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Nata

LumCAT: 2-2187-M	
Luminaire: 92.70.131.00	
Report No: NATA0100	Voltage(V): 34.5000
Test No: GC20200211718	Current(A): 0.6000
LampCAT: BRIDGELUX V13B	Power (W): 20.7000
Lamp flux(lm): 2987.0	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 0	Width(mm): 0
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 2443.49
Efficiency(%): 81.80%
Lumens(lm)/Power(W): 118.04
Central intensity(cd): 11349.700
Maximum intensity(cd): 11349.700
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=24.6
 [C90/270]Total=24.6
Field angle(10%Imax): [C0/180]Total=46.9
 [C90/270]Total=46.9
Maximum s/h(1/2): C0_180=0.42 C90_270=0.42
Maximum s/h(1/4): C0_180=0.43 C90_270=0.43
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 81.80%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.754%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	11349.703	0.000	0	.000%	.000%
1.0	11316.727	10.845	10.845	.363%	.444%
2.0	11161.477	32.263	43.108	1.080%	1.764%
3.0	10922.555	52.818	95.926	1.768%	3.926%
4.0	10588.922	72.006	167.932	2.411%	6.873%
5.0	10193.484	89.405	257.337	2.993%	10.532%
6.0	9665.297	104.363	361.7	3.494%	14.803%
7.0	9085.500	116.386	478.086	3.896%	19.566%
8.0	8513.719	125.954	604.04	4.217%	24.720%
9.0	7856.227	132.670	736.709	4.442%	30.150%
10.0	7120.125	135.530	872.24	4.537%	35.697%
11.0	6505.945	136.152	1008.392	4.558%	41.269%
12.0	5885.648	135.458	1143.85	4.535%	46.812%
13.0	5199.609	131.554	1275.404	4.404%	52.196%
14.0	4642.383	125.977	1401.381	4.217%	57.352%
15.0	4123.336	120.340	1521.721	4.029%	62.277%
16.0	3605.203	113.245	1634.965	3.791%	66.911%
17.0	3142.125	105.074	1740.039	3.518%	71.211%
18.0	2797.664	97.934	1837.974	3.279%	75.219%
19.0	2396.883	90.374	1928.348	3.026%	78.918%
20.0	2078.648	81.915	2010.263	2.742%	82.270%
21.0	1743.490	73.393	2083.656	2.457%	85.274%
22.0	1477.610	64.729	2148.385	2.167%	87.923%
23.0	1242.970	57.085	2205.47	1.911%	90.259%
24.0	1014.905	49.365	2254.835	1.653%	92.279%
25.0	782.740	40.875	2295.71	1.368%	93.952%
26.0	585.605	32.300	2328.01	1.081%	95.274%
27.0	412.313	24.414	2352.424	.817%	96.273%
28.0	245.995	16.667	2369.091	.558%	96.955%
29.0	140.084	10.101	2379.192	.338%	97.369%
30.0	77.955	5.887	2385.079	.197%	97.610%
31.0	27.949	2.947	2388.026	.099%	97.730%
32.0	16.298	1.268	2389.294	.042%	97.782%
33.0	14.766	0.915	2390.209	.031%	97.820%
34.0	13.964	0.869	2391.078	.029%	97.855%
35.0	13.254	0.845	2391.924	.028%	97.890%
36.0	12.734	0.827	2392.751	.028%	97.924%
37.0	12.277	0.816	2393.567	.027%	97.957%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	11.911	0.807	2394.374	.027%	97.990%
39.0	11.559	0.801	2395.175	.027%	98.023%
40.0	11.313	0.798	2395.973	.027%	98.055%
41.0	11.102	0.798	2396.771	.027%	98.088%
42.0	10.920	0.800	2397.571	.027%	98.121%
43.0	10.730	0.802	2398.373	.027%	98.154%
44.0	10.610	0.805	2399.179	.027%	98.187%
45.0	10.484	0.811	2399.989	.027%	98.220%
46.0	10.378	0.816	2400.805	.027%	98.253%
47.0	10.315	0.823	2401.628	.028%	98.287%
48.0	10.238	0.831	2402.459	.028%	98.321%
49.0	10.167	0.838	2403.297	.028%	98.355%
50.0	10.104	0.845	2404.142	.028%	98.390%
51.0	10.076	0.854	2404.996	.029%	98.425%
52.0	10.020	0.862	2405.858	.029%	98.460%
53.0	9.991	0.870	2406.729	.029%	98.496%
54.0	9.949	0.879	2407.608	.029%	98.532%
55.0	9.928	0.887	2408.495	.030%	98.568%
56.0	9.893	0.896	2409.391	.030%	98.605%
57.0	9.865	0.903	2410.294	.030%	98.642%
58.0	9.837	0.911	2411.205	.031%	98.679%
59.0	9.830	0.919	2412.124	.031%	98.716%
60.0	9.816	0.928	2413.053	.031%	98.754%
61.0	9.795	0.936	2413.988	.031%	98.793%
62.0	9.773	0.943	2414.931	.032%	98.831%
63.0	9.745	0.949	2415.881	.032%	98.870%
64.0	9.745	0.956	2416.837	.032%	98.909%
65.0	9.724	0.964	2417.8	.032%	98.949%
66.0	9.731	0.971	2418.771	.032%	98.988%
67.0	9.717	0.978	2419.749	.033%	99.028%
68.0	9.703	0.984	2420.733	.033%	99.069%
69.0	9.696	0.990	2421.723	.033%	99.109%
70.0	9.696	0.996	2422.718	.033%	99.150%
71.0	9.675	1.001	2423.72	.034%	99.191%
72.0	9.703	1.008	2424.727	.034%	99.232%
73.0	9.675	1.013	2425.741	.034%	99.274%
74.0	9.696	1.018	2426.759	.034%	99.315%
75.0	9.703	1.025	2427.784	.034%	99.357%

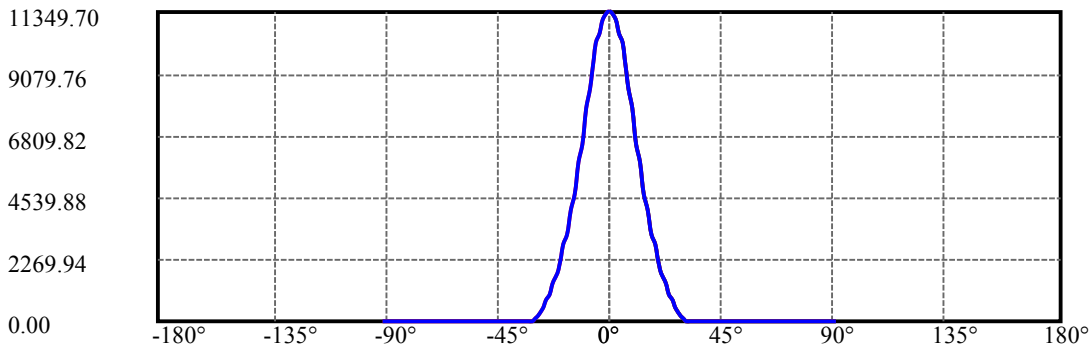
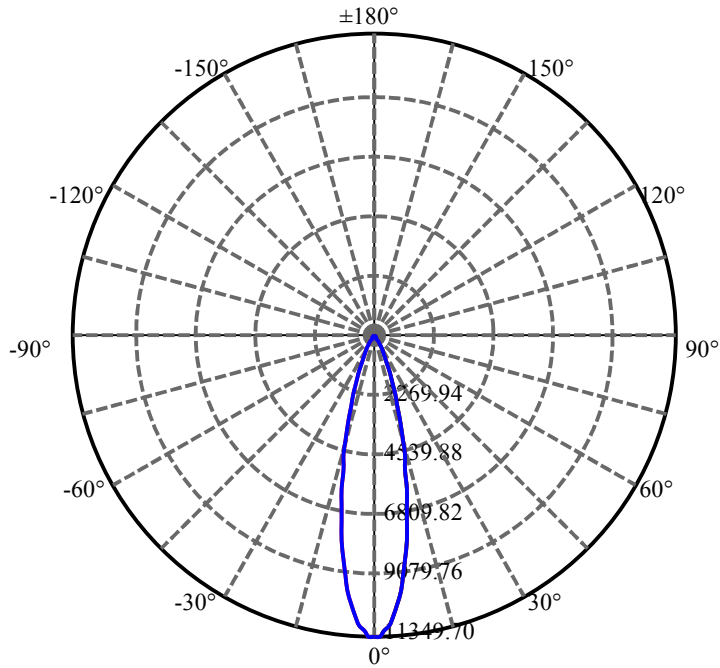
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	9.689	1.029	2428.813	.034%	99.399%
77.0	9.710	1.034	2429.848	.035%	99.442%
78.0	9.675	1.038	2430.885	.035%	99.484%
79.0	9.717	1.042	2431.927	.035%	99.527%
80.0	9.710	1.047	2432.975	.035%	99.570%
81.0	9.696	1.049	2434.024	.035%	99.613%
82.0	9.689	1.051	2435.075	.035%	99.656%
83.0	9.710	1.055	2436.13	.035%	99.699%
84.0	9.745	1.060	2437.19	.035%	99.742%
85.0	9.647	1.058	2438.248	.035%	99.786%
86.0	9.577	1.051	2439.299	.035%	99.829%
87.0	9.555	1.047	2440.346	.035%	99.871%
88.0	9.563	1.047	2441.393	.035%	99.914%
89.0	9.555	1.048	2442.441	.035%	99.957%
90.0	9.541	1.047	2443.488	.035%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	2385.08	79.85%	97.61%
0-40	2395.97	80.21%	98.06%
0-60	2413.05	80.79%	98.75%
0-90	2442.44	81.77%	99.96%
0-120	2442.44	81.77%	99.96%
0-180	2443.49	81.80%	100.00%
60-90	30.32	1.01%	1.24%
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%
0-19.32	1954.79	65.44%	80.00%

ZONAL LUMEN SUMMARY

0-10	872.24
10-20	1138.02
20-30	374.82
30-40	10.89
40-50	8.17
50-60	8.91
60-70	9.67
70-80	10.26
80-90	9.47
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: —————

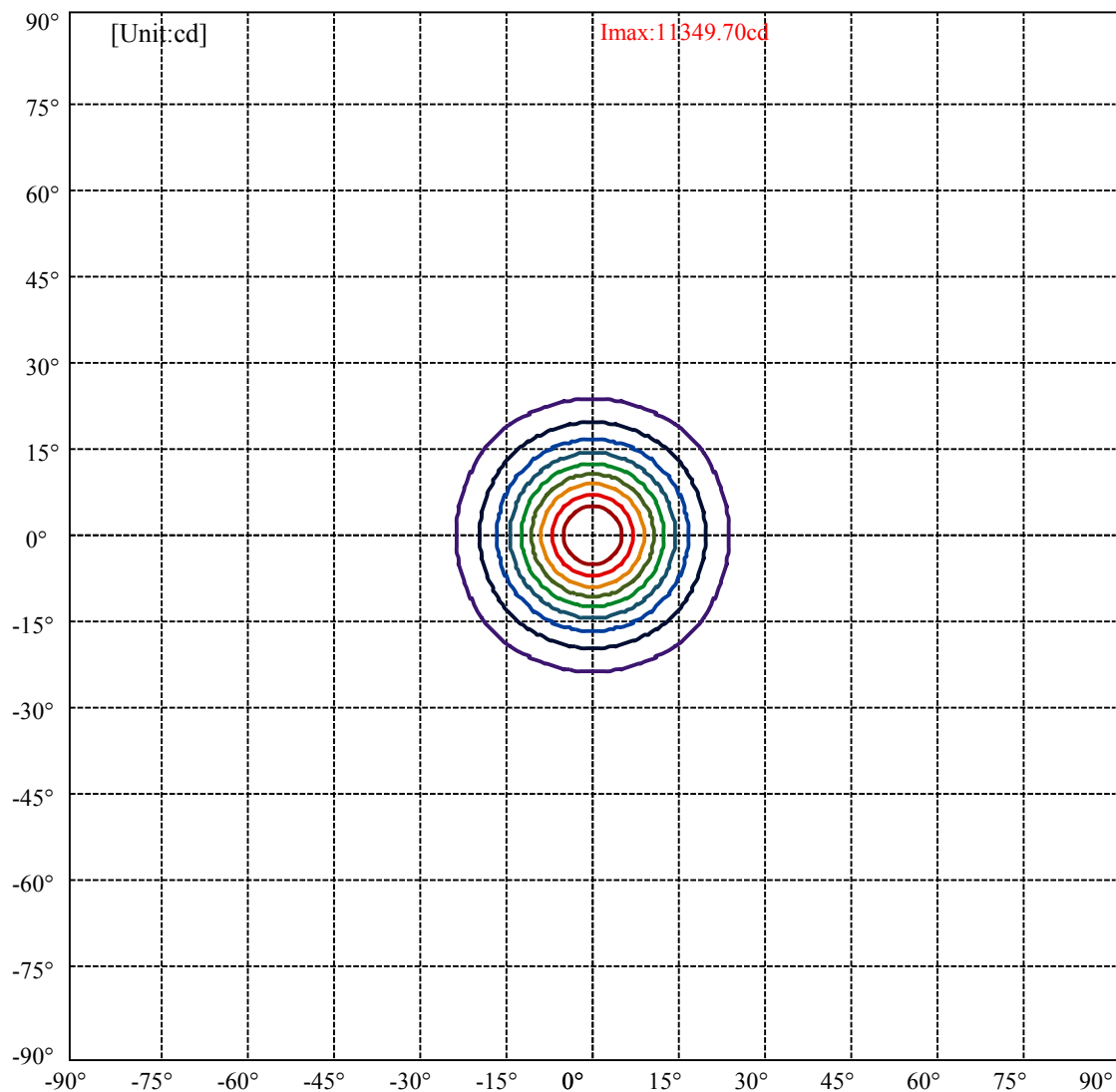
C90/C270: —————

Field angle(10%Imax):C0/180Left:23.5 Right:23.5

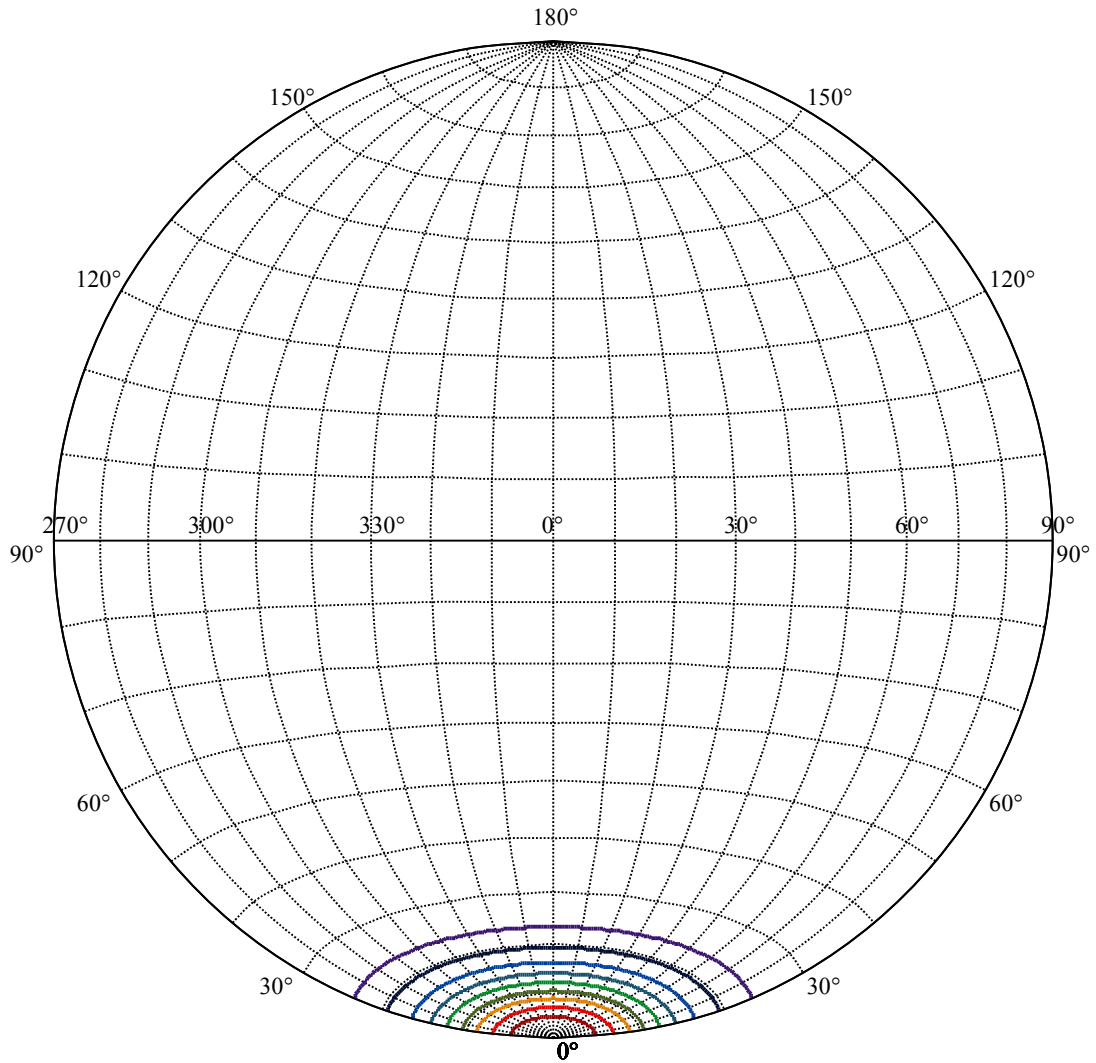
:C90/270Left:23.5 Right:23.5

Beam Angle(50%Imax):C0/180Left:12.3 Right:12.3

:C90/270Left:12.3 Right:12.3



(10%Imax) 1134.97	—
(20%Imax) 2269.94	—
(30%Imax) 3404.91	—
(40%Imax) 4539.88	—
(50%Imax) 5674.85	—
(60%Imax) 6809.82	—
(70%Imax) 7944.79	—
(80%Imax) 9079.76	—
(90%Imax) 10214.7	—



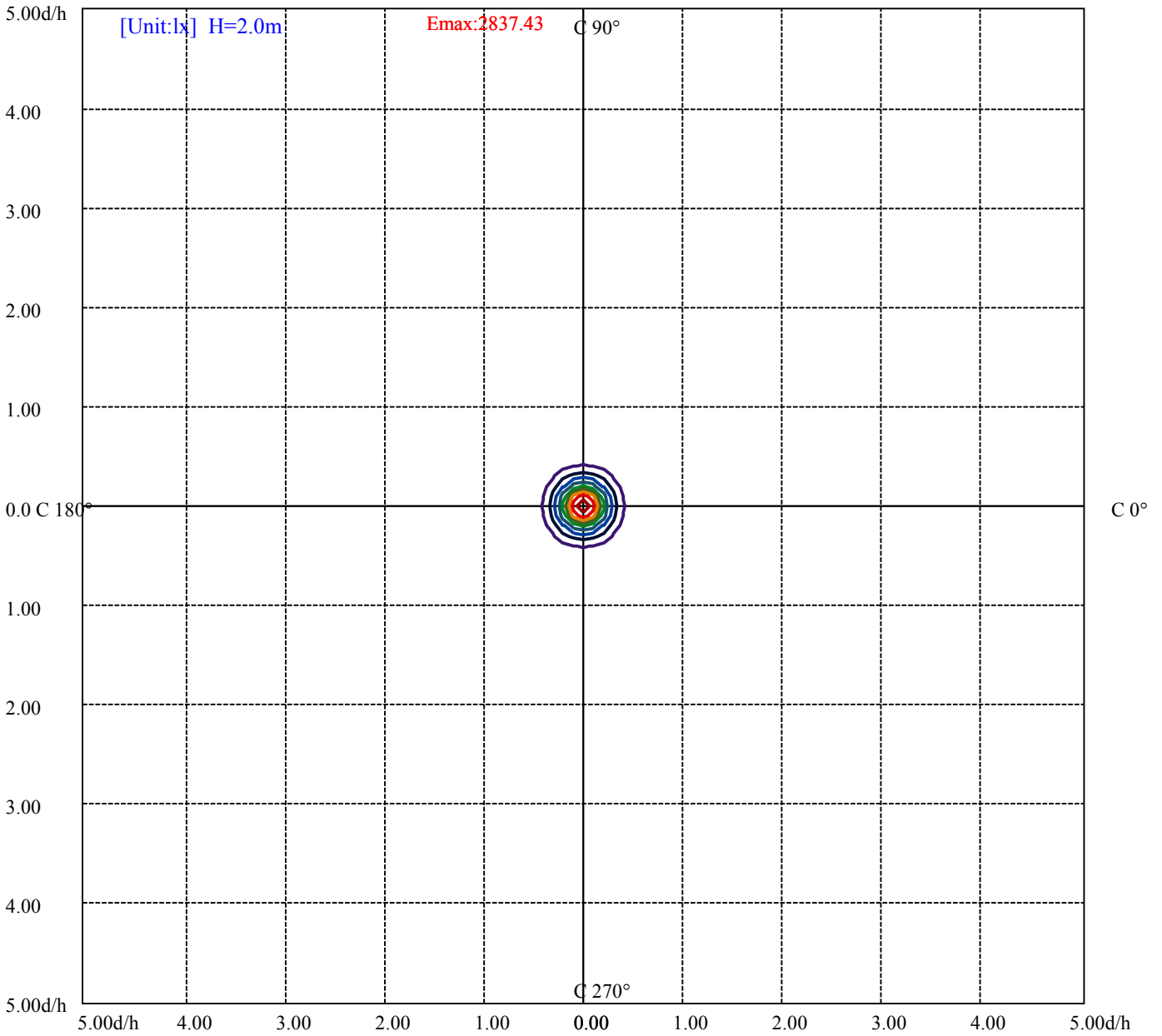
House

[Unit:cd]

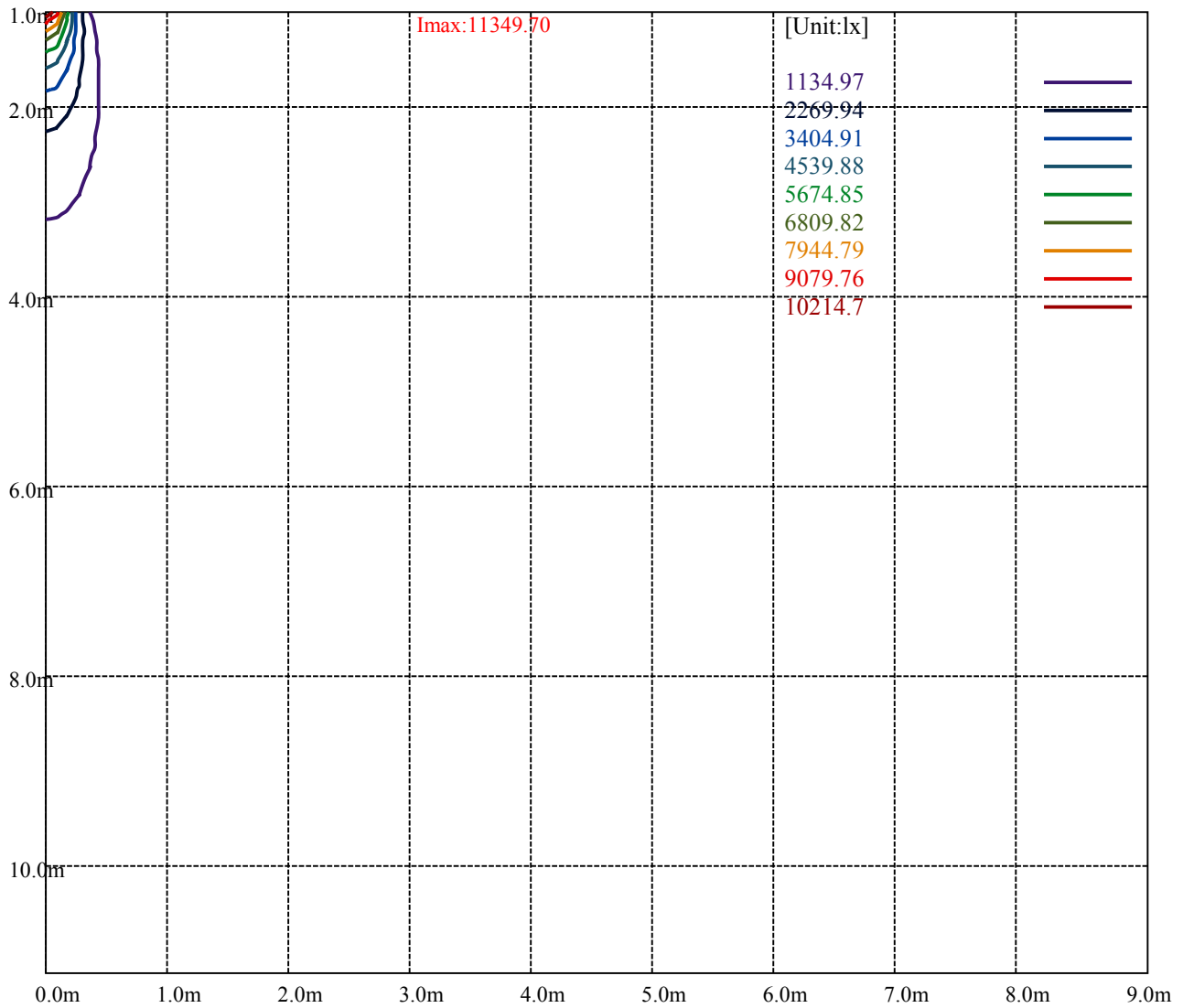
Road

Imax:11349.70

(10%Imax)	1134.97	—
(20%Imax)	2269.94	—
(30%Imax)	3404.91	—
(40%Imax)	4539.88	—
(50%Imax)	5674.85	—
(60%Imax)	6809.82	—
(70%Imax)	7944.79	—
(80%Imax)	9079.76	—
(90%Imax)	10214.7	—



- (10%E_{max}) 283.7425
- (20%E_{max}) 567.485
- (30%E_{max}) 851.2275
- (40%E_{max}) 1134.97
- (50%E_{max}) 1418.713
- (60%E_{max}) 1702.455
- (70%E_{max}) 1986.198
- (80%E_{max}) 2269.94
- (90%E_{max}) 2553.675



Luminance Table

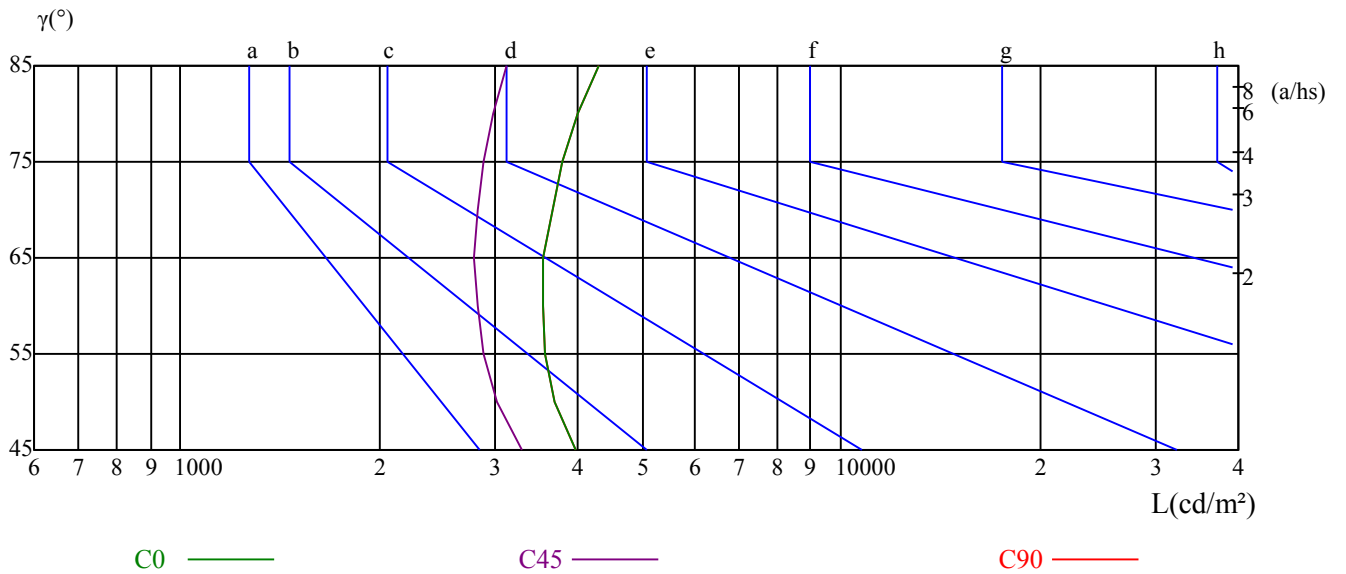
γ	45	50	55	60	65	70	75	80	85
C0	3955	3683	3556	3535	3547	3659	3797	4003	4302
C45	3296	3023	2875	2815	2780	2819	2873	2969	3120
C90	3955	3683	3556	3535	3547	3659	3797	4003	4302

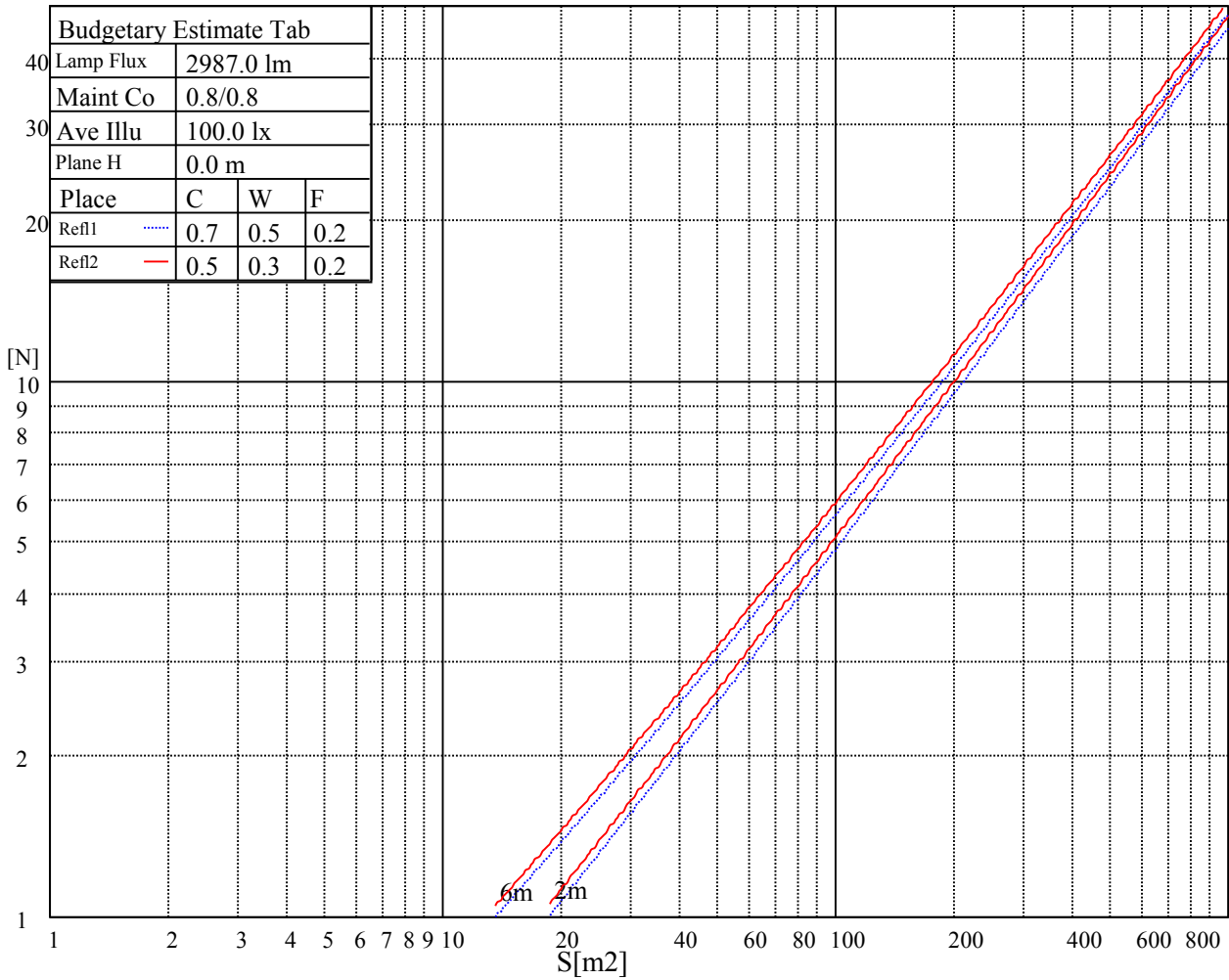
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
10648	10648	10648	17024	17024	17024	50197	50197	50197

Glare Table

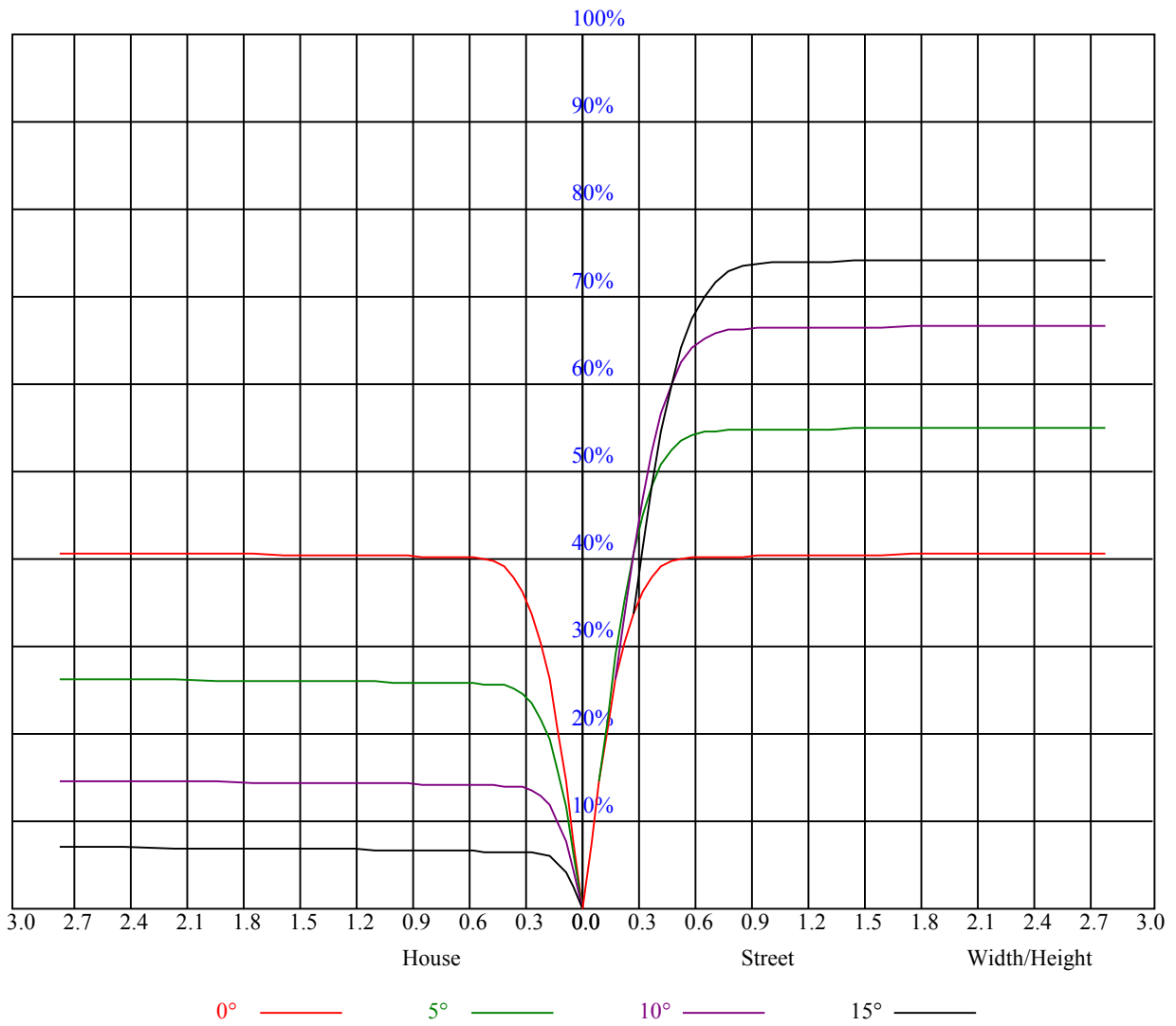
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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	0.97	0.97	0.97	0.95	0.95	0.95	0.91	0.91	0.91	0.87	0.87	0.87	0.83	0.83	0.83	0.82
1	0.92	0.91	0.89	0.90	0.89	0.88	0.87	0.86	0.85	0.84	0.83	0.82	0.81	0.81	0.80	0.79
2	0.88	0.85	0.83	0.87	0.84	0.82	0.84	0.82	0.81	0.82	0.80	0.79	0.79	0.78	0.77	0.76
3	0.84	0.81	0.79	0.83	0.80	0.78	0.81	0.79	0.77	0.79	0.77	0.76	0.78	0.76	0.75	0.74
4	0.81	0.78	0.75	0.80	0.77	0.75	0.79	0.76	0.74	0.77	0.75	0.73	0.76	0.74	0.72	0.72
5	0.78	0.75	0.72	0.78	0.74	0.72	0.76	0.74	0.72	0.75	0.73	0.71	0.74	0.72	0.70	0.69
6	0.76	0.72	0.70	0.75	0.72	0.70	0.74	0.71	0.69	0.73	0.71	0.69	0.72	0.70	0.68	0.68
7	0.73	0.70	0.68	0.73	0.70	0.67	0.72	0.69	0.67	0.71	0.69	0.67	0.70	0.68	0.67	0.66
8	0.71	0.68	0.66	0.71	0.68	0.65	0.70	0.67	0.65	0.69	0.67	0.65	0.69	0.66	0.65	0.64
9	0.69	0.66	0.64	0.69	0.66	0.64	0.68	0.65	0.63	0.68	0.65	0.63	0.67	0.65	0.63	0.62
10	0.67	0.64	0.62	0.67	0.64	0.62	0.67	0.64	0.62	0.66	0.63	0.62	0.66	0.63	0.62	0.61



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	11215.69	11458.13	11463.75	11362.50	11143.13	10828.13	10468.13	9973.13	9478.13
45.0	11390.63	11446.88	11390.63	11216.25	10991.25	10676.25	10186.88	9714.38	9185.63
90.0	11385.00	11214.00	11165.63	10895.06	10526.06	10123.88	9588.38	8966.81	8368.31
135.0	11407.50	11289.38	11053.13	10822.50	10383.75	9950.63	9455.63	8758.13	8150.63
180.0	11215.69	11131.88	10857.94	10368.56	9982.69	9484.88	8854.31	8165.81	7527.94
225.0	11390.63	11223.56	10949.63	10637.44	10206.00	9743.63	9142.31	8486.44	7878.94
270.0	11385.00	11356.88	11205.00	10951.88	10653.75	10271.25	9697.50	9185.63	8634.38
315.0	11407.50	11413.13	11206.13	11126.25	10824.75	10469.25	9929.25	9433.69	8885.81
360.0	11215.69	11458.13	11463.75	11362.50	11143.13	10828.13	10468.13	9973.13	9478.13
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	8859.38	8184.38	7548.75	6907.50	6114.38	5512.50	4944.38	4275.00	3780.00
45.0	8471.25	7835.63	7183.13	6468.75	5771.25	5197.50	4590.00	4083.75	3555.00
90.0	7741.69	6942.94	6319.69	5722.88	5022.00	4495.50	3998.25	3488.63	3030.19
135.0	7537.50	6750.00	6125.63	5540.63	4848.75	4320.00	3841.88	3346.88	2908.13
180.0	6814.13	6114.38	5522.63	4904.44	4385.25	3836.25	3337.31	2939.06	2577.38
225.0	7249.50	6388.31	5860.13	5289.19	4678.88	4105.13	3642.75	3163.50	2734.88
270.0	7886.25	7250.63	6631.88	6024.38	5304.38	4758.75	4241.25	3706.88	3217.50
315.0	8290.13	7494.75	6855.75	6227.44	5472.00	4913.44	4390.88	3837.94	3333.94
360.0	8859.38	8184.38	7548.75	6907.50	6114.38	5512.50	4944.38	4275.00	3780.00
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	3335.63	2896.88	2667.38	2214.00	1901.25	1616.06	1389.94	1160.44	904.50
45.0	3082.50	2840.63	2324.25	2035.69	1751.63	1499.06	1258.88	1008.56	784.13
90.0	2658.94	2287.69	1996.31	1698.19	1434.38	1095.81	960.19	700.99	535.56
135.0	2863.13	2191.50	1869.75	1602.56	1359.00	1111.50	877.50	653.06	465.75
180.0	2168.44	1878.19	1614.94	1118.42	1090.18	870.13	672.69	446.40	299.31
225.0	2399.63	2063.81	1791.56	1511.44	1099.01	1018.58	777.94	582.02	392.46
270.0	2930.63	2462.06	2124.00	1847.25	1562.63	1335.94	1081.13	832.50	627.75
315.0	2942.44	2554.31	2241.00	1920.38	1622.81	1396.69	1100.98	877.95	675.39
360.0	3335.63	2896.88	2667.38	2214.00	1901.25	1616.06	1389.94	1160.44	904.50
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	667.13	478.13	303.75	285.19	82.74	22.44	16.82	15.75	14.63
45.0	587.81	378.00	286.31	116.61	34.88	16.99	15.13	14.18	13.44
90.0	369.90	187.26	99.62	35.83	16.37	14.74	14.06	13.33	12.77
135.0	308.81	151.20	62.44	20.42	15.53	14.63	13.95	13.33	12.71
180.0	174.94	76.84	22.39	16.03	14.96	14.18	13.56	12.99	12.54
225.0	249.02	106.59	39.32	19.13	16.09	14.85	14.06	13.44	12.83
270.0	447.19	292.50	135.06	54.39	19.07	16.03	15.08	14.18	13.44
315.0	493.71	297.45	171.79	76.05	23.96	16.54	15.47	14.51	13.67
360.0	667.13	478.13	303.75	285.19	82.74	22.44	16.82	15.75	14.63
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	13.95	13.33	12.66	12.21	11.93	11.59	11.36	11.14	10.91
45.0	12.88	12.43	12.09	11.76	11.48	11.25	11.03	10.86	10.74
90.0	12.38	11.98	11.70	11.31	11.08	10.97	10.80	10.63	10.52
135.0	12.32	11.98	11.64	11.36	11.14	10.97	10.80	10.63	10.52
180.0	12.09	11.76	11.59	11.36	11.14	10.97	10.80	10.63	10.58
225.0	12.32	11.93	11.59	11.25	11.08	10.86	10.74	10.58	10.46
270.0	12.83	12.32	11.87	11.53	11.25	11.03	10.86	10.63	10.52
315.0	13.11	12.49	12.15	11.70	11.42	11.19	10.97	10.74	10.63
360.0	13.95	13.33	12.66	12.21	11.93	11.59	11.36	11.14	10.91

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	10.74	10.63	10.52	10.46	10.35	10.29	10.24	10.18	10.13
45.0	10.58	10.46	10.41	10.29	10.24	10.13	10.13	10.07	10.07
90.0	10.46	10.29	10.18	10.24	10.13	10.07	10.01	9.96	9.96
135.0	10.41	10.35	10.29	10.18	10.13	10.07	10.07	10.01	9.96
180.0	10.46	10.35	10.29	10.24	10.18	10.13	10.13	10.07	10.01
225.0	10.29	10.24	10.24	10.13	10.07	10.01	9.96	9.90	9.96
270.0	10.41	10.35	10.29	10.18	10.13	10.01	10.01	10.01	9.90
315.0	10.52	10.35	10.29	10.18	10.13	10.13	10.07	9.96	9.96
360.0	10.74	10.63	10.52	10.46	10.35	10.29	10.24	10.18	10.13
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	10.07	10.07	10.01	10.01	9.96	9.90	9.90	9.90	9.84
45.0	10.01	9.96	9.90	9.84	9.84	9.90	9.84	9.79	9.79
90.0	9.90	9.84	9.84	9.84	9.84	9.79	9.73	9.79	9.79
135.0	9.90	9.90	9.84	9.84	9.84	9.79	9.79	9.79	9.79
180.0	10.01	10.01	9.96	9.96	9.90	9.90	9.90	9.84	9.79
225.0	9.96	9.90	9.84	9.79	9.73	9.79	9.79	9.73	9.73
270.0	9.84	9.84	9.90	9.79	9.79	9.79	9.79	9.79	9.73
315.0	9.90	9.90	9.84	9.84	9.79	9.79	9.79	9.73	9.73
360.0	10.07	10.07	10.01	10.01	9.96	9.90	9.90	9.90	9.84
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	9.84	9.84	9.79	9.84	9.79	9.79	9.73	9.73	9.73
45.0	9.73	9.79	9.73	9.79	9.68	9.73	9.68	9.68	9.62
90.0	9.73	9.68	9.73	9.73	9.73	9.73	9.73	9.79	9.73
135.0	9.73	9.73	9.68	9.68	9.68	9.62	9.68	9.68	9.62
180.0	9.79	9.79	9.79	9.79	9.79	9.73	9.73	9.73	9.73
225.0	9.73	9.73	9.68	9.68	9.68	9.62	9.62	9.62	9.62
270.0	9.73	9.73	9.73	9.68	9.73	9.79	9.79	9.79	9.79
315.0	9.68	9.68	9.68	9.68	9.68	9.62	9.62	9.56	9.56
360.0	9.84	9.84	9.79	9.84	9.79	9.79	9.73	9.73	9.73
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	9.73	9.68	9.73	9.73	9.73	9.68	9.68	9.68	9.68
45.0	9.68	9.62	9.62	9.68	9.62	9.62	9.56	9.68	9.62
90.0	9.79	9.79	9.79	9.79	9.84	9.84	9.84	9.84	9.90
135.0	9.62	9.62	9.62	9.62	9.56	9.62	9.56	9.62	9.62
180.0	9.68	9.68	9.68	9.73	9.62	9.73	9.62	9.68	9.68
225.0	9.62	9.56	9.62	9.56	9.62	9.56	9.56	9.62	9.62
270.0	9.90	9.90	9.90	9.90	9.96	10.01	9.96	10.01	9.96
315.0	9.62	9.56	9.62	9.62	9.56	9.62	9.62	9.62	9.62
360.0	9.73	9.68	9.73	9.73	9.73	9.68	9.68	9.68	9.68
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	9.68	9.68	9.62	9.68	9.68	9.68	9.68	9.68	9.62
45.0	9.56	9.56	9.62	9.62	9.56	9.56	9.56	9.56	9.56
90.0	9.90	10.01	10.07	10.24	9.73	9.56	9.51	9.51	9.45
135.0	9.56	9.62	9.62	9.62	9.56	9.56	9.56	9.51	9.56
180.0	9.68	9.62	9.62	9.62	9.68	9.68	9.56	9.68	9.62
225.0	9.62	9.56	9.62	9.56	9.56	9.56	9.56	9.51	9.56
270.0	9.96	9.96	9.96	10.13	9.84	9.51	9.51	9.51	9.51
315.0	9.62	9.51	9.56	9.51	9.56	9.51	9.51	9.56	9.56
360.0	9.68	9.68	9.62	9.68	9.68	9.68	9.68	9.68	9.62

Intensity data(cd)

C/γ(°)	90.0
0.0	9.62
45.0	9.56
90.0	9.45
135.0	9.51
180.0	9.62
225.0	9.56
270.0	9.51
315.0	9.51
360.0	9.62