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Nata

LumCAT: 3-2719-L	
Luminaire: 99.70.131.00	
Report No: 220816-B022	Voltage(V): 35.5200
Test No: 220816-C020	Current(A): 0.4810
LampCAT: CITIZEN CLU038	Power (W): 17.0850
Lamp flux(lm): 2260.9	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): 1920.25
Efficiency(%): 84.93%
Lumens(lm)/Power(W): 112.39
Central intensity(cd): 6740.276
Maximum intensity(cd): 6740.276
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=23.5
 [C90/270]Total=23.5
Field angle(10%Imax): [C0/180]Total=58.5
 [C90/270]Total=58.5
Maximum s/h(1/2): C0_180=0.39 C90_270=0.39
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(%): 84.93%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.027%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	6740.277	0.000	0	.000%	.000%
1.0	6709.578	6.436	6.436	.285%	.335%
2.0	6602.546	19.107	25.542	.845%	1.330%
3.0	6422.316	31.151	56.694	1.378%	2.952%
4.0	6169.487	42.149	98.842	1.864%	5.147%
5.0	5848.166	51.699	150.542	2.287%	7.840%
6.0	5437.365	59.308	209.85	2.623%	10.928%
7.0	5052.332	65.109	274.959	2.880%	14.319%
8.0	4667.448	69.563	344.522	3.077%	17.941%
9.0	4272.780	72.456	416.978	3.205%	21.715%
10.0	3910.603	74.057	491.034	3.276%	25.571%
11.0	3589.655	74.943	565.977	3.315%	29.474%
12.0	3294.551	75.254	641.232	3.329%	33.393%
13.0	3004.077	74.749	715.98	3.306%	37.286%
14.0	2744.824	73.585	789.566	3.255%	41.118%
15.0	2515.000	72.209	861.775	3.194%	44.878%
16.0	2305.566	70.635	932.41	3.124%	48.557%
17.0	2104.796	68.681	1001.091	3.038%	52.133%
18.0	1937.040	66.641	1067.732	2.948%	55.604%
19.0	1787.732	64.803	1132.536	2.866%	58.978%
20.0	1651.645	62.950	1195.486	2.784%	62.257%
21.0	1515.184	60.810	1256.295	2.690%	65.423%
22.0	1386.925	58.319	1314.614	2.579%	68.460%
23.0	1274.007	55.834	1370.448	2.470%	71.368%
24.0	1147.868	52.951	1423.399	2.342%	74.126%
25.0	1032.104	49.568	1472.967	2.192%	76.707%
26.0	924.960	46.197	1519.163	2.043%	79.113%
27.0	836.451	43.093	1562.257	1.906%	81.357%
28.0	761.155	40.448	1602.705	1.789%	83.463%
29.0	693.985	38.071	1640.775	1.684%	85.446%
30.0	618.622	35.440	1676.215	1.568%	87.291%
31.0	537.111	32.162	1708.378	1.423%	88.966%
32.0	451.627	28.326	1736.704	1.253%	90.441%
33.0	371.290	24.243	1760.947	1.072%	91.704%
34.0	301.887	20.372	1781.32	.901%	92.765%
35.0	221.840	16.265	1797.585	.719%	93.612%
36.0	147.470	11.759	1809.344	.520%	94.224%
37.0	99.459	8.053	1817.397	.356%	94.644%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	74.392	5.803	1823.2	.257%	94.946%
39.0	63.607	4.710	1827.91	.208%	95.191%
40.0	57.691	4.230	1832.141	.187%	95.411%
41.0	52.642	3.929	1836.07	.174%	95.616%
42.0	48.064	3.659	1839.728	.162%	95.807%
43.0	44.299	3.421	1843.15	.151%	95.985%
44.0	41.185	3.226	1846.376	.143%	96.153%
45.0	38.212	3.051	1849.427	.135%	96.312%
46.0	35.224	2.872	1852.299	.127%	96.461%
47.0	32.887	2.709	1855.008	.120%	96.602%
48.0	30.773	2.573	1857.582	.114%	96.736%
49.0	28.846	2.448	1860.03	.108%	96.864%
50.0	26.986	2.328	1862.358	.103%	96.985%
51.0	25.522	2.222	1864.579	.098%	97.101%
52.0	24.282	2.137	1866.717	.095%	97.212%
53.0	23.184	2.065	1868.781	.091%	97.319%
54.0	22.303	2.005	1870.786	.089%	97.424%
55.0	21.728	1.965	1872.752	.087%	97.526%
56.0	21.242	1.942	1874.693	.086%	97.627%
57.0	20.884	1.926	1876.619	.085%	97.728%
58.0	20.704	1.923	1878.543	.085%	97.828%
59.0	20.368	1.920	1880.463	.085%	97.928%
60.0	19.972	1.906	1882.369	.084%	98.027%
61.0	19.547	1.886	1884.255	.083%	98.125%
62.0	18.860	1.851	1886.105	.082%	98.222%
63.0	18.060	1.796	1887.901	.079%	98.315%
64.0	17.254	1.733	1889.634	.077%	98.405%
65.0	16.298	1.660	1891.294	.073%	98.492%
66.0	15.469	1.585	1892.879	.070%	98.574%
67.0	14.729	1.518	1894.397	.067%	98.653%
68.0	13.930	1.452	1895.849	.064%	98.729%
69.0	13.273	1.388	1897.237	.061%	98.801%
70.0	12.765	1.337	1898.574	.059%	98.871%
71.0	12.309	1.296	1899.87	.057%	98.938%
72.0	11.936	1.261	1901.131	.056%	99.004%
73.0	11.629	1.232	1902.363	.055%	99.068%
74.0	11.361	1.209	1903.572	.053%	99.131%
75.0	11.069	1.185	1904.757	.052%	99.193%

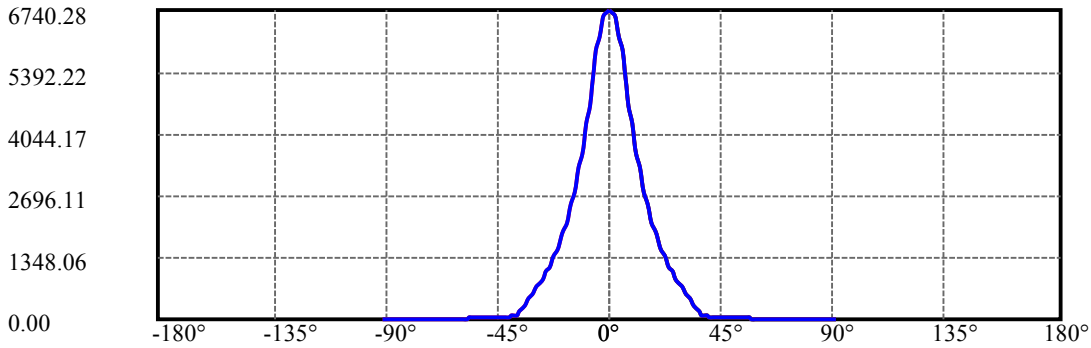
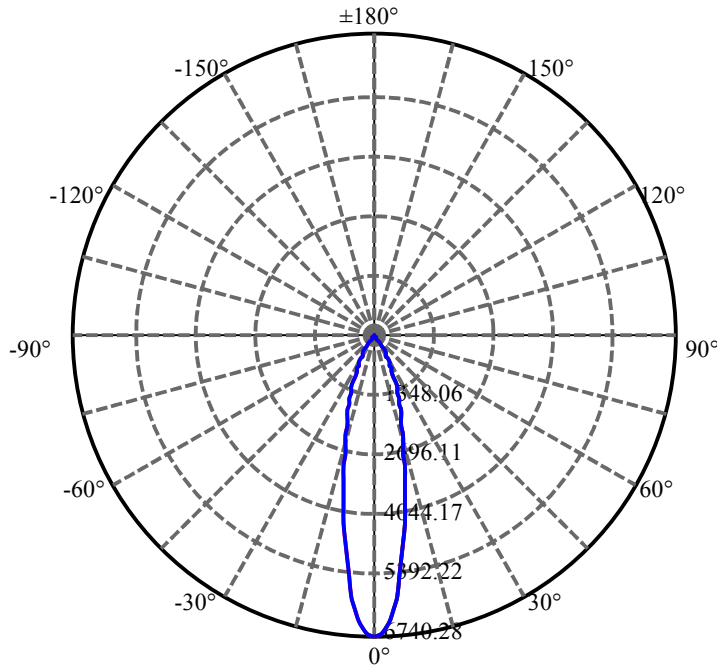
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	10.838	1.163	1905.92	.051%	99.254%
77.0	10.606	1.143	1907.063	.051%	99.313%
78.0	10.397	1.124	1908.187	.050%	99.372%
79.0	10.151	1.104	1909.291	.049%	99.429%
80.0	9.941	1.083	1910.374	.048%	99.486%
81.0	9.747	1.065	1911.439	.047%	99.541%
82.0	9.546	1.046	1912.485	.046%	99.595%
83.0	9.351	1.027	1913.513	.045%	99.649%
84.0	9.172	1.009	1914.522	.045%	99.701%
85.0	9.015	0.993	1915.514	.044%	99.753%
86.0	8.836	0.976	1916.49	.043%	99.804%
87.0	8.657	0.957	1917.448	.042%	99.854%
88.0	8.567	0.943	1918.391	.042%	99.903%
89.0	8.477	0.934	1919.325	.041%	99.952%
90.0	8.463	0.929	1920.254	.041%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1676.22	74.14%	87.29%
0-40	1832.14	81.04%	95.41%
0-60	1882.37	83.26%	98.03%
0-90	1919.33	84.89%	99.95%
0-120	1919.33	84.89%	99.95%
0-180	1920.25	84.93%	100.00%
60-90	38.86	1.72%	2.02%
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%
0-26.40	1536.20	67.95%	80.00%

ZONAL LUMEN SUMMARY

0-10	491.03
10-20	704.45
20-30	480.73
30-40	155.93
40-50	30.22
50-60	20.01
60-70	16.21
70-80	11.80
80-90	8.95
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: —————

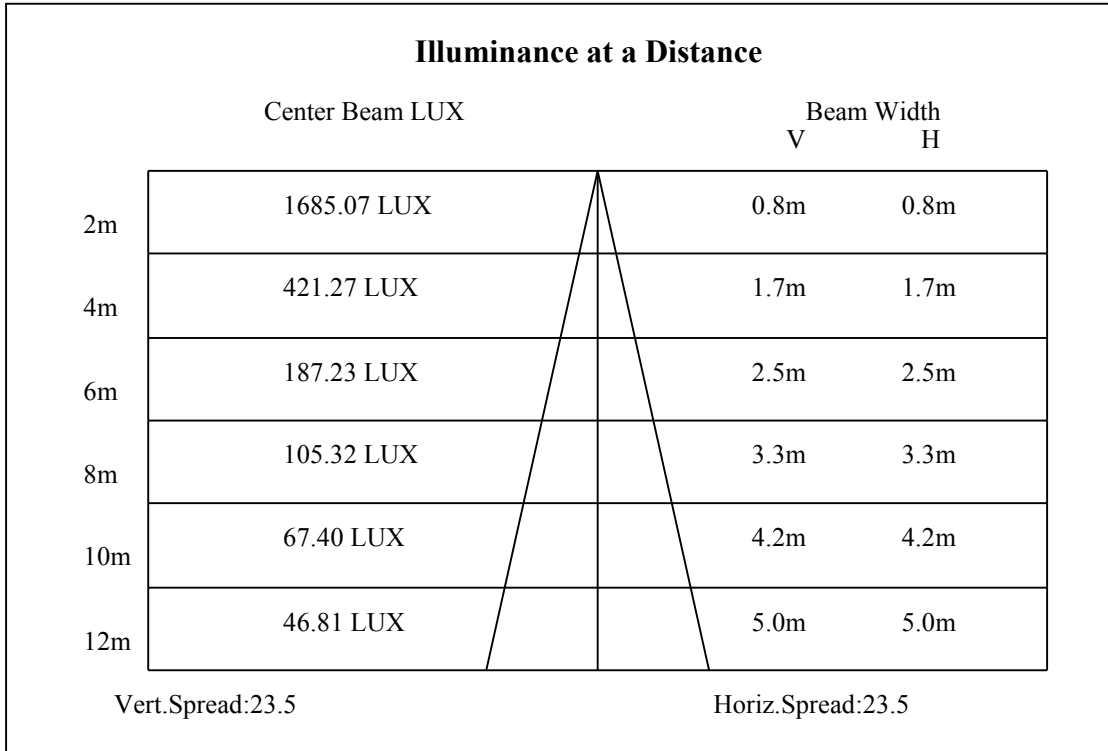
C90/C270: —————

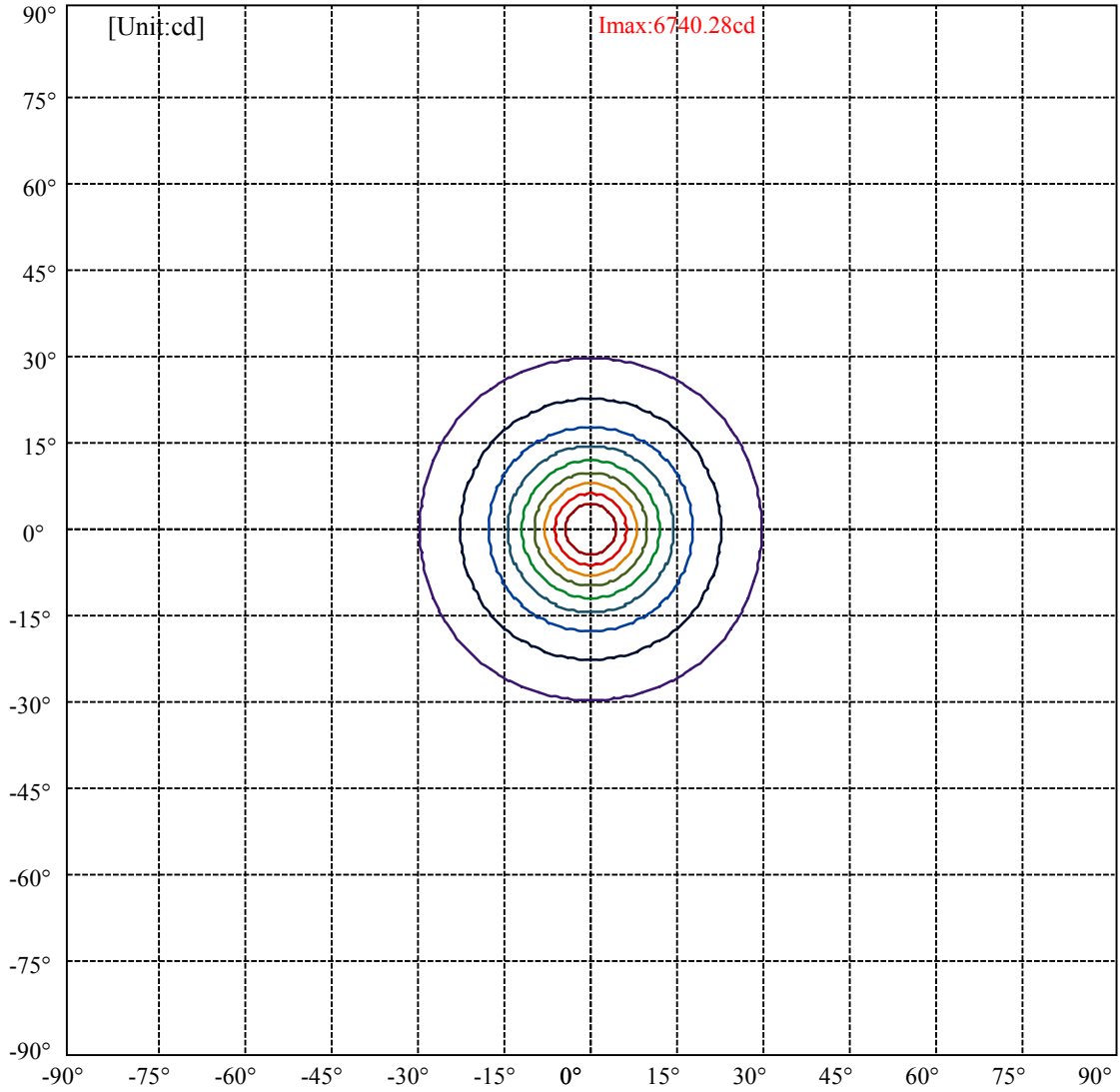
Field angle(10%Imax):C0/180Left:29.3 Right:29.3

:C90/270Left:29.3 Right:29.3

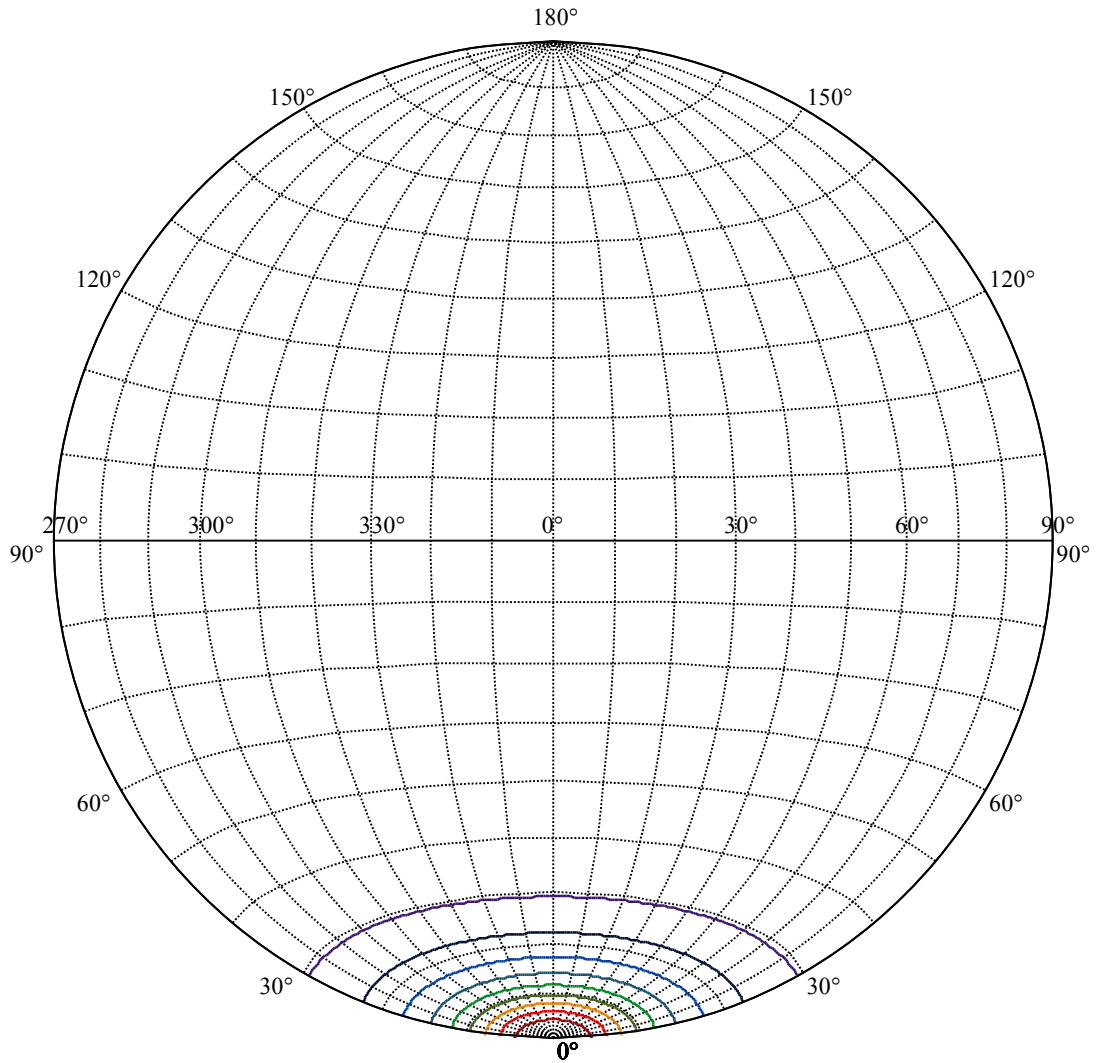
Beam Angle(50%Imax):C0/180Left:11.7 Right:11.7

:C90/270Left:11.7 Right:11.7





(10%Imax) 674.028	—
(20%Imax) 1348.06	—
(30%Imax) 2022.08	—
(40%Imax) 2696.11	—
(50%Imax) 3370.14	—
(60%Imax) 4044.17	—
(70%Imax) 4718.19	—
(80%Imax) 5392.22	—
(90%Imax) 6066.25	—



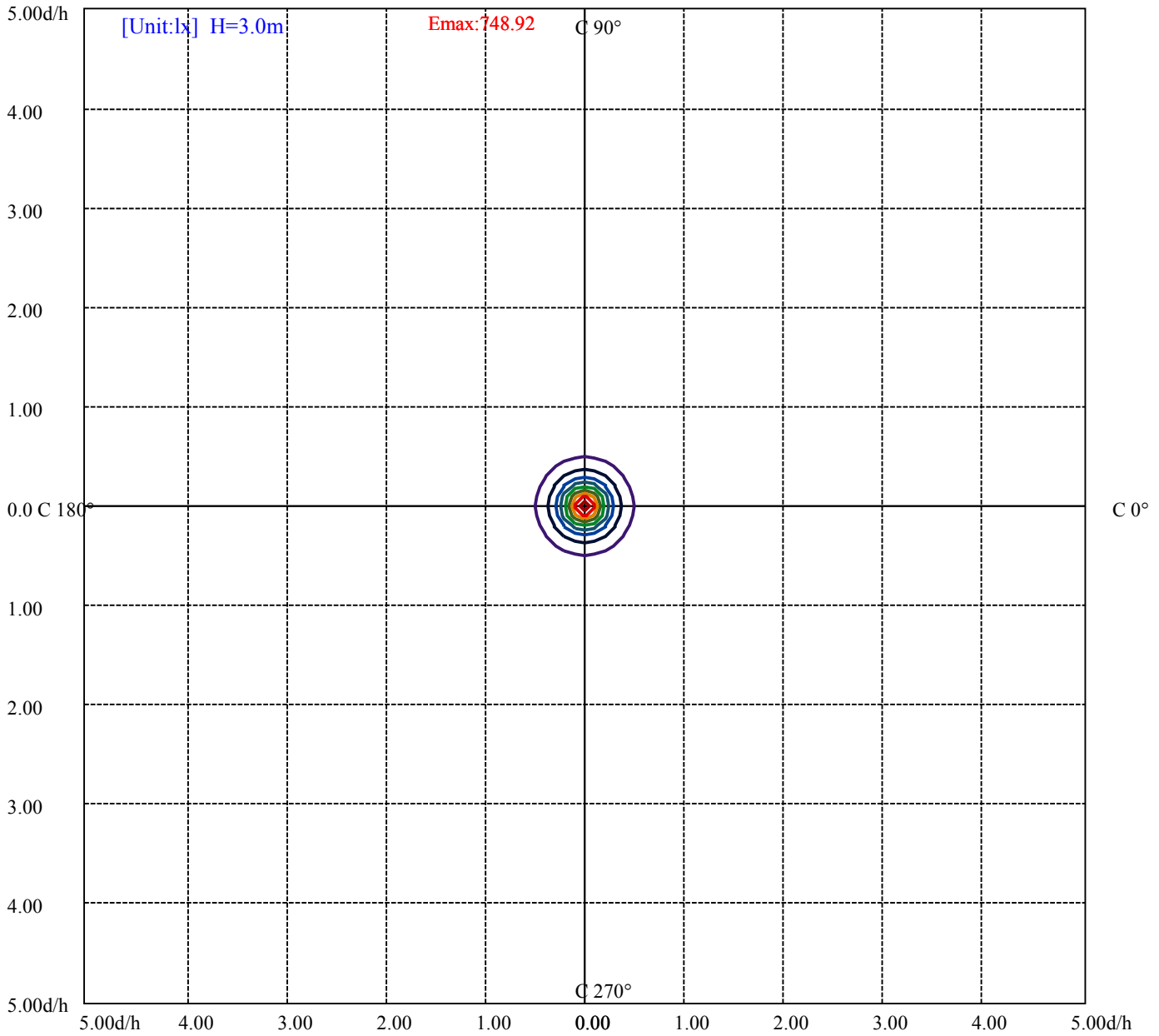
House

[Unit:cd]

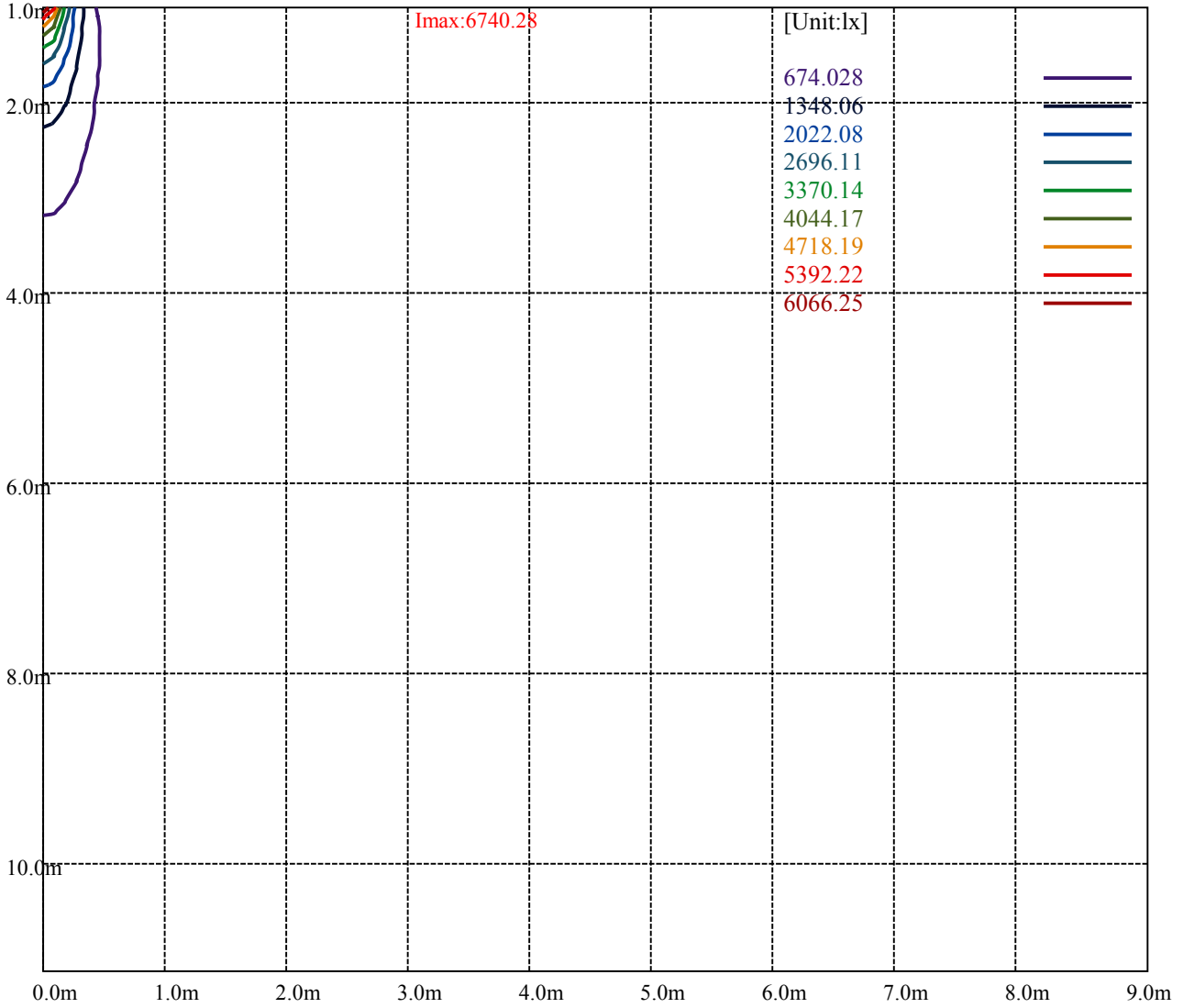
Road

Imax:6740.28

(10%Imax) 674.028	—
(20%Imax) 1348.06	—
(30%Imax) 2022.08	—
(40%Imax) 2696.11	—
(50%Imax) 3370.14	—
(60%Imax) 4044.17	—
(70%Imax) 4718.19	—
(80%Imax) 5392.22	—
(90%Imax) 6066.25	—



(10%Emax) 74.89188	—
(20%Emax) 149.7833	—
(30%Emax) 224.6756	—
(40%Emax) 299.5678	—
(50%Emax) 374.46	—
(60%Emax) 449.3511	—
(70%Emax) 524.2433	—
(80%Emax) 599.1356	—
(90%Emax) 674.0267	—



Luminance Table

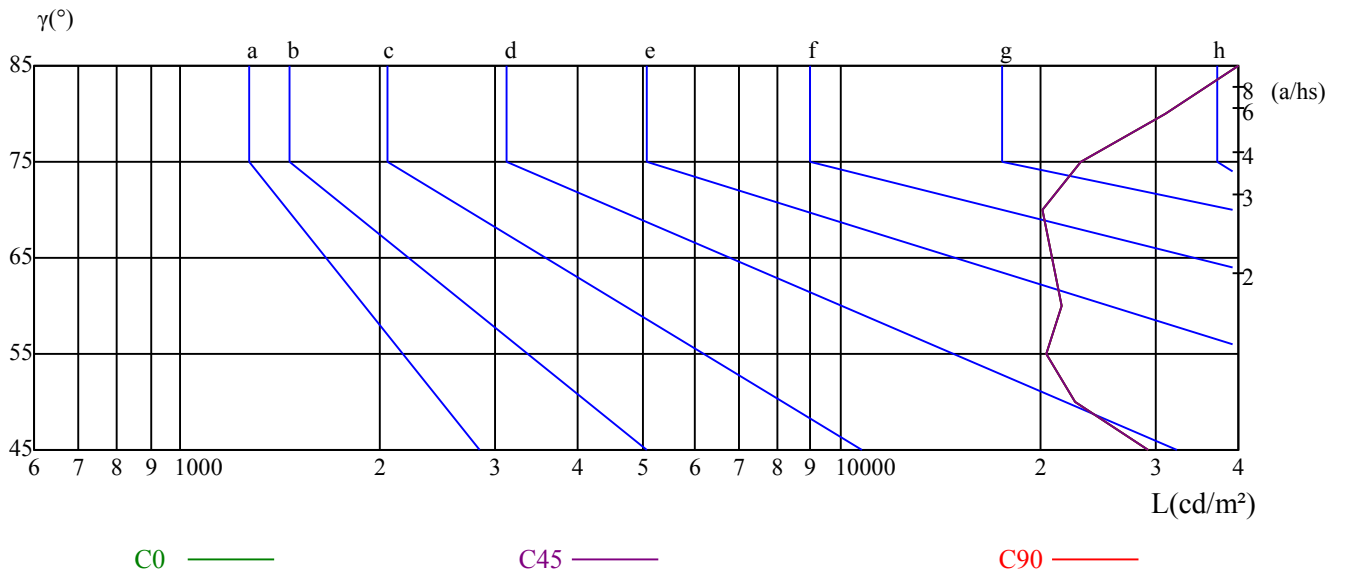
γ	45	50	55	60	65	70	75	80	85
C0	29227	22706	20487	21603	20856	20185	23130	30963	55943
C45	29227	22706	20487	21603	20856	20185	23130	30963	55943
C90	29227	22706	20487	21603	20856	20185	23130	30963	55943

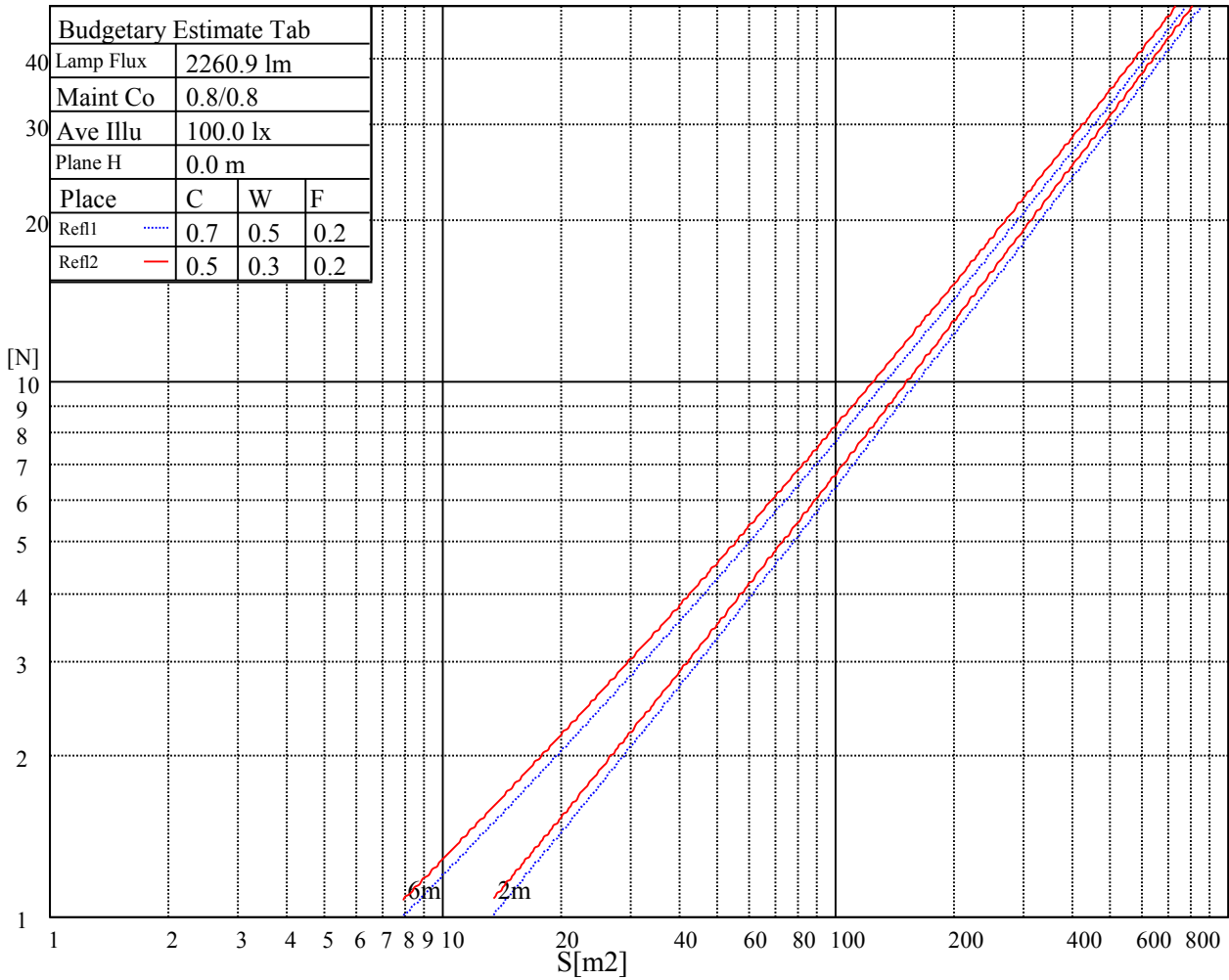
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
20856	20856	20856	23130	23130	23130	55943	55943	55943

Glare Table

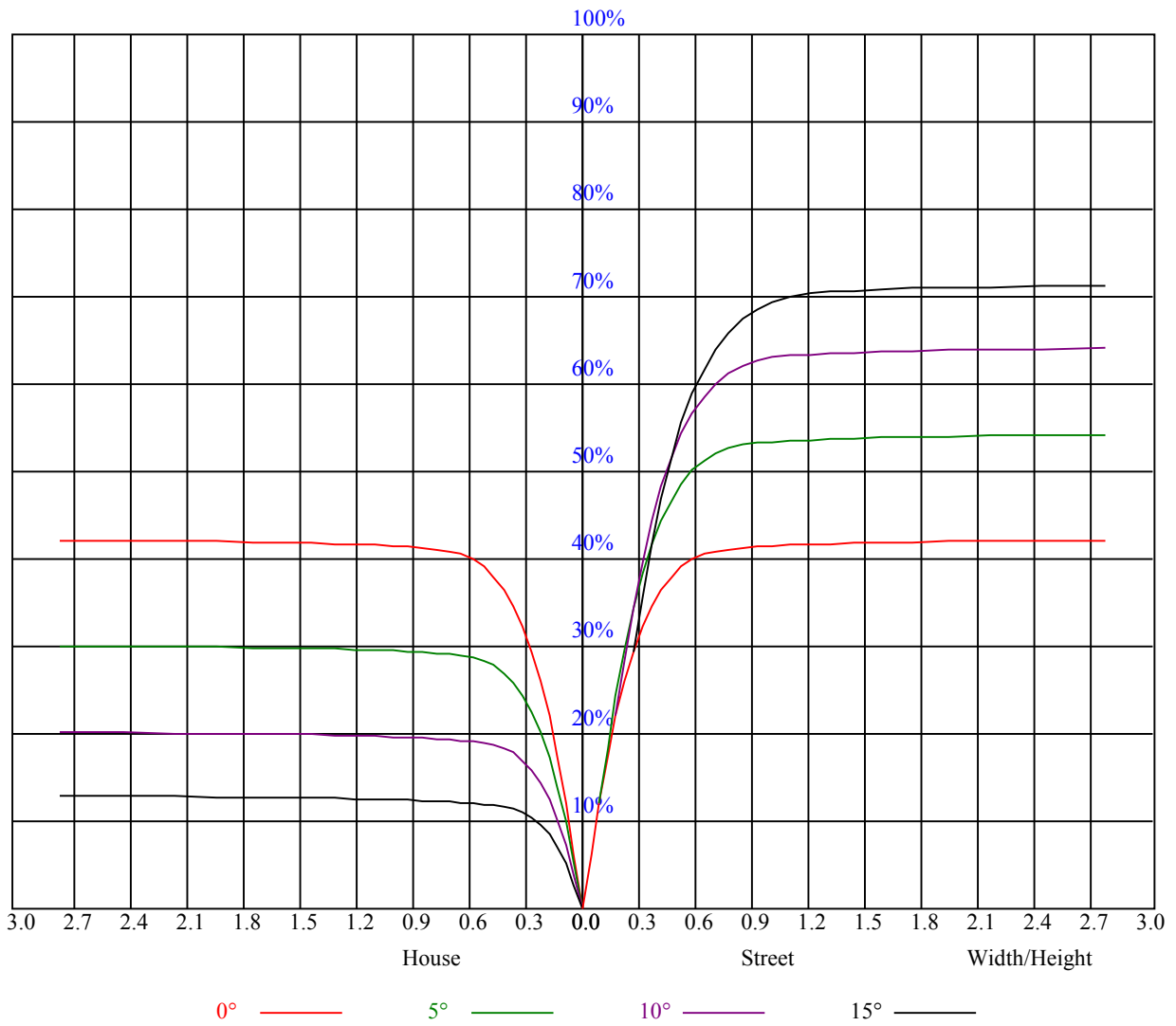
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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	1.01	1.01	1.01	0.99	0.99	0.99	0.94	0.94	0.94	0.90	0.90	0.90	0.87	0.87	0.87	0.85
1	0.95	0.93	0.91	0.93	0.91	0.90	0.90	0.88	0.87	0.86	0.85	0.84	0.84	0.83	0.82	0.80
2	0.89	0.86	0.84	0.88	0.85	0.83	0.85	0.83	0.81	0.83	0.81	0.79	0.80	0.79	0.78	0.76
3	0.85	0.81	0.78	0.83	0.80	0.77	0.81	0.79	0.76	0.79	0.77	0.75	0.77	0.76	0.74	0.73
4	0.80	0.76	0.73	0.80	0.76	0.73	0.78	0.75	0.72	0.76	0.74	0.71	0.75	0.72	0.71	0.69
5	0.77	0.73	0.70	0.76	0.72	0.69	0.75	0.71	0.69	0.73	0.70	0.68	0.72	0.69	0.68	0.66
6	0.73	0.69	0.66	0.73	0.69	0.66	0.72	0.68	0.66	0.70	0.67	0.65	0.69	0.67	0.65	0.64
7	0.70	0.66	0.63	0.70	0.66	0.63	0.69	0.65	0.63	0.68	0.65	0.62	0.67	0.64	0.62	0.61
8	0.68	0.63	0.61	0.67	0.63	0.60	0.66	0.63	0.60	0.65	0.62	0.60	0.65	0.62	0.60	0.59
9	0.65	0.61	0.58	0.65	0.61	0.58	0.64	0.60	0.58	0.63	0.60	0.58	0.63	0.60	0.57	0.57
10	0.63	0.59	0.56	0.62	0.58	0.56	0.62	0.58	0.56	0.61	0.58	0.56	0.61	0.58	0.55	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	6712.64	6756.86	6744.31	6630.18	6461.68	6217.89	5826.51	5445.28	5076.61
45.0	6761.04	6693.52	6541.15	6340.38	6063.13	5690.27	5283.35	4902.13	4495.21
90.0	6740.13	6643.92	6507.09	6269.87	5934.66	5589.29	5176.99	4759.32	4390.64
135.0	6747.30	6701.29	6569.83	6369.06	6112.72	5808.58	5350.87	4989.96	4618.30
180.0	6712.64	6620.02	6389.38	6153.35	5857.58	5454.24	5038.96	4651.17	4243.65
225.0	6761.04	6756.86	6679.78	6526.21	6305.72	5983.06	5601.24	5233.76	4822.66
270.0	6740.13	6754.47	6716.23	6589.55	6383.40	6108.54	5690.87	5329.36	4952.92
315.0	6747.30	6749.69	6672.61	6499.92	6237.01	5933.46	5530.13	5107.68	4739.60
360.0	6712.64	6756.86	6744.31	6630.18	6461.68	6217.89	5826.51	5445.28	5076.61
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	4654.75	4267.55	3929.35	3589.95	3276.85	3017.52	2739.07	2517.39	2294.51
45.0	4090.68	3773.99	3434.60	3164.51	2876.50	2626.14	2419.99	2206.08	2024.43
90.0	4046.47	3655.08	3376.64	3113.13	2835.87	2585.51	2385.93	2174.41	1993.36
135.0	4177.92	3848.68	3540.96	3236.22	2935.06	2711.59	2464.21	2259.26	2077.61
180.0	3873.78	3568.44	3252.35	2997.21	2727.72	2480.94	2289.73	2114.06	1915.68
225.0	4455.18	4072.16	3708.26	3406.51	3137.03	2819.14	2597.46	2388.92	2163.05
270.0	4503.58	4149.84	3830.16	3500.32	3189.61	2939.25	2667.97	2454.05	2235.95
315.0	4379.89	3949.07	3644.93	3348.55	3053.97	2778.51	2555.63	2330.36	2133.78
360.0	4654.75	4267.55	3929.35	3589.95	3276.85	3017.52	2739.07	2517.39	2294.51
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	2097.92	1945.55	1805.14	1647.39	1527.28	1417.34	1278.11	1163.99	1048.66
45.0	1873.25	1728.65	1580.46	1462.15	1348.62	1219.56	1090.49	979.35	869.40
90.0	1838.00	1685.63	1563.14	1432.87	1310.38	1181.20	1086.85	949.29	855.36
135.0	1900.74	1753.15	1621.10	1486.05	1370.13	1256.60	1115.59	1003.25	902.27
180.0	1770.48	1627.07	1507.57	1382.68	1184.18	1142.00	1014.37	906.39	817.66
225.0	1993.95	1851.14	1715.51	1563.73	1450.20	1334.28	1187.17	1074.66	963.69
270.0	2047.73	1897.75	1740.60	1601.38	1487.25	1374.91	1236.29	1121.56	1008.03
315.0	1974.24	1812.90	1679.65	1545.21	1417.34	1266.16	1174.08	1058.34	934.60
360.0	2097.92	1945.55	1805.14	1647.39	1527.28	1417.34	1278.11	1163.99	1048.66
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	921.99	828.77	766.63	696.12	630.39	544.35	455.91	376.44	307.73
45.0	794.71	739.74	661.46	591.55	503.12	412.89	336.41	307.73	180.33
90.0	790.05	720.56	650.89	573.87	488.24	403.93	328.70	250.07	177.41
135.0	818.61	749.90	690.15	607.69	521.64	442.17	354.33	306.53	201.61
180.0	760.59	690.50	614.56	539.39	459.98	364.31	288.61	214.45	136.60
225.0	858.17	784.56	721.22	642.52	568.01	481.31	393.47	319.26	245.94
270.0	901.07	807.86	743.92	664.45	577.21	501.92	428.43	342.38	306.53
315.0	846.40	767.35	703.05	633.38	548.29	462.13	384.45	298.23	218.58
360.0	921.99	828.77	766.63	696.12	630.39	544.35	455.91	376.44	307.73
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	203.28	139.76	94.23	68.24	62.14	56.47	51.03	46.49	43.14
45.0	121.96	83.77	66.74	60.53	54.67	49.65	45.35	42.42	39.38
90.0	121.66	80.73	67.88	60.71	54.14	49.77	46.01	42.36	39.56
135.0	136.95	87.54	68.66	62.98	57.18	52.58	47.98	44.40	41.47
180.0	91.78	72.66	65.97	58.92	53.96	49.12	45.65	42.31	39.02
225.0	162.71	109.71	80.73	68.54	62.38	56.94	51.33	47.44	44.16
270.0	190.01	122.85	79.71	66.80	60.41	54.85	49.59	45.29	42.31
315.0	151.41	98.65	71.23	62.14	56.65	51.75	47.56	43.68	40.45
360.0	203.28	139.76	94.23	68.24	62.14	56.47	51.03	46.49	43.14

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	40.09	36.81	34.18	31.91	29.82	27.84	26.05	24.62	23.66
45.0	36.15	33.94	31.73	29.58	27.79	25.93	24.62	23.60	22.29
90.0	36.69	33.94	31.79	29.82	28.08	26.23	24.98	23.78	22.77
135.0	38.30	35.19	33.10	30.95	28.86	27.19	25.75	24.50	23.36
180.0	36.51	34.06	31.61	29.94	28.26	26.17	25.10	23.90	22.83
225.0	40.39	37.47	35.07	32.27	30.59	28.68	26.71	25.57	24.50
270.0	39.97	36.03	33.76	31.97	29.28	27.73	26.35	24.68	23.60
315.0	37.58	34.36	31.85	29.76	28.08	26.11	24.62	23.60	22.47
360.0	40.09	36.81	34.18	31.91	29.82	27.84	26.05	24.62	23.66
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	22.41	21.57	21.09	20.55	20.32	20.32	19.96	19.66	19.60
45.0	21.75	21.33	20.91	20.79	20.61	20.20	19.90	19.42	18.46
90.0	22.05	21.57	21.09	20.91	20.73	20.26	19.90	19.36	18.28
135.0	22.59	21.93	21.39	21.15	21.03	20.61	20.14	19.90	18.94
180.0	22.23	21.63	21.21	21.15	20.79	20.26	20.20	19.24	18.05
225.0	23.18	22.65	22.11	21.39	21.21	20.73	20.08	19.66	19.24
270.0	22.77	21.99	21.57	21.03	20.73	20.67	20.20	19.72	19.48
315.0	21.45	21.15	20.55	20.08	20.20	19.90	19.42	19.42	18.82
360.0	22.41	21.57	21.09	20.55	20.32	20.32	19.96	19.66	19.60
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	18.76	17.75	17.27	16.13	15.24	14.58	13.68	13.03	12.49
45.0	17.75	16.97	15.72	15.12	14.40	13.50	12.97	12.55	12.13
90.0	17.63	16.79	15.66	15.06	14.40	13.50	12.97	12.55	12.19
135.0	18.05	17.15	16.07	15.36	14.70	13.80	13.21	12.73	12.25
180.0	17.45	16.55	15.36	14.82	14.10	13.27	12.79	12.43	12.01
225.0	18.34	17.75	16.85	15.83	15.12	14.34	13.62	13.03	12.61
270.0	18.64	17.75	17.15	16.13	15.24	14.58	13.86	13.21	12.67
315.0	17.87	17.33	16.31	15.30	14.64	13.86	13.09	12.61	12.13
360.0	18.76	17.75	17.27	16.13	15.24	14.58	13.68	13.03	12.49
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	12.07	11.71	11.41	11.11	10.88	10.70	10.46	10.22	10.04
45.0	11.77	11.53	11.29	10.93	10.76	10.46	10.28	10.04	9.86
90.0	11.83	11.53	11.29	10.99	10.76	10.58	10.34	10.10	9.86
135.0	12.01	11.59	11.35	11.05	10.82	10.58	10.40	10.10	9.92
180.0	11.65	11.41	11.11	10.88	10.64	10.34	10.16	9.92	9.74
225.0	12.13	11.83	11.53	11.23	10.99	10.76	10.52	10.28	10.04
270.0	12.31	11.95	11.71	11.41	11.17	10.93	10.76	10.46	10.28
315.0	11.71	11.47	11.17	10.93	10.70	10.52	10.28	10.10	9.80
360.0	12.07	11.71	11.41	11.11	10.88	10.70	10.46	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	9.44	9.26	9.08	8.90	8.78	8.66	8.48
45.0	9.62	9.44	9.32	9.14	9.02	8.84	8.66	8.54	8.43
90.0	9.74	9.56	9.26	9.08	8.90	8.78	8.60	8.54	8.43
135.0	9.68	9.50	9.32	9.14	9.02	8.78	8.60	8.48	8.43
180.0	9.56	9.32	9.14	8.96	8.84	8.72	8.48	8.48	8.43
225.0	9.86	9.62	9.44	9.26	9.08	8.90	8.78	8.66	8.54
270.0	10.04	9.86	9.62	9.44	9.20	8.90	8.72	8.60	8.54
315.0	9.62	9.44	9.26	9.08	8.96	8.84	8.60	8.54	8.54
360.0	9.86	9.62	9.44	9.26	9.08	8.90	8.78	8.66	8.48

Intensity data(cd)

C/γ(°)	90.0
0.0	8.48
45.0	8.48
90.0	8.48
135.0	8.43
180.0	8.48
225.0	8.48
270.0	8.43
315.0	8.43
360.0	8.48