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NATA

LumCAT: 3-1936-E
Luminaire: 99.02.73.181
Report No: NATA0100
Test No: GC2019022107
LampCAT: LUMILEDS LUXEON 1208
Lamp flux(lm): 2996.0
Number of Lamps: 1
Length(mm): 86
Phm Type: C

Voltage(V): 34.9000
Current(A): 0.7000
Power (W): 24.4300
PF: 0.0000
Ballast type: DC
Width(mm): 86
Height(mm): 0

Photometric Results

Lumens(lm): 2688.79
Efficiency(%): 89.75%
Lumens(lm)/Power(W): 111.34
Central intensity(cd): 5645.531
Maximum intensity(cd): 5645.531
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=39.3
 [C90/270]Total=39.3
Field angle(10%Imax): [C0/180]Total=66.9
 [C90/270]Total=66.9
Maximum s/h(1/2): C0_180=0.64 C90_270=0.64
Maximum s/h(1/4): C0_180=0.65 C90_270=0.65
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 90.79%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 97.646%

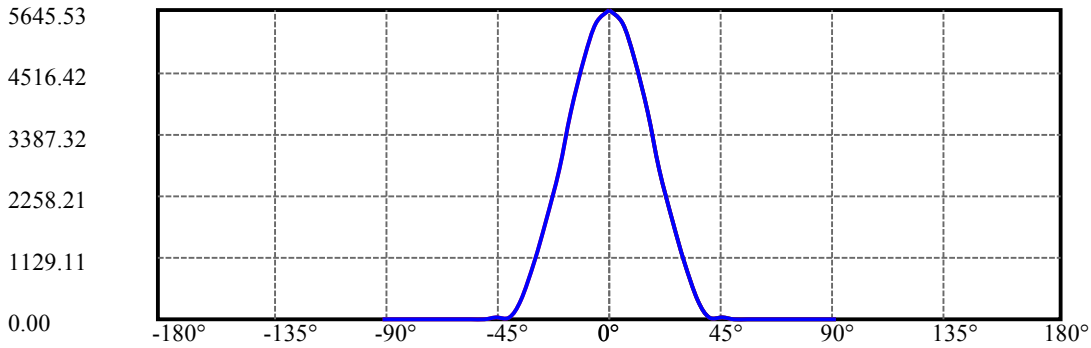
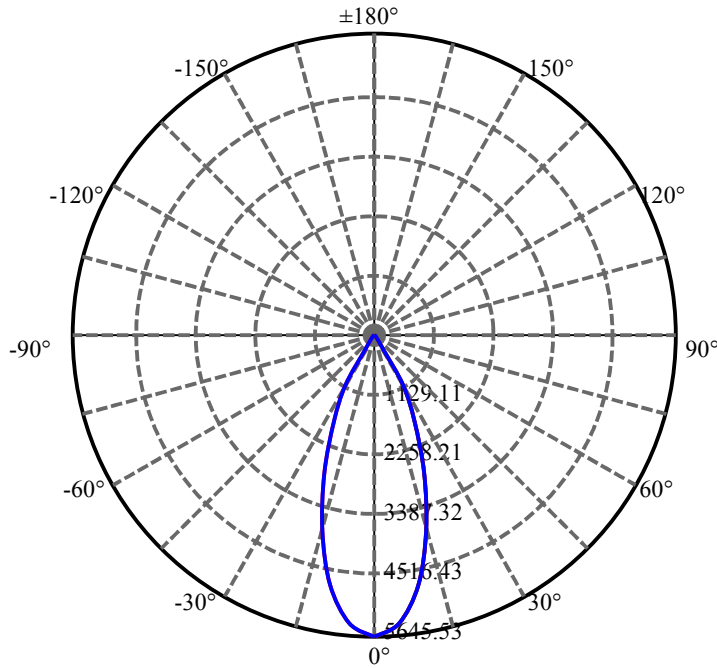
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	5645.531	33.761	33.761	1.127%	1.256%
5.0	5413.570	258.624	292.386	8.632%	10.874%
10.0	4754.109	452.511	744.896	15.104%	27.704%
15.0	3797.438	538.736	1283.633	17.982%	47.740%
20.0	2751.680	515.868	1799.501	17.219%	66.926%
25.0	1804.570	418.034	2217.535	13.953%	82.473%
30.0	1068.335	292.797	2510.332	9.773%	93.363%
35.0	343.245	107.916	2618.248	3.602%	97.377%
40.0	32.541	11.465	2629.713	.383%	97.803%
45.0	18.366	7.118	2636.831	.238%	98.068%
50.0	16.031	6.731	2643.563	.225%	98.318%
55.0	14.259	6.403	2649.966	.214%	98.556%
60.0	12.628	5.995	2655.96	.200%	98.779%
65.0	11.524	5.725	2661.685	.191%	98.992%
70.0	11.433	5.889	2667.574	.197%	99.211%
75.0	11.370	6.020	2673.594	.201%	99.435%
80.0	11.384	6.145	2679.739	.205%	99.663%
85.0	11.299	6.170	2685.909	.206%	99.893%
90.0	10.505	2.879	2688.788	.096%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	2510.33	83.79%	93.36%
0-40	2629.71	87.77%	97.80%
0-60	2655.96	88.65%	98.78%
0-90	2685.91	89.65%	99.89%
0-120	2685.91	89.65%	99.89%
0-180	2688.79	89.75%	100.00%
60-90	35.94	1.20%	1.34%
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%
0-24.20	2151.03	71.80%	80.00%

ZONAL LUMEN SUMMARY

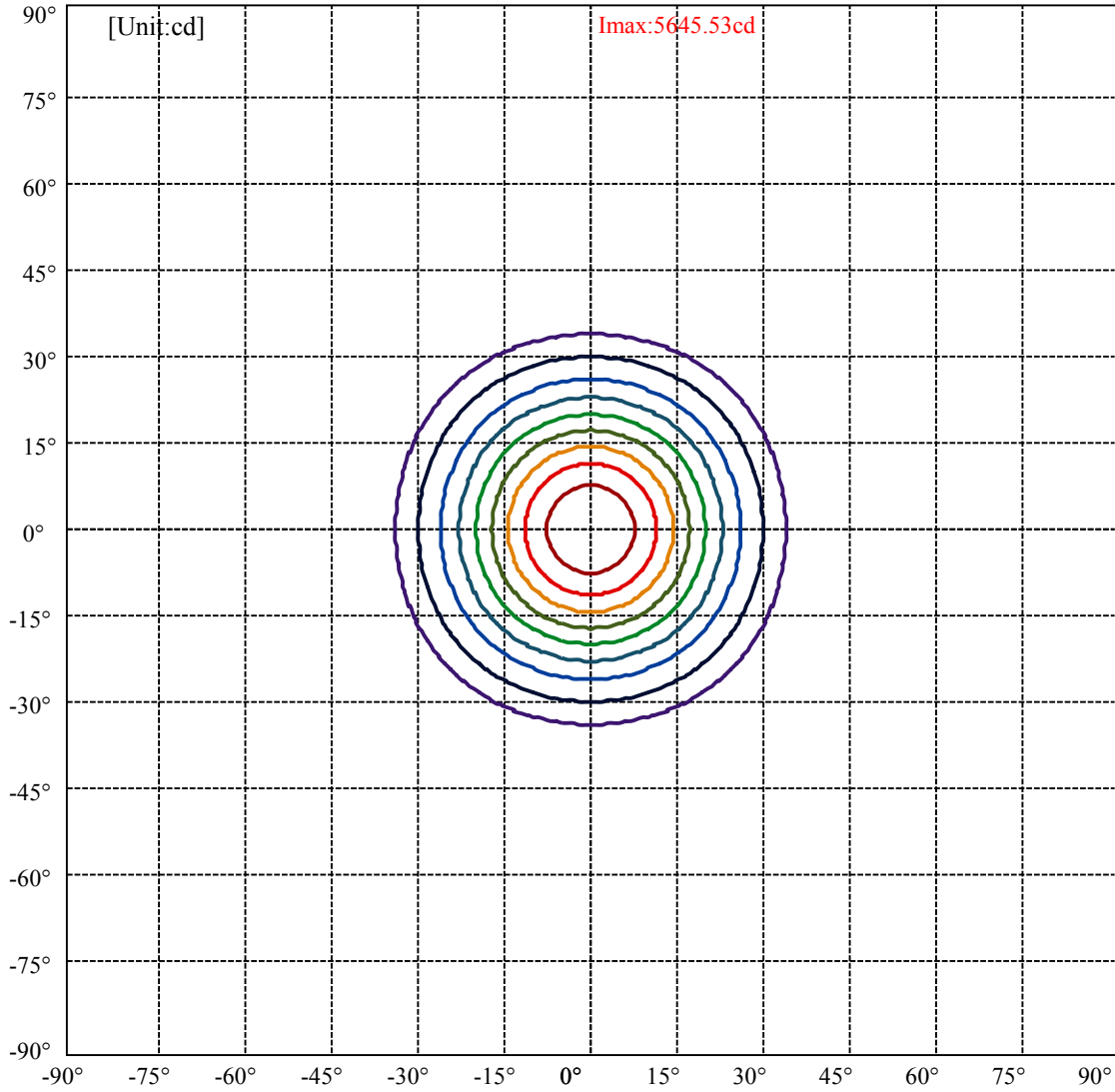
0-10	744.90
10-20	1054.60
20-30	710.83
30-40	119.38
40-50	13.85
50-60	12.40
60-70	11.61
70-80	12.16
80-90	6.17
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00



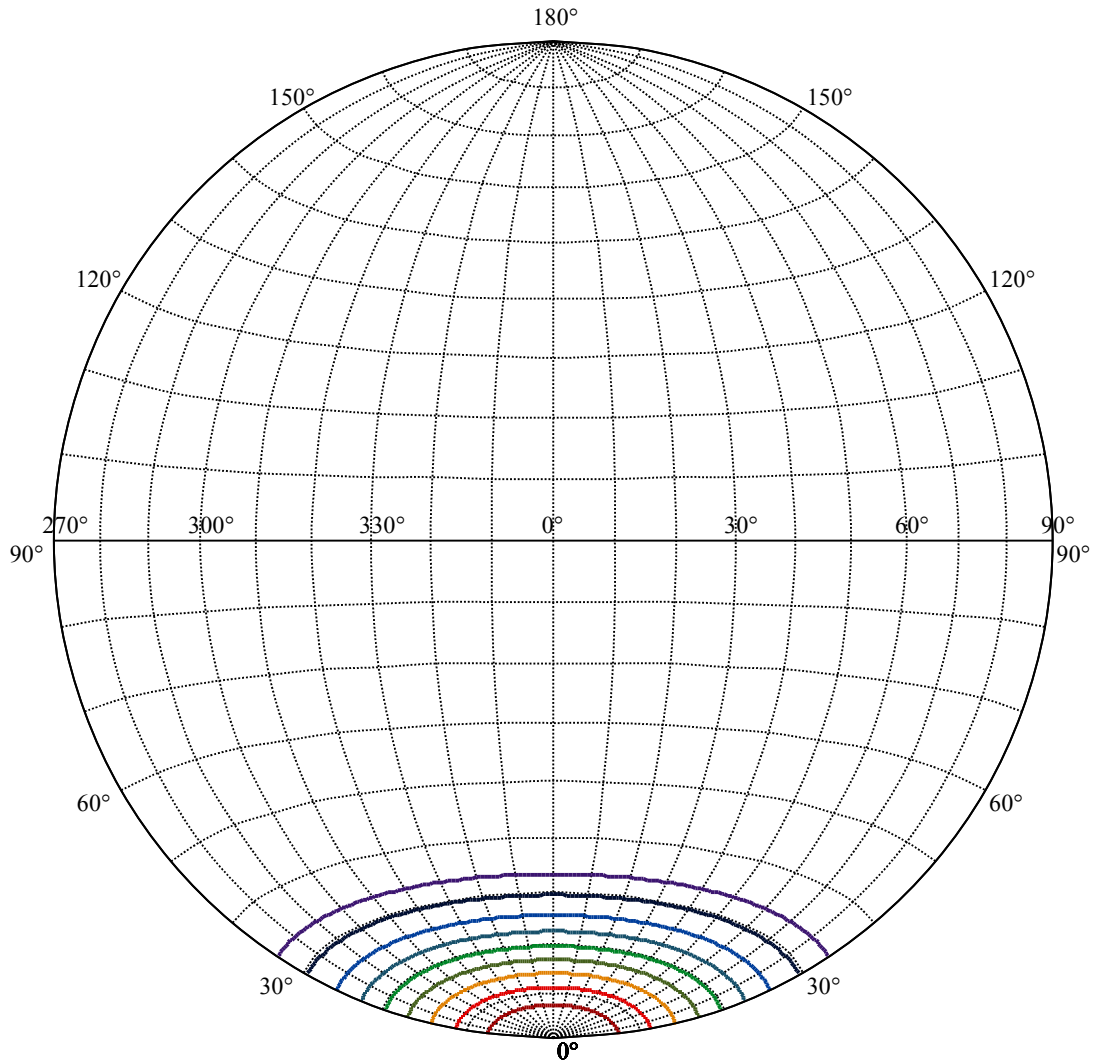
C0(Max): ———
C0/C180: ———
C90/C270: ———

Field angle(10%Imax):C0/180Left:33.5 Right:33.5
:C90/270Left:33.5 Right:33.5

Beam Angle(50%Imax):C0/180Left:19.7 Right:19.7
:C90/270Left:19.7 Right:19.7



(10%Imax) 564.553	—
(20%Imax) 1129.11	—
(30%Imax) 1693.66	—
(40%Imax) 2258.21	—
(50%Imax) 2822.77	—
(60%Imax) 3387.32	—
(70%Imax) 3951.87	—
(80%Imax) 4516.42	—
(90%Imax) 5080.98	—



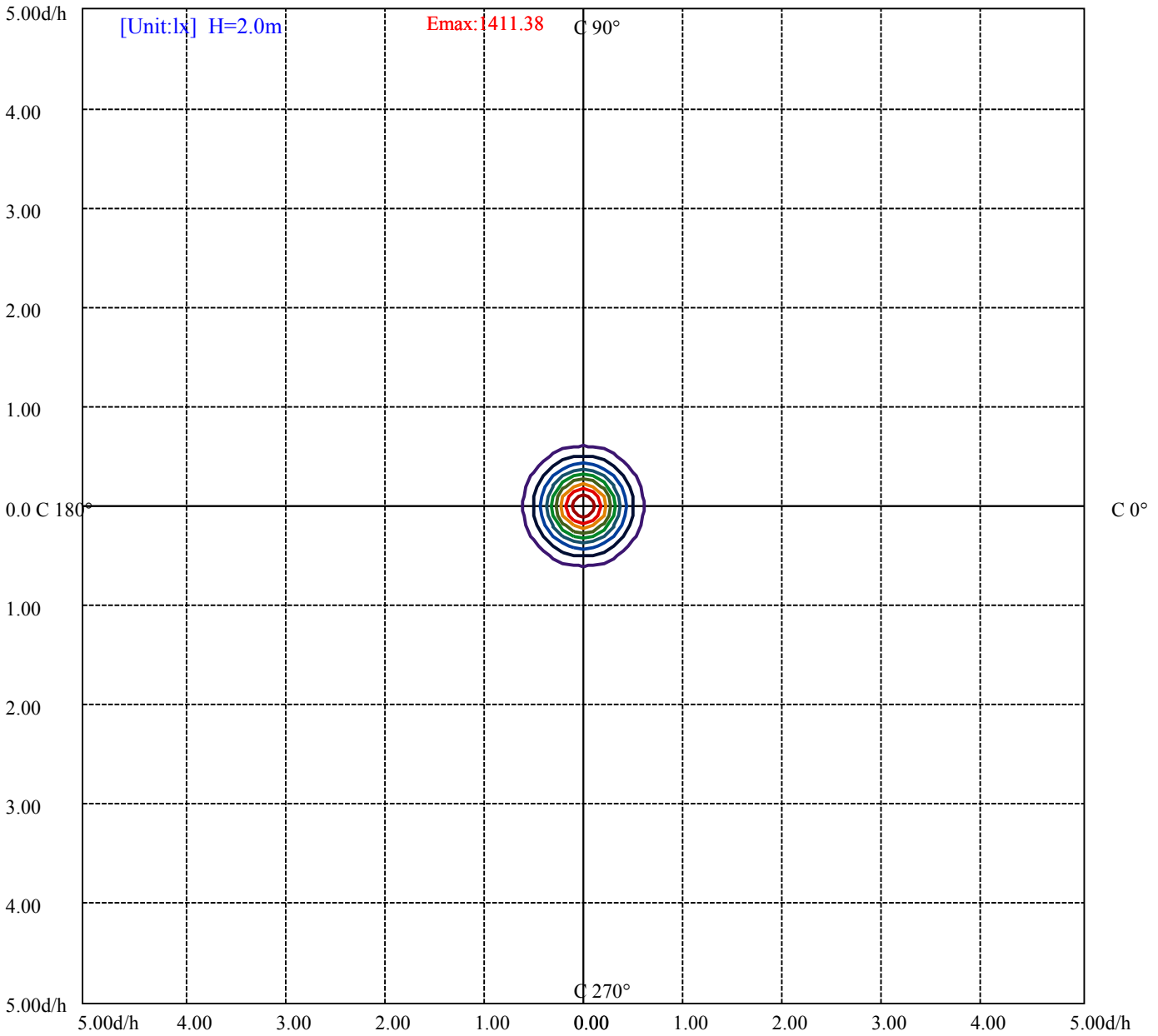
House

[Unit:cd]

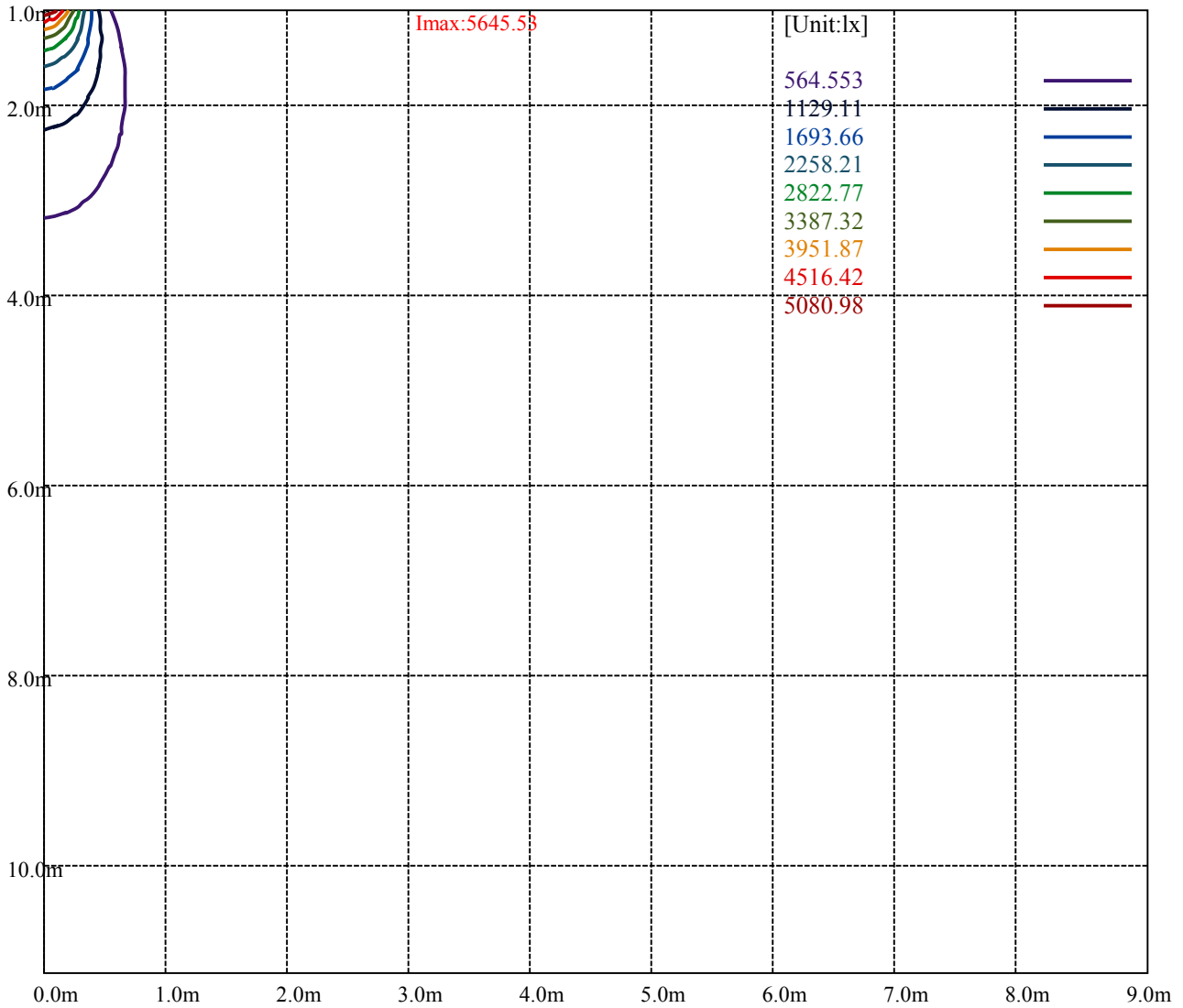
Road

Imax:5645.53

(10%Imax) 564.553	—
(20%Imax) 1129.11	—
(30%Imax) 1693.66	—
(40%Imax) 2258.21	—
(50%Imax) 2822.77	—
(60%Imax) 3387.32	—
(70%Imax) 3951.87	—
(80%Imax) 4516.42	—
(90%Imax) 5080.98	—



- (10%Emax) 141.138
- (20%Emax) 282.275
- (30%Emax) 423.415
- (40%Emax) 564.5525
- (50%Emax) 705.69
- (60%Emax) 846.8275
- (70%Emax) 987.9675
- (80%Emax) 1129.105
- (90%Emax) 1270.243



Luminance Table

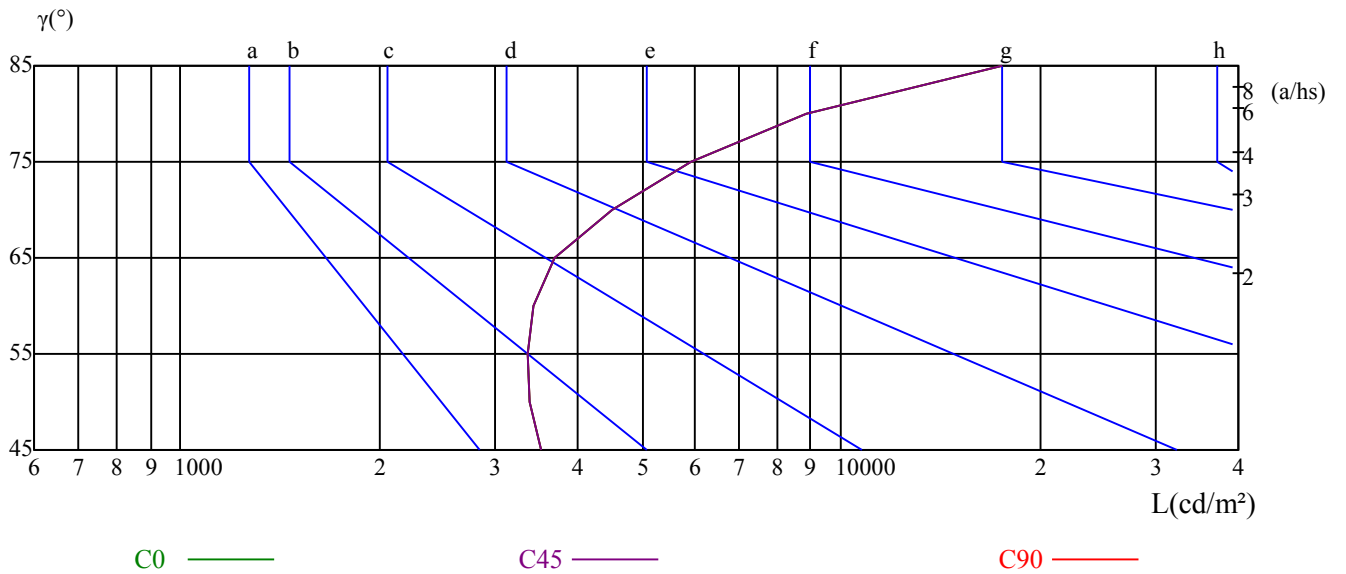
γ	45	50	55	60	65	70	75	80	85
C0	3512	3372	3361	3415	3687	4520	5939	8864	17529
C45	3512	3372	3361	3415	3687	4520	5939	8864	17529
C90	3512	3372	3361	3415	3687	4520	5939	8864	17529

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
3687	3687	3687	5939	5939	5939	17529	17529	17529

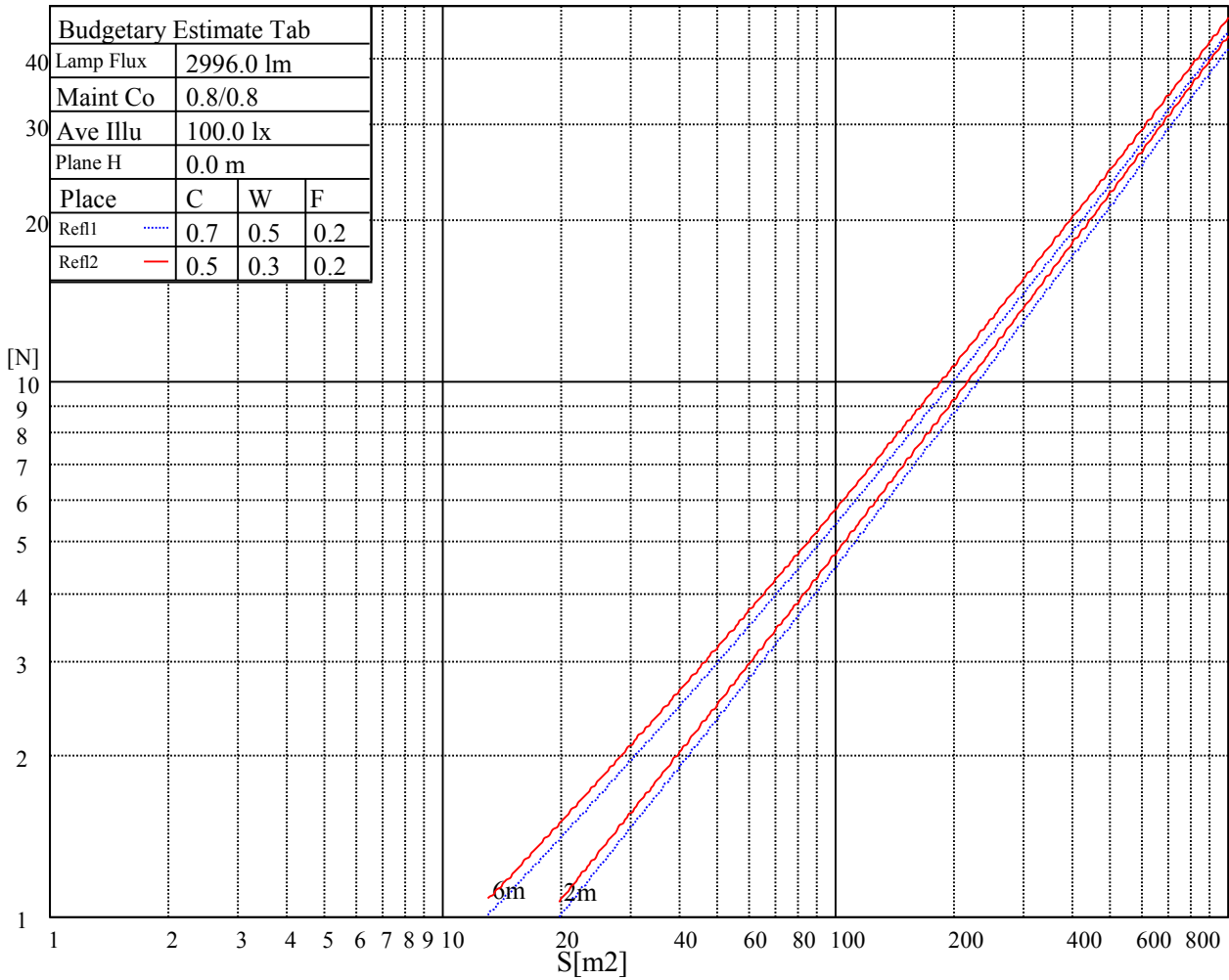
Glare Table

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

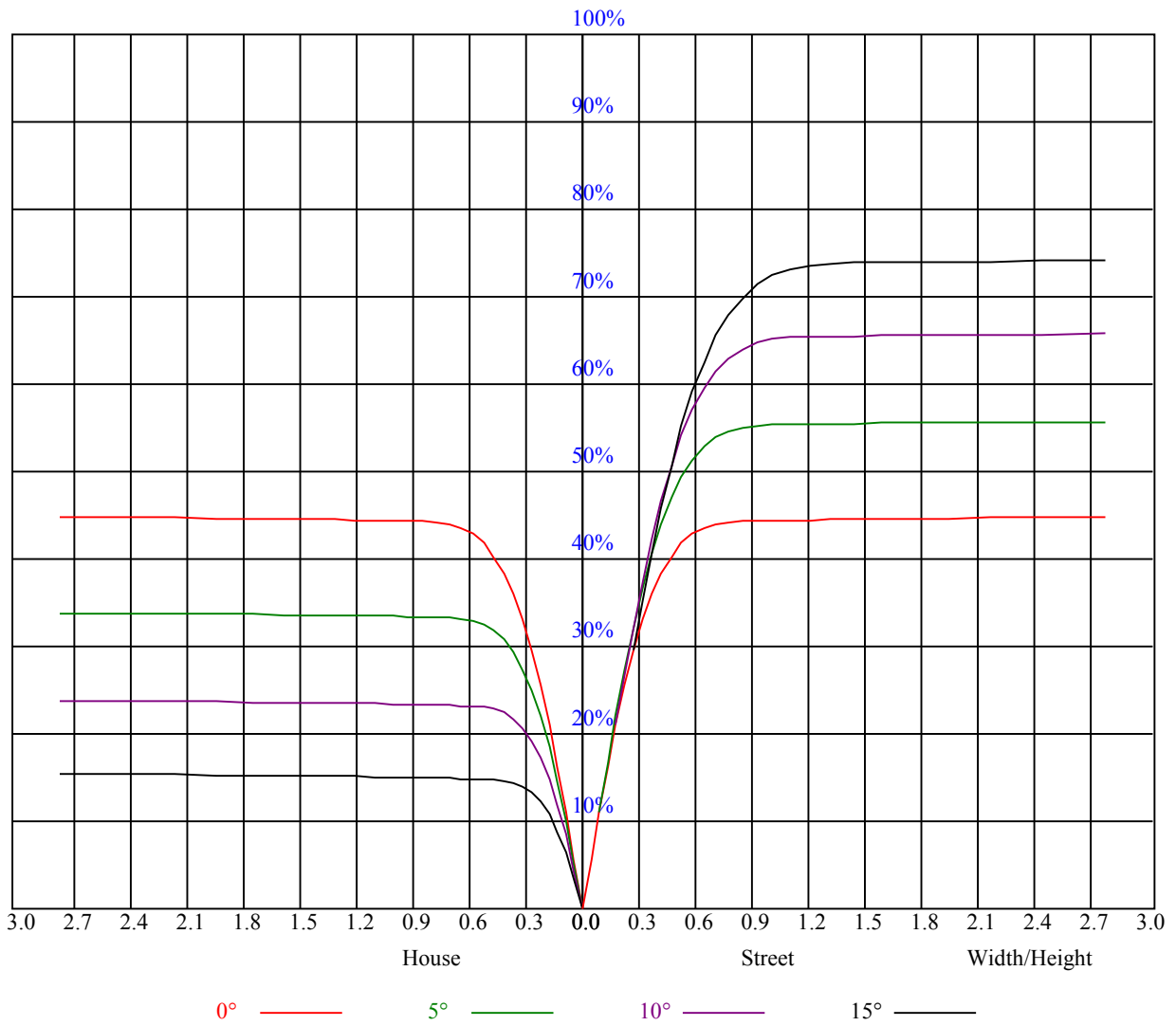
Luminance Limiting Curve



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	1.95	2.87	2.32	3.18	3.49	1.51	2.42	1.88	2.73	3.05
	3H	4.81	5.62	5.20	5.95	6.32	4.41	5.21	4.79	5.54	5.91
	4H	6.59	7.34	7.00	7.69	8.08	6.07	6.81	6.47	7.17	7.56
	6H	8.71	9.39	9.13	9.77	10.17	7.97	8.65	8.39	9.03	9.43
	8H	9.88	10.52	10.32	10.92	11.33	9.04	9.68	9.48	10.07	10.48
	12H	11.75	12.36	12.18	12.74	13.17	10.79	11.40	11.22	11.78	12.21
4H	2H	2.61	3.35	3.02	3.71	4.10	2.28	3.02	2.69	3.38	3.77
	3H	5.81	6.42	6.23	6.83	7.24	5.49	6.10	5.90	6.51	6.92
	4H	7.78	8.33	8.22	8.76	9.21	7.34	7.89	7.78	8.31	8.76
	6H	9.99	10.46	10.46	10.91	11.39	9.41	9.88	9.88	10.33	10.80
	8H	11.30	11.74	11.78	12.19	12.66	10.59	11.02	11.06	11.47	11.95
8H	12H	13.10	13.47	13.59	13.96	14.44	12.24	12.61	12.73	13.10	13.58
	4H	8.42	8.85	8.90	9.30	9.78	8.07	8.50	8.55	8.95	9.43
	6H	10.91	11.25	11.42	11.75	12.24	10.42	10.76	10.93	11.26	11.75
	8H	12.40	12.70	12.93	13.23	13.72	11.78	12.08	12.31	12.61	13.10
12H	12H	14.32	14.58	14.85	15.08	15.66	13.57	13.83	14.09	14.33	14.91
	4H	8.60	8.97	9.09	9.46	9.94	8.30	8.67	8.79	9.16	9.64
	6H	11.38	11.48	11.72	11.96	12.51	10.95	11.05	11.29	11.53	12.08
	8H	12.79	13.05	13.32	13.55	14.13	12.24	12.50	12.76	13.00	13.58
Variation with the observer position at spacings:											
S = 1.0H	5.9/-6.2					5.9/-6.2					
S = 1.5H	7.8/-4.3					7.8/-4.3					
S = 2.0H	8.9/-3.1					8.9/-3.1					
Standard tables:	BK3					BK3					
Uncorrected UGR	-0.4					-0.4					



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	1.08	1.08	1.08	1.06	1.06	1.06	1.01	1.01	1.01	0.97	0.97	0.97	0.93	0.93	0.93	0.91
1	1.00	0.98	0.96	0.98	0.96	0.94	0.95	0.93	0.91	0.91	0.90	0.89	0.88	0.87	0.86	0.85
2	0.95	0.92	0.89	0.93	0.90	0.88	0.90	0.88	0.86	0.88	0.86	0.84	0.85	0.84	0.82	0.81
3	0.90	0.86	0.83	0.89	0.85	0.82	0.87	0.84	0.81	0.85	0.82	0.80	0.83	0.80	0.79	0.77
4	0.86	0.82	0.79	0.85	0.81	0.78	0.83	0.80	0.77	0.81	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	0.75	0.72	0.71
6	0.79	0.74	0.71	0.78	0.74	0.71	0.77	0.73	0.71	0.76	0.73	0.70	0.75	0.72	0.70	0.69
7	0.76	0.71	0.68	0.75	0.71	0.68	0.74	0.71	0.68	0.73	0.70	0.67	0.72	0.69	0.67	0.66
8	0.73	0.69	0.66	0.73	0.68	0.66	0.72	0.68	0.65	0.71	0.67	0.65	0.70	0.67	0.65	0.64
9	0.70	0.66	0.63	0.70	0.66	0.63	0.69	0.65	0.63	0.68	0.65	0.63	0.68	0.65	0.63	0.62
10	0.68	0.64	0.61	0.68	0.64	0.61	0.67	0.63	0.61	0.66	0.63	0.61	0.66	0.63	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	5631.19	5431.50	4818.38	3847.50	2848.50	1879.88	1132.31	400.50	32.74
45.0	5669.44	5474.25	4873.50	3990.94	2922.75	1913.63	1159.31	433.69	38.25
90.0	5653.13	5396.63	4758.19	3775.50	2695.50	1776.94	1041.53	314.38	33.86
135.0	5628.38	5495.63	4944.94	4023.00	2936.25	2001.94	1226.25	459.56	43.88
180.0	5631.19	5401.69	4695.19	3735.00	2694.38	1747.13	983.76	299.59	27.11
225.0	5669.44	5403.38	4692.38	3695.06	2664.00	1760.63	1000.74	312.08	28.52
270.0	5653.13	5391.00	4721.63	3742.88	2690.44	1733.06	1050.19	324.00	32.74
315.0	5628.38	5314.50	4528.69	3569.63	2561.63	1623.38	952.59	202.16	23.23
360.0	5631.19	5431.50	4818.38	3847.50	2848.50	1879.88	1132.31	400.50	32.74
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	17.38	15.13	13.22	11.98	11.31	11.14	10.91	10.80	10.74
45.0	19.35	16.93	14.96	12.83	11.48	11.25	11.08	10.97	10.86
90.0	19.01	16.65	14.96	13.16	12.04	12.38	12.77	13.11	12.32
135.0	18.84	16.37	14.57	12.94	11.42	11.14	10.97	10.86	10.74
180.0	16.43	14.57	12.88	12.04	11.36	11.19	10.97	10.86	10.80
225.0	18.79	16.43	14.74	12.77	11.53	11.42	11.14	10.97	10.91
270.0	19.24	16.48	14.85	13.16	11.81	11.87	12.21	12.66	13.28
315.0	17.89	15.69	13.89	12.15	11.25	11.08	10.91	10.86	10.74
360.0	17.38	15.13	13.22	11.98	11.31	11.14	10.91	10.80	10.74
C/γ(°)	90.0								
0.0	10.41								
45.0	10.58								
90.0	10.52								
135.0	10.46								
180.0	10.41								
225.0	10.63								
270.0	10.58								
315.0	10.46								
360.0	10.41								