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NATA

LumCAT: LN01D06315BF

Luminaire: 92.70.130.00

Report No: NATA0100

Voltage(V): 36.1000

Test No: GC2018123015

Current(A): 0.5000

LampCAT: LUMINUS CXM-14-AA10

Power (W): 18.0500

Lamp flux(lm): 2643.0

PF: 0.0000

Number of Lamps: 1

Ballast type: DC

Length(mm): 63

Width(mm): 63

Phm Type: C

Height(mm): 0

Photometric Results

Lumens(lm): 2458.62

Efficiency(%): 93.02%

Lumens(lm)/Power(W): 136.40

Central intensity(cd): 14526.560

Maximum intensity(cd): 14526.560

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=18.9

[C90/270]Total=18.9

Field angle(10%Imax): [C0/180]Total=38.0

[C90/270]Total=38.0

Maximum s/h(1/2): C0_180=0.32 C90_270=0.32

Maximum s/h(1/4): C0_180=0.33 C90_270=0.33

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 93.15%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 95.732%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	14526.563	3.475	3.475	.131%	.141%
1.0	14497.031	27.745	31.22	1.050%	1.270%
2.0	14352.891	54.930	86.151	2.078%	3.504%
3.0	14075.859	80.784	166.935	3.057%	6.790%
4.0	13633.594	104.291	271.226	3.946%	11.032%
5.0	12767.273	122.024	393.25	4.617%	15.995%
6.0	11802.445	135.288	528.538	5.119%	21.497%
7.0	10605.023	141.729	670.266	5.362%	27.262%
8.0	9268.313	141.452	811.718	5.352%	33.015%
9.0	7839.633	134.487	946.205	5.088%	38.485%
10.0	6582.516	125.347	1071.552	4.743%	43.583%
11.0	5493.234	114.942	1186.494	4.349%	48.258%
12.0	4616.508	105.255	1291.749	3.982%	52.540%
13.0	3920.906	96.722	1388.471	3.660%	56.474%
14.0	3302.508	87.613	1476.085	3.315%	60.037%
15.0	2896.102	82.198	1558.283	3.110%	63.380%
16.0	2418.680	73.109	1631.391	2.766%	66.354%
17.0	2095.383	67.182	1698.573	2.542%	69.086%
18.0	1723.430	58.402	1756.975	2.210%	71.462%
19.0	1452.045	51.841	1808.816	1.961%	73.570%
20.0	1200.452	45.024	1853.84	1.704%	75.402%
21.0	1003.936	39.454	1893.294	1.493%	77.006%
22.0	846.049	34.755	1928.05	1.315%	78.420%
23.0	706.908	30.290	1958.339	1.146%	79.652%
24.0	592.397	26.423	1984.762	1.000%	80.727%
25.0	505.048	23.406	2008.168	.886%	81.679%
26.0	434.749	20.899	2029.067	.791%	82.529%
27.0	374.084	18.624	2047.691	.705%	83.286%
28.0	332.142	17.100	2064.791	.647%	83.982%
29.0	300.073	15.953	2080.744	.604%	84.631%
30.0	267.954	14.692	2095.436	.556%	85.228%
31.0	246.783	13.938	2109.374	.527%	85.795%
32.0	229.282	13.324	2122.698	.504%	86.337%
33.0	215.290	12.858	2135.556	.487%	86.860%
34.0	201.853	12.378	2147.934	.468%	87.363%
35.0	190.083	11.956	2159.89	.452%	87.850%
36.0	178.130	11.482	2171.372	.434%	88.317%
37.0	167.590	11.060	2182.432	.418%	88.766%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	156.009	10.533	2192.965	.399%	89.195%
39.0	144.534	9.975	2202.94	.377%	89.601%
40.0	135.211	9.531	2212.47	.361%	89.988%
41.0	126.211	9.080	2221.551	.344%	90.358%
42.0	117.724	8.638	2230.189	.327%	90.709%
43.0	111.614	8.347	2238.536	.316%	91.048%
44.0	106.516	8.114	2246.65	.307%	91.378%
45.0	101.953	7.906	2254.556	.299%	91.700%
46.0	98.550	7.774	2262.33	.294%	92.016%
47.0	95.435	7.654	2269.984	.290%	92.327%
48.0	92.925	7.573	2277.557	.287%	92.636%
49.0	90.752	7.511	2285.068	.284%	92.941%
50.0	88.770	7.457	2292.525	.282%	93.244%
51.0	86.154	7.342	2299.867	.278%	93.543%
52.0	82.870	7.161	2307.028	.271%	93.834%
53.0	78.855	6.906	2313.934	.261%	94.115%
54.0	74.890	6.644	2320.578	.251%	94.385%
55.0	72.014	6.469	2327.047	.245%	94.648%
56.0	69.300	6.300	2333.348	.238%	94.905%
57.0	66.621	6.127	2339.475	.232%	95.154%
58.0	64.181	5.969	2345.443	.226%	95.397%
59.0	61.988	5.827	2351.27	.220%	95.634%
60.0	59.527	5.653	2356.923	.214%	95.864%
61.0	57.410	5.506	2362.43	.208%	96.088%
62.0	55.357	5.360	2367.789	.203%	96.306%
63.0	53.234	5.201	2372.991	.197%	96.517%
64.0	51.138	5.040	2378.031	.191%	96.722%
65.0	49.050	4.875	2382.906	.184%	96.920%
66.0	47.004	4.709	2387.615	.178%	97.112%
67.0	45.042	4.547	2392.162	.172%	97.297%
68.0	43.291	4.402	2396.563	.167%	97.476%
69.0	41.309	4.229	2400.792	.160%	97.648%
70.0	39.614	4.082	2404.875	.154%	97.814%
71.0	37.941	3.934	2408.808	.149%	97.974%
72.0	36.084	3.763	2412.572	.142%	98.127%
73.0	34.615	3.630	2416.202	.137%	98.275%
74.0	33.258	3.506	2419.708	.133%	98.417%
75.0	31.760	3.364	2423.072	.127%	98.554%

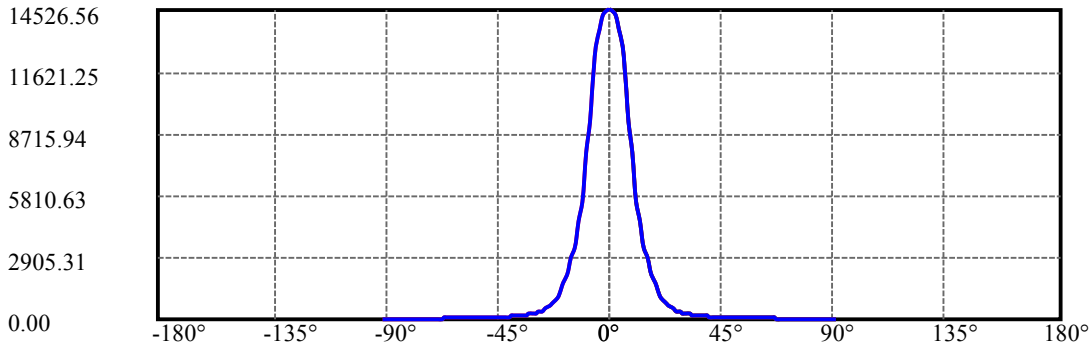
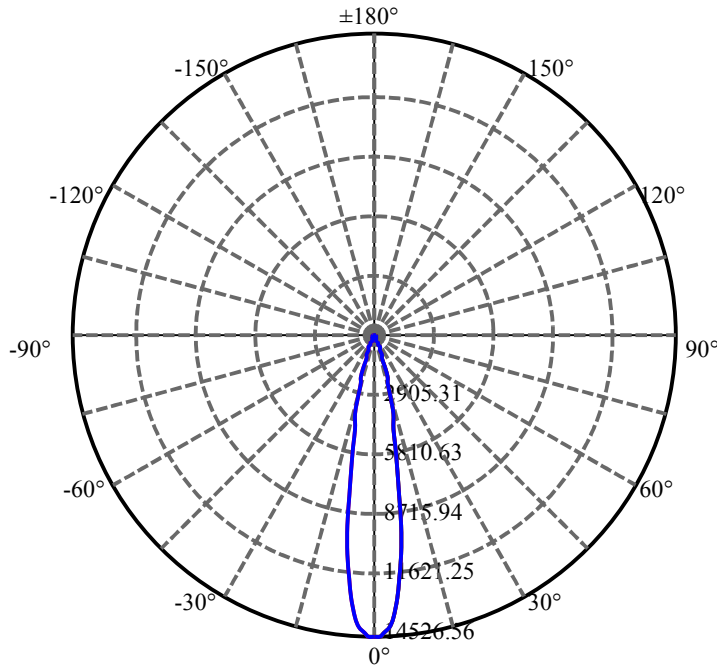
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	30.586	3.254	2426.326	.123%	98.686%
77.0	29.510	3.153	2429.479	.119%	98.815%
78.0	28.216	3.027	2432.506	.115%	98.938%
79.0	27.056	2.912	2435.419	.110%	99.056%
80.0	25.889	2.796	2438.214	.106%	99.170%
81.0	24.539	2.658	2440.872	.101%	99.278%
82.0	23.238	2.524	2443.396	.095%	99.381%
83.0	21.923	2.386	2445.782	.090%	99.478%
84.0	20.595	2.246	2448.028	.085%	99.569%
85.0	19.470	2.127	2450.155	.080%	99.656%
86.0	18.380	2.011	2452.166	.076%	99.737%
87.0	17.571	1.924	2454.09	.073%	99.816%
88.0	16.903	1.852	2455.942	.070%	99.891%
89.0	16.383	1.796	2457.739	.068%	99.964%
90.0	16.109	0.883	2458.622	.033%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	2095.44	79.28%	85.23%
0-40	2212.47	83.71%	89.99%
0-60	2356.92	89.18%	95.86%
0-90	2457.74	92.99%	99.96%
0-120	2457.74	92.99%	99.96%
0-180	2458.62	93.02%	100.00%
60-90	106.47	4.03%	4.33%
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%
0-23.32	1966.90	74.42%	80.00%

ZONAL LUMEN SUMMARY

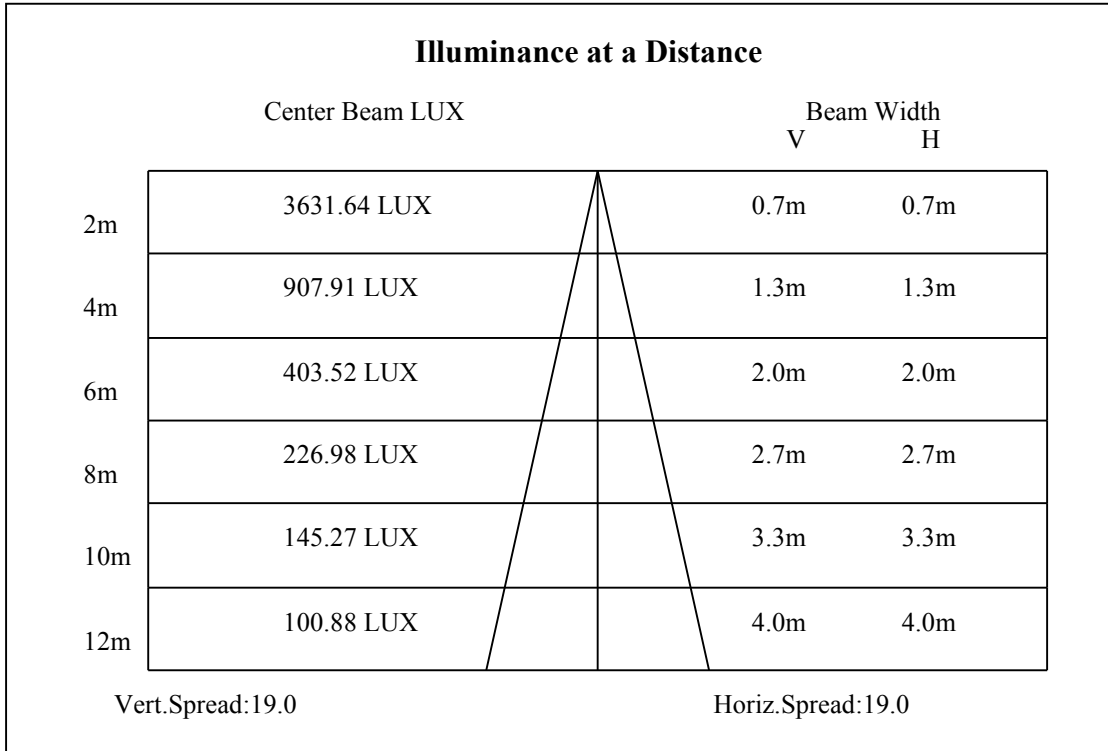
0-10	1071.55
10-20	782.29
20-30	241.60
30-40	117.03
40-50	80.05
50-60	64.40
60-70	47.95
70-80	33.34
80-90	19.52
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

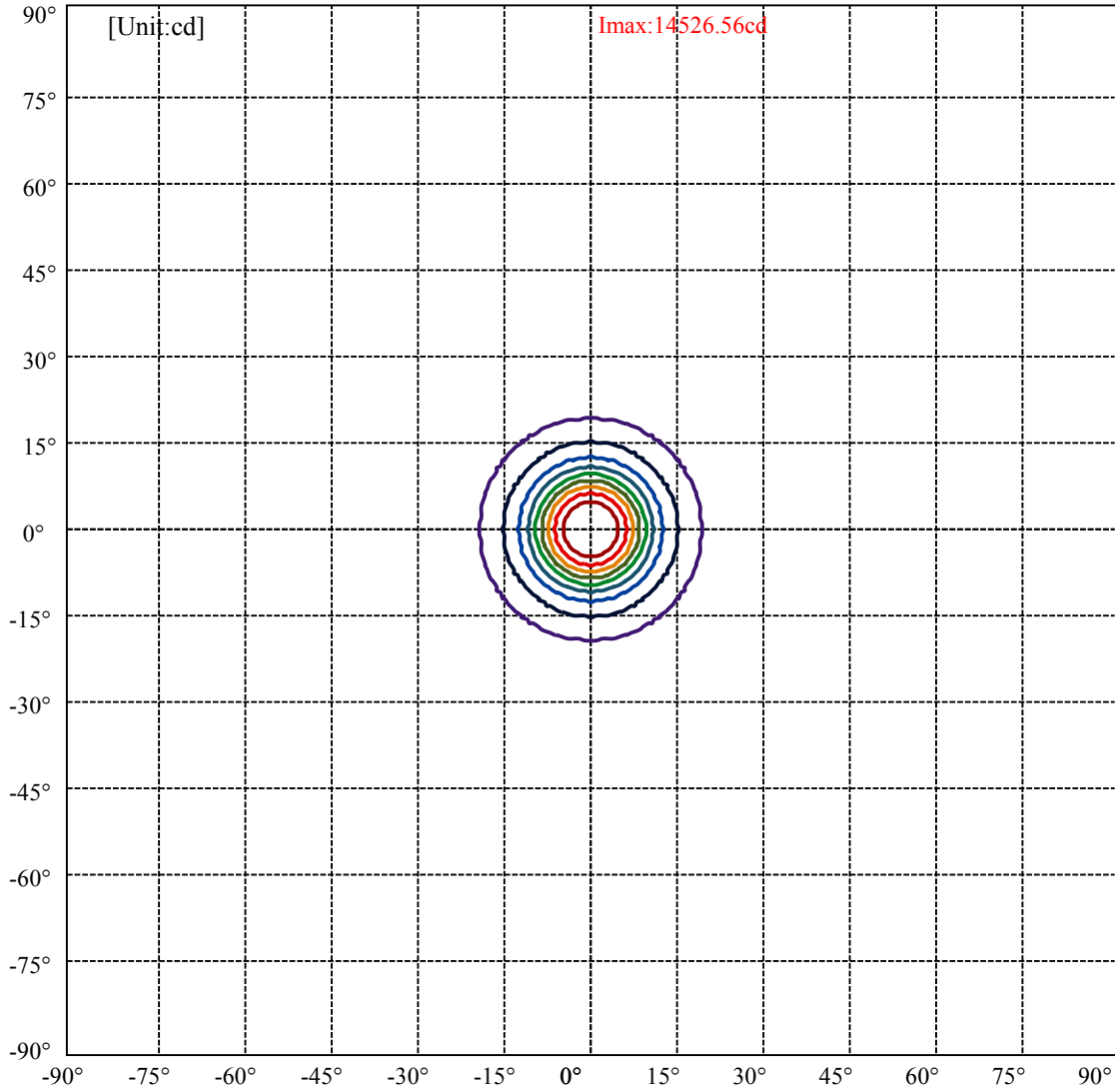


C0(Max): —————
C0/C180: —————
C90/C270: —————

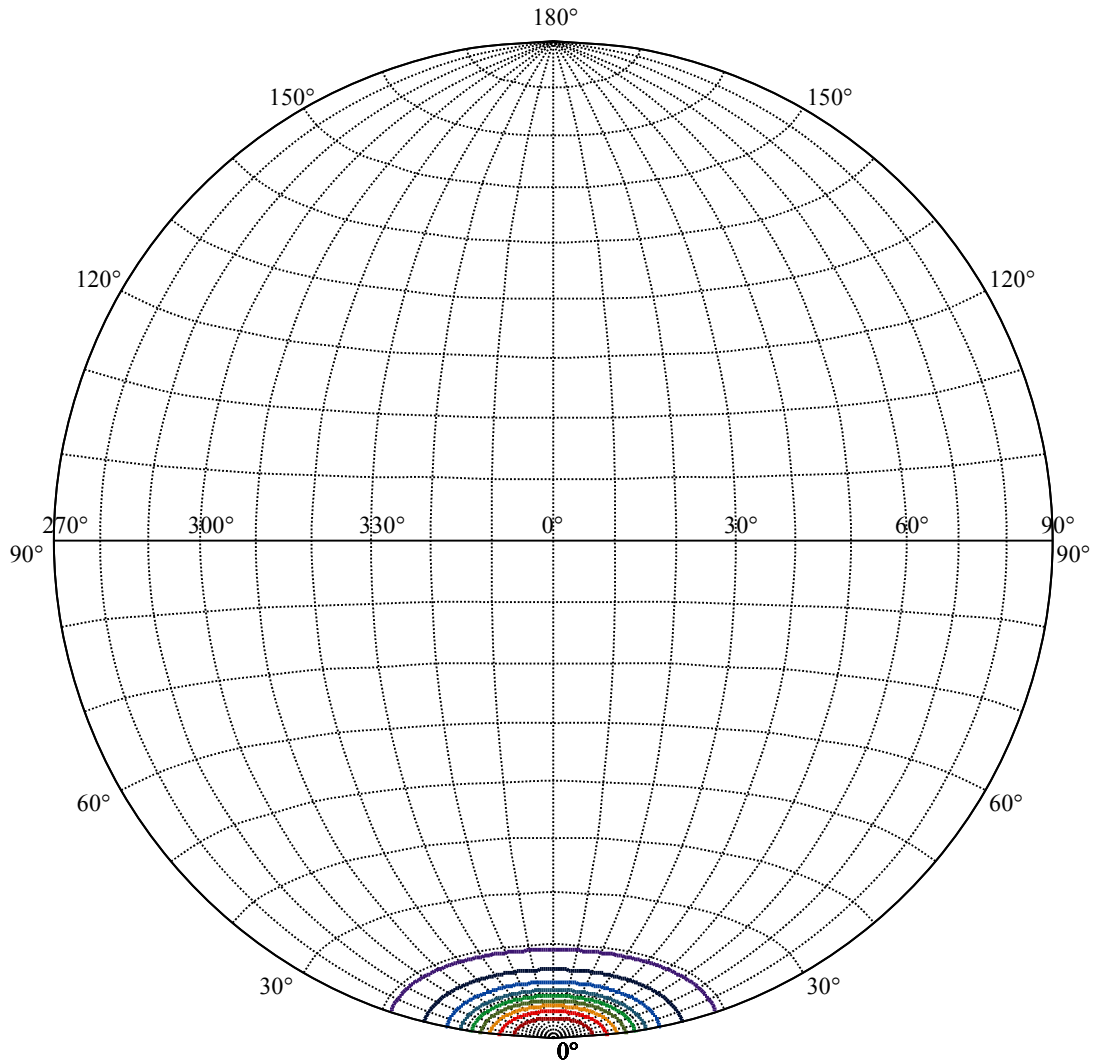
Field angle(10%Imax):C0/180Left:19.0 Right:19.0
:C90/270Left:19.0 Right:19.0

Beam Angle(50%Imax):C0/180Left:9.5 Right:9.5
:C90/270Left:9.5 Right:9.5





(10%Imax) 1452.66	—
(20%Imax) 2905.31	—
(30%Imax) 4357.97	—
(40%Imax) 5810.63	—
(50%Imax) 7263.28	—
(60%Imax) 8715.94	—
(70%Imax) 10168.6	—
(80%Imax) 11621.3	—
(90%Imax) 13073.9	—



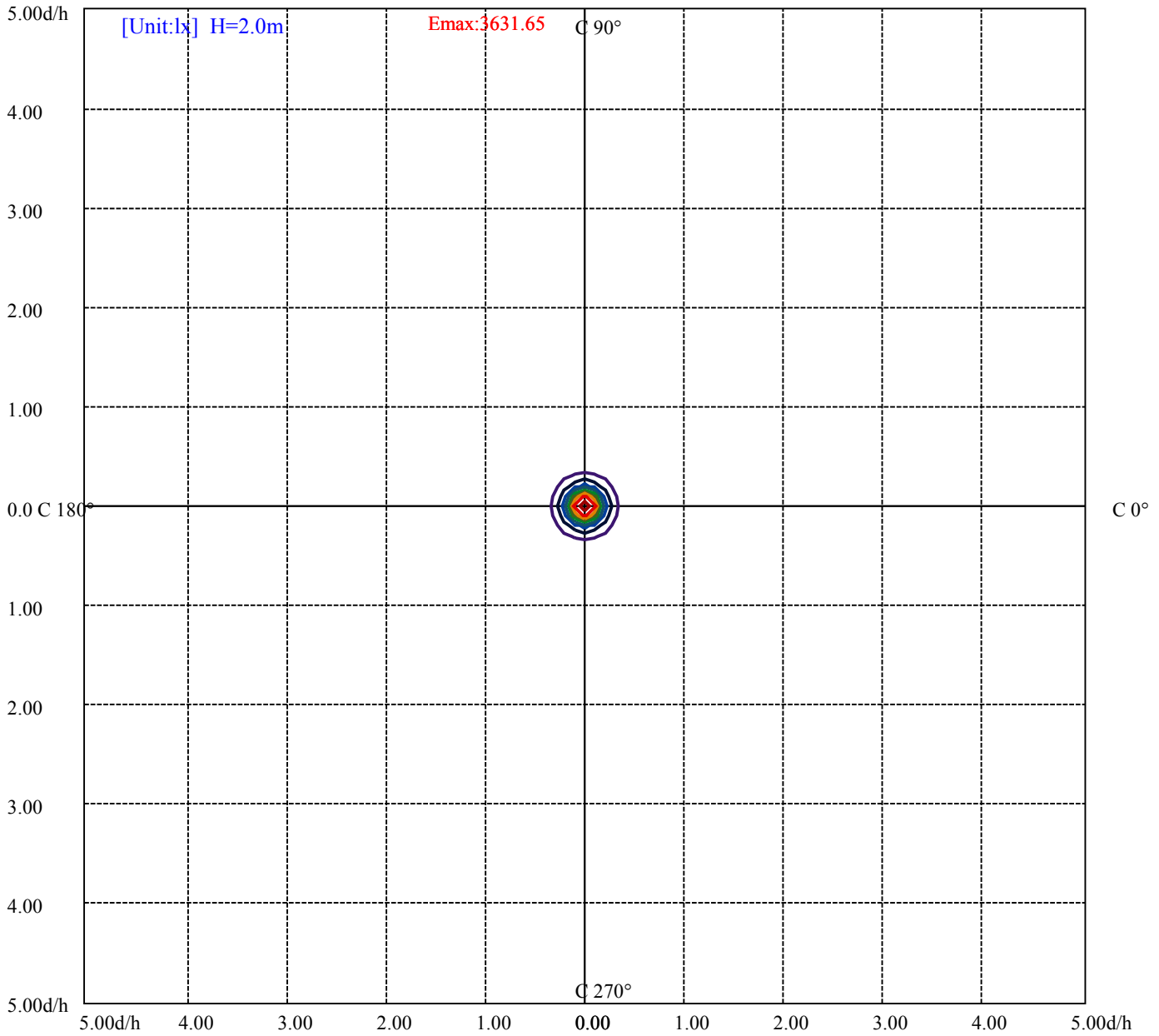
House

[Unit:cd]

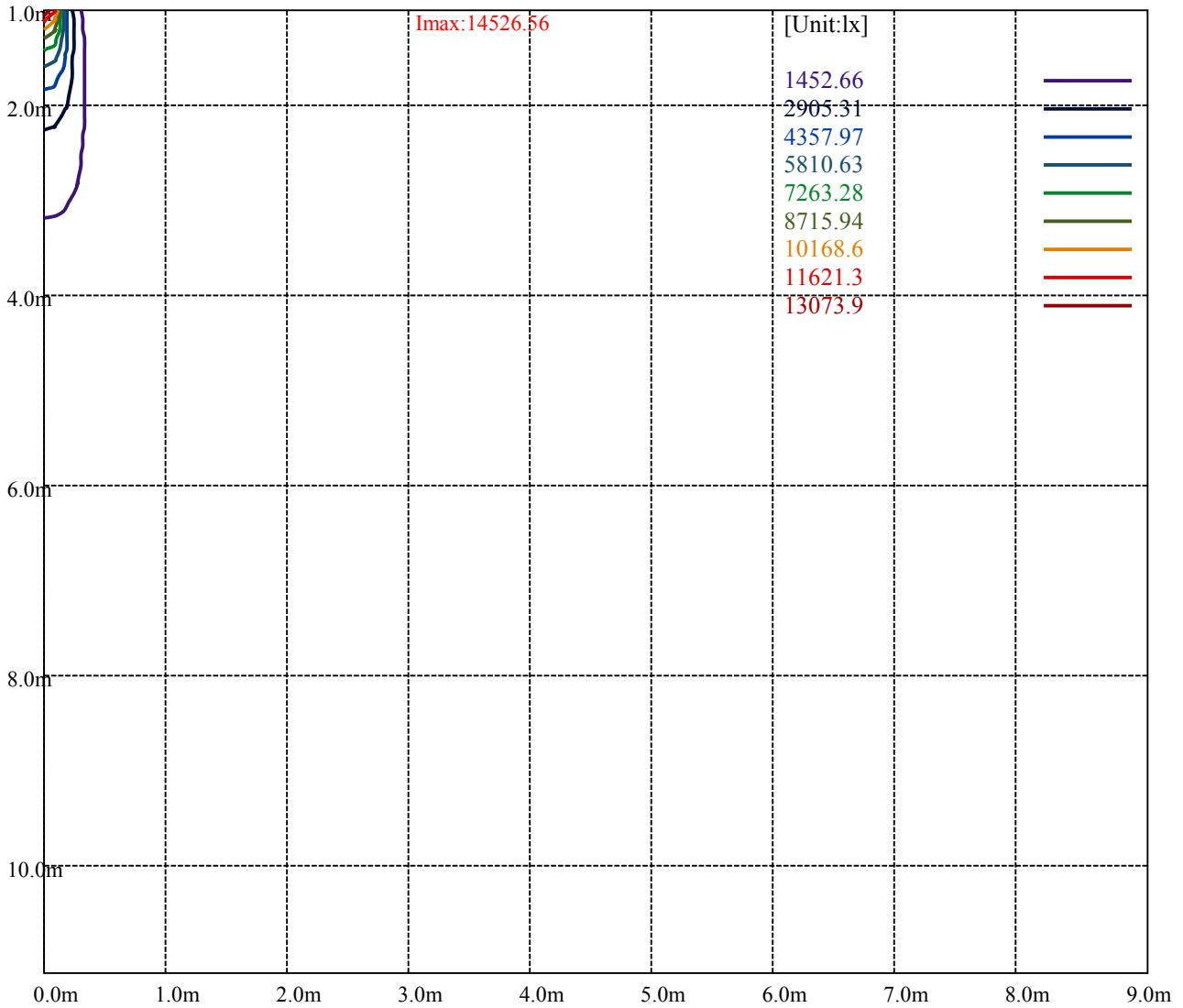
Road

Imax:14526.56

(10%Imax) 1452.66	—
(20%Imax) 2905.31	—
(30%Imax) 4357.97	—
(40%Imax) 5810.63	—
(50%Imax) 7263.28	—
(60%Imax) 8715.94	—
(70%Imax) 10168.6	—
(80%Imax) 11621.3	—
(90%Imax) 13073.9	—



(10%Emax) 363.165	—
(20%Emax) 726.3275	—
(30%Emax) 1089.493	—
(40%Emax) 1452.655	—
(50%Emax) 1815.82	—
(60%Emax) 2178.982	—
(70%Emax) 2542.15	—
(80%Emax) 2905.3	—
(90%Emax) 3268.475	—



Luminance Table

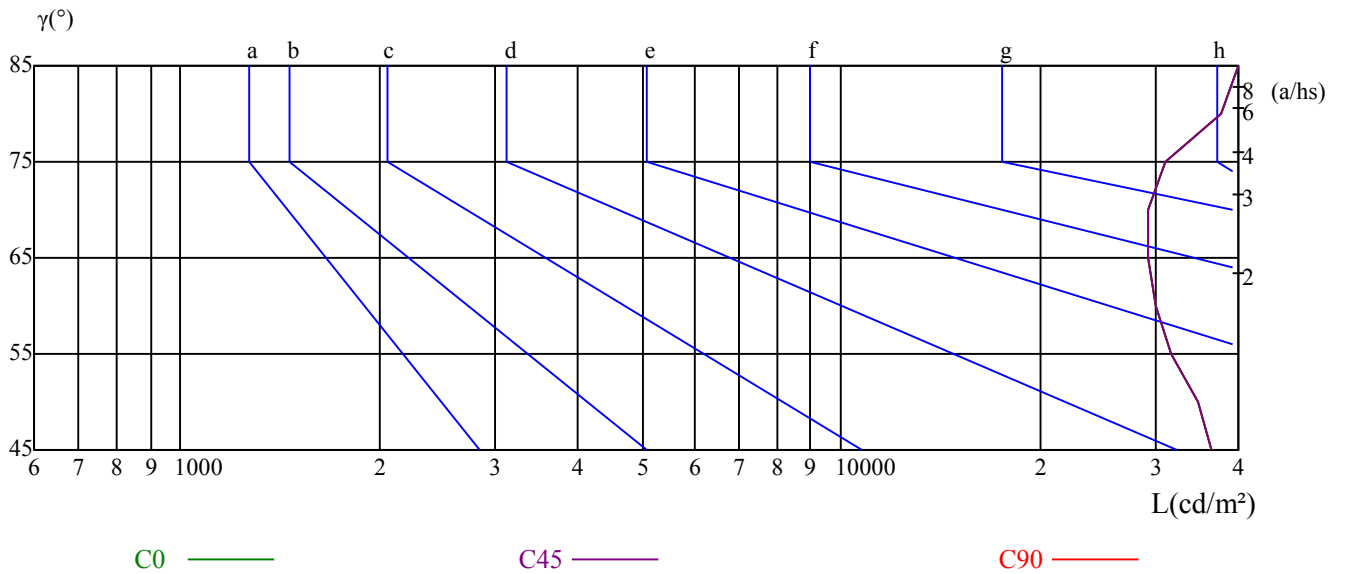
γ	45	50	55	60	65	70	75	80	85
C0	36327	34795	31633	29996	29242	29182	30918	37563	56283
C45	36327	34795	31633	29996	29242	29182	30918	37563	56283
C90	36327	34795	31633	29996	29242	29182	30918	37563	56283

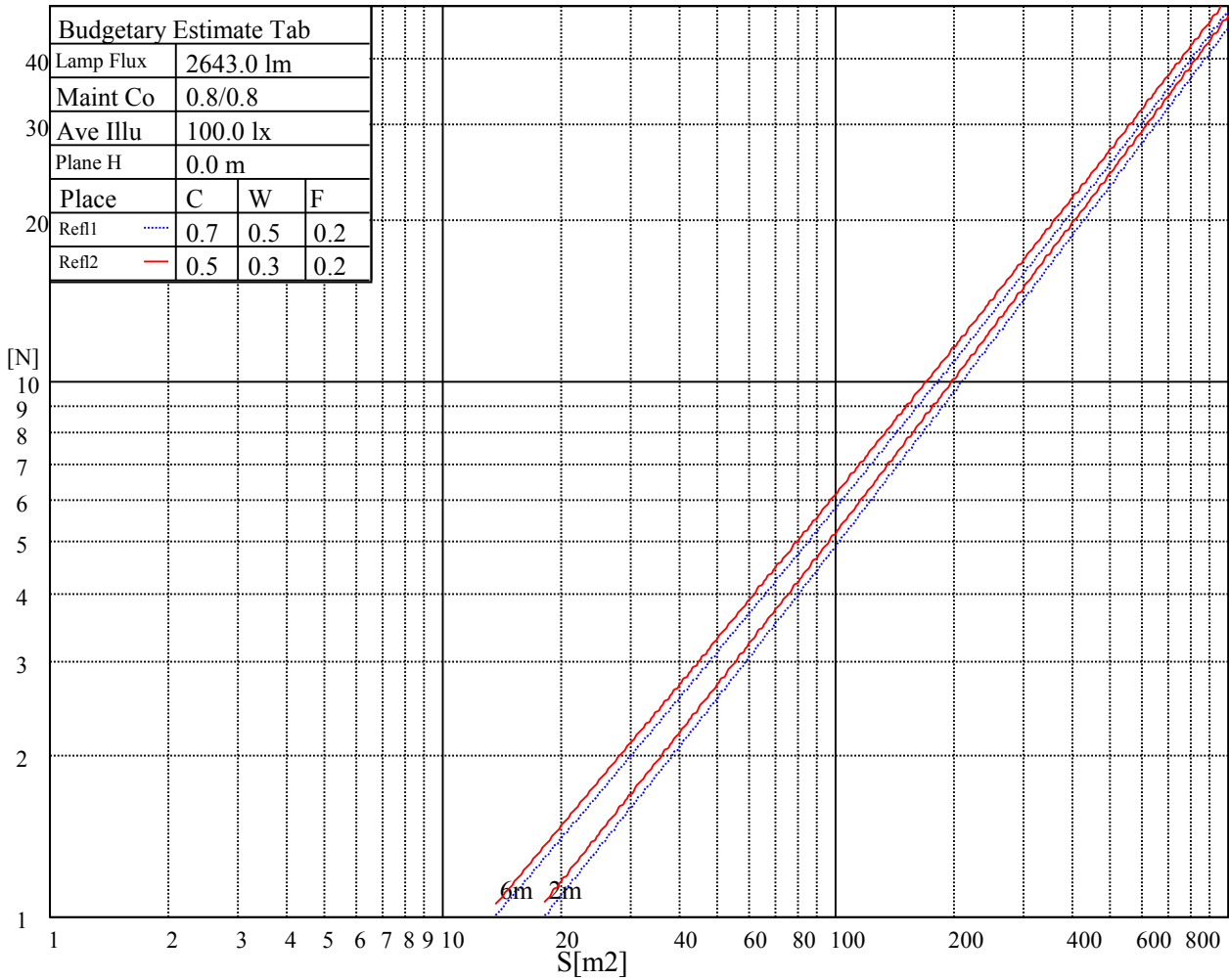
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
29242	29242	29242	30918	30918	30918	56283	56283	56283

Glare Table

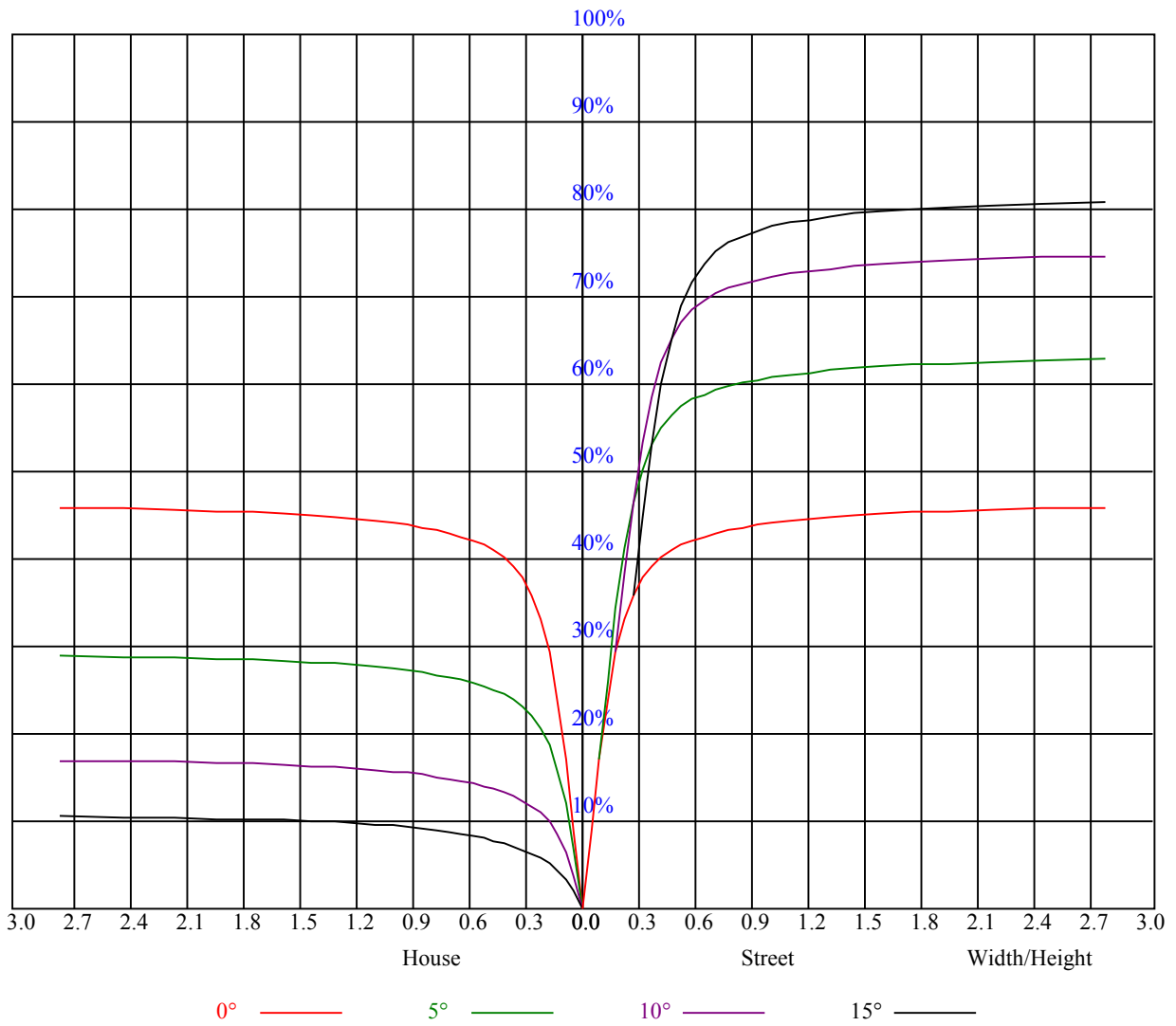
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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	1.11	1.11	1.11	1.08	1.08	1.08	1.04	1.04	1.04	0.99	0.99	0.99	0.95	0.95	0.95	0.93
1	1.04	1.02	1.00	1.02	1.00	0.98	0.98	0.97	0.95	0.95	0.93	0.92	0.91	0.91	0.90	0.88
2	0.98	0.95	0.92	0.97	0.94	0.91	0.94	0.91	0.89	0.91	0.89	0.87	0.88	0.87	0.86	0.84
3	0.94	0.90	0.87	0.92	0.89	0.86	0.90	0.87	0.85	0.88	0.85	0.83	0.86	0.84	0.82	0.81
4	0.90	0.85	0.82	0.89	0.85	0.82	0.87	0.83	0.81	0.85	0.82	0.80	0.83	0.81	0.79	0.78
5	0.86	0.82	0.79	0.85	0.81	0.78	0.84	0.80	0.78	0.82	0.79	0.77	0.81	0.79	0.77	0.75
6	0.83	0.79	0.76	0.83	0.79	0.76	0.81	0.78	0.75	0.80	0.77	0.75	0.79	0.76	0.74	0.73
7	0.81	0.76	0.73	0.80	0.76	0.73	0.79	0.75	0.73	0.78	0.75	0.73	0.77	0.74	0.72	0.71
8	0.78	0.74	0.71	0.78	0.74	0.71	0.77	0.73	0.71	0.76	0.73	0.71	0.75	0.72	0.70	0.69
9	0.76	0.72	0.69	0.76	0.72	0.69	0.75	0.72	0.69	0.74	0.71	0.69	0.74	0.71	0.69	0.68
10	0.74	0.70	0.68	0.74	0.70	0.68	0.73	0.70	0.67	0.73	0.70	0.67	0.72	0.69	0.67	0.66



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	14495.63	14428.13	14242.50	13854.38	13275.00	12346.88	11103.75	9770.63	8589.38
45.0	14602.50	14523.75	14383.13	14163.75	13753.13	12960.00	12048.75	10884.38	9388.13
90.0	14546.25	14512.50	14394.38	14175.00	13826.25	13179.38	12391.88	11205.56	9777.38
135.0	14461.88	14512.50	14461.88	14355.00	14146.88	13680.00	13095.00	12279.38	11250.00
180.0	14495.63	14512.50	14445.00	14270.63	13978.13	13415.63	12673.13	11093.63	10128.38
225.0	14602.50	14568.75	14433.75	14169.38	13691.25	12886.88	11175.19	10535.63	8992.69
270.0	14546.25	14535.00	14366.25	14051.25	13545.00	12549.38	11463.75	10158.75	8606.25
315.0	14461.88	14383.13	14096.25	13567.50	12853.13	11120.06	10468.13	8912.25	7414.31
360.0	14495.63	14428.13	14242.50	13854.38	13275.00	12346.88	11103.75	9770.63	8589.38
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	6868.13	5793.75	5023.13	4128.75	3493.13	3071.25	2851.88	2154.38	1839.94
45.0	7903.13	6693.75	5523.75	4696.88	3948.75	3341.25	2868.75	2439.00	2087.44
90.0	8430.19	7020.00	5828.63	4964.63	4241.25	3520.69	3047.06	2636.44	2229.19
135.0	9703.13	8370.00	7093.13	5737.50	4860.00	4128.75	3465.00	2947.50	2521.88
180.0	8763.75	7279.88	5990.63	5060.25	4295.25	3537.00	3054.94	2641.50	2232.00
225.0	7648.88	6294.38	5176.69	4379.63	3743.44	3107.25	2687.06	2310.75	1900.69
270.0	7149.38	6035.63	5000.63	4258.13	3583.13	3037.50	2880.00	2228.63	1947.94
315.0	6250.50	5172.75	4309.31	3706.31	3202.31	2676.38	2314.13	1991.25	1674.00
360.0	6868.13	5793.75	5023.13	4128.75	3493.13	3071.25	2851.88	2154.38	1839.94
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1535.63	1301.06	1076.63	888.75	749.25	635.06	518.63	443.25	383.06
45.0	1735.31	1457.44	1183.50	997.88	836.44	687.38	573.19	496.13	430.88
90.0	1869.19	1590.75	1325.81	1101.15	936.17	784.63	673.88	569.87	485.61
135.0	2162.81	1841.06	1554.19	1312.31	1113.19	946.13	786.94	680.63	586.13
180.0	1869.75	1584.56	1233.00	1077.64	906.92	748.52	633.09	526.95	444.26
225.0	1613.25	1360.69	1110.09	903.43	748.74	622.52	511.99	429.19	372.83
270.0	1600.31	1360.13	1149.19	925.88	777.94	656.44	537.19	461.81	403.31
315.0	1401.19	1120.67	971.21	824.46	699.75	574.59	504.28	432.56	371.93
360.0	1535.63	1301.06	1076.63	888.75	749.25	635.06	518.63	443.25	383.06
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	325.13	291.38	284.06	240.86	227.87	217.07	206.27	195.64	186.19
45.0	354.94	311.06	285.75	240.64	215.04	199.80	184.50	172.01	163.01
90.0	425.53	375.64	327.09	296.61	272.19	247.33	229.50	214.03	199.91
135.0	494.44	437.06	389.81	350.44	320.06	300.38	285.75	264.54	248.57
180.0	385.93	339.98	293.23	265.56	242.61	221.85	207.79	195.69	182.42
225.0	322.20	281.64	253.07	225.17	204.86	186.02	170.78	159.81	152.38
270.0	346.50	311.63	285.75	255.60	235.35	220.84	206.38	193.84	183.04
315.0	338.01	308.76	281.81	268.76	256.28	240.98	231.36	219.26	205.14
360.0	325.13	291.38	284.06	240.86	227.87	217.07	206.27	195.64	186.19
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	174.66	163.97	151.76	139.39	130.05	122.12	114.19	109.07	104.85
45.0	154.74	146.81	136.24	126.06	117.96	110.76	104.34	100.41	97.03
90.0	184.28	172.35	160.82	147.32	136.97	127.74	120.21	114.36	109.80
135.0	232.37	215.33	198.06	180.11	165.26	151.88	136.86	128.08	121.39
180.0	172.46	163.24	151.76	143.33	135.28	125.10	118.35	111.83	105.98
225.0	144.84	139.44	134.55	128.70	123.19	116.89	109.18	103.16	97.71
270.0	171.23	161.89	151.14	141.08	132.58	124.99	116.66	111.04	106.20
315.0	190.46	177.69	163.74	150.30	140.40	130.22	122.01	114.98	109.18
360.0	174.66	163.97	151.76	139.39	130.05	122.12	114.19	109.07	104.85

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	100.69	97.99	95.34	93.21	90.90	89.33	87.24	83.08	78.19
45.0	93.38	90.79	88.20	85.67	83.36	81.39	79.37	77.18	74.59
90.0	104.96	101.42	98.21	95.57	93.54	92.08	89.44	87.69	82.35
135.0	114.81	109.74	106.09	102.71	100.24	98.61	97.20	95.46	90.84
180.0	102.15	98.21	93.99	91.52	89.27	86.34	84.54	82.18	78.64
225.0	92.87	89.94	86.91	84.26	82.41	80.27	77.68	75.43	73.29
270.0	101.03	97.59	94.61	91.91	89.55	87.24	84.49	79.71	75.66
315.0	105.75	102.71	100.13	98.55	96.75	94.89	89.27	82.24	77.29
360.0	100.69	97.99	95.34	93.21	90.90	89.33	87.24	83.08	78.19
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	74.59	71.72	68.91	66.04	63.73	61.54	58.84	56.70	54.56
45.0	72.06	69.75	67.28	64.52	62.27	60.13	57.54	55.58	53.55
90.0	77.96	74.87	72.28	69.47	66.71	64.58	62.10	59.79	57.71
135.0	83.70	79.26	75.49	72.56	70.20	67.89	65.31	63.23	61.14
180.0	74.81	72.00	69.30	67.05	64.46	62.04	60.08	57.83	55.69
225.0	70.54	68.46	66.38	63.96	61.65	59.57	57.38	55.35	53.44
270.0	72.56	70.03	67.39	64.74	62.49	60.36	57.66	55.74	53.72
315.0	72.90	70.03	67.39	64.63	61.93	59.79	57.32	55.07	53.04
360.0	74.59	71.72	68.91	66.04	63.73	61.54	58.84	56.70	54.56
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	52.48	49.89	47.87	45.84	43.48	41.68	39.99	38.08	36.23
45.0	51.47	49.39	47.53	45.68	43.76	42.19	40.44	38.93	37.46
90.0	55.41	53.33	51.02	48.77	46.74	44.66	42.30	40.50	38.76
135.0	58.84	56.48	54.34	51.98	49.67	47.76	45.68	43.76	41.79
180.0	53.89	51.92	49.39	47.42	45.56	43.76	41.74	40.11	38.59
225.0	51.36	49.56	47.59	45.68	43.99	42.36	40.33	38.81	37.29
270.0	51.53	49.50	47.64	45.73	43.93	42.41	40.56	38.87	37.01
315.0	50.91	49.05	47.03	44.94	43.20	41.51	39.43	37.86	36.39
360.0	52.48	49.89	47.87	45.84	43.48	41.68	39.99	38.08	36.23
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	34.65	32.85	31.39	29.93	28.69	27.68	26.61	25.37	24.36
45.0	35.94	34.88	33.75	32.18	30.94	29.64	27.90	26.66	25.43
90.0	36.62	34.99	33.41	31.78	30.49	29.42	28.29	27.11	26.04
135.0	39.66	38.08	36.39	34.37	33.02	31.73	30.26	29.14	27.90
180.0	36.68	35.21	33.81	32.34	31.16	30.15	28.91	27.56	26.44
225.0	35.44	34.09	32.91	31.73	30.60	29.59	28.24	27.17	25.88
270.0	35.27	33.86	32.74	31.39	30.49	29.59	28.35	27.39	26.27
315.0	34.43	32.96	31.67	30.38	29.31	28.29	27.17	26.04	24.81
360.0	34.65	32.85	31.39	29.93	28.69	27.68	26.61	25.37	24.36
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	23.18	21.77	20.70	19.35	18.34	17.55	16.82	16.20	15.92
45.0	23.96	22.78	21.66	20.36	19.24	18.28	17.61	16.93	16.48
90.0	24.81	23.63	22.33	20.98	19.80	18.56	17.78	17.04	16.37
135.0	26.33	24.98	23.68	22.28	20.98	19.58	18.51	17.66	17.04
180.0	25.09	23.85	22.28	21.09	19.97	18.62	17.66	16.99	16.26
225.0	24.64	23.40	22.05	20.70	19.63	18.51	17.61	16.99	16.31
270.0	24.81	23.34	21.99	20.53	19.35	18.28	17.55	16.93	16.48
315.0	23.51	22.16	20.70	19.46	18.45	17.66	17.04	16.48	16.20
360.0	23.18	21.77	20.70	19.35	18.34	17.55	16.82	16.20	15.92

Intensity data(cd)

C/ γ (°)	90.0
0.0	15.81
45.0	16.37
90.0	16.20
135.0	16.37
180.0	15.81
225.0	16.03
270.0	16.26
315.0	16.03
360.0	15.81