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NATA

LumCAT: 2-1122-A4
Luminaire: 99.02.73.172+92.76.365.00
Report No: NATA0100
Test No: GC2019021804
LampCAT: CITIZEN CLU710
Lamp flux(lm): 1321.0
Number of Lamps: 1
Length(mm): 70
Phm Type: C

Voltage(V): 35.3000
Current(A): 0.3000
Power (W): 10.5900
PF: 0.0000
Ballast type: DC
Width(mm): 70
Height(mm): 0

Photometric Results

Lumens(lm): 1198.45
Efficiency(%): 90.72%
Lumens(lm)/Power(W): 114.66
Central intensity(cd): 2823.609
Maximum intensity(cd): 2823.609
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=33.9
 [C90/270]Total=33.9
Field angle(10%Imax): [C0/180]Total=71.6
 [C90/270]Total=71.6
Maximum s/h(1/2): C0_180=0.57 C90_270=0.57
Maximum s/h(1/4): C0_180=0.54 C90_270=0.54
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 91.91%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 97.562%

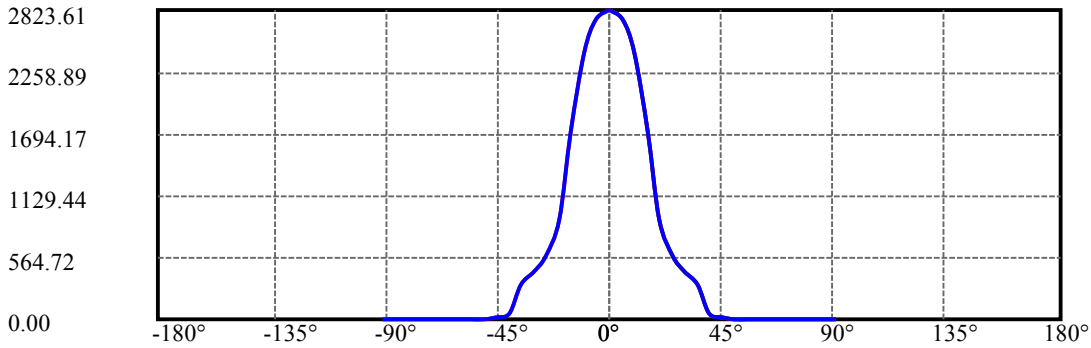
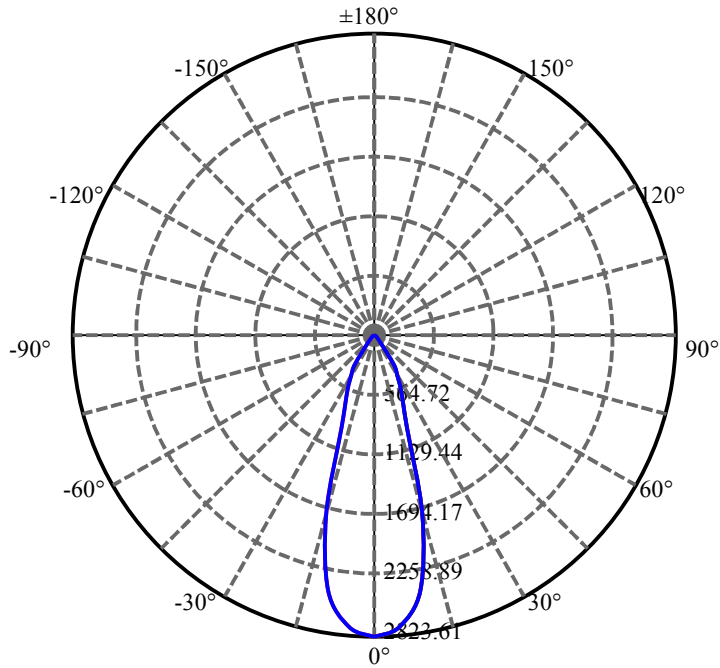
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	2823.609	16.886	16.886	1.278%	1.409%
5.0	2738.461	130.825	147.711	9.904%	12.325%
10.0	2436.258	231.890	379.602	17.554%	31.674%
15.0	1725.173	244.748	624.349	18.527%	52.096%
20.0	916.538	171.827	796.176	13.007%	66.434%
25.0	579.987	134.356	930.532	10.171%	77.645%
30.0	437.316	119.855	1050.386	9.073%	87.645%
35.0	324.394	101.989	1152.375	7.721%	96.155%
40.0	58.071	20.461	1172.836	1.549%	97.863%
45.0	10.941	4.240	1177.076	.321%	98.216%
50.0	6.054	2.542	1179.618	.192%	98.429%
55.0	5.534	2.485	1182.103	.188%	98.636%
60.0	5.259	2.497	1184.6	.189%	98.844%
65.0	5.020	2.494	1187.094	.189%	99.052%
70.0	4.880	2.513	1189.607	.190%	99.262%
75.0	4.760	2.520	1192.127	.191%	99.472%
80.0	4.697	2.535	1194.663	.192%	99.684%
85.0	4.627	2.526	1197.189	.191%	99.895%
90.0	4.605	1.262	1198.451	.096%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1050.39	79.51%	87.65%
0-40	1172.84	88.78%	97.86%
0-60	1184.60	89.67%	98.84%
0-90	1197.19	90.63%	99.89%
0-120	1197.19	90.63%	99.89%
0-180	1198.45	90.72%	100.00%
60-90	15.09	1.14%	1.26%
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%
0-26.18	958.76	72.58%	80.00%

ZONAL LUMEN SUMMARY

0-10	379.60
10-20	416.57
20-30	254.21
30-40	122.45
40-50	6.78
50-60	4.98
60-70	5.01
70-80	5.06
80-90	2.53
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: —————

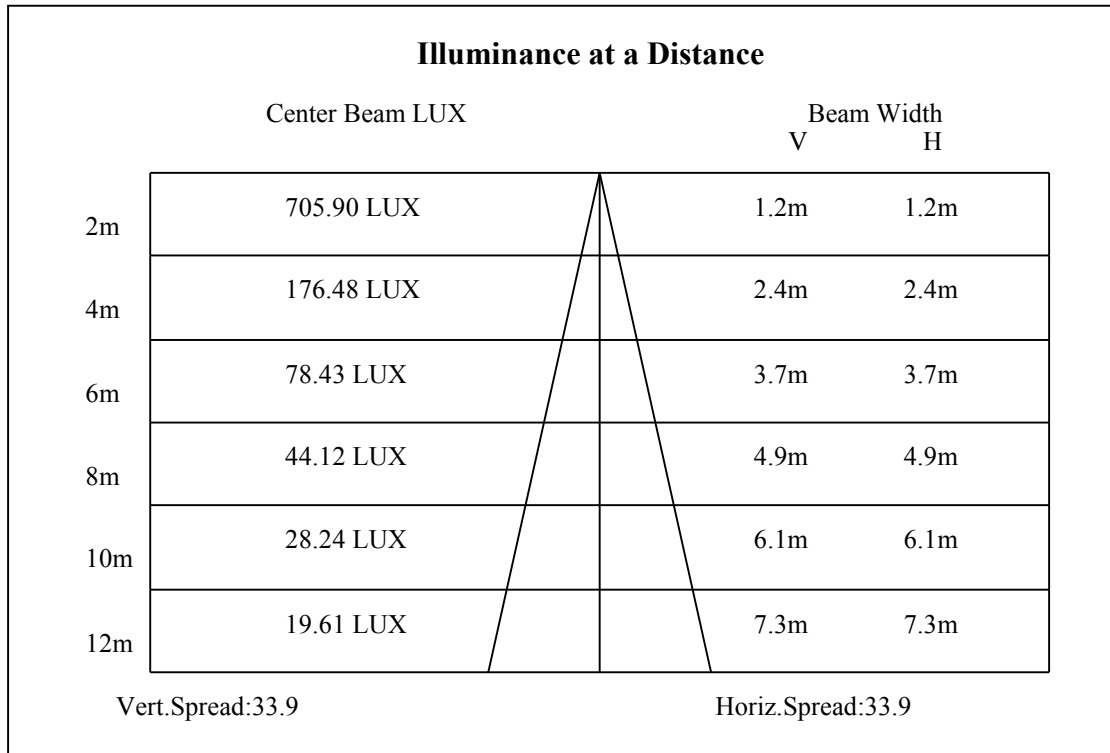
C90/C270: —————

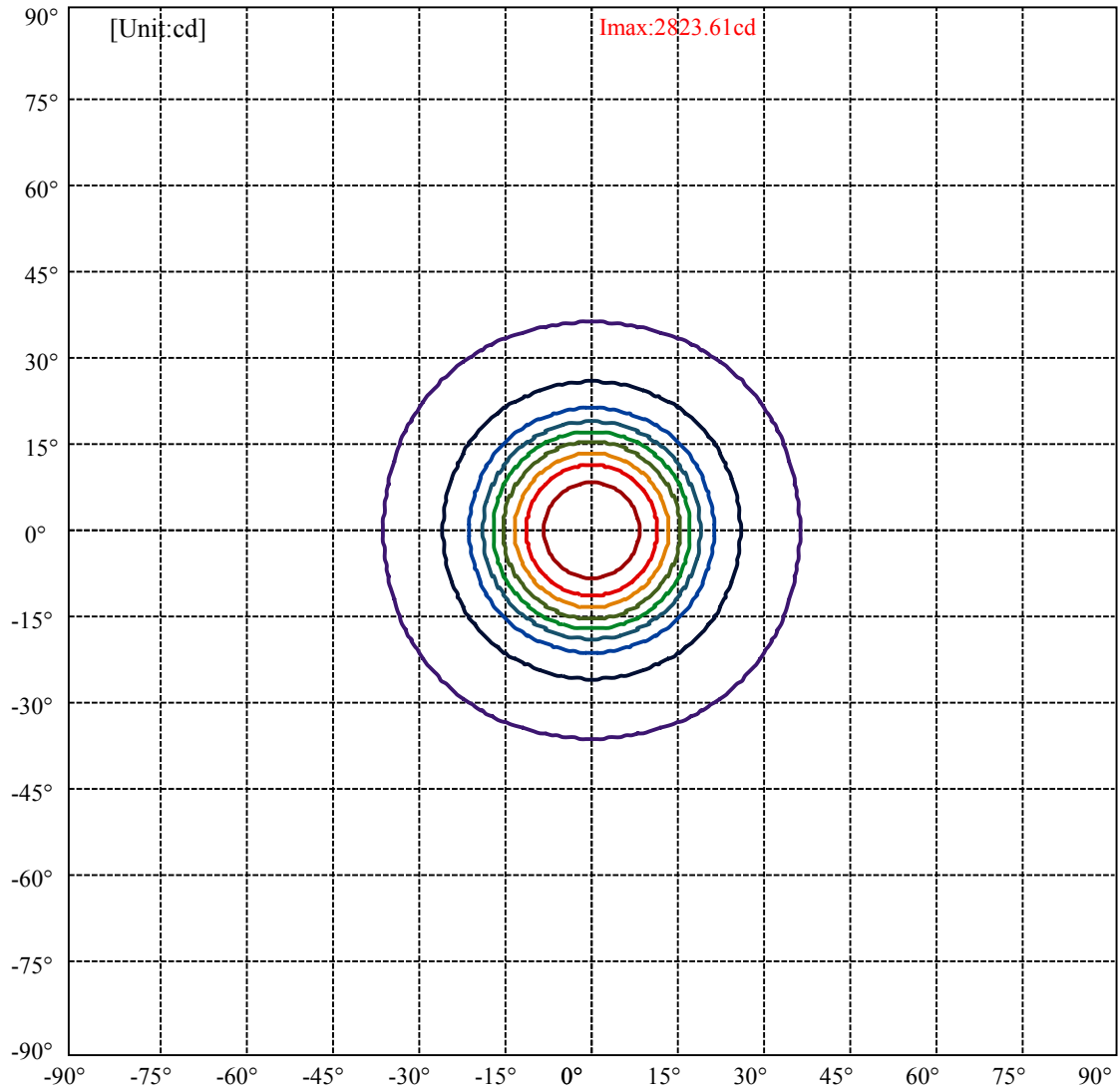
Field angle(10%Imax):C0/180Left:35.8 Right:35.8

:C90/270Left:35.8 Right:35.8

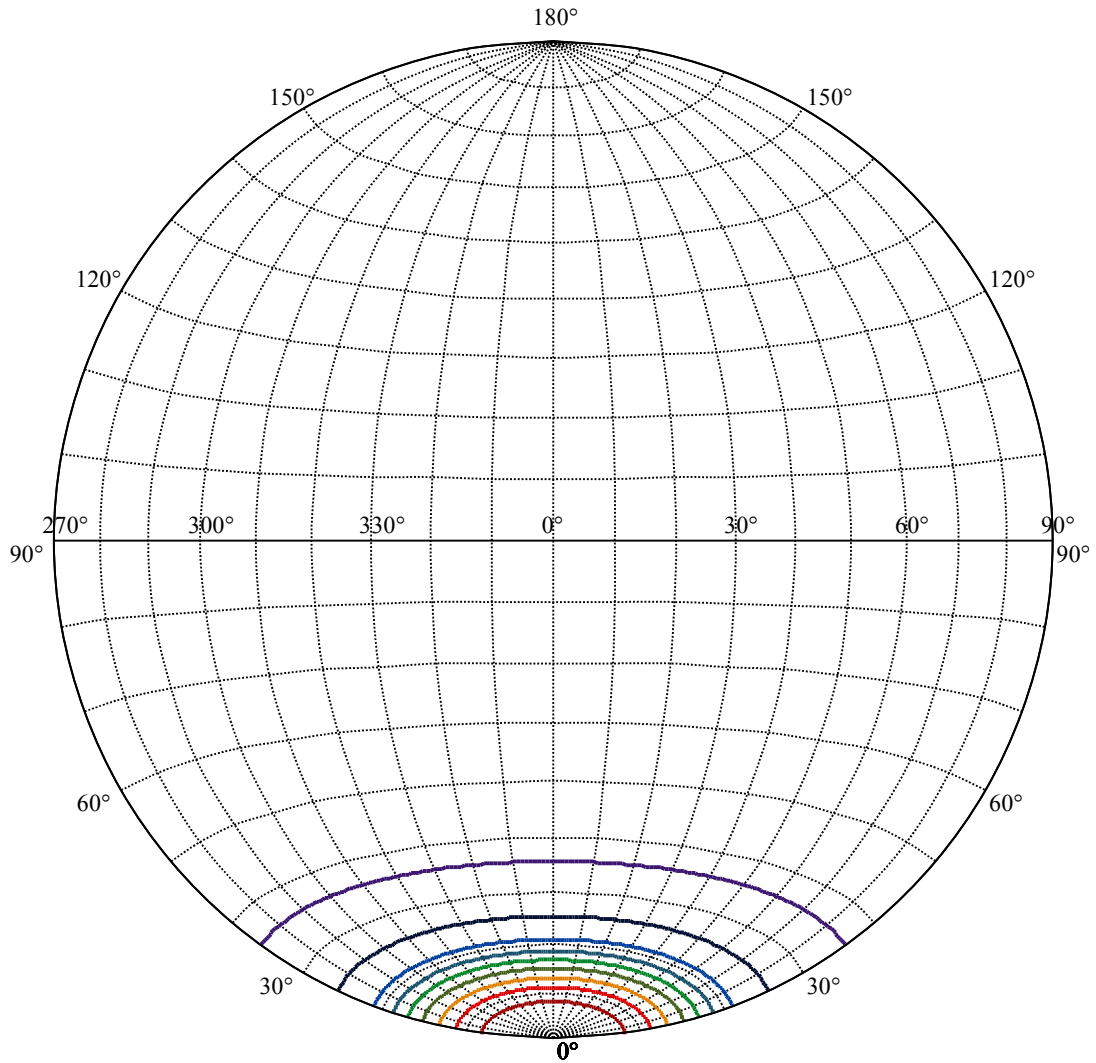
Beam Angle(50%Imax):C0/180Left:16.9 Right:16.9

:C90/270Left:16.9 Right:16.9





(10%Imax) 282.361	—
(20%Imax) 564.722	—
(30%Imax) 847.083	—
(40%Imax) 1129.44	—
(50%Imax) 1411.8	—
(60%Imax) 1694.17	—
(70%Imax) 1976.53	—
(80%Imax) 2258.89	—
(90%Imax) 2541.25	—



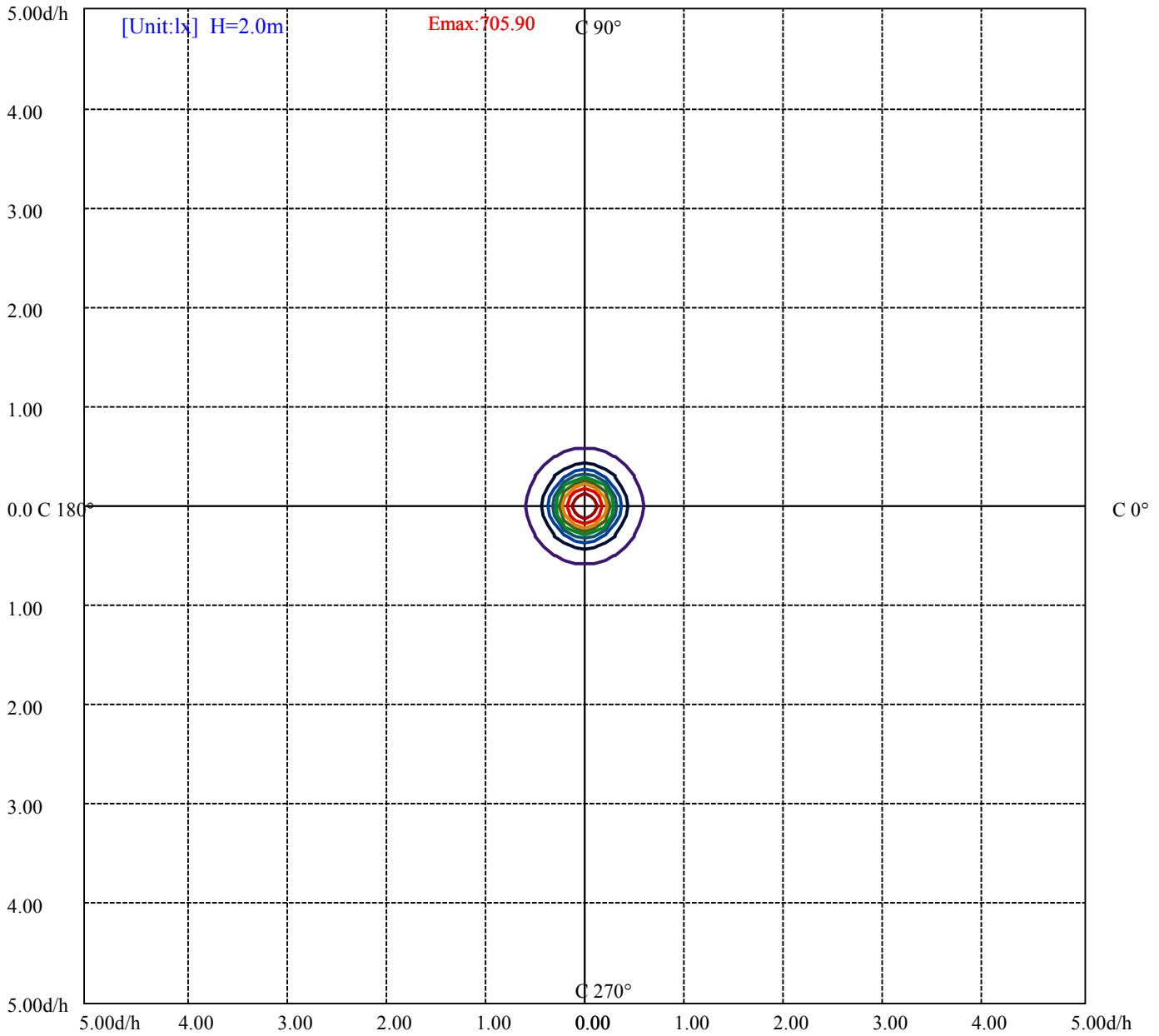
House

[Unit:cd]

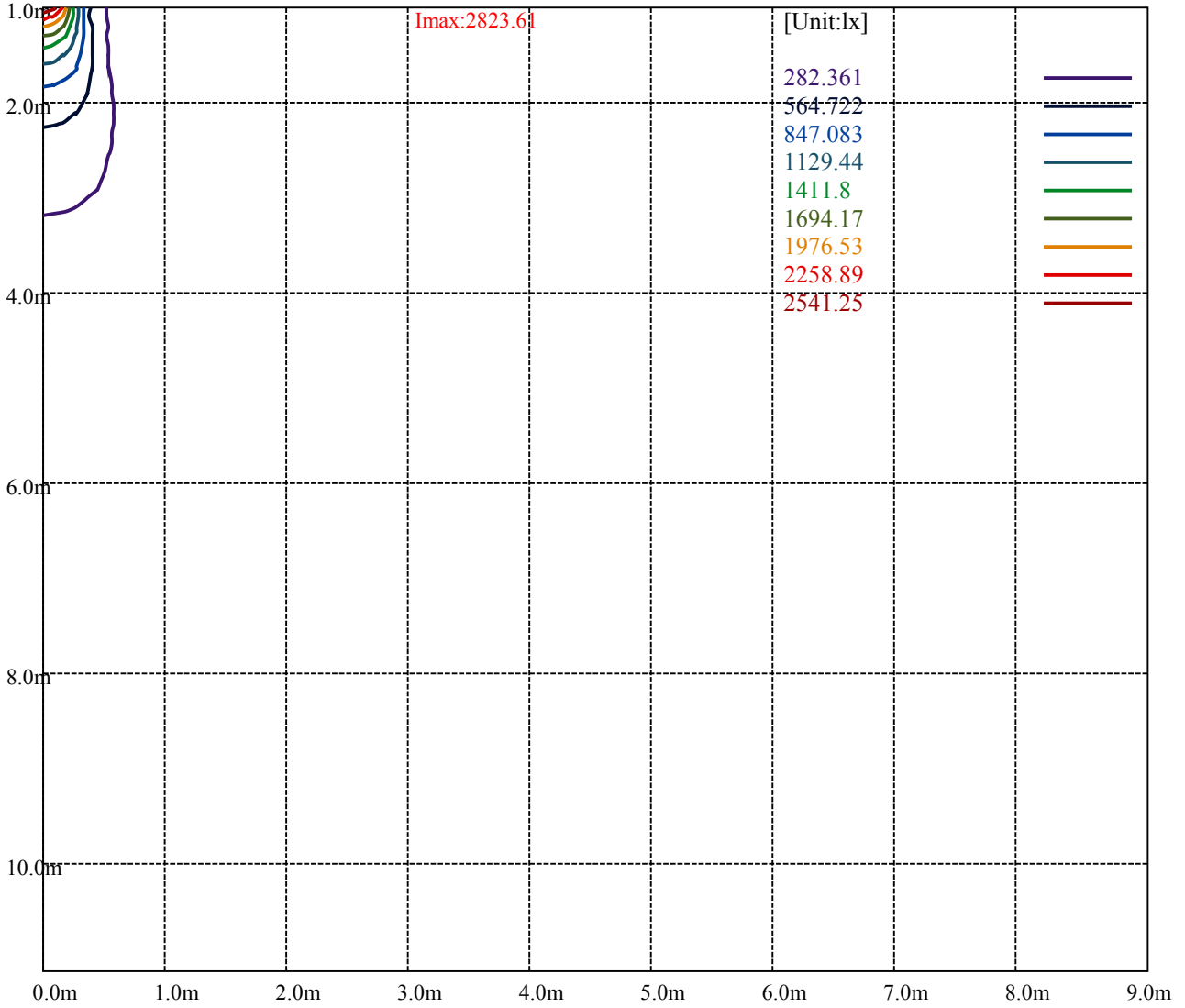
Road

Imax:2823.61

(10%Imax) 282.361	—
(20%Imax) 564.722	—
(30%Imax) 847.083	—
(40%Imax) 1129.44	—
(50%Imax) 1411.8	—
(60%Imax) 1694.17	—
(70%Imax) 1976.53	—
(80%Imax) 2258.89	—
(90%Imax) 2541.25	—



(10%Emax) 70.59025	—
(20%Emax) 141.1803	—
(30%Emax) 211.7705	—
(40%Emax) 282.36	—
(50%Emax) 352.95	—
(60%Emax) 423.54	—
(70%Emax) 494.13	—
(80%Emax) 564.7225	—
(90%Emax) 635.3125	—



Luminance Table

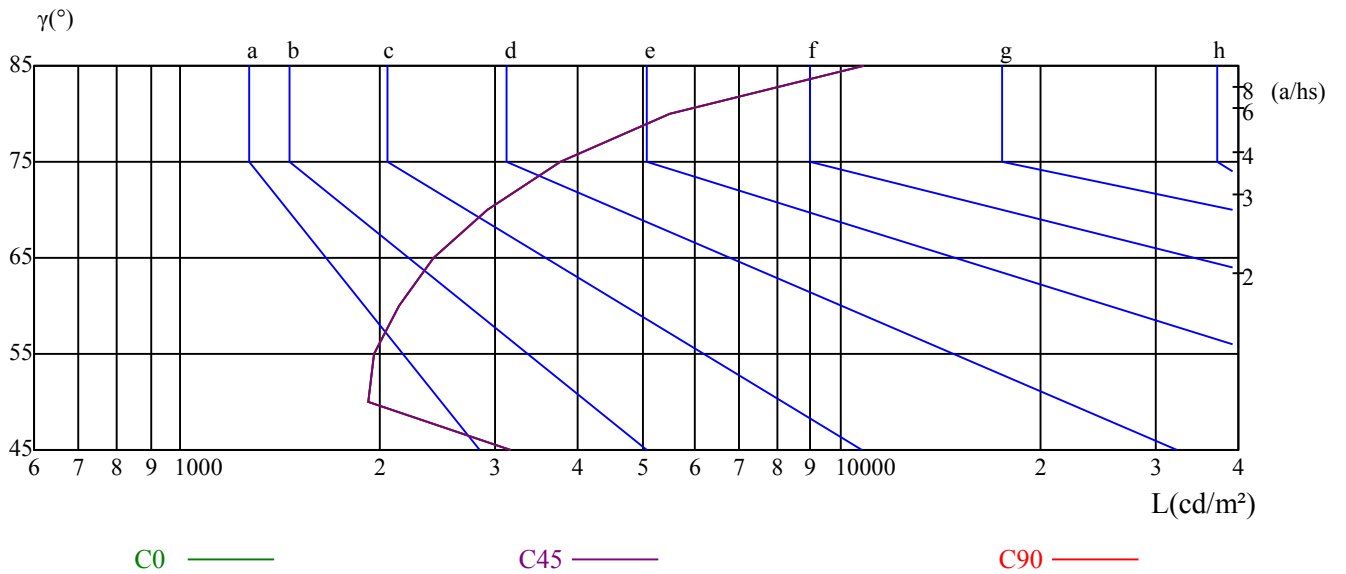
γ	45	50	55	60	65	70	75	80	85
C0	3158	1922	1969	2147	2424	2912	3753	5520	10833
C45	3158	1922	1969	2147	2424	2912	3753	5520	10833
C90	3158	1922	1969	2147	2424	2912	3753	5520	10833

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
2424	2424	2424	3753	3753	3753	10833	10833	10833

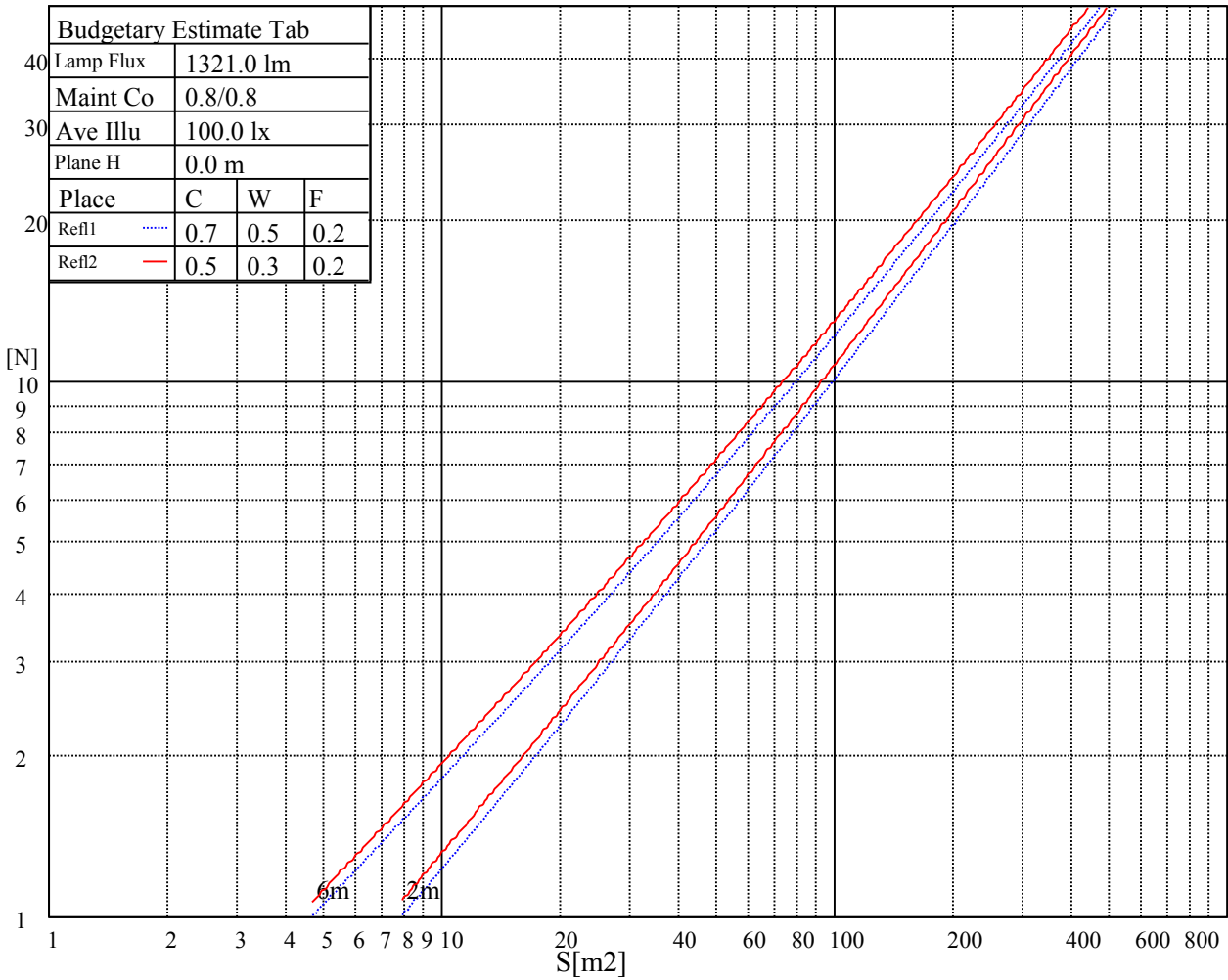
Glare Table

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

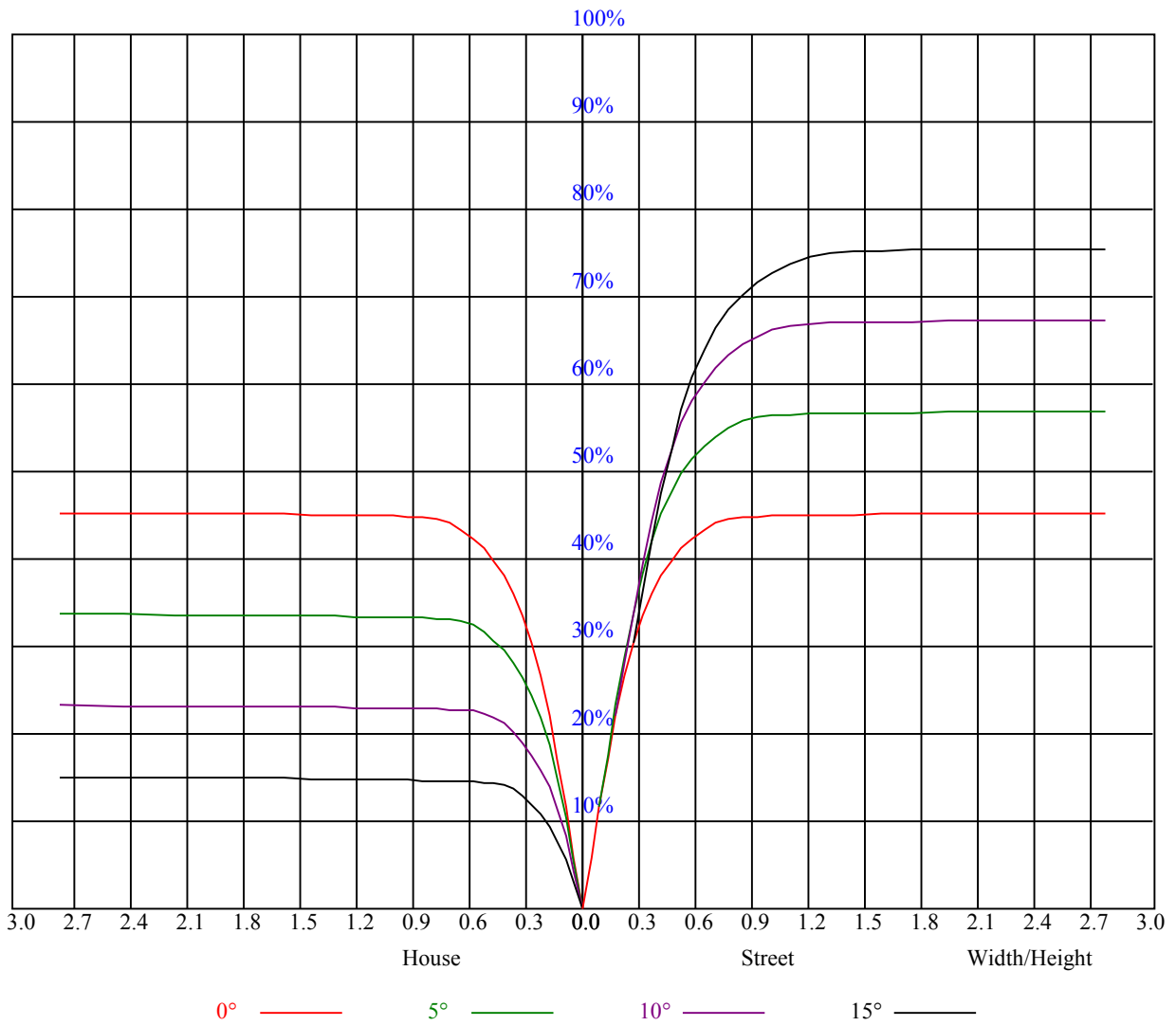
Luminance Limiting Curve



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	2.45	3.36	2.81	3.67	3.99	2.50	3.41	2.87	3.73	4.04
	3H	5.57	6.37	5.95	6.70	7.07	5.60	6.40	5.98	6.74	7.10
	4H	7.27	8.01	7.67	8.36	8.76	7.29	8.03	7.70	8.39	8.78
	6H	9.18	9.86	9.60	10.23	10.63	9.21	9.89	9.63	10.27	10.67
	8H	10.24	10.88	10.68	11.27	11.68	10.28	10.92	10.72	11.31	11.72
	12H	11.97	12.58	12.41	12.97	13.40	12.02	12.63	12.45	13.01	13.44
4H	2H	3.32	4.07	3.73	4.42	4.81	3.36	4.11	3.77	4.46	4.85
	3H	6.70	7.31	7.11	7.72	8.12	6.71	7.32	7.13	7.73	8.14
	4H	8.57	9.11	9.01	9.54	9.99	8.58	9.12	9.02	9.55	10.00
	6H	10.64	11.11	11.11	11.56	12.03	10.66	11.13	11.14	11.58	12.06
	8H	11.80	12.24	12.28	12.69	13.16	11.84	12.27	12.31	12.72	13.20
8H	12H	13.44	13.81	13.93	14.30	14.78	13.48	13.85	13.97	14.34	14.82
	4H	9.28	9.71	9.76	10.16	10.64	9.29	9.72	9.76	10.17	10.65
	6H	11.63	11.97	12.14	12.47	12.96	11.65	11.99	12.16	12.50	12.98
	8H	12.98	13.28	13.52	13.81	14.31	13.01	13.31	13.55	13.84	14.33
12H	12H	14.76	15.02	15.29	15.52	16.10	14.79	15.05	15.32	15.55	16.13
	4H	9.48	9.85	9.97	10.34	10.82	9.49	9.86	9.98	10.35	10.83
	6H	12.14	12.24	12.48	12.72	13.27	12.16	12.26	12.50	12.74	13.29
	8H	13.43	13.69	13.95	14.19	14.77	13.45	13.71	13.98	14.21	14.79
Variation with the observer position at spacings:											
S = 1.0H	5.3/-8.2					5.3/-8.2					
S = 1.5H	7.6/-6.2					7.6/-6.2					
S = 2.0H	9.0/-4.7					9.0/-4.7					
Standard tables:	BK2					BK2					
Uncorrected UGR	-0.7					-0.7					



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	1.09	1.09	1.09	1.07	1.07	1.07	1.02	1.02	1.02	0.98	0.98	0.98	0.94	0.94	0.94	0.92
1	1.01	0.99	0.97	0.99	0.97	0.95	0.96	0.94	0.92	0.92	0.91	0.90	0.89	0.88	0.87	0.85
2	0.96	0.92	0.90	0.94	0.91	0.89	0.91	0.89	0.87	0.89	0.87	0.85	0.86	0.84	0.83	0.82
3	0.91	0.87	0.84	0.90	0.86	0.83	0.87	0.84	0.82	0.85	0.83	0.81	0.83	0.81	0.79	0.78
4	0.87	0.83	0.79	0.86	0.82	0.79	0.84	0.81	0.78	0.82	0.79	0.77	0.81	0.78	0.76	0.75
5	0.83	0.79	0.75	0.82	0.78	0.75	0.81	0.77	0.74	0.79	0.76	0.74	0.78	0.75	0.73	0.72
6	0.80	0.75	0.72	0.79	0.75	0.72	0.78	0.74	0.71	0.76	0.73	0.71	0.75	0.72	0.70	0.69
7	0.77	0.72	0.69	0.76	0.72	0.69	0.75	0.71	0.68	0.74	0.71	0.68	0.73	0.70	0.68	0.67
8	0.74	0.69	0.66	0.73	0.69	0.66	0.72	0.69	0.66	0.71	0.68	0.66	0.71	0.68	0.65	0.64
9	0.71	0.67	0.64	0.71	0.67	0.64	0.70	0.66	0.63	0.69	0.66	0.63	0.68	0.65	0.63	0.62
10	0.69	0.64	0.62	0.68	0.64	0.62	0.68	0.64	0.61	0.67	0.64	0.61	0.66	0.63	0.61	0.60



Intensity data(cd)

C/γ(°)	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0
0.0	2820.94	2840.06	2671.31	2112.75	1157.63	637.88	477.56	399.94	191.31
45.0	2814.75	2813.06	2604.94	2003.63	1030.50	616.50	453.38	382.50	96.64
90.0	2824.88	2747.81	2367.00	1577.81	807.58	551.48	414.79	299.03	19.29
135.0	2833.88	2699.44	2361.38	1729.69	843.75	568.13	426.94	308.81	18.17
180.0	2820.94	2602.13	2218.50	1110.26	728.16	535.11	412.14	204.13	15.02
225.0	2814.75	2640.94	2239.31	1546.88	784.07	542.03	422.33	253.63	15.92
270.0	2824.88	2757.38	2500.31	1885.50	1018.13	603.00	452.81	384.75	54.00
315.0	2833.88	2806.88	2527.31	1834.88	962.49	585.79	438.58	362.36	54.23
360.0	2820.94	2840.06	2671.31	2112.75	1157.63	637.88	477.56	399.94	191.31

C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	15.64	6.41	5.74	5.46	5.12	5.01	4.84	4.73	4.67
45.0	16.26	6.19	5.68	5.34	5.06	4.89	4.78	4.73	4.61
90.0	10.80	5.85	5.40	5.18	4.95	4.84	4.73	4.67	4.61
135.0	10.07	5.79	5.40	5.18	5.01	4.84	4.73	4.67	4.61
180.0	8.10	5.79	5.40	5.18	4.95	4.84	4.73	4.73	4.61
225.0	8.16	5.85	5.46	5.18	4.95	4.84	4.73	4.73	4.61
270.0	9.34	6.30	5.57	5.29	5.06	4.89	4.78	4.67	4.61
315.0	9.17	6.24	5.63	5.29	5.06	4.89	4.78	4.67	4.67
360.0	15.64	6.41	5.74	5.46	5.12	5.01	4.84	4.73	4.67

C/γ(°)	90.0
0.0	4.61
45.0	4.61
90.0	4.56
135.0	4.61
180.0	4.61
225.0	4.61
270.0	4.61
315.0	4.61
360.0	4.61