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## Nata

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LumCAT: 3-1547-A3  
Luminaire: 99.02.73.172+92.76.365.00  
Report No: NATA0100  
Test No: GC2018082718  
LampCAT: CITIZEN CLU038  
Lamp flux(lm): 2534.0  
Number of Lamps: 1  
Length(mm): 84  
Phm Type: C

Voltage(V): 35.4000  
Current(A): 0.4900  
Power (W): 17.3460  
PF: 0.0000  
Ballast type: DC  
Width(mm): 84  
Height(mm): 0

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## Photometric Results

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Lumens(lm): 2312.06  
Efficiency(%): 91.24%  
Lumens(lm)/Power(W): 134.70  
Central intensity(cd): 4443.740  
Maximum intensity(cd): 4443.740  
Angle of maximum intensity: C=0.0  $\gamma$ =0.0  
Beam Angle(50%Imax): [C0/180]Total=40.5  
                                  [C90/270]Total=40.5  
Field angle(10%Imax): [C0/180]Total=70.8  
                                  [C90/270]Total=70.8  
Maximum s/h(1/2): C0\_180=0.67 C90\_270=0.67  
Maximum s/h(1/4): C0\_180=0.64 C90\_270=0.64  
Up flux rate of lamp(%): 0.00%  
Down flux rate of lamp(%): 92.20%  
Up flux rate of LUM(%): - -  
Down flux rate of LUM(%): 100.00%  
CIE Type : Direct lighting  
Output flux ratio in  $\pi$  solid angle : 97.625%

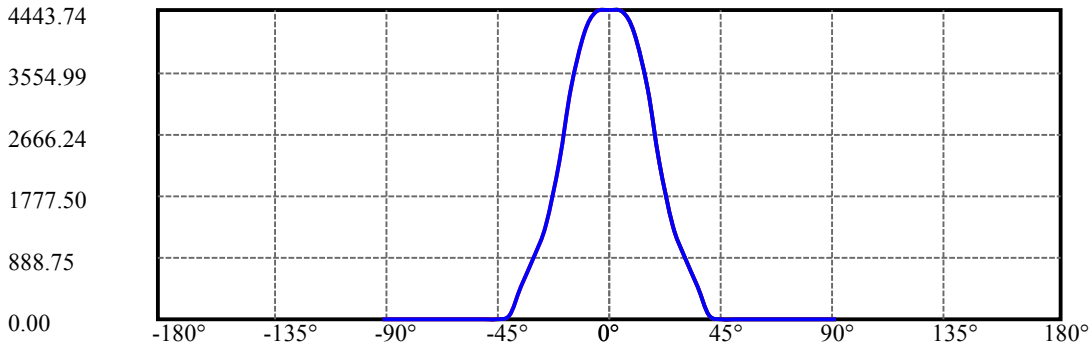
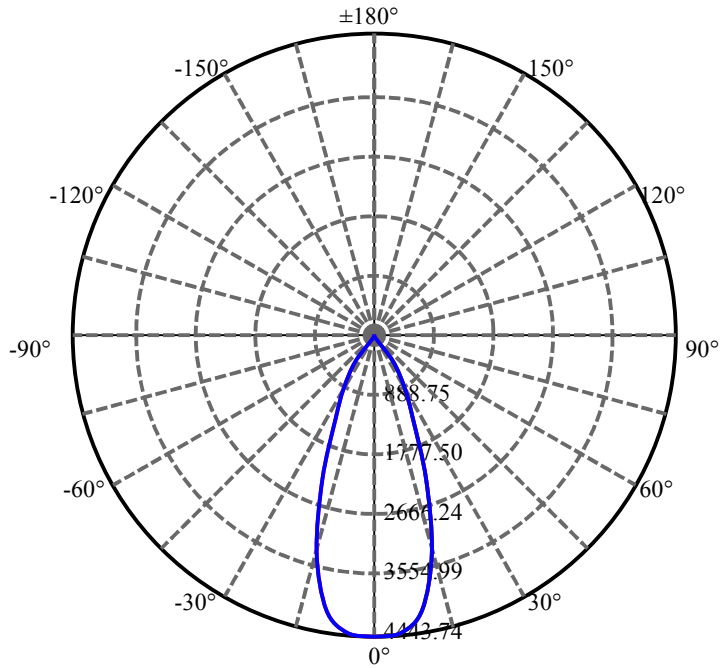
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	4443.740	26.574	26.574	1.049%	1.149%
5.0	4418.001	211.063	237.637	8.329%	10.278%
10.0	4105.143	390.740	628.377	15.420%	27.178%
15.0	3305.793	468.988	1097.365	18.508%	47.463%
20.0	2269.838	425.536	1522.9	16.793%	65.868%
25.0	1355.530	314.012	1836.913	12.392%	79.449%
30.0	918.272	251.670	2088.582	9.932%	90.334%
35.0	477.573	150.148	2238.73	5.925%	96.828%
40.0	59.736	21.047	2259.778	.831%	97.739%
45.0	13.558	5.255	2265.033	.207%	97.966%
50.0	12.415	5.213	2270.246	.206%	98.191%
55.0	11.796	5.296	2275.542	.209%	98.420%
60.0	11.383	5.403	2280.946	.213%	98.654%
65.0	11.087	5.508	2286.453	.217%	98.892%
70.0	10.874	5.601	2292.054	.221%	99.135%
75.0	10.722	5.677	2297.731	.224%	99.380%
80.0	10.598	5.721	2303.452	.226%	99.628%
85.0	10.523	5.746	2309.198	.227%	99.876%
90.0	10.454	2.865	2312.063	.113%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	2088.58	82.42%	90.33%
0-40	2259.78	89.18%	97.74%
0-60	2280.95	90.01%	98.65%
0-90	2309.20	91.13%	99.88%
0-120	2309.20	91.13%	99.88%
0-180	2312.06	91.24%	100.00%
60-90	33.66	1.33%	1.46%
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%
0-25.25	1849.65	72.99%	80.00%

ZONAL LUMEN SUMMARY

0-10	628.38
10-20	894.52
20-30	565.68
30-40	171.20
40-50	10.47
50-60	10.70
60-70	11.11
70-80	11.40
80-90	5.75
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): —————

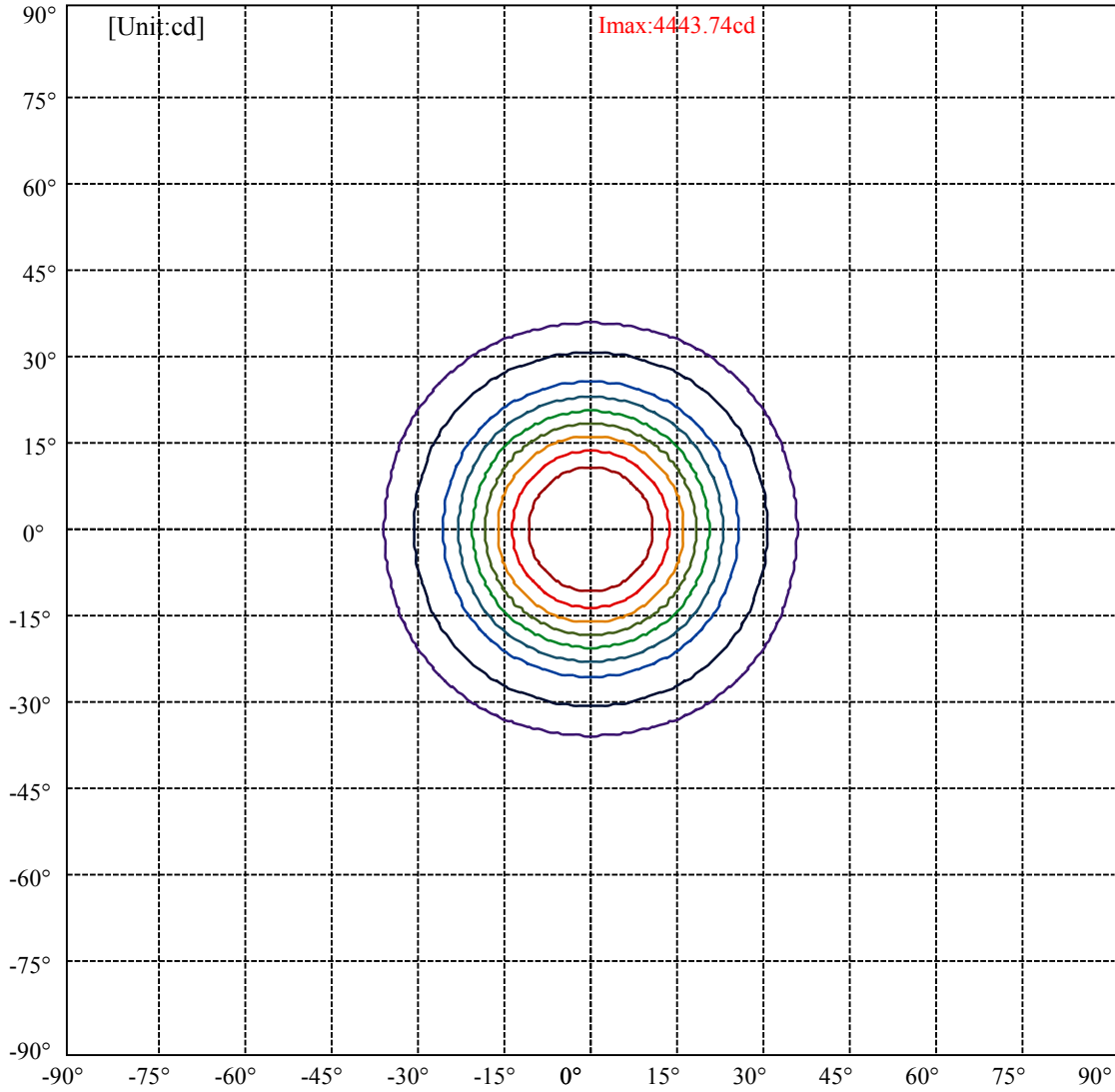
C0/C180: —————

C90/C270: —————

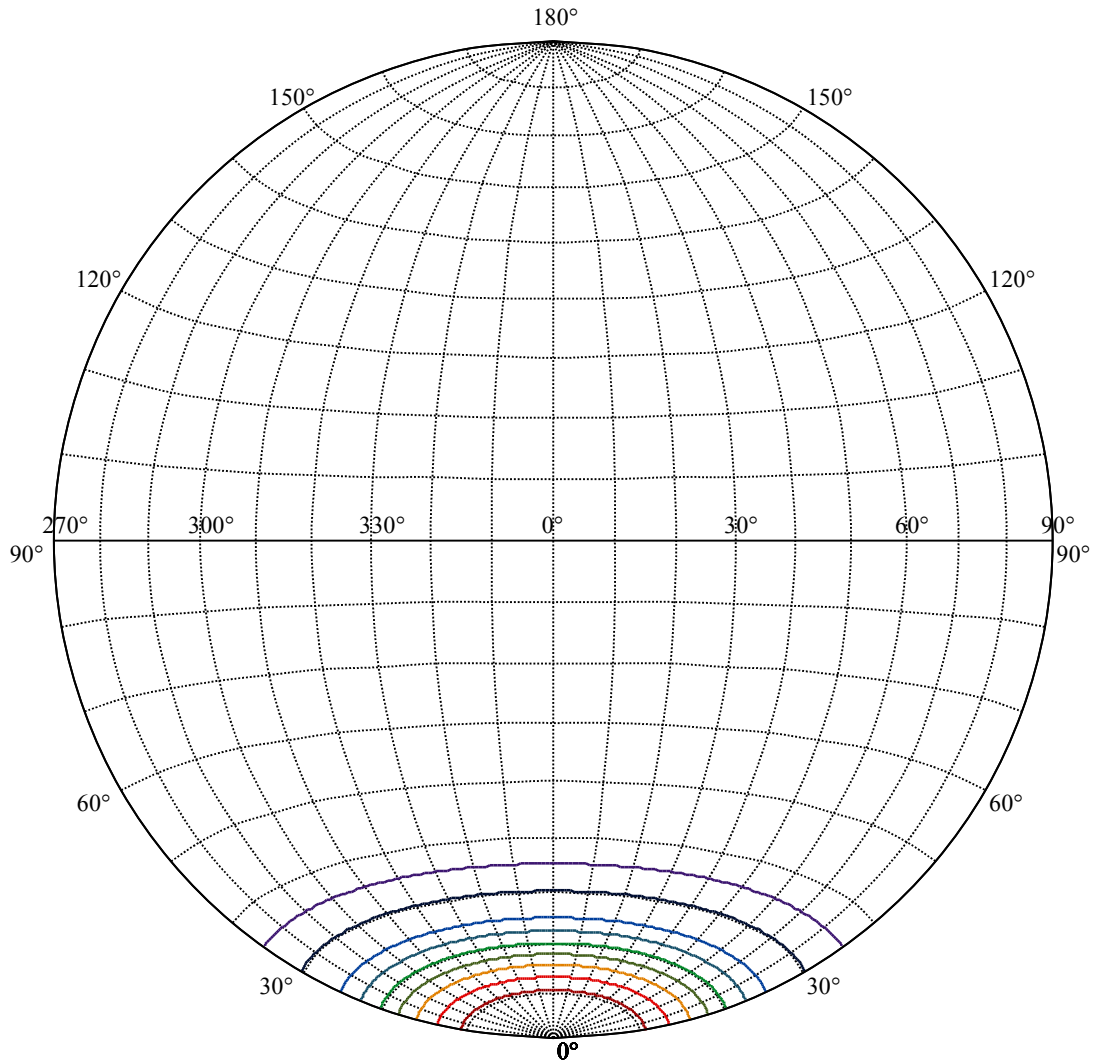
Field angle(10%Imax):C0/180Left:35.4 Right:35.4  
:C90/270Left:35.4 Right:35.4

Beam Angle(50%Imax):C0/180Left:20.3 Right:20.3  
:C90/270Left:20.3 Right:20.3





(10%Imax) 444.374	—
(20%Imax) 888.748	—
(30%Imax) 1333.12	—
(40%Imax) 1777.5	—
(50%Imax) 2221.87	—
(60%Imax) 2666.24	—
(70%Imax) 3110.62	—
(80%Imax) 3554.99	—
(90%Imax) 3999.37	—



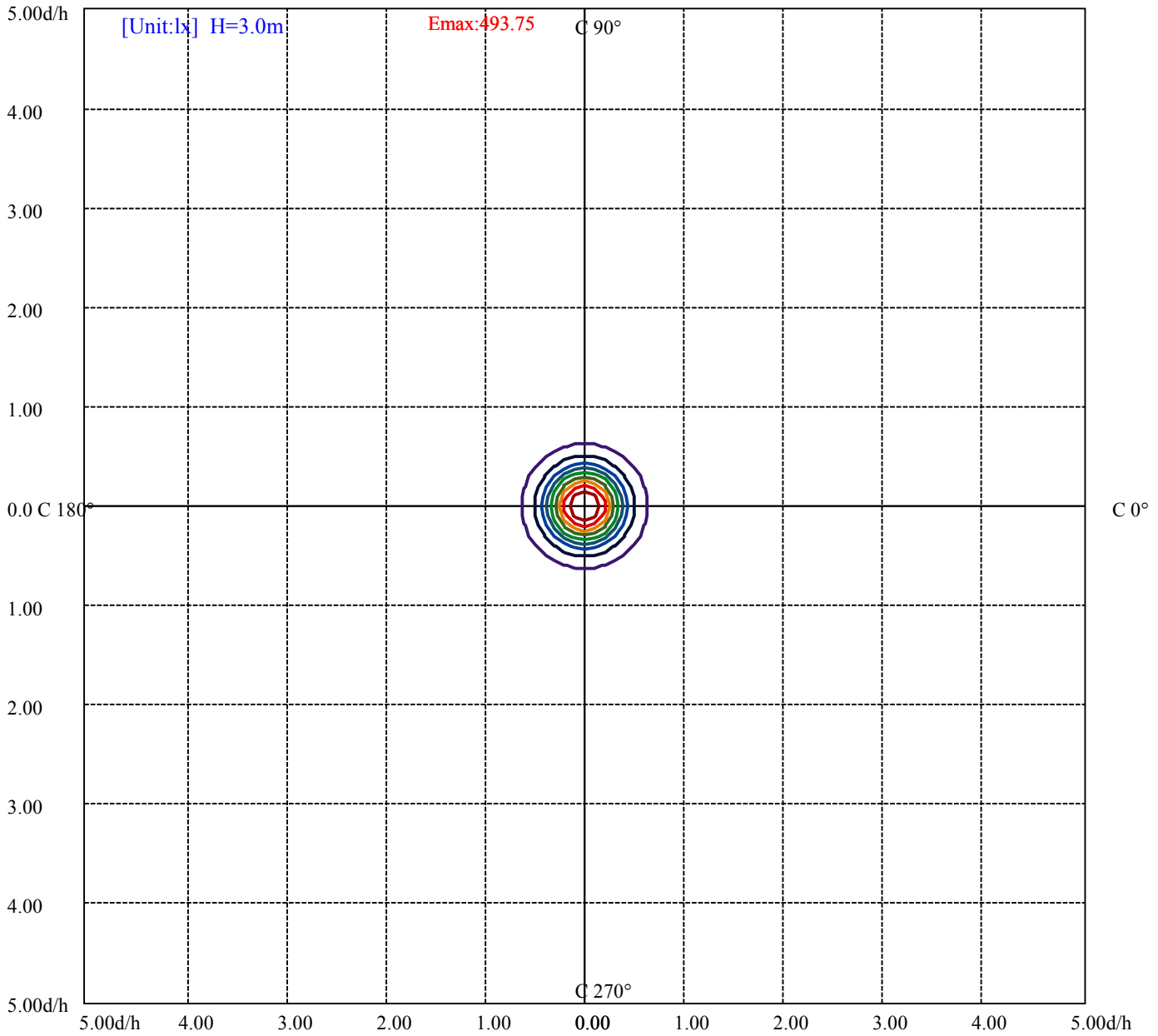
House

[Unit:cd]

Road

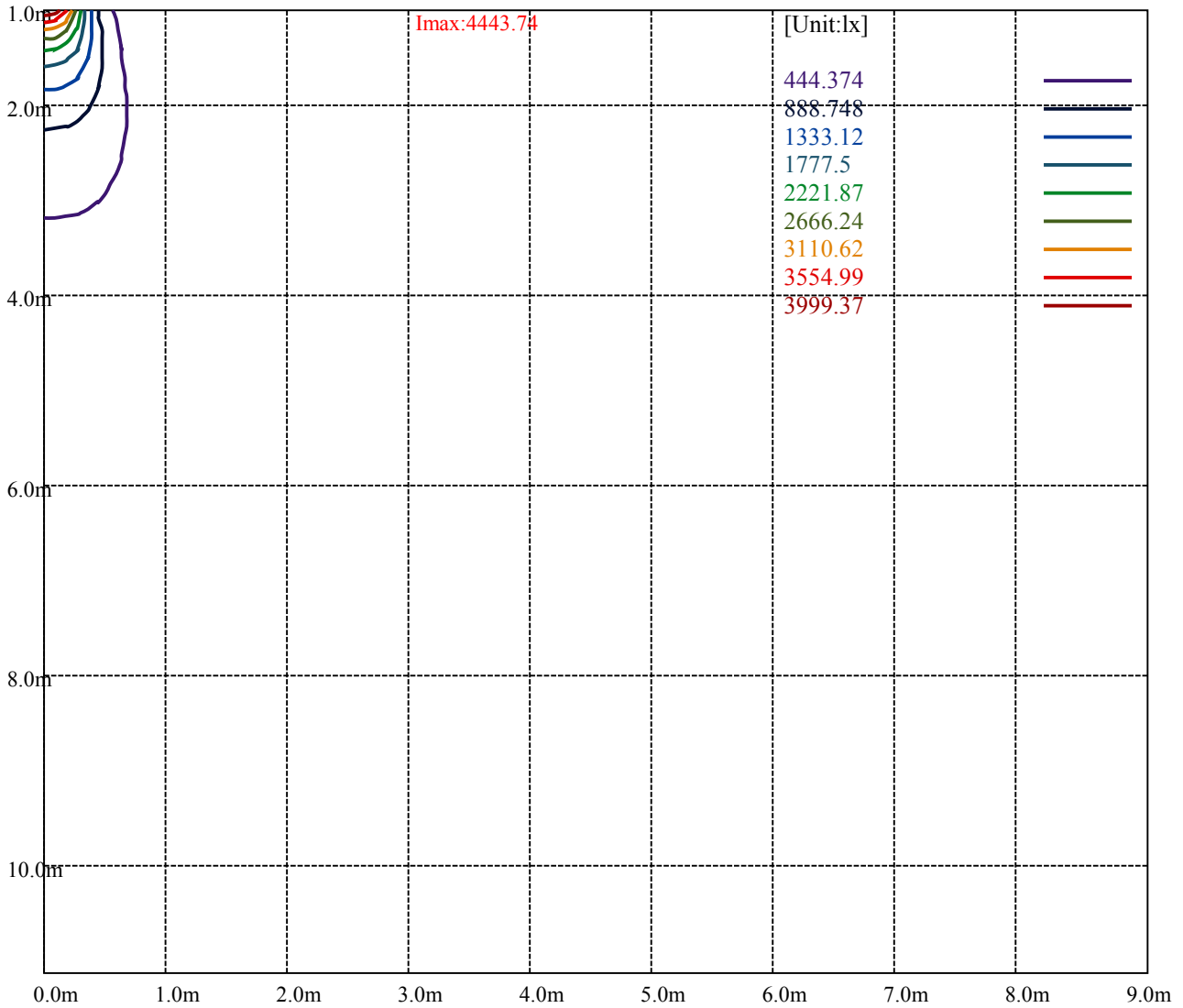
**Imax:4443.74**

(10%Imax) 444.374	—
(20%Imax) 888.748	—
(30%Imax) 1333.12	—
(40%Imax) 1777.5	—
(50%Imax) 2221.87	—
(60%Imax) 2666.24	—
(70%Imax) 3110.62	—
(80%Imax) 3554.99	—
(90%Imax) 3999.37	—



- (10%Emax) 49.37489
- (20%Emax) 98.74978
- (30%Emax) 148.1245
- (40%Emax) 197.5
- (50%Emax) 246.8745
- (60%Emax) 296.2489
- (70%Emax) 345.6245
- (80%Emax) 394.9989
- (90%Emax) 444.3734





Luminance Table

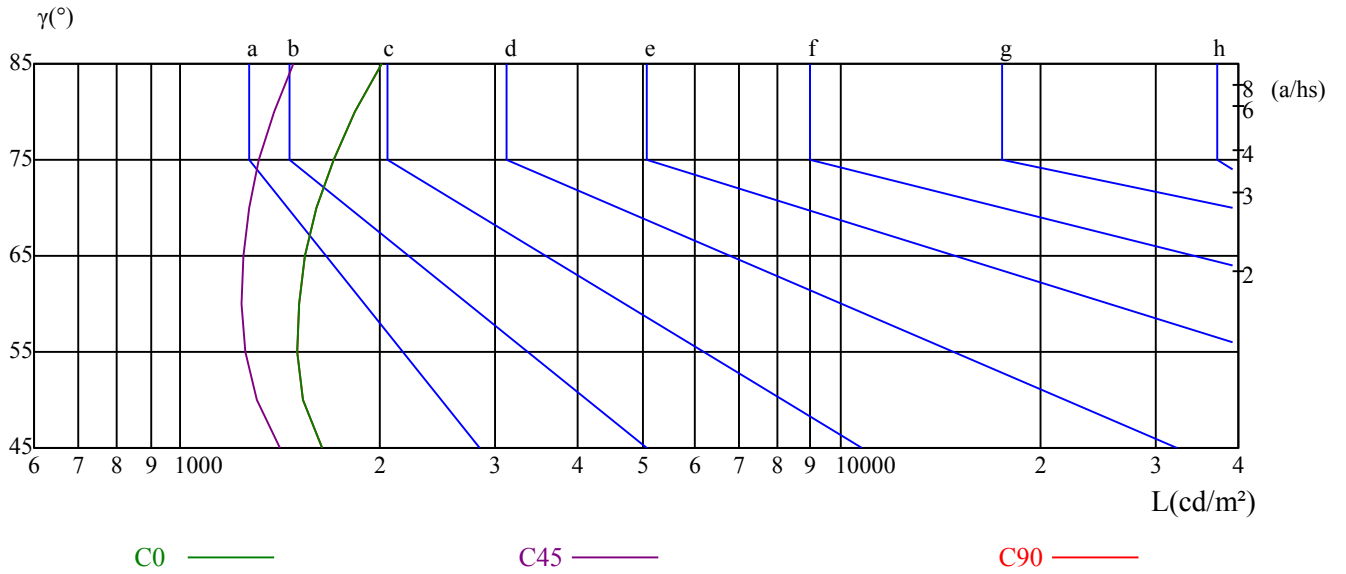
$\gamma$	45	50	55	60	65	70	75	80	85
C0	1642	1538	1506	1512	1546	1610	1705	1835	2017
C45	1411	1301	1255	1239	1245	1271	1318	1384	1477
C90	1642	1538	1506	1512	1546	1610	1705	1835	2017

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
3718	3718	3718	5871	5871	5871	17111	17111	17111

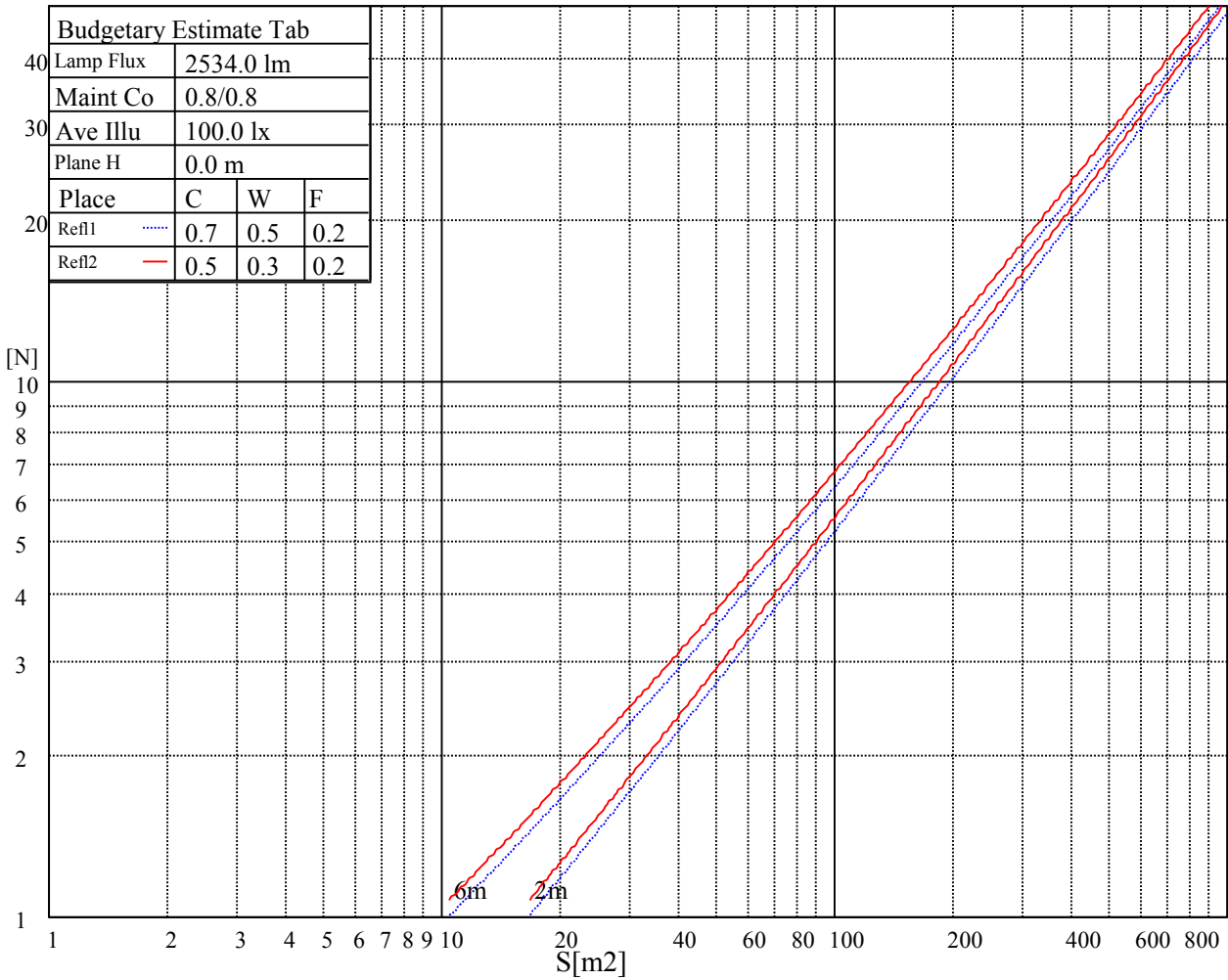
Glare Table

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

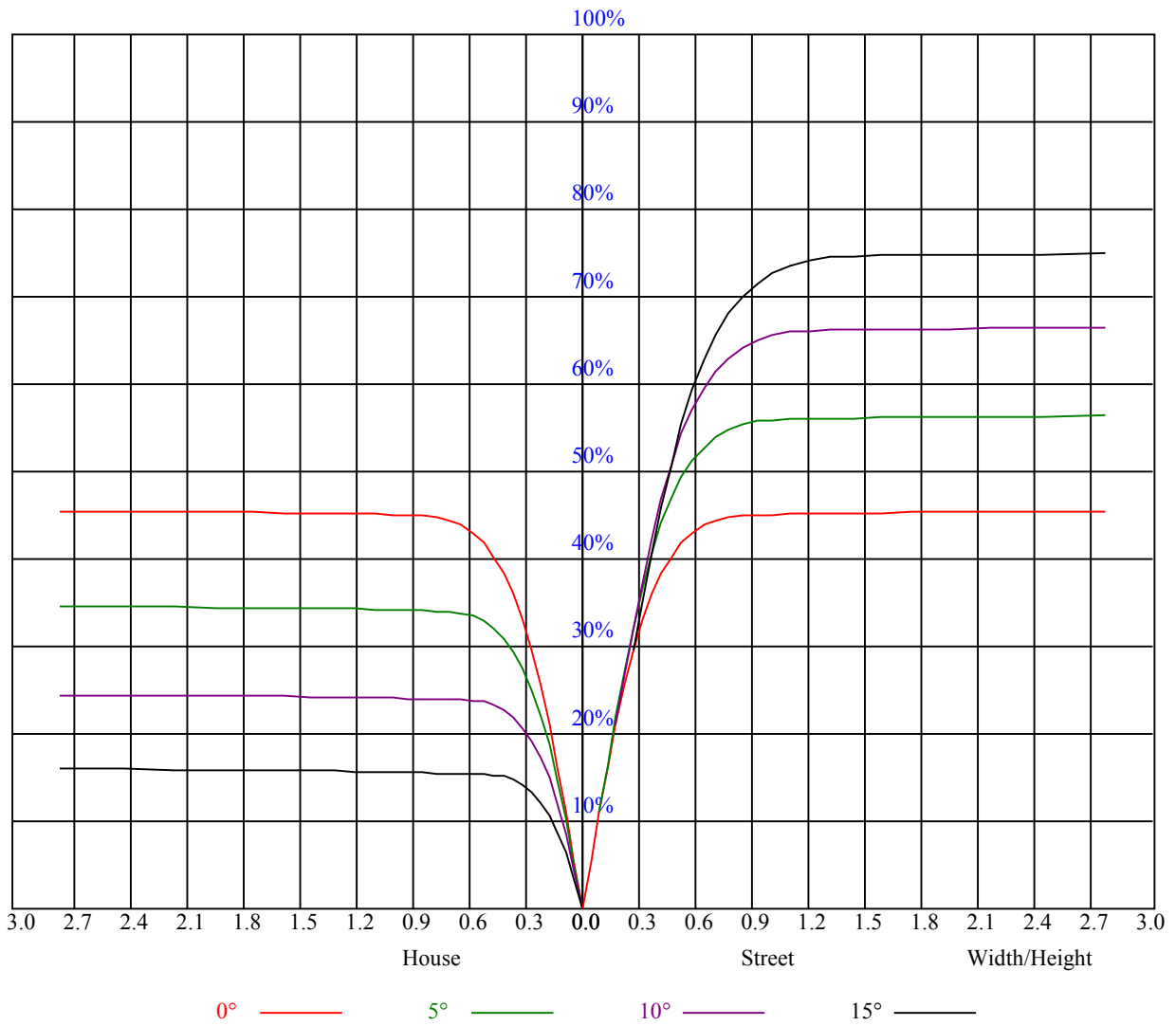
Luminance Limiting Curve



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	-0.12	0.79	0.24	1.10	1.42	-0.15	0.76	0.21	1.07	1.39
	3H	2.15	2.96	2.54	3.29	3.66	2.13	2.94	2.52	3.27	3.64
	4H	3.40	4.15	3.81	4.50	4.89	3.37	4.12	3.78	4.47	4.87
	6H	4.70	5.39	5.12	5.76	6.16	4.68	5.37	5.10	5.74	6.14
	8H	5.35	5.99	5.79	6.39	6.80	5.34	5.98	5.77	6.37	6.78
	12H	6.36	6.97	6.80	7.36	7.79	6.34	6.95	6.78	7.34	7.77
4H	2H	0.37	1.12	0.78	1.47	1.86	0.34	1.09	0.75	1.45	1.84
	3H	2.94	3.55	3.35	3.96	4.37	2.92	3.53	3.34	3.94	4.35
	4H	4.36	4.90	4.80	5.33	5.78	4.33	4.88	4.77	5.31	5.76
	6H	5.76	6.23	6.23	6.68	7.15	5.74	6.21	6.21	6.66	7.14
	8H	6.52	6.96	7.00	7.41	7.89	6.50	6.94	6.98	7.39	7.87
8H	12H	7.52	7.90	8.02	8.39	8.87	7.51	7.88	8.00	8.37	8.85
	4H	4.79	5.23	5.27	5.68	6.15	4.77	5.21	5.25	5.66	6.14
	6H	6.43	6.77	6.94	7.28	7.77	6.42	6.76	6.93	7.26	7.75
	8H	7.35	7.65	7.88	8.18	8.67	7.33	7.64	7.87	8.16	8.66
12H	12H	8.48	8.74	9.01	9.24	9.83	8.47	8.73	8.99	9.23	9.81
	4H	4.88	5.25	5.37	5.74	6.22	4.86	5.24	5.35	5.73	6.20
	6H	6.80	6.91	7.14	7.38	7.93	6.79	6.89	7.12	7.36	7.91
	8H	7.61	7.87	8.14	8.37	8.96	7.60	7.86	8.12	8.36	8.94
Variation with the observer position at spacings:											
S = 1.0H	5.8/-7.7					5.8/-7.7					
S = 1.5H	8.1/-6.0					8.1/-6.0					
S = 2.0H	9.7/-4.8					9.7/-4.8					
Standard tables:	BK2					BK2					
Uncorrected UGR	-3.4					-3.4					



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	1.10	1.10	1.10	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	1.02	1.00	0.97	1.00	0.98	0.96	0.96	0.94	0.93	0.93	0.91	0.90	0.90	0.88	0.88	0.86
2	0.96	0.93	0.90	0.95	0.92	0.89	0.92	0.89	0.87	0.89	0.87	0.85	0.87	0.85	0.83	0.82
3	0.91	0.87	0.84	0.90	0.86	0.83	0.88	0.85	0.82	0.86	0.83	0.81	0.84	0.81	0.80	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	0.77	0.73	0.71	0.75	0.73	0.70	0.69
7	0.76	0.72	0.69	0.76	0.72	0.69	0.75	0.71	0.68	0.74	0.70	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	0.68	0.66	0.71	0.68	0.65	0.70	0.67	0.65	0.64
9	0.71	0.66	0.63	0.70	0.66	0.63	0.70	0.66	0.63	0.69	0.65	0.63	0.68	0.65	0.63	0.62
10	0.68	0.64	0.61	0.68	0.64	0.61	0.67	0.64	0.61	0.67	0.63	0.61	0.66	0.63	0.61	0.60



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	4449.11	4378.08	4069.22	3296.78	2317.32	1428.16	934.86	467.43	46.36
45.0	4446.35	4443.60	4105.01	3218.60	2186.29	1310.89	893.01	464.68	34.74
90.0	4450.21	4465.62	4014.71	3051.78	1917.61	1074.48	841.54	352.80	27.20
135.0	4429.29	4505.82	4254.21	3383.77	2293.10	1401.19	918.34	499.36	59.35
180.0	4449.11	4494.25	4187.04	3376.06	2266.67	1349.98	904.69	469.30	46.69
225.0	4446.35	4412.22	4165.02	3434.97	2399.36	1447.98	918.23	520.39	63.26
270.0	4450.21	4338.99	4087.94	3499.38	2545.81	1609.85	1024.60	617.18	169.57
315.0	4429.29	4305.41	3958.00	3185.01	2232.54	1221.70	910.91	429.44	30.72
360.0	4449.11	4378.08	4069.22	3296.78	2317.32	1428.16	934.86	467.43	46.36
C/ $\gamma$ (°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	13.54	12.33	11.78	11.40	11.07	10.85	10.74	10.63	10.52
45.0	13.32	12.33	11.67	11.29	11.01	10.85	10.68	10.57	10.46
90.0	13.05	12.22	11.67	11.29	11.01	10.85	10.68	10.57	10.52
135.0	13.65	12.55	11.95	11.45	11.18	10.90	10.79	10.63	10.57
180.0	13.27	12.33	11.78	11.34	11.07	10.85	10.68	10.57	10.52
225.0	13.60	12.39	11.73	11.34	11.07	10.85	10.68	10.57	10.52
270.0	14.48	12.66	11.95	11.51	11.18	10.96	10.79	10.63	10.57
315.0	13.54	12.50	11.84	11.45	11.12	10.90	10.74	10.63	10.52
360.0	13.54	12.33	11.78	11.40	11.07	10.85	10.74	10.63	10.52
C/ $\gamma$ (°)	90.0								
0.0	10.46								
45.0	10.41								
90.0	10.46								
135.0	10.52								
180.0	10.46								
225.0	10.41								
270.0	10.46								
315.0	10.46								
360.0	10.46								