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## Nata

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LumCAT: 2-1682-M  
Luminaire: 92.70.126.00  
Report No: NATA0100  
Test No: GC2018090803  
LampCAT: LUMINUS CHM-9-XD20  
Lamp flux(lm): 1946.0  
Number of Lamps: 1  
Length(mm): 70  
Phm Type: C

Voltage(V): 35.2000  
Current(A): 0.4100  
Power (W): 14.4320  
PF: 0.0000  
Ballast type: DC  
Width(mm): 70  
Height(mm): 0

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## Photometric Results

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Lumens(lm): 1758.05  
Efficiency(%): 90.34%  
Lumens(lm)/Power(W): 121.82  
Central intensity(cd): 3749.625  
Maximum intensity(cd): 3749.625  
Angle of maximum intensity: C=0.0  $\gamma$ =0.0  
Beam Angle(50%Imax): [C0/180]Total=37.2  
                                  [C90/270]Total=37.2  
Field angle(10%Imax): [C0/180]Total=69.0  
                                  [C90/270]Total=69.0  
Maximum s/h(1/2): C0\_180=0.61 C90\_270=0.61  
Maximum s/h(1/4): C0\_180=0.62 C90\_270=0.62  
Up flux rate of lamp(%): 0.00%  
Down flux rate of lamp(%): 91.41%  
Up flux rate of LUM(%): - -  
Down flux rate of LUM(%): 100.00%  
CIE Type : Direct lighting  
Output flux ratio in  $\pi$  solid angle : 97.511%

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Equipment: GMS1980  
Temperature(°C): 25.0

Date: 2018/9/8  
Humidity(%): 60.0%

Operator: NT07  
Distance(m): 7.50

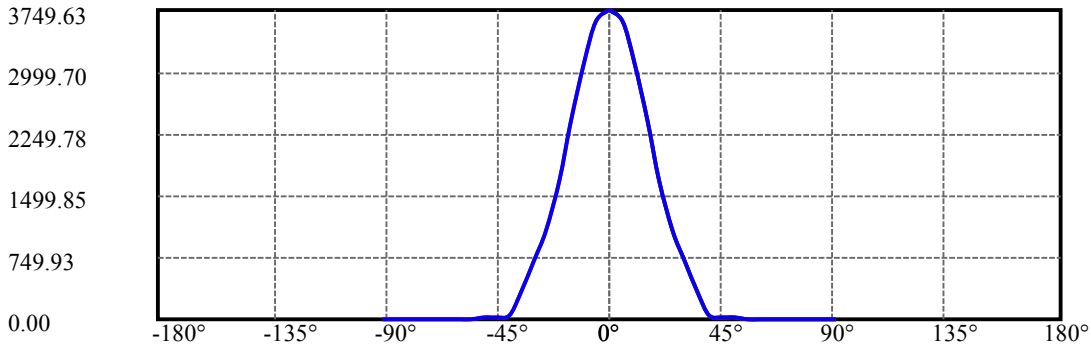
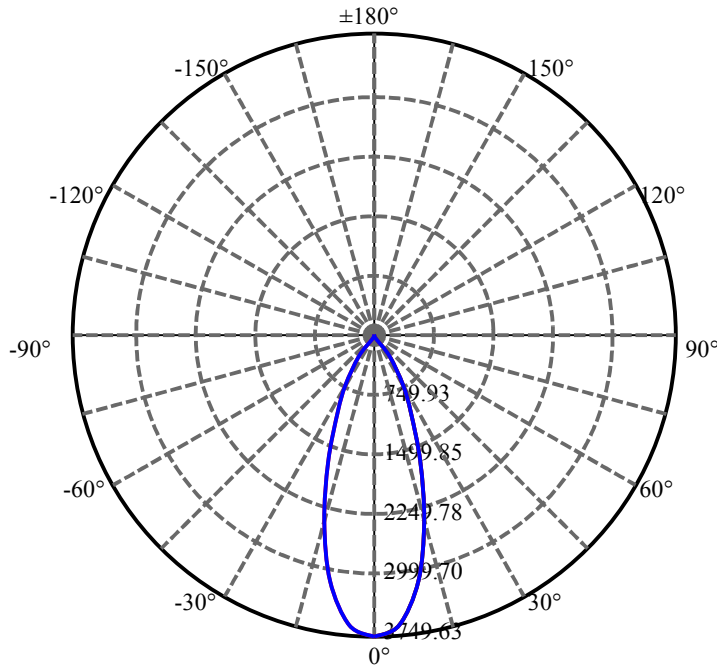
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	3749.625	22.424	22.424	1.152%	1.275%
5.0	3610.055	172.464	194.888	8.863%	11.085%
10.0	3111.820	296.193	491.08	15.221%	27.933%
15.0	2395.828	339.892	830.973	17.466%	47.267%
20.0	1667.250	312.566	1143.539	16.062%	65.046%
25.0	1060.411	245.647	1389.186	12.623%	79.019%
30.0	730.378	200.174	1589.36	10.286%	90.405%
35.0	334.554	105.183	1694.543	5.405%	96.388%
40.0	51.954	18.305	1712.848	.941%	97.429%
45.0	16.664	6.459	1719.307	.332%	97.796%
50.0	13.388	5.621	1724.929	.289%	98.116%
55.0	11.145	5.004	1729.933	.257%	98.401%
60.0	9.661	4.586	1734.519	.236%	98.662%
65.0	8.698	4.321	1738.839	.222%	98.907%
70.0	8.184	4.216	1743.055	.217%	99.147%
75.0	7.945	4.207	1747.262	.216%	99.386%
80.0	7.938	4.285	1751.547	.220%	99.630%
85.0	7.959	4.346	1755.893	.223%	99.877%
90.0	7.868	2.156	1758.049	.111%	100.000%

## ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1589.36	81.67%	90.40%
0-40	1712.85	88.02%	97.43%
0-60	1734.52	89.13%	98.66%
0-90	1755.89	90.23%	99.88%
0-120	1755.89	90.23%	99.88%
0-180	1758.05	90.34%	100.00%
60-90	25.96	1.33%	1.48%
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%
0-25.43	1406.44	72.27%	80.00%

## ZONAL LUMEN SUMMARY

0-10	491.08
10-20	652.46
20-30	445.82
30-40	123.49
40-50	12.08
50-60	9.59
60-70	8.54
70-80	8.49
80-90	4.35
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: —————

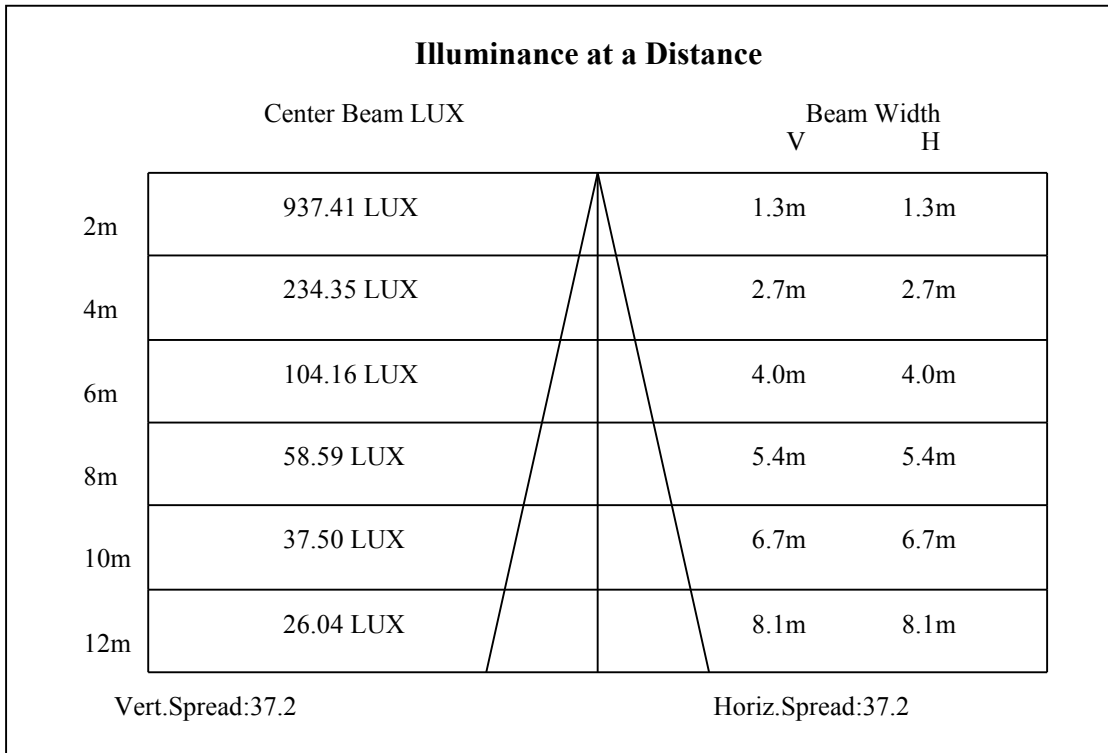
C90/C270: —————

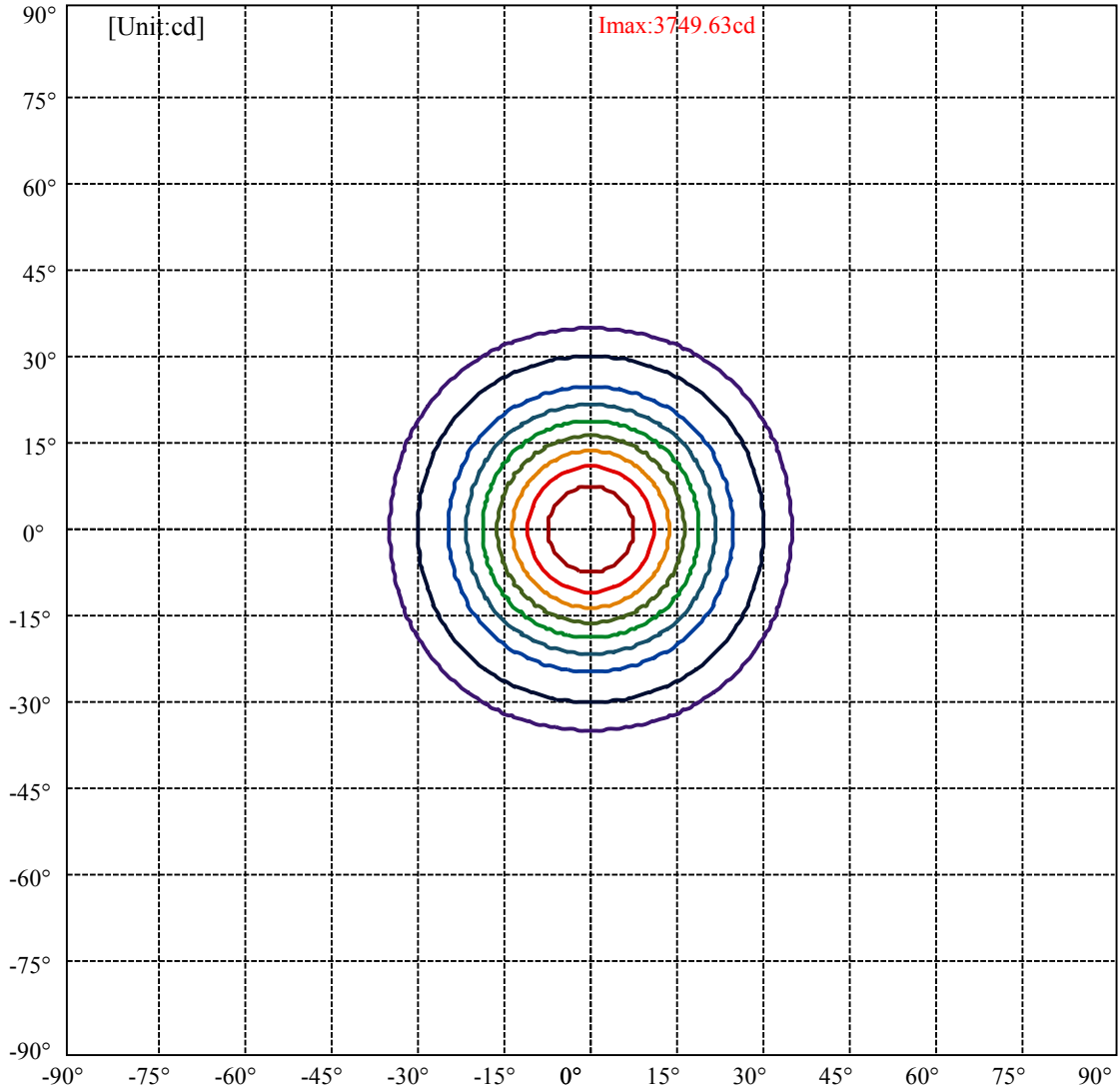
Field angle(10%Imax):C0/180Left:34.5 Right:34.5

:C90/270Left:34.5 Right:34.5

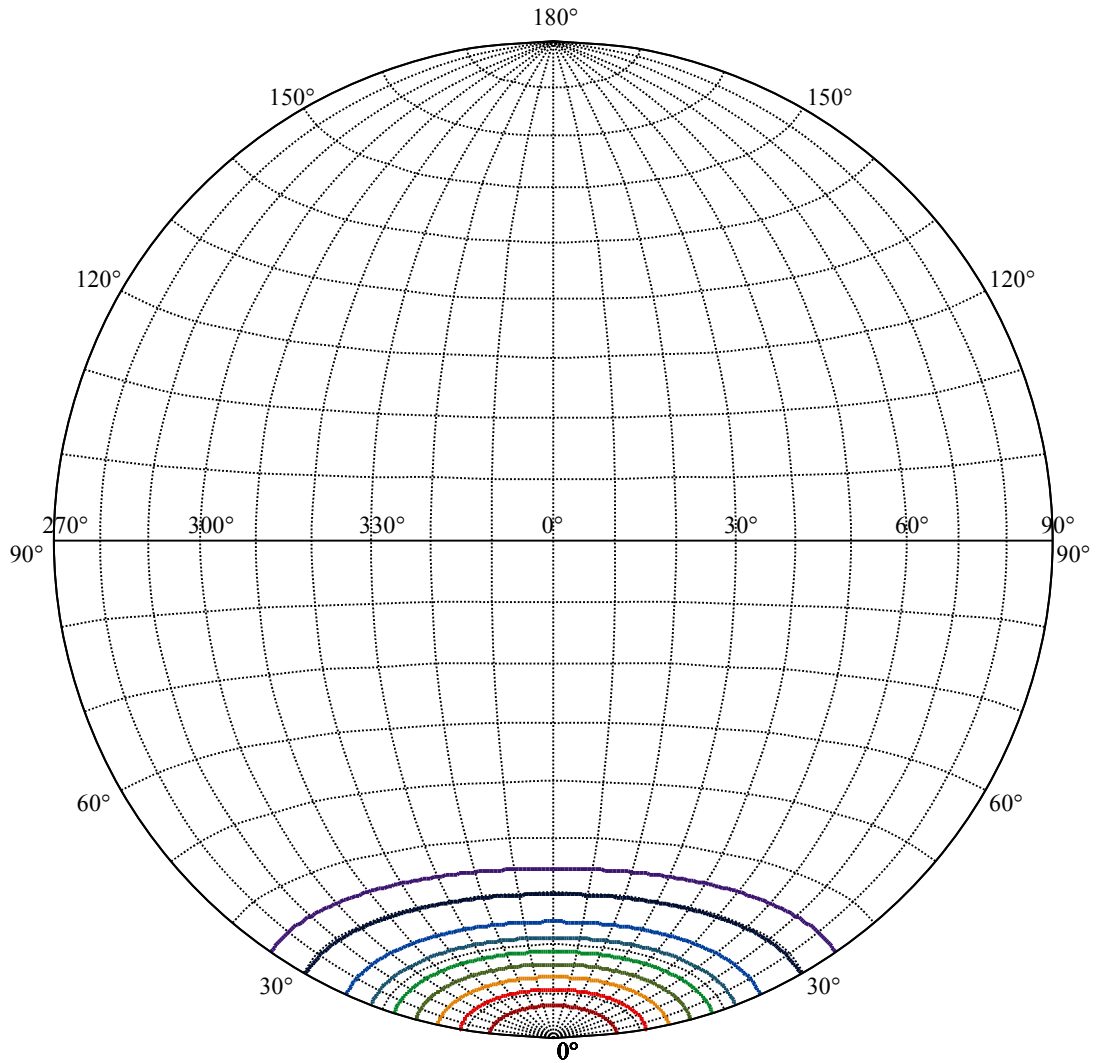
Beam Angle(50%Imax):C0/180Left:18.6 Right:18.6

:C90/270Left:18.6 Right:18.6





(10%Imax) 374.963	—
(20%Imax) 749.925	—
(30%Imax) 1124.89	—
(40%Imax) 1499.85	—
(50%Imax) 1874.81	—
(60%Imax) 2249.78	—
(70%Imax) 2624.74	—
(80%Imax) 2999.7	—
(90%Imax) 3374.66	—



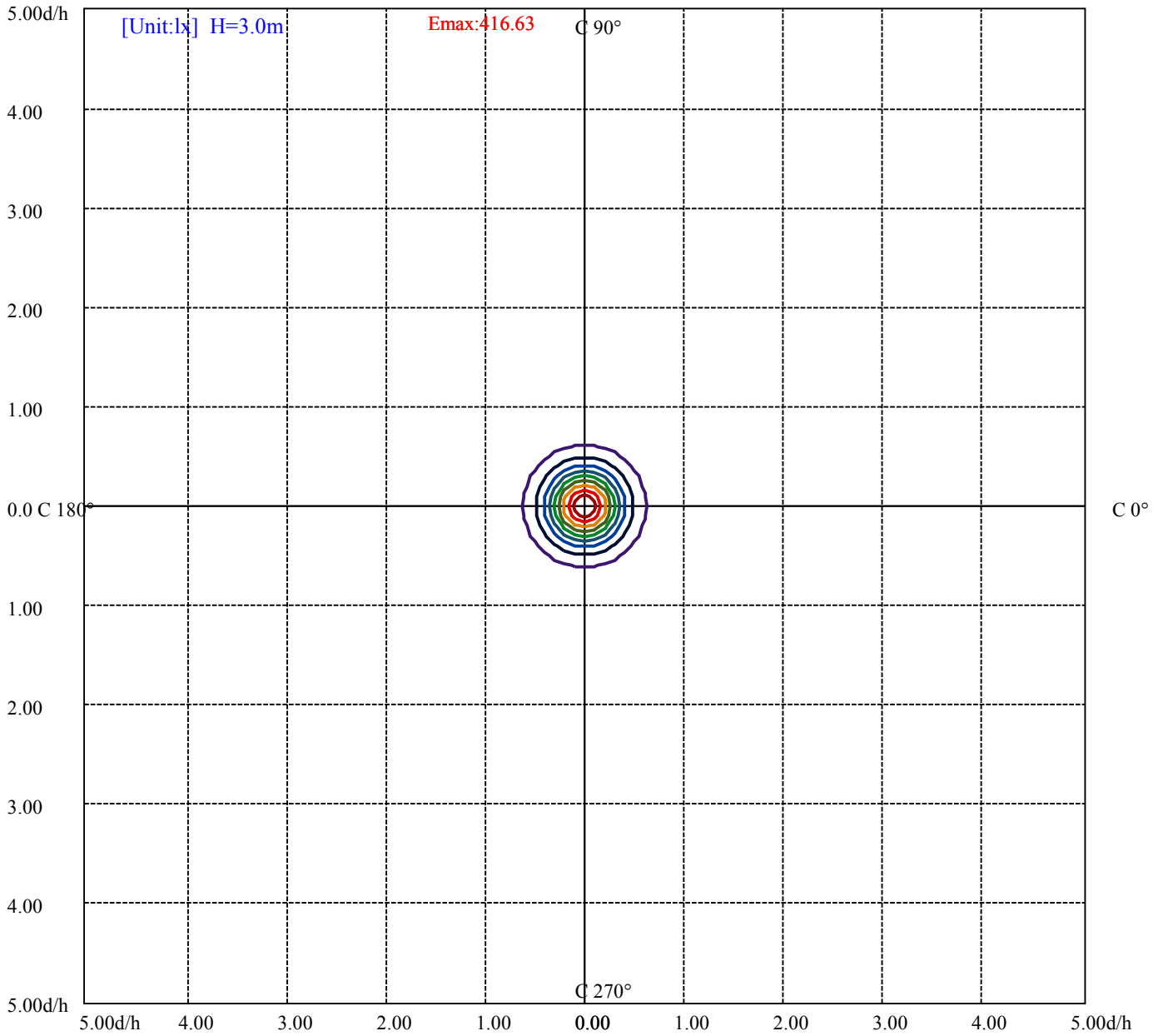
House

[Unit:cd]

Road

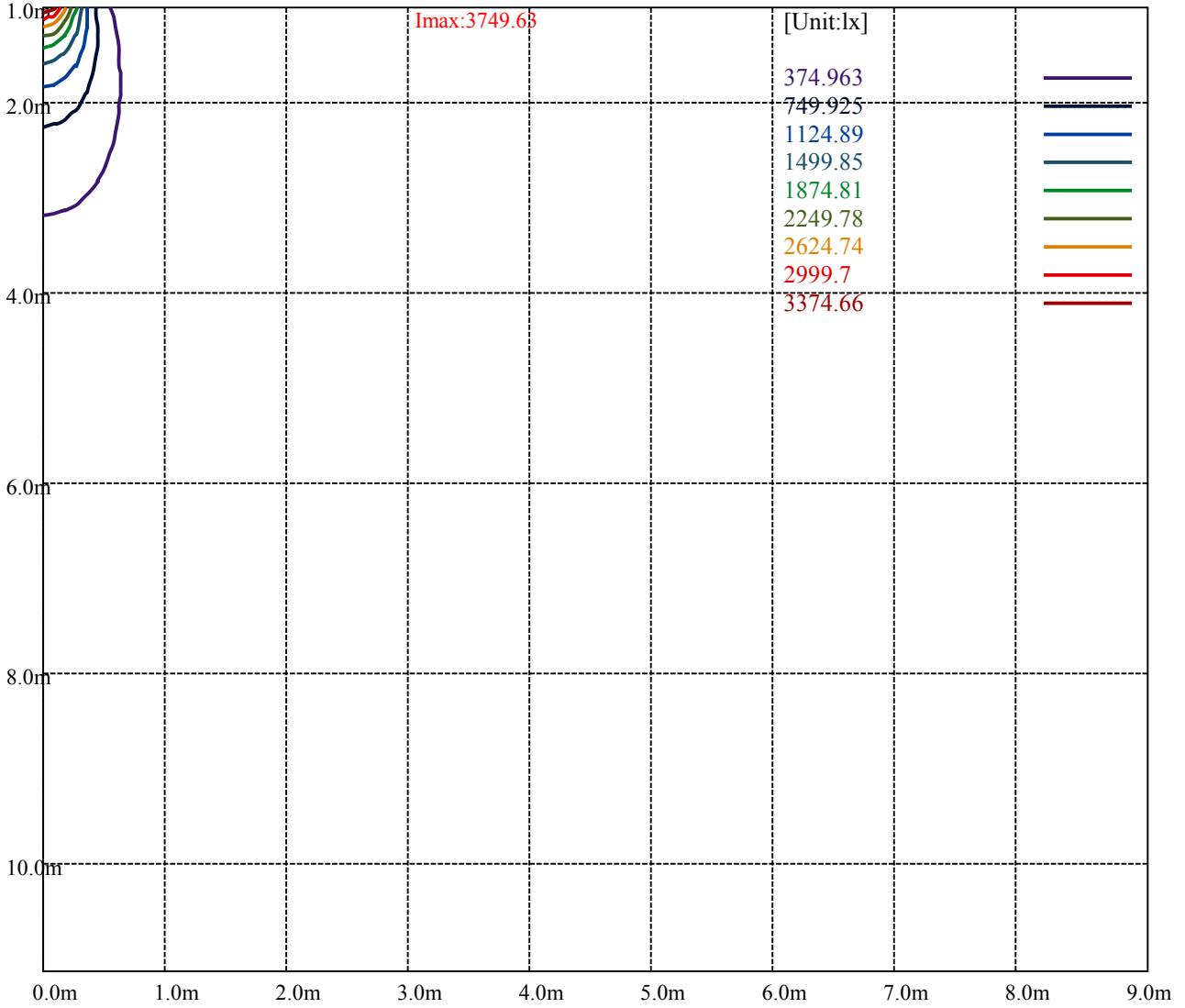
**Imax:3749.63**

(10%Imax) 374.963	—
(20%Imax) 749.925	—
(30%Imax) 1124.89	—
(40%Imax) 1499.85	—
(50%Imax) 1874.81	—
(60%Imax) 2249.78	—
(70%Imax) 2624.74	—
(80%Imax) 2999.7	—
(90%Imax) 3374.66	—



(10%Emax) 41.66245	—
(20%Emax) 83.32489	—
(30%Emax) 124.9878	—
(40%Emax) 166.65	—
(50%Emax) 208.3122	—
(60%Emax) 249.9744	—
(70%Emax) 291.6367	—
(80%Emax) 333.3	—
(90%Emax) 374.9622	—





Luminance Table

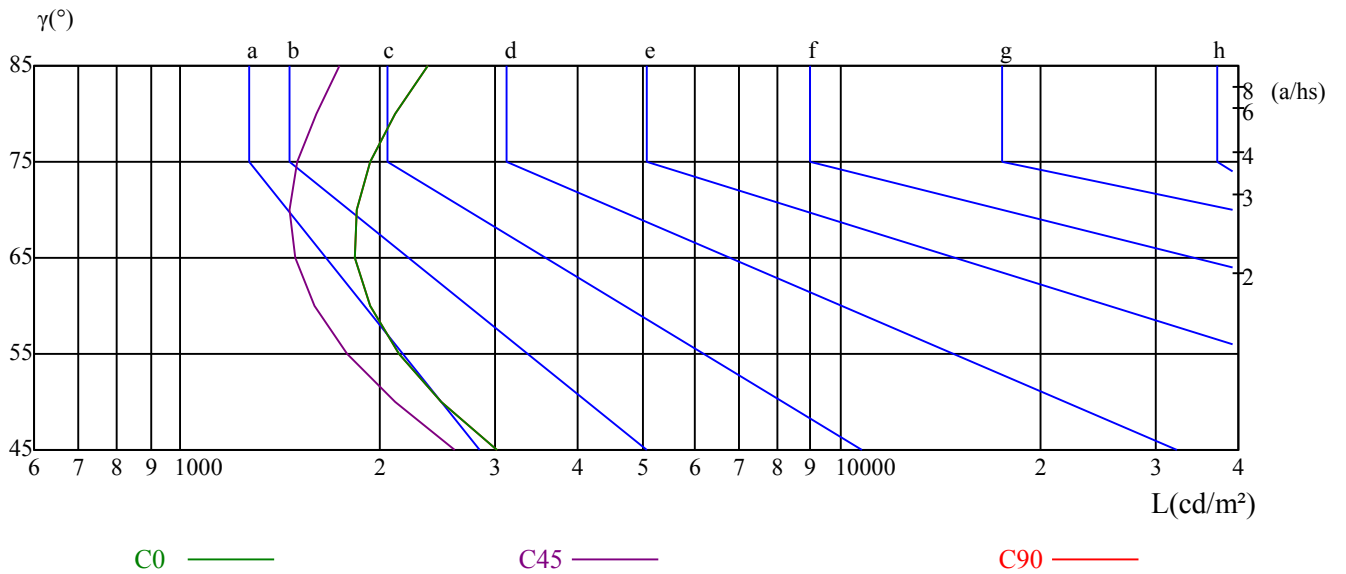
$\gamma$	45	50	55	60	65	70	75	80	85
C0	3006	2478	2135	1934	1837	1844	1934	2119	2372
C45	2602	2113	1793	1597	1490	1466	1504	1605	1742
C90	3006	2478	2135	1934	1837	1844	1934	2119	2372

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
4200	4200	4200	6265	6265	6265	18637	18637	18637

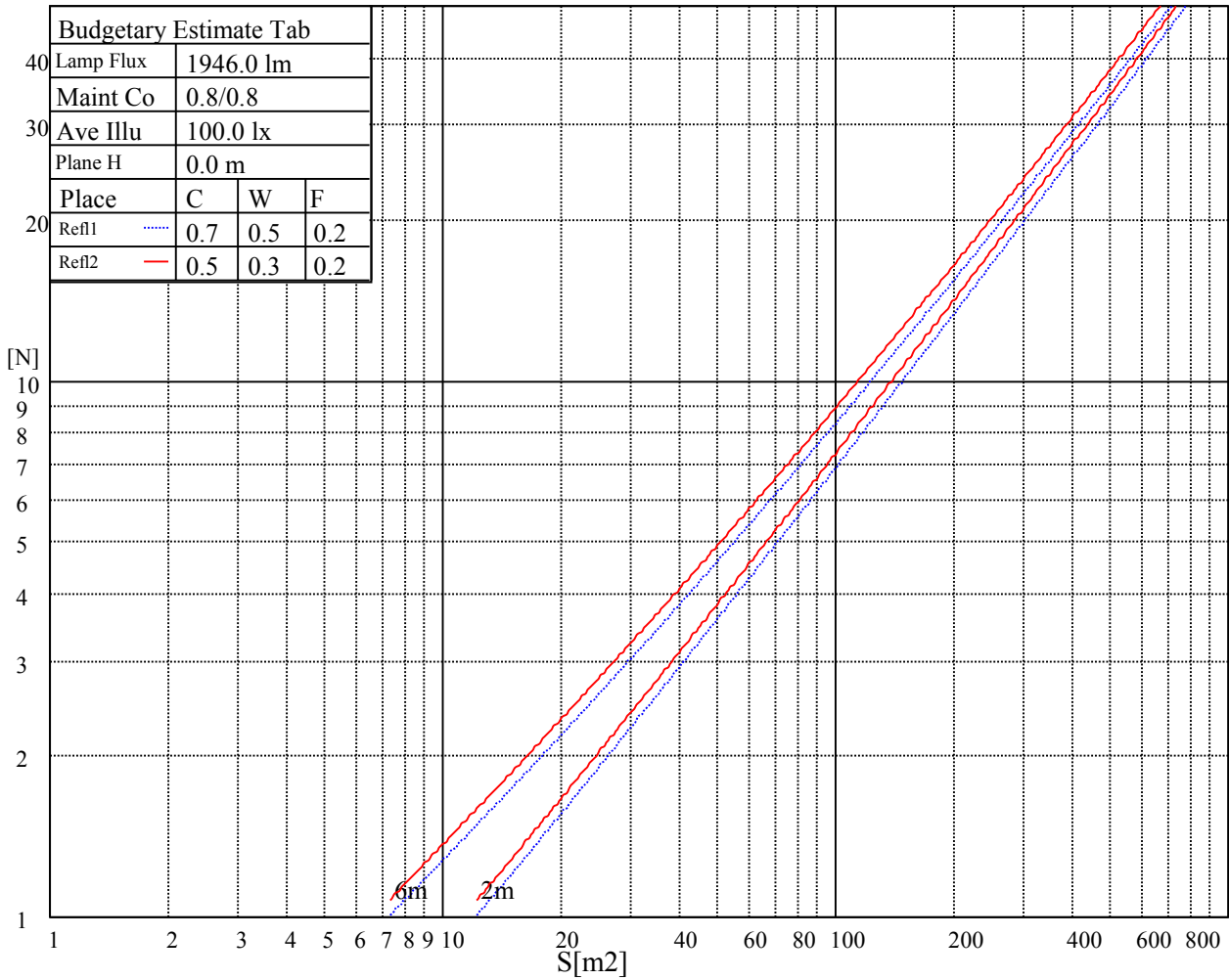
Glare Table

Glare	Quality	Service Values Illuminance(lx)							
		a	b	c	d	e	f	g	h
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

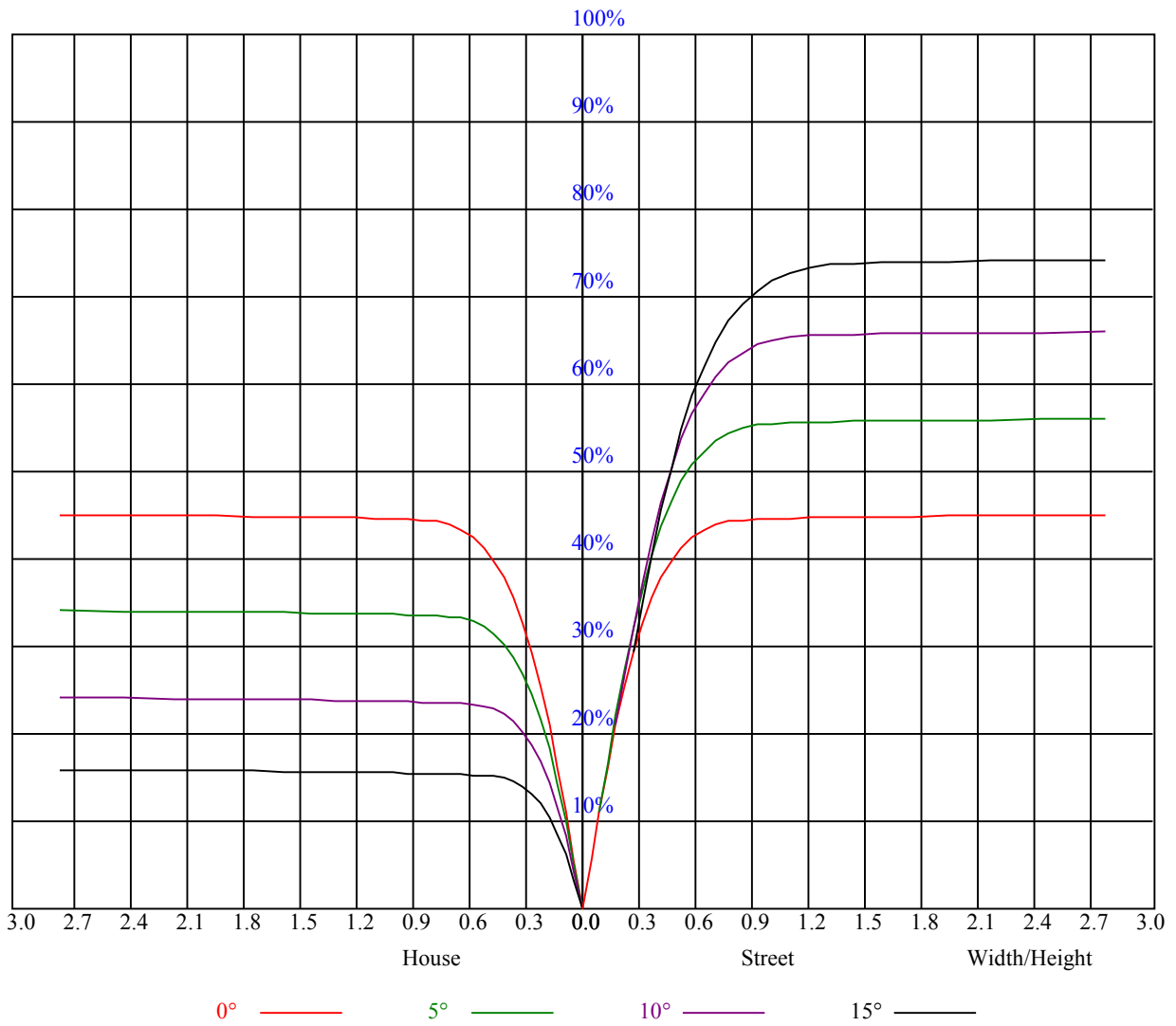
Luminance Limiting Curve



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	2.39	3.31	2.76	3.62	3.94	2.37	3.29	2.73	3.60	3.92
	3H	4.19	5.00	4.57	5.33	5.70	4.16	4.97	4.54	5.30	5.67
	4H	5.23	5.98	5.63	6.33	6.72	5.18	5.94	5.59	6.29	6.68
	6H	6.40	7.09	6.82	7.47	7.86	6.34	7.03	6.76	7.41	7.80
	8H	7.02	7.67	7.46	8.06	8.47	6.95	7.59	7.38	7.98	8.40
	12H	8.01	8.63	8.45	9.01	9.44	7.90	8.52	8.34	8.90	9.33
4H	2H	2.73	3.48	3.14	3.84	4.23	2.71	3.46	3.12	3.82	4.21
	3H	4.83	5.45	5.25	5.86	6.26	4.81	5.43	5.23	5.84	6.24
	4H	6.06	6.61	6.50	7.04	7.49	6.03	6.58	6.47	7.00	7.45
	6H	7.37	7.84	7.84	8.29	8.77	7.32	7.79	7.79	8.25	8.72
	8H	8.11	8.55	8.59	9.00	9.48	8.05	8.49	8.53	8.94	9.41
	12H	9.12	9.49	9.61	9.98	10.46	9.02	9.39	9.51	9.88	10.36
8H	4H	6.43	6.87	6.91	7.33	7.80	6.41	6.85	6.89	7.30	7.77
	6H	7.99	8.34	8.50	8.84	9.33	7.95	8.30	8.46	8.80	9.29
	8H	8.89	9.20	9.43	9.72	10.22	8.83	9.14	9.37	9.66	10.16
	12H	10.04	10.31	10.57	10.80	11.39	9.95	10.21	10.47	10.71	11.29
12H	4H	6.51	6.89	7.01	7.38	7.86	6.49	6.86	6.98	7.35	7.83
	6H	8.36	8.46	8.69	8.93	9.48	8.32	8.42	8.65	8.89	9.44
	8H	9.15	9.41	9.67	9.91	10.49	9.09	9.36	9.62	9.86	10.44
Variation with the observer position at spacings:											
S = 1.0H	5.8/-7.2					5.8/-7.2					
S = 1.5H	8.2/-5.7					8.2/-5.7					
S = 2.0H	9.8/-4.6					9.8/-4.6					
Standard tables:	BK2					BK2					
Uncorrected UGR	-2.9					-2.9					



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	1.06	1.06	1.06	1.02	1.02	1.02	0.97	0.97	0.97	0.93	0.93	0.93	0.91
1	1.01	0.98	0.96	0.99	0.97	0.95	0.95	0.93	0.92	0.92	0.90	0.89	0.89	0.88	0.87	0.85
2	0.95	0.92	0.89	0.94	0.91	0.88	0.91	0.88	0.86	0.88	0.86	0.84	0.86	0.84	0.82	0.81
3	0.90	0.86	0.83	0.89	0.86	0.83	0.87	0.84	0.81	0.85	0.82	0.80	0.83	0.81	0.79	0.77
4	0.86	0.82	0.78	0.85	0.81	0.78	0.83	0.80	0.77	0.82	0.79	0.76	0.80	0.77	0.75	0.74
5	0.82	0.78	0.75	0.81	0.77	0.74	0.80	0.76	0.74	0.79	0.75	0.73	0.77	0.74	0.72	0.71
6	0.79	0.74	0.71	0.78	0.74	0.71	0.77	0.73	0.70	0.76	0.72	0.70	0.75	0.72	0.69	0.68
7	0.76	0.71	0.68	0.75	0.71	0.68	0.74	0.70	0.67	0.73	0.70	0.67	0.72	0.69	0.67	0.66
8	0.73	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	0.64	0.63
9	0.70	0.66	0.63	0.70	0.66	0.63	0.69	0.65	0.62	0.68	0.65	0.62	0.67	0.64	0.62	0.61
10	0.68	0.63	0.60	0.67	0.63	0.60	0.67	0.63	0.60	0.66	0.63	0.60	0.65	0.62	0.60	0.59



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	3742.88	3683.25	3268.13	2570.63	1851.19	1163.25	795.38	427.50	84.04
45.0	3754.13	3652.88	3172.50	2423.25	1689.75	1046.81	731.25	356.63	53.33
90.0	3750.19	3564.56	3030.19	2275.31	1506.94	977.46	654.69	255.71	35.21
135.0	3751.31	3580.88	3098.25	2362.50	1633.50	1057.50	731.81	316.13	46.69
180.0	3742.88	3513.38	2914.31	2235.94	1522.69	983.59	654.08	256.11	33.64
225.0	3754.13	3592.69	3044.25	2318.63	1634.63	1052.89	717.02	325.80	44.04
270.0	3750.19	3658.50	3210.19	2545.31	1806.75	1159.88	812.25	407.81	75.26
315.0	3751.31	3634.31	3156.75	2435.06	1692.56	1041.92	746.55	330.75	43.43
360.0	3742.88	3683.25	3268.13	2570.63	1851.19	1163.25	795.38	427.50	84.04
C/ $\gamma$ (°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	17.16	13.61	11.36	9.84	8.78	8.27	7.93	7.93	7.88
45.0	16.31	13.44	11.25	9.73	8.83	8.16	7.93	7.93	7.93
90.0	15.81	13.11	11.03	9.56	8.66	8.16	7.99	8.04	8.16
135.0	17.16	14.06	11.53	9.84	8.83	8.21	7.93	7.93	7.93
180.0	15.36	12.94	10.80	9.39	8.49	8.10	7.88	7.88	7.88
225.0	16.65	13.39	11.14	9.56	8.61	8.10	7.93	7.88	7.88
270.0	18.39	13.61	11.19	9.84	8.78	8.33	8.04	8.04	8.16
315.0	16.48	12.94	10.86	9.51	8.61	8.16	7.93	7.88	7.88
360.0	17.16	13.61	11.36	9.84	8.78	8.27	7.93	7.93	7.88
C/ $\gamma$ (°)	90.0								
0.0	7.88								
45.0	7.88								
90.0	7.82								
135.0	7.88								
180.0	7.88								
225.0	7.88								
270.0	7.88								
315.0	7.88								
360.0	7.88								