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NATA

LumCAT: 2-1463-A
Luminaire: 92.70.135.00
Report No: NATA0100
Test No: GC2018101810
LampCAT: LUMILEDS LUXEON CoB 1208
Lamp flux(lm): 3643.0
Number of Lamps: 1
Length(mm): 64
Phm Type: C

Voltage(V): 35.0000
Current(A): 0.7000
Power (W): 24.5000
PF: 0.0000
Ballast type: DC
Width(mm): 64
Height(mm): 0

Photometric Results

Lumens(lm): 3068.23
Efficiency(%): 84.22%
Lumens(lm)/Power(W): 125.40
Central intensity(cd): 17312.340
Maximum intensity(cd): 17312.340
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=18.1
 [C90/270]Total=18.1
Field angle(10%Imax): [C0/180]Total=47.0
 [C90/270]Total=47.0
Maximum s/h(1/2): C0_180=0.31 C90_270=0.31
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(%): 84.33%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.497%

Equipment:
Temperature(°C): 25.0

Date: 2018/10/18
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.50

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	17312.344	4.142	4.142	.114%	.135%
1.0	17244.844	33.004	37.146	.906%	1.211%
2.0	17000.156	65.061	102.207	1.786%	3.331%
3.0	16409.531	94.178	196.385	2.585%	6.401%
4.0	15505.313	118.609	314.994	3.256%	10.266%
5.0	14356.406	137.212	452.206	3.766%	14.738%
6.0	12777.891	146.469	598.675	4.021%	19.512%
7.0	11365.734	151.895	750.57	4.170%	24.463%
8.0	10151.016	154.923	905.493	4.253%	29.512%
9.0	8714.813	149.500	1054.994	4.104%	34.384%
10.0	7531.594	143.420	1198.413	3.937%	39.059%
11.0	6642.352	138.986	1337.4	3.815%	43.589%
12.0	5883.891	134.151	1471.551	3.682%	47.961%
13.0	5293.195	130.574	1602.126	3.584%	52.217%
14.0	4804.594	127.463	1729.588	3.499%	56.371%
15.0	4368.094	123.977	1853.565	3.403%	60.412%
16.0	3979.266	120.280	1973.845	3.302%	64.332%
17.0	3669.188	117.641	2091.485	3.229%	68.166%
18.0	3356.156	113.730	2205.216	3.122%	71.873%
19.0	3096.281	110.544	2315.759	3.034%	75.475%
20.0	2846.953	106.778	2422.538	2.931%	78.955%
21.0	2556.211	100.456	2522.994	2.758%	82.230%
22.0	2203.242	90.509	2613.503	2.484%	85.179%
23.0	1901.813	81.489	2694.992	2.237%	87.835%
24.0	1575.984	70.294	2765.285	1.930%	90.126%
25.0	1284.996	59.553	2824.838	1.635%	92.067%
26.0	1031.154	49.570	2874.408	1.361%	93.683%
27.0	767.869	38.228	2912.636	1.049%	94.929%
28.0	554.182	28.531	2941.167	.783%	95.859%
29.0	356.091	18.931	2960.098	.520%	96.476%
30.0	219.945	12.060	2972.158	.331%	96.869%
31.0	129.874	7.335	2979.493	.201%	97.108%
32.0	76.830	4.465	2983.958	.123%	97.253%
33.0	52.031	3.108	2987.066	.085%	97.355%
34.0	37.976	2.329	2989.394	.064%	97.431%
35.0	31.113	1.957	2991.351	.054%	97.494%
36.0	27.759	1.789	2993.141	.049%	97.553%
37.0	25.706	1.696	2994.837	.047%	97.608%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	23.836	1.609	2996.446	.044%	97.660%
39.0	22.289	1.538	2997.985	.042%	97.710%
40.0	20.932	1.475	2999.46	.041%	97.759%
41.0	19.772	1.422	3000.883	.039%	97.805%
42.0	18.816	1.381	3002.263	.038%	97.850%
43.0	17.993	1.346	3003.609	.037%	97.894%
44.0	17.374	1.324	3004.932	.036%	97.937%
45.0	16.889	1.310	3006.242	.036%	97.980%
46.0	16.516	1.303	3007.545	.036%	98.022%
47.0	16.200	1.299	3008.844	.036%	98.064%
48.0	15.975	1.302	3010.146	.036%	98.107%
49.0	15.743	1.303	3011.449	.036%	98.149%
50.0	15.567	1.308	3012.757	.036%	98.192%
51.0	15.434	1.315	3014.072	.036%	98.235%
52.0	15.272	1.320	3015.392	.036%	98.278%
53.0	15.103	1.323	3016.714	.036%	98.321%
54.0	14.934	1.325	3018.039	.036%	98.364%
55.0	14.808	1.330	3019.369	.037%	98.407%
56.0	14.646	1.332	3020.701	.037%	98.451%
57.0	14.555	1.339	3022.04	.037%	98.494%
58.0	14.442	1.343	3023.383	.037%	98.538%
59.0	14.372	1.351	3024.734	.037%	98.582%
60.0	14.330	1.361	3026.094	.037%	98.627%
61.0	14.280	1.370	3027.464	.038%	98.671%
62.0	14.231	1.378	3028.842	.038%	98.716%
63.0	14.196	1.387	3030.229	.038%	98.761%
64.0	14.154	1.395	3031.624	.038%	98.807%
65.0	14.105	1.402	3033.026	.038%	98.853%
66.0	14.091	1.412	3034.438	.039%	98.899%
67.0	14.041	1.417	3035.855	.039%	98.945%
68.0	13.992	1.423	3037.278	.039%	98.991%
69.0	13.964	1.430	3038.707	.039%	99.038%
70.0	13.901	1.432	3040.14	.039%	99.084%
71.0	13.866	1.438	3041.577	.039%	99.131%
72.0	13.830	1.442	3043.02	.040%	99.178%
73.0	13.795	1.447	3044.467	.040%	99.225%
74.0	13.774	1.452	3045.918	.040%	99.273%
75.0	13.711	1.452	3047.371	.040%	99.320%

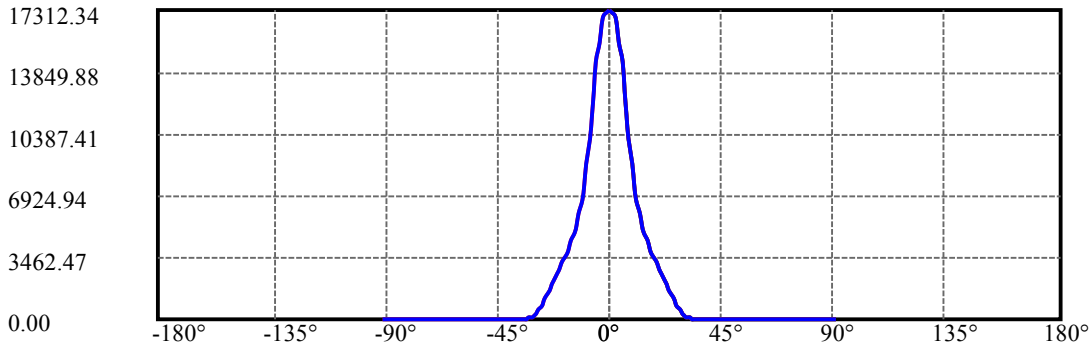
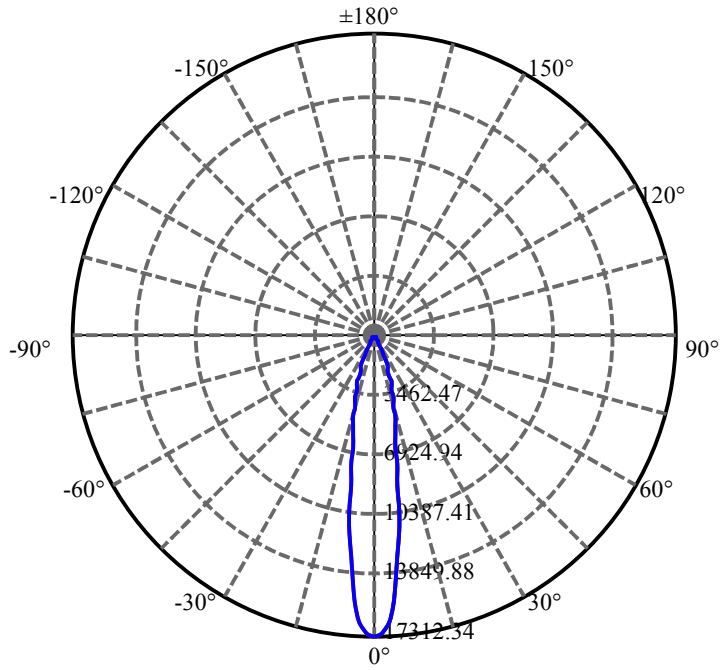
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	13.662	1.454	3048.824	.040%	99.367%
77.0	13.627	1.456	3050.28	.040%	99.415%
78.0	13.577	1.456	3051.737	.040%	99.462%
79.0	13.535	1.457	3053.194	.040%	99.510%
80.0	13.472	1.455	3054.649	.040%	99.557%
81.0	13.416	1.453	3056.102	.040%	99.605%
82.0	13.338	1.448	3057.55	.040%	99.652%
83.0	13.261	1.443	3058.994	.040%	99.699%
84.0	13.198	1.439	3060.433	.040%	99.746%
85.0	13.127	1.434	3061.867	.039%	99.793%
86.0	13.064	1.429	3063.296	.039%	99.839%
87.0	12.987	1.422	3064.718	.039%	99.885%
88.0	12.930	1.417	3066.135	.039%	99.932%
89.0	12.783	1.402	3067.537	.038%	99.977%
90.0	12.677	0.695	3068.232	.019%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	2972.16	81.59%	96.87%
0-40	2999.46	82.33%	97.76%
0-60	3026.09	83.07%	98.63%
0-90	3067.54	84.20%	99.98%
0-120	3067.54	84.20%	99.98%
0-180	3068.23	84.22%	100.00%
60-90	42.80	1.17%	1.40%
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%
0-20.32	2454.59	67.38%	80.00%

ZONAL LUMEN SUMMARY

0-10	1198.41
10-20	1224.12
20-30	549.62
30-40	27.30
40-50	13.30
50-60	13.34
60-70	14.05
70-80	14.51
80-90	12.89
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



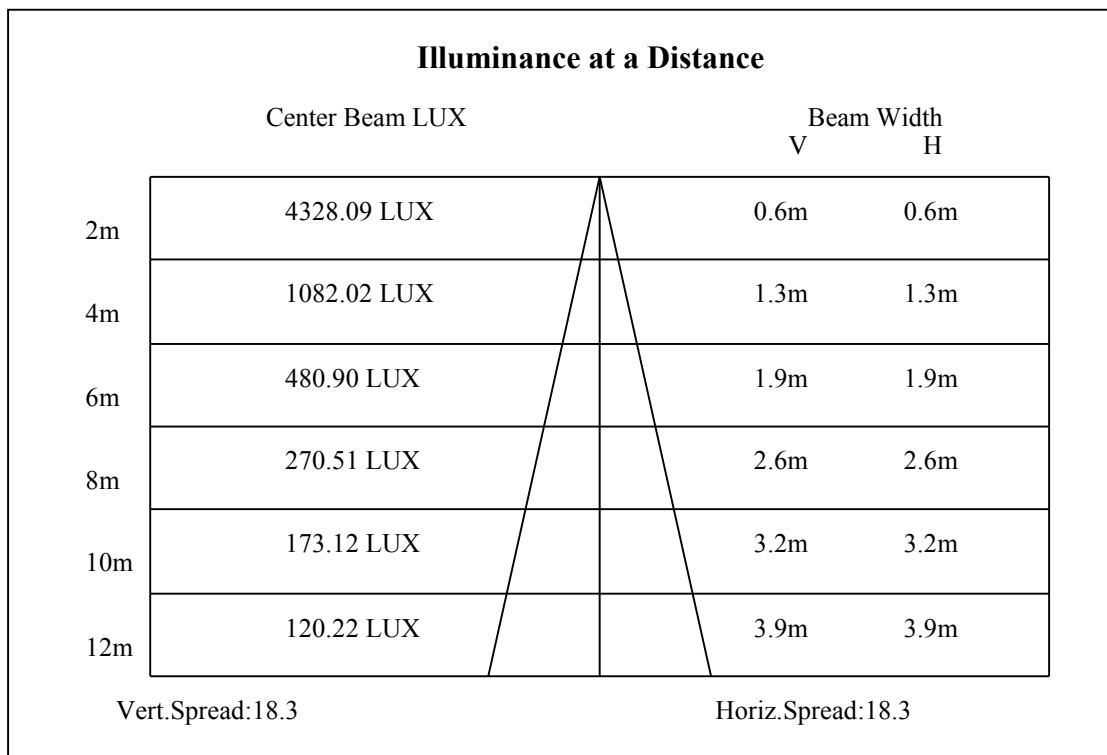
C0(Max): —————

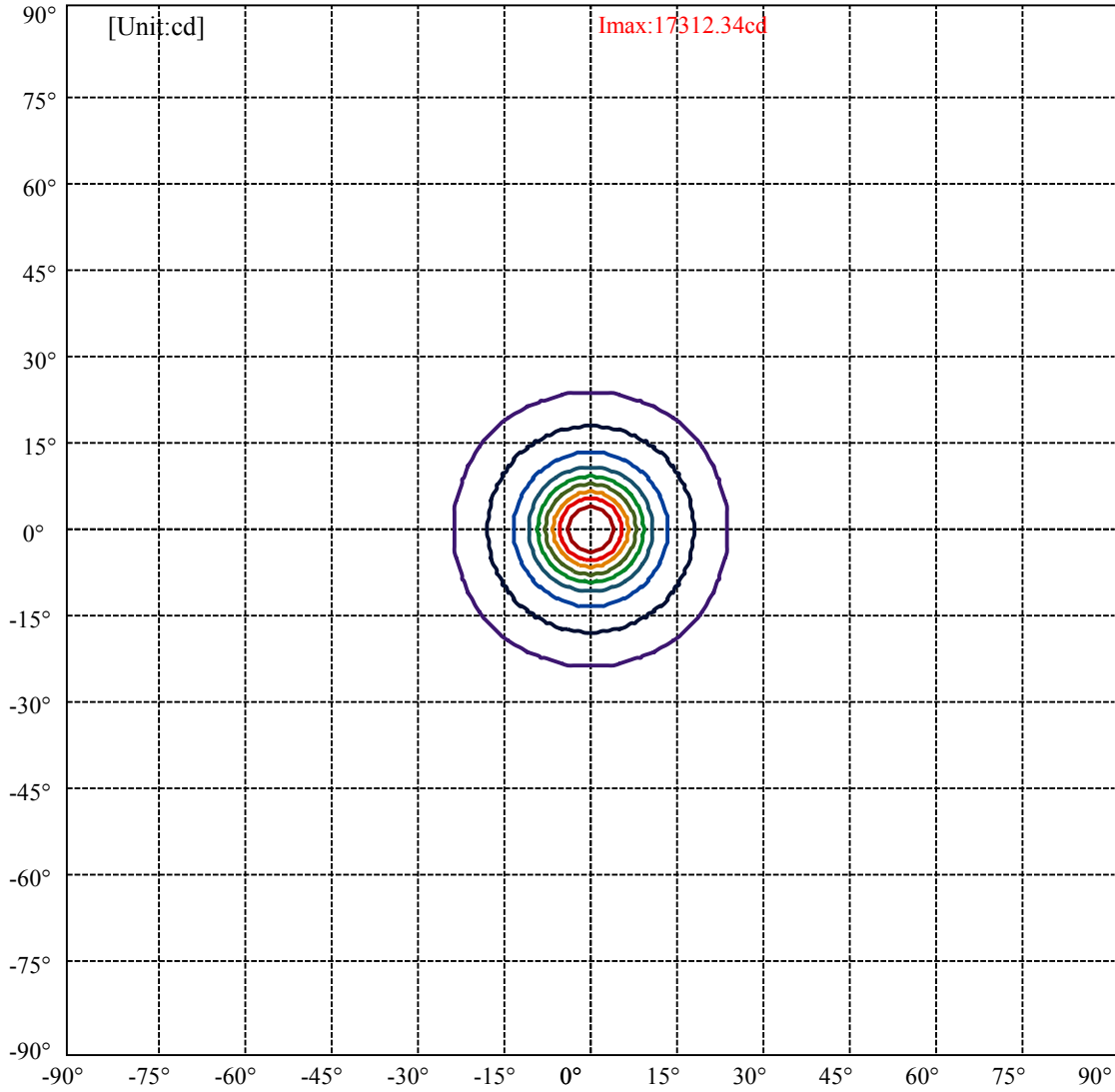
C0/C180: —————

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:9.0 Right:9.0
:C90/270Left:9.0 Right:9.0



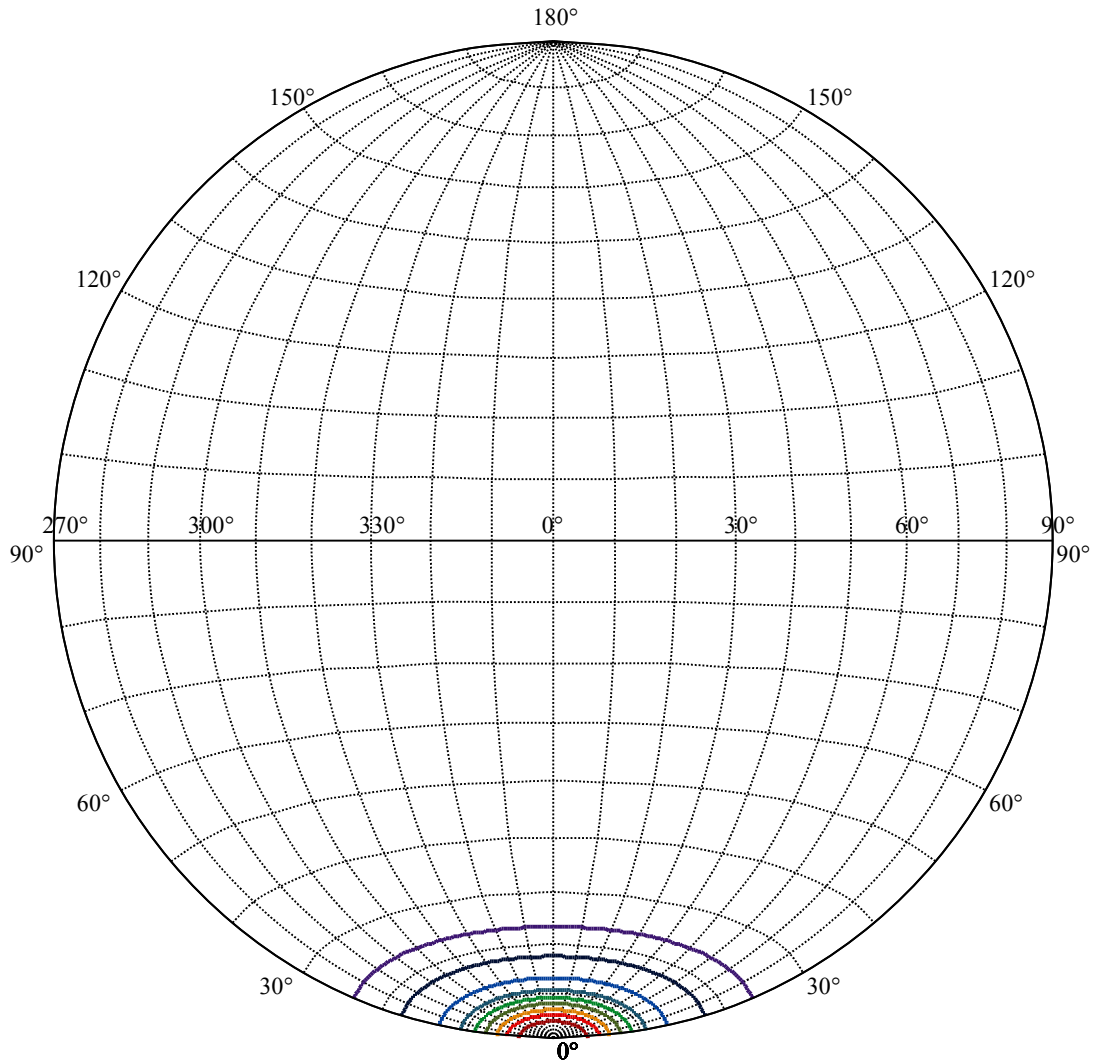


(10%Imax) 1731.23	—
(20%Imax) 3462.47	—
(30%Imax) 5193.7	—
(40%Imax) 6924.94	—
(50%Imax) 8656.17	—
(60%Imax) 10387.4	—
(70%Imax) 12118.6	—
(80%Imax) 13849.9	—
(90%Imax) 15581.1	—

Equipment:
Temperature(°C): 25.0

Date: 2018/10/18
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.50



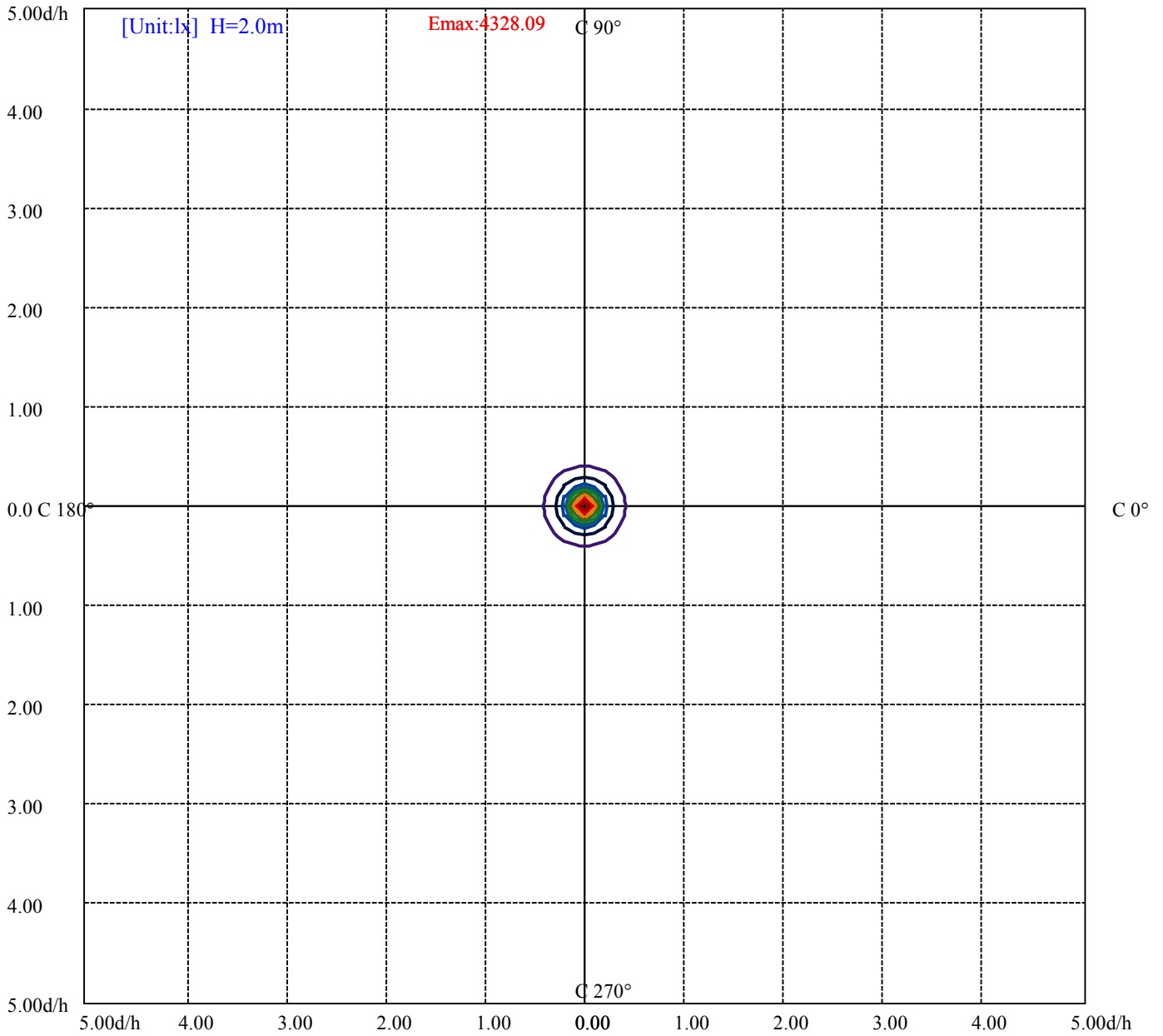
House

[Unit:cd]

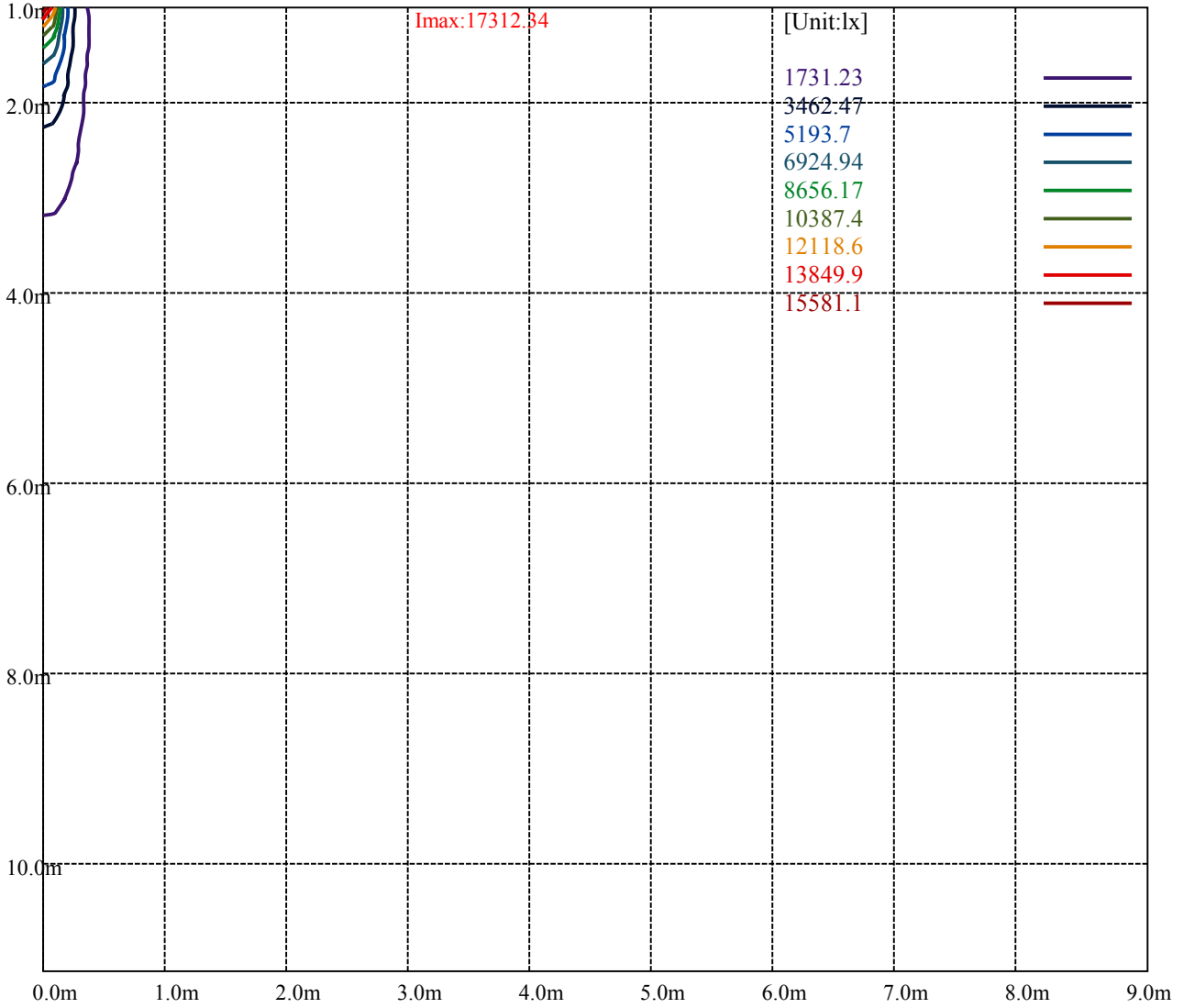
Road

Imax:17312.34

(10%Imax) 1731.23	—
(20%Imax) 3462.47	—
(30%Imax) 5193.7	—
(40%Imax) 6924.94	—
(50%Imax) 8656.17	—
(60%Imax) 10387.4	—
(70%Imax) 12118.6	—
(80%Imax) 13849.9	—
(90%Imax) 15581.1	—



- (10%Emax) 432.8075
- (20%Emax) 865.6175
- (30%Emax) 1298.425
- (40%Emax) 1731.233
- (50%Emax) 2164.042
- (60%Emax) 2596.85
- (70%Emax) 3029.65
- (80%Emax) 3462.475
- (90%Emax) 3895.275



Luminance Table

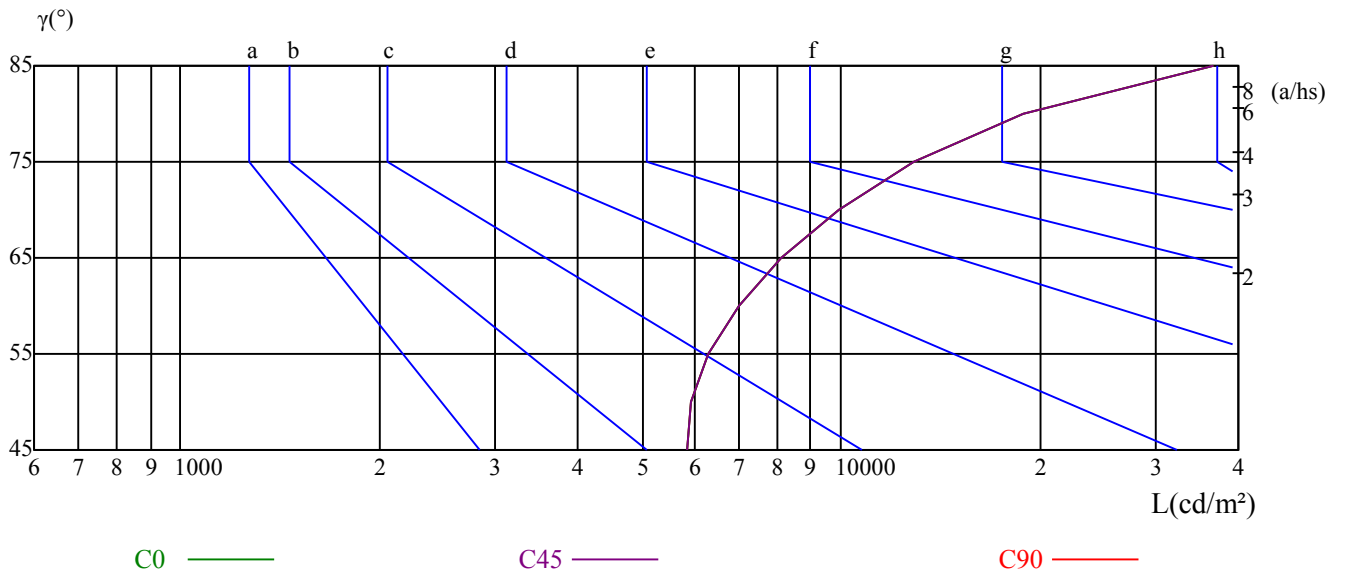
γ	45	50	55	60	65	70	75	80	85
C0	5831	5913	6303	6997	8148	9923	12933	18941	36772
C45	5831	5913	6303	6997	8148	9923	12933	18941	36772
C90	5831	5913	6303	6997	8148	9923	12933	18941	36772

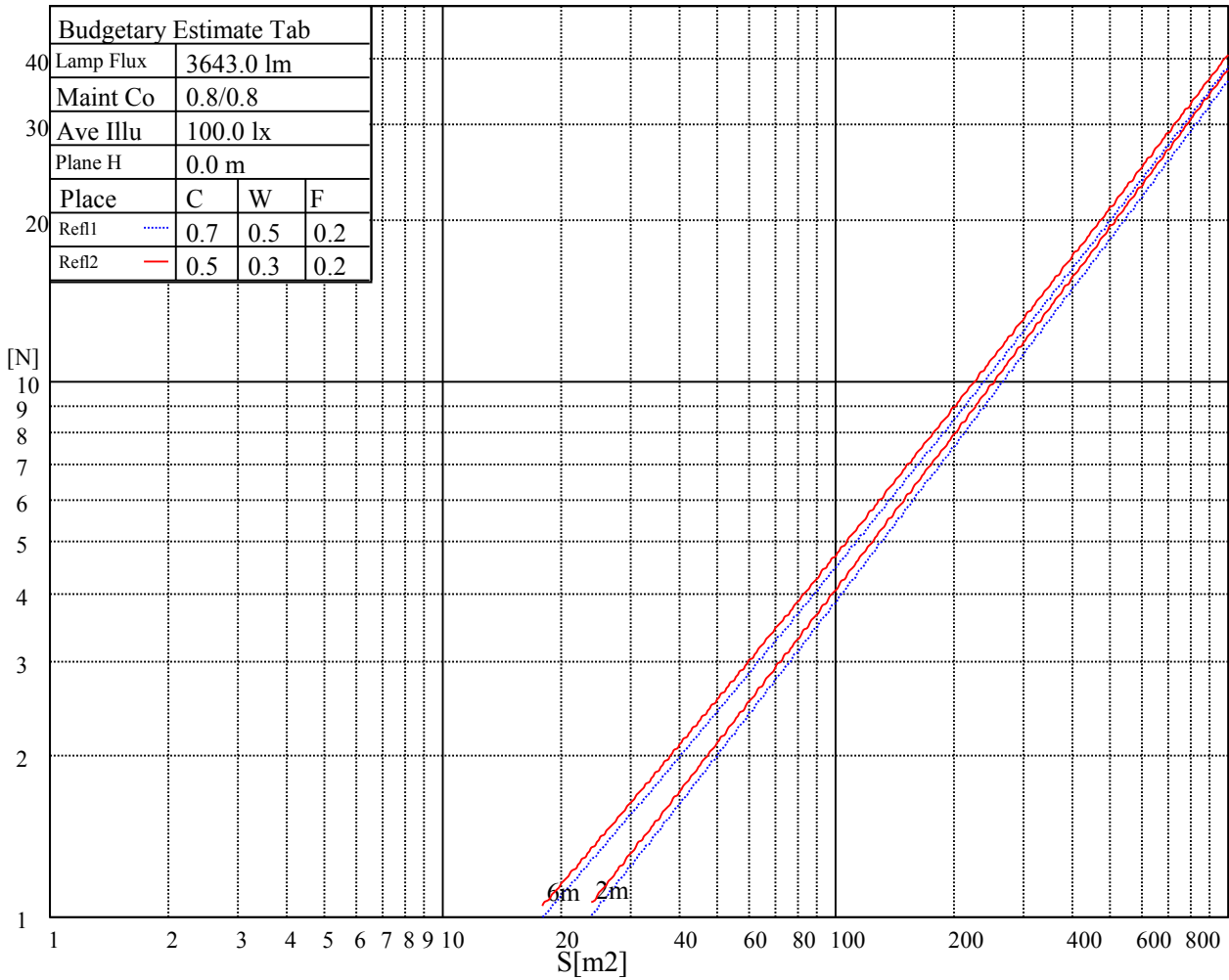
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
8148	8148	8148	12933	12933	12933	36772	36772	36772

Glare Table

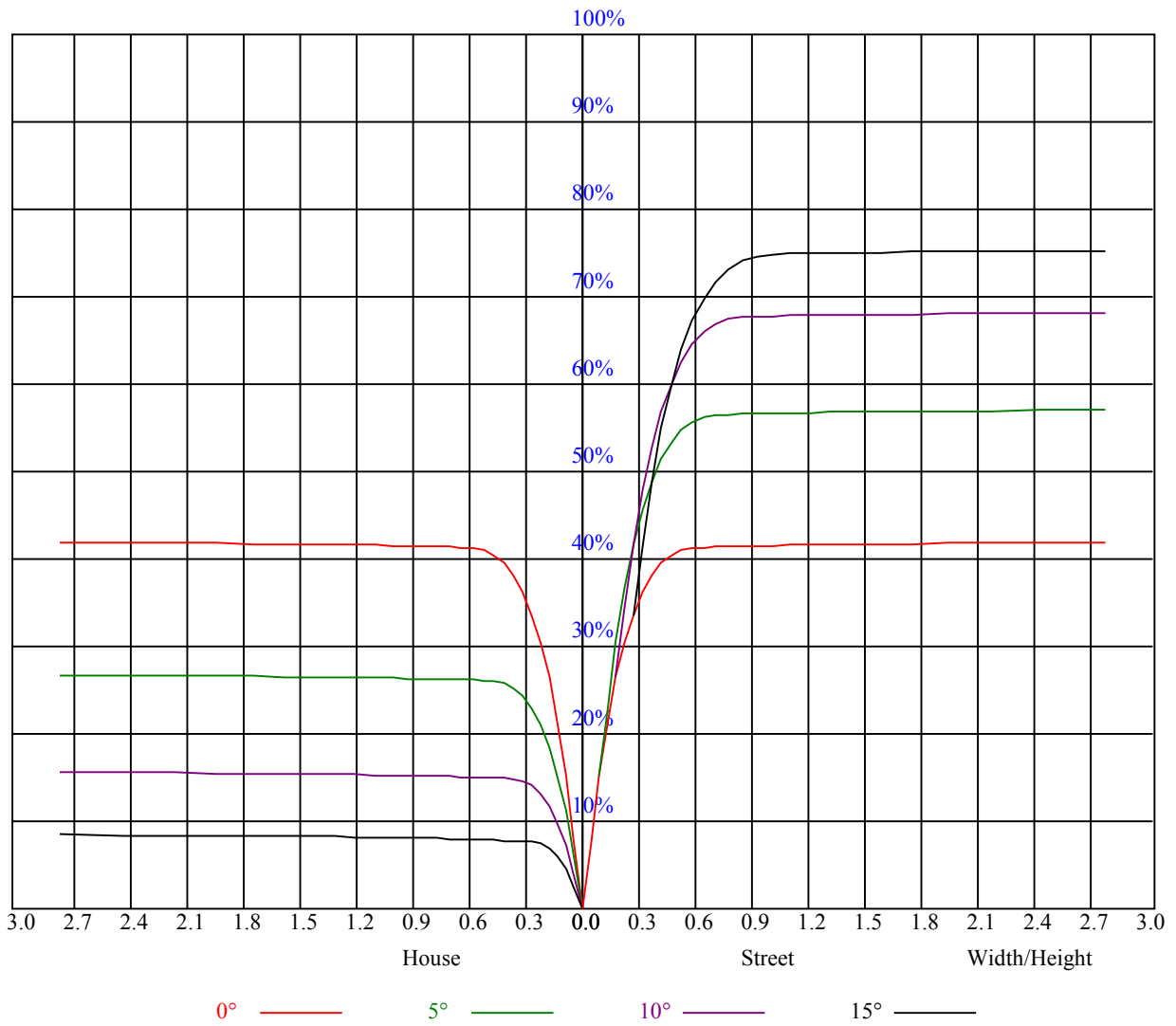
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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	1.00	1.00	1.00	0.98	0.98	0.98	0.94	0.94	0.94	0.90	0.90	0.90	0.86	0.86	0.86	0.84
1	0.95	0.93	0.92	0.93	0.92	0.90	0.90	0.88	0.87	0.87	0.86	0.85	0.84	0.83	0.82	0.81
2	0.90	0.88	0.86	0.89	0.87	0.85	0.86	0.84	0.83	0.84	0.82	0.81	0.82	0.81	0.79	0.78
3	0.87	0.84	0.81	0.86	0.83	0.80	0.83	0.81	0.79	0.82	0.80	0.78	0.80	0.78	0.77	0.76
4	0.83	0.80	0.77	0.82	0.79	0.77	0.81	0.78	0.76	0.79	0.77	0.75	0.78	0.76	0.74	0.73
5	0.80	0.77	0.74	0.80	0.77	0.74	0.78	0.76	0.73	0.77	0.75	0.73	0.76	0.74	0.72	0.71
6	0.78	0.74	0.72	0.77	0.74	0.72	0.76	0.73	0.71	0.75	0.73	0.71	0.74	0.72	0.70	0.69
7	0.75	0.72	0.70	0.75	0.72	0.69	0.74	0.71	0.69	0.73	0.71	0.69	0.72	0.70	0.68	0.68
8	0.73	0.70	0.67	0.73	0.70	0.67	0.72	0.69	0.67	0.71	0.69	0.67	0.71	0.68	0.67	0.66
9	0.71	0.68	0.66	0.71	0.68	0.66	0.70	0.67	0.65	0.70	0.67	0.65	0.69	0.67	0.65	0.64
10	0.69	0.66	0.64	0.69	0.66	0.64	0.69	0.66	0.64	0.68	0.65	0.64	0.68	0.65	0.63	0.63



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	17319.38	17291.25	17128.13	16666.88	15879.38	14647.50	13196.25	11851.88	10507.50
45.0	17285.63	17347.50	17235.00	16931.25	16396.88	15345.00	14023.13	12678.75	11486.25
90.0	17347.50	17341.88	17206.88	16846.88	15958.13	15052.50	13826.25	11082.94	10740.38
135.0	17296.88	17336.25	17218.13	16875.00	16239.38	15170.63	13860.00	12543.75	11188.13
180.0	17319.38	17206.88	16891.88	16160.63	15103.13	13944.38	12645.00	10938.38	9566.44
225.0	17285.63	17094.38	16678.13	15795.00	14608.13	13342.50	11189.81	10520.44	9045.00
270.0	17347.50	17223.75	16925.63	16132.50	15153.75	13938.75	12268.13	10929.38	9590.63
315.0	17296.88	17116.88	16717.50	15868.13	14703.75	13410.00	11214.56	10380.38	9083.81
360.0	17319.38	17291.25	17128.13	16666.88	15879.38	14647.50	13196.25	11851.88	10507.50
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	8921.25	7801.88	6896.25	6103.13	5484.38	5006.25	4522.50	4100.63	3785.63
45.0	9680.63	8437.50	7503.75	6463.13	5737.50	5315.63	4747.50	4297.50	3988.13
90.0	9410.06	8047.69	6973.88	6224.06	5628.94	5029.88	4604.06	4204.13	3833.44
135.0	9506.25	8268.75	7211.25	6176.25	5535.00	5034.38	4573.13	4145.63	3841.88
180.0	8294.63	6999.19	6195.38	5563.13	4941.00	4536.00	4177.13	3799.69	3565.69
225.0	7877.81	6812.44	5983.88	5411.81	4929.19	4405.50	4043.81	3727.13	3411.56
270.0	8088.75	7093.13	6294.38	5613.75	5051.25	4606.88	4156.88	3768.75	3465.00
315.0	7939.13	6792.19	6080.06	5515.88	5038.31	4502.25	4119.75	3790.69	3462.19
360.0	8921.25	7801.88	6896.25	6103.13	5484.38	5006.25	4522.50	4100.63	3785.63
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	3481.88	3240.00	2970.00	2885.63	2418.19	2086.88	1791.56	1468.69	1190.25
45.0	3605.63	3330.00	3082.50	2857.50	2473.31	2193.19	1820.25	1536.19	1272.94
90.0	3493.69	3214.69	2915.44	2613.94	2319.19	1987.31	1699.88	1390.50	1102.89
135.0	3532.50	3279.38	3009.38	2851.88	2416.50	2133.00	1746.56	1461.94	1204.31
180.0	3275.44	2997.56	2733.75	2393.44	2053.13	1754.44	1472.06	1112.01	902.81
225.0	3127.50	2883.38	2576.81	2239.88	1948.50	1623.38	1256.63	1064.25	804.88
270.0	3161.25	2896.88	2840.63	2286.00	1997.44	1716.19	1377.56	1130.06	896.06
315.0	3171.38	2928.38	2647.13	2321.44	1999.69	1720.13	1443.38	1116.34	875.08
360.0	3481.88	3240.00	2970.00	2885.63	2418.19	2086.88	1791.56	1468.69	1190.25
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	866.81	627.75	423.56	299.25	132.36	81.79	53.27	36.17	28.01
45.0	962.44	725.63	512.44	307.13	206.04	106.76	61.37	44.44	34.76
90.0	870.47	647.04	405.39	252.39	151.88	86.12	58.11	44.21	34.54
135.0	906.19	687.38	480.94	284.63	167.46	107.04	70.26	44.04	34.48
180.0	681.81	483.47	277.43	169.65	109.01	61.88	45.00	34.54	28.74
225.0	587.70	395.10	220.33	139.84	90.28	55.80	42.53	34.20	30.04
270.0	622.69	429.75	290.81	164.14	93.04	62.21	46.29	34.93	30.94
315.0	644.85	437.34	237.83	142.54	88.93	53.04	39.43	31.28	27.39
360.0	866.81	627.75	423.56	299.25	132.36	81.79	53.27	36.17	28.01
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	24.41	22.44	20.98	19.97	18.96	18.28	17.66	17.16	16.76
45.0	29.36	27.39	25.43	23.46	21.88	20.53	19.18	18.34	17.66
90.0	30.26	28.29	26.33	24.58	23.18	21.71	20.53	19.41	18.45
135.0	30.26	27.45	25.37	23.79	21.88	20.53	19.46	18.34	17.66
180.0	26.16	24.24	22.50	20.98	19.86	18.90	18.17	17.49	17.04
225.0	27.90	26.10	23.96	22.39	20.98	19.63	18.68	17.89	17.16
270.0	28.63	26.49	24.64	23.12	21.66	20.48	19.35	18.45	17.83
315.0	25.09	23.23	21.49	20.03	19.07	18.11	17.49	16.88	16.43
360.0	24.41	22.44	20.98	19.97	18.96	18.28	17.66	17.16	16.76

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	16.43	16.14	15.92	15.75	15.47	15.36	15.24	15.08	14.96
45.0	16.99	16.59	16.31	16.09	15.81	15.69	15.58	15.47	15.36
90.0	17.78	17.27	16.82	16.48	16.26	16.09	15.86	15.75	15.47
135.0	17.10	16.59	16.26	16.03	15.75	15.53	15.41	15.24	15.08
180.0	16.65	16.37	16.03	15.86	15.69	15.47	15.30	15.13	14.96
225.0	16.76	16.43	16.09	15.81	15.69	15.47	15.36	15.19	15.02
270.0	17.33	16.88	16.59	16.31	15.98	15.75	15.64	15.36	15.19
315.0	16.09	15.86	15.58	15.47	15.30	15.19	15.08	14.96	14.79
360.0	16.43	16.14	15.92	15.75	15.47	15.36	15.24	15.08	14.96
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	14.85	14.74	14.63	14.57	14.40	14.29	14.23	14.12	14.12
45.0	15.13	15.02	14.79	14.68	14.57	14.51	14.46	14.40	14.40
90.0	15.24	15.13	14.91	14.85	14.74	14.68	14.68	14.63	14.57
135.0	14.85	14.74	14.57	14.40	14.29	14.18	14.12	14.06	14.01
180.0	14.85	14.74	14.57	14.46	14.34	14.23	14.18	14.12	14.01
225.0	14.85	14.68	14.57	14.46	14.34	14.29	14.29	14.23	14.18
270.0	15.02	14.85	14.74	14.68	14.63	14.63	14.57	14.57	14.51
315.0	14.68	14.57	14.40	14.34	14.23	14.18	14.12	14.12	14.06
360.0	14.85	14.74	14.63	14.57	14.40	14.29	14.23	14.12	14.12
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	14.06	14.01	13.95	13.95	13.95	13.89	13.89	13.84	13.78
45.0	14.34	14.34	14.29	14.29	14.23	14.18	14.12	14.01	13.95
90.0	14.51	14.51	14.40	14.40	14.34	14.23	14.18	14.12	14.12
135.0	13.95	13.89	13.89	13.84	13.78	13.78	13.78	13.73	13.73
180.0	14.01	13.95	13.89	13.89	13.84	13.84	13.84	13.84	13.78
225.0	14.18	14.12	14.12	14.06	14.06	14.01	14.01	13.95	13.95
270.0	14.51	14.40	14.34	14.34	14.23	14.18	14.12	14.01	13.95
315.0	14.01	14.01	13.95	13.95	13.89	13.84	13.78	13.73	13.67
360.0	14.06	14.01	13.95	13.95	13.95	13.89	13.89	13.84	13.78
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	13.73	13.73	13.67	13.61	13.50	13.44	13.39	13.39	13.33
45.0	13.89	13.89	13.89	13.84	13.78	13.78	13.73	13.61	13.56
90.0	14.12	14.06	14.06	14.01	13.95	13.89	13.84	13.84	13.73
135.0	13.67	13.61	13.61	13.56	13.50	13.50	13.44	13.39	13.39
180.0	13.78	13.73	13.67	13.61	13.56	13.56	13.56	13.56	13.44
225.0	13.89	13.89	13.84	13.78	13.78	13.73	13.67	13.61	13.56
270.0	13.95	13.89	13.89	13.78	13.78	13.73	13.67	13.61	13.56
315.0	13.61	13.56	13.56	13.50	13.44	13.39	13.33	13.28	13.22
360.0	13.73	13.73	13.67	13.61	13.50	13.44	13.39	13.39	13.33
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	13.28	13.16	13.11	13.05	13.05	12.99	12.99	12.94	12.83
45.0	13.50	13.44	13.33	13.33	13.28	13.22	13.16	13.05	13.05
90.0	13.73	13.67	13.50	13.39	13.22	13.05	12.94	12.83	12.77
135.0	13.33	13.28	13.22	13.11	13.05	13.05	12.99	12.94	12.88
180.0	13.39	13.28	13.22	13.22	13.16	13.11	13.05	13.05	12.60
225.0	13.50	13.44	13.39	13.33	13.28	13.22	13.05	13.05	12.83
270.0	13.50	13.39	13.28	13.16	13.05	12.99	12.83	12.77	12.71
315.0	13.11	13.05	13.05	12.99	12.94	12.88	12.88	12.83	12.60
360.0	13.28	13.16	13.11	13.05	13.05	12.99	12.99	12.94	12.83

Intensity data(cd)

C/ γ (°)	90.0
0.0	12.60
45.0	12.88
90.0	12.71
135.0	12.60
180.0	12.54
225.0	12.83
270.0	12.66
315.0	12.60
360.0	12.60