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NATA

LumCAT: 3-1937-E	
Luminaire: 99.02.73.181	
Report No: NATA0100	Voltage(V): 34.9000
Test No: GC2019022108	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): 86	Width(mm): 86
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 2598.00
Efficiency(%): 86.72%
Lumens(lm)/Power(W): 107.03
Central intensity(cd): 3229.453
Maximum intensity(cd): 3229.453
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=57.2
 [C90/270]Total=57.2
Field angle(10%Imax): [C0/180]Total=74.8
 [C90/270]Total=74.8
Maximum s/h(1/2): C0_180=0.95 C90_270=0.95
Maximum s/h(1/4): C0_180=0.84 C90_270=0.84
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 87.28%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.057%

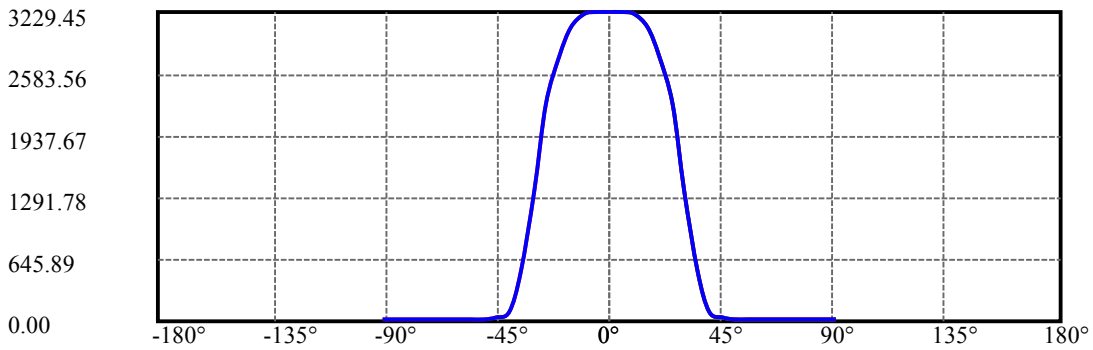
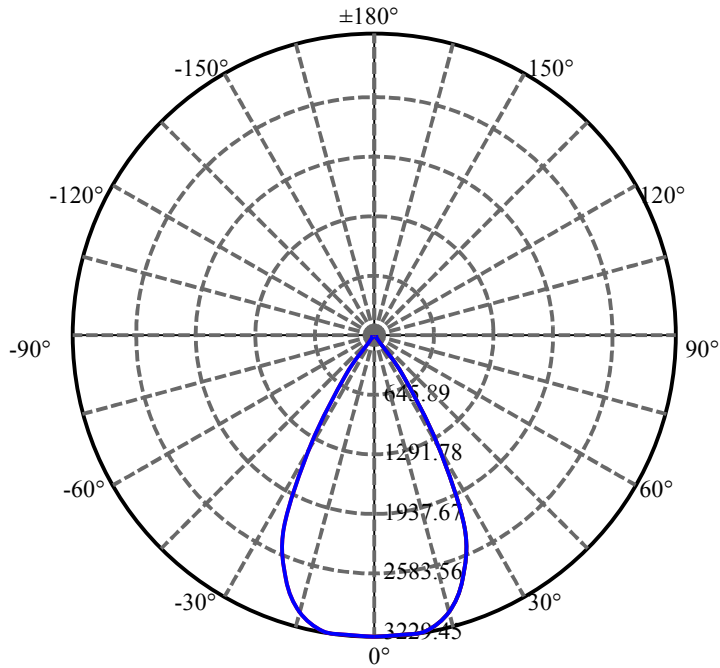
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	3229.453	19.313	19.313	.645%	.743%
5.0	3224.953	154.067	173.379	5.142%	6.674%
10.0	3207.023	305.254	478.634	10.189%	18.423%
15.0	3061.195	434.287	912.921	14.496%	35.139%
20.0	2772.492	519.770	1432.691	17.349%	55.146%
25.0	2270.953	526.073	1958.764	17.559%	75.395%
30.0	1355.984	371.633	2330.396	12.404%	89.700%
35.0	526.683	165.588	2495.985	5.527%	96.073%
40.0	99.211	34.956	2530.94	1.167%	97.419%
45.0	32.892	12.749	2543.689	.426%	97.910%
50.0	18.443	7.744	2551.433	.258%	98.208%
55.0	14.934	6.706	2558.139	.224%	98.466%
60.0	12.410	5.891	2564.03	.197%	98.693%
65.0	12.016	5.970	2570	.199%	98.922%
70.0	11.932	6.146	2576.146	.205%	99.159%
75.0	11.763	6.228	2582.374	.208%	99.399%
80.0	11.763	6.350	2588.724	.212%	99.643%
85.0	11.770	6.427	2595.151	.215%	99.890%
90.0	10.385	2.846	2597.997	.095%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	2330.40	77.78%	89.70%
0-40	2530.94	84.48%	97.42%
0-60	2564.03	85.58%	98.69%
0-90	2595.15	86.62%	99.89%
0-120	2595.15	86.62%	99.89%
0-180	2598.00	86.72%	100.00%
60-90	37.01	1.24%	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%
0-26.61	2078.40	69.37%	80.00%

ZONAL LUMEN SUMMARY

0-10	478.63
10-20	954.06
20-30	897.71
30-40	200.54
40-50	20.49
50-60	12.60
60-70	12.12
70-80	12.58
80-90	6.43
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: ———

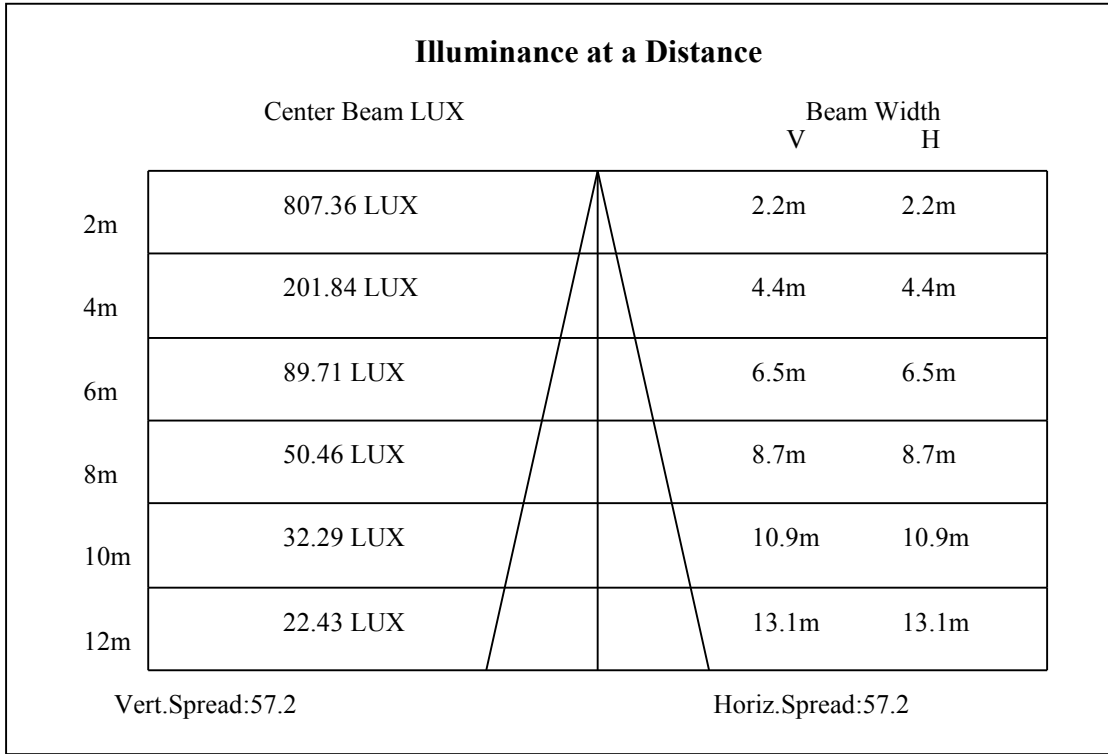
C90/C270: ———

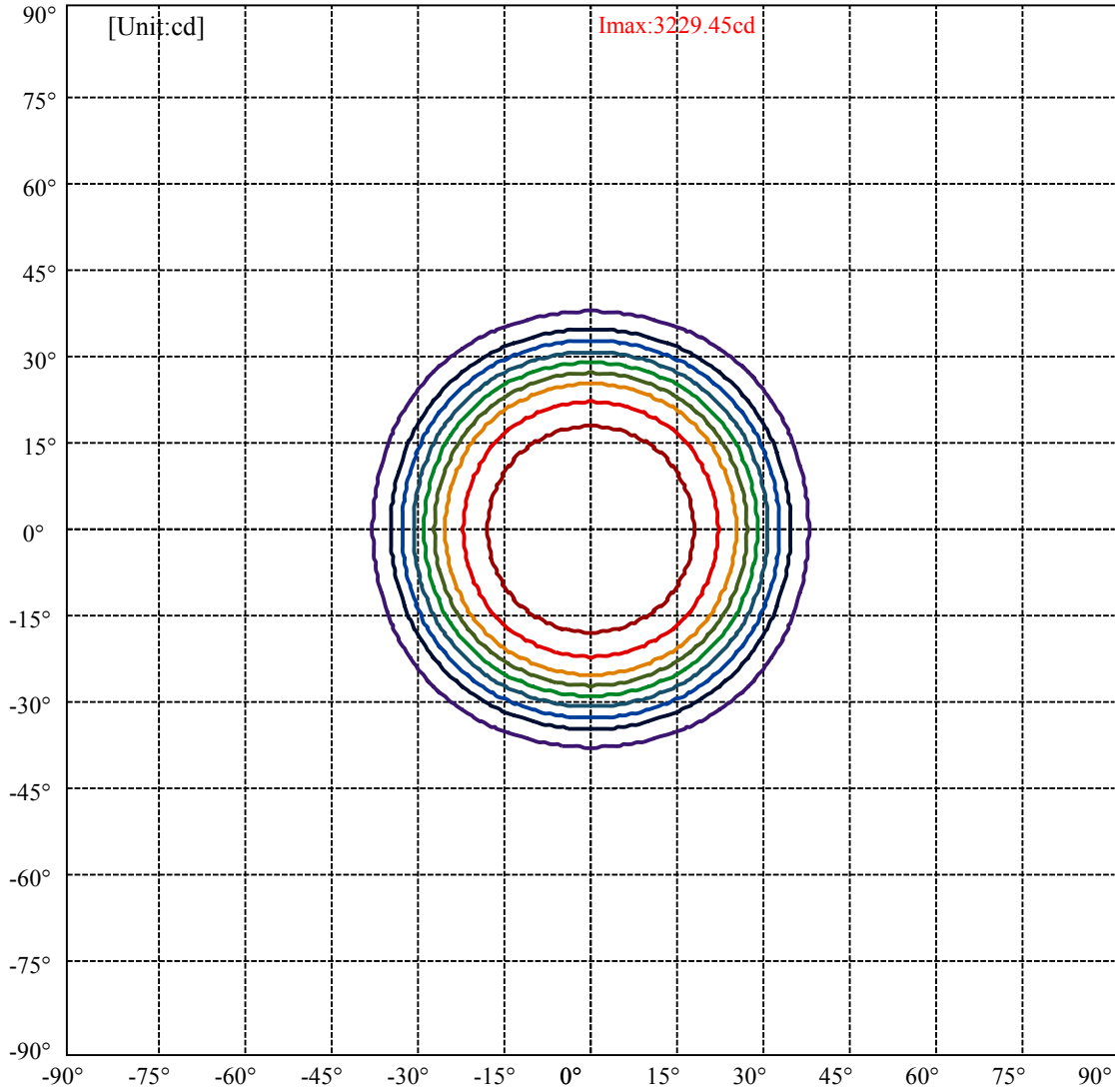
Field angle(10%Imax):C0/180Left:37.4 Right:37.4

:C90/270Left:37.4 Right:37.4

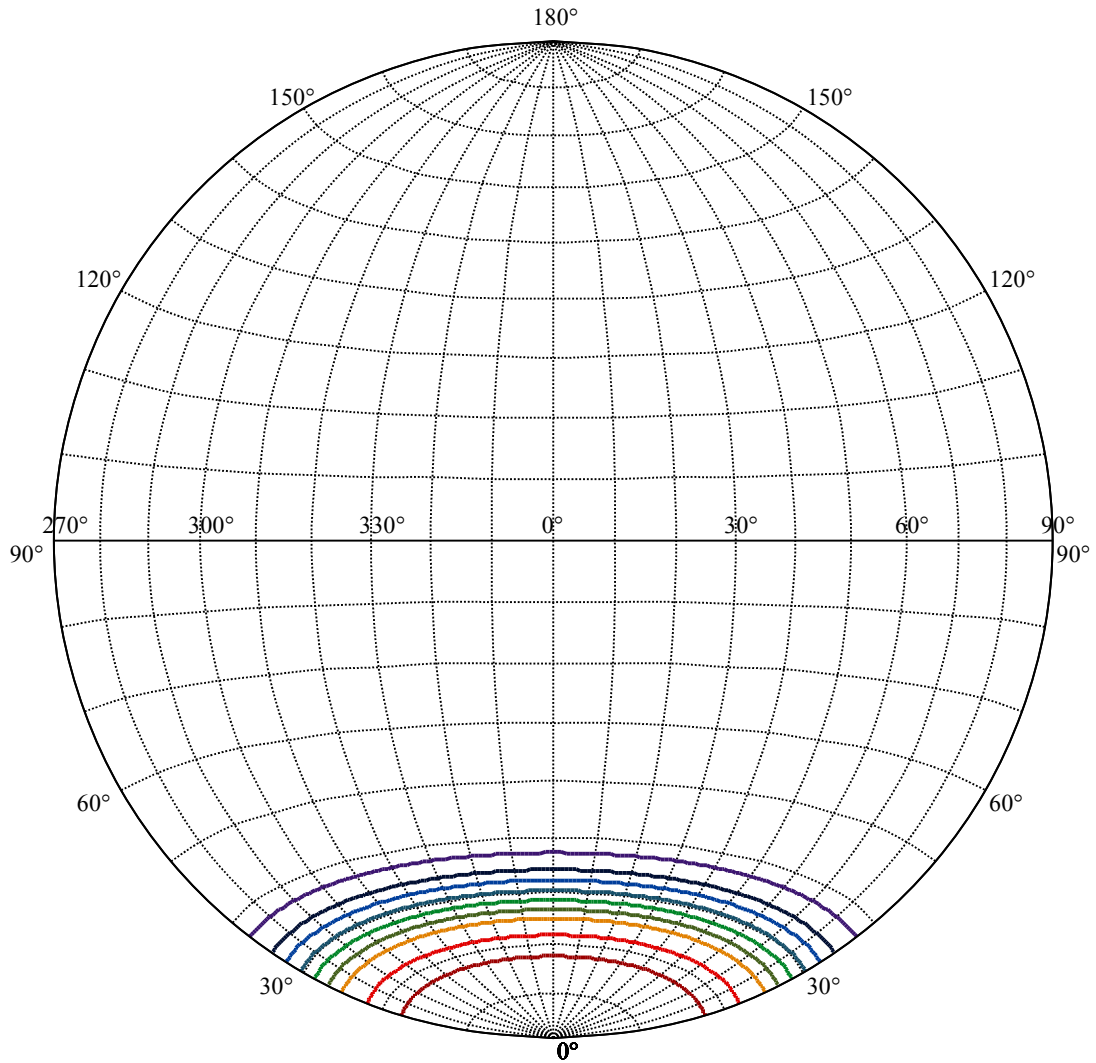
Beam Angle(50%Imax):C0/180Left:28.6 Right:28.6

:C90/270Left:28.6 Right:28.6





(10%Imax) 322.945	—
(20%Imax) 645.891	—
(30%Imax) 968.836	—
(40%Imax) 1291.78	—
(50%Imax) 1614.73	—
(60%Imax) 1937.67	—
(70%Imax) 2260.62	—
(80%Imax) 2583.56	—
(90%Imax) 2906.51	—



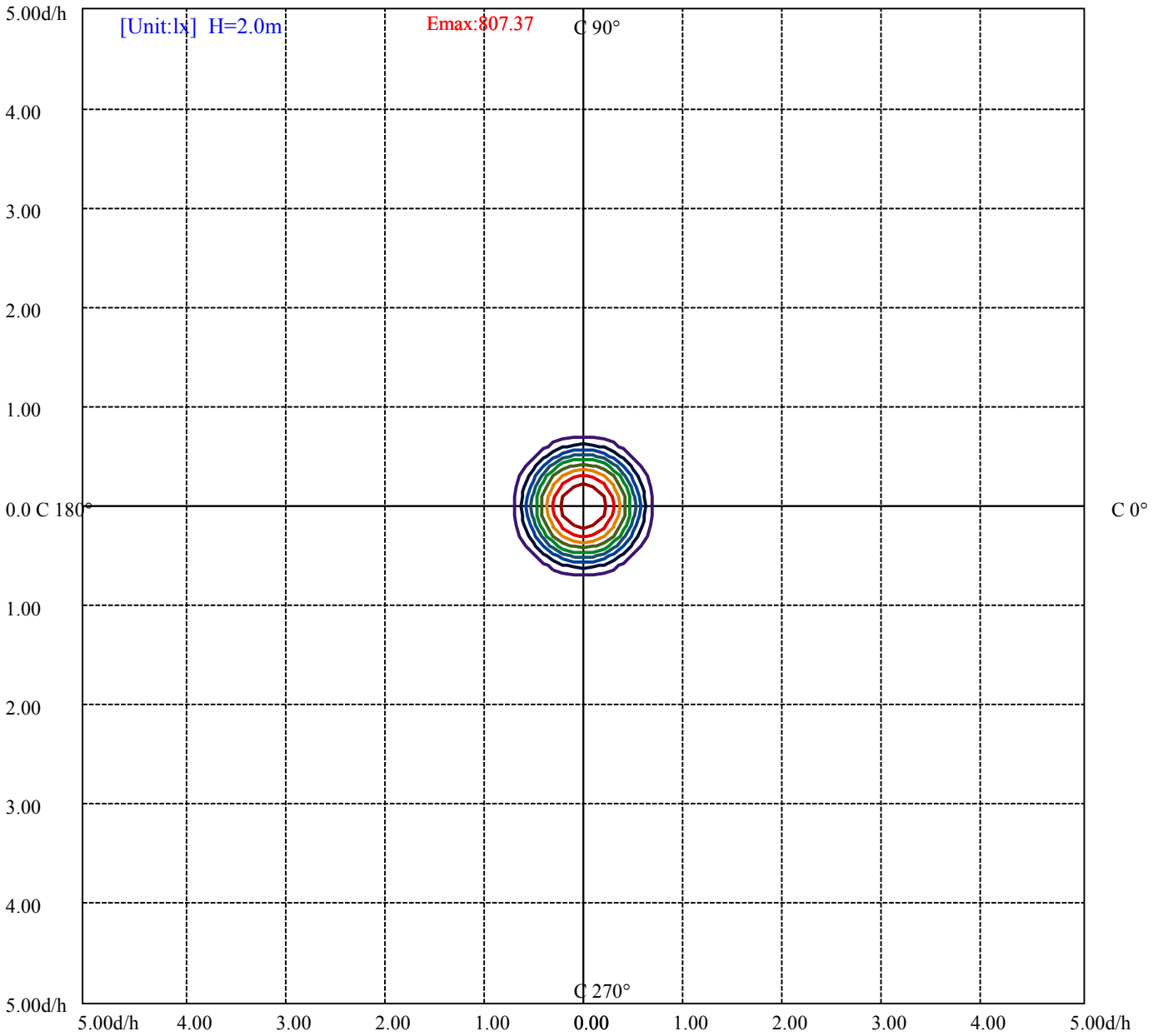
House

[Unit:cd]

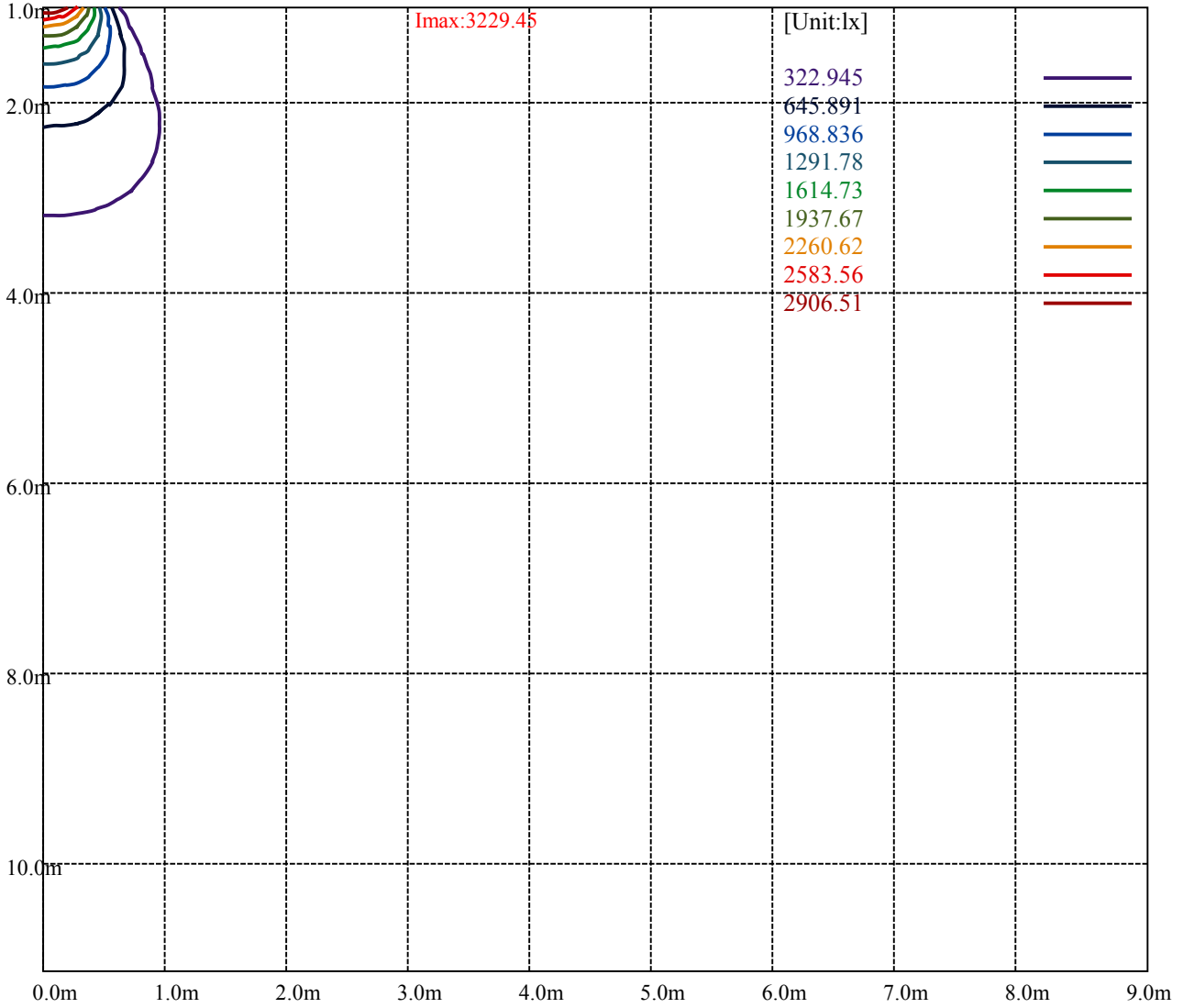
Road

Imax:3229.45

(10%Imax) 322.945	—
(20%Imax) 645.891	—
(30%Imax) 968.836	—
(40%Imax) 1291.78	—
(50%Imax) 1614.73	—
(60%Imax) 1937.67	—
(70%Imax) 2260.62	—
(80%Imax) 2583.56	—
(90%Imax) 2906.51	—



- (10%Emax) 80.73625
- (20%Emax) 161.4727
- (30%Emax) 242.209
- (40%Emax) 322.945
- (50%Emax) 403.6825
- (60%Emax) 484.4175
- (70%Emax) 565.155
- (80%Emax) 645.89
- (90%Emax) 726.6275



Luminance Table

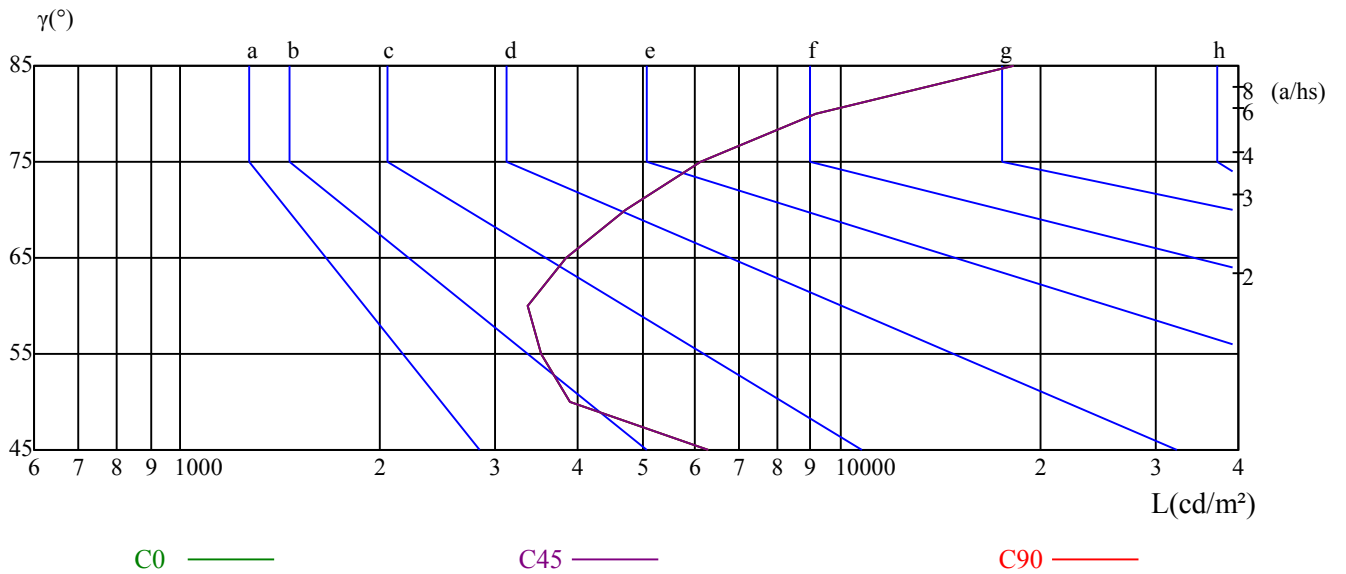
γ	45	50	55	60	65	70	75	80	85
C0	6289	3879	3520	3356	3844	4717	6145	9159	18260
C45	6289	3879	3520	3356	3844	4717	6145	9159	18260
C90	6289	3879	3520	3356	3844	4717	6145	9159	18260

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
3844	3844	3844	6145	6145	6145	18260	18260	18260

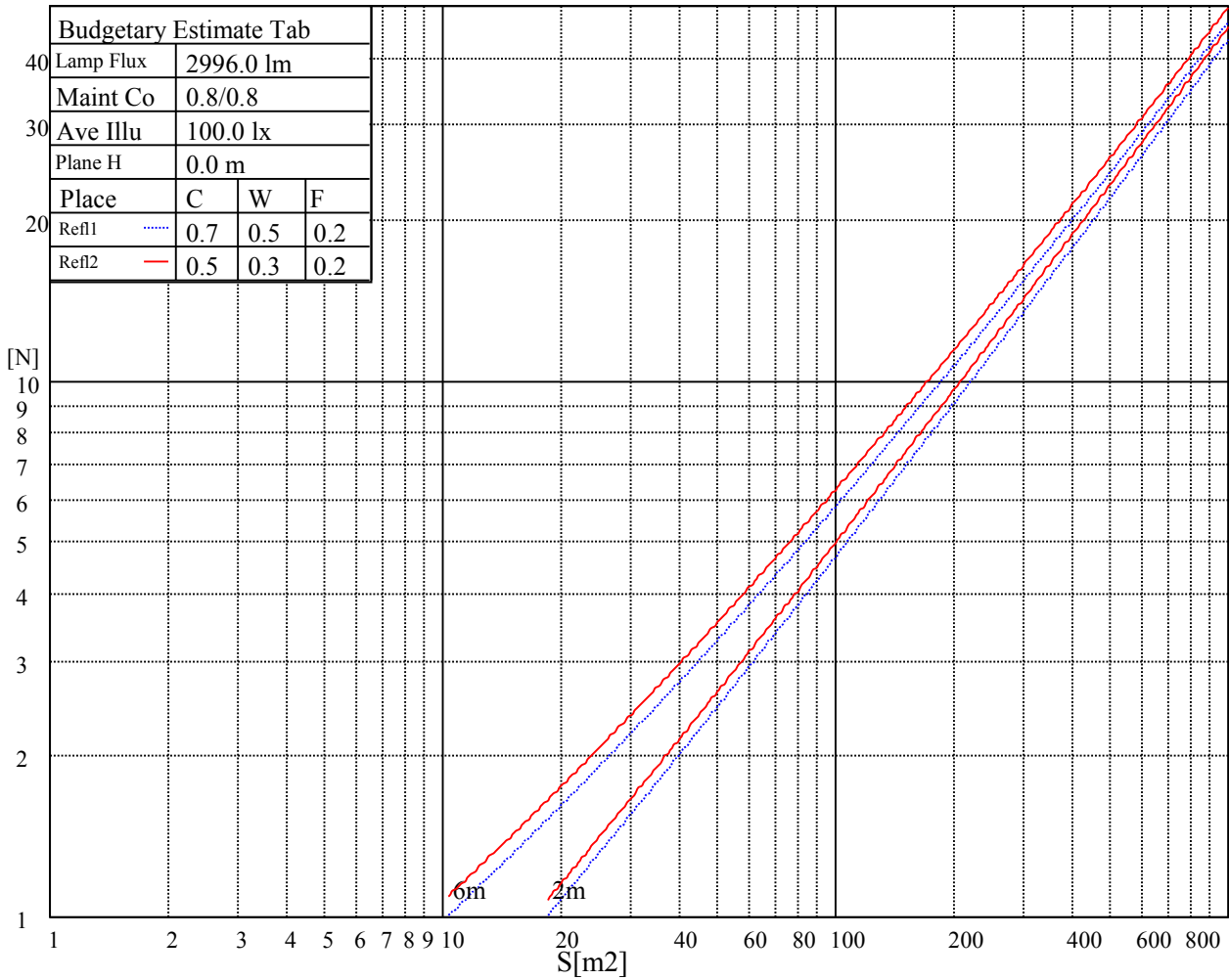
Glare Table

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

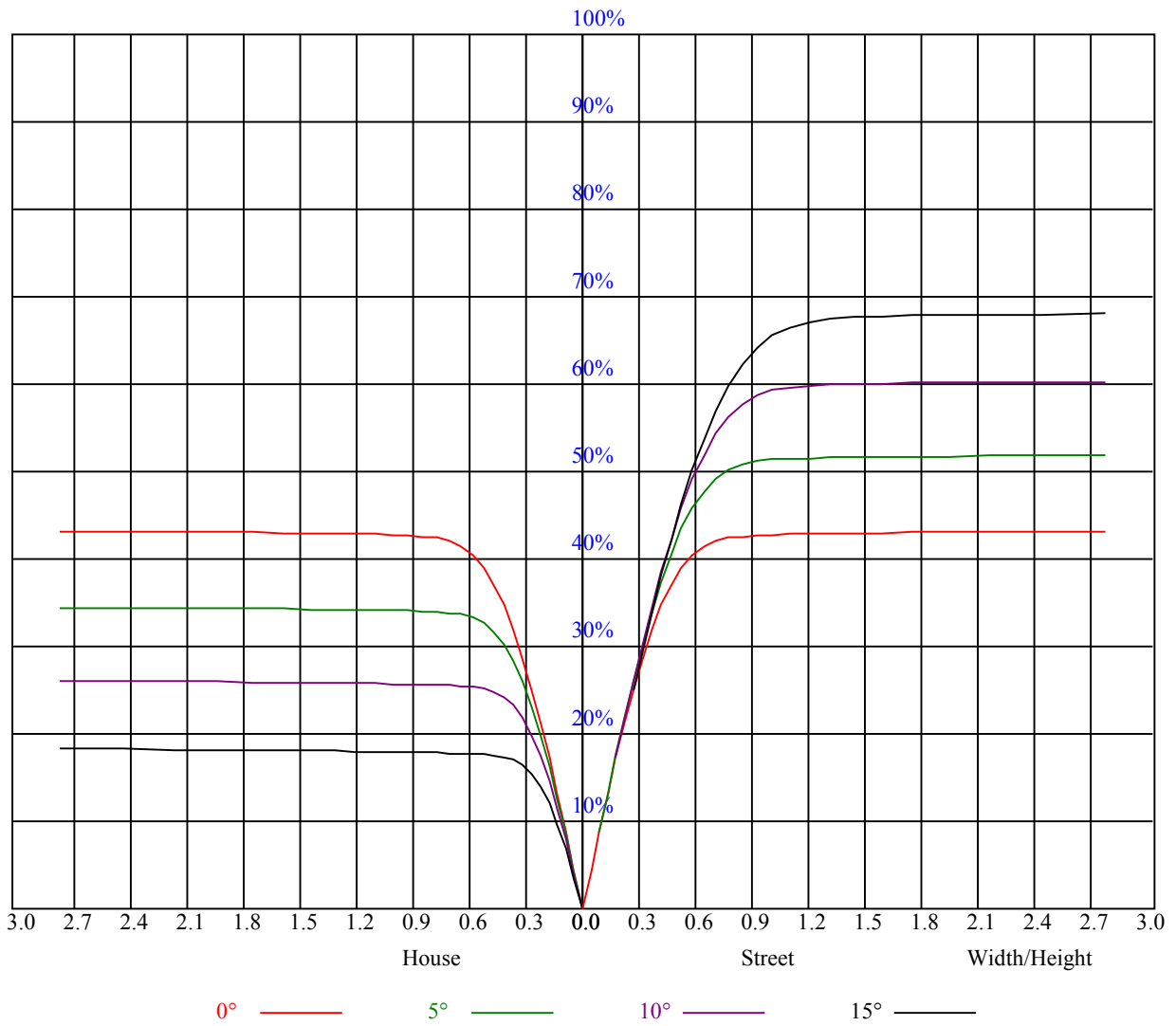
Luminance Limiting Curve



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	2.00	2.92	2.37	3.23	3.55	2.18	3.10	2.54	3.41	3.72
	3H	5.09	5.91	5.48	6.24	6.61	5.02	5.84	5.41	6.17	6.54
	4H	6.95	7.70	7.35	8.05	8.44	6.65	7.40	7.06	7.76	8.15
	6H	9.20	9.89	9.62	10.27	10.67	8.49	9.18	8.91	9.56	9.95
	8H	10.49	11.13	10.93	11.53	11.94	9.52	10.16	9.96	10.56	10.97
	12H	12.53	13.15	12.97	13.53	13.97	11.21	11.82	11.64	12.21	12.64
4H	2H	2.77	3.52	3.17	3.87	4.26	2.90	3.65	3.30	4.00	4.39
	3H	6.17	6.79	6.59	7.20	7.60	6.09	6.70	6.50	7.11	7.52
	4H	8.19	8.74	8.63	9.16	9.61	7.90	8.45	8.34	8.88	9.33
	6H	10.47	10.94	10.94	11.39	11.86	9.89	10.36	10.36	10.81	11.29
	8H	11.90	12.34	12.38	12.79	13.26	11.03	11.47	11.50	11.92	12.39
	12H	13.87	14.25	14.36	14.74	15.22	12.64	13.01	13.13	13.50	13.98
8H	4H	8.83	9.27	9.31	9.72	10.19	8.60	9.04	9.08	9.49	9.96
	6H	11.38	11.73	11.89	12.23	12.72	10.86	11.21	11.37	11.71	12.20
	8H	12.98	13.29	13.52	13.81	14.31	12.19	12.49	12.72	13.02	13.52
	12H	15.06	15.33	15.59	15.83	16.41	13.94	14.20	14.46	14.70	15.28
12H	4H	9.00	9.38	9.49	9.87	10.35	8.83	9.20	9.32	9.69	10.17
	6H	11.85	11.94	12.17	12.42	12.97	11.39	11.49	11.72	11.96	12.51
	8H	13.35	13.61	13.87	14.11	14.69	12.64	12.90	13.16	13.40	13.98
Variation with the observer position at spacings:											
S = 1.0H	6.0/-7.4					6.0/-7.4					
S = 1.5H	8.1/-5.4					8.1/-5.4					
S = 2.0H	9.5/-4.2					9.5/-4.2					
Standard tables:	BK3					BK3					
Uncorrected UGR	1.2					1.2					



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	1.04	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	0.97	0.94	0.92	0.95	0.93	0.91	0.91	0.89	0.88	0.88	0.87	0.85	0.85	0.84	0.83	0.81
2	0.91	0.87	0.85	0.89	0.86	0.84	0.86	0.84	0.82	0.84	0.82	0.80	0.82	0.80	0.78	0.77
3	0.86	0.82	0.79	0.85	0.81	0.78	0.82	0.79	0.77	0.80	0.78	0.76	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	0.69	0.76	0.72	0.69	0.75	0.71	0.68	0.73	0.70	0.68	0.72	0.69	0.67	0.66
6	0.73	0.69	0.65	0.73	0.68	0.65	0.71	0.68	0.65	0.70	0.67	0.64	0.69	0.66	0.64	0.63
7	0.70	0.65	0.62	0.69	0.65	0.62	0.68	0.64	0.62	0.67	0.64	0.61	0.66	0.63	0.61	0.60
8	0.67	0.62	0.59	0.66	0.62	0.59	0.65	0.62	0.59	0.65	0.61	0.59	0.64	0.61	0.58	0.57
9	0.64	0.59	0.56	0.64	0.59	0.56	0.63	0.59	0.56	0.62	0.58	0.56	0.61	0.58	0.56	0.55
10	0.61	0.57	0.54	0.61	0.57	0.54	0.60	0.56	0.54	0.60	0.56	0.54	0.59	0.56	0.53	0.52



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	3225.94	3248.44	3254.63	3111.19	2863.13	2396.81	1647.00	624.38	114.81
45.0	3232.69	3186.56	3143.25	3008.81	2747.81	2304.56	1596.94	648.56	121.61
90.0	3225.94	3141.56	3057.19	2877.19	2564.44	2147.06	1083.26	437.29	103.05
135.0	3233.25	3174.75	3139.31	3002.63	2746.69	2346.19	1647.00	631.13	128.42
180.0	3225.94	3205.13	3180.38	3036.94	2726.44	2217.94	1072.74	447.75	85.61
225.0	3232.69	3263.06	3277.69	3125.81	2823.75	2247.19	1088.04	450.62	80.61
270.0	3225.94	3284.44	3304.69	3183.19	2892.38	2332.13	1625.06	572.06	91.01
315.0	3233.25	3295.69	3299.06	3143.81	2815.31	2175.75	1087.82	401.68	68.57
360.0	3225.94	3248.44	3254.63	3111.19	2863.13	2396.81	1647.00	624.38	114.81
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	36.00	19.86	16.20	12.77	12.09	11.98	11.76	11.36	11.08
45.0	36.62	19.46	15.13	12.54	12.09	11.98	11.53	11.08	10.74
90.0	33.69	17.78	14.63	12.54	12.32	12.32	12.66	13.89	14.79
135.0	39.26	19.74	15.24	12.49	11.70	11.59	11.25	11.03	10.86
180.0	30.38	19.07	15.47	12.21	11.81	11.59	11.14	10.91	10.74
225.0	28.01	17.16	14.18	12.04	11.76	11.64	11.19	10.91	10.74
270.0	30.83	17.44	14.40	12.54	12.43	12.60	13.16	13.84	14.40
315.0	28.35	17.04	14.23	12.15	11.93	11.76	11.42	11.08	10.80
360.0	36.00	19.86	16.20	12.77	12.09	11.98	11.76	11.36	11.08
C/γ(°)	90.0								
0.0	10.35								
45.0	10.35								
90.0	10.41								
135.0	10.41								
180.0	10.35								
225.0	10.41								
270.0	10.41								
315.0	10.41								
360.0	10.35								