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Nata

LumCAT: 2-2077-M
Luminaire: 92.70.131.00
Report No: NATA0100
Test No: GC2019092503
LampCAT: BRIDGELUX V13B LES13
Lamp flux(lm): 1938.0
Number of Lamps: 1
Length(mm): 0
Phm Type: C

Voltage(V): 33.3000
Current(A): 0.3970
Power (W): 13.2000
PF: 0.0000
Ballast type: DC
Width(mm): 0
Height(mm): 0

Photometric Results

Lumens(lm): 1535.83
Efficiency(%): 79.25%
Lumens(lm)/Power(W): 116.35
Central intensity(cd): 8721.563
Maximum intensity(cd): 8721.563
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=22.8
[C90/270]Total=22.8
Field angle(10%Imax): [C0/180]Total=41.1
[C90/270]Total=41.1
Maximum s/h(1/2): C0_180=0.39 C90_270=0.39
Maximum s/h(1/4): C0_180=0.39 C90_270=0.39
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 79.25%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.519%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	8721.563	0.000	0	.000%	.000%
1.0	8690.133	8.331	8.331	.430%	.542%
2.0	8596.547	24.811	33.143	1.280%	2.158%
3.0	8399.953	40.650	73.793	2.098%	4.805%
4.0	8130.164	55.332	129.124	2.855%	8.407%
5.0	7781.977	68.453	197.577	3.532%	12.865%
6.0	7336.969	79.454	277.032	4.100%	18.038%
7.0	6819.750	87.871	364.902	4.534%	23.759%
8.0	6319.336	94.034	458.936	4.852%	29.882%
9.0	5737.008	97.710	556.646	5.042%	36.244%
10.0	5121.703	98.267	654.913	5.071%	42.642%
11.0	4587.539	97.015	751.929	5.006%	48.959%
12.0	4050.914	94.431	846.359	4.873%	55.108%
13.0	3496.078	89.564	935.923	4.621%	60.939%
14.0	3030.680	83.542	1019.465	4.311%	66.379%
15.0	2598.609	77.281	1096.747	3.988%	71.411%
16.0	2190.305	70.171	1166.918	3.621%	75.980%
17.0	1849.711	62.914	1229.831	3.246%	80.076%
18.0	1494.872	55.145	1284.976	2.845%	83.667%
19.0	1213.875	47.127	1332.103	2.432%	86.735%
20.0	1003.774	40.589	1372.692	2.094%	89.378%
21.0	771.061	34.080	1406.773	1.759%	91.597%
22.0	567.598	26.901	1433.673	1.388%	93.348%
23.0	405.359	20.415	1454.089	1.053%	94.678%
24.0	269.677	14.759	1468.847	.762%	95.639%
25.0	162.408	9.825	1478.672	.507%	96.278%
26.0	66.713	5.408	1484.08	.279%	96.631%
27.0	32.428	2.425	1486.506	.125%	96.788%
28.0	23.829	1.424	1487.93	.073%	96.881%
29.0	20.918	1.171	1489.101	.060%	96.957%
30.0	19.013	1.078	1490.179	.056%	97.028%
31.0	17.339	1.012	1491.191	.052%	97.094%
32.0	16.017	0.956	1492.146	.049%	97.156%
33.0	14.991	0.914	1493.06	.047%	97.215%
34.0	13.978	0.877	1493.937	.045%	97.272%
35.0	13.198	0.844	1494.78	.044%	97.327%
36.0	12.537	0.819	1495.6	.042%	97.381%
37.0	11.946	0.798	1496.398	.041%	97.433%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	11.405	0.779	1497.178	.040%	97.483%
39.0	10.948	0.763	1497.941	.039%	97.533%
40.0	10.575	0.751	1498.691	.039%	97.582%
41.0	10.223	0.741	1499.432	.038%	97.630%
42.0	9.949	0.733	1500.165	.038%	97.678%
43.0	9.668	0.727	1500.892	.037%	97.725%
44.0	9.450	0.722	1501.613	.037%	97.772%
45.0	9.246	0.719	1502.332	.037%	97.819%
46.0	9.049	0.715	1503.047	.037%	97.865%
47.0	8.880	0.713	1503.76	.037%	97.912%
48.0	8.740	0.712	1504.473	.037%	97.958%
49.0	8.599	0.712	1505.185	.037%	98.005%
50.0	8.466	0.711	1505.896	.037%	98.051%
51.0	8.367	0.712	1506.608	.037%	98.097%
52.0	8.248	0.713	1507.321	.037%	98.144%
53.0	8.156	0.714	1508.035	.037%	98.190%
54.0	8.065	0.715	1508.75	.037%	98.237%
55.0	7.988	0.717	1509.466	.037%	98.283%
56.0	7.924	0.719	1510.185	.037%	98.330%
57.0	7.847	0.721	1510.906	.037%	98.377%
58.0	7.784	0.723	1511.629	.037%	98.424%
59.0	7.720	0.725	1512.354	.037%	98.471%
60.0	7.671	0.727	1513.081	.038%	98.519%
61.0	7.622	0.730	1513.811	.038%	98.566%
62.0	7.587	0.733	1514.544	.038%	98.614%
63.0	7.545	0.736	1515.28	.038%	98.662%
64.0	7.481	0.737	1516.017	.038%	98.710%
65.0	7.467	0.740	1516.757	.038%	98.758%
66.0	7.425	0.743	1517.5	.038%	98.807%
67.0	7.390	0.745	1518.245	.038%	98.855%
68.0	7.355	0.747	1518.992	.039%	98.904%
69.0	7.327	0.749	1519.741	.039%	98.952%
70.0	7.313	0.752	1520.492	.039%	99.001%
71.0	7.298	0.755	1521.248	.039%	99.051%
72.0	7.270	0.758	1522.005	.039%	99.100%
73.0	7.235	0.759	1522.764	.039%	99.149%
74.0	7.235	0.761	1523.524	.039%	99.199%
75.0	7.200	0.763	1524.287	.039%	99.248%

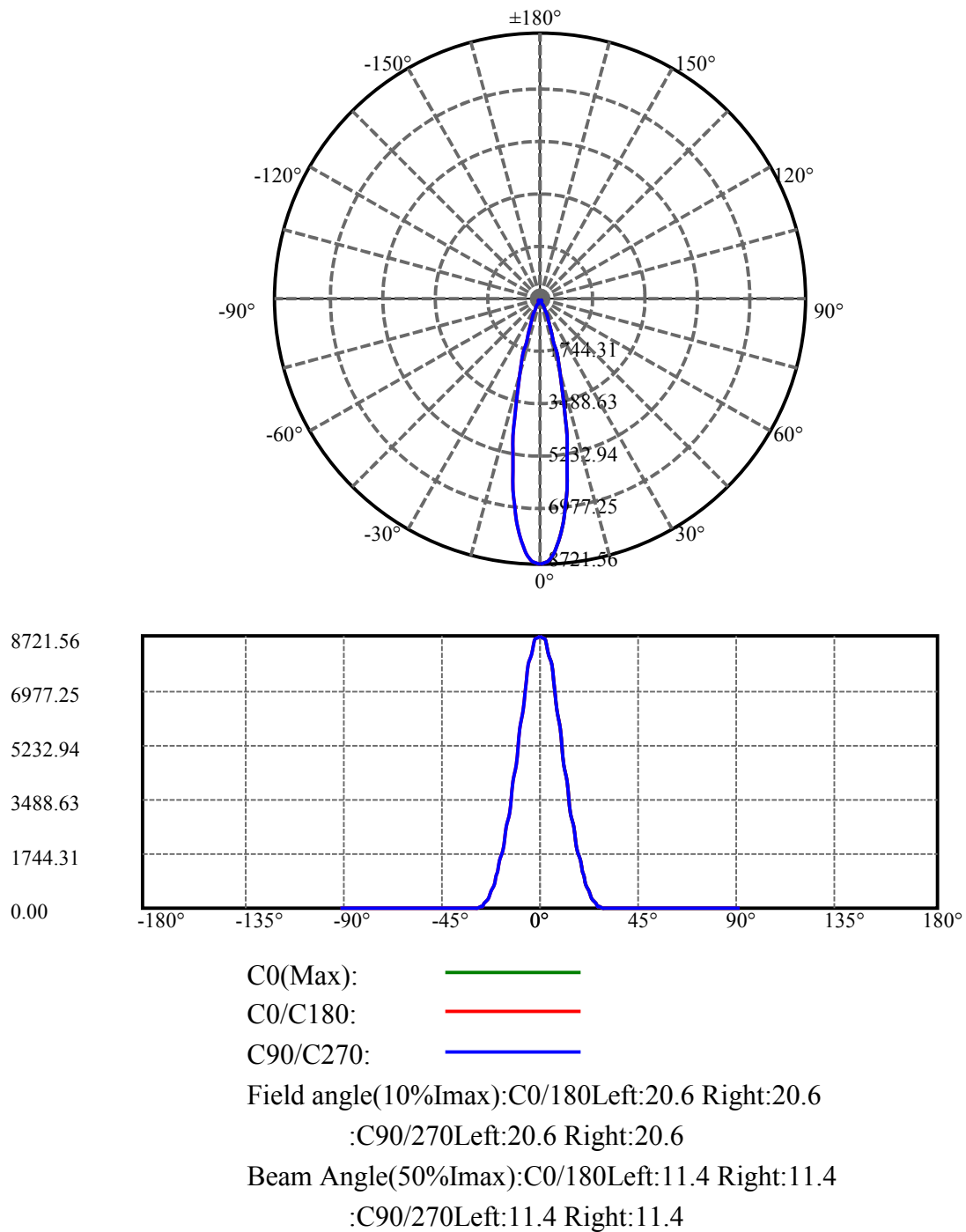
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	7.179	0.763	1525.05	.039%	99.298%
77.0	7.172	0.765	1525.816	.039%	99.348%
78.0	7.172	0.768	1526.583	.040%	99.398%
79.0	7.144	0.769	1527.353	.040%	99.448%
80.0	7.137	0.770	1528.122	.040%	99.498%
81.0	7.123	0.771	1528.894	.040%	99.548%
82.0	7.116	0.772	1529.666	.040%	99.599%
83.0	7.102	0.773	1530.439	.040%	99.649%
84.0	7.102	0.774	1531.212	.040%	99.699%
85.0	7.080	0.774	1531.986	.040%	99.750%
86.0	7.059	0.773	1532.759	.040%	99.800%
87.0	7.010	0.770	1533.529	.040%	99.850%
88.0	6.996	0.767	1534.296	.040%	99.900%
89.0	6.989	0.767	1535.063	.040%	99.950%
90.0	6.989	0.766	1535.829	.040%	100.000%

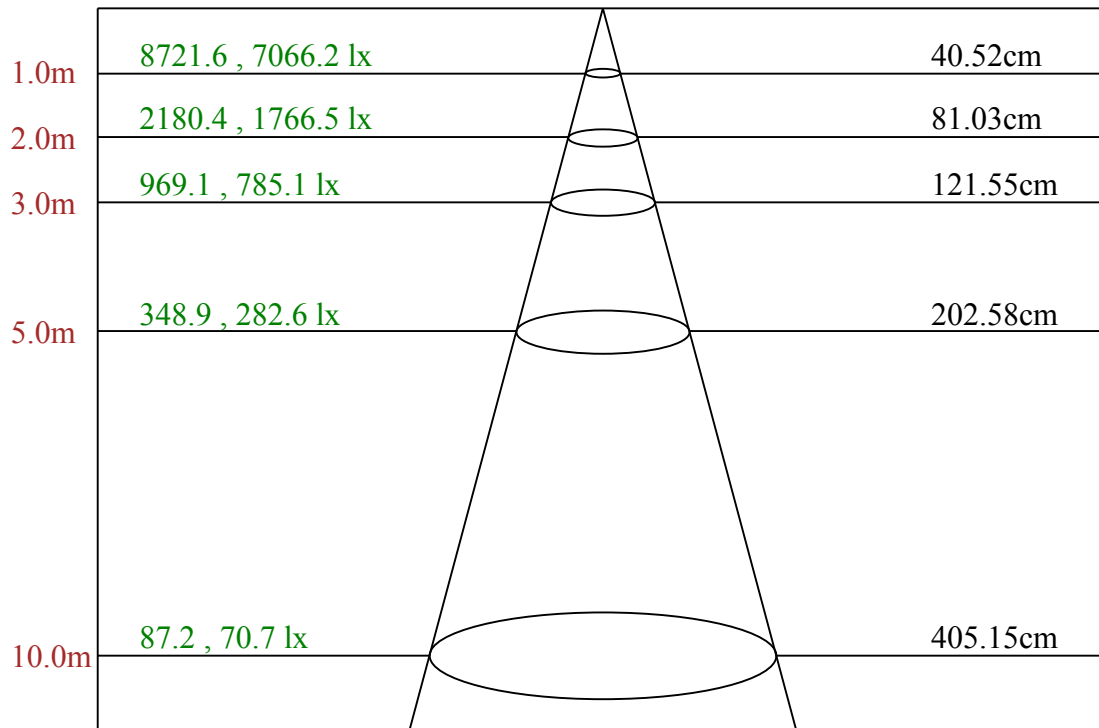
ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1490.18	76.89%	97.03%
0-40	1498.69	77.33%	97.58%
0-60	1513.08	78.07%	98.52%
0-90	1535.06	79.21%	99.95%
0-120	1535.06	79.21%	99.95%
0-180	1535.83	79.25%	100.00%
60-90	22.71	1.17%	1.48%
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%
0-16.98	1228.66	63.40%	80.00%

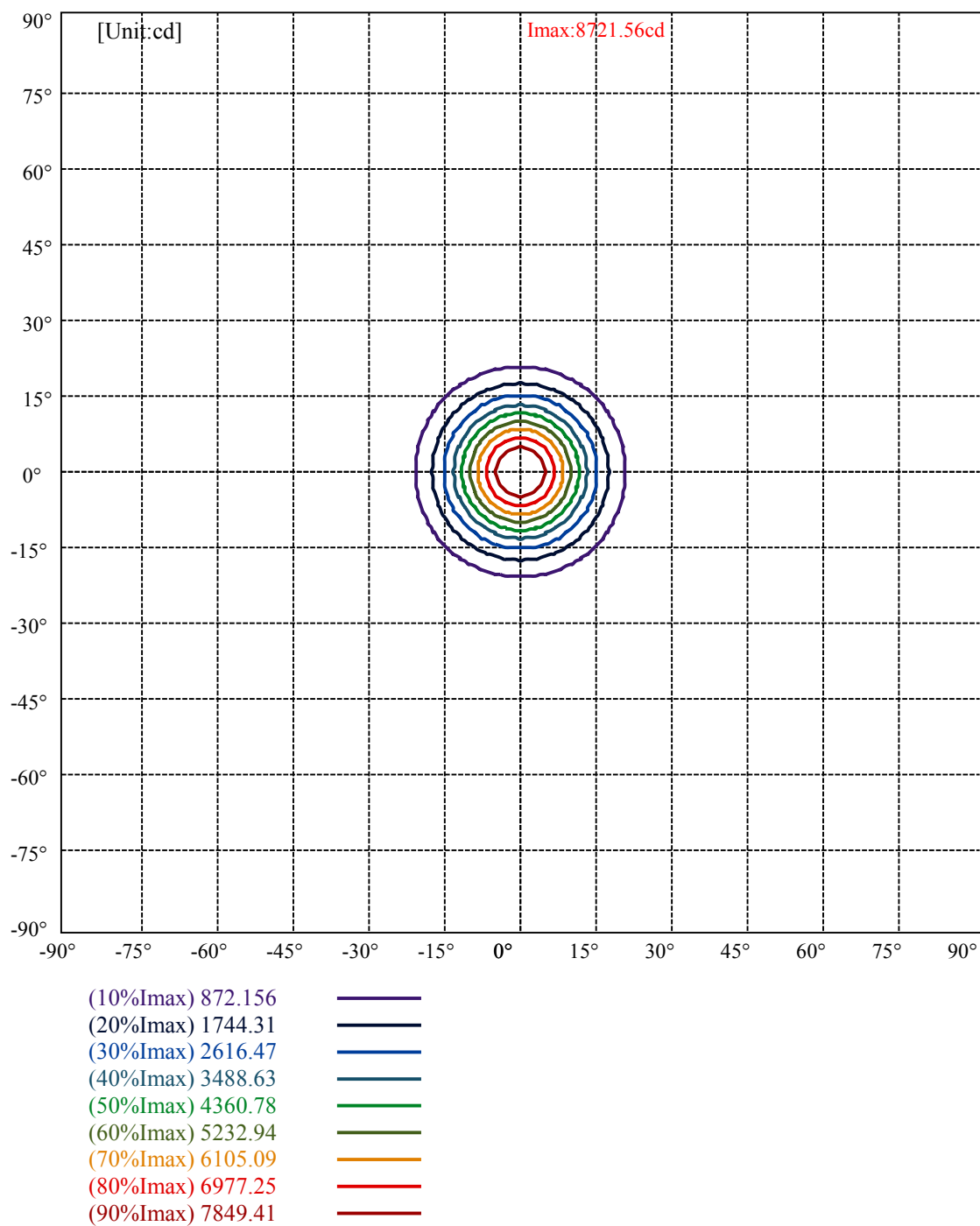
ZONAL LUMEN SUMMARY

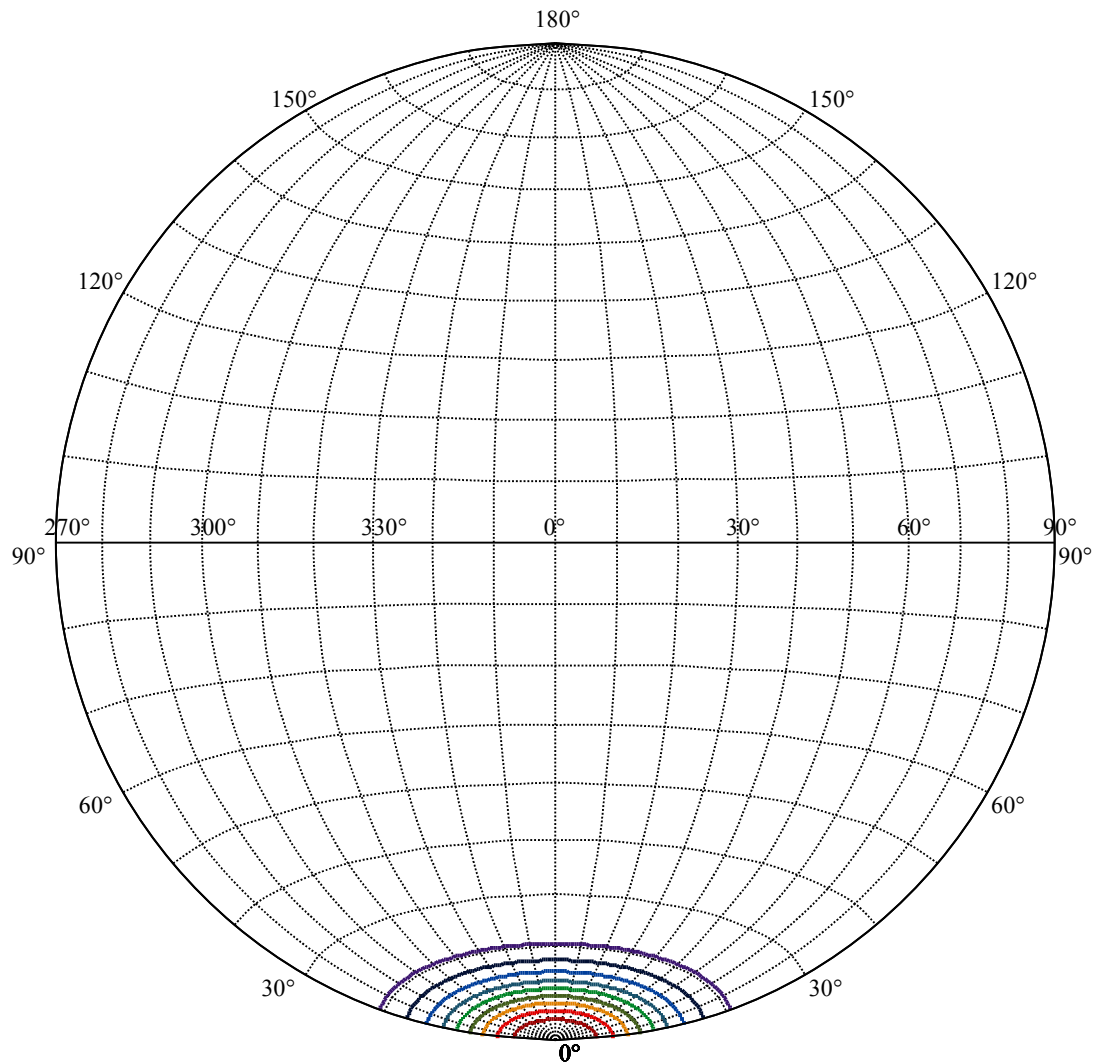
0-10	654.91
10-20	717.78
20-30	117.49
30-40	8.51
40-50	7.20
50-60	7.19
60-70	7.41
70-80	7.63
80-90	6.94
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00





Max , Ave Beam angle of C0 plane 22.90





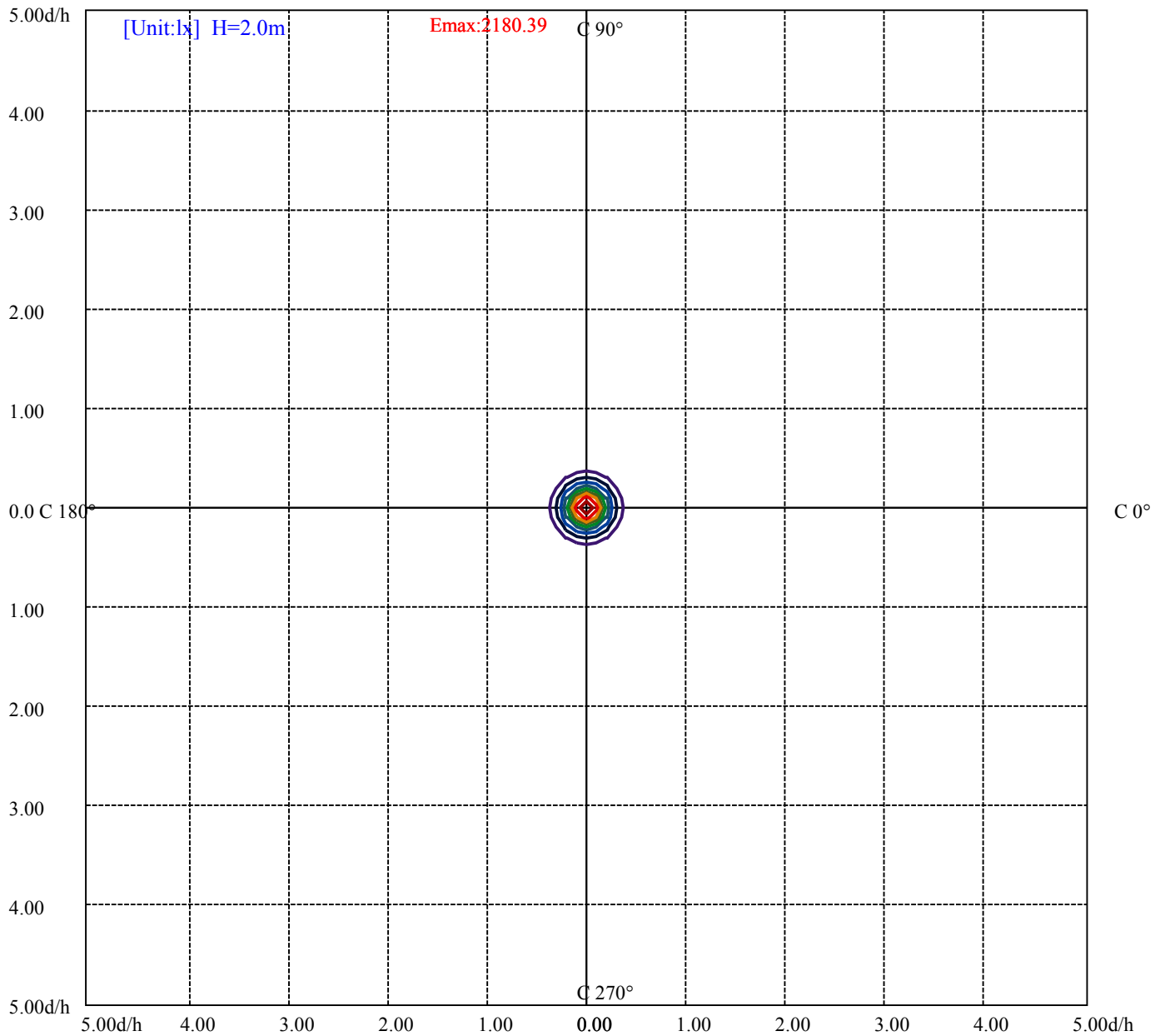
House

[Unit:cd]

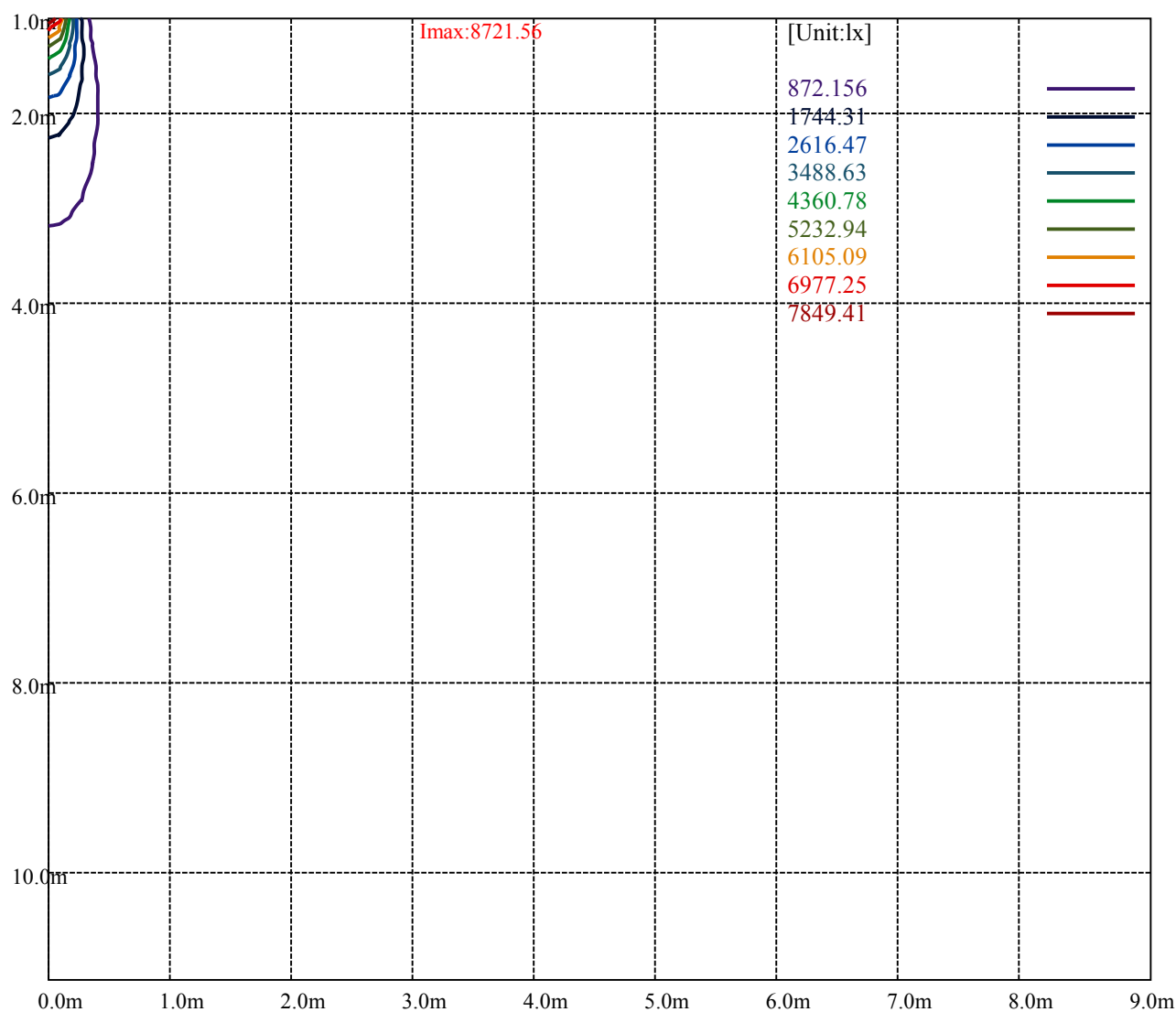
Road

Imax:8721.56

(10%Imax)	872.156	—
(20%Imax)	1744.31	—
(30%Imax)	2616.47	—
(40%Imax)	3488.63	—
(50%Imax)	4360.78	—
(60%Imax)	5232.94	—
(70%Imax)	6105.09	—
(80%Imax)	6977.25	—
(90%Imax)	7849.41	—



(10%Emax) 218.039	—
(20%Emax) 436.0775	—
(30%Emax) 654.1175	—
(40%Emax) 872.155	—
(50%Emax) 1090.195	—
(60%Emax) 1308.233	—
(70%Emax) 1526.272	—
(80%Emax) 1744.313	—
(90%Emax) 1962.35	—



Luminance Table

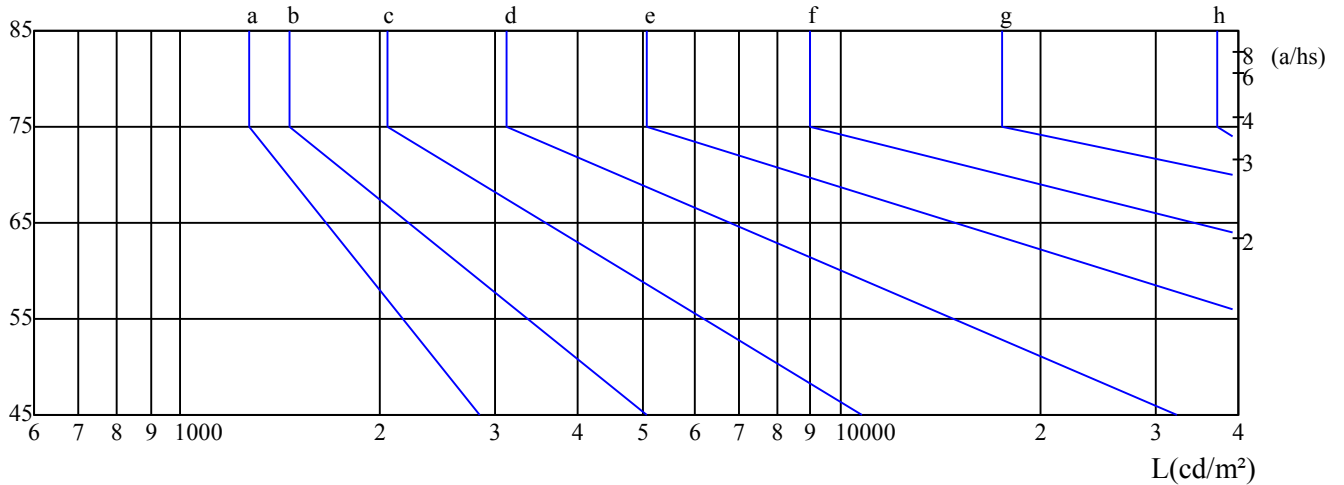
γ	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

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

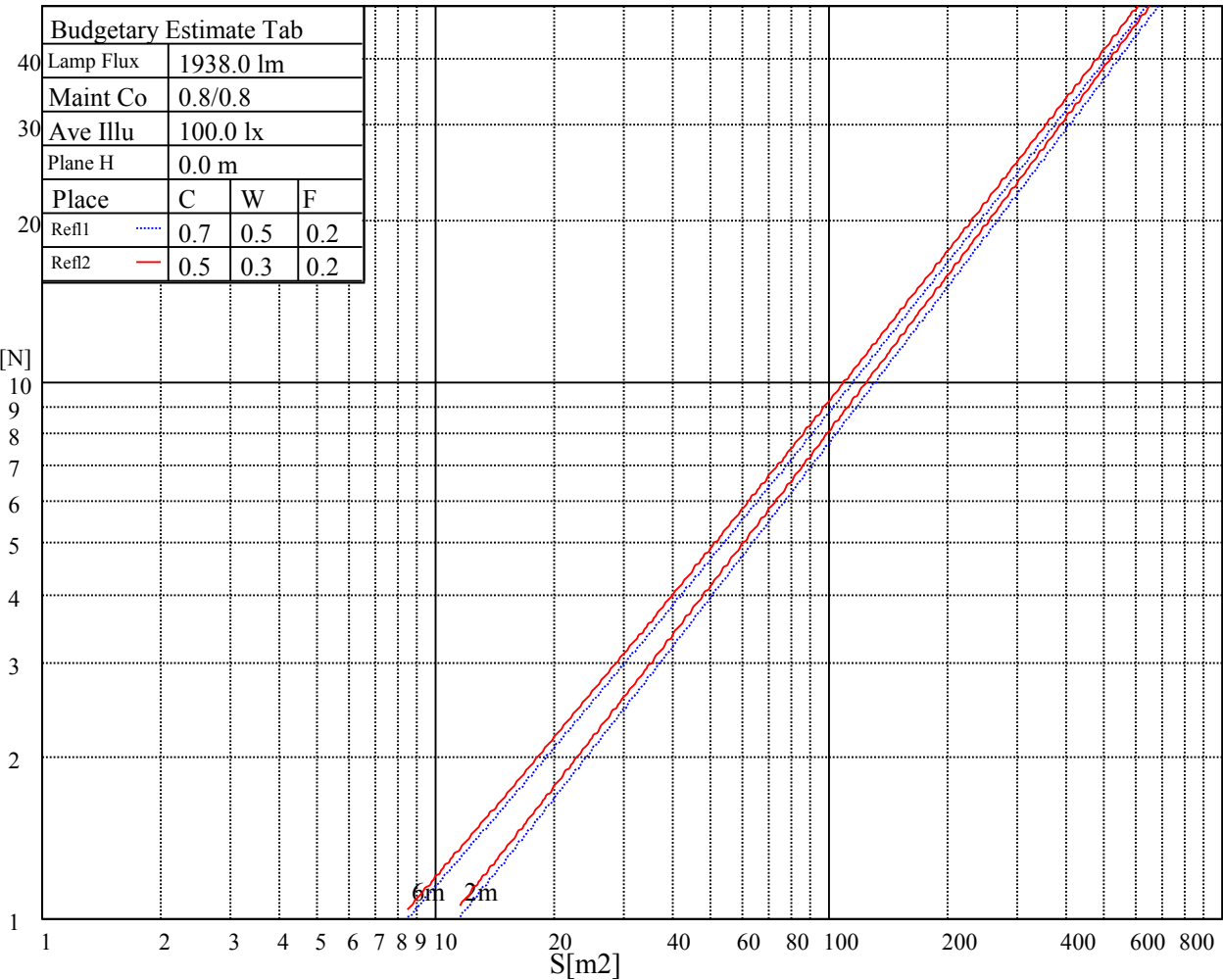
Luminance Limiting Curve

 $\gamma(^{\circ})$ 

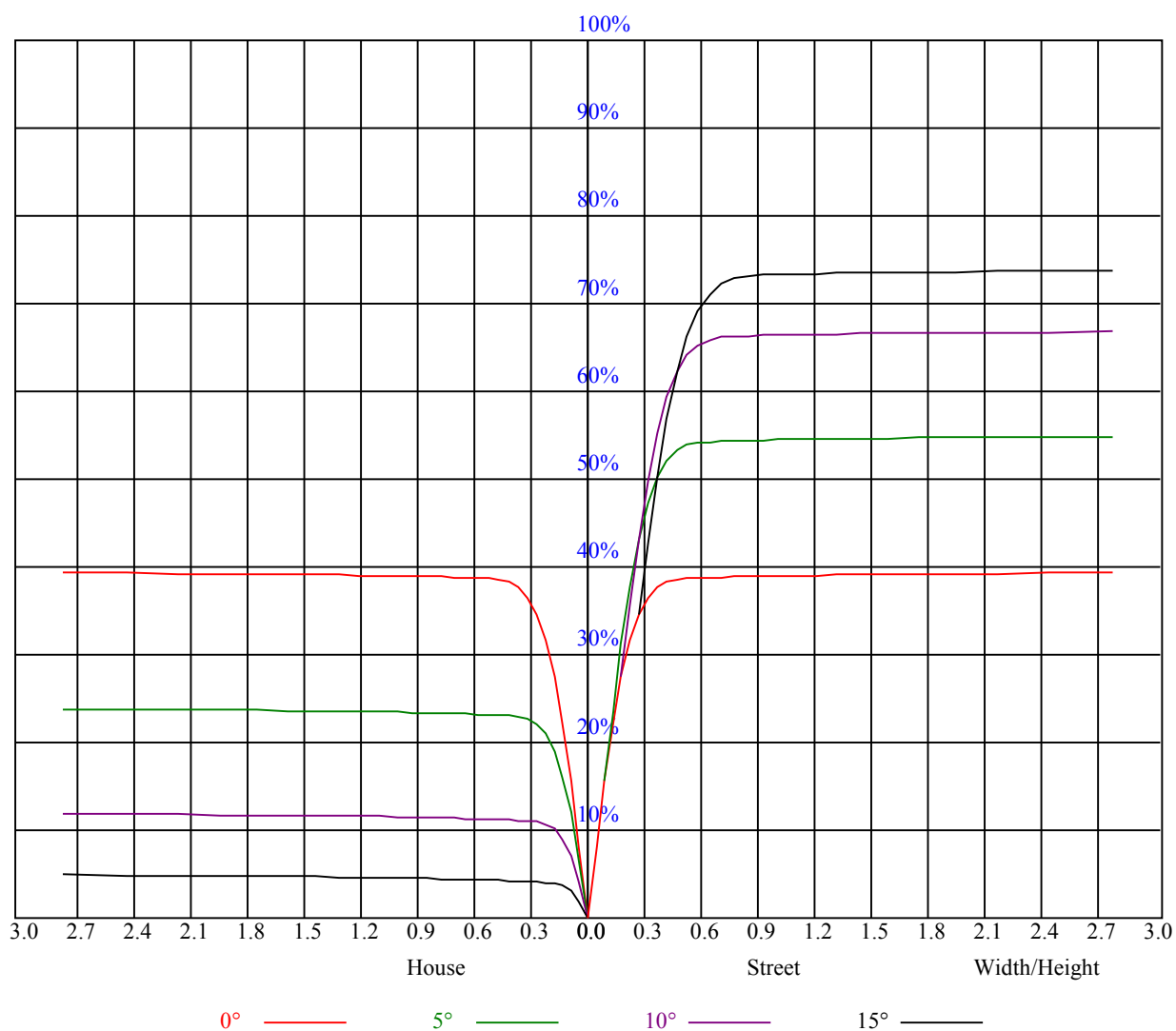
C0 ———

C45 ———

C90 ———



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	0.94	0.94	0.94	0.92	0.92	0.92	0.88	0.88	0.88	0.84	0.84	0.84	0.81	0.81	0.81	0.79
1	0.89	0.88	0.87	0.88	0.86	0.85	0.85	0.84	0.83	0.82	0.81	0.80	0.79	0.78	0.78	0.77
2	0.86	0.83	0.81	0.84	0.82	0.80	0.82	0.80	0.79	0.80	0.78	0.77	0.77	0.76	0.75	0.74
3	0.82	0.80	0.77	0.81	0.79	0.77	0.79	0.77	0.76	0.78	0.76	0.74	0.76	0.75	0.73	0.72
4	0.79	0.77	0.74	0.79	0.76	0.74	0.77	0.75	0.73	0.76	0.74	0.72	0.74	0.73	0.71	0.71
5	0.77	0.74	0.72	0.76	0.74	0.71	0.75	0.73	0.71	0.74	0.72	0.70	0.73	0.71	0.70	0.69
6	0.75	0.72	0.70	0.74	0.71	0.69	0.73	0.71	0.69	0.72	0.70	0.68	0.71	0.70	0.68	0.67
7	0.73	0.70	0.68	0.72	0.69	0.67	0.71	0.69	0.67	0.71	0.68	0.67	0.70	0.68	0.67	0.66
8	0.71	0.68	0.66	0.71	0.68	0.66	0.70	0.67	0.66	0.69	0.67	0.65	0.69	0.67	0.65	0.64
9	0.69	0.66	0.64	0.69	0.66	0.64	0.68	0.66	0.64	0.68	0.66	0.64	0.67	0.65	0.64	0.63
10	0.68	0.65	0.63	0.67	0.65	0.63	0.67	0.64	0.63	0.66	0.64	0.63	0.66	0.64	0.62	0.62



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	8731.13	8708.63	8615.81	8435.81	8190.00	7864.88	7365.38	6912.56	6422.63
45.0	8712.00	8722.13	8674.88	8544.94	8322.19	8026.31	7664.63	7175.81	6709.50
90.0	8725.50	8712.00	8630.44	8438.63	8200.69	7882.88	7387.88	6926.63	6431.63
135.0	8717.63	8727.75	8668.13	8533.13	8305.88	7982.44	7615.69	7106.63	6627.94
180.0	8731.13	8691.19	8602.88	8391.94	8095.50	7754.63	7279.88	6737.06	6208.88
225.0	8712.00	8632.69	8502.75	8219.25	7901.44	7507.69	7000.88	6454.13	5929.88
270.0	8725.50	8684.44	8561.25	8364.94	8065.69	7671.38	7245.00	6712.31	6208.88
315.0	8717.63	8642.25	8516.25	8271.00	7959.94	7565.63	7136.44	6532.88	6015.38
360.0	8731.13	8708.63	8615.81	8435.81	8190.00	7864.88	7365.38	6912.56	6422.63
C/ γ (°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	5770.13	5239.13	4706.44	4118.63	3567.94	3110.63	2638.69	2259.00	1874.81
45.0	6135.19	5535.00	4992.19	4457.25	3818.81	3343.50	2910.94	2420.44	2067.19
90.0	5765.06	5218.88	4682.25	4113.00	3624.19	3116.25	2610.00	2287.13	1942.88
135.0	6116.63	5445.00	4910.06	4377.38	3757.50	3290.63	2862.56	2386.69	2042.44
180.0	5670.00	4993.31	4460.63	3961.69	3381.19	2946.38	2555.44	2149.31	1784.81
225.0	5333.63	4718.81	4193.44	3641.63	3192.75	2718.56	2295.56	1952.44	1647.00
270.0	5626.13	5015.81	4483.13	3970.69	3380.06	2941.31	2532.38	2082.38	1760.06
315.0	5479.31	4807.69	4272.19	3767.06	3246.19	2778.19	2383.31	1985.06	1678.50
360.0	5770.13	5239.13	4706.44	4118.63	3567.94	3110.63	2638.69	2259.00	1874.81
C/ γ (°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1542.38	1287.00	1024.31	785.81	601.31	437.06	297.56	151.65	71.49
45.0	1743.75	1423.69	1144.13	928.13	695.81	518.06	343.69	291.94	106.26
90.0	1524.94	1119.15	1058.68	810.23	594.96	434.19	294.47	155.42	76.28
135.0	1720.13	1402.88	1133.44	912.38	680.06	483.19	326.25	292.50	99.56
180.0	1487.81	1110.99	971.44	732.26	529.20	375.81	233.94	122.34	54.51
225.0	1099.91	1071.79	853.88	609.47	444.04	299.76	170.83	80.10	36.00
270.0	1471.50	1195.88	964.13	733.50	532.13	377.44	293.06	114.75	49.95
315.0	1368.56	1099.63	880.20	656.72	463.28	317.36	197.61	90.56	39.66
360.0	1542.38	1287.00	1024.31	785.81	601.31	437.06	297.56	151.65	71.49
C/ γ (°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	32.01	24.19	21.66	19.74	17.83	16.59	15.47	14.40	13.44
45.0	43.99	26.49	22.16	19.97	18.23	16.65	15.53	14.46	13.61
90.0	34.54	24.58	21.32	19.24	17.49	16.20	15.19	14.18	13.44
135.0	41.40	25.26	21.71	19.52	17.66	16.26	15.30	14.06	13.39
180.0	27.56	22.39	19.74	18.06	16.71	15.30	14.40	13.61	12.71
225.0	25.59	21.94	19.58	17.94	16.48	15.24	14.18	13.39	12.71
270.0	27.73	23.34	20.93	19.07	17.27	16.09	15.08	13.95	13.22
315.0	26.61	22.44	20.25	18.56	17.04	15.81	14.79	13.78	13.05
360.0	32.01	24.19	21.66	19.74	17.83	16.59	15.47	14.40	13.44
C/ γ (°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	12.77	12.09	11.53	11.03	10.63	10.29	10.01	9.73	9.51
45.0	12.99	12.43	11.76	11.31	10.97	10.52	10.18	9.96	9.68
90.0	12.71	12.09	11.59	11.08	10.69	10.35	10.07	9.79	9.56
135.0	12.71	12.04	11.53	11.08	10.69	10.35	10.01	9.73	9.51
180.0	12.15	11.64	11.14	10.74	10.35	10.01	9.79	9.51	9.28
225.0	12.04	11.53	11.08	10.58	10.24	9.96	9.73	9.45	9.28
270.0	12.54	11.98	11.36	10.97	10.63	10.24	9.96	9.68	9.45
315.0	12.38	11.76	11.25	10.80	10.41	10.07	9.84	9.51	9.34
360.0	12.77	12.09	11.53	11.03	10.63	10.29	10.01	9.73	9.51

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	9.28	9.06	8.89	8.78	8.61	8.49	8.38	8.21	8.16
45.0	9.45	9.28	9.06	8.94	8.78	8.61	8.55	8.38	8.27
90.0	9.34	9.11	8.94	8.83	8.66	8.55	8.38	8.33	8.21
135.0	9.28	9.11	8.94	8.78	8.61	8.49	8.38	8.27	8.16
180.0	9.11	8.94	8.78	8.61	8.55	8.38	8.27	8.16	8.10
225.0	9.06	8.89	8.72	8.61	8.49	8.33	8.27	8.16	8.10
270.0	9.28	9.06	8.94	8.78	8.61	8.49	8.38	8.27	8.16
315.0	9.17	8.94	8.78	8.61	8.49	8.38	8.33	8.21	8.10
360.0	9.28	9.06	8.89	8.78	8.61	8.49	8.38	8.21	8.16
C/ γ (°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	8.10	7.99	7.93	7.82	7.76	7.71	7.65	7.59	7.59
45.0	8.16	8.10	8.04	7.99	7.93	7.82	7.76	7.71	7.71
90.0	8.10	8.04	7.99	7.88	7.82	7.76	7.71	7.65	7.59
135.0	8.10	7.99	7.93	7.88	7.82	7.71	7.71	7.65	7.59
180.0	7.99	7.93	7.82	7.76	7.71	7.65	7.59	7.54	7.54
225.0	7.99	7.93	7.88	7.82	7.71	7.71	7.65	7.59	7.54
270.0	8.10	7.99	7.93	7.82	7.82	7.76	7.71	7.65	7.59
315.0	7.99	7.93	7.88	7.82	7.71	7.65	7.59	7.59	7.54
360.0	8.10	7.99	7.93	7.82	7.76	7.71	7.65	7.59	7.59
C/ γ (°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	7.54	7.48	7.43	7.43	7.37	7.31	7.31	7.31	7.31
45.0	7.65	7.59	7.59	7.54	7.48	7.48	7.43	7.43	7.43
90.0	7.54	7.48	7.48	7.43	7.43	7.37	7.31	7.31	7.31
135.0	7.54	7.48	7.48	7.43	7.37	7.37	7.31	7.31	7.26
180.0	7.48	7.43	7.43	7.37	7.31	7.31	7.26	7.26	7.20
225.0	7.54	7.48	7.43	7.43	7.37	7.31	7.31	7.31	7.31
270.0	7.54	7.48	7.48	7.43	7.43	7.37	7.37	7.31	7.31
315.0	7.54	7.43	7.43	7.37	7.37	7.31	7.31	7.26	7.26
360.0	7.54	7.48	7.43	7.43	7.37	7.31	7.31	7.31	7.31
C/ γ (°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	7.26	7.26	7.20	7.20	7.14	7.14	7.14	7.09	7.09
45.0	7.37	7.37	7.37	7.37	7.31	7.31	7.37	7.31	7.31
90.0	7.26	7.20	7.20	7.20	7.14	7.14	7.14	7.14	7.09
135.0	7.26	7.20	7.20	7.14	7.14	7.14	7.09	7.09	7.09
180.0	7.20	7.14	7.20	7.14	7.14	7.09	7.14	7.09	7.09
225.0	7.31	7.26	7.26	7.20	7.20	7.20	7.20	7.20	7.20
270.0	7.26	7.26	7.26	7.20	7.20	7.20	7.14	7.14	7.14
315.0	7.26	7.20	7.20	7.14	7.14	7.14	7.14	7.09	7.09
360.0	7.26	7.26	7.20	7.20	7.14	7.14	7.14	7.09	7.09
C/ γ (°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	7.09	7.09	7.03	7.03	7.03	7.03	7.03	6.98	6.98
45.0	7.31	7.31	7.26	7.26	7.26	7.14	7.03	7.03	7.03
90.0	7.09	7.09	7.09	7.09	7.03	7.03	7.03	6.98	6.98
135.0	7.03	7.03	7.03	7.03	7.03	7.03	7.03	6.98	6.98
180.0	7.09	7.09	7.09	7.09	7.09	7.09	6.98	6.98	6.98
225.0	7.20	7.20	7.20	7.20	7.09	7.09	6.98	7.03	7.03
270.0	7.09	7.09	7.09	7.09	7.09	7.03	7.03	7.03	6.98
315.0	7.09	7.03	7.03	7.03	7.03	7.03	6.98	6.98	6.98
360.0	7.09	7.09	7.03	7.03	7.03	7.03	7.03	6.98	6.98

Intensity data(cd)

Appendix Page: 18 Total:18

C/ $\gamma(^{\circ})$	90.0
0.0	6.98
45.0	7.03
90.0	6.98
135.0	6.98
180.0	6.98
225.0	7.03
270.0	6.98
315.0	6.98
360.0	6.98