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NATA

LumCAT: 3-1824-E	
Luminaire: 99.02.73.181	
Report No: NATA0100	Voltage(V): 34.9000
Test No: GC2019022111	Current(A): 0.7000
LampCAT: LUMILEDS LUXEON 1208	Power (W): 24.4300
Lamp flux(lm): 2996.0	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 72	Width(mm): 72
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 2642.30
Efficiency(%): 88.19%
Lumens(lm)/Power(W): 109.50
Central intensity(cd): 5893.453
Maximum intensity(cd): 5893.453
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=36.8
 [C90/270]Total=36.8
Field angle(10%Imax): [C0/180]Total=66.7
 [C90/270]Total=66.7
Maximum s/h(1/2): C0_180=0.60 C90_270=0.60
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(%): 89.29%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 97.526%

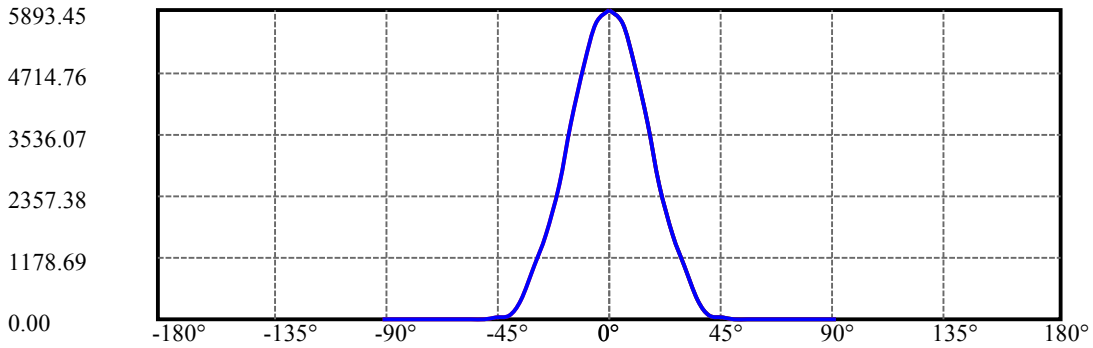
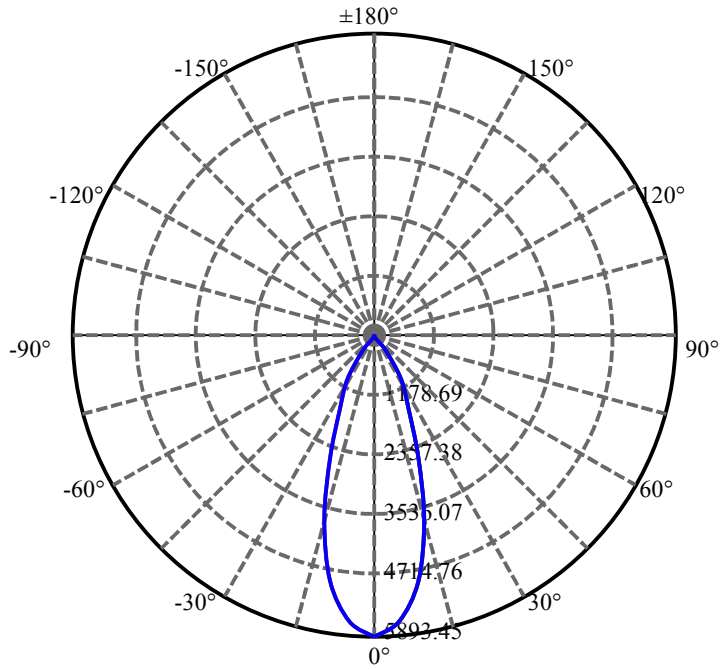
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	5893.453	35.244	35.244	1.176%	1.334%
5.0	5633.156	269.115	304.359	8.982%	11.519%
10.0	4873.219	463.848	768.206	15.482%	29.073%
15.0	3736.547	530.098	1298.304	17.694%	49.135%
20.0	2571.820	482.150	1780.454	16.093%	67.383%
25.0	1613.391	373.747	2154.2	12.475%	81.528%
30.0	1017.879	278.969	2433.169	9.311%	92.085%
35.0	381.930	120.078	2553.248	4.008%	96.630%
40.0	76.451	26.936	2580.184	.899%	97.649%
45.0	19.955	7.734	2587.918	.258%	97.942%
50.0	17.114	7.186	2595.104	.240%	98.214%
55.0	15.497	6.958	2602.063	.232%	98.477%
60.0	14.280	6.779	2608.842	.226%	98.734%
65.0	12.628	6.273	2615.115	.209%	98.971%
70.0	12.066	6.215	2621.33	.207%	99.206%
75.0	11.630	6.157	2627.487	.206%	99.439%
80.0	11.145	6.016	2633.503	.201%	99.667%
85.0	11.004	6.009	2639.512	.201%	99.895%
90.0	10.167	2.787	2642.298	.093%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	2433.17	81.21%	92.09%
0-40	2580.18	86.12%	97.65%
0-60	2608.84	87.08%	98.73%
0-90	2639.51	88.10%	99.89%
0-120	2639.51	88.10%	99.89%
0-180	2642.30	88.19%	100.00%
60-90	37.45	1.25%	1.42%
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%
0-24.46	2113.84	70.56%	80.00%

ZONAL LUMEN SUMMARY

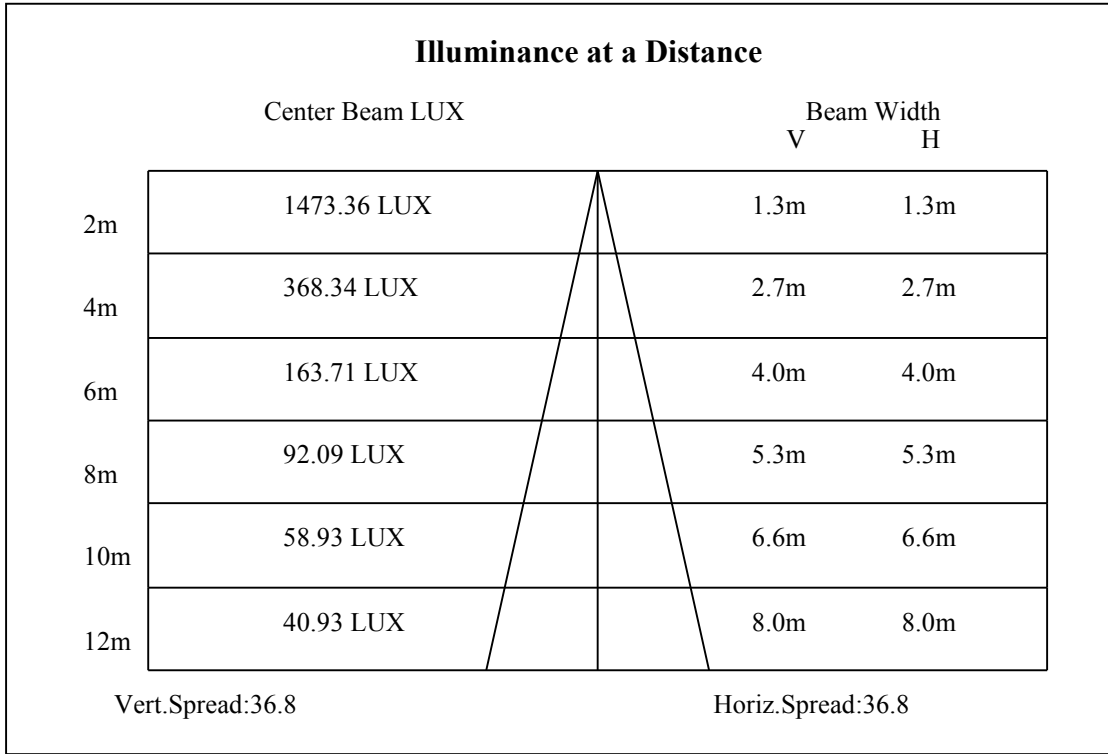
0-10	768.21
10-20	1012.25
20-30	652.72
30-40	147.01
40-50	14.92
50-60	13.74
60-70	12.49
70-80	12.17
80-90	6.01
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

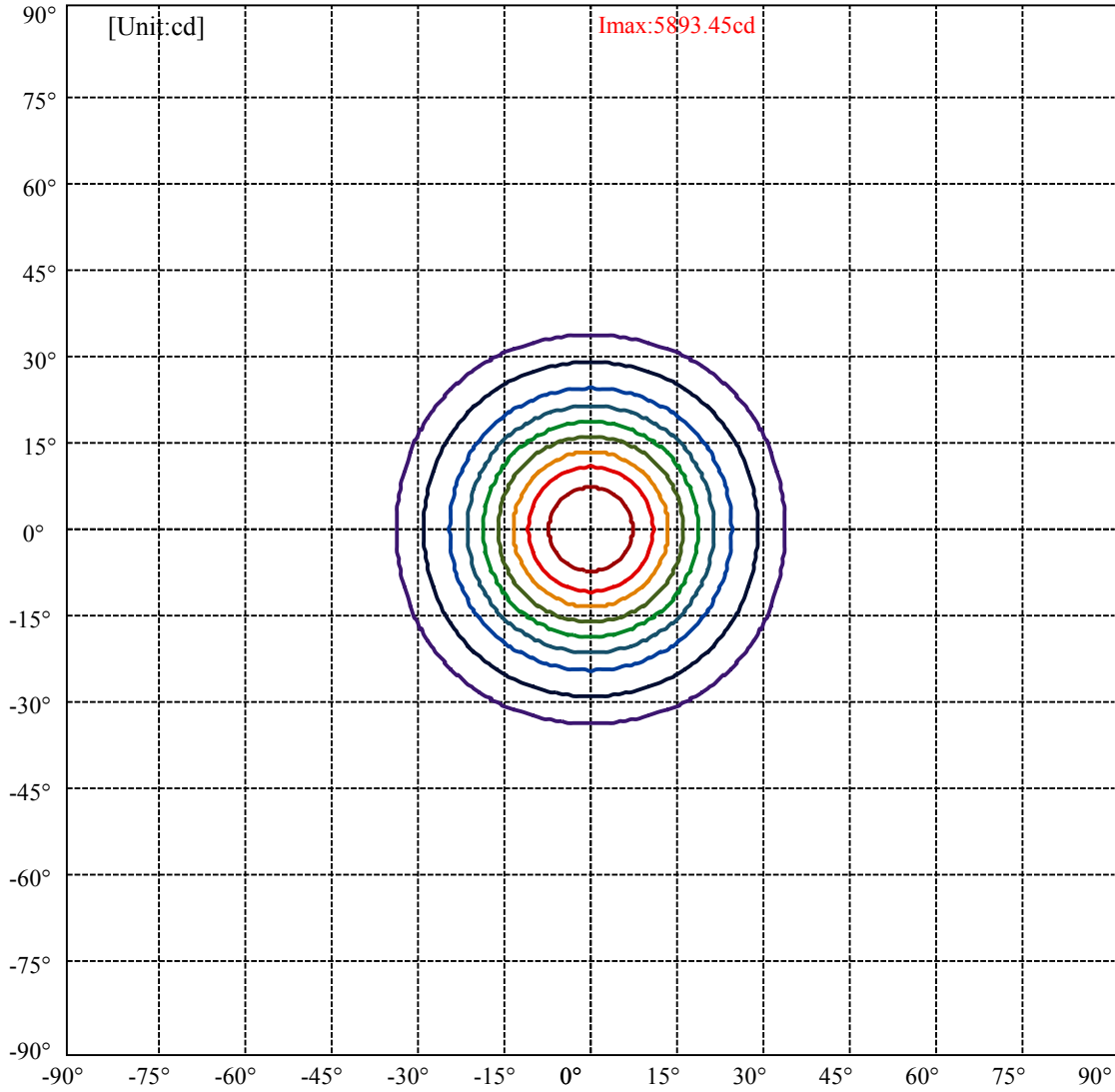


C0(Max): ———
C0/C180: ———
C90/C270: ———

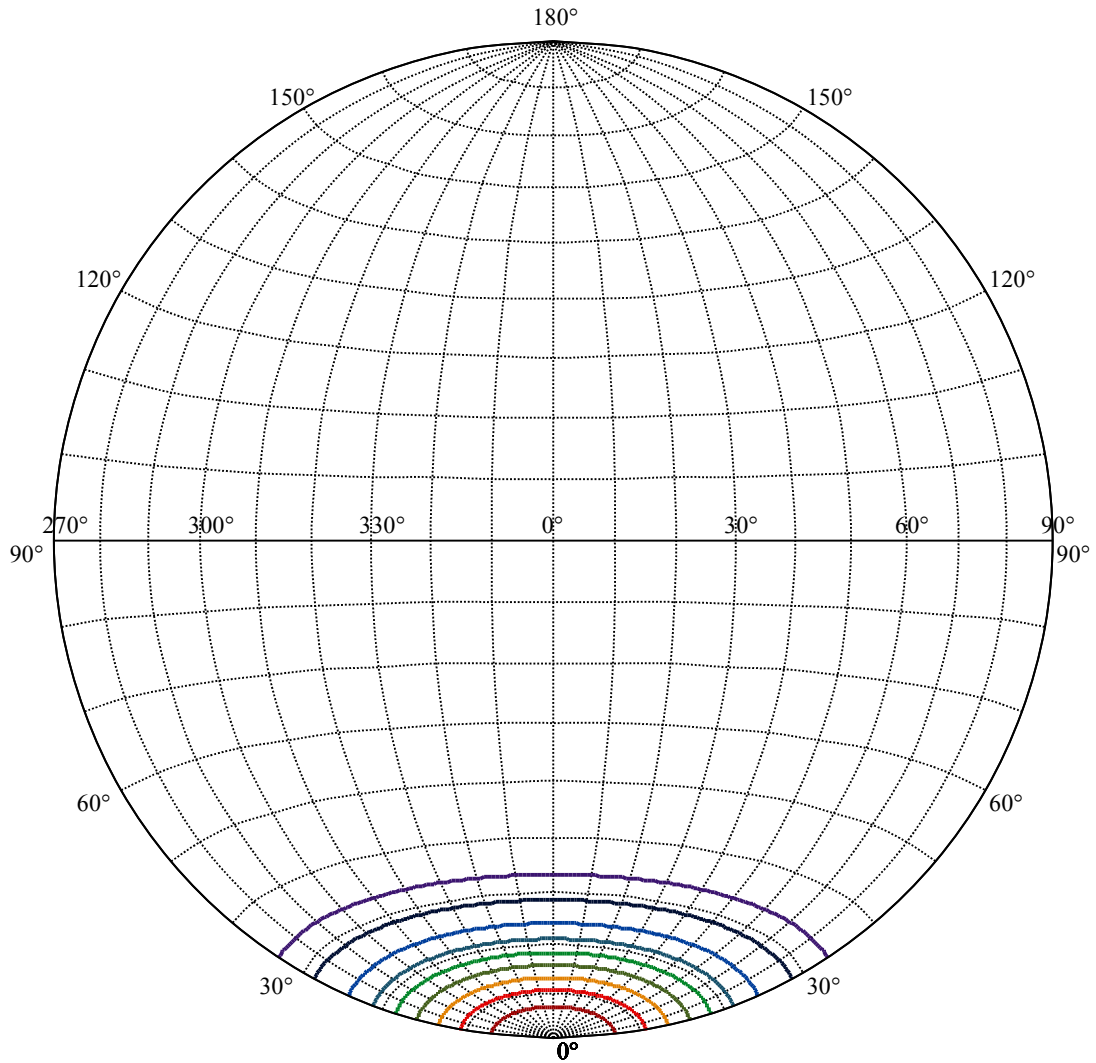
Field angle(10%Imax):C0/180Left:33.4 Right:33.4
:C90/270Left:33.4 Right:33.4

Beam Angle(50%Imax):C0/180Left:18.4 Right:18.4
:C90/270Left:18.4 Right:18.4





(10%Imax) 589.345	—
(20%Imax) 1178.69	—
(30%Imax) 1768.04	—
(40%Imax) 2357.38	—
(50%Imax) 2946.73	—
(60%Imax) 3536.07	—
(70%Imax) 4125.42	—
(80%Imax) 4714.76	—
(90%Imax) 5304.11	—



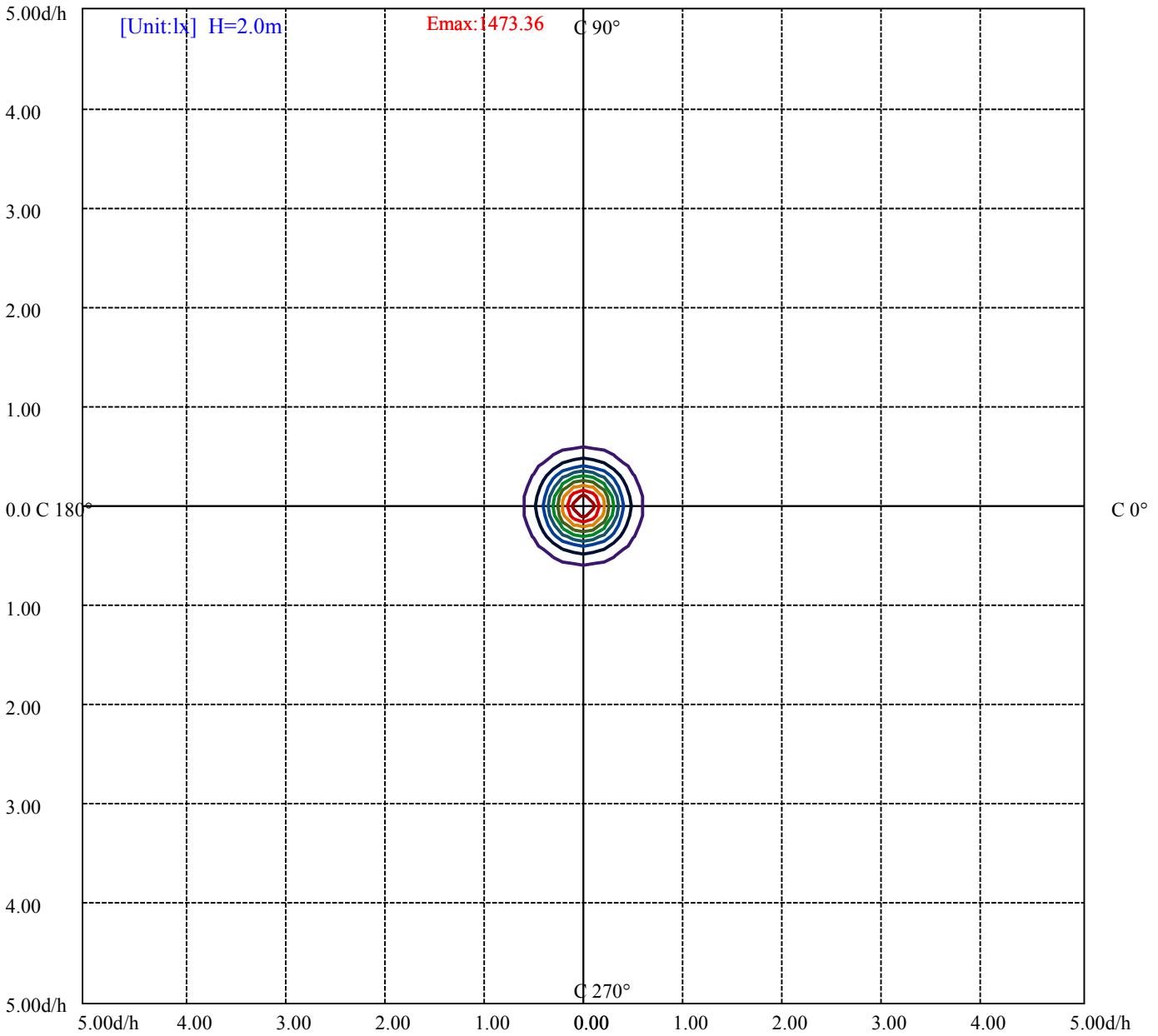
House

[Unit:cd]

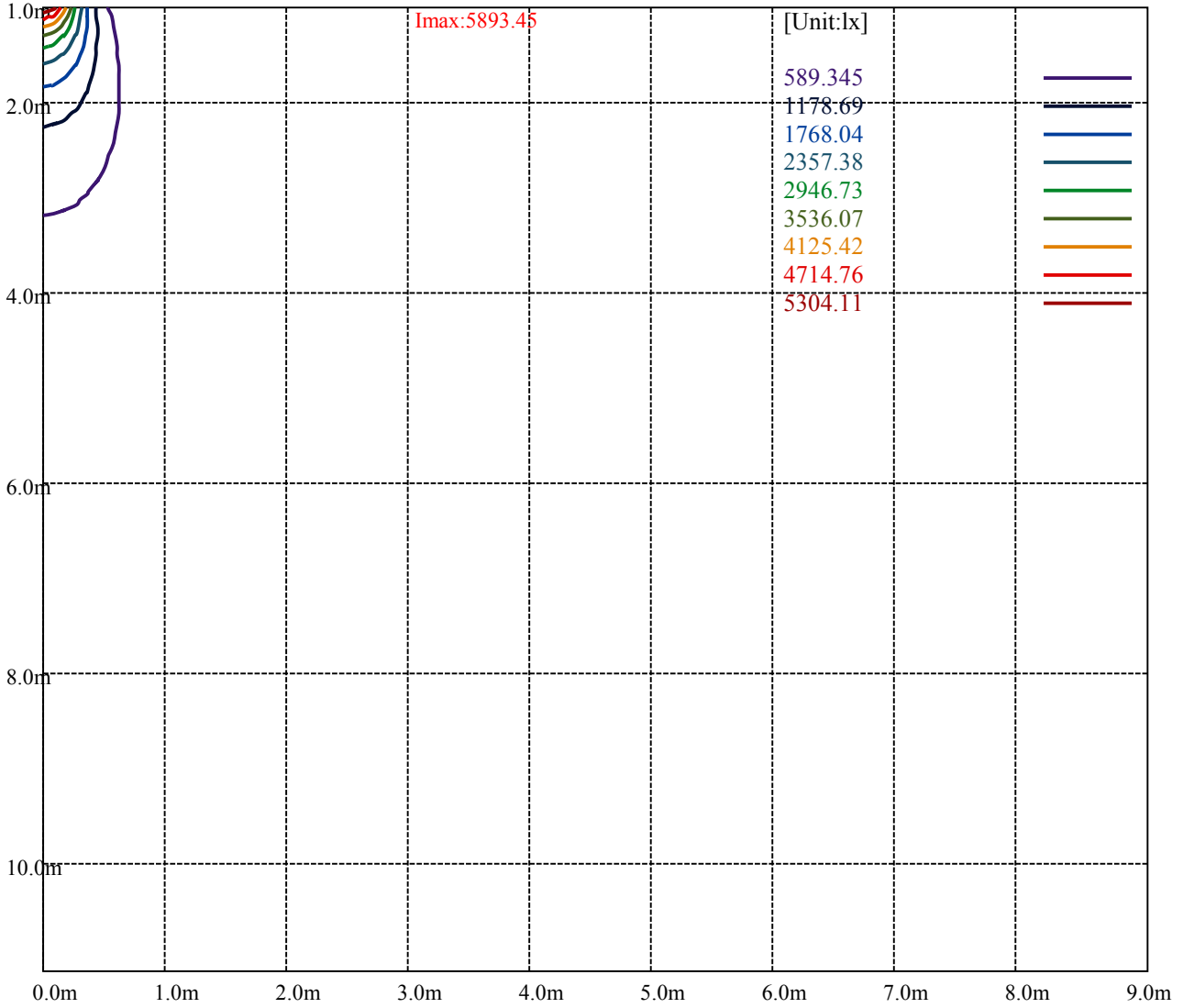
Road

I_{max}:5893.45

(10%I _{max}) 589.345	—
(20%I _{max}) 1178.69	—
(30%I _{max}) 1768.04	—
(40%I _{max}) 2357.38	—
(50%I _{max}) 2946.73	—
(60%I _{max}) 3536.07	—
(70%I _{max}) 4125.42	—
(80%I _{max}) 4714.76	—
(90%I _{max}) 5304.11	—



- (10%Emax) 147.3362
- (20%Emax) 294.6725
- (30%Emax) 442.0075
- (40%Emax) 589.345
- (50%Emax) 736.68
- (60%Emax) 884.0175
- (70%Emax) 1031.353
- (80%Emax) 1178.69
- (90%Emax) 1326.025



Luminance Table

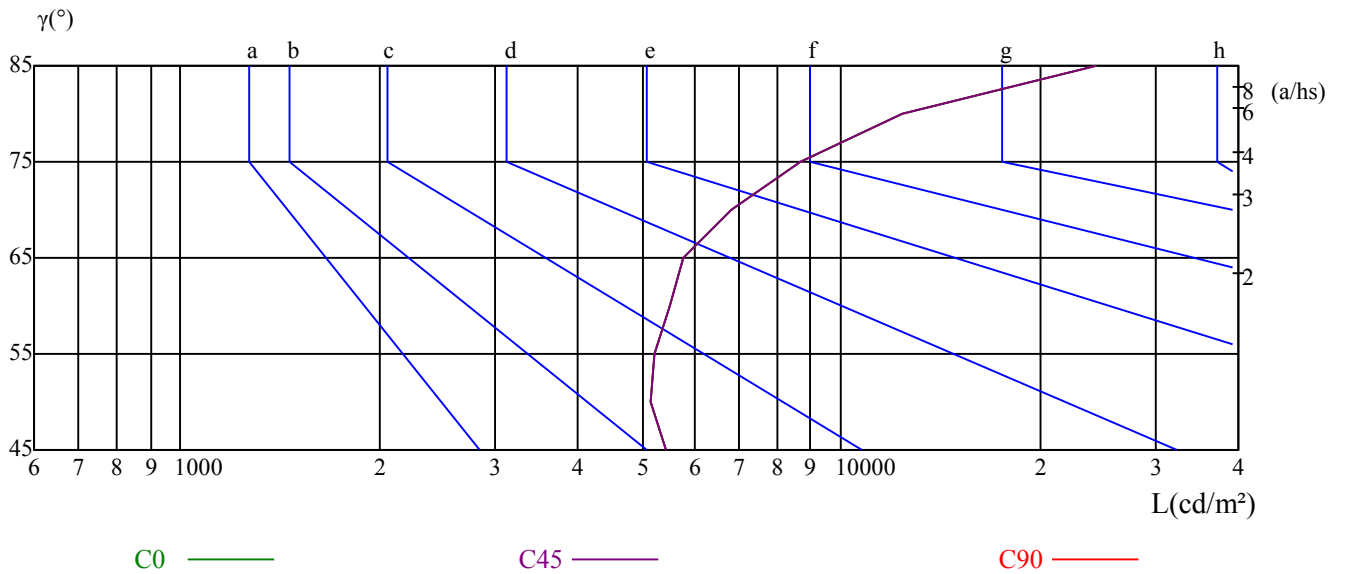
γ	45	50	55	60	65	70	75	80	85
C0	5444	5136	5212	5509	5764	6805	8668	12380	24355
C45	5444	5136	5212	5509	5764	6805	8668	12380	24355
C90	5444	5136	5212	5509	5764	6805	8668	12380	24355

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
5764	5764	5764	8668	8668	8668	24355	24355	24355

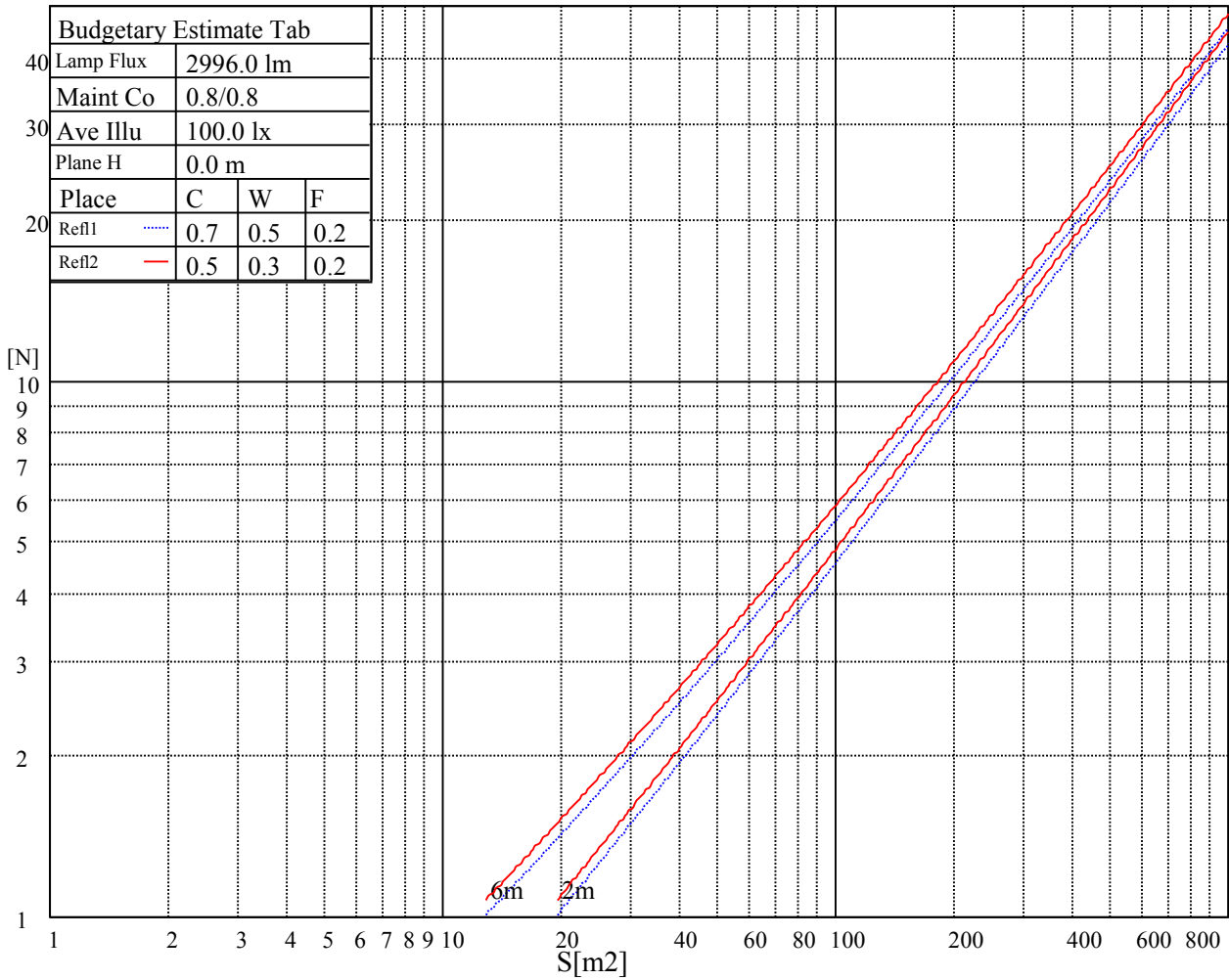
Glare Table

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

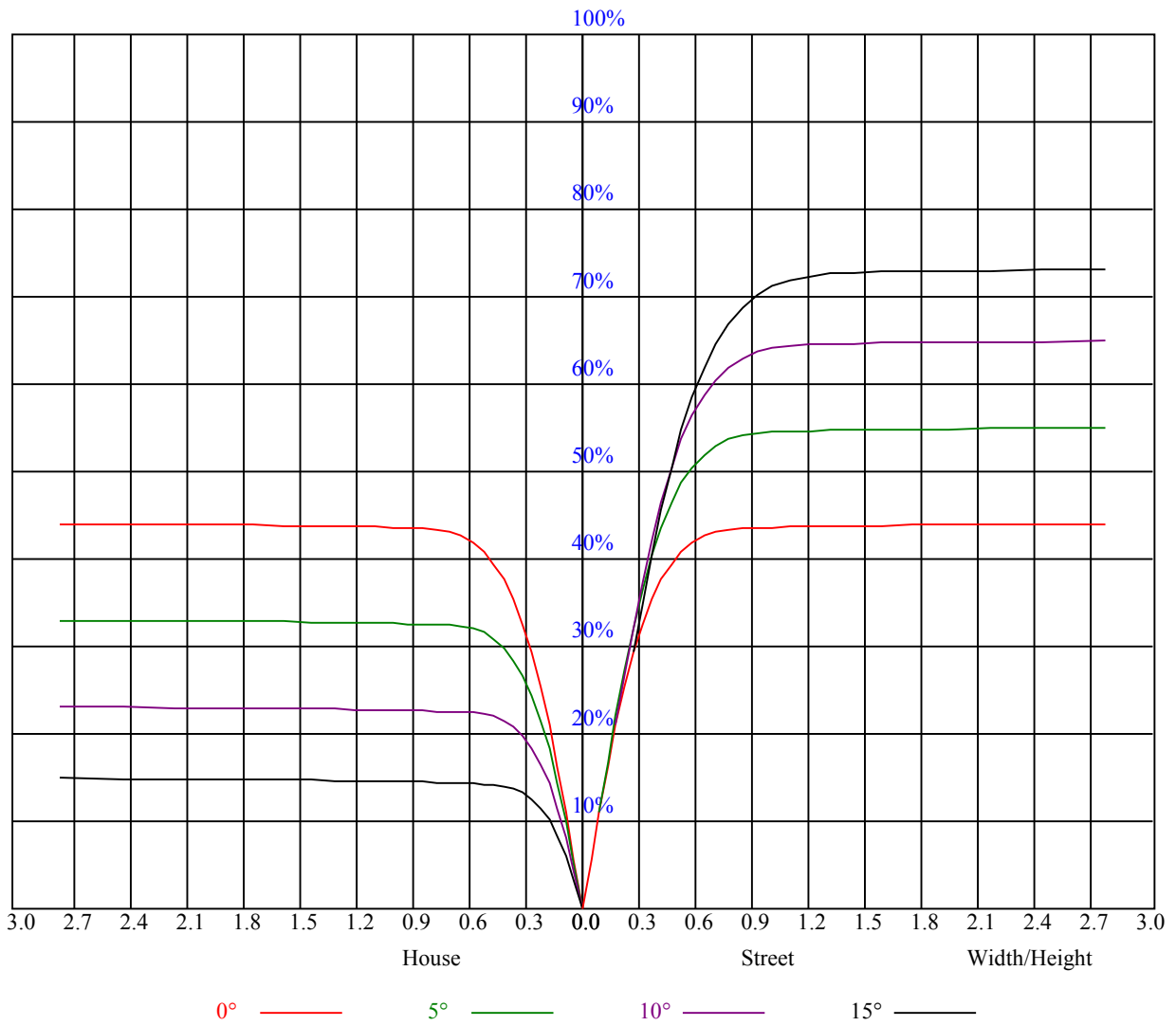
Luminance Limiting Curve



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	4.04	4.96	4.41	5.27	5.59	3.60	4.52	3.97	4.83	5.14
	3H	6.68	7.49	7.06	7.82	8.19	6.35	7.16	6.74	7.50	7.86
	4H	8.20	8.95	8.61	9.30	9.69	7.93	8.68	8.34	9.03	9.42
	6H	9.93	10.62	10.35	10.99	11.39	9.71	10.40	10.13	10.77	11.17
	8H	10.94	11.58	11.37	11.97	12.38	10.71	11.35	11.15	11.74	12.15
	12H	12.64	13.25	13.08	13.64	14.07	12.35	12.96	12.79	13.35	13.78
4H	2H	4.67	5.42	5.08	5.78	6.17	4.34	5.09	4.75	5.45	5.84
	3H	7.64	8.25	8.05	8.66	9.07	7.41	8.02	7.82	8.43	8.84
	4H	9.36	9.91	9.80	10.34	10.79	9.17	9.72	9.61	10.14	10.59
	6H	11.24	11.71	11.71	12.16	12.63	11.09	11.56	11.56	12.01	12.48
	8H	12.38	12.82	12.86	13.27	13.74	12.20	12.64	12.68	13.09	13.57
	12H	14.03	14.40	14.52	14.89	15.37	13.77	14.15	14.27	14.64	15.12
8H	4H	9.99	10.43	10.47	10.88	11.35	9.84	10.27	10.31	10.72	11.20
	6H	12.17	12.51	12.68	13.01	13.50	12.04	12.39	12.55	12.89	13.38
	8H	13.50	13.81	14.04	14.33	14.83	13.35	13.65	13.88	14.18	14.67
	12H	15.31	15.57	15.84	16.07	16.66	15.08	15.34	15.60	15.84	16.42
12H	4H	10.16	10.54	10.65	11.03	11.50	10.02	10.40	10.51	10.89	11.37
	6H	12.65	12.76	12.99	13.23	13.78	12.55	12.65	12.88	13.12	13.67
	8H	13.92	14.18	14.44	14.68	15.26	13.78	14.04	14.30	14.54	15.12
Variation with the observer position at spacings:											
S = 1.0H	5.7/-5.7					5.7/-5.7					
S = 1.5H	7.6/-4.3					7.6/-4.3					
S = 2.0H	8.7/-3.1					8.7/-3.1					
Standard tables:	BK3					BK3					
Uncorrected UGR	1.0					1.0					



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	1.06	1.06	1.06	1.04	1.04	1.04	0.99	0.99	0.99	0.95	0.95	0.95	0.91	0.91	0.91	0.89
1	0.99	0.96	0.94	0.97	0.95	0.93	0.93	0.91	0.90	0.90	0.88	0.87	0.87	0.86	0.85	0.83
2	0.93	0.90	0.87	0.92	0.89	0.86	0.89	0.86	0.84	0.86	0.84	0.83	0.84	0.82	0.81	0.79
3	0.89	0.85	0.82	0.87	0.84	0.81	0.85	0.82	0.80	0.83	0.81	0.79	0.81	0.79	0.77	0.76
4	0.85	0.80	0.77	0.84	0.80	0.77	0.82	0.78	0.76	0.80	0.77	0.75	0.78	0.76	0.74	0.73
5	0.81	0.77	0.73	0.80	0.76	0.73	0.79	0.75	0.72	0.77	0.74	0.72	0.76	0.73	0.71	0.70
6	0.78	0.73	0.70	0.77	0.73	0.70	0.76	0.72	0.69	0.75	0.71	0.69	0.73	0.71	0.69	0.67
7	0.75	0.70	0.67	0.74	0.70	0.67	0.73	0.69	0.67	0.72	0.69	0.66	0.71	0.68	0.66	0.65
8	0.72	0.68	0.65	0.71	0.67	0.64	0.70	0.67	0.64	0.70	0.66	0.64	0.69	0.66	0.64	0.63
9	0.69	0.65	0.62	0.69	0.65	0.62	0.68	0.64	0.62	0.67	0.64	0.62	0.67	0.64	0.62	0.61
10	0.67	0.63	0.60	0.67	0.63	0.60	0.66	0.62	0.60	0.65	0.62	0.60	0.65	0.62	0.60	0.59



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	5885.44	5774.63	5241.94	4202.44	3009.38	1901.25	1280.25	604.69	80.72
45.0	5895.56	5821.88	5256.56	4197.38	2964.94	1909.13	1267.88	608.06	288.00
90.0	5902.88	5717.81	4976.44	3822.19	2658.94	1680.19	1096.43	442.24	50.85
135.0	5889.94	5677.88	4951.69	3853.69	2635.88	1665.56	1110.38	410.63	44.38
180.0	5885.44	5455.69	4534.88	3319.88	2178.56	1421.44	782.49	173.03	24.24
225.0	5895.56	5414.63	4481.44	3312.00	2179.69	1296.56	781.14	168.30	27.96
270.0	5902.88	5593.50	4750.88	3546.00	2426.06	1443.94	840.38	305.44	50.79
315.0	5889.94	5609.25	4791.94	3638.81	2521.13	1589.06	984.09	343.07	44.66
360.0	5885.44	5774.63	5241.94	4202.44	3009.38	1901.25	1280.25	604.69	80.72
C/ γ (°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	20.70	16.82	15.02	14.12	12.43	11.42	11.03	10.80	10.63
45.0	22.05	17.72	15.81	14.29	12.26	11.36	11.08	10.86	10.63
90.0	19.74	17.44	15.69	14.46	12.71	12.21	11.93	11.59	12.38
135.0	17.21	15.36	14.29	13.50	12.32	11.93	11.59	11.08	10.52
180.0	16.14	14.74	13.89	13.39	12.60	12.38	12.09	11.42	10.97
225.0	19.35	17.55	16.20	14.79	13.16	12.88	12.15	11.42	11.48
270.0	24.75	20.31	17.38	15.24	13.28	12.66	11.93	11.14	10.74
315.0	19.69	16.99	15.69	14.46	12.26	11.70	11.25	10.86	10.69
360.0	20.70	16.82	15.02	14.12	12.43	11.42	11.03	10.80	10.63
C/ γ (°)	90.0								
0.0	10.35								
45.0	10.29								
90.0	10.07								
135.0	10.13								
180.0	10.13								
225.0	10.18								
270.0	10.07								
315.0	10.13								
360.0	10.35								