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Nata

LumCAT: 3-2546-M
Luminaire: 92.70.131.00
Report No: 200919-B048
Test No: 200919-C048
LampCAT: OSRAM OPTO SOLERIQ S15
Lamp flux(lm): 2197.0
Number of Lamps: 1
Length(feet)(ft.):0.000
Phm Type: C

Voltage(V): 230.7000
Current(A): 0.0910
Power (W): 20.2300
PF: 0.9560
Ballast type: AC
Width(feet)(ft.):0.000
Height(feet)(ft.):0.000

Photometric Results

Lumens(lm): 2077.05
Efficiency(%): 94.54%
Lumens(lm)/Power(W): 102.67
Central intensity(cd): 10522.420
Maximum intensity(cd): 10522.420
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=21.9
 [C90/270]Total=21.9
Field angle(10%Imax): [C0/180]Total=40.0
 [C90/270]Total=40.0
Maximum s/h(1/2): C0_180=0.37 C90_270=0.37
Maximum s/h(1/4): C0_180=0.36 C90_270=0.36
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 94.65%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 99.782%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	10522.422	2.517	2.517	.115%	.121%
1.0	10491.680	20.079	22.597	.914%	1.088%
2.0	10282.836	39.354	61.95	1.791%	2.983%
3.0	10035.593	57.596	119.547	2.622%	5.756%
4.0	9832.405	75.214	194.76	3.424%	9.377%
5.0	9323.447	89.110	283.87	4.056%	13.667%
6.0	8754.107	100.346	384.215	4.567%	18.498%
7.0	8200.747	109.597	493.813	4.989%	23.775%
8.0	7633.698	116.504	610.317	5.303%	29.384%
9.0	6773.554	116.199	726.516	5.289%	34.978%
10.0	5996.762	114.193	840.708	5.198%	40.476%
11.0	5221.362	109.253	949.962	4.973%	45.736%
12.0	4383.086	99.933	1049.895	4.549%	50.548%
13.0	3631.932	89.594	1139.489	4.078%	54.861%
14.0	3032.285	80.445	1219.933	3.662%	58.734%
15.0	2470.137	70.108	1290.042	3.191%	62.109%
16.0	2063.586	62.375	1352.417	2.839%	65.113%
17.0	1695.578	54.363	1406.78	2.474%	67.730%
18.0	1395.668	47.295	1454.075	2.153%	70.007%
19.0	1272.061	45.415	1499.49	2.067%	72.193%
20.0	1051.105	39.423	1538.913	1.794%	74.091%
21.0	958.449	37.666	1576.579	1.714%	75.905%
22.0	890.474	36.580	1613.16	1.665%	77.666%
23.0	844.344	36.178	1649.338	1.647%	79.408%
24.0	797.847	35.586	1684.925	1.620%	81.121%
25.0	764.304	35.421	1720.346	1.612%	82.827%
26.0	737.361	35.447	1755.792	1.613%	84.533%
27.0	713.190	35.506	1791.299	1.616%	86.243%
28.0	691.938	35.623	1826.921	1.621%	87.958%
29.0	666.433	35.431	1862.352	1.613%	89.664%
30.0	633.139	34.715	1897.067	1.580%	91.335%
31.0	588.789	33.255	1930.322	1.514%	92.936%
32.0	528.975	30.739	1961.061	1.399%	94.416%
33.0	460.576	27.508	1988.57	1.252%	95.740%
34.0	378.808	23.229	2011.799	1.057%	96.859%
35.0	305.560	19.219	2031.018	.875%	97.784%
36.0	218.403	14.078	2045.096	.641%	98.462%
37.0	163.096	10.764	2055.859	.490%	98.980%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	104.860	7.080	2062.939	.322%	99.321%
39.0	61.600	4.251	2067.19	.194%	99.526%
40.0	34.861	2.457	2069.647	.112%	99.644%
41.0	13.289	0.956	2070.603	.044%	99.690%
42.0	8.097	0.594	2071.198	.027%	99.718%
43.0	5.882	0.440	2071.637	.020%	99.740%
44.0	4.623	0.352	2071.99	.016%	99.757%
45.0	3.764	0.292	2072.281	.013%	99.771%
46.0	3.225	0.254	2072.536	.012%	99.783%
47.0	2.900	0.233	2072.768	.011%	99.794%
48.0	2.680	0.218	2072.987	.010%	99.805%
49.0	2.483	0.205	2073.192	.009%	99.814%
50.0	2.320	0.195	2073.387	.009%	99.824%
51.0	2.187	0.186	2073.574	.008%	99.833%
52.0	2.053	0.177	2073.751	.008%	99.841%
53.0	1.926	0.169	2073.92	.008%	99.850%
54.0	1.810	0.161	2074.08	.007%	99.857%
55.0	1.729	0.155	2074.236	.007%	99.865%
56.0	1.659	0.151	2074.386	.007%	99.872%
57.0	1.584	0.146	2074.532	.007%	99.879%
58.0	1.549	0.144	2074.676	.007%	99.886%
59.0	1.485	0.140	2074.816	.006%	99.893%
60.0	1.439	0.137	2074.952	.006%	99.899%
61.0	1.392	0.134	2075.086	.006%	99.906%
62.0	1.346	0.130	2075.216	.006%	99.912%
63.0	1.299	0.127	2075.343	.006%	99.918%
64.0	1.230	0.121	2075.464	.006%	99.924%
65.0	1.131	0.112	2075.577	.005%	99.929%
66.0	1.050	0.105	2075.682	.005%	99.934%
67.0	0.974	0.098	2075.78	.004%	99.939%
68.0	0.887	0.090	2075.87	.004%	99.943%
69.0	0.806	0.083	2075.953	.004%	99.947%
70.0	0.748	0.077	2076.03	.004%	99.951%
71.0	0.725	0.075	2076.105	.003%	99.955%
72.0	0.644	0.067	2076.172	.003%	99.958%
73.0	0.609	0.064	2076.236	.003%	99.961%
74.0	0.580	0.061	2076.297	.003%	99.964%
75.0	0.563	0.060	2076.357	.003%	99.967%

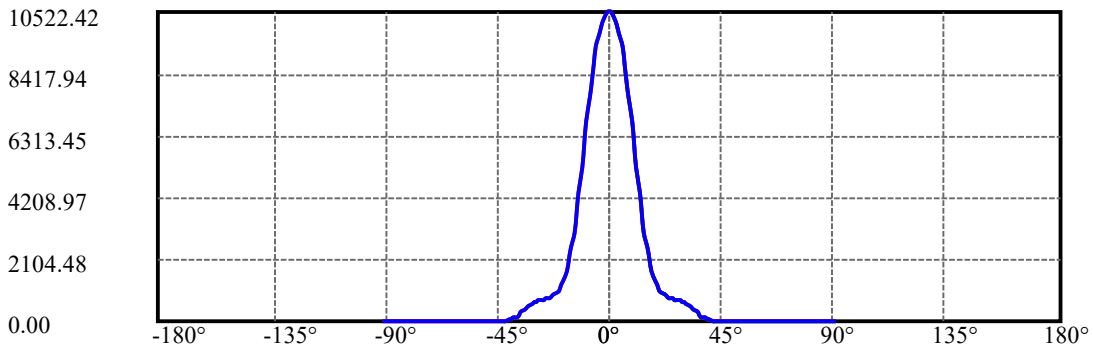
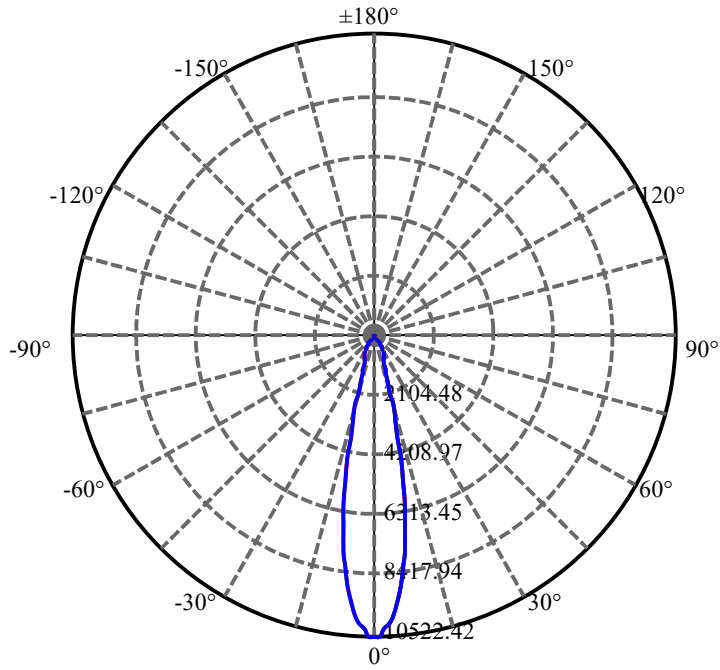
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	0.516	0.055	2076.412	.003%	99.969%
77.0	0.493	0.053	2076.465	.002%	99.972%
78.0	0.470	0.050	2076.515	.002%	99.974%
79.0	0.470	0.051	2076.566	.002%	99.977%
80.0	0.447	0.048	2076.614	.002%	99.979%
81.0	0.429	0.046	2076.66	.002%	99.981%
82.0	0.429	0.047	2076.707	.002%	99.984%
83.0	0.400	0.044	2076.75	.002%	99.986%
84.0	0.418	0.046	2076.796	.002%	99.988%
85.0	0.394	0.043	2076.839	.002%	99.990%
86.0	0.383	0.042	2076.881	.002%	99.992%
87.0	0.470	0.051	2076.932	.002%	99.995%
88.0	0.441	0.048	2076.981	.002%	99.997%
89.0	0.394	0.043	2077.024	.002%	99.999%
90.0	0.394	0.022	2077.046	.001%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1897.07	86.35%	91.33%
0-40	2069.65	94.21%	99.64%
0-60	2074.95	94.45%	99.90%
0-90	2077.02	94.54%	100.00%
0-120	2077.02	94.54%	100.00%
0-180	2077.05	94.54%	100.00%
60-90	2.21	0.10%	0.11%
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%
0-23.35	1661.64	75.63%	80.00%

ZONAL LUMEN SUMMARY

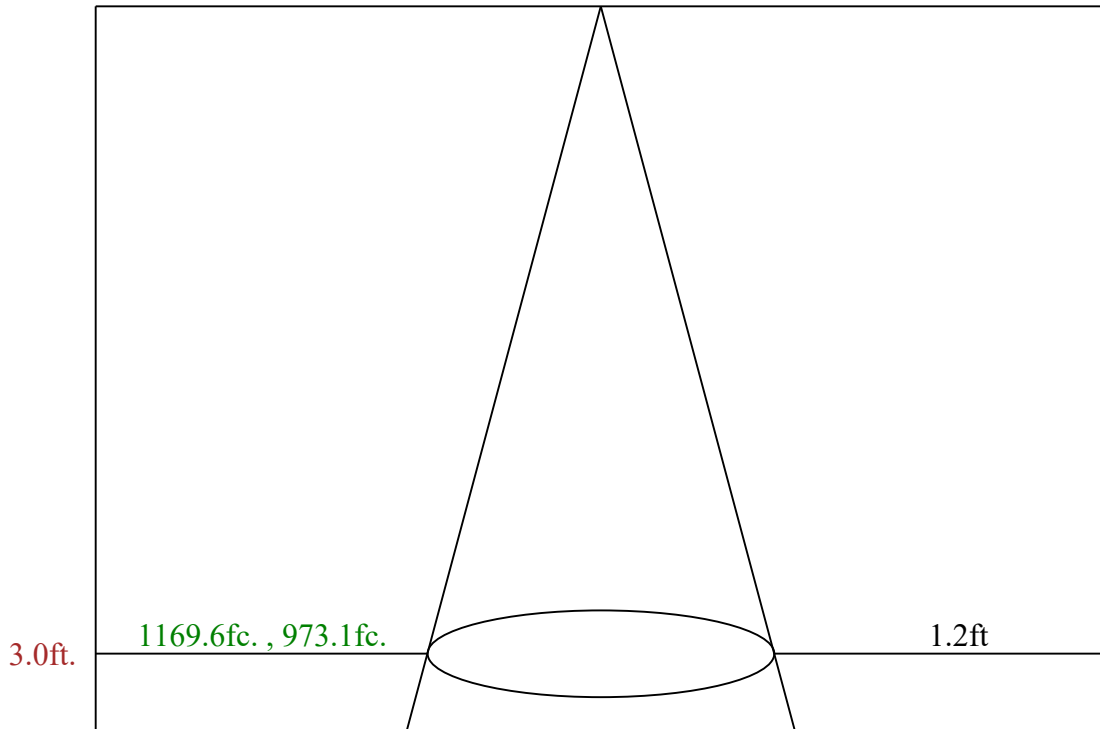
0-10	840.71
10-20	698.20
20-30	358.15
30-40	172.58
40-50	3.74
50-60	1.56
60-70	1.08
70-80	0.58
80-90	0.41
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00



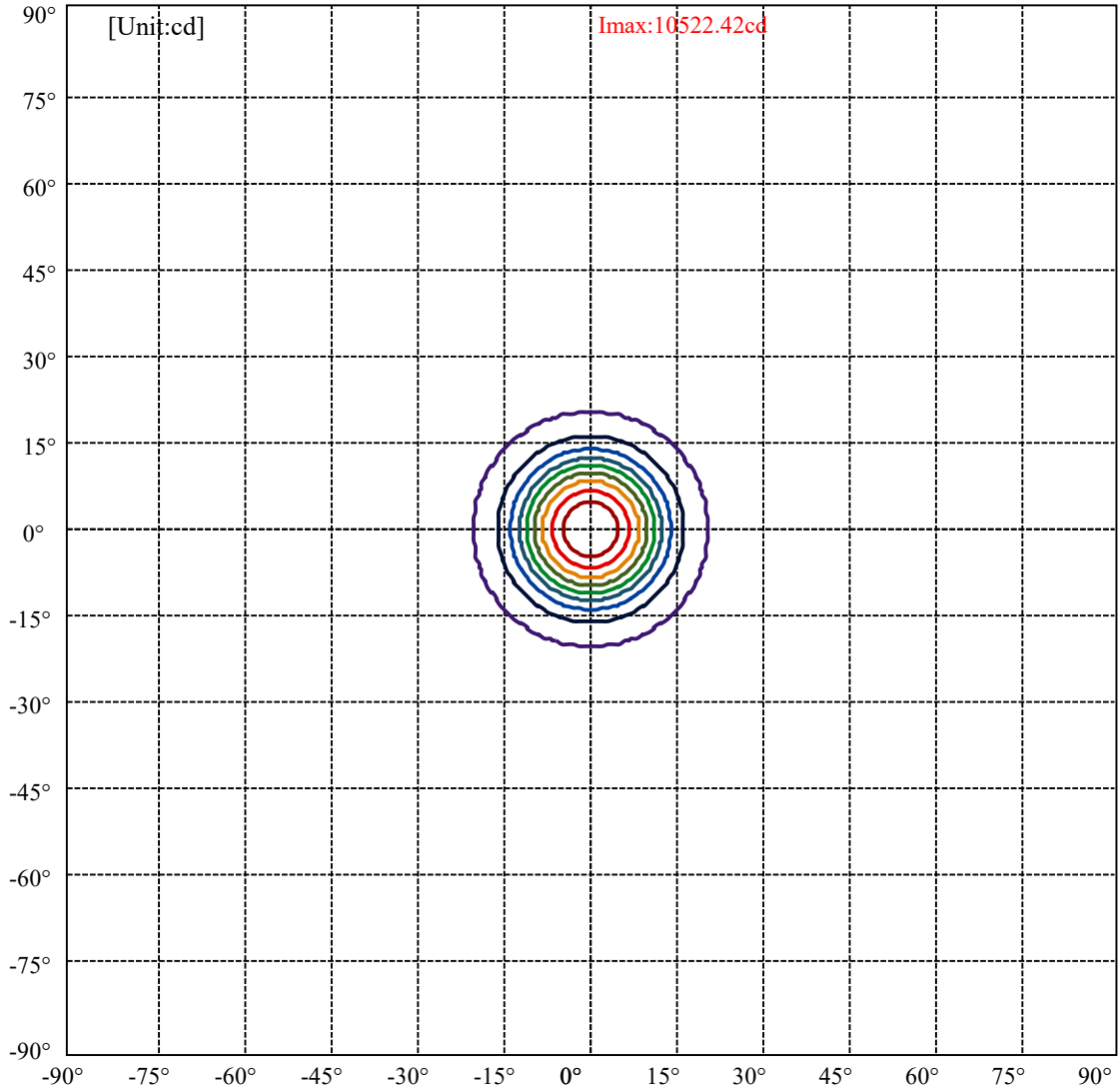
C0(Max): —————
C0/C180: —————
C90/C270: —————

Field angle(10%Imax):C0/180Left:20.0 Right:20.0
:C90/270Left:20.0 Right:20.0

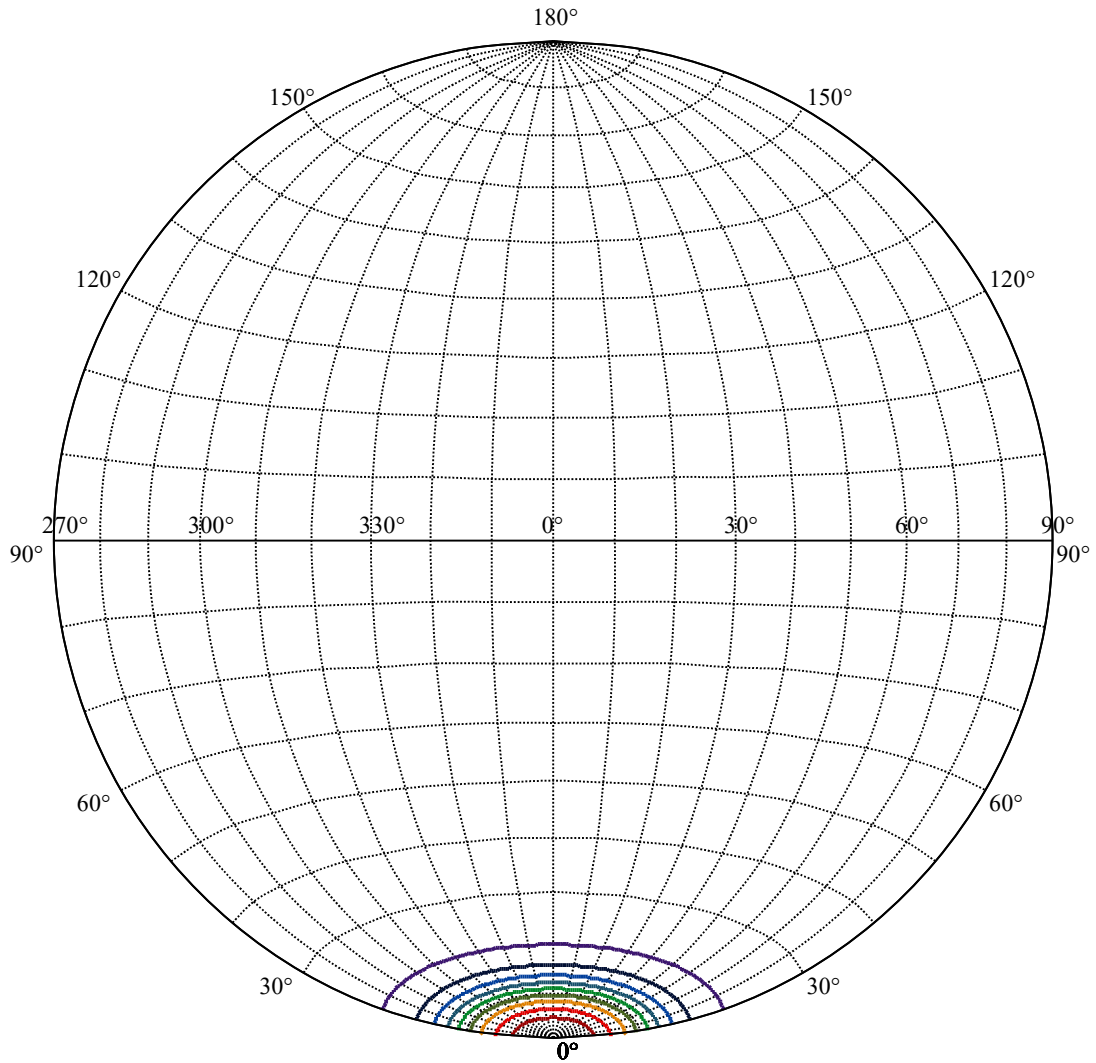
Beam Angle(50%Imax):C0/180Left:10.9 Right:10.9
:C90/270Left:10.9 Right:10.9



Max , Ave Beam angle of C0 plane 21.94



(10%I _{max}) 1052.24	—
(20%I _{max}) 2104.48	—
(30%I _{max}) 3156.73	—
(40%I _{max}) 4208.97	—
(50%I _{max}) 5261.21	—
(60%I _{max}) 6313.45	—
(70%I _{max}) 7365.69	—
(80%I _{max}) 8417.94	—
(90%I _{max}) 9470.18	—



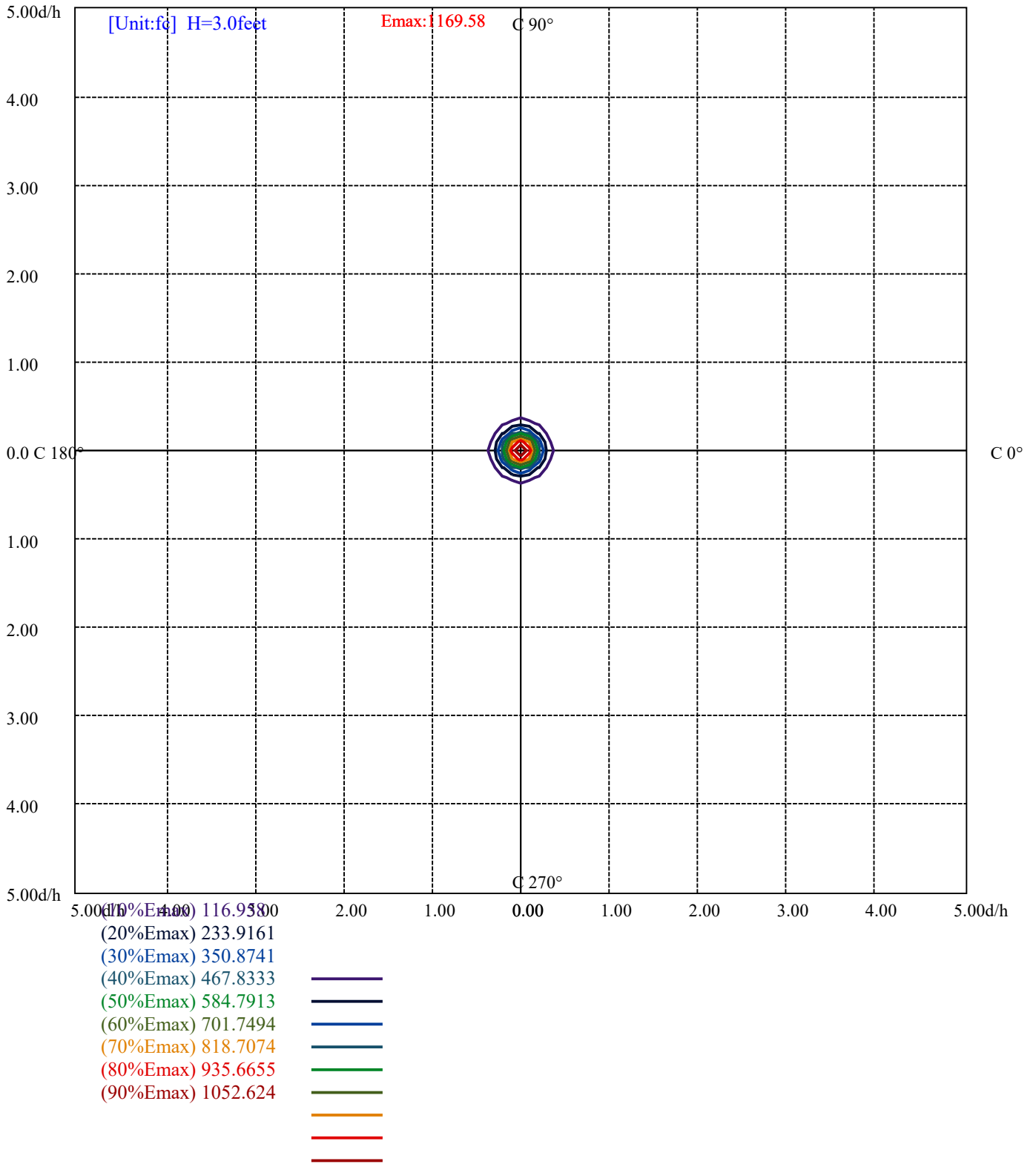
House

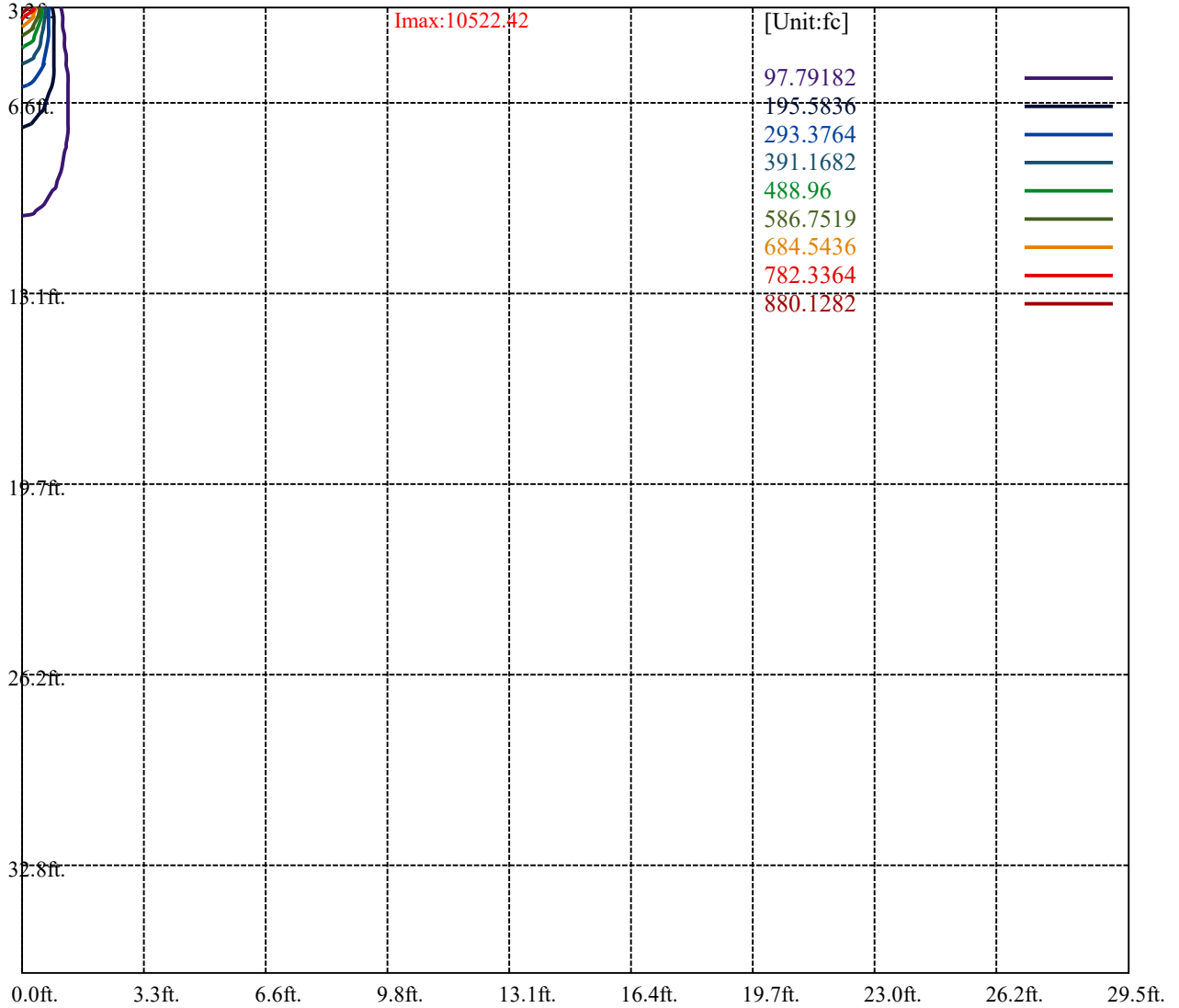
[Unit:cd]

Road

Imax:10522.42

(10%Imax) 1052.24	—
(20%Imax) 2104.48	—
(30%Imax) 3156.73	—
(40%Imax) 4208.97	—
(50%Imax) 5261.21	—
(60%Imax) 6313.45	—
(70%Imax) 7365.69	—
(80%Imax) 8417.94	—
(90%Imax) 9470.18	—





Luminance Table

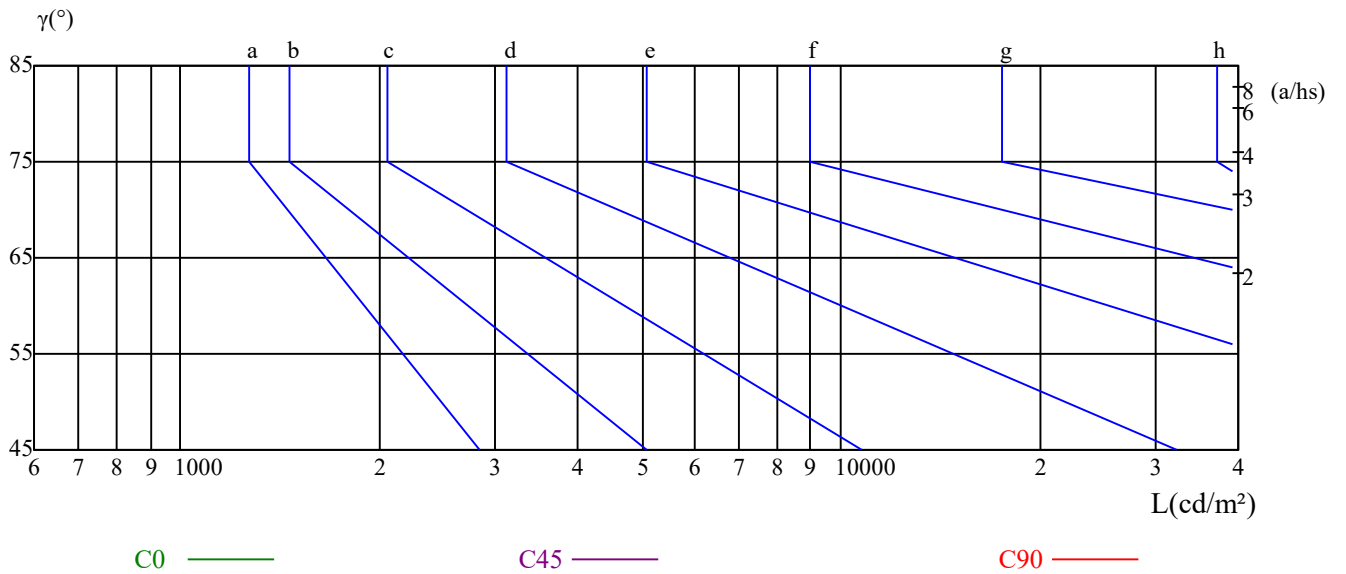
γ	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

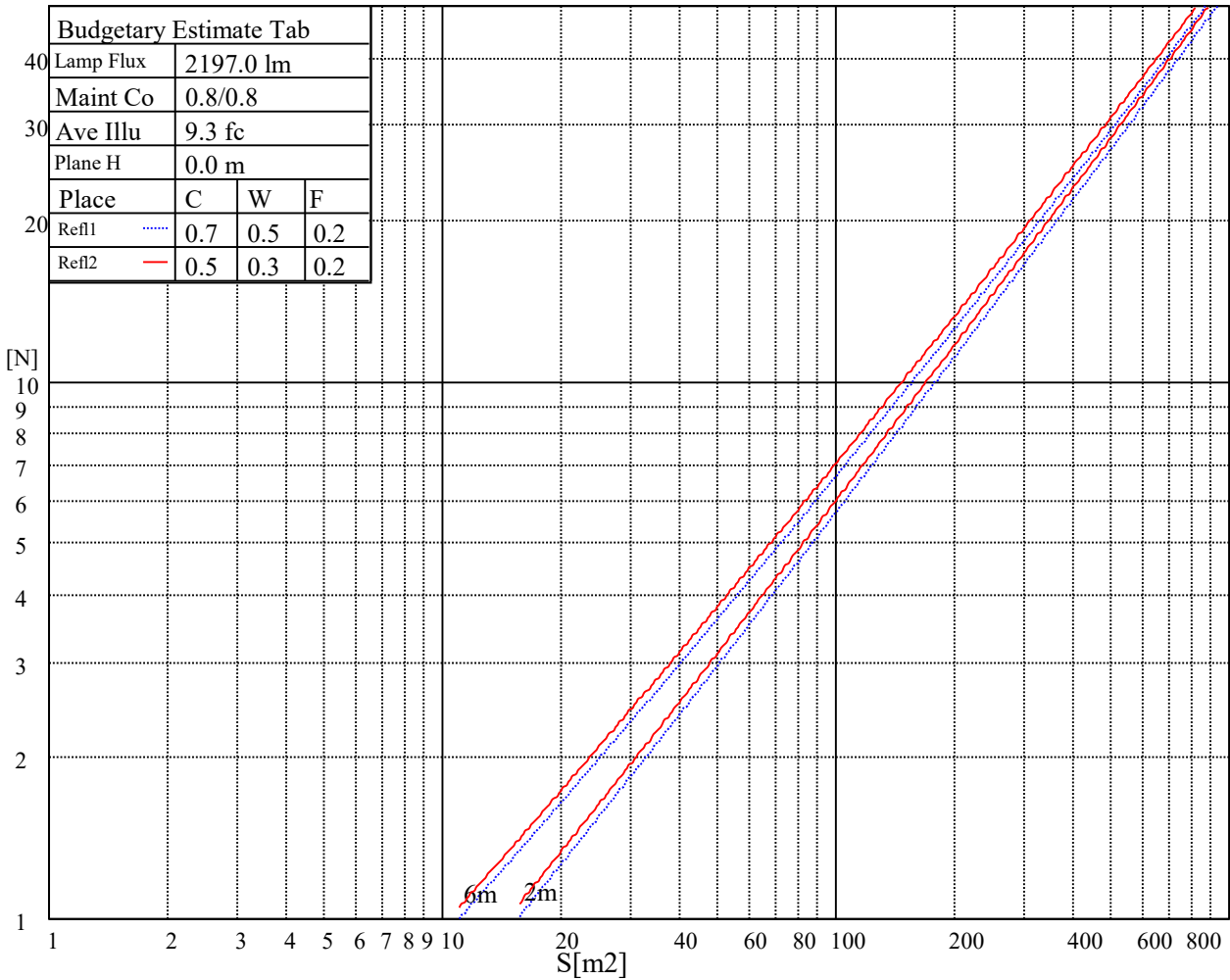
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

Glare Table

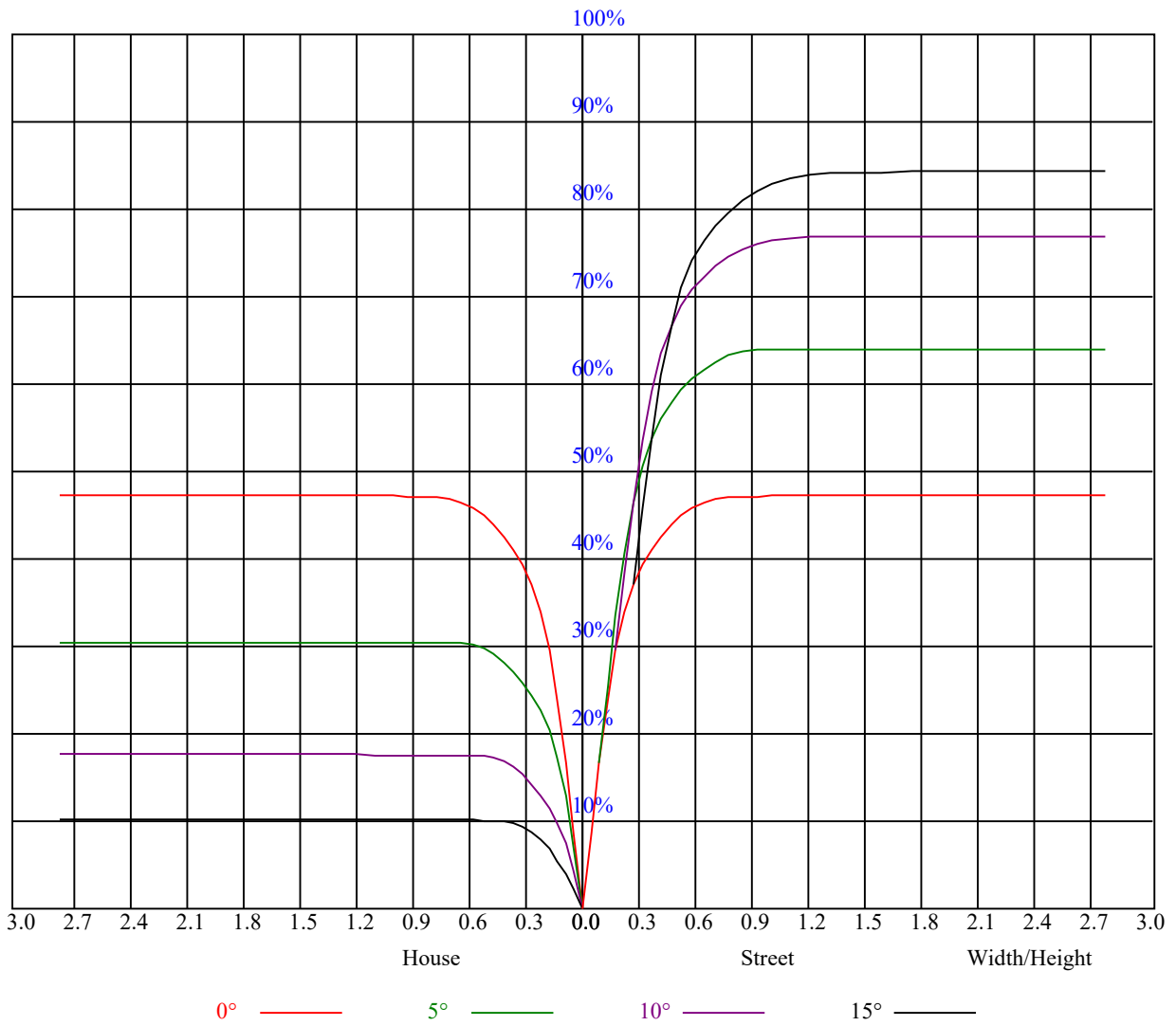
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

Luminance Limiting Curve





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	1.13	1.13	1.13	1.10	1.10	1.10	1.05	1.05	1.05	1.01	1.01	1.01	0.97	0.97	0.97	0.95
1	1.07	1.05	1.03	1.05	1.03	1.02	1.01	1.00	0.98	0.97	0.96	0.96	0.94	0.94	0.93	0.91
2	1.02	0.99	0.96	1.00	0.98	0.95	0.97	0.95	0.93	0.94	0.93	0.91	0.92	0.91	0.89	0.88
3	0.97	0.94	0.91	0.96	0.93	0.90	0.94	0.91	0.89	0.92	0.89	0.88	0.90	0.88	0.86	0.85
4	0.93	0.90	0.87	0.92	0.89	0.86	0.91	0.88	0.85	0.89	0.86	0.84	0.87	0.85	0.83	0.82
5	0.90	0.86	0.83	0.89	0.86	0.83	0.88	0.85	0.82	0.86	0.84	0.81	0.85	0.83	0.81	0.80
6	0.87	0.83	0.80	0.86	0.83	0.80	0.85	0.82	0.79	0.84	0.81	0.79	0.83	0.80	0.78	0.77
7	0.84	0.80	0.77	0.84	0.80	0.77	0.82	0.79	0.77	0.82	0.79	0.76	0.81	0.78	0.76	0.75
8	0.81	0.78	0.75	0.81	0.77	0.75	0.80	0.77	0.74	0.79	0.76	0.74	0.79	0.76	0.74	0.73
9	0.79	0.75	0.73	0.79	0.75	0.73	0.78	0.75	0.72	0.77	0.74	0.72	0.77	0.74	0.72	0.71
10	0.77	0.73	0.71	0.77	0.73	0.71	0.76	0.73	0.70	0.75	0.72	0.70	0.75	0.72	0.70	0.69



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	10540.98	10531.70	10448.18	10308.97	10179.04	9042.39	9042.39	8499.47	7739.38
45.0	10471.38	10568.83	10596.67	10587.39	10513.14	10424.98	10248.64	9998.06	9612.92
90.0	10573.47	10578.11	10531.70	10457.46	10308.97	10100.15	8989.49	8989.49	8854.92
135.0	10503.86	10527.06	10476.02	10373.93	10216.16	9960.94	9575.79	9037.52	8647.73
180.0	10540.98	10517.78	10424.98	10239.36	9928.46	9473.71	8884.38	8174.41	7413.40
225.0	10471.38	10299.69	9167.21	9028.47	8734.73	7982.54	7172.80	6354.24	5505.99
270.0	10573.47	10494.58	10350.73	10072.31	9561.87	8926.15	8169.77	7380.92	6592.06
315.0	10503.86	10415.69	10267.20	9216.86	9216.86	8676.73	7949.59	7171.87	6703.20
360.0	10540.98	10531.70	10448.18	10308.97	10179.04	9042.39	9042.39	8499.47	7739.38
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	6905.98	6039.16	5161.68	4316.21	3504.15	2777.94	2174.69	1733.40	1450.80
45.0	9028.23	8322.90	7524.77	6670.94	5803.20	4926.18	4100.20	3306.70	2578.17
90.0	8118.96	7357.02	6552.38	5718.98	4867.48	4043.82	3260.99	2509.72	1934.79
135.0	7585.09	7107.14	6239.39	5380.93	4536.39	3766.10	3019.00	2601.37	2601.37
180.0	6592.06	5747.52	4879.78	4058.44	3274.22	2587.45	2346.15	2346.15	1451.73
225.0	4647.99	3795.10	2991.86	2319.94	1832.24	1625.28	1308.34	1212.75	1087.00
270.0	5770.72	4935.46	4248.69	3241.74	2624.57	2490.00	1899.52	1397.44	1230.38
315.0	5539.40	4669.80	4172.36	3357.51	2613.20	2041.52	1652.19	1401.15	1230.38
360.0	6905.98	6039.16	5161.68	4316.21	3504.15	2777.94	2174.69	1733.40	1450.80
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1264.26	1126.91	919.44	906.72	906.72	851.32	807.00	773.36	744.96
45.0	2443.60	2443.60	1438.74	1252.19	1114.84	1012.29	932.94	870.29	820.18
90.0	1566.81	1339.43	1182.59	1019.25	905.89	905.89	845.33	799.58	764.73
135.0	1524.58	1319.48	1169.60	1052.20	959.39	899.06	829.00	792.34	757.07
180.0	1259.62	1118.09	1009.50	925.05	858.69	808.11	769.60	742.69	721.34
225.0	899.99	899.99	838.88	793.40	760.37	733.78	713.31	694.57	680.09
270.0	1105.56	1004.40	925.51	859.16	808.58	771.46	740.83	716.24	704.63
315.0	1100.92	924.59	924.59	859.62	809.32	772.85	744.77	725.38	705.89
360.0	1264.26	1126.91	919.44	906.72	906.72	851.32	807.00	773.36	744.96
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	721.25	701.15	685.05	667.47	625.19	558.56	477.91	391.32	304.08
45.0	781.20	749.18	724.12	703.71	686.07	672.15	647.56	592.34	516.70
90.0	737.72	715.82	698.37	683.06	667.98	633.36	572.01	494.06	406.86
135.0	730.62	711.60	692.57	678.18	661.48	622.04	556.14	474.47	388.16
180.0	702.78	686.07	672.15	657.30	585.38	510.67	461.02	372.85	284.68
225.0	662.64	620.83	550.34	468.44	417.86	331.92	247.24	164.27	90.30
270.0	682.36	674.47	654.52	605.80	538.51	456.84	365.43	274.48	274.48
315.0	686.96	676.38	654.33	601.16	527.84	446.26	357.31	266.68	179.21
360.0	721.25	701.15	685.05	667.47	625.19	558.56	477.91	391.32	304.08
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	217.54	136.29	68.77	31.97	11.65	10.26	7.84	5.34	4.18
45.0	432.71	347.33	278.65	261.95	166.22	49.98	19.21	11.00	8.77
90.0	315.45	242.41	143.11	87.42	37.12	13.41	11.42	8.82	6.03
135.0	299.07	248.95	248.95	63.53	33.36	10.21	9.00	7.10	4.97
180.0	250.35	232.71	58.61	21.21	11.42	9.33	6.64	5.15	4.27
225.0	35.78	14.06	10.39	7.38	4.92	3.99	3.57	3.20	2.88
270.0	94.80	39.44	14.80	10.07	7.01	4.36	3.43	3.20	2.92
315.0	101.53	43.57	15.59	9.28	7.19	4.78	3.67	3.25	2.97
360.0	217.54	136.29	68.77	31.97	11.65	10.26	7.84	5.34	4.18

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	3.76	3.53	3.25	2.97	2.69	2.51	2.37	2.23	2.04
45.0	6.03	4.22	3.39	3.16	2.92	2.60	2.46	2.27	2.13
90.0	4.59	3.76	3.34	3.02	2.74	2.55	2.37	2.18	2.09
135.0	3.85	3.20	2.97	2.74	2.51	2.27	2.09	2.00	1.90
180.0	3.81	3.48	3.16	2.97	2.69	2.55	2.46	2.37	2.18
225.0	2.64	2.51	2.32	2.18	2.09	2.09	1.90	1.86	1.76
270.0	2.74	2.64	2.46	2.27	2.18	2.09	2.04	1.86	1.72
315.0	2.69	2.46	2.32	2.13	2.04	1.90	1.81	1.67	1.58
360.0	3.76	3.53	3.25	2.97	2.69	2.51	2.37	2.23	2.04
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	1.90	1.81	1.72	1.58	1.48	1.39	1.35	1.25	1.21
45.0	1.95	1.95	1.76	1.67	1.62	1.53	1.44	1.35	1.35
90.0	2.00	1.86	1.76	1.67	1.62	1.58	1.53	1.53	1.53
135.0	1.76	1.62	1.53	1.53	1.48	1.35	1.30	1.25	1.25
180.0	2.09	2.00	1.95	1.86	1.81	1.76	1.81	1.72	1.62
225.0	1.62	1.53	1.58	1.58	1.53	1.44	1.44	1.44	1.35
270.0	1.62	1.58	1.58	1.48	1.53	1.53	1.44	1.44	1.35
315.0	1.53	1.48	1.39	1.30	1.30	1.30	1.21	1.16	1.11
360.0	1.90	1.81	1.72	1.58	1.48	1.39	1.35	1.25	1.21
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	1.21	1.11	1.02	0.97	0.93	0.88	0.79	0.74	0.74
45.0	1.30	1.25	1.16	1.16	1.11	1.02	0.93	0.84	0.84
90.0	1.53	1.53	1.39	1.30	1.21	1.07	0.93	0.79	0.79
135.0	1.16	1.11	1.07	1.07	1.02	0.93	0.79	0.79	0.79
180.0	1.58	1.53	1.39	1.21	1.07	0.97	0.93	0.79	0.84
225.0	1.16	1.07	0.97	0.88	0.79	0.65	0.65	0.65	0.60
270.0	1.35	1.21	1.07	0.97	0.88	0.84	0.79	0.70	0.60
315.0	1.11	1.02	0.97	0.84	0.79	0.74	0.65	0.70	0.60
360.0	1.21	1.11	1.02	0.97	0.93	0.88	0.79	0.74	0.74
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	0.65	0.60	0.60	0.60	0.56	0.51	0.46	0.56	0.51
45.0	0.79	0.70	0.65	0.65	0.60	0.60	0.51	0.46	0.46
90.0	0.70	0.65	0.60	0.60	0.51	0.46	0.46	0.51	0.42
135.0	0.70	0.65	0.60	0.60	0.56	0.51	0.46	0.46	0.46
180.0	0.74	0.70	0.60	0.65	0.56	0.51	0.51	0.51	0.51
225.0	0.51	0.46	0.46	0.46	0.46	0.42	0.42	0.42	0.42
270.0	0.56	0.56	0.56	0.46	0.46	0.46	0.46	0.42	0.42
315.0	0.51	0.56	0.56	0.46	0.42	0.46	0.46	0.42	0.37
360.0	0.65	0.60	0.60	0.60	0.56	0.51	0.46	0.56	0.51
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	0.42	0.46	0.42	0.46	0.46	0.42	0.46	0.42	0.42
45.0	0.51	0.42	0.46	0.42	0.46	0.42	0.42	0.37	0.46
90.0	0.37	0.42	0.37	0.42	0.42	0.32	0.42	0.37	0.37
135.0	0.51	0.42	0.42	0.42	0.37	0.42	0.46	0.42	0.37
180.0	0.46	0.51	0.42	0.46	0.37	0.42	0.88	0.88	0.46
225.0	0.37	0.37	0.42	0.42	0.32	0.42	0.42	0.37	0.37
270.0	0.42	0.42	0.37	0.37	0.37	0.32	0.37	0.32	0.32
315.0	0.37	0.42	0.32	0.37	0.37	0.32	0.32	0.37	0.37
360.0	0.42	0.46	0.42	0.46	0.46	0.42	0.46	0.42	0.42

Intensity data(cd)

C/γ(°)	90.0
0.0	0.37
45.0	0.42
90.0	0.37
135.0	0.42
180.0	0.56
225.0	0.37
270.0	0.37
315.0	0.28
360.0	0.37