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## Nata

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LumCAT: 3-1549-A3  
Luminaire: 99.02.73.172+92.76.365.00  
Report No: NATA0100  
Test No: GC2018082714  
LampCAT: CITIZEN CLU038  
Lamp flux(lm): 2534.0  
Number of Lamps: 1  
Length(mm): 79  
Phm Type: C

Voltage(V): 35.4000  
Current(A): 0.5000  
Power (W): 17.7000  
PF: 0.0000  
Ballast type: DC  
Width(mm): 79  
Height(mm): 0

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## Photometric Results

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Lumens(lm): 2328.56  
Efficiency(%): 91.89%  
Lumens(lm)/Power(W): 131.56  
Central intensity(cd): 9295.586  
Maximum intensity(cd): 9295.586  
Angle of maximum intensity: C=0.0  $\gamma$ =0.0  
Beam Angle(50%Imax): [C0/180]Total=22.9  
                                  [C90/270]Total=22.9  
Field angle(10%Imax): [C0/180]Total=54.7  
                                  [C90/270]Total=54.7  
Maximum s/h(1/2): C0\_180=0.39 C90\_270=0.39  
Maximum s/h(1/4): C0\_180=0.40 C90\_270=0.40  
Up flux rate of lamp(%): 0.00%  
Down flux rate of lamp(%): 94.00%  
Up flux rate of LUM(%): - -  
Down flux rate of LUM(%): 100.00%  
CIE Type : Direct lighting  
Output flux ratio in  $\pi$  solid angle : 96.482%

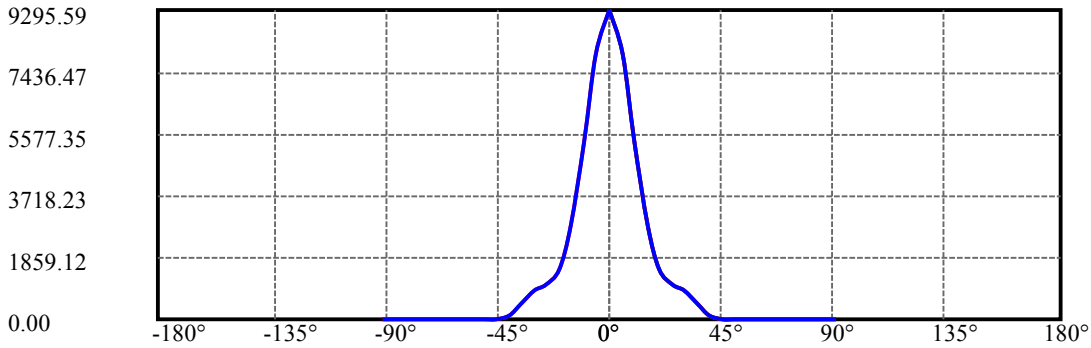
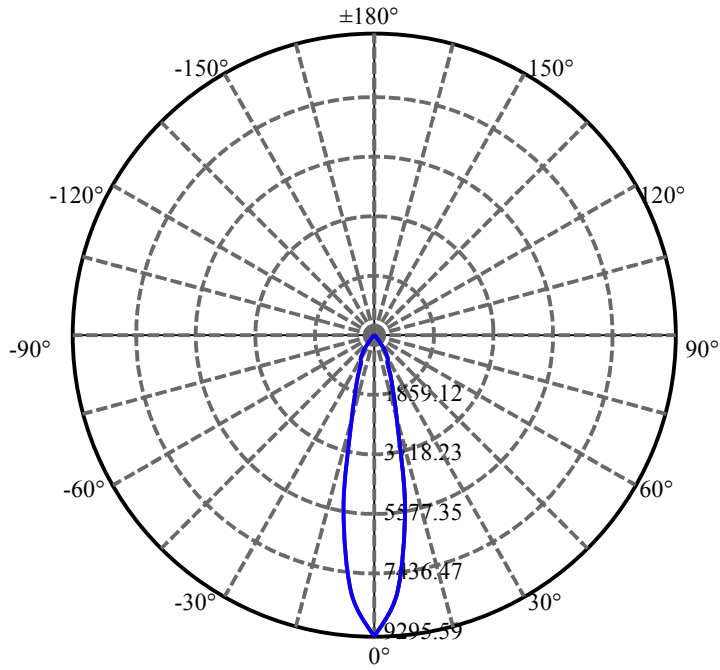
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	9295.585	55.589	55.589	2.194%	2.387%
5.0	7966.111	380.568	436.157	15.018%	18.731%
10.0	5395.802	513.589	949.746	20.268%	40.787%
15.0	2818.406	399.843	1349.589	15.779%	57.958%
20.0	1510.266	283.136	1632.724	11.173%	70.117%
25.0	1010.402	234.063	1866.787	9.237%	80.169%
30.0	837.456	229.520	2096.307	9.058%	90.026%
35.0	475.680	149.553	2245.861	5.902%	96.448%
40.0	86.920	30.625	2276.486	1.209%	97.764%
45.0	16.730	6.485	2282.97	.256%	98.042%
50.0	11.789	4.950	2287.92	.195%	98.255%
55.0	11.238	5.046	2292.967	.199%	98.471%
60.0	10.901	5.175	2298.141	.204%	98.694%
65.0	10.688	5.310	2303.451	.210%	98.922%
70.0	10.564	5.441	2308.892	.215%	99.155%
75.0	10.488	5.553	2314.445	.219%	99.394%
80.0	10.406	5.617	2320.062	.222%	99.635%
85.0	10.433	5.697	2325.759	.225%	99.880%
90.0	10.227	2.803	2328.562	.111%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	2096.31	82.73%	90.03%
0-40	2276.49	89.84%	97.76%
0-60	2298.14	90.69%	98.69%
0-90	2325.76	91.78%	99.88%
0-120	2325.76	91.78%	99.88%
0-180	2328.56	91.89%	100.00%
60-90	32.79	1.29%	1.41%
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%
0-24.92	1862.85	73.51%	80.00%

ZONAL LUMEN SUMMARY

0-10	949.75
10-20	682.98
20-30	463.58
30-40	180.18
40-50	11.43
50-60	10.22
60-70	10.75
70-80	11.17
80-90	5.70
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: —————

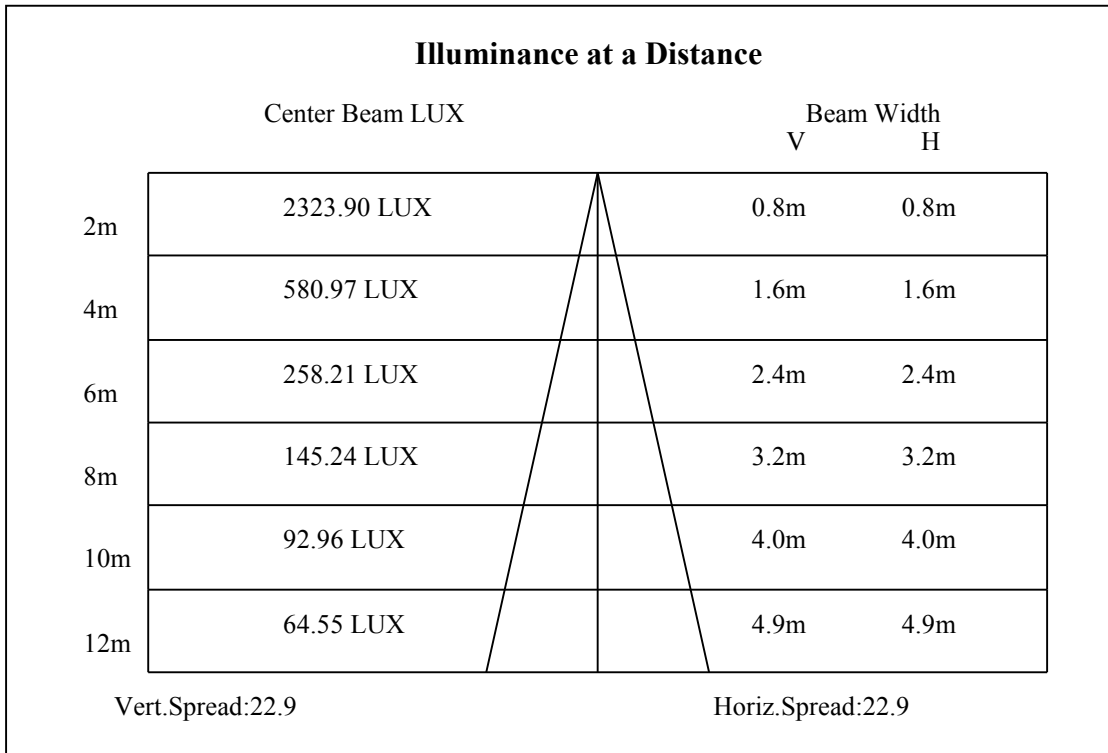
C90/C270: —————

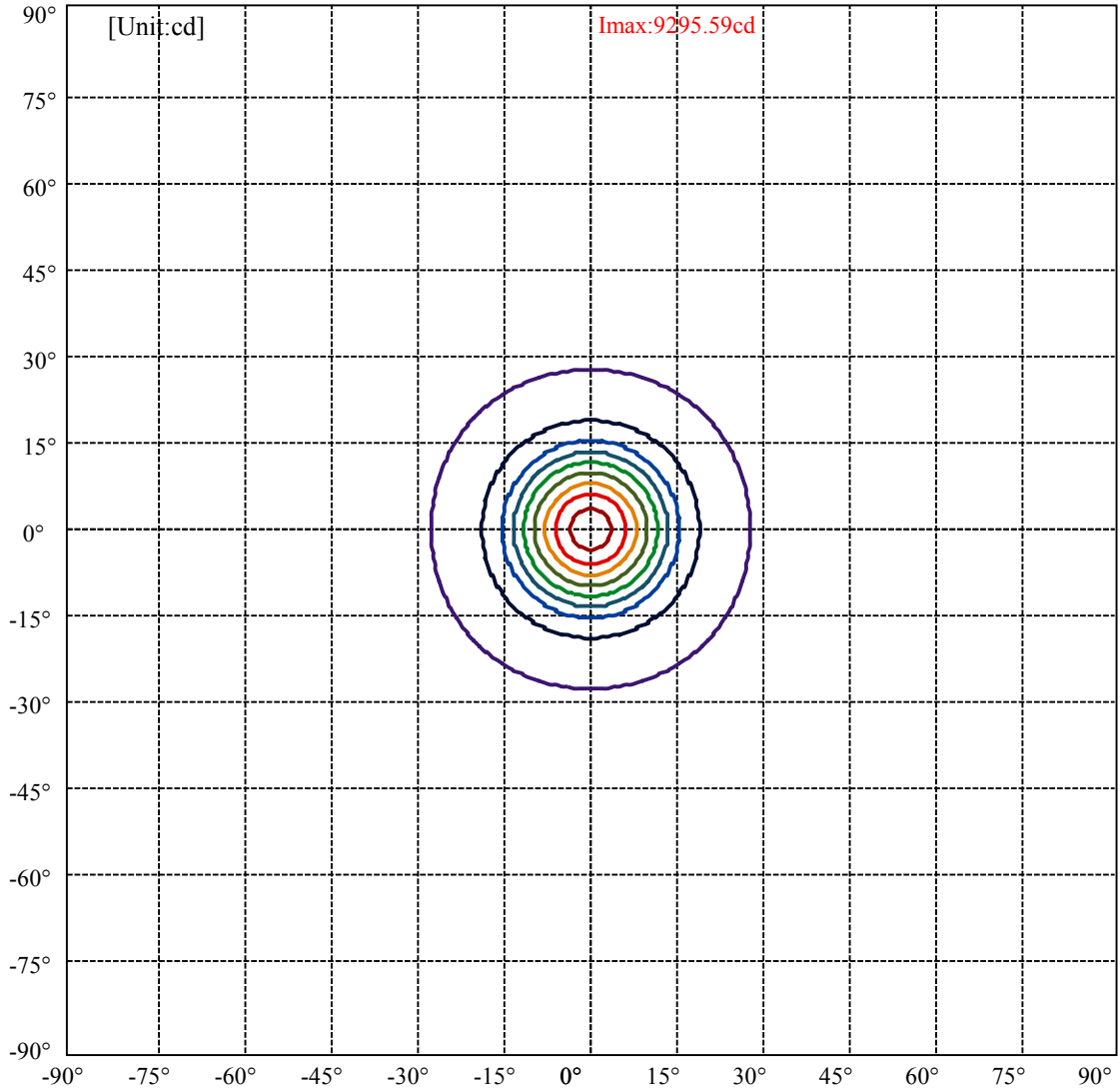
Field angle(10%Imax):C0/180Left:27.3 Right:27.3

:C90/270Left:27.3 Right:27.3

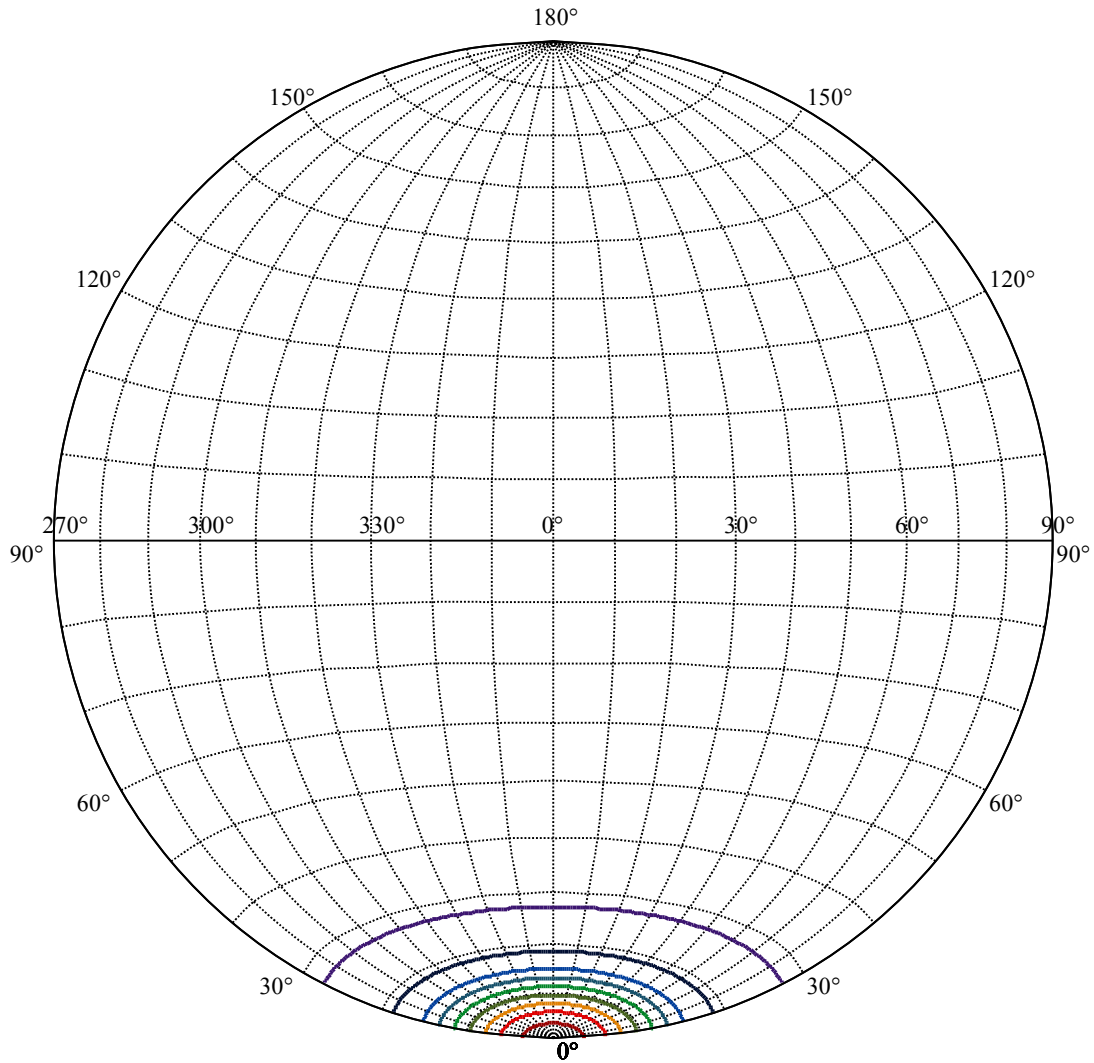
Beam Angle(50%Imax):C0/180Left:11.5 Right:11.5

:C90/270Left:11.5 Right:11.5





(10%Imax) 929.559	—
(20%Imax) 1859.12	—
(30%Imax) 2788.68	—
(40%Imax) 3718.23	—
(50%Imax) 4647.79	—
(60%Imax) 5577.35	—
(70%Imax) 6506.91	—
(80%Imax) 7436.47	—
(90%Imax) 8366.03	—



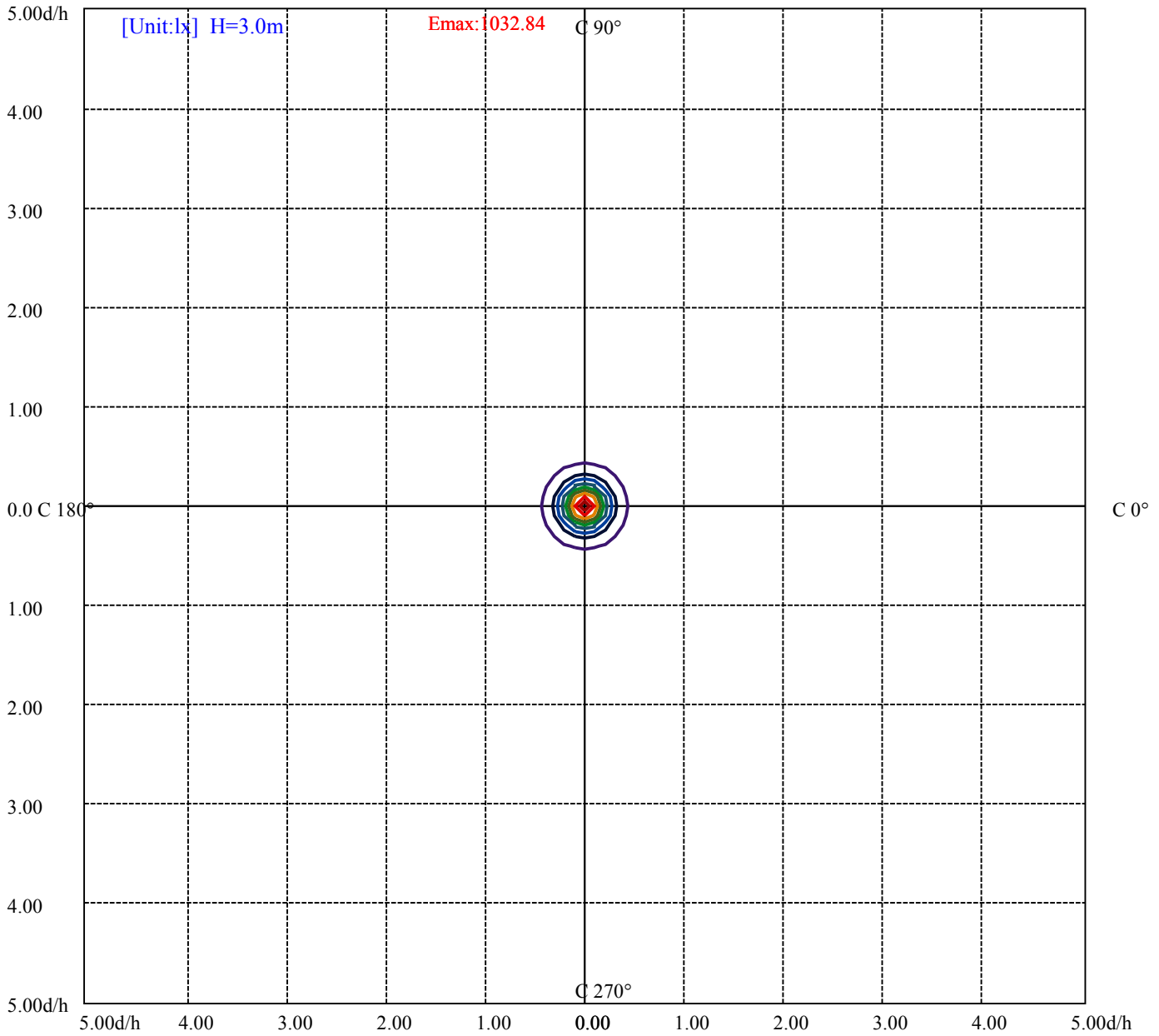
House

[Unit:cd]

Road

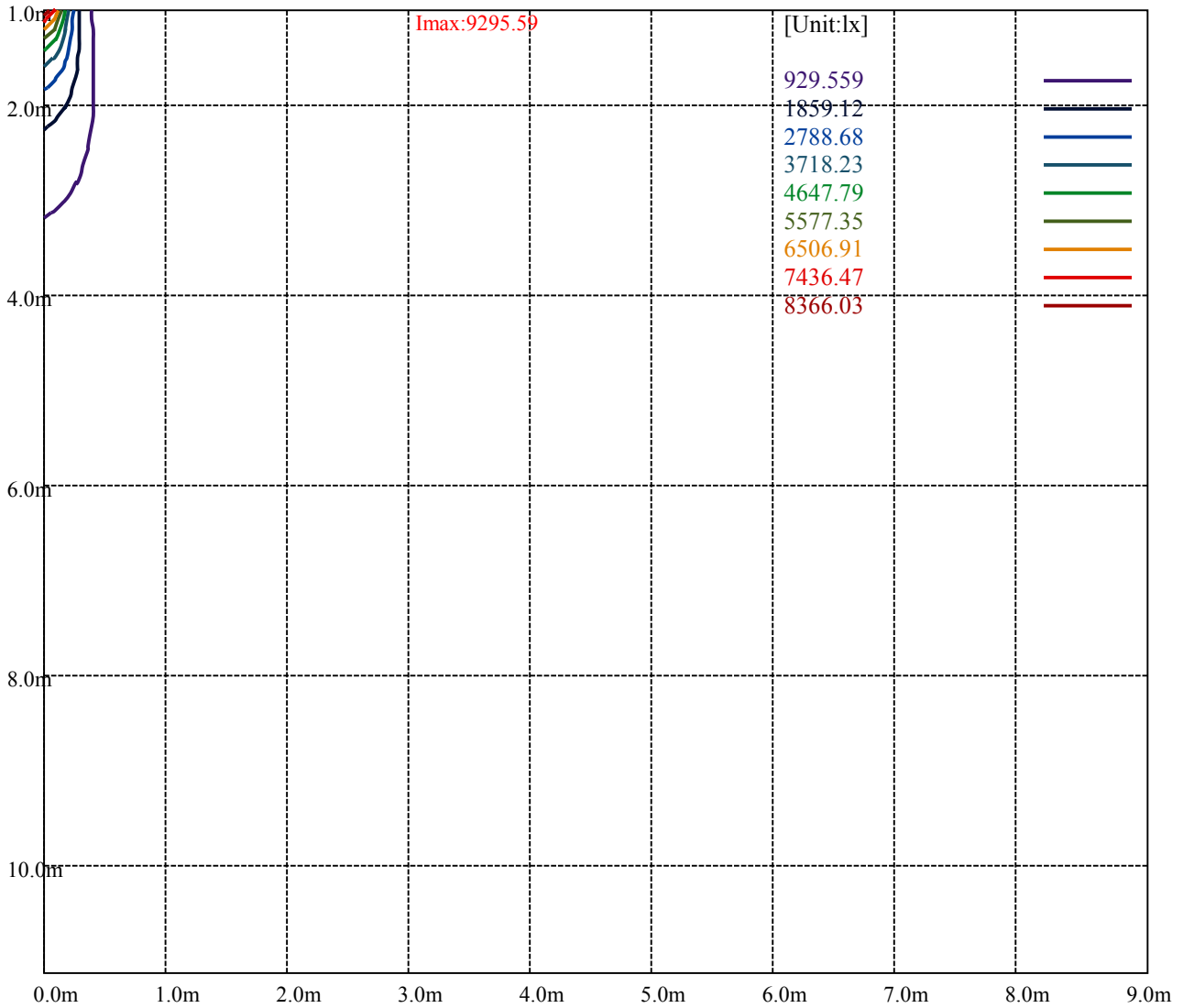
Imax:9295.59

(10%Imax)	929.559	—
(20%Imax)	1859.12	—
(30%Imax)	2788.68	—
(40%Imax)	3718.23	—
(50%Imax)	4647.79	—
(60%Imax)	5577.35	—
(70%Imax)	6506.91	—
(80%Imax)	7436.47	—
(90%Imax)	8366.03	—



- (10%E<sub>max</sub>) 103.2839
- (20%E<sub>max</sub>) 206.5678
- (30%E<sub>max</sub>) 309.8511
- (40%E<sub>max</sub>) 413.1356
- (50%E<sub>max</sub>) 516.4189
- (60%E<sub>max</sub>) 619.7034
- (70%E<sub>max</sub>) 722.9866
- (80%E<sub>max</sub>) 826.2711
- (90%E<sub>max</sub>) 929.5544





Luminance Table

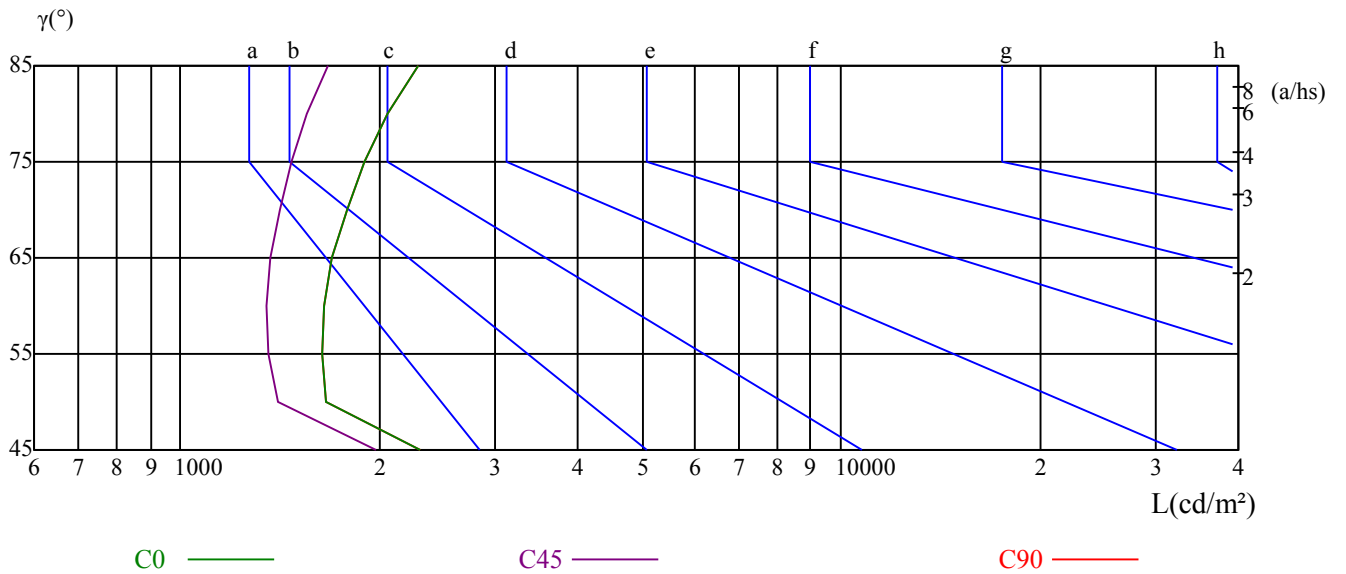
$\gamma$	45	50	55	60	65	70	75	80	85
C0	2304	1661	1633	1649	1699	1784	1905	2060	2289
C45	1982	1407	1363	1353	1370	1411	1473	1554	1677
C90	2304	1661	1633	1649	1699	1784	1905	2060	2289

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
4052	4052	4052	6493	6493	6493	19181	19181	19181

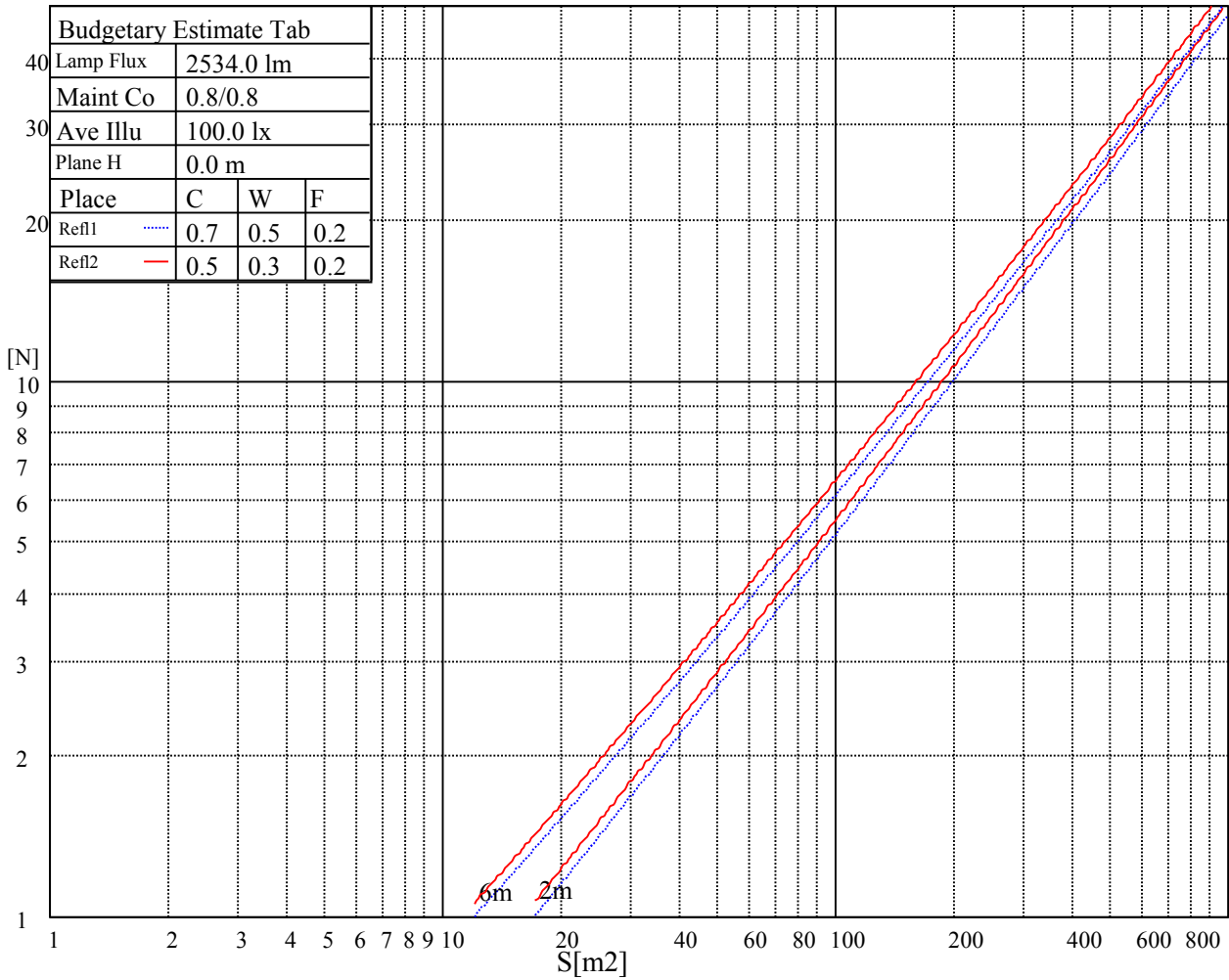
Glare Table

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

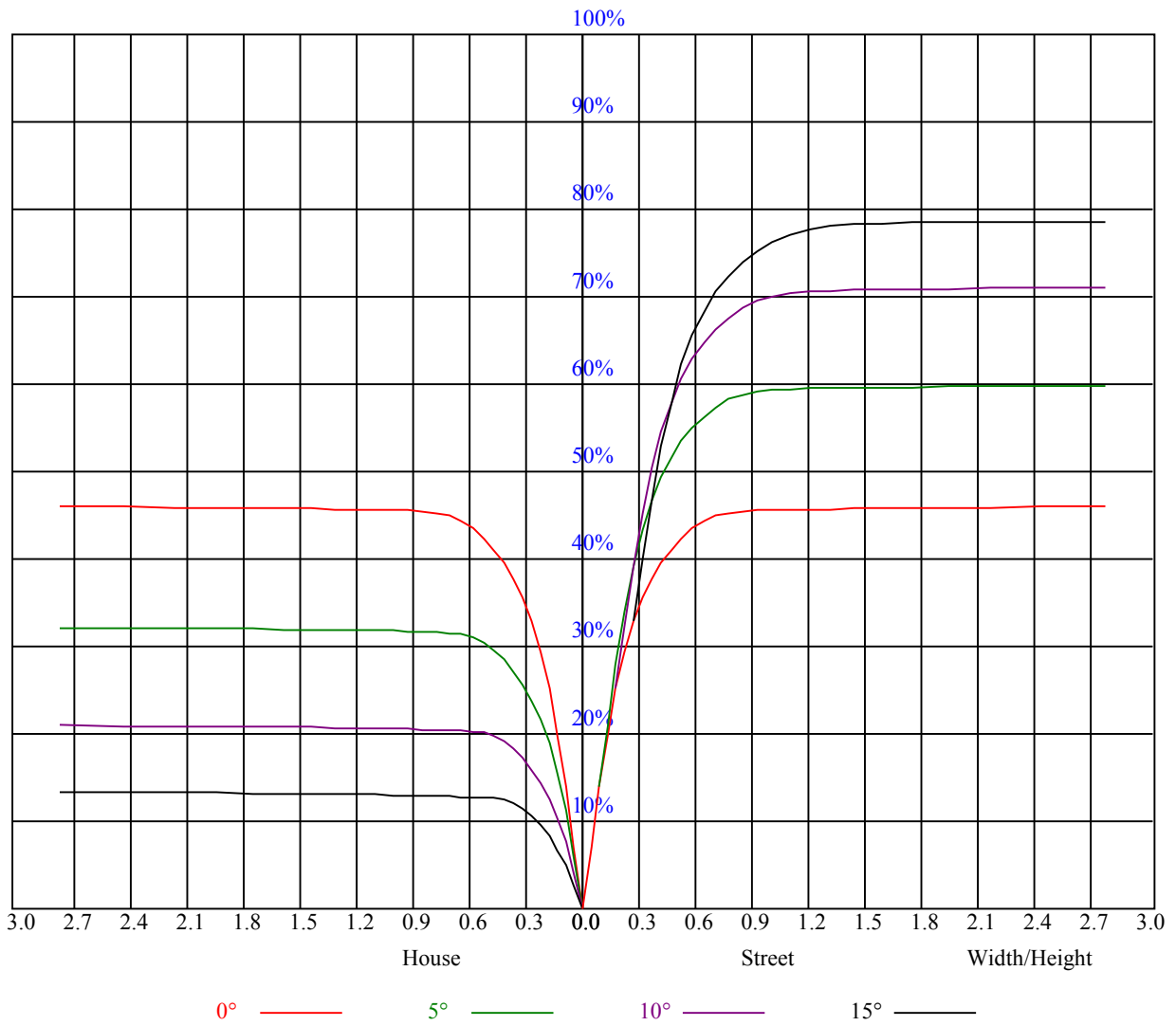
Luminance Limiting Curve



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	-0.05	0.86	0.31	1.17	1.49	-0.06	0.86	0.31	1.17	1.49
	3H	2.28	3.09	2.66	3.42	3.79	2.27	3.08	2.66	3.42	3.79
	4H	3.56	4.31	3.97	4.66	5.05	3.56	4.30	3.96	4.66	5.05
	6H	4.90	5.59	5.32	5.96	6.36	4.90	5.59	5.32	5.96	6.36
	8H	5.58	6.22	6.02	6.61	7.02	5.57	6.21	6.01	6.60	7.01
	12H	6.63	7.24	7.06	7.62	8.06	6.60	7.21	7.03	7.59	8.02
4H	2H	0.46	1.20	0.86	1.56	1.95	0.45	1.20	0.86	1.55	1.94
	3H	3.08	3.69	3.50	4.10	4.51	3.08	3.69	3.49	4.10	4.51
	4H	4.53	5.08	4.97	5.51	5.96	4.53	5.08	4.97	5.51	5.96
	6H	5.97	6.44	6.45	6.89	7.37	5.97	6.44	6.44	6.89	7.37
	8H	6.76	7.20	7.24	7.65	8.13	6.75	7.19	7.23	7.64	8.12
8H	12H	7.80	8.18	8.30	8.67	9.15	7.77	8.15	8.27	8.64	9.12
	4H	4.98	5.42	5.46	5.87	6.35	4.98	5.42	5.46	5.87	6.34
	6H	6.66	7.00	7.17	7.51	8.00	6.66	7.00	7.17	7.51	8.00
	8H	7.60	7.91	8.14	8.43	8.93	7.59	7.90	8.13	8.42	8.92
12H	12H	8.77	9.03	9.30	9.53	10.11	8.74	9.00	9.27	9.50	10.08
	4H	5.08	5.45	5.57	5.94	6.42	5.07	5.45	5.57	5.94	6.42
	6H	7.04	7.14	7.37	7.61	8.16	7.04	7.14	7.37	7.61	8.16
	8H	7.88	8.14	8.40	8.64	9.22	7.87	8.13	8.39	8.63	9.21
Variation with the observer position at spacings:											
S = 1.0H		5.6/-7.7					5.6/-7.7				
S = 1.5H		7.9/-6.0					7.9/-6.0				
S = 2.0H		9.5/-4.7					9.5/-4.7				
Standard tables:		BK2					BK2				
Uncorrected UGR		-3.2					-3.2				



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	1.12	1.12	1.12	1.09	1.09	1.09	1.04	1.04	1.04	1.00	1.00	1.00	0.96	0.96	0.96	0.94
1	1.03	1.00	0.98	1.01	0.98	0.96	0.97	0.95	0.93	0.93	0.92	0.90	0.90	0.89	0.88	0.86
2	0.97	0.94	0.91	0.96	0.93	0.90	0.93	0.90	0.88	0.90	0.88	0.86	0.87	0.86	0.84	0.83
3	0.93	0.89	0.85	0.92	0.88	0.85	0.89	0.86	0.83	0.87	0.84	0.82	0.85	0.83	0.81	0.80
4	0.89	0.85	0.81	0.88	0.84	0.81	0.86	0.82	0.80	0.84	0.81	0.79	0.82	0.80	0.78	0.77
5	0.85	0.81	0.78	0.85	0.80	0.77	0.83	0.79	0.77	0.82	0.78	0.76	0.80	0.77	0.75	0.74
6	0.82	0.78	0.75	0.82	0.77	0.74	0.80	0.77	0.74	0.79	0.76	0.73	0.78	0.75	0.73	0.72
7	0.79	0.75	0.72	0.79	0.75	0.72	0.78	0.74	0.71	0.77	0.73	0.71	0.76	0.73	0.71	0.70
8	0.77	0.72	0.69	0.76	0.72	0.69	0.75	0.72	0.69	0.75	0.71	0.69	0.74	0.71	0.68	0.67
9	0.74	0.70	0.67	0.74	0.70	0.67	0.73	0.70	0.67	0.73	0.69	0.67	0.72	0.69	0.67	0.66
10	0.72	0.68	0.65	0.72	0.68	0.65	0.71	0.68	0.65	0.71	0.67	0.65	0.70	0.67	0.65	0.64



Intensity data(cd)

C/ $\gamma$ (°)	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0
0.0	9329.86	7792.13	5205.03	2759.98	1493.13	1000.37	845.12	467.98	51.09
45.0	9352.43	7697.44	5173.10	2619.03	1412.75	981.66	823.64	414.02	45.48
90.0	9237.36	7437.57	4643.46	2399.36	1223.35	926.82	797.55	354.34	30.67
135.0	9262.69	8212.21	5669.16	2955.98	1574.06	1013.59	836.86	524.69	76.20
180.0	9329.86	8004.65	5537.57	2915.79	1530.57	1017.55	837.13	482.40	79.61
225.0	9352.43	8264.52	5771.01	3051.23	1617.01	1055.38	852.05	523.53	85.28
270.0	9237.36	8482.54	6092.54	3287.42	1765.66	1101.13	878.15	596.26	280.79
315.0	9262.69	7837.83	5074.55	2558.47	1465.60	986.72	829.15	442.21	46.25
360.0	9329.86	7792.13	5205.03	2759.98	1493.13	1000.37	845.12	467.98	51.09
C/ $\gamma$ (°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	16.41	11.73	11.18	10.85	10.63	10.57	10.52	10.46	10.35
45.0	13.43	11.62	11.12	10.85	10.68	10.57	10.52	10.41	10.41
90.0	12.33	11.62	11.12	10.79	10.68	10.57	10.52	10.41	10.74
135.0	16.02	11.84	11.29	10.96	10.74	10.63	10.57	10.46	10.63
180.0	18.11	11.84	11.29	10.96	10.74	10.57	10.46	10.35	10.35
225.0	21.03	11.89	11.29	10.96	10.68	10.52	10.41	10.35	10.30
270.0	21.20	12.00	11.40	11.01	10.74	10.57	10.46	10.41	10.35
315.0	15.31	11.78	11.23	10.85	10.63	10.52	10.46	10.41	10.35
360.0	16.41	11.73	11.18	10.85	10.63	10.57	10.52	10.46	10.35
C/ $\gamma$ (°)	90.0								
0.0	10.24								
45.0	10.24								
90.0	10.24								
135.0	10.24								
180.0	10.19								
225.0	10.19								
270.0	10.24								
315.0	10.24								
360.0	10.24								