



NATA LIGHTING CO.,LTD.
www.nata.cn
Email:info@nata.com
Tel:+86-750-3770000 Fax:+86-750-3771111
Address:380JinOu Road,GaoXin Zone,Jiang Men City,Guangdong,China

Nata

LumCAT: 2-2137-M
Luminaire: BJB 47.360.1010
Report No: NATA0100
Test No: GC2019102102
LampCAT: CITIZEN CLU038
Lamp flux(lm): 1963.0
Number of Lamps: 1
Length(mm): 0
Phm Type: C

Voltage(V): 35.2900
Current(A): 0.4270
Power (W): 15.0700
PF: 0.0000
Ballast type: DC
Width(mm): 0
Height(mm): 0

Photometric Results

Lumens(lm): 1466.88
Efficiency(%): 74.73%
Lumens(lm)/Power(W): 97.34
Central intensity(cd): 4844.953
Maximum intensity(cd): 4844.953
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=33.5
[C90/270]Total=33.5
Field angle(10%Imax): [C0/180]Total=49.2
[C90/270]Total=49.2
Maximum s/h(1/2): C0_180=0.56 C90_270=0.56
Maximum s/h(1/4): C0_180=0.52 C90_270=0.52
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 74.73%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 97.943%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	4844.953	0.000	0	.000%	.000%
1.0	4835.320	4.632	4.632	.236%	.316%
2.0	4811.273	13.846	18.478	.705%	1.260%
3.0	4763.953	22.901	41.378	1.167%	2.821%
4.0	4697.086	31.669	73.047	1.613%	4.980%
5.0	4614.047	40.056	113.103	2.041%	7.710%
6.0	4500.352	47.899	161.002	2.440%	10.976%
7.0	4367.953	55.045	216.047	2.804%	14.728%
8.0	4236.117	61.578	277.625	3.137%	18.926%
9.0	4072.500	67.337	344.962	3.430%	23.517%
10.0	3895.734	72.110	417.072	3.673%	28.433%
11.0	3721.852	76.115	493.187	3.878%	33.621%
12.0	3530.672	79.280	572.467	4.039%	39.026%
13.0	3306.516	81.140	653.608	4.133%	44.558%
14.0	3097.828	81.975	735.583	4.176%	50.146%
15.0	2873.250	81.974	817.556	4.176%	55.734%
16.0	2614.359	80.409	897.965	4.096%	61.216%
17.0	2353.008	77.355	975.32	3.941%	66.489%
18.0	2097.211	73.374	1048.695	3.738%	71.491%
19.0	1826.367	68.262	1116.957	3.477%	76.145%
20.0	1533.277	61.491	1178.448	3.132%	80.337%
21.0	1289.194	54.197	1232.645	2.761%	84.032%
22.0	1029.572	46.597	1279.242	2.374%	87.208%
23.0	819.288	38.794	1318.036	1.976%	89.853%
24.0	603.197	31.101	1349.136	1.584%	91.973%
25.0	410.182	23.042	1372.178	1.174%	93.544%
26.0	266.288	15.968	1388.146	.813%	94.632%
27.0	167.913	10.623	1398.769	.541%	95.357%
28.0	82.406	6.338	1405.107	.323%	95.789%
29.0	42.863	3.277	1408.384	.167%	96.012%
30.0	24.961	1.831	1410.215	.093%	96.137%
31.0	18.352	1.205	1411.421	.061%	96.219%
32.0	16.059	0.986	1412.407	.050%	96.286%
33.0	14.773	0.908	1413.315	.046%	96.348%
34.0	13.760	0.863	1414.178	.044%	96.407%
35.0	13.050	0.833	1415.011	.042%	96.464%
36.0	12.523	0.814	1415.825	.041%	96.519%
37.0	12.073	0.802	1416.627	.041%	96.574%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	11.735	0.795	1417.422	.040%	96.628%
39.0	11.426	0.791	1418.213	.040%	96.682%
40.0	11.173	0.788	1419.001	.040%	96.736%
41.0	11.011	0.790	1419.791	.040%	96.790%
42.0	10.828	0.793	1420.584	.040%	96.844%
43.0	10.695	0.797	1421.381	.041%	96.898%
44.0	10.589	0.803	1422.185	.041%	96.953%
45.0	10.491	0.810	1422.995	.041%	97.008%
46.0	10.427	0.818	1423.813	.042%	97.064%
47.0	10.350	0.826	1424.639	.042%	97.120%
48.0	10.308	0.835	1425.474	.043%	97.177%
49.0	10.294	0.846	1426.32	.043%	97.235%
50.0	10.280	0.858	1427.178	.044%	97.293%
51.0	10.301	0.871	1428.049	.044%	97.353%
52.0	10.329	0.885	1428.934	.045%	97.413%
53.0	10.378	0.901	1429.835	.046%	97.474%
54.0	10.455	0.918	1430.753	.047%	97.537%
55.0	10.554	0.938	1431.691	.048%	97.601%
56.0	10.645	0.958	1432.649	.049%	97.666%
57.0	10.758	0.979	1433.627	.050%	97.733%
58.0	10.891	1.001	1434.629	.051%	97.801%
59.0	11.081	1.027	1435.656	.052%	97.871%
60.0	11.292	1.057	1436.713	.054%	97.943%
61.0	11.595	1.092	1437.805	.056%	98.018%
62.0	11.862	1.130	1438.935	.058%	98.095%
63.0	12.073	1.164	1440.099	.059%	98.174%
64.0	12.284	1.195	1441.295	.061%	98.256%
65.0	12.445	1.224	1442.518	.062%	98.339%
66.0	12.516	1.245	1443.764	.063%	98.424%
67.0	12.530	1.259	1445.023	.064%	98.510%
68.0	12.466	1.266	1446.289	.065%	98.596%
69.0	12.347	1.266	1447.555	.064%	98.682%
70.0	12.192	1.260	1448.815	.064%	98.768%
71.0	11.904	1.245	1450.061	.063%	98.853%
72.0	11.524	1.218	1451.279	.062%	98.936%
73.0	11.116	1.184	1452.463	.060%	99.017%
74.0	10.610	1.142	1453.605	.058%	99.095%
75.0	9.970	1.087	1454.693	.055%	99.169%

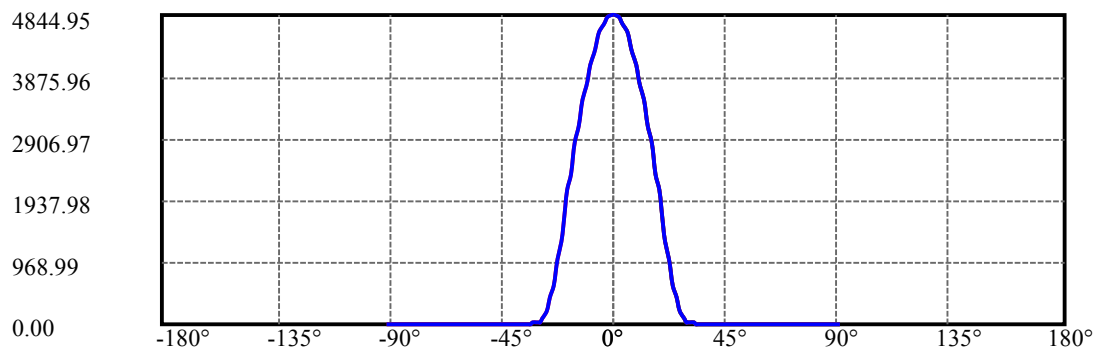
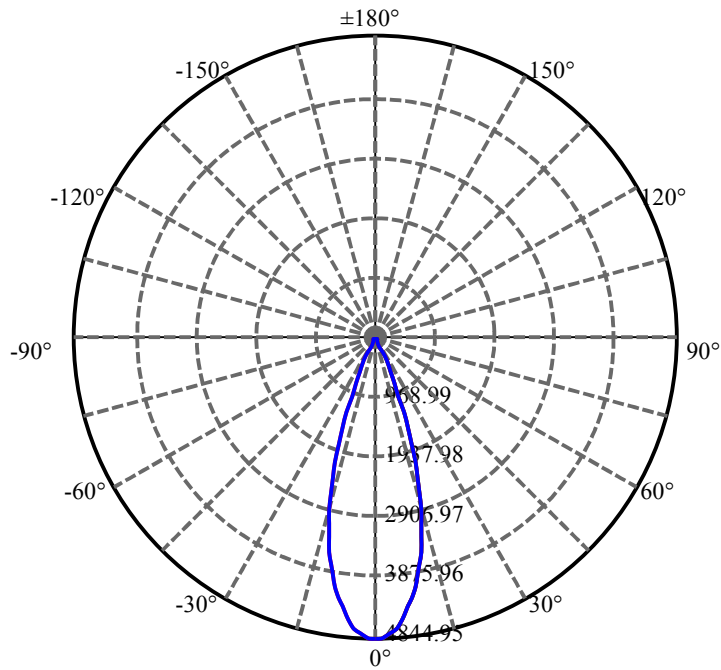
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	9.204	1.018	1455.71	.052%	99.238%
77.0	8.557	0.947	1456.657	.048%	99.303%
78.0	8.135	0.894	1457.551	.046%	99.364%
79.0	7.777	0.855	1458.406	.044%	99.422%
80.0	7.530	0.825	1459.231	.042%	99.478%
81.0	7.383	0.806	1460.038	.041%	99.533%
82.0	7.221	0.792	1460.83	.040%	99.587%
83.0	7.123	0.780	1461.609	.040%	99.641%
84.0	7.024	0.771	1462.38	.039%	99.693%
85.0	6.975	0.764	1463.144	.039%	99.745%
86.0	6.926	0.760	1463.904	.039%	99.797%
87.0	6.841	0.753	1464.657	.038%	99.848%
88.0	6.785	0.746	1465.404	.038%	99.899%
89.0	6.729	0.741	1466.144	.038%	99.950%
90.0	6.715	0.737	1466.882	.038%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1410.22	71.84%	96.14%
0-40	1419.00	72.29%	96.74%
0-60	1436.71	73.19%	97.94%
0-90	1466.14	74.69%	99.95%
0-120	1466.14	74.69%	99.95%
0-180	1466.88	74.73%	100.00%
60-90	30.49	1.55%	2.08%
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%
0-19.92	1173.51	59.78%	80.00%

ZONAL LUMEN SUMMARY

0-10	417.07
10-20	761.38
20-30	231.77
30-40	8.79
40-50	8.18
50-60	9.53
60-70	12.10
70-80	10.42
80-90	6.91
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: —————

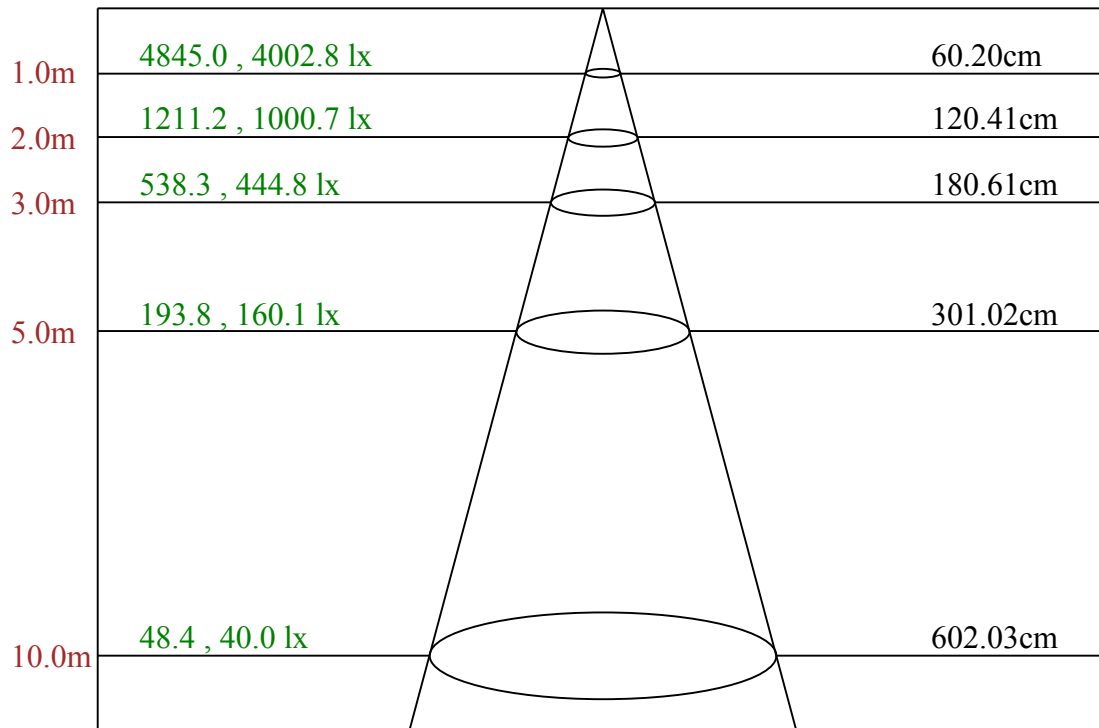
C90/C270: —————

Field angle(10%Imax):C0/180Left:24.6 Right:24.6

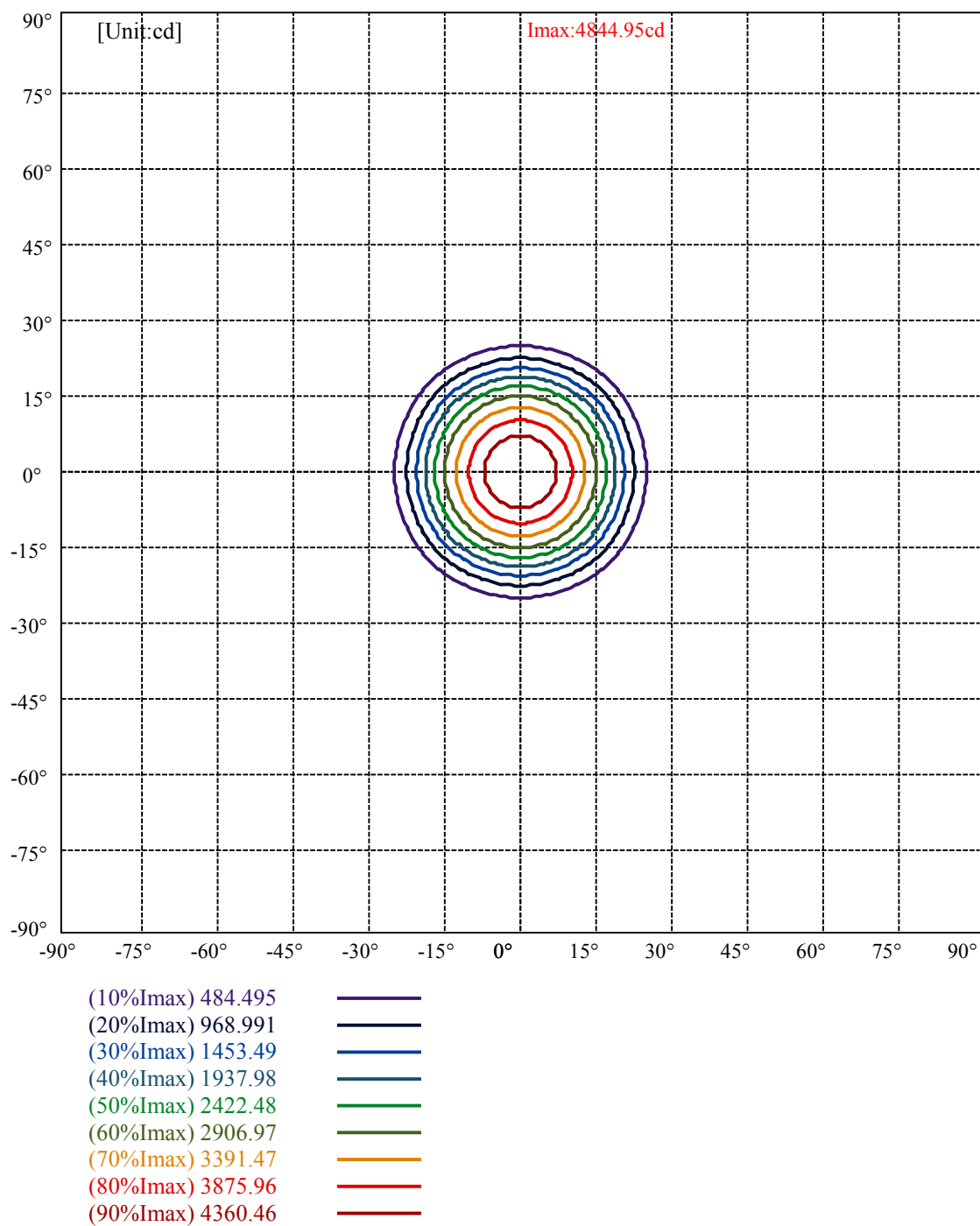
:C90/270Left:24.6 Right:24.6

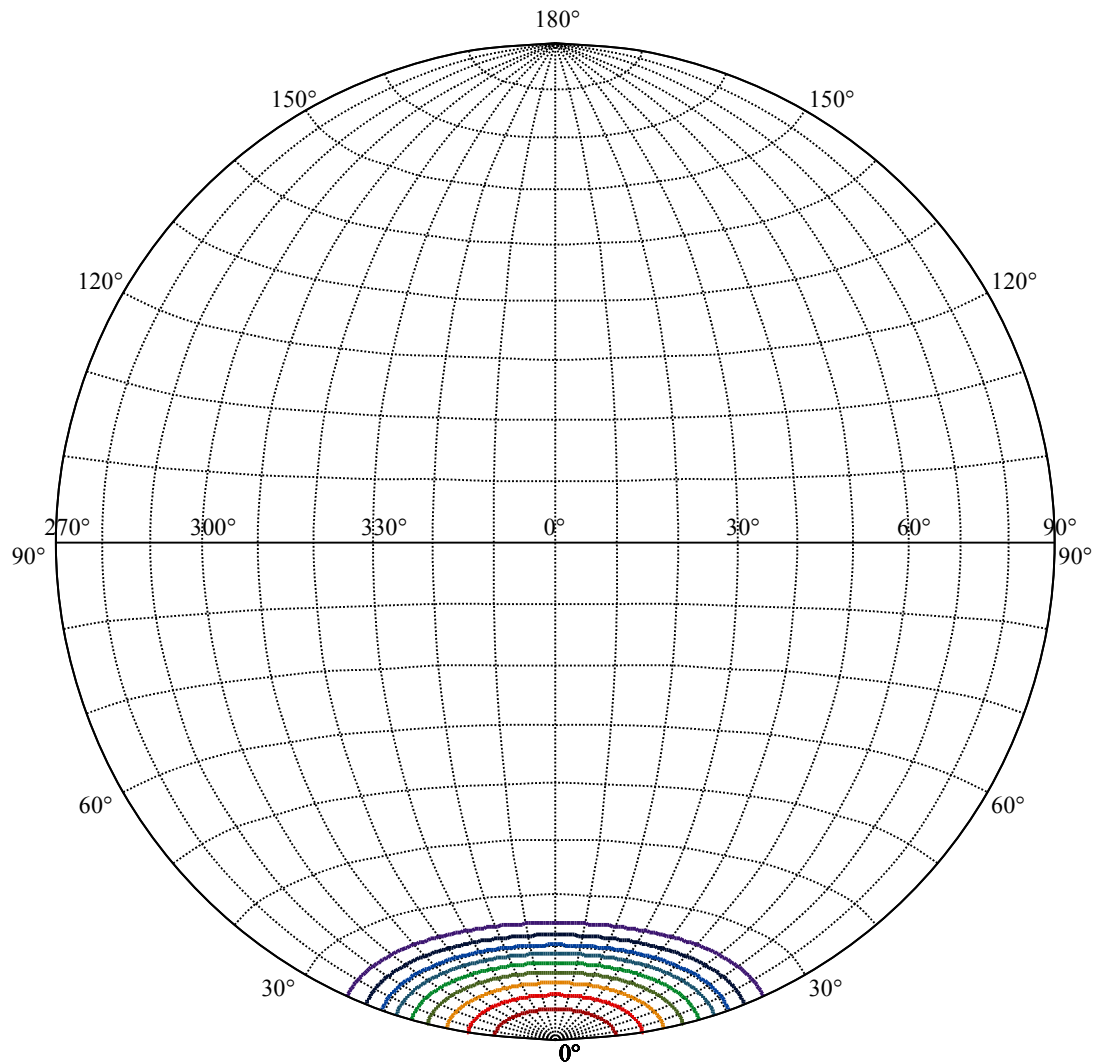
Beam Angle(50%Imax):C0/180Left:16.7 Right:16.7

:C90/270Left:16.7 Right:16.7



Max , Ave Beam angle of C0 plane 33.51





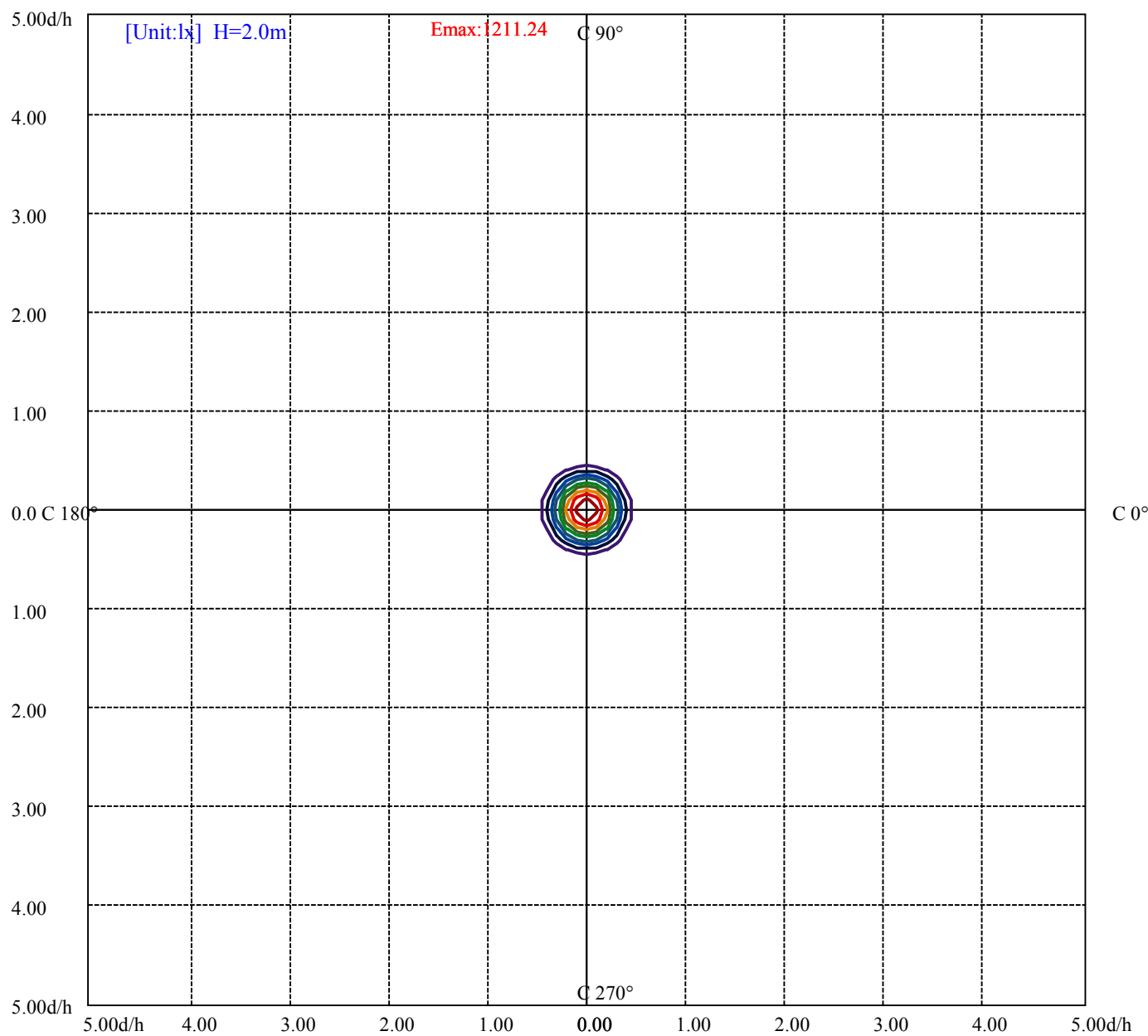
House

[Unit:cd]

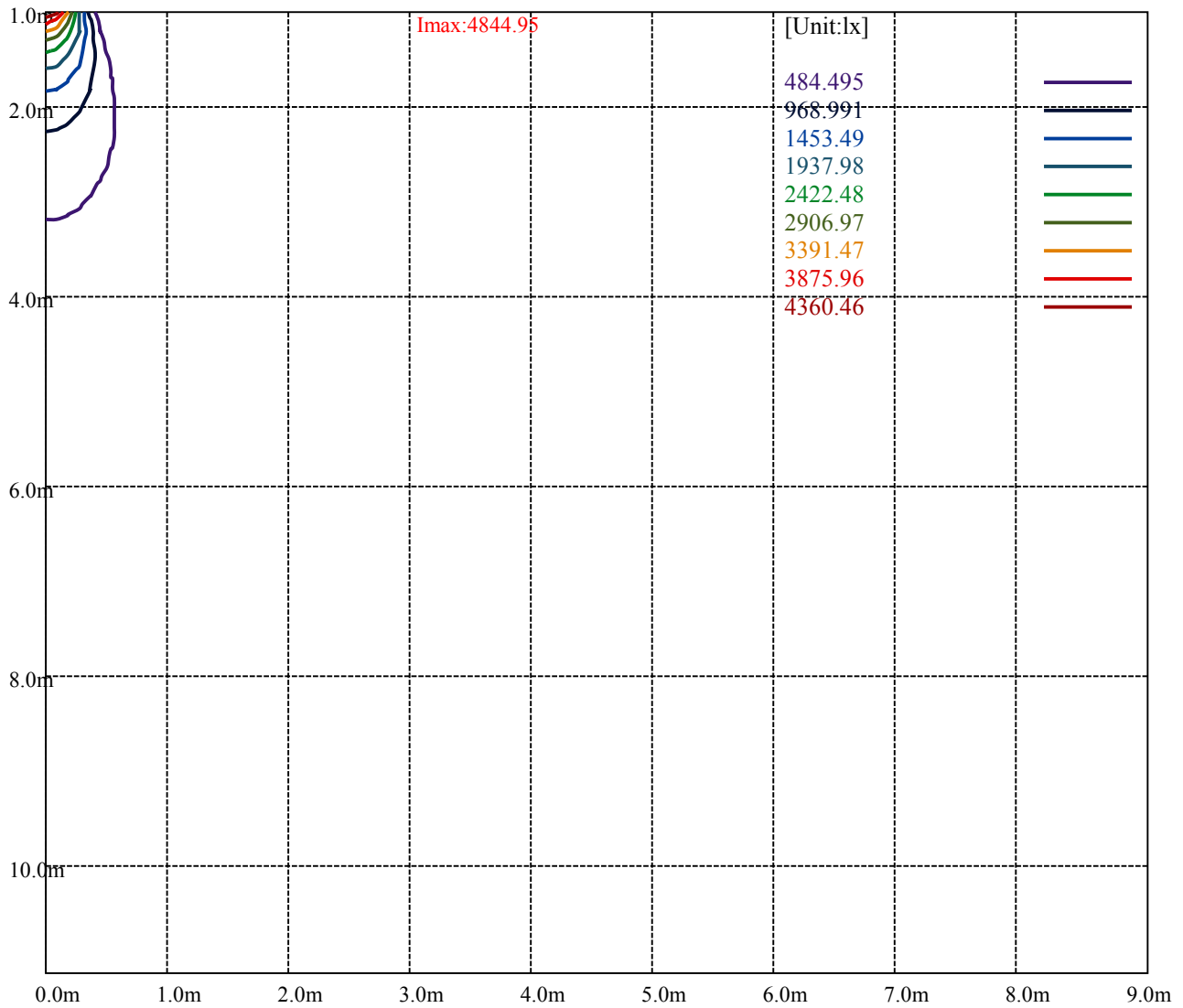
Road

Imax:4844.95

(10%Imax)	484.495	—
(20%Imax)	968.991	—
(30%Imax)	1453.49	—
(40%Imax)	1937.98	—
(50%Imax)	2422.48	—
(60%Imax)	2906.97	—
(70%Imax)	3391.47	—
(80%Imax)	3875.96	—
(90%Imax)	4360.46	—



(10%E _{max}) 121.1237	—
(20%E _{max}) 242.2475	—
(30%E _{max}) 363.3725	—
(40%E _{max}) 484.495	—
(50%E _{max}) 605.62	—
(60%E _{max}) 726.7425	—
(70%E _{max}) 847.8675	—
(80%E _{max}) 968.99	—
(90%E _{max}) 1090.115	—



Luminance Table

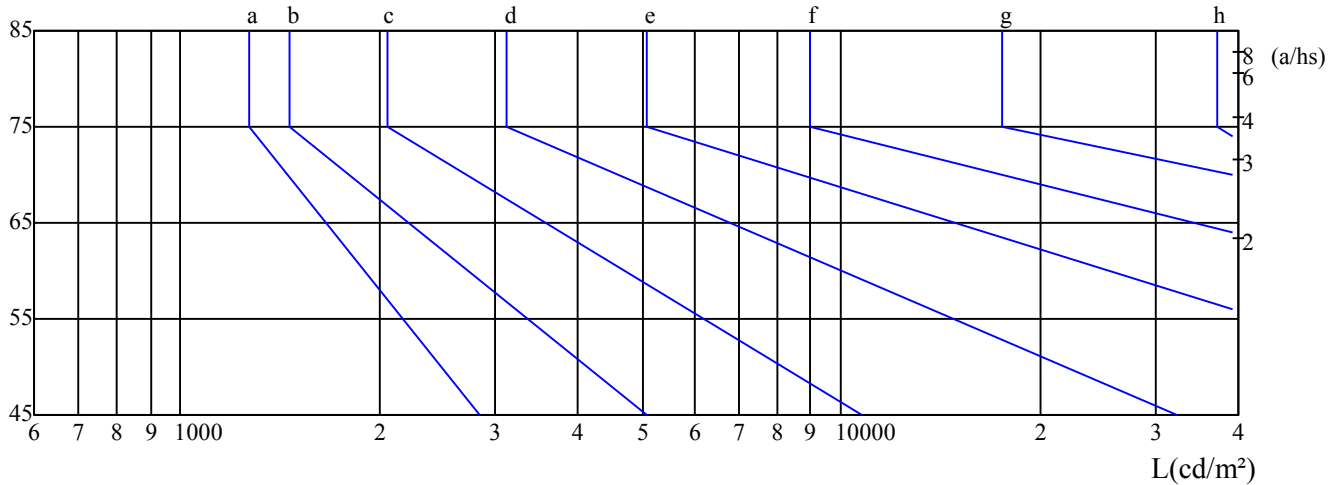
γ	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

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

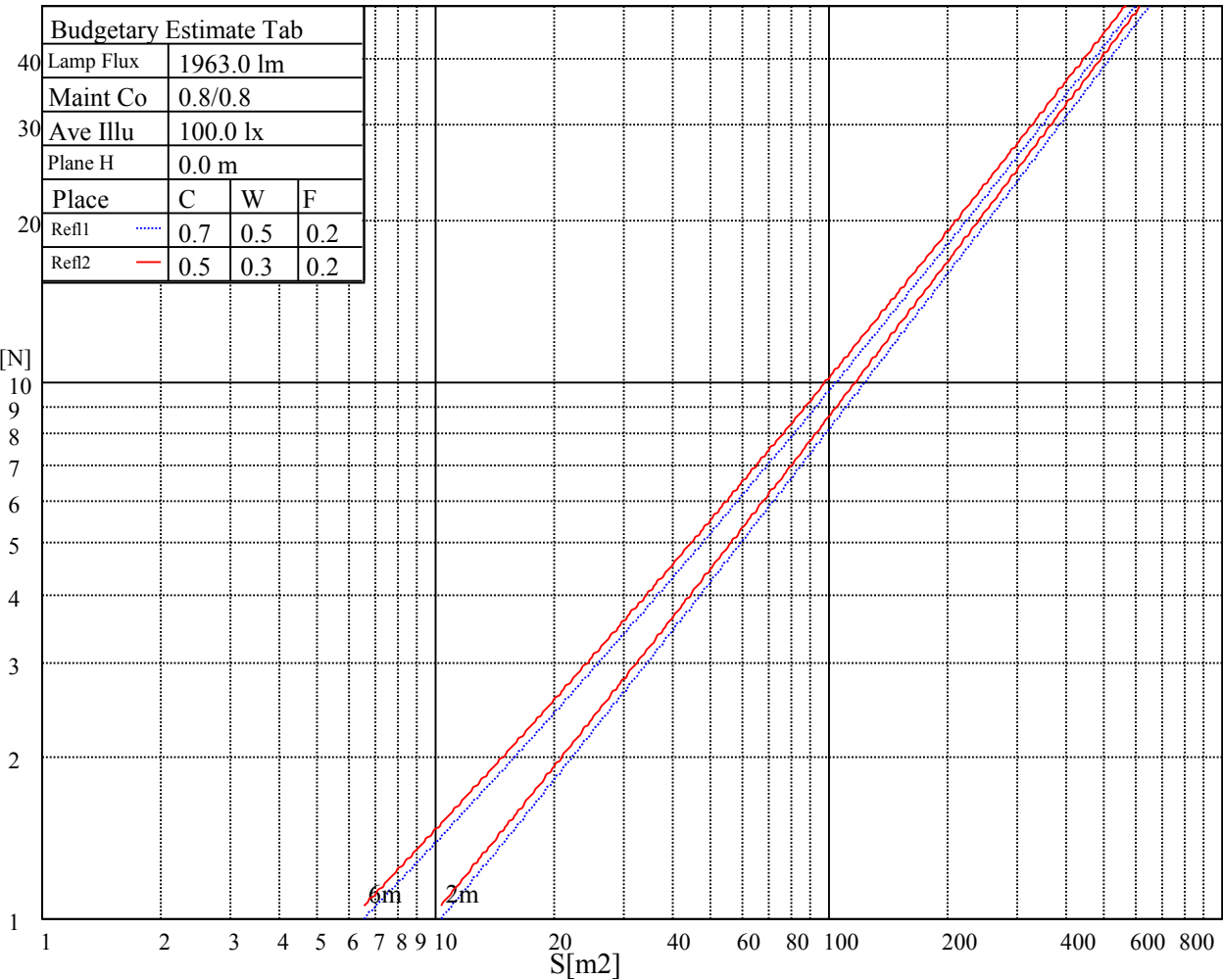
Luminance Limiting Curve

 $\gamma(^{\circ})$ 

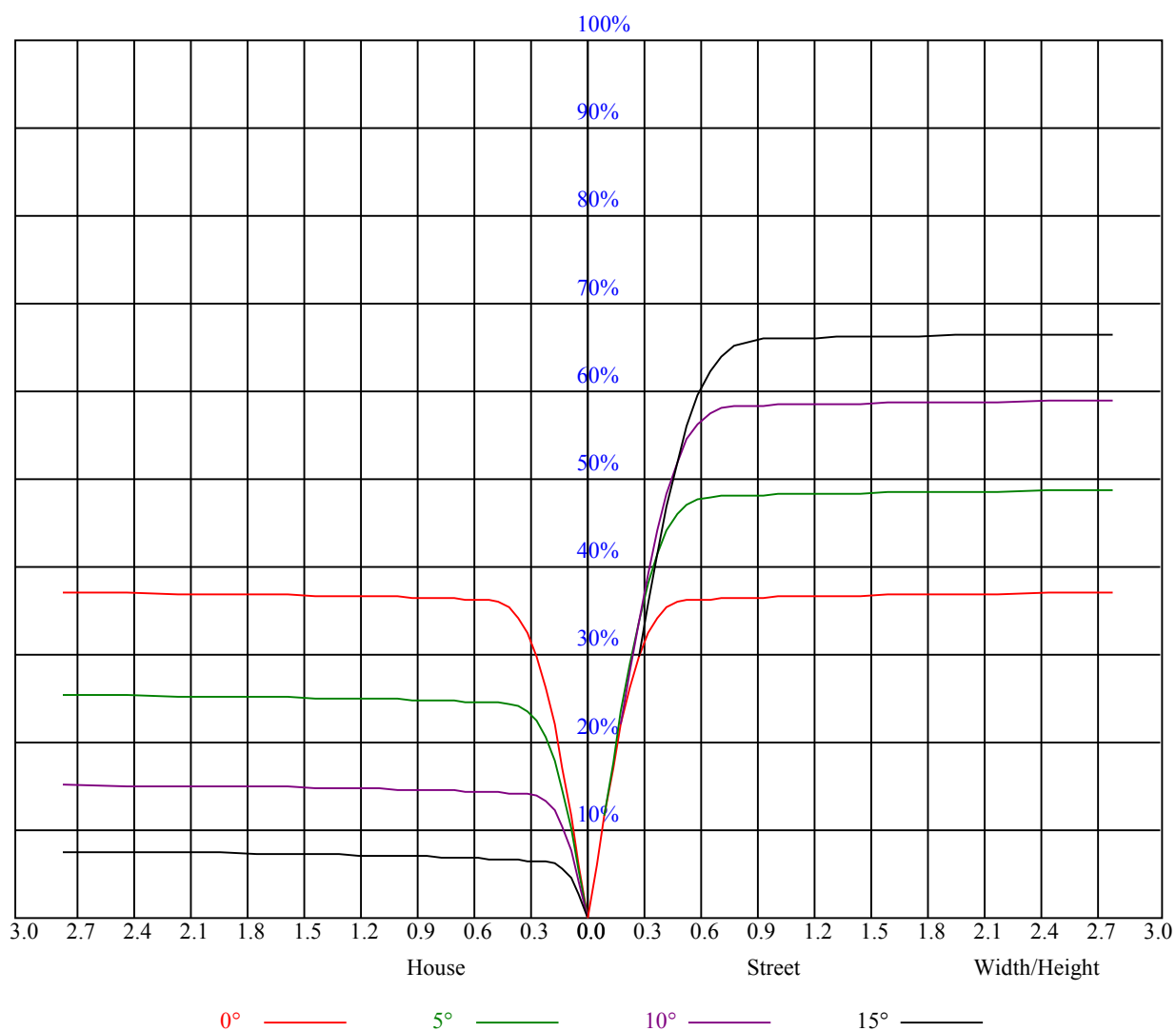
C0 ———

C45 ———

C90 ———



RHOC	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	0.89	0.89	0.89	0.87	0.87	0.87	0.83	0.83	0.83	0.79	0.79	0.79	0.76	0.76	0.76	0.75
1	0.84	0.82	0.81	0.82	0.81	0.80	0.79	0.78	0.77	0.77	0.76	0.75	0.74	0.73	0.73	0.71
2	0.80	0.77	0.75	0.78	0.76	0.74	0.76	0.74	0.73	0.74	0.72	0.71	0.72	0.71	0.70	0.69
3	0.76	0.73	0.71	0.75	0.72	0.70	0.73	0.71	0.69	0.71	0.70	0.68	0.70	0.68	0.67	0.66
4	0.73	0.70	0.67	0.72	0.69	0.67	0.71	0.68	0.66	0.69	0.67	0.65	0.68	0.66	0.65	0.64
5	0.70	0.67	0.64	0.69	0.66	0.64	0.68	0.66	0.64	0.67	0.65	0.63	0.66	0.64	0.63	0.62
6	0.68	0.64	0.62	0.67	0.64	0.62	0.66	0.63	0.61	0.65	0.63	0.61	0.64	0.62	0.61	0.60
7	0.65	0.62	0.60	0.65	0.62	0.60	0.64	0.61	0.59	0.63	0.61	0.59	0.62	0.60	0.59	0.58
8	0.63	0.60	0.58	0.63	0.60	0.58	0.62	0.59	0.57	0.61	0.59	0.57	0.61	0.59	0.57	0.56
9	0.61	0.58	0.56	0.61	0.58	0.56	0.60	0.58	0.56	0.60	0.57	0.55	0.59	0.57	0.55	0.55
10	0.59	0.56	0.54	0.59	0.56	0.54	0.59	0.56	0.54	0.58	0.56	0.54	0.58	0.55	0.54	0.53



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	4838.63	4848.75	4848.75	4831.31	4795.31	4737.94	4659.19	4564.69	4457.25
45.0	4847.06	4851.00	4841.44	4818.94	4773.38	4712.63	4621.50	4503.94	4385.81
90.0	4844.81	4831.88	4805.44	4741.88	4680.00	4593.38	4454.44	4330.13	4195.13
135.0	4849.31	4831.31	4797.00	4737.94	4665.38	4570.88	4443.75	4299.19	4155.75
180.0	4838.63	4804.88	4759.88	4681.13	4575.38	4463.44	4340.25	4163.06	4004.44
225.0	4847.06	4823.44	4780.69	4705.31	4621.50	4515.19	4366.69	4232.81	4083.19
270.0	4844.81	4842.56	4820.63	4789.13	4720.50	4640.63	4540.50	4398.75	4276.69
315.0	4849.31	4848.75	4836.38	4806.00	4745.25	4678.31	4576.50	4451.06	4330.69
360.0	4838.63	4848.75	4848.75	4831.31	4795.31	4737.94	4659.19	4564.69	4457.25
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	4308.19	4170.38	4016.81	3829.50	3634.31	3451.50	3229.88	2989.13	2763.00
45.0	4242.94	4076.44	3915.56	3747.38	3520.13	3329.44	3129.75	2881.13	2625.75
90.0	4021.88	3836.25	3660.75	3479.06	3240.00	3031.31	2810.25	2545.31	2271.38
135.0	3960.00	3791.81	3615.75	3430.13	3179.81	2961.56	2730.38	2449.13	2178.00
180.0	3834.00	3632.06	3424.50	3228.75	2990.25	2730.38	2491.31	2215.13	1971.00
225.0	3884.06	3713.06	3531.38	3289.50	3084.19	2865.38	2599.88	2352.94	2073.38
270.0	4134.38	3940.31	3772.13	3596.06	3364.88	3166.88	2954.81	2694.38	2422.13
315.0	4194.56	4005.56	3837.94	3645.00	3438.56	3246.19	3039.75	2787.75	2519.44
360.0	4308.19	4170.38	4016.81	3829.50	3634.31	3451.50	3229.88	2989.13	2763.00
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	2495.25	2251.13	1976.63	1698.19	1445.06	1167.19	935.44	692.44	498.38
45.0	2373.75	2090.81	1830.94	1593.00	1289.81	1060.31	826.31	597.94	415.13
90.0	2029.50	1751.63	1499.06	1107.34	963.96	750.66	531.68	340.37	204.47
135.0	1933.31	1647.00	1373.63	1137.94	847.69	646.88	442.13	294.75	149.79
180.0	1690.31	1405.69	1099.35	901.29	662.79	474.30	312.58	163.18	90.90
225.0	1801.13	1553.63	1102.05	1014.92	795.15	592.93	392.18	231.02	133.76
270.0	2178.00	1906.88	1630.13	1387.69	1125.56	902.25	668.81	460.69	300.38
315.0	2276.44	2004.19	1754.44	1473.19	1106.55	959.79	716.46	501.08	337.50
360.0	2495.25	2251.13	1976.63	1698.19	1445.06	1167.19	935.44	692.44	498.38
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	313.88	216.00	101.08	48.66	26.27	20.70	18.23	16.26	15.19
45.0	298.69	132.86	70.65	30.60	20.87	17.66	16.09	14.96	14.18
90.0	116.44	48.15	24.36	18.62	15.75	14.23	13.28	12.49	11.93
135.0	80.66	28.52	20.14	16.31	14.34	13.33	12.60	11.98	11.42
180.0	40.95	22.67	18.39	16.54	15.19	14.34	13.73	13.22	12.83
225.0	70.03	28.41	21.83	18.73	16.88	15.58	14.74	13.95	13.39
270.0	217.29	79.99	36.51	23.51	18.23	16.31	14.91	13.84	12.99
315.0	205.37	102.66	49.95	26.72	19.29	16.31	14.63	13.39	12.49
360.0	313.88	216.00	101.08	48.66	26.27	20.70	18.23	16.26	15.19
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	14.34	13.67	13.11	12.66	12.32	12.09	11.81	11.64	11.53
45.0	13.61	13.11	12.77	12.43	12.15	11.98	11.70	11.64	11.48
90.0	11.42	11.03	10.74	10.46	10.24	10.07	9.96	9.84	9.73
135.0	11.08	10.74	10.52	10.24	10.07	9.96	9.79	9.68	9.56
180.0	12.43	12.21	12.04	11.81	11.64	11.59	11.48	11.36	11.25
225.0	12.99	12.60	12.32	12.09	11.87	11.70	11.59	11.42	11.36
270.0	12.38	11.87	11.48	11.14	10.80	10.63	10.41	10.29	10.24
315.0	11.93	11.36	10.91	10.58	10.29	10.07	9.90	9.68	9.56
360.0	14.34	13.67	13.11	12.66	12.32	12.09	11.81	11.64	11.53

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	11.36	11.25	11.14	11.08	11.03	10.91	10.86	10.80	10.69
45.0	11.36	11.31	11.25	11.14	11.08	11.03	11.08	11.19	11.48
90.0	9.62	9.56	9.45	9.39	9.34	9.28	9.28	9.17	9.11
135.0	9.51	9.45	9.34	9.28	9.23	9.11	9.11	9.06	9.00
180.0	11.19	11.14	11.08	11.03	11.08	11.08	11.14	11.31	11.42
225.0	11.36	11.36	11.36	11.48	11.70	12.04	12.26	12.54	12.83
270.0	10.07	9.96	9.90	9.84	9.79	9.73	9.68	9.62	9.56
315.0	9.45	9.39	9.28	9.23	9.11	9.06	9.00	8.94	8.94
360.0	11.36	11.25	11.14	11.08	11.03	10.91	10.86	10.80	10.69
C/ γ (°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	10.69	10.69	10.69	10.80	10.91	11.03	11.14	11.36	11.59
45.0	11.76	12.04	12.38	12.77	13.22	13.89	14.74	15.69	16.71
90.0	9.11	9.06	9.00	8.94	8.89	8.89	8.83	8.83	8.83
135.0	8.94	8.94	8.89	8.83	8.78	8.72	8.66	8.66	8.61
180.0	11.59	11.81	11.98	12.15	12.38	12.60	12.88	13.28	13.61
225.0	13.16	13.56	13.95	14.46	15.02	15.64	16.26	17.21	17.89
270.0	9.51	9.51	9.45	9.34	9.28	9.23	9.17	9.11	9.11
315.0	8.89	8.83	8.83	8.78	8.66	8.66	8.66	8.61	8.55
360.0	10.69	10.69	10.69	10.80	10.91	11.03	11.14	11.36	11.59
C/ γ (°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	11.87	12.38	12.83	13.11	13.28	13.28	13.28	13.22	13.11
45.0	17.38	18.00	18.45	18.68	18.73	18.56	18.17	17.55	16.09
90.0	8.78	8.78	8.78	8.83	8.94	9.11	9.28	9.73	10.07
135.0	8.55	8.49	8.44	8.44	8.38	8.38	8.33	8.33	8.27
180.0	14.01	14.40	14.63	14.57	14.40	14.29	14.12	13.78	13.22
225.0	18.39	18.73	18.90	18.96	18.84	18.28	17.61	16.54	15.47
270.0	9.11	9.06	9.11	9.17	9.34	9.51	9.73	10.18	10.80
315.0	8.49	8.44	8.44	8.38	8.33	8.33	8.27	8.21	8.21
360.0	11.87	12.38	12.83	13.11	13.28	13.28	13.28	13.22	13.11
C/ γ (°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	12.88	12.32	11.87	11.48	10.74	10.07	9.06	8.44	8.10
45.0	14.85	13.67	12.38	10.74	9.51	8.27	7.93	7.71	7.48
90.0	10.18	10.18	10.41	10.13	9.28	8.55	7.76	7.54	7.37
135.0	8.27	8.21	8.16	8.10	8.04	7.88	7.71	7.48	7.31
180.0	12.54	12.04	10.97	9.90	8.61	7.93	7.65	7.43	7.26
225.0	14.23	13.22	11.64	9.96	8.49	7.93	7.71	7.48	7.31
270.0	11.03	11.08	11.31	11.31	10.80	9.73	9.23	8.21	7.65
315.0	8.21	8.21	8.16	8.16	8.16	8.10	8.04	7.93	7.76
360.0	12.88	12.32	11.87	11.48	10.74	10.07	9.06	8.44	8.10
C/ γ (°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	7.82	7.48	7.31	7.20	7.14	7.09	7.03	6.98	6.92
45.0	7.37	7.20	7.09	6.98	6.98	6.98	6.98	6.86	6.69
90.0	7.26	7.14	7.03	6.92	6.86	6.81	6.69	6.64	6.58
135.0	7.26	7.14	7.03	6.98	6.86	6.81	6.81	6.75	6.75
180.0	7.14	7.09	7.03	6.98	6.98	6.92	6.81	6.81	6.81
225.0	7.14	7.03	6.98	6.92	6.98	6.92	6.69	6.69	6.64
270.0	7.54	7.37	7.26	7.14	6.98	6.92	6.81	6.69	6.64
315.0	7.54	7.31	7.26	7.09	7.03	6.98	6.92	6.86	6.81
360.0	7.82	7.48	7.31	7.20	7.14	7.09	7.03	6.98	6.92

Intensity data(cd)

Appendix Page: 18 Total:18

C/ γ (°)	90.0
0.0	6.81
45.0	6.64
90.0	6.64
135.0	6.75
180.0	6.81
225.0	6.69
270.0	6.64
315.0	6.75
360.0	6.81