



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: 1709-M
Luminaire: 92.70.126.00
Report No: NATA0100
Test No: GC2018090715
LampCAT: LUMINUS CHM-9-XD20
Lamp flux(lm): 1969.0
Number of Lamps: 1
Length(mm): 46
Phm Type: C

Voltage(V): 35.1000
Current(A): 0.4000
Power (W): 14.0400
PF: 0.0000
Ballast type: DC
Width(mm): 46
Height(mm): 0

Photometric Results

Lumens(lm): 1771.29
Efficiency(%): 89.96%
Lumens(lm)/Power(W): 126.16
Central intensity(cd): 6694.594
Maximum intensity(cd): 6694.594
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=17.6
 [C90/270]Total=17.6
Field angle(10%Imax): [C0/180]Total=61.8
 [C90/270]Total=61.8
Maximum s/h(1/2): C0_180=0.30 C90_270=0.30
Maximum s/h(1/4): C0_180=0.32 C90_270=0.32
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 90.27%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.332%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	6694.594	6.406	6.406	.325%	.362%
2.0	6479.156	49.591	55.997	2.519%	3.161%
4.0	5884.031	90.017	146.014	4.572%	8.243%
6.0	4849.453	111.171	257.186	5.646%	14.520%
8.0	3720.234	113.551	370.737	5.767%	20.930%
10.0	2758.219	105.042	475.779	5.335%	26.861%
12.0	2031.609	92.637	568.416	4.705%	32.091%
14.0	1538.086	81.606	650.022	4.145%	36.698%
16.0	1259.508	76.138	726.16	3.867%	40.996%
18.0	1076.126	72.931	799.091	3.704%	45.113%
20.0	963.809	72.295	871.386	3.672%	49.195%
22.0	877.430	72.086	943.472	3.661%	53.265%
24.0	806.055	71.902	1015.375	3.652%	57.324%
26.0	753.560	72.448	1087.822	3.679%	61.414%
28.0	713.004	73.412	1161.234	3.728%	65.559%
30.0	681.476	74.728	1235.963	3.795%	69.778%
32.0	655.095	76.134	1312.097	3.867%	74.076%
34.0	631.786	77.481	1389.578	3.935%	78.450%
36.0	604.744	77.957	1467.535	3.959%	82.851%
38.0	559.891	75.598	1543.133	3.839%	87.119%
40.0	474.483	66.889	1610.022	3.397%	90.895%
42.0	361.624	53.068	1663.09	2.695%	93.891%
44.0	245.426	37.390	1700.48	1.899%	96.002%
46.0	134.536	21.225	1721.705	1.078%	97.201%
48.0	58.331	9.507	1731.211	.483%	97.737%
50.0	28.216	4.740	1735.952	.241%	98.005%
52.0	18.998	3.283	1739.235	.167%	98.190%
54.0	13.887	2.464	1741.699	.125%	98.329%
56.0	11.827	2.150	1743.849	.109%	98.451%
58.0	10.800	2.009	1745.858	.102%	98.564%
60.0	10.097	1.918	1747.776	.097%	98.672%
62.0	9.598	1.859	1749.634	.094%	98.777%
64.0	9.014	1.777	1751.411	.090%	98.878%
66.0	8.620	1.727	1753.138	.088%	98.975%
68.0	8.269	1.681	1754.82	.085%	99.070%
70.0	7.945	1.637	1756.457	.083%	99.163%
72.0	7.692	1.604	1758.062	.081%	99.253%
74.0	7.530	1.588	1759.649	.081%	99.343%

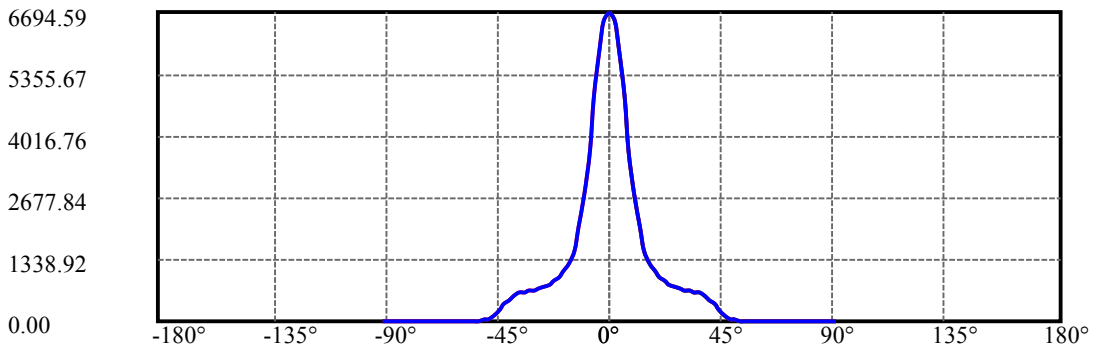
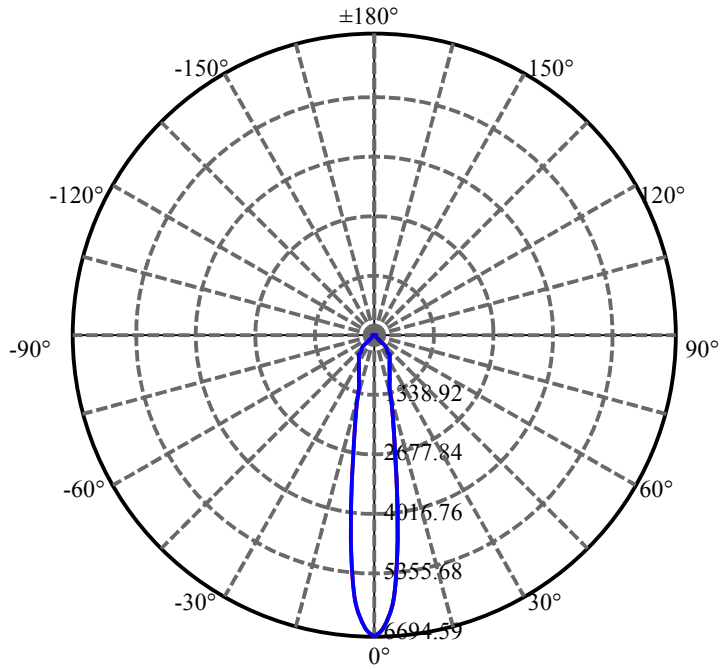
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	7.390	1.573	1761.222	.080%	99.432%
78.0	7.284	1.563	1762.784	.079%	99.520%
80.0	7.207	1.557	1764.341	.079%	99.608%
82.0	7.165	1.556	1765.897	.079%	99.696%
84.0	7.151	1.560	1767.457	.079%	99.784%
86.0	7.151	1.564	1769.021	.079%	99.872%
88.0	6.905	1.513	1770.534	.077%	99.957%
90.0	6.891	0.756	1771.29	.038%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1235.96	62.77%	69.78%
0-40	1610.02	81.77%	90.90%
0-60	1747.78	88.76%	98.67%
0-90	1770.53	89.92%	99.96%
0-120	1770.53	89.92%	99.96%
0-180	1771.29	89.96%	100.00%
60-90	24.68	1.25%	1.39%
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%
0-34.70	1417.03	71.97%	80.00%

ZONAL LUMEN SUMMARY

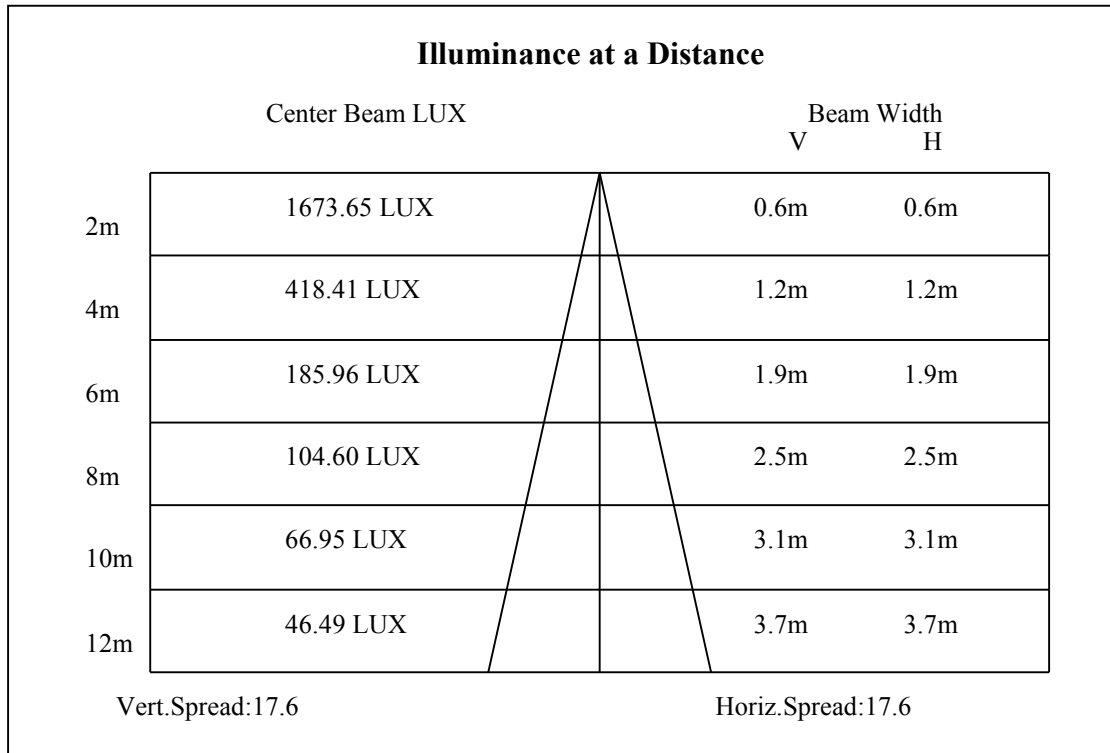
0-10	475.78
10-20	395.61
20-30	364.58
30-40	374.06
40-50	125.93
50-60	11.82
60-70	8.68
70-80	7.88
80-90	6.19
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

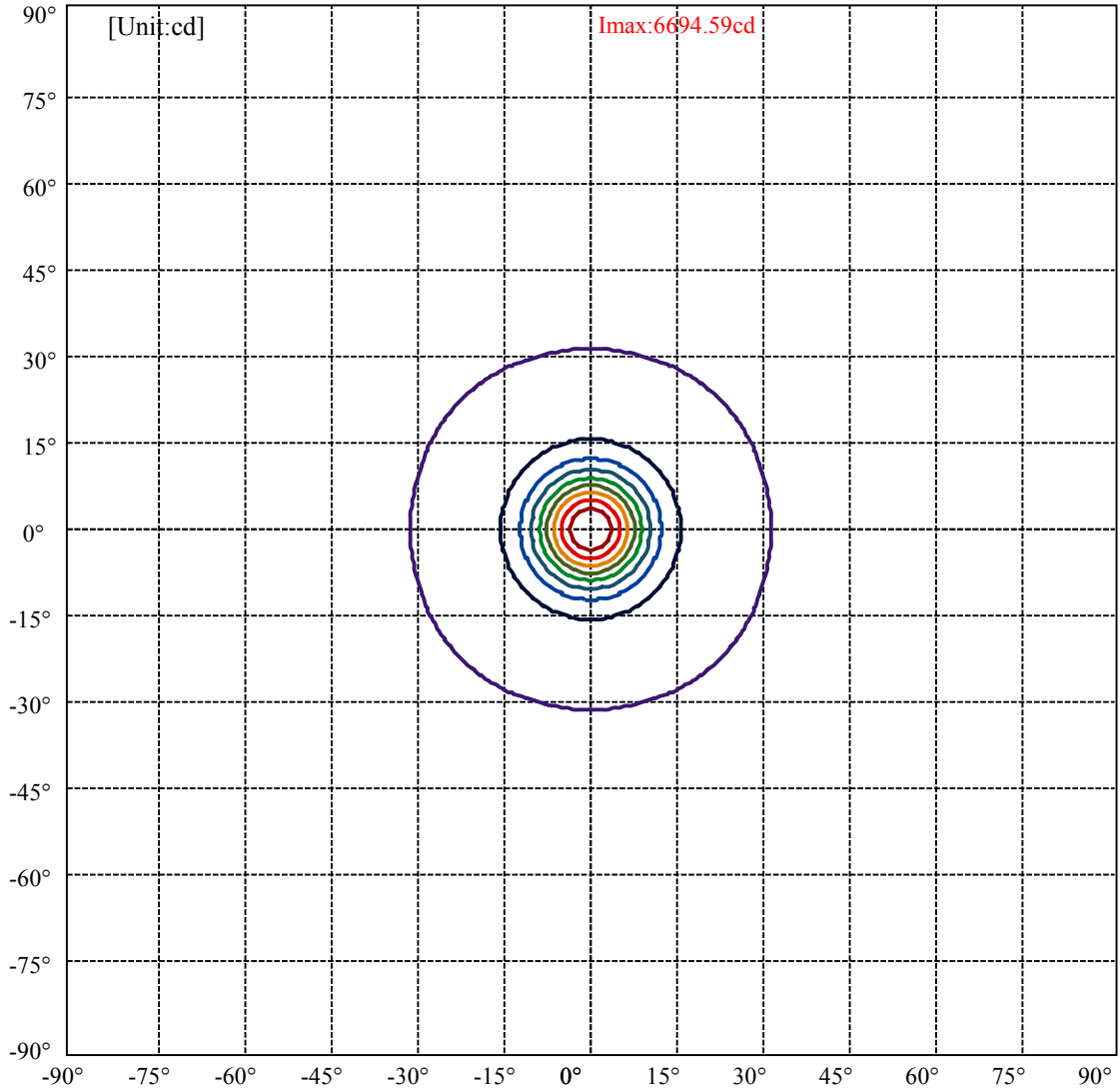


C0(Max): —————
C0/C180: —————
C90/C270: —————

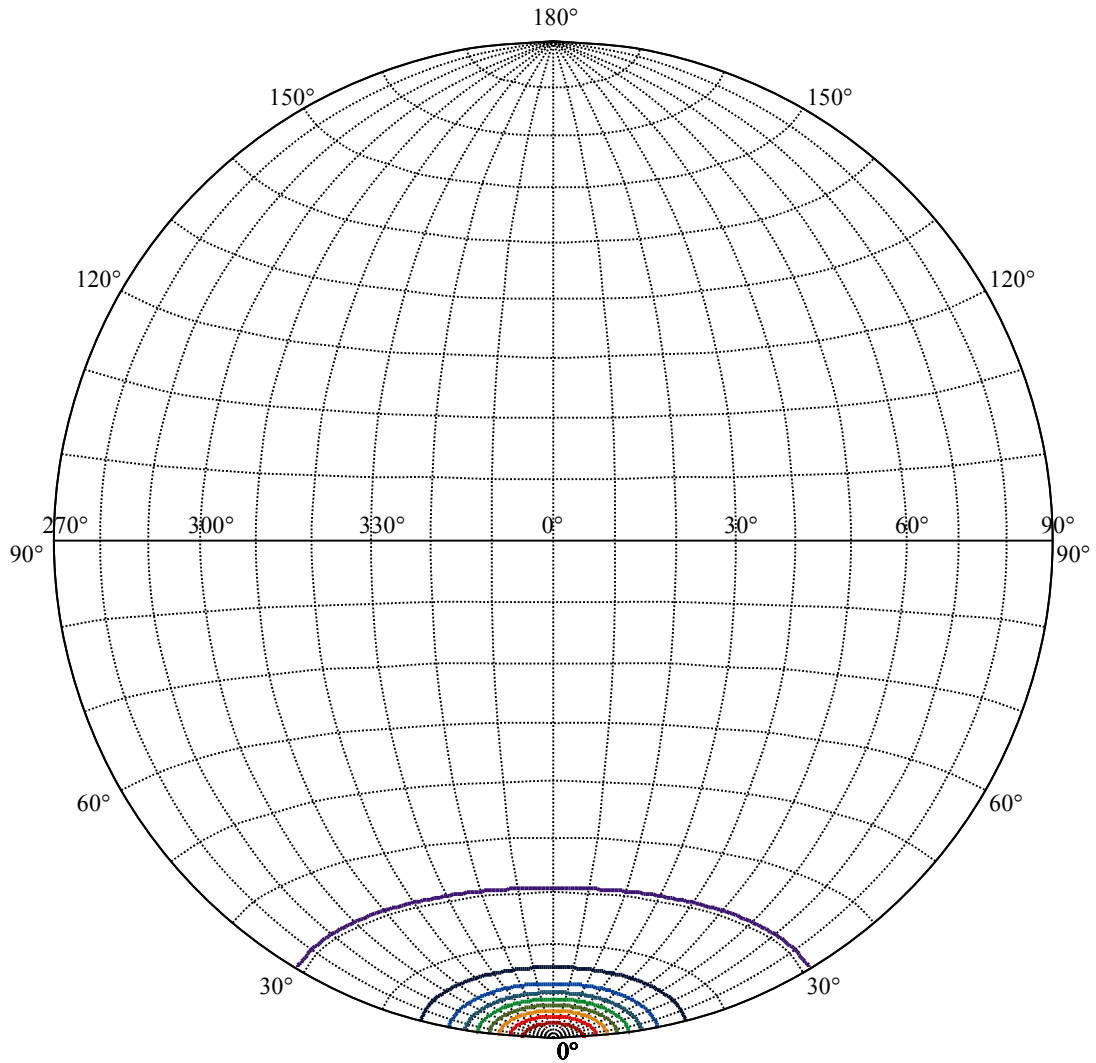
Field angle(10%Imax):C0/180Left:30.9 Right:30.9
:C90/270Left:30.9 Right:30.9

Beam Angle(50%Imax):C0/180Left:8.8 Right:8.8
:C90/270Left:8.8 Right:8.8





(10%Imax) 669.459	—
(20%Imax) 1338.92	—
(30%Imax) 2008.38	—
(40%Imax) 2677.84	—
(50%Imax) 3347.3	—
(60%Imax) 4016.76	—
(70%Imax) 4686.22	—
(80%Imax) 5355.67	—
(90%Imax) 6025.13	—



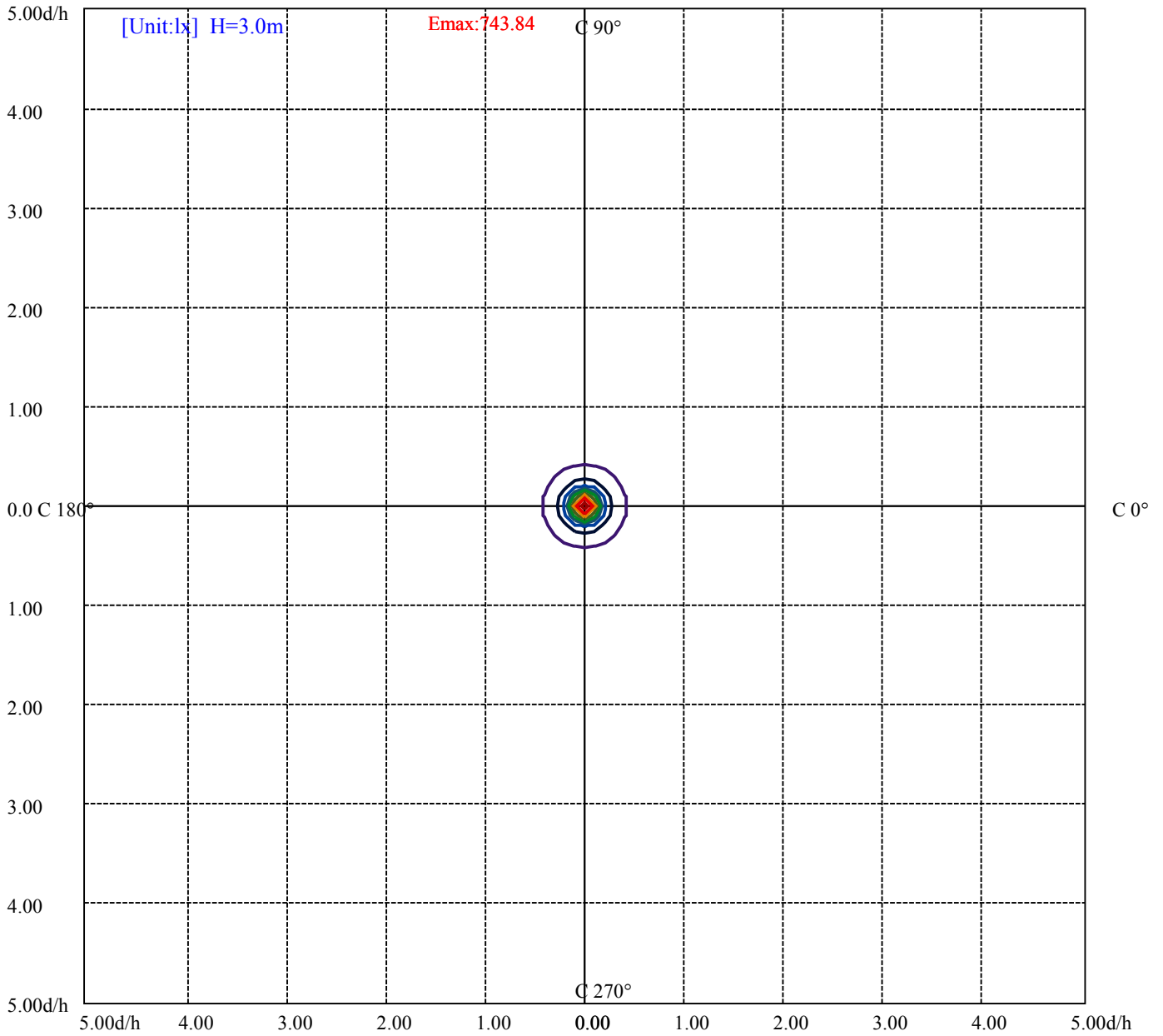
House

[Unit:cd]

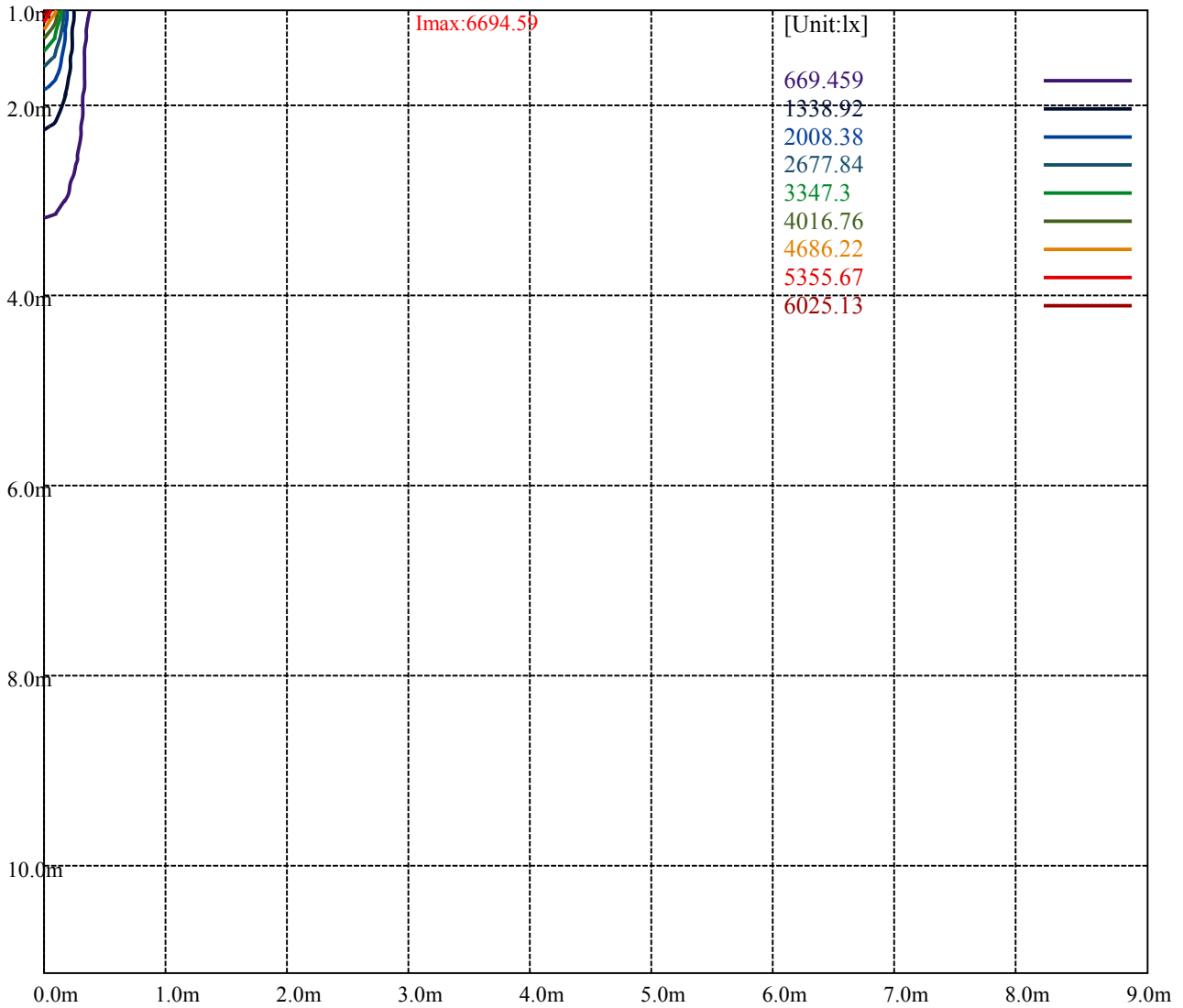
Road

Imax:6694.59

(10%Imax) 669.459	—
(20%Imax) 1338.92	—
(30%Imax) 2008.38	—
(40%Imax) 2677.84	—
(50%Imax) 3347.3	—
(60%Imax) 4016.76	—
(70%Imax) 4686.22	—
(80%Imax) 5355.67	—
(90%Imax) 6025.13	—



- (10%Emax) 74.38422
- (20%Emax) 148.7689
- (30%Emax) 223.1522
- (40%Emax) 297.5367
- (50%Emax) 371.9211
- (60%Emax) 446.3055
- (70%Emax) 520.6889
- (80%Emax) 595.0734
- (90%Emax) 669.4578



Luminance Table

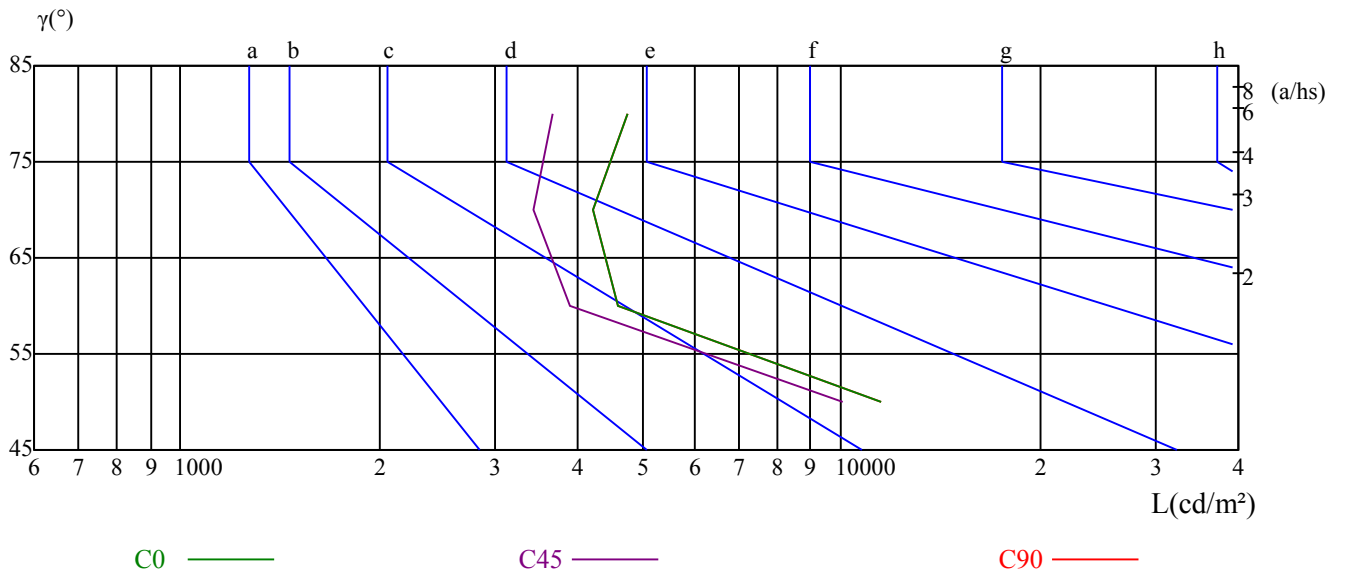
γ	45	50	55	60	65	70	75	80	85
C0	0	11519	0	4584	0	4207	0	4750	0
C45	0	10082	0	3888	0	3429	0	3666	0
C90	0	11519	0	4584	0	4207	0	4750	0

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
9816	9816	9816	11562	11562	11562	31753	31753	31753

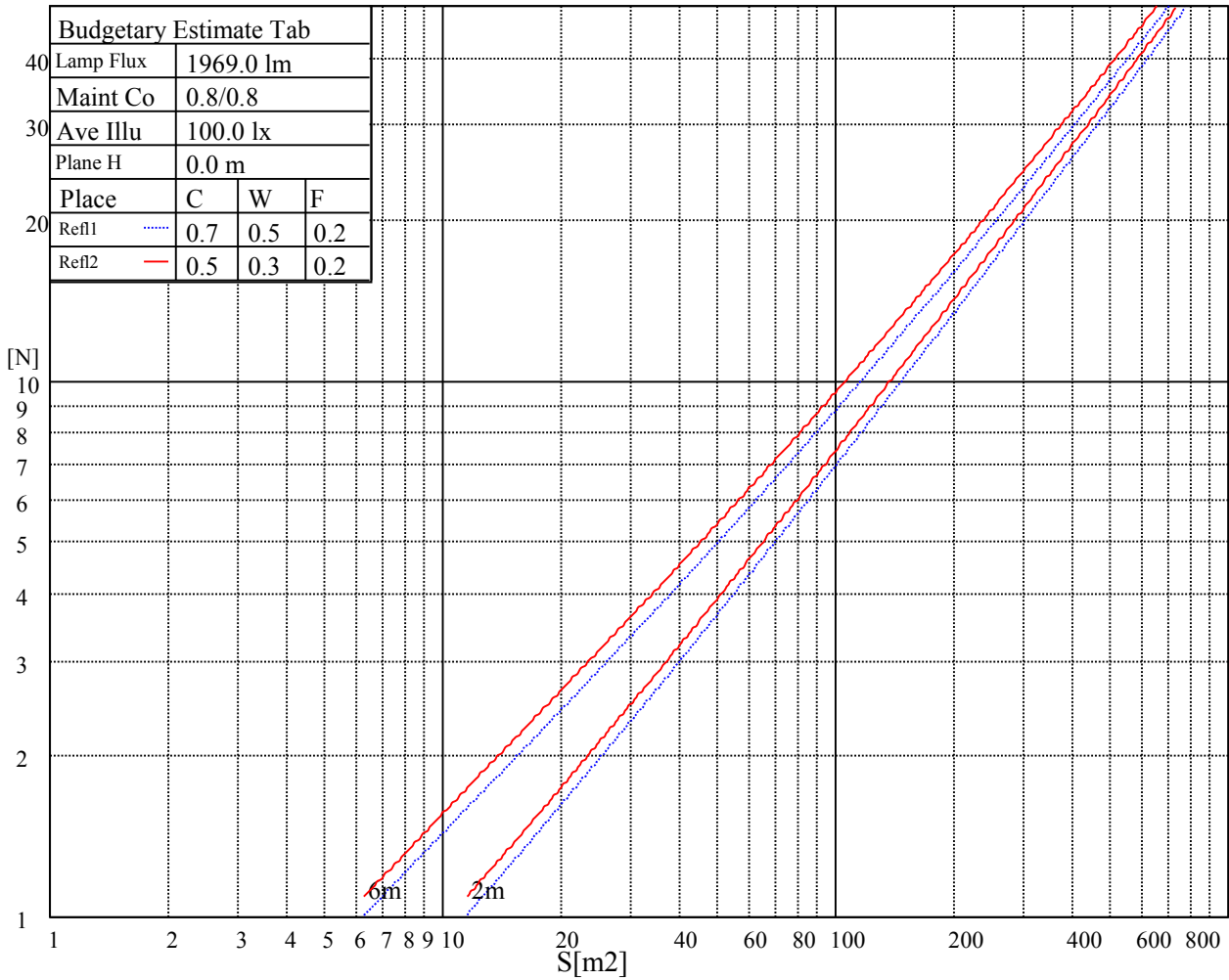
Glare Table

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

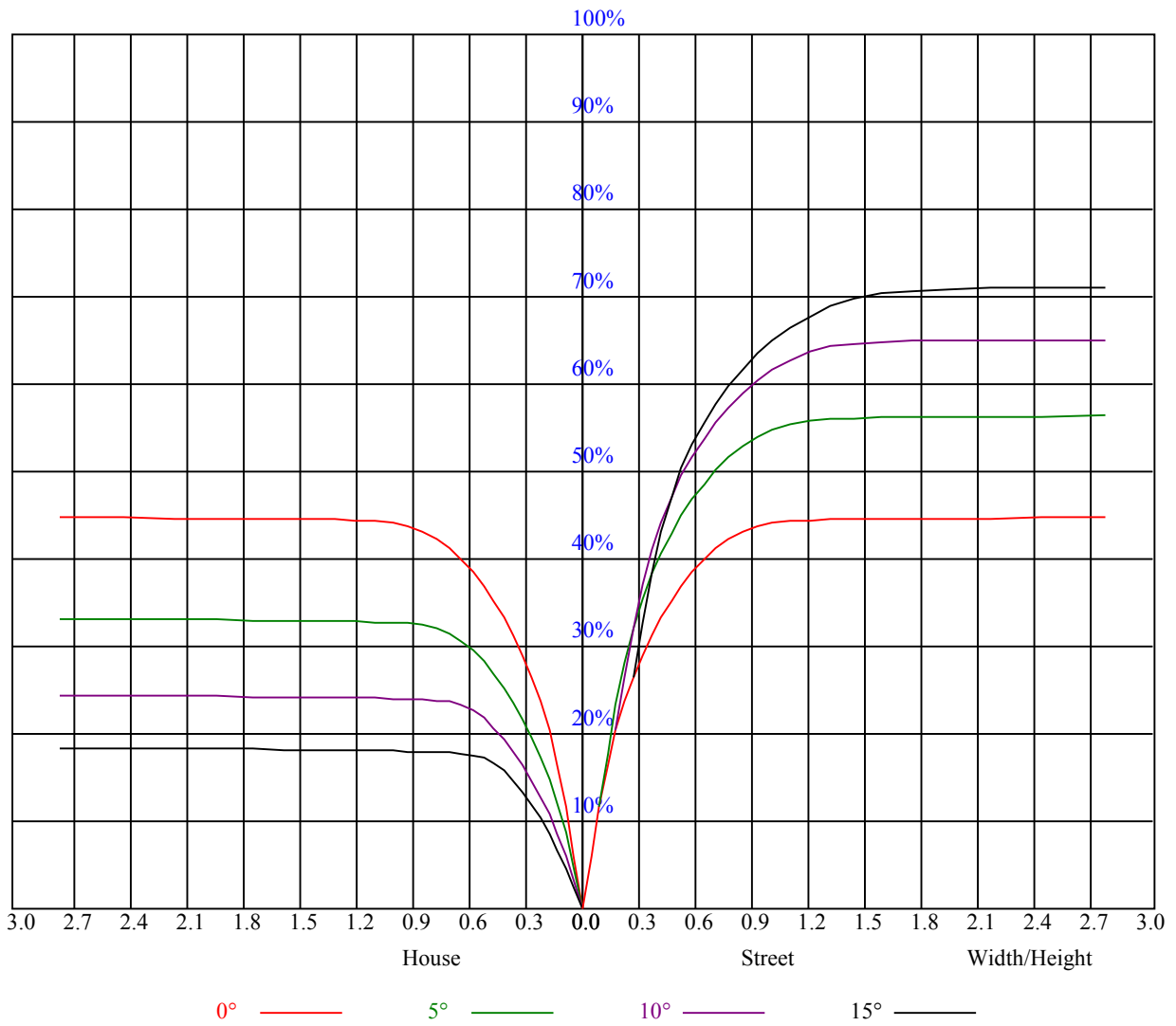
Luminance Limiting Curve



Illumination assessment according UGR											
Rf of Ceiling	70	70	50	50	30	70	70	50	50	30	
Rf of Wall	50	30	50	30	30	50	30	50	30	30	
Rf of Floor	20	20	20	20	20	20	20	20	20	20	
Room dimensions		Viewed crosswise					Viewed endwise				
X	Y										
2H	2H	5.67	6.69	6.04	7.00	7.32	5.59	6.61	5.96	6.92	7.24
	3H	7.23	8.13	7.62	8.46	8.83	7.19	8.08	7.57	8.41	8.78
	4H	8.14	8.97	8.55	9.32	9.71	8.09	8.92	8.50	9.27	9.66
	6H	9.17	9.93	9.59	10.30	10.70	9.11	9.86	9.52	10.24	10.63
	8H	9.73	10.44	10.17	10.83	11.24	9.65	10.36	10.08	10.75	11.16
	12H	10.64	11.32	11.08	11.71	12.14	10.53	11.21	10.96	11.59	12.02
4H	2H	5.98	6.81	6.39	7.16	7.55	5.91	6.74	6.32	7.09	7.48
	3H	7.84	8.51	8.25	8.92	9.33	7.80	8.47	8.22	8.88	9.29
	4H	8.94	9.54	9.37	9.96	10.41	8.89	9.49	9.33	9.91	10.36
	6H	10.10	10.61	10.57	11.06	11.54	10.04	10.56	10.51	11.01	11.48
	8H	10.78	11.26	11.26	11.71	12.19	10.71	11.19	11.18	11.64	12.11
	12H	11.73	12.14	12.22	12.63	13.11	11.62	12.03	12.11	12.52	13.00
8H	4H	9.28	9.75	9.75	10.21	10.68	9.24	9.72	9.71	10.17	10.64
	6H	10.68	11.06	11.19	11.57	12.05	10.63	11.01	11.14	11.51	12.00
	8H	11.52	11.86	12.05	12.39	12.88	11.45	11.79	11.98	12.31	12.81
	12H	12.63	12.93	13.15	13.42	14.00	12.53	12.83	13.05	13.32	13.90
12H	4H	9.34	9.76	9.83	10.24	10.72	9.31	9.72	9.80	10.21	10.69
	6H	11.12	11.17	11.36	11.64	12.19	11.07	11.12	11.31	11.59	12.14
	8H	11.76	12.06	12.28	12.56	13.14	11.70	11.99	12.22	12.49	13.07
Variation with the observer position at spacings:											
S = 1.0H	3.5/-11.5					3.5/-11.5					
S = 1.5H	5.2/-9.9					5.2/-9.9					
S = 2.0H	7.1/-8.8					7.1/-8.8					
Standard tables:	BK0					BK0					
Uncorrected UGR	3.7					3.7					



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	1.07	1.07	1.07	1.05	1.05	1.05	1.00	1.00	1.00	0.96	0.96	0.96	0.92	0.92	0.92	0.90
1	1.00	0.98	0.96	0.98	0.96	0.94	0.94	0.93	0.91	0.91	0.90	0.88	0.88	0.87	0.86	0.84
2	0.93	0.90	0.87	0.92	0.89	0.86	0.89	0.86	0.84	0.86	0.84	0.82	0.84	0.82	0.81	0.79
3	0.88	0.83	0.80	0.86	0.83	0.79	0.84	0.81	0.78	0.82	0.79	0.77	0.80	0.78	0.76	0.74
4	0.83	0.78	0.74	0.82	0.77	0.74	0.80	0.76	0.73	0.78	0.75	0.72	0.76	0.74	0.71	0.70
5	0.78	0.73	0.70	0.77	0.73	0.69	0.76	0.72	0.69	0.74	0.71	0.68	0.73	0.70	0.67	0.66
6	0.74	0.69	0.65	0.73	0.69	0.65	0.72	0.68	0.65	0.71	0.67	0.64	0.70	0.66	0.64	0.63
7	0.70	0.65	0.62	0.70	0.65	0.62	0.69	0.64	0.61	0.68	0.64	0.61	0.67	0.63	0.61	0.60
8	0.67	0.62	0.59	0.67	0.62	0.59	0.66	0.61	0.58	0.65	0.61	0.58	0.64	0.60	0.58	0.57
9	0.64	0.59	0.56	0.64	0.59	0.56	0.63	0.59	0.56	0.62	0.58	0.55	0.61	0.58	0.55	0.54
10	0.61	0.57	0.53	0.61	0.56	0.53	0.60	0.56	0.53	0.60	0.56	0.53	0.59	0.55	0.53	0.52



Intensity data(cd)

C/γ(°)	0.0	2.0	4.0	6.0	8.0	10.0	12.0	14.0	16.0
0.0	6699.38	6646.50	6186.38	5220.00	4064.06	3026.25	2198.25	1612.69	1319.06
45.0	6714.00	6330.38	5606.44	4410.00	3350.81	2390.63	1759.50	1387.69	1161.00
90.0	6635.81	6105.94	5146.31	3903.75	2873.25	2093.63	1593.56	1293.19	1116.68
135.0	6729.19	6300.00	5531.06	4333.50	3234.94	2365.88	1750.50	1371.38	1157.63
180.0	6699.38	6315.19	5587.31	4419.56	3254.06	2430.56	1807.31	1405.69	1112.51
225.0	6714.00	6654.38	6199.88	5305.50	4102.88	3067.31	2252.81	1681.31	1366.88
270.0	6635.81	6774.75	6518.25	5759.44	4646.25	3531.94	2599.88	1875.94	1482.19
315.0	6729.19	6706.13	6296.63	5443.88	4235.63	3159.56	2291.06	1676.81	1360.13
360.0	6699.38	6646.50	6186.38	5220.00	4064.06	3026.25	2198.25	1612.69	1319.06
C/γ(°)	18.0	20.0	22.0	24.0	26.0	28.0	30.0	32.0	34.0
0.0	1119.38	991.13	905.63	826.88	765.00	722.25	689.63	662.63	639.56
45.0	1018.69	921.38	845.44	777.94	736.31	702.56	676.69	652.50	629.44
90.0	981.11	892.97	821.08	762.41	725.68	691.99	664.93	639.34	617.51
135.0	1015.88	911.25	839.81	774.56	733.50	700.88	672.75	646.88	626.63
180.0	1022.96	921.21	836.78	771.41	731.59	696.71	669.21	645.86	623.03
225.0	1117.91	1007.16	907.65	829.18	762.13	720.90	685.97	655.65	632.87
270.0	1216.13	1048.50	945.56	865.69	801.00	741.38	703.13	675.00	648.00
315.0	1116.96	1016.89	917.49	840.38	773.27	727.37	689.51	662.91	637.26
360.0	1119.38	991.13	905.63	826.88	765.00	722.25	689.63	662.63	639.56
C/γ(°)	36.0	38.0	40.0	42.0	44.0	46.0	48.0	50.0	52.0
0.0	617.06	587.81	511.88	399.38	284.63	159.58	70.65	30.26	21.71
45.0	604.69	539.44	432.56	311.06	200.81	93.21	34.88	24.02	16.37
90.0	575.38	492.08	381.83	262.29	150.36	60.41	27.62	19.41	13.11
135.0	600.19	536.06	441.56	316.13	200.64	91.97	33.75	22.33	15.64
180.0	596.98	553.33	455.06	338.06	214.31	103.73	40.05	24.24	15.92
225.0	607.28	581.01	509.96	405.84	286.54	177.92	75.15	30.71	20.70
270.0	622.69	599.06	549.00	450.56	336.94	217.01	113.06	44.66	26.16
315.0	613.69	590.34	514.01	409.67	289.18	172.46	71.49	30.09	22.39
360.0	617.06	587.81	511.88	399.38	284.63	159.58	70.65	30.26	21.71
C/γ(°)	54.0	56.0	58.0	60.0	62.0	64.0	66.0	68.0	70.0
0.0	15.36	13.11	11.25	10.52	9.96	9.39	8.94	8.49	8.16
45.0	13.39	11.42	10.74	10.01	9.56	8.94	8.49	8.16	7.88
90.0	11.48	10.86	10.24	9.62	9.11	8.55	8.21	7.88	7.71
135.0	12.49	10.80	10.18	9.73	9.34	8.55	8.21	7.99	7.65
180.0	12.26	10.80	10.24	9.73	9.34	8.66	8.38	8.04	7.71
225.0	14.18	11.31	10.58	9.96	9.39	9.00	8.61	8.27	7.93
270.0	17.16	13.78	11.76	10.52	9.96	9.39	9.00	8.66	8.27
315.0	14.79	12.54	11.42	10.69	10.13	9.62	9.11	8.66	8.27
360.0	15.36	13.11	11.25	10.52	9.96	9.39	8.94	8.49	8.16
C/γ(°)	72.0	74.0	76.0	78.0	80.0	82.0	84.0	86.0	88.0
0.0	7.82	7.65	7.48	7.31	7.20	7.09	7.03	6.98	6.92
45.0	7.59	7.48	7.31	7.26	7.20	7.14	7.14	7.20	6.86
90.0	7.54	7.43	7.37	7.31	7.26	7.31	7.31	7.71	6.92
135.0	7.54	7.43	7.26	7.20	7.14	7.09	7.09	7.09	6.92
180.0	7.54	7.37	7.31	7.20	7.14	7.09	7.03	6.98	6.86
225.0	7.65	7.48	7.37	7.26	7.14	7.14	7.09	7.03	6.92
270.0	7.99	7.76	7.54	7.43	7.37	7.31	7.43	7.26	6.92
315.0	7.88	7.65	7.48	7.31	7.20	7.14	7.09	6.98	6.92
360.0	7.82	7.65	7.48	7.31	7.20	7.09	7.03	6.98	6.92

Intensity data(cd)

C/ γ ($^{\circ}$)	90.0
0.0	6.92
45.0	6.86
90.0	6.86
135.0	6.92
180.0	6.86
225.0	6.86
270.0	6.92
315.0	6.92
360.0	6.92