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Nata

LumCAT: 3-2727-L	
Luminaire: 99.70.131.00	
Report No: 220816-B013	Voltage(V): 35.5100
Test No: 220816-C013	Current(A): 0.4810
LampCAT: CITIZEN CLU038	Power (W): 17.0800
Lamp flux(lm): 2260.8	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 43	Width(mm): 43
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 1953.30
Efficiency(%): 86.40%
Lumens(lm)/Power(W): 114.36
Central intensity(cd): 6519.190
Maximum intensity(cd): 6519.190
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=25.2
 [C90/270]Total=25.2
Field angle(10%Imax): [C0/180]Total=60.0
 [C90/270]Total=60.0
Maximum s/h(1/2): C0_180=0.42 C90_270=0.42
Maximum s/h(1/4): C0_180=0.46 C90_270=0.46
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 86.40%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.096%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	6519.191	0.000	0	.000%	.000%
1.0	6500.966	6.230	6.23	.276%	.319%
2.0	6425.080	18.553	24.783	.821%	1.269%
3.0	6297.283	30.428	55.21	1.346%	2.827%
4.0	6116.232	41.552	96.762	1.838%	4.954%
5.0	5858.548	51.515	148.277	2.279%	7.591%
6.0	5541.857	59.912	208.189	2.650%	10.658%
7.0	5219.491	66.796	274.985	2.954%	14.078%
8.0	4847.081	72.045	347.029	3.187%	17.766%
9.0	4477.210	75.568	422.598	3.343%	21.635%
10.0	4111.298	77.723	500.321	3.438%	25.614%
11.0	3754.349	78.594	578.915	3.476%	29.638%
12.0	3443.634	78.684	657.599	3.480%	33.666%
13.0	3125.077	77.954	735.553	3.448%	37.657%
14.0	2816.752	76.055	811.608	3.364%	41.551%
15.0	2576.993	74.048	885.655	3.275%	45.342%
16.0	2325.807	71.840	957.495	3.178%	49.019%
17.0	2103.451	68.975	1026.471	3.051%	52.551%
18.0	1930.766	66.515	1092.986	2.942%	55.956%
19.0	1763.682	64.276	1157.262	2.843%	59.247%
20.0	1607.428	61.701	1218.963	2.729%	62.405%
21.0	1462.534	58.949	1277.912	2.607%	65.423%
22.0	1349.325	56.506	1334.418	2.499%	68.316%
23.0	1233.830	54.202	1388.619	2.397%	71.091%
24.0	1104.756	51.130	1439.749	2.262%	73.709%
25.0	1018.630	48.281	1488.03	2.136%	76.180%
26.0	936.530	46.152	1534.182	2.041%	78.543%
27.0	860.882	43.974	1578.156	1.945%	80.794%
28.0	787.917	41.744	1619.9	1.846%	82.932%
29.0	718.088	39.401	1659.302	1.743%	84.949%
30.0	651.941	36.991	1696.292	1.636%	86.842%
31.0	572.642	34.078	1730.37	1.507%	88.587%
32.0	485.836	30.324	1760.695	1.341%	90.140%
33.0	410.017	26.392	1787.087	1.167%	91.491%
34.0	318.326	22.042	1809.129	.975%	92.619%
35.0	235.703	17.206	1826.335	.761%	93.500%
36.0	178.445	13.187	1839.521	.583%	94.175%
37.0	131.135	10.097	1849.618	.447%	94.692%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	84.633	7.202	1856.82	.319%	95.061%
39.0	62.360	5.017	1861.837	.222%	95.318%
40.0	54.129	4.063	1865.9	.180%	95.526%
41.0	49.528	3.691	1869.591	.163%	95.715%
42.0	45.263	3.444	1873.035	.152%	95.891%
43.0	41.917	3.229	1876.264	.143%	96.056%
44.0	39.190	3.061	1879.326	.135%	96.213%
45.0	36.614	2.913	1882.239	.129%	96.362%
46.0	34.067	2.764	1885.003	.122%	96.504%
47.0	32.020	2.628	1887.631	.116%	96.638%
48.0	30.242	2.517	1890.148	.111%	96.767%
49.0	28.525	2.413	1892.562	.107%	96.891%
50.0	27.277	2.327	1894.888	.103%	97.010%
51.0	26.172	2.261	1897.15	.100%	97.125%
52.0	25.261	2.207	1899.357	.098%	97.238%
53.0	24.596	2.169	1901.525	.096%	97.349%
54.0	24.021	2.143	1903.668	.095%	97.459%
55.0	23.602	2.126	1905.794	.094%	97.568%
56.0	23.124	2.111	1907.905	.093%	97.676%
57.0	22.699	2.095	1910.001	.093%	97.783%
58.0	22.094	2.071	1912.072	.092%	97.889%
59.0	21.519	2.039	1914.111	.090%	97.994%
60.0	20.712	1.995	1916.106	.088%	98.096%
61.0	19.756	1.931	1918.037	.085%	98.195%
62.0	18.949	1.865	1919.902	.082%	98.290%
63.0	17.874	1.791	1921.693	.079%	98.382%
64.0	16.955	1.709	1923.402	.076%	98.469%
65.0	15.894	1.626	1925.028	.072%	98.553%
66.0	14.961	1.539	1926.567	.068%	98.632%
67.0	14.139	1.463	1928.03	.065%	98.706%
68.0	13.317	1.391	1929.421	.062%	98.778%
69.0	12.727	1.329	1930.75	.059%	98.846%
70.0	12.219	1.281	1932.031	.057%	98.911%
71.0	11.794	1.241	1933.272	.055%	98.975%
72.0	11.435	1.208	1934.48	.053%	99.037%
73.0	11.159	1.182	1935.662	.052%	99.097%
74.0	10.942	1.162	1936.824	.051%	99.157%
75.0	10.726	1.145	1937.968	.051%	99.215%

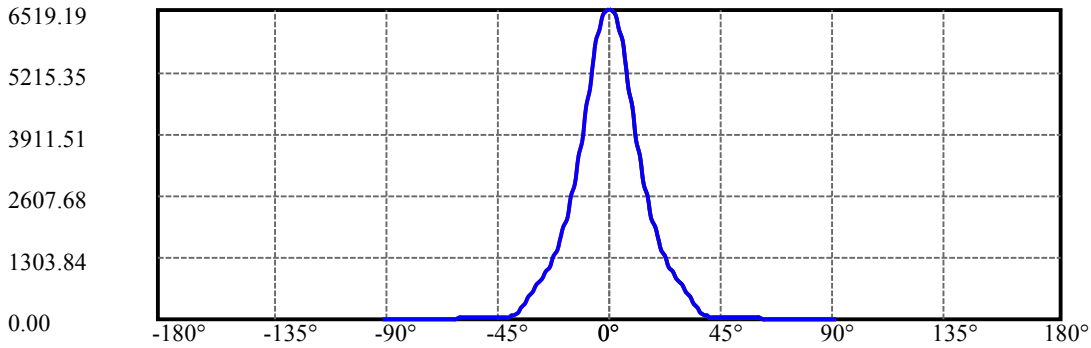
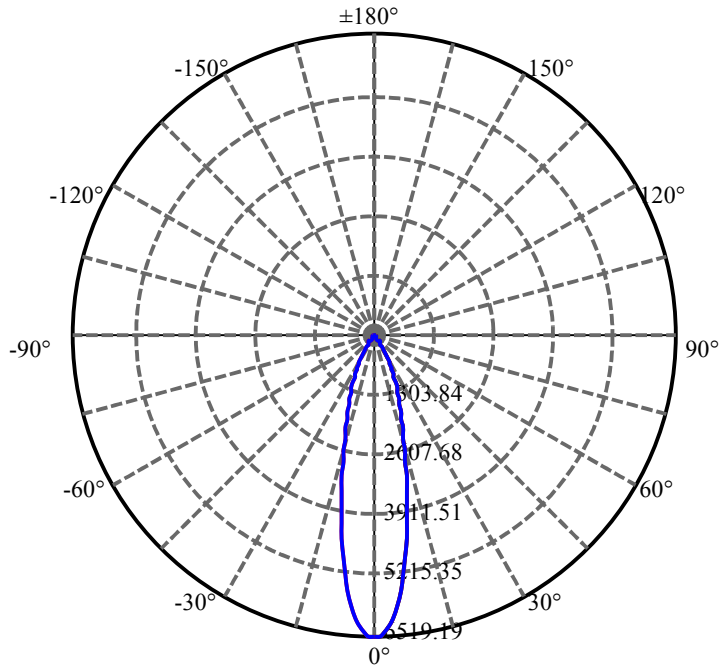
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	10.494	1.126	1939.095	.050%	99.273%
77.0	10.330	1.110	1940.205	.049%	99.330%
78.0	10.128	1.095	1941.3	.048%	99.386%
79.0	9.941	1.078	1942.378	.048%	99.441%
80.0	9.770	1.063	1943.441	.047%	99.495%
81.0	9.613	1.048	1944.489	.046%	99.549%
82.0	9.426	1.032	1945.522	.046%	99.602%
83.0	9.269	1.016	1946.538	.045%	99.654%
84.0	9.105	1.001	1947.539	.044%	99.705%
85.0	8.978	0.987	1948.526	.044%	99.756%
86.0	8.851	0.975	1949.5	.043%	99.806%
87.0	8.731	0.962	1950.463	.043%	99.855%
88.0	8.649	0.952	1951.415	.042%	99.904%
89.0	8.582	0.944	1952.359	.042%	99.952%
90.0	8.530	0.938	1953.298	.041%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1696.29	75.03%	86.84%
0-40	1865.90	82.53%	95.53%
0-60	1916.11	84.75%	98.10%
0-90	1952.36	86.36%	99.95%
0-120	1952.36	86.36%	99.95%
0-180	1953.30	86.40%	100.00%
60-90	38.25	1.69%	1.96%
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%
0-26.65	1562.64	69.12%	80.00%

ZONAL LUMEN SUMMARY

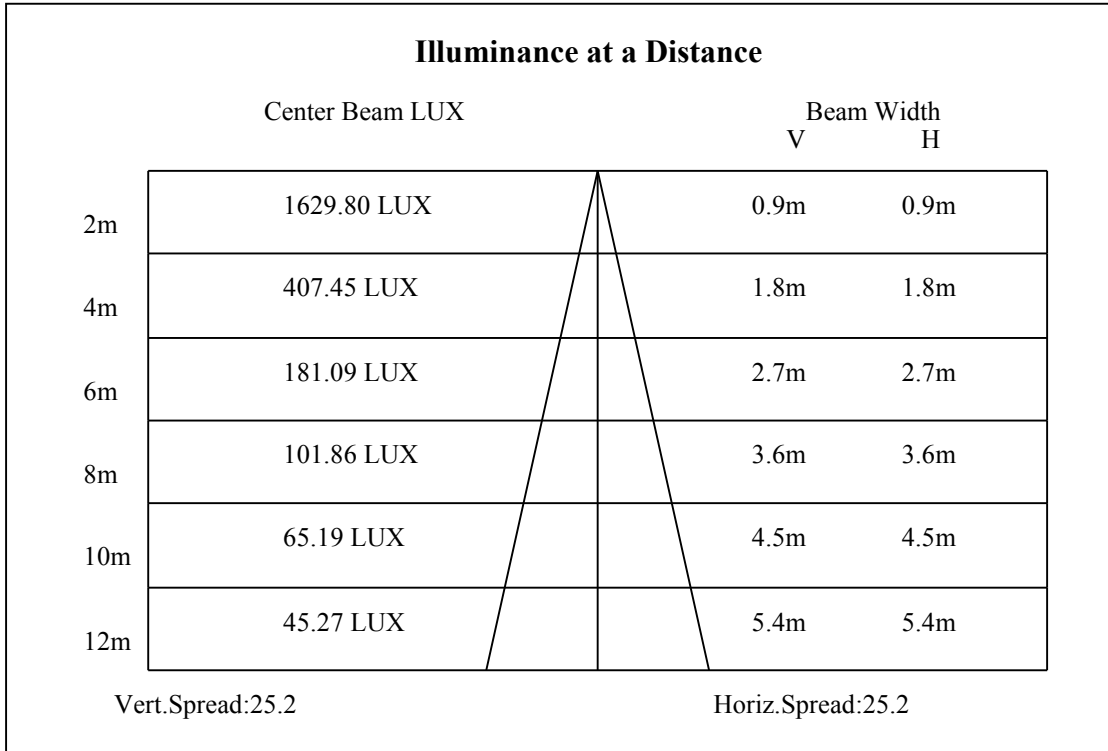
0-10	500.32
10-20	718.64
20-30	477.33
30-40	169.61
40-50	28.99
50-60	21.22
60-70	15.93
70-80	11.41
80-90	8.92
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

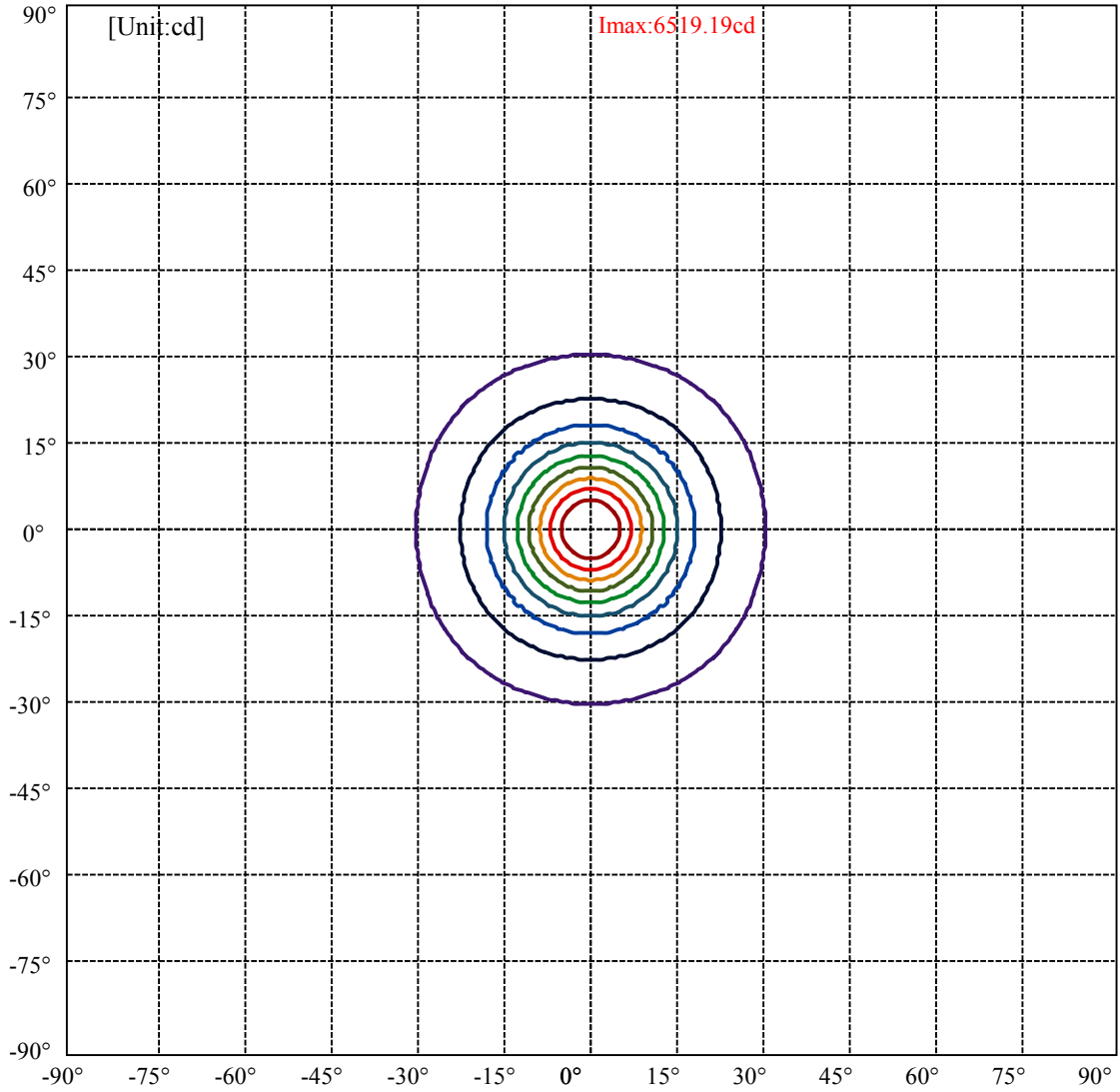


C0(Max): —————
C0/C180: —————
C90/C270: —————

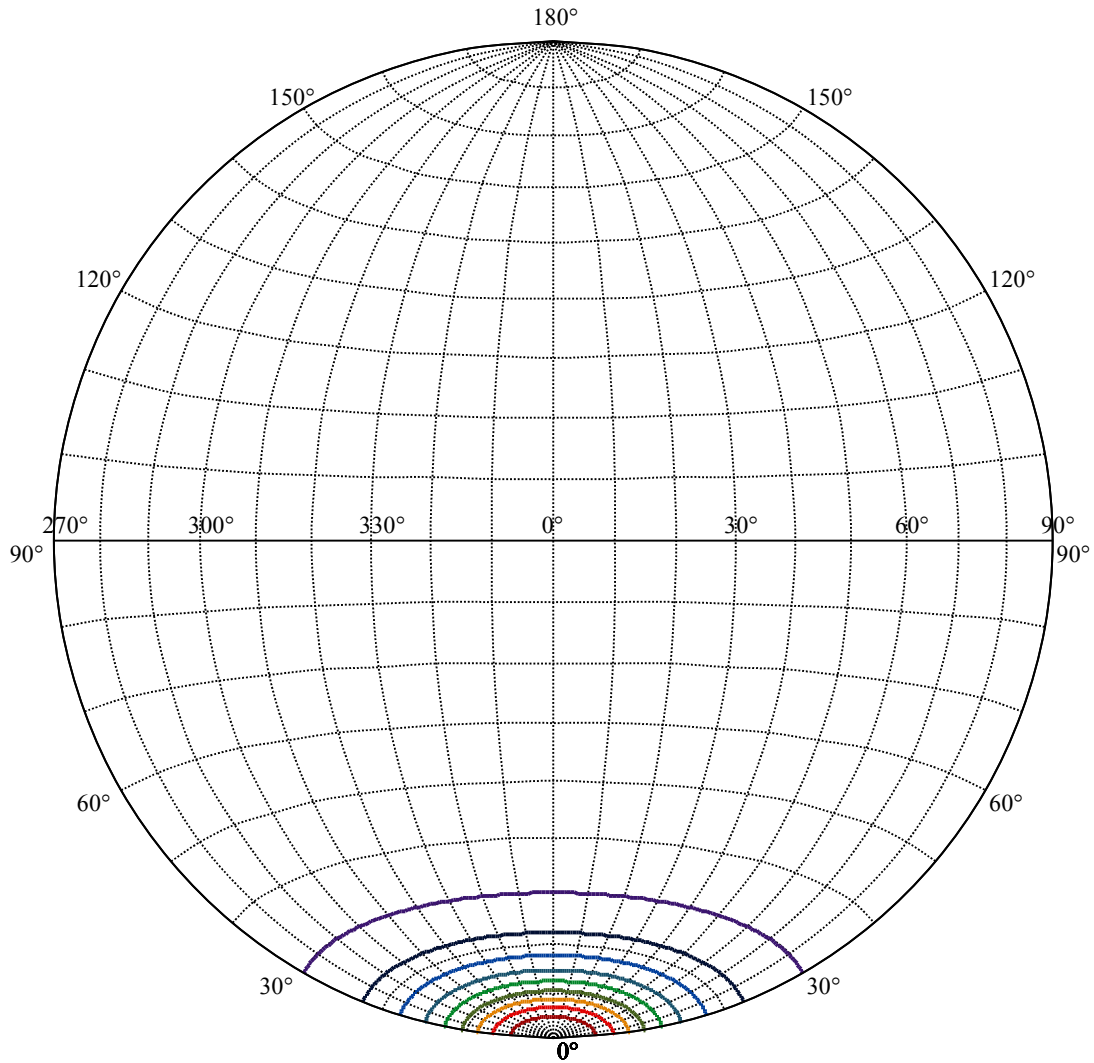
Field angle(10%Imax):C0/180Left:30.0 Right:30.0
:C90/270Left:30.0 Right:30.0

Beam Angle(50%Imax):C0/180Left:12.6 Right:12.6
:C90/270Left:12.6 Right:12.6





(10%Imax) 651.919	—
(20%Imax) 1303.84	—
(30%Imax) 1955.76	—
(40%Imax) 2607.68	—
(50%Imax) 3259.6	—
(60%Imax) 3911.51	—
(70%Imax) 4563.43	—
(80%Imax) 5215.35	—
(90%Imax) 5867.27	—



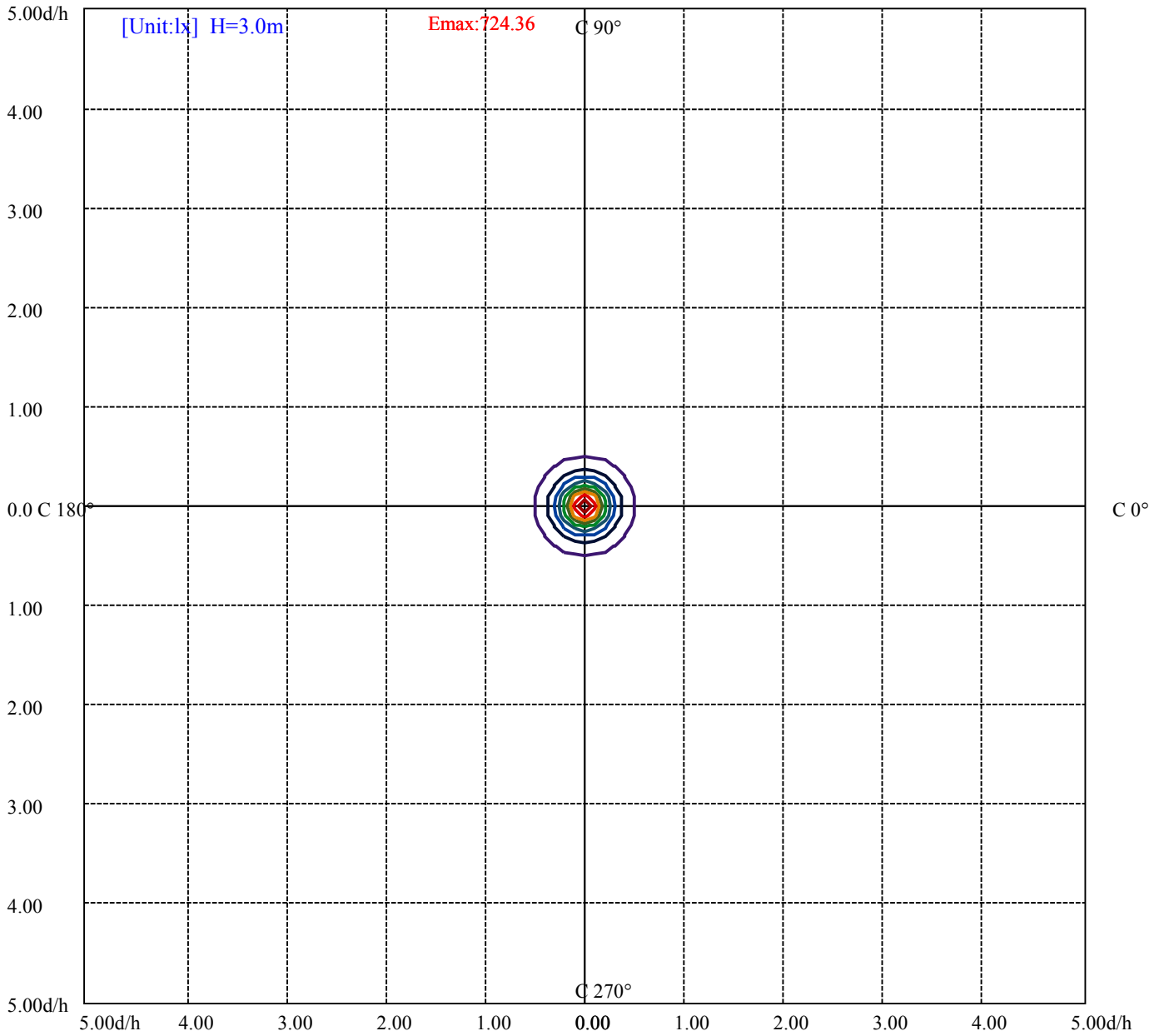
House

[Unit:cd]

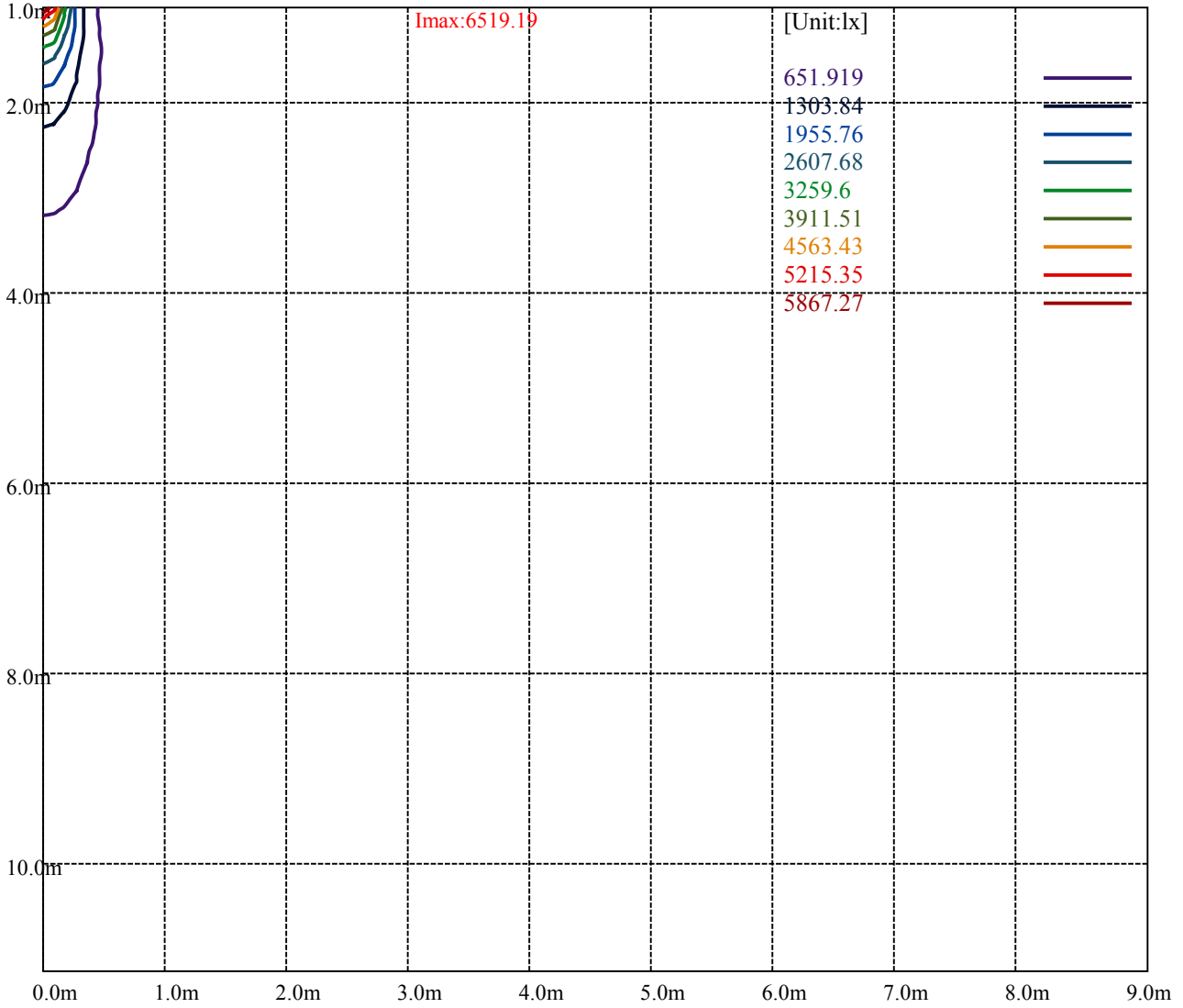
Road

Imax:6519.19

(10%Imax) 651.919	—
(20%Imax) 1303.84	—
(30%Imax) 1955.76	—
(40%Imax) 2607.68	—
(50%Imax) 3259.6	—
(60%Imax) 3911.51	—
(70%Imax) 4563.43	—
(80%Imax) 5215.35	—
(90%Imax) 5867.27	—



- (10%Emax) 72.43545
- (20%Emax) 144.8711
- (30%Emax) 217.3067
- (40%Emax) 289.7422
- (50%Emax) 362.1767
- (60%Emax) 434.6122
- (70%Emax) 507.0478
- (80%Emax) 579.4833
- (90%Emax) 651.9189



Luminance Table

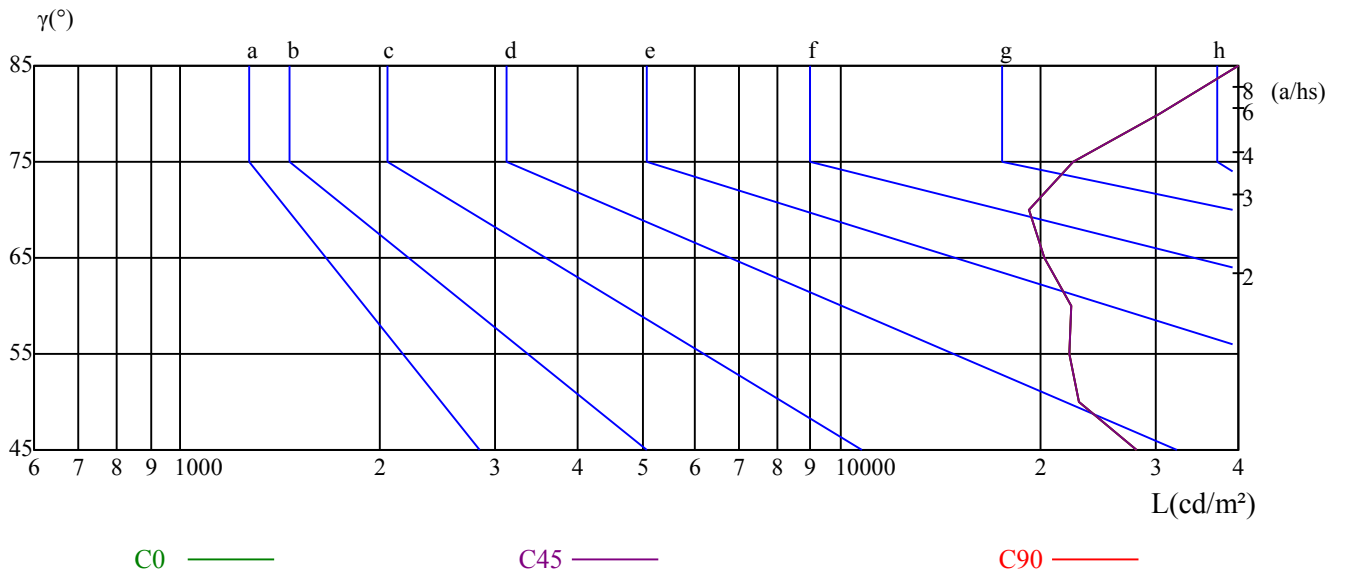
γ	45	50	55	60	65	70	75	80	85
C0	28004	22951	22255	22403	20340	19323	22413	30428	55711
C45	28004	22951	22255	22403	20340	19323	22413	30428	55711
C90	28004	22951	22255	22403	20340	19323	22413	30428	55711

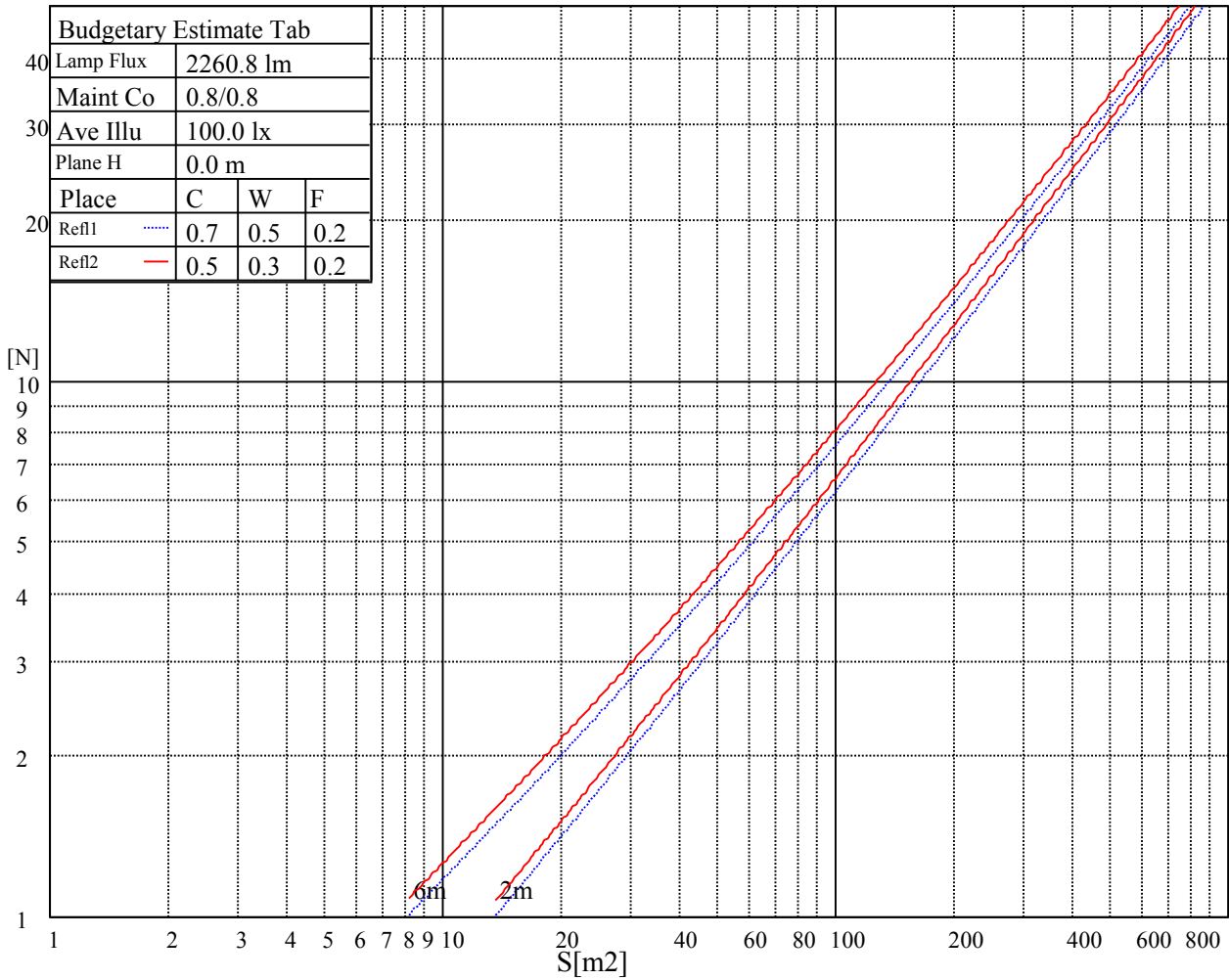
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
20340	20340	20340	22413	22413	22413	55711	55711	55711

Glare Table

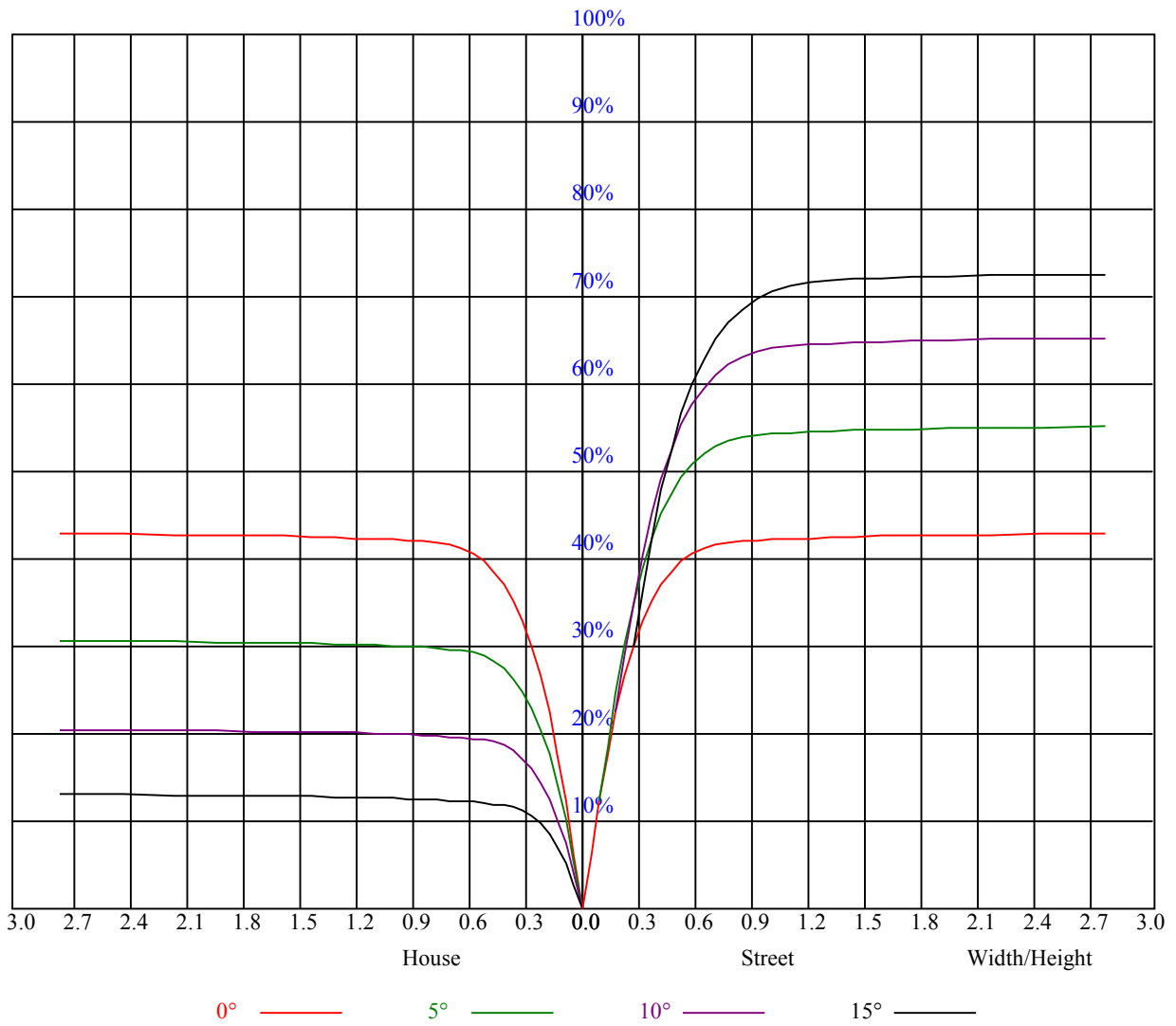
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

Luminance Limiting Curve





RHOCC	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	1.00	1.00	1.00	0.96	0.96	0.96	0.92	0.92	0.92	0.88	0.88	0.88	0.86
1	0.96	0.94	0.93	0.95	0.93	0.91	0.91	0.90	0.88	0.88	0.87	0.86	0.85	0.84	0.83	0.82
2	0.91	0.88	0.85	0.89	0.87	0.84	0.87	0.84	0.83	0.84	0.82	0.81	0.82	0.80	0.79	0.78
3	0.86	0.82	0.79	0.85	0.82	0.79	0.83	0.80	0.78	0.81	0.78	0.76	0.79	0.77	0.75	0.74
4	0.82	0.78	0.75	0.81	0.77	0.74	0.79	0.76	0.73	0.77	0.75	0.73	0.76	0.74	0.72	0.71
5	0.78	0.74	0.71	0.77	0.73	0.70	0.76	0.72	0.70	0.74	0.72	0.69	0.73	0.71	0.69	0.68
6	0.75	0.70	0.67	0.74	0.70	0.67	0.73	0.69	0.67	0.72	0.69	0.66	0.71	0.68	0.66	0.65
7	0.72	0.67	0.64	0.71	0.67	0.64	0.70	0.66	0.64	0.69	0.66	0.63	0.68	0.65	0.63	0.62
8	0.69	0.64	0.62	0.68	0.64	0.61	0.67	0.64	0.61	0.67	0.63	0.61	0.66	0.63	0.61	0.60
9	0.66	0.62	0.59	0.66	0.62	0.59	0.65	0.61	0.59	0.64	0.61	0.59	0.64	0.61	0.58	0.58
10	0.64	0.60	0.57	0.63	0.59	0.57	0.63	0.59	0.57	0.62	0.59	0.57	0.62	0.59	0.56	0.55



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	6516.65	6563.26	6553.10	6505.90	6403.12	6218.48	5987.24	5704.61	5321.59
45.0	6541.15	6461.68	6333.21	6137.22	5895.82	5591.08	5157.27	4802.34	4448.60
90.0	6482.59	6379.22	6202.35	5968.72	5671.75	5286.94	4888.38	4531.66	4131.32
135.0	6536.37	6452.12	6320.66	6121.09	5868.93	5520.57	5127.99	4768.88	4422.31
180.0	6516.65	6444.95	6282.42	6098.38	5843.24	5442.89	5090.95	4736.01	4296.23
225.0	6541.15	6577.00	6561.47	6492.15	6366.07	6208.33	5943.02	5619.16	5273.19
270.0	6482.59	6550.71	6582.38	6555.49	6491.56	6349.34	6141.40	5928.09	5552.84
315.0	6536.37	6578.79	6565.05	6499.32	6389.38	6250.75	5998.59	5665.17	5330.56
360.0	6516.65	6563.26	6553.10	6505.90	6403.12	6218.48	5987.24	5704.61	5321.59
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	4924.83	4569.90	4180.31	3842.11	3486.58	3149.58	2874.71	2592.68	2335.74
45.0	4020.18	3689.74	3377.23	3053.97	2753.41	2515.00	2301.68	2051.32	1887.59
90.0	3794.91	3435.79	3107.75	2832.29	2592.68	2316.02	2119.44	1944.36	1749.56
135.0	3995.08	3659.27	3342.58	3052.18	2720.55	2489.31	2280.17	2035.18	1875.64
180.0	4001.65	3633.57	3253.55	3002.58	2741.46	2421.79	2238.34	2046.54	1818.88
225.0	4936.78	4511.34	4167.17	3837.93	3475.23	3136.43	2859.77	2578.94	2327.38
270.0	5172.21	4863.89	4427.69	4090.68	3760.85	3371.86	3084.44	2778.51	2502.45
315.0	4972.04	4526.88	4178.52	3837.33	3469.85	3134.04	2857.38	2578.94	2330.36
360.0	4924.83	4569.90	4180.31	3842.11	3486.58	3149.58	2874.71	2592.68	2335.74
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	2139.15	1965.27	1774.66	1636.03	1512.35	1380.89	1258.99	1153.83	1041.49
45.0	1736.42	1576.88	1439.45	1313.97	1208.20	1103.64	989.51	901.07	840.72
90.0	1611.54	1484.26	1353.40	1185.56	1120.55	1021.83	922.05	847.06	793.10
135.0	1730.44	1568.51	1431.68	1319.34	1198.64	1088.70	979.95	890.32	827.58
180.0	1689.81	1557.76	1420.33	1263.18	1186.75	1074.95	979.53	890.02	819.51
225.0	2129.59	1932.41	1779.44	1622.89	1483.66	1368.94	1187.65	1124.43	1028.17
270.0	2281.96	2090.16	1879.83	1732.24	1598.39	1461.56	1333.09	1226.73	1111.40
315.0	2127.20	1934.20	1780.64	1627.07	1486.05	1370.13	1187.29	1115.59	1030.26
360.0	2139.15	1965.27	1774.66	1636.03	1512.35	1380.89	1258.99	1153.83	1041.49
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	937.52	868.21	801.88	755.28	685.96	601.11	519.85	433.21	325.65
45.0	783.96	723.01	648.32	564.07	458.30	374.05	310.12	201.55	130.68
90.0	738.96	662.30	581.16	487.34	404.23	313.28	226.82	157.39	99.97
135.0	773.80	717.03	639.36	560.48	451.13	365.09	312.51	194.14	123.39
180.0	769.80	718.53	639.06	558.45	470.91	364.43	282.09	204.41	136.89
225.0	940.57	851.78	796.15	748.76	685.49	599.68	517.64	422.57	338.50
270.0	1002.06	917.21	841.92	790.53	737.35	665.05	589.16	506.11	402.14
315.0	940.39	845.26	796.86	750.62	687.76	603.98	521.94	427.23	328.40
360.0	937.52	868.21	801.88	755.28	685.96	601.11	519.85	433.21	325.65
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	305.93	165.87	100.15	68.95	61.61	55.51	50.19	46.97	43.68
45.0	80.07	62.32	55.87	50.37	46.49	43.38	40.15	37.23	34.96
90.0	65.91	60.05	54.55	49.12	46.07	42.84	39.74	36.81	34.60
135.0	84.73	62.38	56.65	52.28	47.86	44.70	41.71	38.36	35.97
180.0	81.20	63.64	57.72	50.85	47.50	44.40	40.99	37.94	35.61
225.0	246.12	164.92	106.06	69.97	59.10	52.88	48.34	44.52	41.41
270.0	318.48	307.73	143.53	88.73	64.95	58.26	51.15	47.56	44.52
315.0	245.11	162.17	102.54	68.60	59.45	54.26	49.83	45.95	42.78
360.0	305.93	165.87	100.15	68.95	61.61	55.51	50.19	46.97	43.68

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	40.57	37.52	35.25	32.92	30.89	29.34	27.73	26.59	25.57
45.0	33.16	30.77	29.04	28.02	26.29	25.45	24.80	24.14	23.72
90.0	32.39	30.59	28.98	27.43	26.29	25.51	24.74	24.26	23.84
135.0	33.76	31.49	29.82	28.44	26.83	25.93	25.22	24.56	24.02
180.0	33.16	31.31	29.34	27.79	26.53	25.51	24.62	24.02	23.60
225.0	38.72	35.55	33.40	31.43	29.52	27.96	26.65	25.45	24.74
270.0	41.11	38.18	35.73	33.34	31.25	29.52	28.02	26.71	25.69
315.0	40.03	37.11	34.60	32.57	30.59	28.98	27.61	26.35	25.57
360.0	40.57	37.52	35.25	32.92	30.89	29.34	27.73	26.59	25.57
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	24.80	24.38	23.84	23.54	23.12	22.71	21.99	21.21	20.38
45.0	23.42	23.18	22.71	22.35	21.51	20.67	19.78	18.58	17.75
90.0	23.48	23.00	22.59	21.81	20.97	20.26	19.00	18.16	17.21
135.0	23.60	23.24	22.77	22.41	21.45	20.73	19.66	18.58	17.81
180.0	23.18	22.89	22.35	21.87	21.15	20.38	19.48	18.46	17.63
225.0	24.02	23.54	23.06	22.83	22.35	21.99	21.45	20.44	19.78
270.0	24.92	24.32	23.96	23.36	23.18	22.77	22.29	21.57	20.73
315.0	24.74	24.26	23.72	23.41	23.00	22.65	22.05	21.03	20.32
360.0	24.80	24.38	23.84	23.54	23.12	22.71	21.99	21.21	20.38
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	19.12	18.22	17.21	16.13	15.30	14.28	13.50	12.91	12.31
45.0	16.73	15.72	14.76	13.92	13.15	12.49	12.13	11.71	11.41
90.0	16.19	15.30	14.16	13.44	12.85	12.37	12.01	11.71	11.47
135.0	16.73	15.66	14.58	13.80	12.97	12.43	12.01	11.71	11.35
180.0	16.43	15.60	14.52	13.56	12.97	12.25	11.83	11.53	11.29
225.0	18.76	17.99	16.79	15.83	14.88	13.74	13.09	12.37	11.89
270.0	19.84	18.76	17.93	16.73	15.77	14.82	13.80	13.15	12.43
315.0	19.18	18.40	17.21	16.25	15.24	14.16	13.44	12.67	12.19
360.0	19.12	18.22	17.21	16.13	15.30	14.28	13.50	12.91	12.31
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	11.89	11.53	11.35	11.05	10.82	10.64	10.40	10.22	10.04
45.0	11.17	10.93	10.70	10.52	10.28	10.10	9.92	9.68	9.56
90.0	11.11	10.93	10.76	10.52	10.34	10.16	9.86	9.74	9.56
135.0	11.11	10.88	10.70	10.46	10.28	10.10	9.92	9.74	9.56
180.0	10.99	10.76	10.58	10.40	10.16	10.04	9.86	9.68	9.50
225.0	11.53	11.23	10.99	10.82	10.58	10.40	10.22	10.04	9.86
270.0	11.89	11.59	11.29	11.05	10.82	10.64	10.46	10.28	10.10
315.0	11.77	11.41	11.17	10.99	10.70	10.58	10.40	10.16	9.98
360.0	11.89	11.53	11.35	11.05	10.82	10.64	10.40	10.22	10.04
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	9.86	9.62	9.50	9.32	9.14	8.96	8.84	8.72	8.66
45.0	9.38	9.20	9.02	8.90	8.72	8.66	8.54	8.48	8.48
90.0	9.38	9.26	9.02	8.78	8.72	8.60	8.54	8.48	8.48
135.0	9.38	9.20	9.08	8.96	8.78	8.72	8.60	8.54	8.48
180.0	9.38	9.20	9.08	8.96	8.90	8.72	8.66	8.54	8.48
225.0	9.74	9.56	9.38	9.26	9.14	9.02	8.84	8.78	8.66
270.0	9.92	9.74	9.56	9.38	9.26	9.08	8.96	8.84	8.72
315.0	9.86	9.62	9.50	9.26	9.14	9.02	8.84	8.78	8.66
360.0	9.86	9.62	9.50	9.32	9.14	8.96	8.84	8.72	8.66

Intensity data(cd)

C/γ(°)	90.0
0.0	8.54
45.0	8.48
90.0	8.48
135.0	8.48
180.0	8.48
225.0	8.54
270.0	8.60
315.0	8.60
360.0	8.54