



NATA LIGHTING CO.,LTD.  
www.nata.cn  
Email:info@nata.com  
Tel:+86-750-3770000 Fax:+86-750-3771111  
Address:380JinOu Road,GaoXin Zone,Jiang Men City,Guangdong,China

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## NATA

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LumCAT: 4-2267-M  
Luminaire: 92.70.134.00  
Report No: NATA0100  
Test No: GC2019010915  
LampCAT: OSRAM SOLERIQ S19  
Lamp flux(lm): 3440.0  
Number of Lamps: 1  
Length(mm): 100  
Phm Type: C

Voltage(V): 34.9000  
Current(A): 0.7000  
Power (W): 24.4300  
PF: 0.0000  
Ballast type: DC  
Width(mm): 100  
Height(mm): 0

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## Photometric Results

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Lumens(lm): 2963.03  
Efficiency(%): 86.13%  
Lumens(lm)/Power(W): 122.52  
Central intensity(cd): 5529.515  
Maximum intensity(cd): 5529.515  
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=72.4  
                                  [C90/270]Total=72.4  
Maximum s/h(1/2): C0\_180=0.65 C90\_270=0.65  
Maximum s/h(1/4): C0\_180=0.67 C90\_270=0.67  
Up flux rate of lamp(%): 0.00%  
Down flux rate of lamp(%): 87.01%  
Up flux rate of LUM(%): - -  
Down flux rate of LUM(%): 100.00%  
CIE Type : Direct lighting  
Output flux ratio in  $\pi$  solid angle : 96.824%

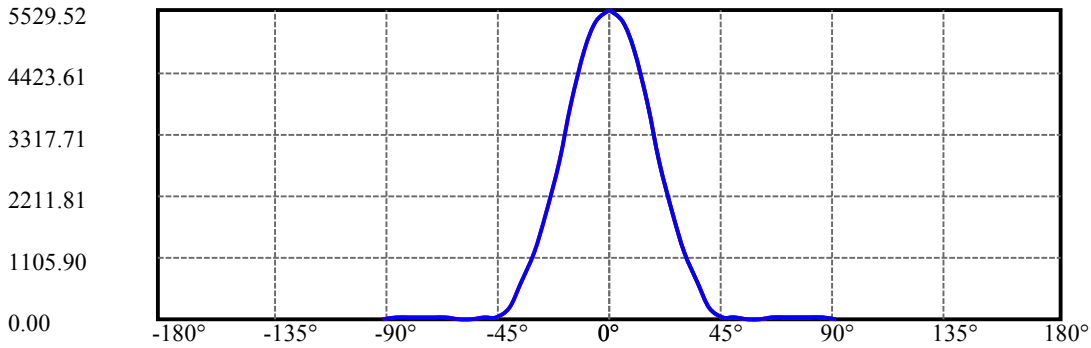
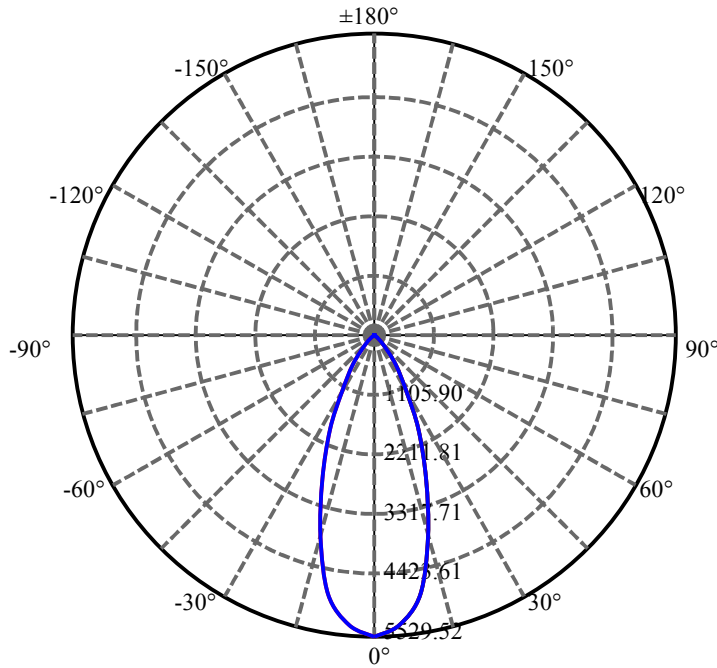
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	5529.516	33.068	33.068	.961%	1.116%
5.0	5331.656	254.711	287.779	7.404%	9.712%
10.0	4812.047	458.025	745.804	13.315%	25.170%
15.0	3844.266	545.380	1291.184	15.854%	43.576%
20.0	2810.672	526.928	1818.112	15.318%	61.360%
25.0	1890.352	437.905	2256.017	12.730%	76.139%
30.0	1218.663	333.997	2590.014	9.709%	87.411%
35.0	665.698	209.294	2799.309	6.084%	94.474%
40.0	194.801	68.635	2867.944	1.995%	96.791%
45.0	20.032	7.764	2875.708	.226%	97.053%
50.0	17.388	7.301	2883.01	.212%	97.299%
55.0	16.474	7.397	2890.407	.215%	97.549%
60.0	16.439	7.804	2898.21	.227%	97.812%
65.0	21.459	10.661	2908.871	.310%	98.172%
70.0	29.159	15.019	2923.89	.437%	98.679%
75.0	27.914	14.779	2938.67	.430%	99.178%
80.0	21.073	11.375	2950.045	.331%	99.562%
85.0	17.255	9.422	2959.467	.274%	99.880%
90.0	13.015	3.567	2963.034	.104%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	2590.01	75.29%	87.41%
0-40	2867.94	83.37%	96.79%
0-60	2898.21	84.25%	97.81%
0-90	2959.47	86.03%	99.88%
0-120	2959.47	86.03%	99.88%
0-180	2963.03	86.13%	100.00%
60-90	69.06	2.01%	2.33%
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%
0-26.71	2370.43	68.91%	80.00%

ZONAL LUMEN SUMMARY

0-10	745.80
10-20	1072.31
20-30	771.90
30-40	277.93
40-50	15.07
50-60	15.20
60-70	25.68
70-80	26.15
80-90	9.42
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



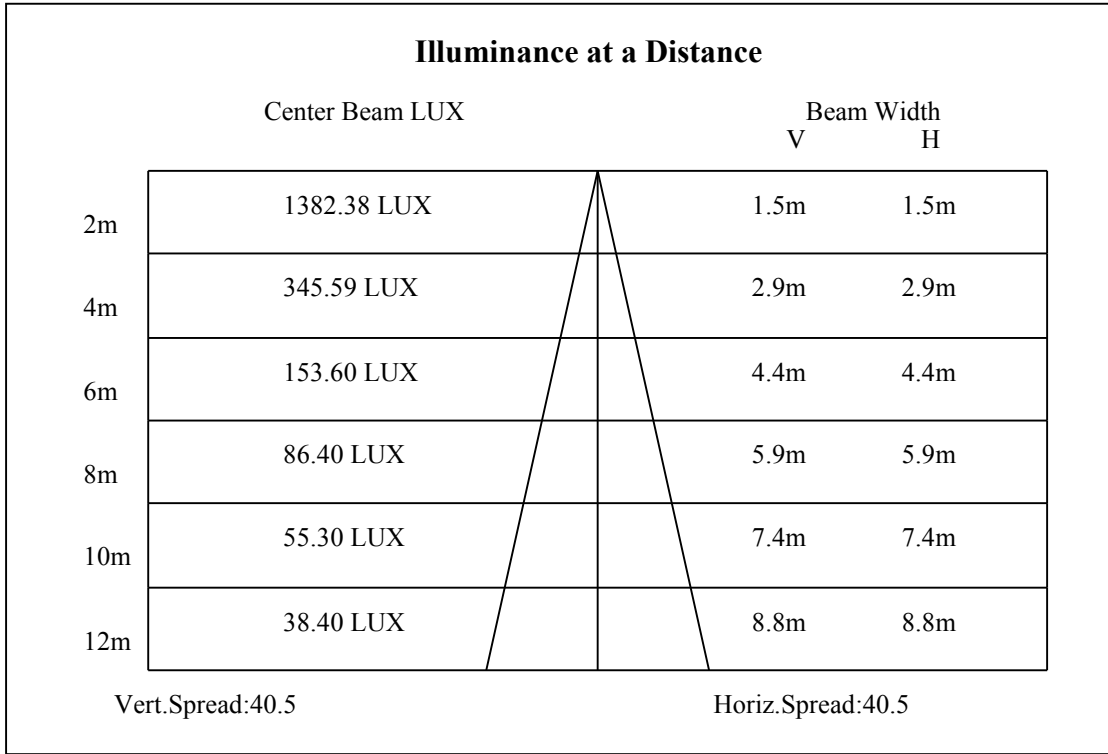
C0(Max): —————

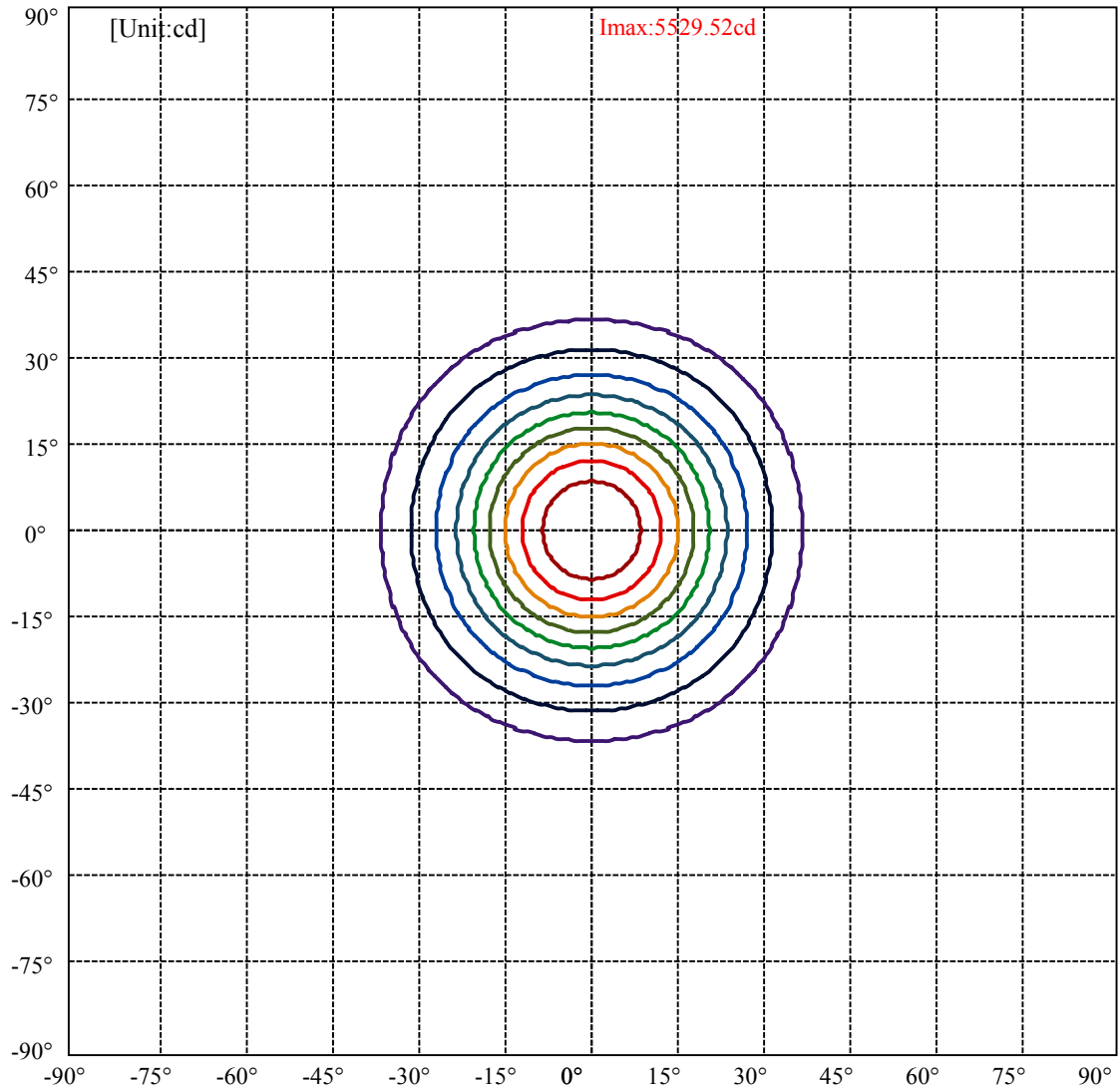
C0/C180: —————

C90/C270: —————

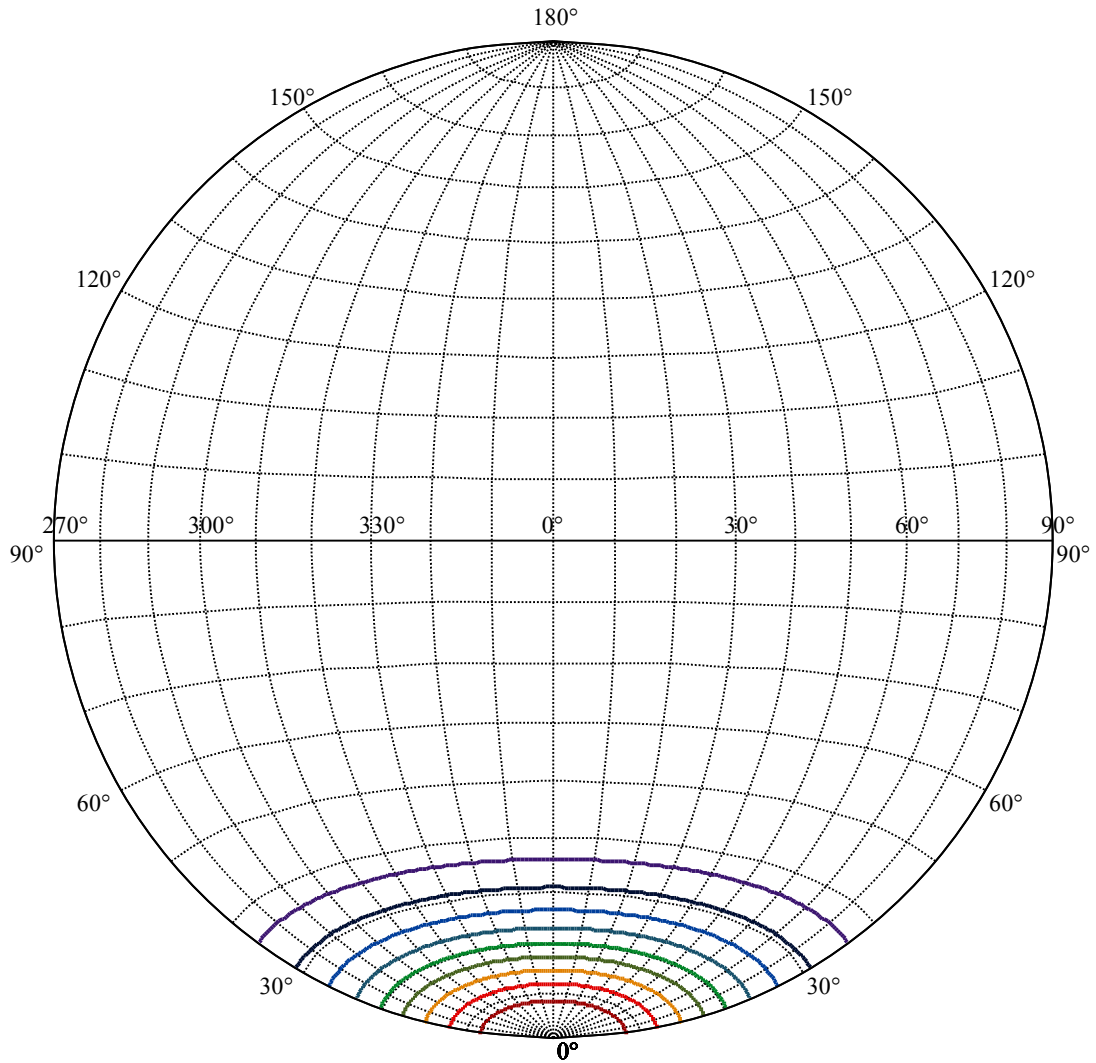
Field angle(10%Imax):C0/180Left:36.2 Right:36.2  
:C90/270Left:36.2 Right:36.2

Beam Angle(50%Imax):C0/180Left:20.2 Right:20.2  
:C90/270Left:20.2 Right:20.2





(10%I <sub>max</sub> ) 552.952	—
(20%I <sub>max</sub> ) 1105.9	—
(30%I <sub>max</sub> ) 1658.85	—
(40%I <sub>max</sub> ) 2211.81	—
(50%I <sub>max</sub> ) 2764.76	—
(60%I <sub>max</sub> ) 3317.71	—
(70%I <sub>max</sub> ) 3870.66	—
(80%I <sub>max</sub> ) 4423.61	—
(90%I <sub>max</sub> ) 4976.56	—



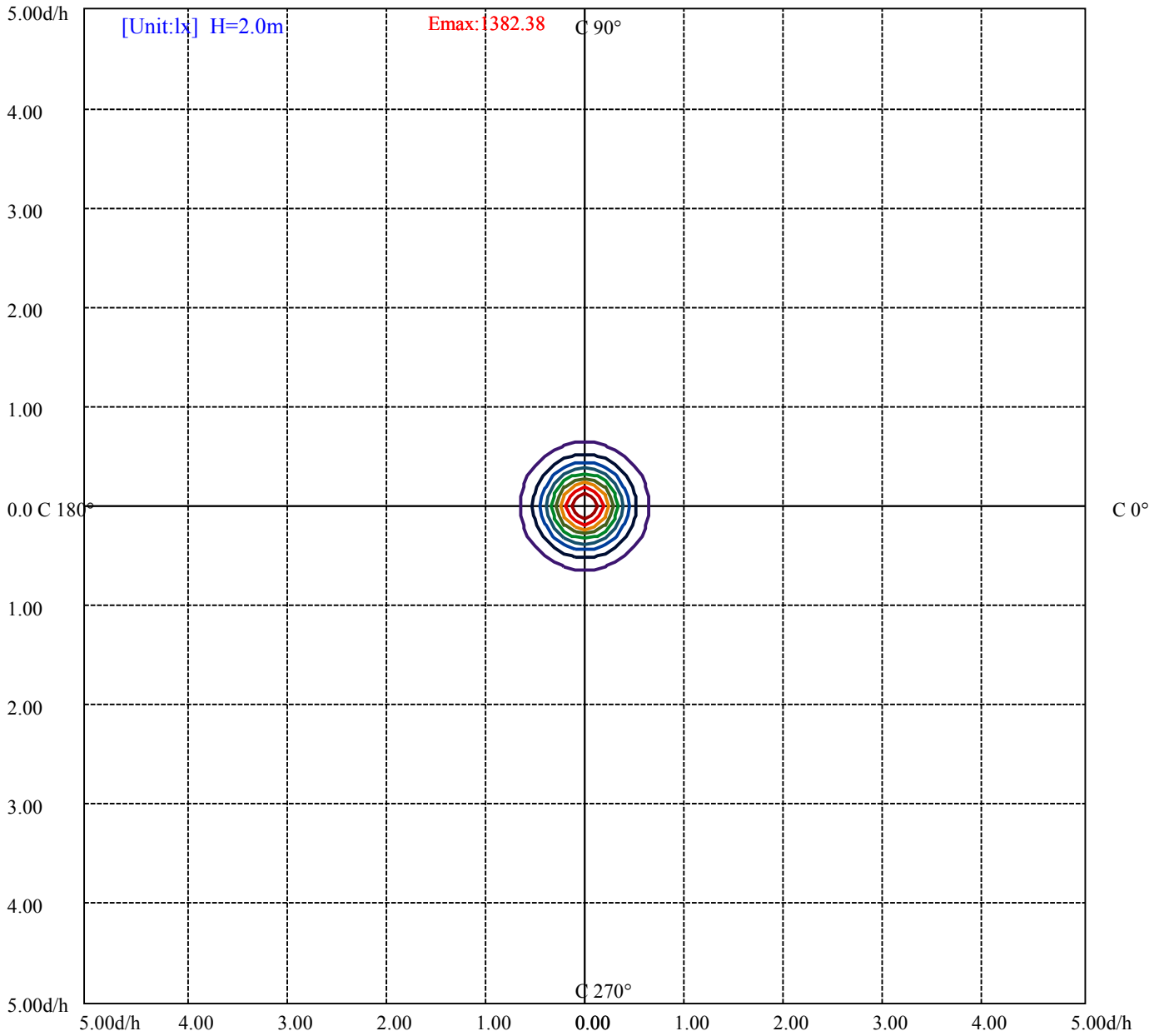
House

[Unit:cd]

Road

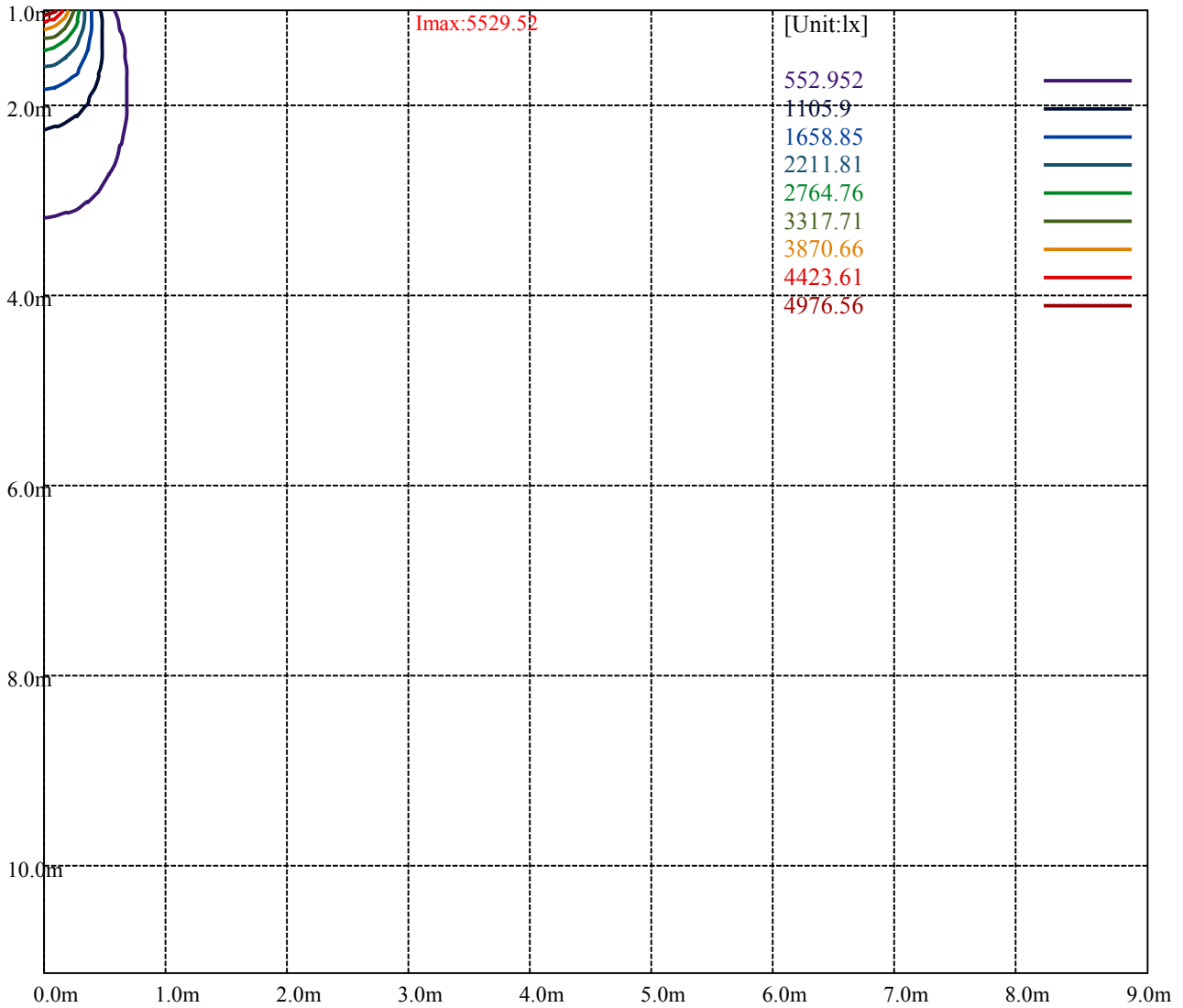
Imax:5529.52

(10%Imax) 552.952	—
(20%Imax) 1105.9	—
(30%Imax) 1658.85	—
(40%Imax) 2211.81	—
(50%Imax) 2764.76	—
(60%Imax) 3317.71	—
(70%Imax) 3870.66	—
(80%Imax) 4423.61	—
(90%Imax) 4976.56	—



(10%Emax) 138.2377	—
(20%Emax) 276.475	—
(30%Emax) 414.7125	—
(40%Emax) 552.95	—
(50%Emax) 691.1875	—
(60%Emax) 829.4275	—
(70%Emax) 967.665	—
(80%Emax) 1105.902	—
(90%Emax) 1244.14	—





Luminance Table

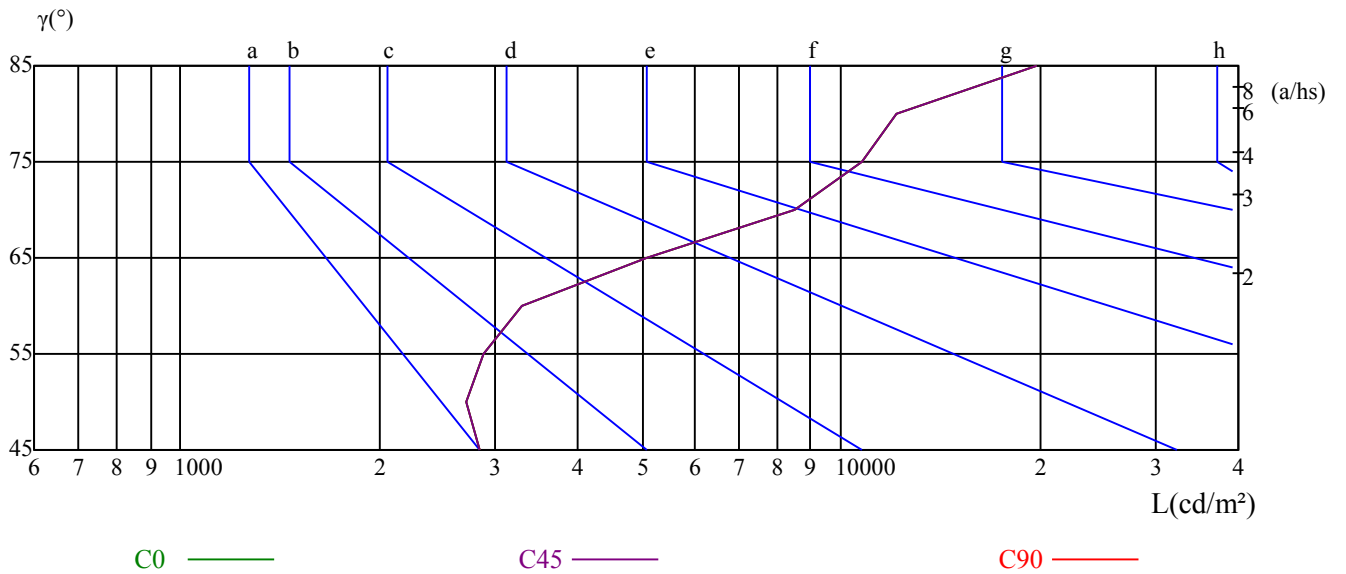
$\gamma$	45	50	55	60	65	70	75	80	85
C0	2833	2705	2872	3288	5078	8525	10785	12135	19798
C45	2833	2705	2872	3288	5078	8525	10785	12135	19798
C90	2833	2705	2872	3288	5078	8525	10785	12135	19798

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
5078	5078	5078	10785	10785	10785	19798	19798	19798

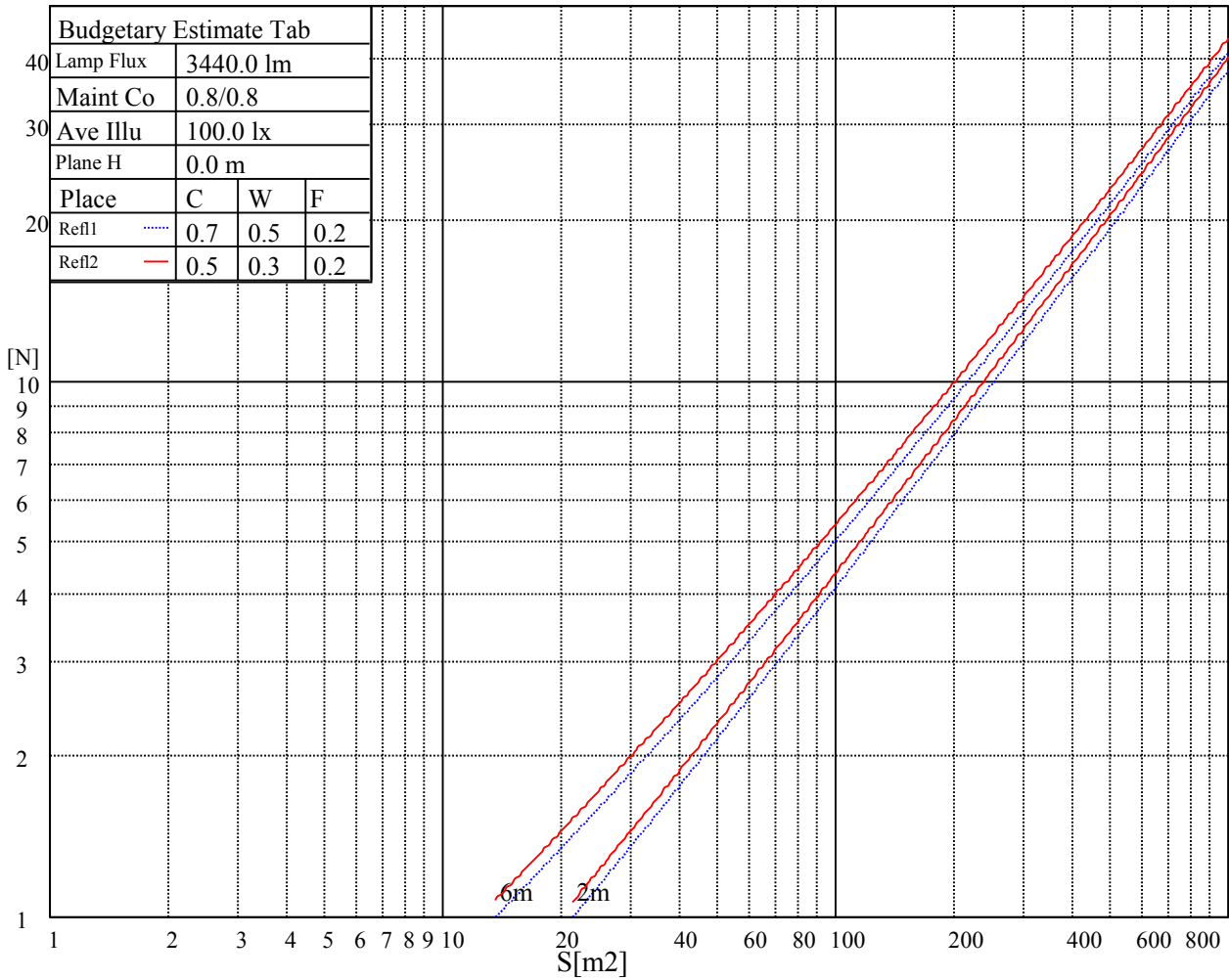
Glare Table

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

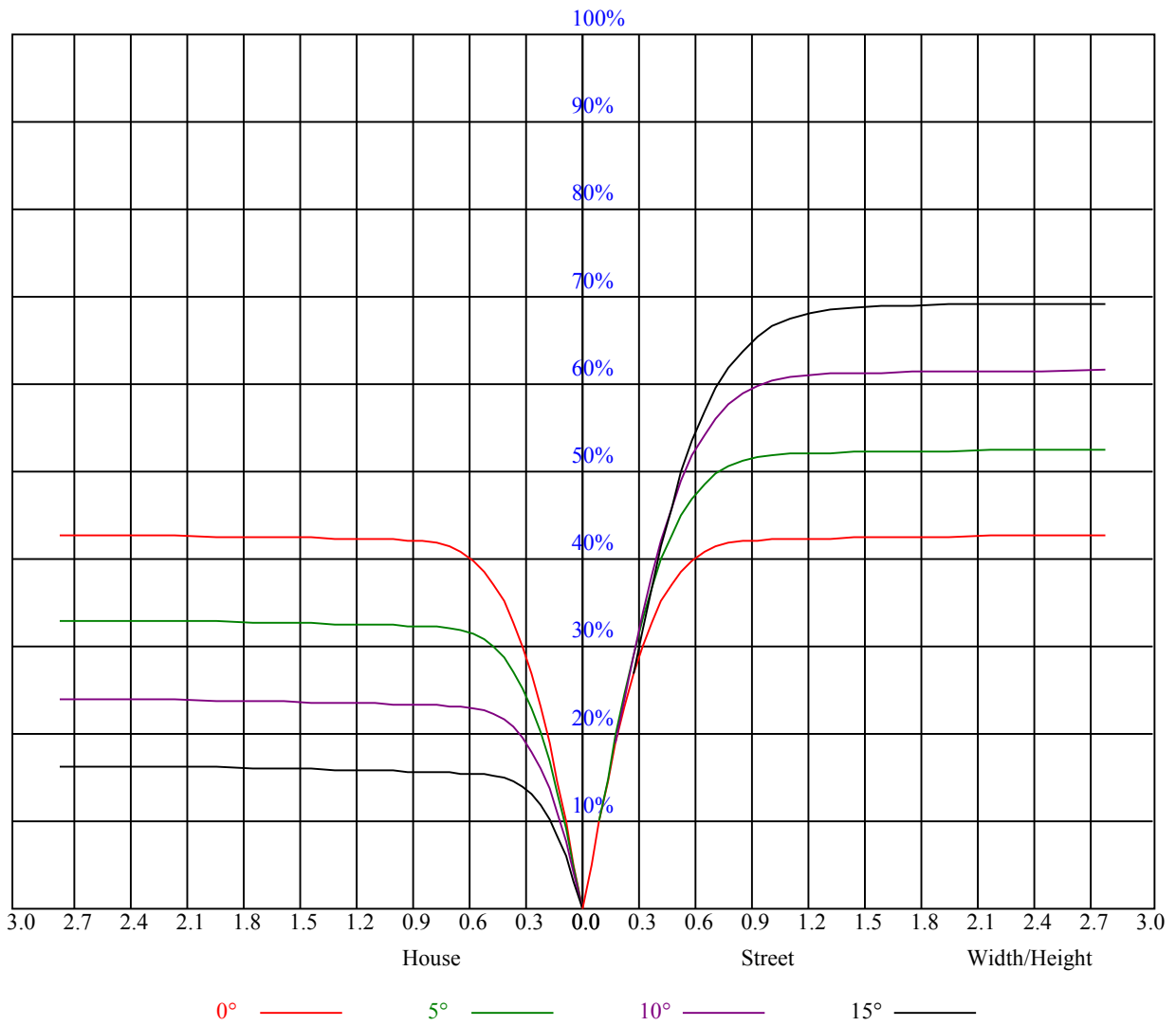
Luminance Limiting Curve



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	1.41	2.35	1.78	2.66	2.97	1.44	2.38	1.81	2.69	3.00
	3H	7.46	8.29	7.84	8.62	8.99	7.62	8.44	8.00	8.78	9.15
	4H	9.96	10.73	10.37	11.08	11.47	9.99	10.75	10.40	11.11	11.50
	6H	11.77	12.47	12.19	12.84	13.24	11.64	12.34	12.06	12.72	13.12
	8H	12.56	13.21	12.99	13.61	14.02	12.36	13.02	12.80	13.41	13.82
	12H	13.79	14.42	14.23	14.81	15.24	13.52	14.15	13.96	14.54	14.97
4H	2H	3.13	3.90	3.54	4.25	4.64	3.15	3.91	3.55	4.27	4.66
	3H	9.02	9.65	9.43	10.06	10.47	9.13	9.76	9.55	10.17	10.58
	4H	11.48	12.04	11.92	12.47	12.92	11.48	12.05	11.92	12.47	12.92
	6H	13.12	13.61	13.60	14.06	14.53	13.02	13.50	13.49	13.95	14.43
	8H	14.00	14.45	14.48	14.91	15.38	13.83	14.28	14.30	14.73	15.21
	12H	15.19	15.58	15.68	16.06	16.54	14.94	15.33	15.43	15.81	16.29
8H	4H	12.20	12.65	12.68	13.10	13.58	12.20	12.65	12.68	13.11	13.58
	6H	14.06	14.41	14.57	14.92	15.40	13.95	14.31	14.46	14.81	15.30
	8H	15.08	15.40	15.61	15.92	16.42	14.91	15.23	15.44	15.75	16.25
	12H	16.39	16.67	16.92	17.16	17.75	16.16	16.44	16.69	16.93	17.52
12H	4H	12.32	12.71	12.82	13.20	13.68	12.33	12.72	12.83	13.21	13.69
	6H	14.50	14.59	14.81	15.06	15.61	14.41	14.50	14.72	14.97	15.52
	8H	15.41	15.68	15.93	16.18	16.76	15.26	15.53	15.78	16.03	16.61
Variation with the observer position at spacings:											
S = 1.0H	4.5/-4.2					4.5/-4.2					
S = 1.5H	6.0/-2.8					6.0/-2.8					
S = 2.0H	7.0/-2.2					7.0/-2.2					
Standard tables:	BK4					BK4					
Uncorrected UGR	2.0					2.0					



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	1.04	1.04	1.04	1.01	1.01	1.01	0.97	0.97	0.97	0.93	0.93	0.93	0.89	0.89	0.89	0.87
1	0.96	0.94	0.91	0.94	0.92	0.90	0.90	0.89	0.87	0.87	0.86	0.85	0.84	0.83	0.82	0.81
2	0.90	0.87	0.84	0.89	0.86	0.83	0.86	0.83	0.81	0.83	0.81	0.80	0.81	0.79	0.78	0.77
3	0.85	0.81	0.78	0.84	0.81	0.78	0.82	0.79	0.76	0.80	0.77	0.75	0.78	0.76	0.74	0.73
4	0.81	0.77	0.74	0.80	0.76	0.73	0.78	0.75	0.72	0.77	0.74	0.71	0.75	0.73	0.71	0.69
5	0.77	0.73	0.70	0.77	0.72	0.69	0.75	0.71	0.69	0.74	0.71	0.68	0.72	0.70	0.68	0.66
6	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
7	0.71	0.66	0.63	0.70	0.66	0.63	0.69	0.65	0.63	0.68	0.65	0.62	0.67	0.64	0.62	0.61
8	0.68	0.63	0.60	0.67	0.63	0.60	0.67	0.63	0.60	0.66	0.62	0.60	0.65	0.62	0.60	0.59
9	0.65	0.61	0.58	0.65	0.61	0.58	0.64	0.60	0.58	0.63	0.60	0.57	0.63	0.60	0.57	0.56
10	0.63	0.59	0.56	0.62	0.58	0.56	0.62	0.58	0.55	0.61	0.58	0.55	0.61	0.57	0.55	0.54



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	5536.69	5350.50	4857.75	3886.31	2846.81	1940.63	1317.38	691.31	298.13
45.0	5527.13	5344.31	4830.75	3835.13	2850.19	1902.94	1294.88	698.06	312.75
90.0	5526.00	5302.69	4732.31	3712.50	2662.88	1812.94	1095.02	597.21	73.01
135.0	5528.25	5383.69	4980.94	4020.19	2953.69	2016.56	1389.38	762.75	347.63
180.0	5536.69	5321.25	4752.56	3824.44	2758.50	1829.25	1098.90	622.18	75.43
225.0	5527.13	5328.00	4776.19	3807.56	2820.38	1866.38	1091.25	653.51	88.88
270.0	5526.00	5343.19	4859.44	3990.38	2948.06	1969.31	1359.00	742.50	315.56
315.0	5528.25	5279.63	4706.44	3677.63	2644.88	1784.81	1103.51	558.06	47.03
360.0	5536.69	5350.50	4857.75	3886.31	2846.81	1940.63	1317.38	691.31	298.13
C/ $\gamma$ (°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	20.25	17.49	16.54	16.59	20.08	26.55	29.03	23.29	17.49
45.0	20.08	17.78	17.04	17.10	21.38	26.10	26.44	20.42	17.78
90.0	19.91	17.61	16.88	16.93	22.05	28.86	26.33	21.09	19.41
135.0	20.93	17.44	16.20	15.81	17.61	25.54	27.39	22.61	17.78
180.0	19.80	17.27	16.43	16.37	23.06	33.08	26.72	17.55	15.92
225.0	19.63	17.04	16.09	15.98	23.74	31.78	30.60	23.06	17.83
270.0	20.19	17.21	16.03	15.75	19.97	28.63	30.88	22.78	16.37
315.0	19.46	17.27	16.59	16.99	23.79	32.74	25.93	17.78	15.47
360.0	20.25	17.49	16.54	16.59	20.08	26.55	29.03	23.29	17.49
C/ $\gamma$ (°)	90.0								
0.0	12.88								
45.0	12.88								
90.0	12.88								
135.0	14.06								
180.0	12.83								
225.0	12.88								
270.0	12.88								
315.0	12.83								
360.0	12.88								