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Nata

LumCAT: 3-1545-A3
Luminaire: 99.02.73.172+92.76.365.00
Report No: NATA0100
Test No: GC2018082819
LampCAT: SAMSUNG LC026D
Lamp flux(lm): 2486.0
Number of Lamps: 1
Length(mm): 84
Phm Type: C

Voltage(V): 34.5000
Current(A): 0.5000
Power (W): 17.2500
PF: 0.0000
Ballast type: DC
Width(mm): 84
Height(mm): 0

Photometric Results

Lumens(lm): 2294.23
Efficiency(%): 92.29%
Lumens(lm)/Power(W): 133.00
Central intensity(cd): 16779.810
Maximum intensity(cd): 16779.810
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=15.4
 [C90/270]Total=15.4
Field angle(10%Imax): [C0/180]Total=30.9
 [C90/270]Total=30.9
Maximum s/h(1/2): C0_180=0.27 C90_270=0.27
Maximum s/h(1/4): C0_180=0.26 C90_270=0.26
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 92.92%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 97.992%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	16779.814	16.058	16.058	.646%	.700%
2.0	16242.326	124.318	140.375	5.001%	6.119%
4.0	14296.702	218.719	359.094	8.798%	15.652%
6.0	11357.998	260.376	619.47	10.474%	27.001%
8.0	7884.008	240.640	860.11	9.680%	37.490%
10.0	4875.657	185.681	1045.791	7.469%	45.583%
12.0	3112.751	141.935	1187.726	5.709%	51.770%
14.0	2060.279	109.312	1297.038	4.397%	56.535%
16.0	1538.826	93.024	1390.061	3.742%	60.589%
18.0	1249.243	84.663	1474.724	3.406%	64.280%
20.0	1090.144	81.771	1556.496	3.289%	67.844%
22.0	1006.837	82.718	1639.214	3.327%	71.449%
24.0	951.863	84.909	1724.123	3.415%	75.150%
26.0	911.190	87.602	1811.725	3.524%	78.969%
28.0	871.391	89.720	1901.445	3.609%	82.879%
30.0	822.336	90.175	1991.619	3.627%	86.810%
32.0	725.471	84.313	2075.932	3.392%	90.485%
34.0	575.745	70.609	2146.541	2.840%	93.562%
36.0	394.479	50.852	2197.393	2.046%	95.779%
38.0	226.426	30.573	2227.966	1.230%	97.112%
40.0	88.063	12.414	2240.38	.499%	97.653%
42.0	30.660	4.499	2244.879	.181%	97.849%
44.0	18.010	2.744	2247.623	.110%	97.968%
46.0	13.413	2.116	2249.739	.085%	98.061%
48.0	12.106	1.973	2251.712	.079%	98.147%
50.0	11.693	1.964	2253.677	.079%	98.232%
52.0	11.390	1.968	2255.645	.079%	98.318%
54.0	11.080	1.966	2257.611	.079%	98.404%
56.0	10.874	1.977	2259.588	.080%	98.490%
58.0	10.674	1.985	2261.573	.080%	98.576%
60.0	10.516	1.997	2263.571	.080%	98.663%
62.0	10.399	2.014	2265.584	.081%	98.751%
64.0	10.309	2.032	2267.616	.082%	98.840%
66.0	10.220	2.048	2269.664	.082%	98.929%
68.0	10.158	2.066	2271.729	.083%	99.019%
70.0	10.117	2.085	2273.814	.084%	99.110%
72.0	10.068	2.100	2275.914	.084%	99.201%
74.0	10.048	2.118	2278.033	.085%	99.294%

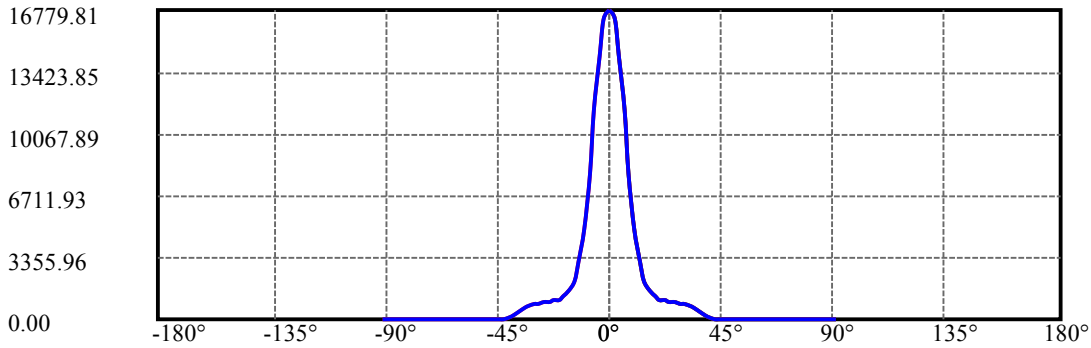
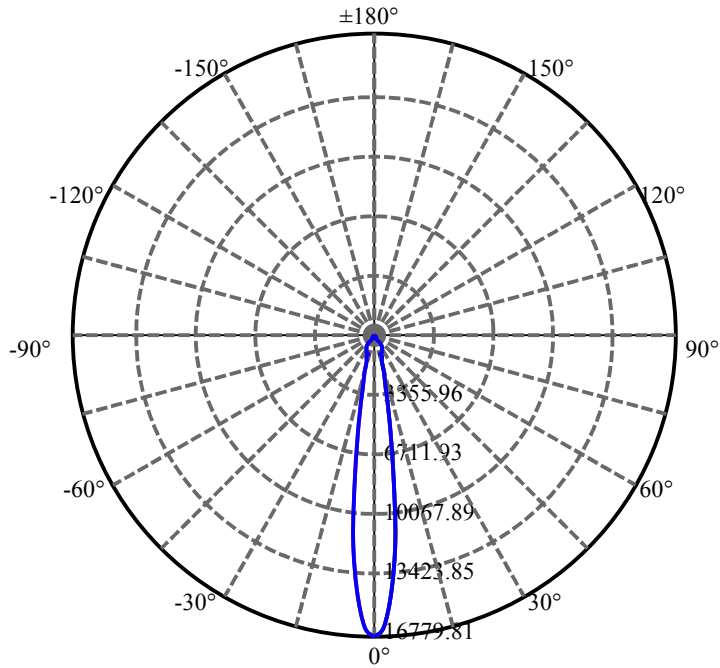
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	10.027	2.134	2280.166	.086%	99.387%
78.0	9.986	2.142	2282.309	.086%	99.480%
80.0	9.972	2.154	2284.462	.087%	99.574%
82.0	9.945	2.160	2286.622	.087%	99.668%
84.0	9.986	2.178	2288.8	.088%	99.763%
86.0	10.041	2.197	2290.997	.088%	99.859%
88.0	9.848	2.159	2293.155	.087%	99.953%
90.0	9.841	1.079	2294.235	.043%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1991.62	80.11%	86.81%
0-40	2240.38	90.12%	97.65%
0-60	2263.57	91.05%	98.66%
0-90	2293.16	92.24%	99.95%
0-120	2293.16	92.24%	99.95%
0-180	2294.23	92.29%	100.00%
60-90	31.58	1.27%	1.38%
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%
0-26.53	1835.39	73.83%	80.00%

ZONAL LUMEN SUMMARY

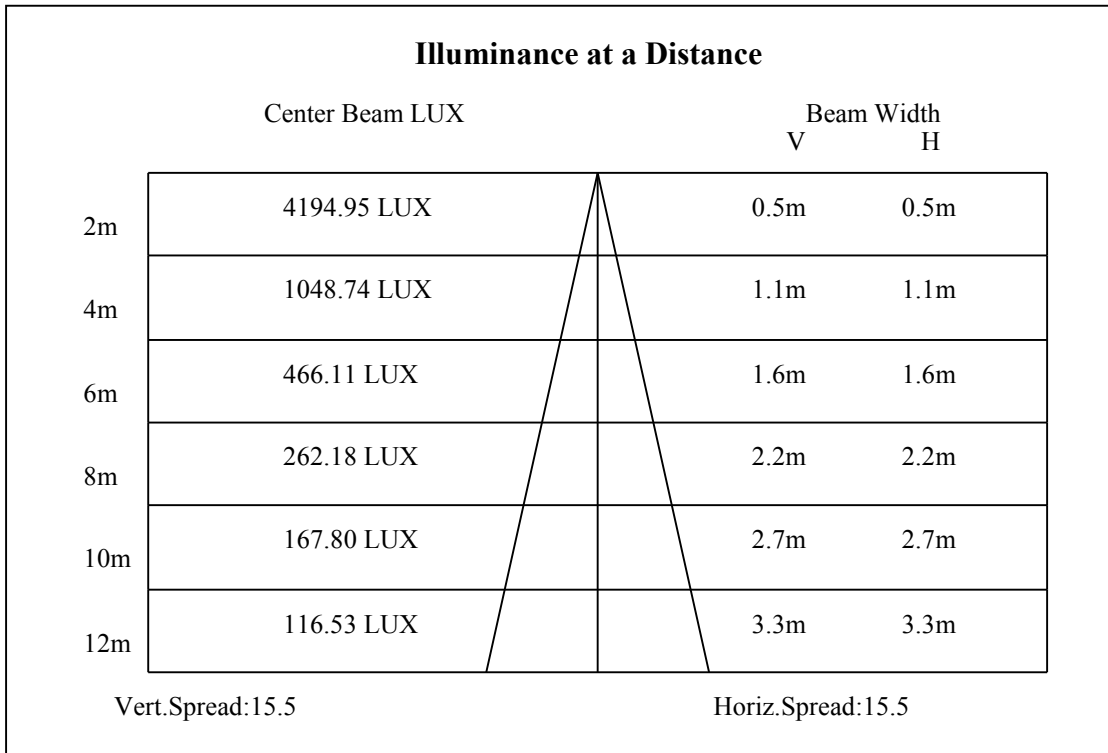
0-10	1045.79
10-20	510.70
20-30	435.12
30-40	248.76
40-50	13.30
50-60	9.89
60-70	10.24
70-80	10.65
80-90	8.69
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

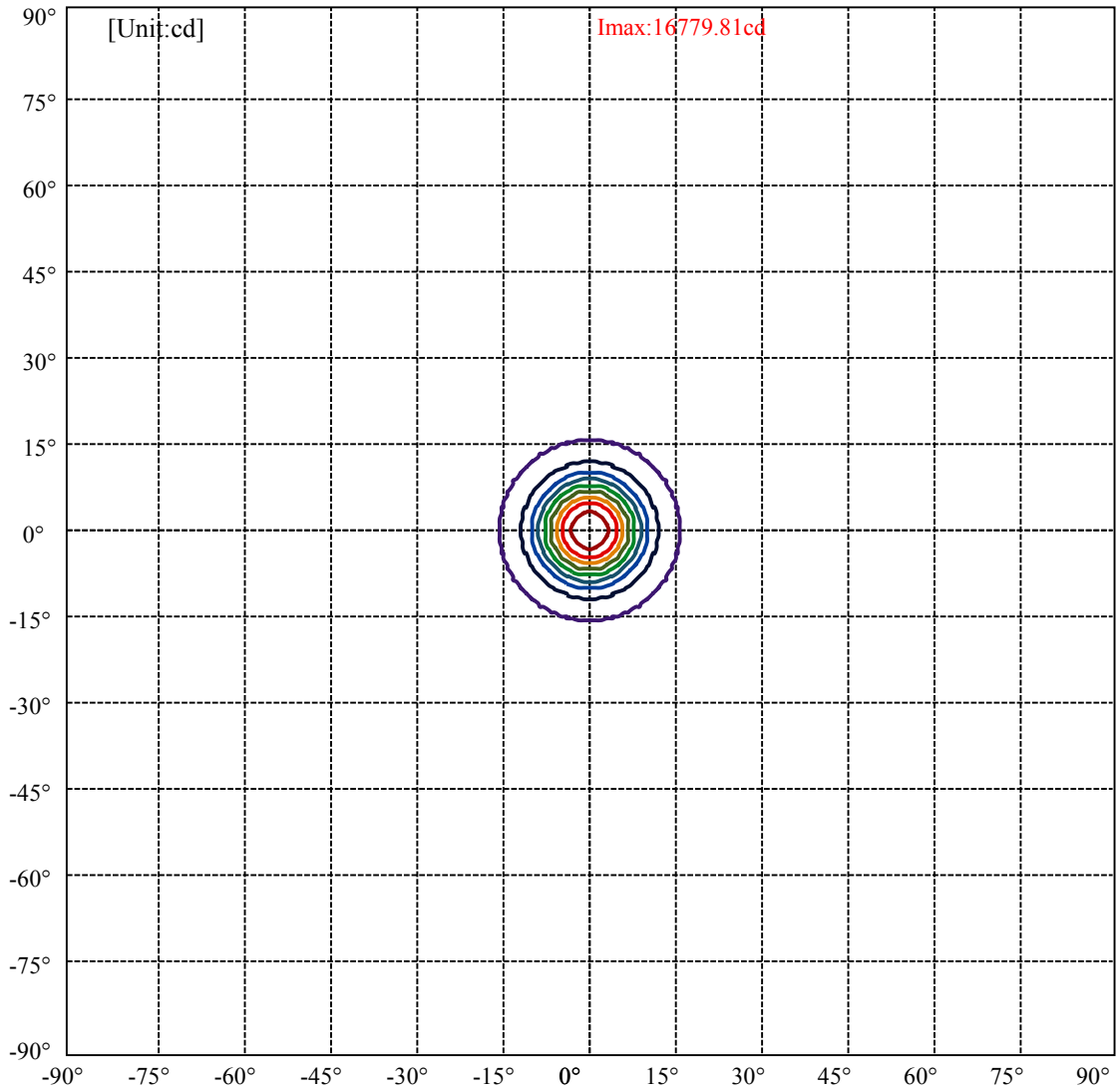


C0(Max): —————
C0/C180: —————
C90/C270: —————

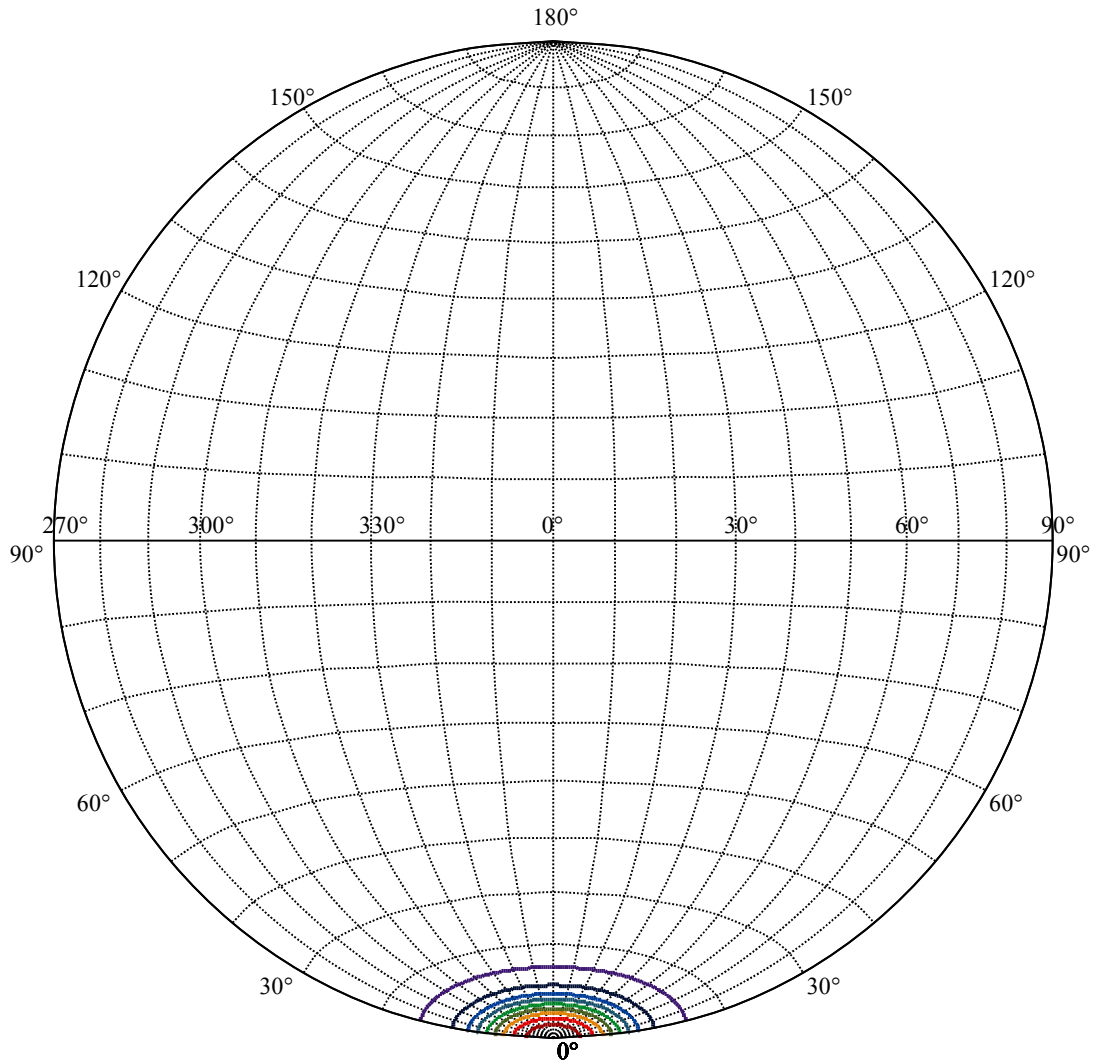
Field angle(10%Imax):C0/180Left:15.5 Right:15.5
:C90/270Left:15.5 Right:15.5

Beam Angle(50%Imax):C0/180Left:7.7 Right:7.7
:C90/270Left:7.7 Right:7.7





(10%I _{max}) 1677.98	—
(20%I _{max}) 3355.96	—
(30%I _{max}) 5033.94	—
(40%I _{max}) 6711.93	—
(50%I _{max}) 8389.91	—
(60%I _{max}) 10067.9	—
(70%I _{max}) 11745.9	—
(80%I _{max}) 13423.9	—
(90%I _{max}) 15101.8	—



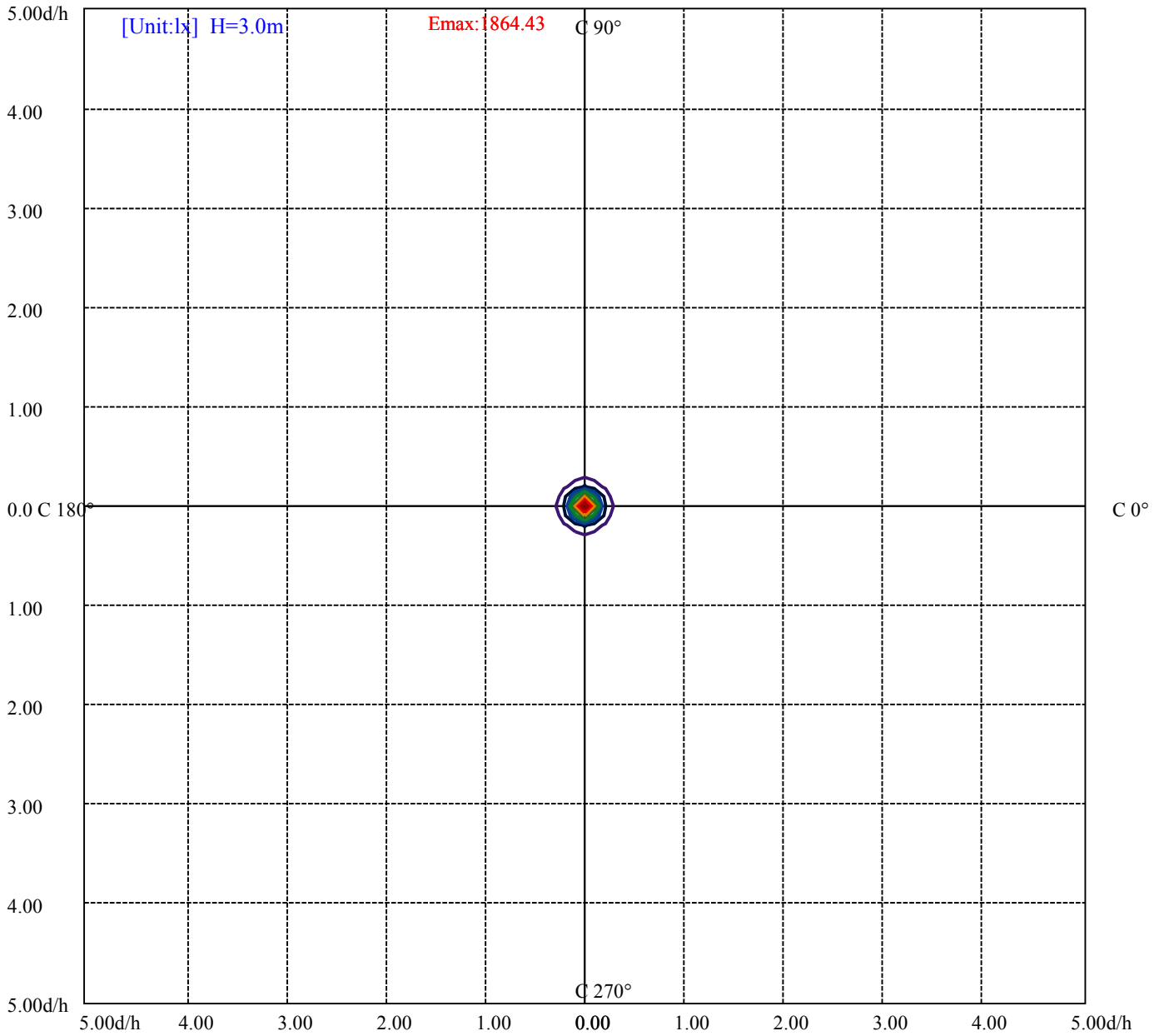
House

[Unit:cd]

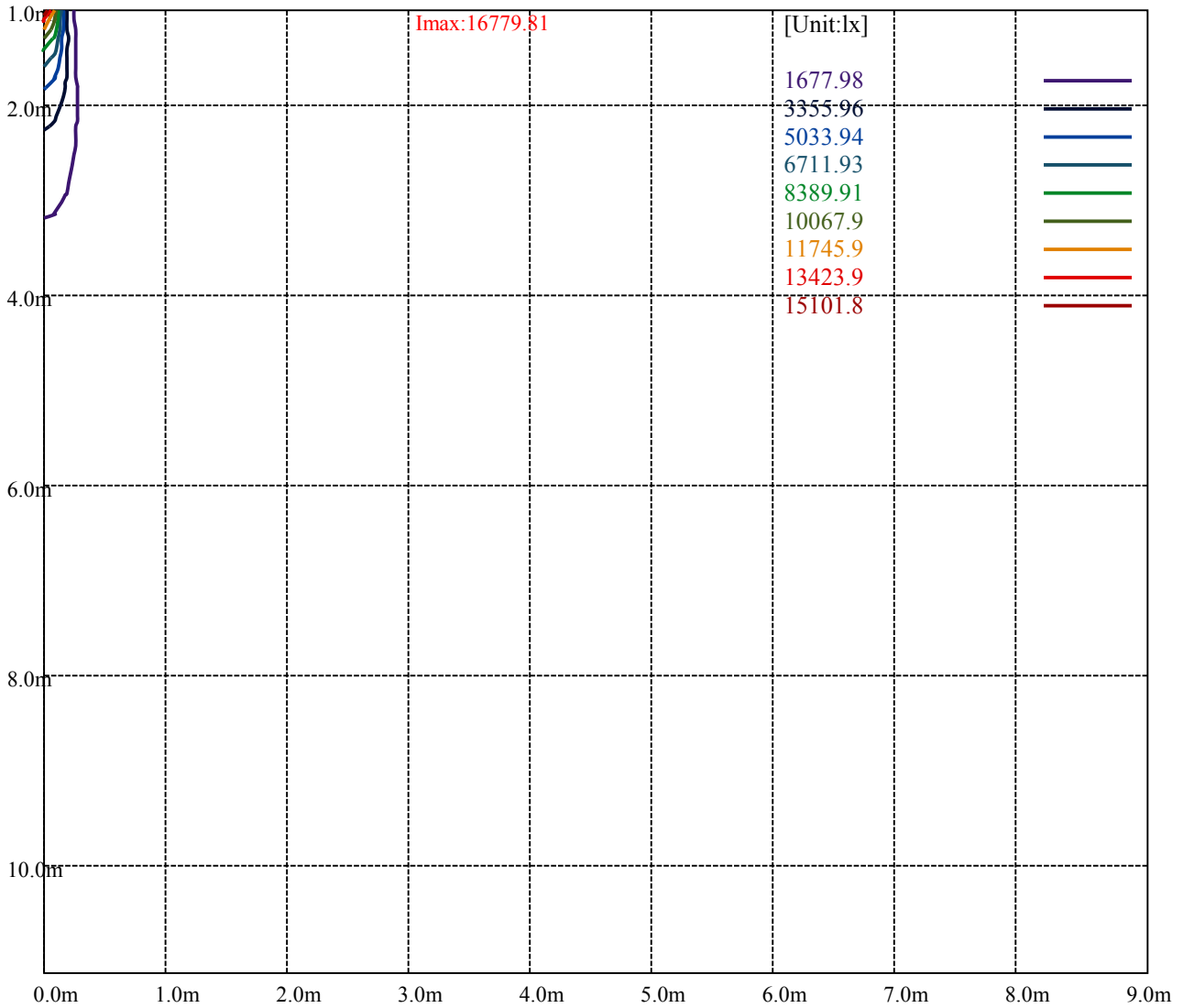
Road

Imax:16779.81

(10%Imax)	1677.98	—
(20%Imax)	3355.96	—
(30%Imax)	5033.94	—
(40%Imax)	6711.93	—
(50%Imax)	8389.91	—
(60%Imax)	10067.9	—
(70%Imax)	11745.9	—
(80%Imax)	13423.9	—
(90%Imax)	15101.8	—



(10%Emax) 186.4422	—
(20%Emax) 372.8833	—
(30%Emax) 559.3256	—
(40%Emax) 745.7678	—
(50%Emax) 932.21	—
(60%Emax) 1118.656	—
(70%Emax) 1305.089	—
(80%Emax) 1491.533	—
(90%Emax) 1677.978	—



Luminance Table

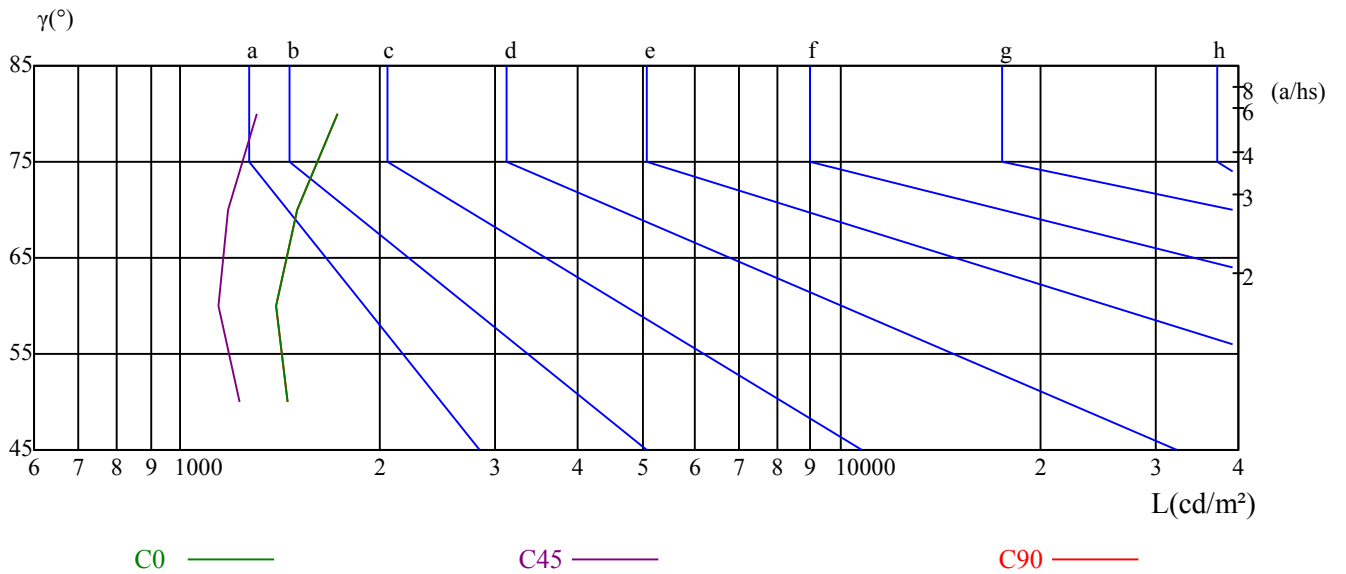
γ	45	50	55	60	65	70	75	80	85
C0	0	1448	0	1397	0	1498	0	1727	0
C45	0	1226	0	1145	0	1183	0	1302	0
C90	0	1448	0	1397	0	1498	0	1727	0

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
3598	3598	3598	5641	5641	5641	16316	16316	16316

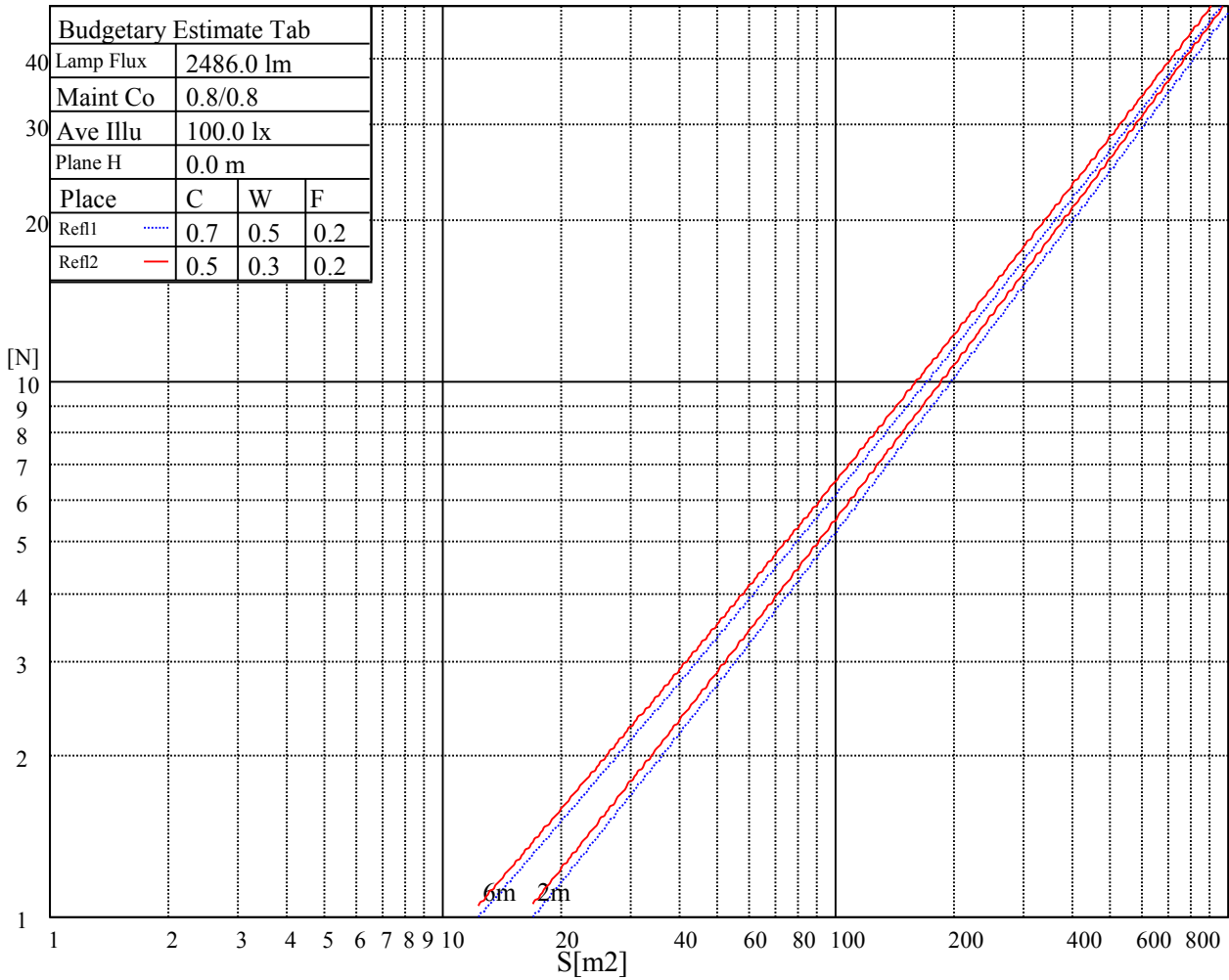
Glare Table

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

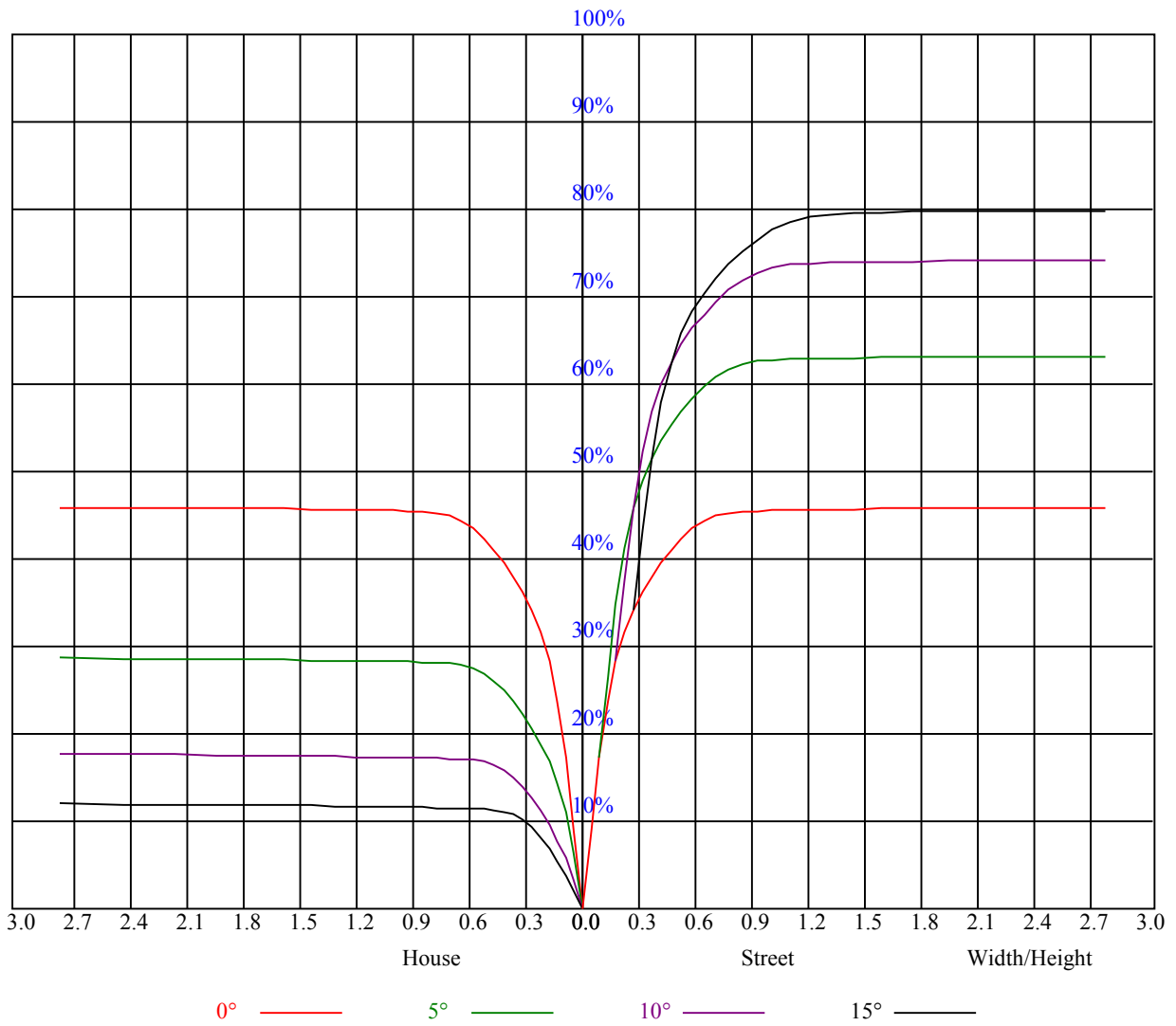
Luminance Limiting Curve



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	-0.59	0.32	-0.22	0.63	0.95	-0.62	0.29	-0.25	0.60	0.92
	3H	1.70	2.50	2.08	2.84	3.20	1.68	2.48	2.06	2.82	3.19
	4H	2.96	3.70	3.37	4.06	4.45	2.95	3.69	3.36	4.05	4.44
	6H	4.29	4.97	4.71	5.35	5.75	4.28	4.96	4.70	5.34	5.73
	8H	4.96	5.60	5.40	5.99	6.40	4.94	5.58	5.38	5.97	6.38
	12H	6.00	6.61	6.43	6.99	7.42	5.95	6.56	6.39	6.94	7.38
4H	2H	-0.10	0.64	0.31	1.00	1.39	-0.12	0.62	0.28	0.97	1.36
	3H	2.48	3.09	2.90	3.50	3.91	2.47	3.08	2.88	3.49	3.89
	4H	3.92	4.47	4.36	4.89	5.34	3.91	4.46	4.35	4.88	5.33
	6H	5.35	5.82	5.83	6.27	6.75	5.35	5.81	5.82	6.26	6.74
	8H	6.14	6.57	6.62	7.02	7.50	6.12	6.55	6.59	7.00	7.48
	12H	7.17	7.54	7.66	8.03	8.51	7.12	7.49	7.61	7.98	8.46
8H	4H	4.36	4.80	4.84	5.25	5.72	4.36	4.79	4.84	5.24	5.72
	6H	6.03	6.38	6.55	6.88	7.37	6.03	6.37	6.54	6.87	7.36
	8H	6.97	7.27	7.51	7.80	8.30	6.95	7.26	7.49	7.78	8.28
	12H	8.13	8.39	8.66	8.89	9.47	8.09	8.35	8.61	8.85	9.43
12H	4H	4.45	4.83	4.95	5.32	5.79	4.45	4.82	4.94	5.31	5.79
	6H	6.40	6.51	6.75	6.98	7.53	6.40	6.50	6.74	6.98	7.53
	8H	7.24	7.50	7.77	8.00	8.58	7.23	7.48	7.75	7.98	8.56
Variation with the observer position at spacings:											
S = 1.0H		5.8/-8.1					5.8/-8.1				
S = 1.5H		8.2/-6.4					8.2/-6.4				
S = 2.0H		9.8/-5.1					9.8/-5.1				
Standard tables:		BK1					BK1				
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	1.11	1.11	1.11	1.08	1.08	1.08	1.03	1.03	1.03	0.99	0.99	0.99	0.95	0.95	0.95	0.93
1	1.04	1.01	1.00	1.02	1.00	0.98	0.98	0.96	0.95	0.94	0.93	0.92	0.91	0.90	0.90	0.88
2	0.98	0.95	0.93	0.97	0.94	0.92	0.94	0.92	0.90	0.91	0.89	0.88	0.89	0.87	0.86	0.85
3	0.94	0.90	0.87	0.93	0.89	0.87	0.90	0.88	0.85	0.88	0.86	0.84	0.86	0.84	0.83	0.81
4	0.90	0.86	0.83	0.89	0.85	0.83	0.87	0.84	0.82	0.85	0.83	0.81	0.84	0.82	0.80	0.79
5	0.87	0.82	0.79	0.86	0.82	0.79	0.84	0.81	0.78	0.83	0.80	0.78	0.82	0.79	0.77	0.76
6	0.84	0.79	0.76	0.83	0.79	0.76	0.82	0.78	0.76	0.80	0.77	0.75	0.79	0.77	0.75	0.74
7	0.81	0.77	0.74	0.80	0.76	0.74	0.79	0.76	0.73	0.78	0.75	0.73	0.77	0.75	0.73	0.72
8	0.78	0.74	0.71	0.78	0.74	0.71	0.77	0.73	0.71	0.76	0.73	0.71	0.75	0.73	0.71	0.70
9	0.76	0.72	0.69	0.76	0.72	0.69	0.75	0.71	0.69	0.74	0.71	0.69	0.74	0.71	0.69	0.68
10	0.74	0.70	0.67	0.74	0.70	0.67	0.73	0.70	0.67	0.72	0.69	0.67	0.72	0.69	0.67	0.66



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	16830.74	15960.85	13609.94	9816.56	6381.04	3743.84	2785.85	1708.95	1334.02
45.0	16841.75	15393.77	12673.98	8698.91	5279.91	3226.31	2137.29	1537.17	1243.17
90.0	16643.55	15217.59	10840.05	8588.25	5049.77	3117.84	2099.85	1537.73	1265.75
135.0	16803.21	16252.65	14523.88	11214.99	7961.16	4591.70	2895.97	2005.70	1506.89
180.0	16830.74	16742.65	15404.78	13053.87	9168.54	5545.28	3541.23	2299.16	1702.89
225.0	16841.75	17061.98	16439.84	14446.80	10873.64	7125.40	4297.15	2674.09	1903.85
270.0	16643.55	16968.38	16373.77	14232.08	10824.09	7107.78	4305.41	2807.88	1865.86
315.0	16803.21	16340.74	14507.36	10812.53	7533.92	4547.11	2839.26	1911.56	1488.17
360.0	16830.74	15960.85	13609.94	9816.56	6381.04	3743.84	2785.85	1708.95	1334.02
C/γ(°)	18.0	20.0	22.0	24.0	26.0	28.0	30.0	32.0	34.0
0.0	1139.12	1040.02	982.76	933.76	899.07	856.13	814.28	692.61	506.52
45.0	1090.12	1005.88	958.53	917.79	886.96	845.12	776.30	619.38	427.24
90.0	1092.43	1011.77	962.11	922.58	887.07	846.49	767.98	597.14	429.55
135.0	1229.41	1081.31	1007.53	953.03	913.39	875.40	835.76	743.26	574.24
180.0	1331.81	1094.14	1020.20	961.89	912.95	875.89	840.49	791.49	666.07
225.0	1445.23	1198.58	1058.62	983.75	933.37	889.27	849.74	811.37	713.09
270.0	1437.52	1217.85	1064.79	989.91	943.12	905.13	864.94	825.30	711.33
315.0	1228.31	1071.62	1000.15	952.20	913.61	877.71	829.20	723.22	577.93
360.0	1139.12	1040.02	982.76	933.76	899.07	856.13	814.28	692.61	506.52
C/γ(°)	36.0	38.0	40.0	42.0	44.0	46.0	48.0	50.0	52.0
0.0	309.97	132.41	36.01	21.31	15.86	12.44	11.95	11.51	11.23
45.0	280.79	88.70	28.41	16.68	12.66	12.00	11.73	11.34	11.12
90.0	245.66	100.04	29.84	18.11	12.61	12.11	11.78	11.45	11.18
135.0	389.80	284.64	66.56	24.17	16.57	12.61	12.17	11.78	11.45
180.0	467.15	276.22	117.38	34.02	17.73	12.88	12.11	11.73	11.45
225.0	534.87	356.33	171.12	49.94	22.63	15.31	12.39	11.89	11.51
270.0	543.41	363.92	185.82	50.49	26.10	17.23	12.61	12.11	11.73
315.0	384.18	209.16	69.37	30.56	19.93	12.72	12.11	11.73	11.45
360.0	309.97	132.41	36.01	21.31	15.86	12.44	11.95	11.51	11.23
C/γ(°)	54.0	56.0	58.0	60.0	62.0	64.0	66.0	68.0	70.0
0.0	10.96	10.79	10.57	10.46	10.35	10.30	10.24	10.19	10.08
45.0	10.90	10.68	10.52	10.41	10.30	10.24	10.13	10.13	10.13
90.0	10.90	10.74	10.57	10.46	10.35	10.30	10.19	10.19	10.13
135.0	11.12	10.90	10.74	10.57	10.46	10.35	10.30	10.19	10.19
180.0	11.12	10.90	10.68	10.52	10.41	10.30	10.19	10.13	10.08
225.0	11.18	10.96	10.74	10.52	10.41	10.24	10.19	10.08	10.02
270.0	11.34	11.07	10.90	10.63	10.52	10.41	10.30	10.19	10.13
315.0	11.12	10.96	10.68	10.57	10.41	10.35	10.24	10.19	10.19
360.0	10.96	10.79	10.57	10.46	10.35	10.30	10.24	10.19	10.08
C/γ(°)	72.0	74.0	76.0	78.0	80.0	82.0	84.0	86.0	88.0
0.0	10.13	10.08	10.08	10.02	10.02	9.97	9.97	9.91	9.86
45.0	10.02	10.02	10.02	9.97	9.97	9.97	9.97	9.86	9.80
90.0	10.08	10.02	10.02	9.97	9.97	9.97	10.24	10.35	9.86
135.0	10.13	10.13	10.08	10.02	10.02	9.97	10.02	10.57	9.91
180.0	10.02	10.02	9.97	9.97	9.91	9.91	9.91	9.86	9.80
225.0	9.97	9.97	9.97	9.91	9.91	9.86	9.86	9.86	9.80
270.0	10.08	10.08	10.02	10.02	10.02	9.97	9.97	9.91	9.86
315.0	10.13	10.08	10.08	10.02	9.97	9.97	9.97	10.02	9.91
360.0	10.13	10.08	10.08	10.02	10.02	9.97	9.97	9.91	9.86

Intensity data(cd)

C/γ(°)	90.0
0.0	9.86
45.0	9.80
90.0	9.86
135.0	9.86
180.0	9.86
225.0	9.80
270.0	9.86
315.0	9.86
360.0	9.86