4206.38	3719.81	3256.88	2777.63	2362.50	2058.19	1809.56	1568.25
315.0	5100.75	4532.63	4025.81	3472.88	3006.00	2534.63	2141.44	1859.63	1640.81
360.0	5496.19	4938.75	4434.19	3935.25	3328.31	2874.38	2468.81	2058.19	1803.94
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1601.44	1418.06	1271.25	1161.00	1058.63	984.38	913.50	856.13	811.69
45.0	1553.06	1422.00	1258.88	1155.94	1078.88	990.00	924.75	874.13	825.19
90.0	1273.50	1117.07	1074.32	984.83	925.71	875.64	822.21	786.04	754.26
135.0	1168.88	1066.50	986.63	927.00	875.81	818.44	780.19	742.50	712.69
180.0	1112.68	1062.84	991.80	915.47	863.83	818.89	780.02	739.41	711.00
225.0	1254.94	1113.24	1073.31	984.66	923.40	871.09	815.34	777.88	745.03
270.0	1417.50	1292.06	1162.69	1077.19	1004.06	935.44	878.06	833.63	790.88
315.0	1435.50	1307.81	1119.60	1088.55	1014.81	951.75	885.49	841.05	803.03
360.0	1601.44	1418.06	1271.25	1161.00	1058.63	984.38	913.50	856.13	811.69
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	771.19	736.88	712.69	691.88	664.88	644.06	617.06	572.06	531.56
45.0	789.75	758.81	727.88	704.25	682.88	654.75	620.44	581.06	529.31
90.0	722.42	695.48	674.44	651.77	629.49	596.59	554.91	508.28	449.66
135.0	684.00	660.94	641.25	623.25	596.81	560.81	520.31	466.88	407.81
180.0	685.97	660.66	636.69	611.66	567.51	510.08	455.79	396.34	345.88
225.0	713.64	685.97	662.63	636.58	605.93	551.48	489.49	433.07	372.21
270.0	758.25	726.19	698.63	676.13	652.50	623.81	588.38	552.94	486.56
315.0	761.79	732.49	707.51	679.84	662.79	640.18	608.96	576.45	530.66
360.0	771.19	736.88	712.69	691.88	664.88	644.06	617.06	572.06	531.56
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	489.94	443.81	393.75	347.63	293.06	286.88	188.89	147.88	109.86
45.0	485.44	440.44	384.19	324.56	284.63	209.36	157.50	118.97	84.77
90.0	389.25	335.19	282.15	220.16	175.28	135.56	95.57	70.31	50.29
135.0	354.38	302.63	257.91	193.11	153.84	116.38	87.08	66.21	47.70
180.0	294.53	246.99	207.45	165.83	128.25	99.68	76.16	53.04	38.93
225.0	315.34	269.44	227.36	177.69	142.71	111.54	82.13	58.39	41.68
270.0	433.13	385.31	315.56	288.00	202.67	154.58	114.98	86.91	62.21
315.0	459.84	412.14	356.63	295.93	239.91	194.01	149.01	111.60	84.26
360.0	489.94	443.81	393.75	347.63	293.06	286.88	188.89	147.88	109.86

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Intensity data(cd)										Appendix Page: 17 Total:18	
C/ γ (°)	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0		
0.0	79.93	58.84	40.73	28.69	20.08	17.83	17.16	16.71	16.09		
45.0	61.03	40.95	25.99	17.27	13.73	13.05	12.77	12.54	12.15		
90.0	31.39	20.70	13.84	11.53	11.31	11.08	10.86	10.63	10.46		
135.0	33.75	25.09	18.79	17.55	17.04	16.59	16.09	15.64	14.79		
180.0	28.13	20.31	17.66	17.27	16.93	16.65	16.26	15.92	15.47		
225.0	27.00	16.82	11.87	10.58	10.29	10.18	10.13	10.07	10.01		
270.0	45.11	30.32	19.63	13.50	10.74	10.18	10.01	9.84	9.79		
315.0	59.79	43.09	28.91	19.58	16.09	15.69	15.53	15.47	15.36		
360.0	79.93	58.84	40.73	28.69	20.08	17.83	17.16	16.71	16.09		
C/ γ (°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0		
0.0	15.75	15.36	14.68	14.12	13.50	12.66	11.87	11.19	10.46		
45.0	11.98	11.81	11.64	11.48	11.25	10.97	10.69	10.35	9.96		
90.0	10.18	10.13	10.01	9.90	9.84	9.79	9.68	9.62	9.45		
135.0	14.12	13.44	12.54	11.93	11.25	10.63	10.13	9.79	9.56		
180.0	14.74	13.89	13.05	12.21	11.14	10.52	10.01	9.56	9.51		
225.0	10.07	10.07	10.18	10.13	10.13	10.07	9.90	9.73	9.56		
270.0	9.68	9.62	9.56	9.51	9.51	9.45	9.39	9.34	9.23		
315.0	15.19	14.96	14.57	14.06	13.28	12.49	11.53	10.63	10.01		
360.0	15.75	15.36	14.68	14.12	13.50	12.66	11.87	11.19	10.46		
C/ γ (°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0		
0.0	10.07	9.73	9.45	9.39	9.28	9.17	9.11	9.06	9.06		
45.0	9.62	9.39	9.11	9.00	8.89	8.83	8.78	8.72	8.61		
90.0	9.28	9.06	8.94	8.94	8.83	8.78	8.72	8.66	8.61		
135.0	9.34	9.28	9.23	9.17	9.11	9.06	9.06	8.94	8.94		
180.0	9.39	9.34	9.28	9.28	9.23	9.17	9.17	9.11	9.11		
225.0	9.28	9.11	8.94	8.78	8.72	8.61	8.55	8.55	8.55		
270.0	9.17	9.06	8.94	8.89	8.83	8.72	8.66	8.66	8.61		
315.0	9.68	9.39	9.28	9.23	9.23	9.17	9.17	9.11	9.11		
360.0	10.07	9.73	9.45	9.39	9.28	9.17	9.11	9.06	9.06		
C/ γ (°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0		
0.0	9.00	8.94	8.89	8.83	8.72	8.72	8.66	8.61	8.55		
45.0	8.61	8.55	8.49	8.44	8.44	8.38	8.33	8.33	8.27		
90.0	8.55	8.55	8.44	8.44	8.38	8.38	8.38	8.33	8.33		
135.0	8.83	8.83	8.78	8.72	8.66	8.66	8.66	8.66	8.66		
180.0	9.11	9.06	9.06	9.00	8.94	8.83	8.72	8.55	8.49		
225.0	8.49	8.44	8.44	8.33	8.27	8.21	8.21	8.16	8.16		
270.0	8.61	8.55	8.49	8.49	8.38	8.38	8.27	8.27	8.21		
315.0	9.06	9.06	9.06	9.00	9.00	8.94	8.89	8.83	8.78		
360.0	9.00	8.94	8.89	8.83	8.72	8.72	8.66	8.61	8.55		
C/ γ (°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0		
0.0	8.49	8.49	8.44	8.44	8.38	8.33	8.27	8.10	8.04		
45.0	8.27	8.27	8.27	8.21	8.21	8.16	8.04	7.99	7.93		
90.0	8.27	8.33	8.27	8.21	8.16	8.16	7.99	7.99	7.88		
135.0	8.66	8.66	8.72	8.66	8.44	8.04	7.99	7.93	7.93		
180.0	8.38	8.33	8.27	8.16	8.10	8.04	8.10	7.93	7.93		
225.0	8.16	8.10	8.10	8.10	8.04	8.04	7.93	7.93	7.82		
270.0	8.21	8.16	8.16	8.16	8.16	8.10	8.04	7.99	7.93		
315.0	8.72	8.66	8.55	8.49	8.44	8.38	8.10	7.99	7.99		
360.0	8.49	8.49	8.44	8.44	8.38	8.33	8.27	8.10	8.04		

Intensity data(cd)

Appendix Page: 18 Total:18

C/ γ (°)	90.0
0.0	7.99
45.0	7.88
90.0	7.82
135.0	7.93
180.0	7.88
225.0	7.82
270.0	7.88
315.0	7.93
360.0	7.99