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NATA

LumCAT: 3-1547-A3
Luminaire: 99.02.73.172+92.76.365.00
Report No: NATA0100 Voltage(V): 36.2000
Test No: GC2018111514 Current(A): 0.5000
LampCAT: OSRAM OPTO SOLERIQ S13 G2 Power (W): 18.1000
Lamp flux(lm): 1689.0 PF: 0.0000
Number of Lamps: 1 Ballast type: DC
Length(mm): 84 Width(mm): 84
Phm Type: C Height(mm): 0

Photometric Results

Lumens(lm): 1553.87
Efficiency(%): 92.00%
Lumens(lm)/Power(W): 86.82
Central intensity(cd): 3196.125
Maximum intensity(cd): 3196.125
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=38.7
[C90/270]Total=38.7
Field angle(10%Imax): [C0/180]Total=70.3
[C90/270]Total=70.3
Maximum s/h(1/2): C0_180=0.64 C90_270=0.64
Maximum s/h(1/4): C0_180=0.63 C90_270=0.63
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 93.04%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 97.628%

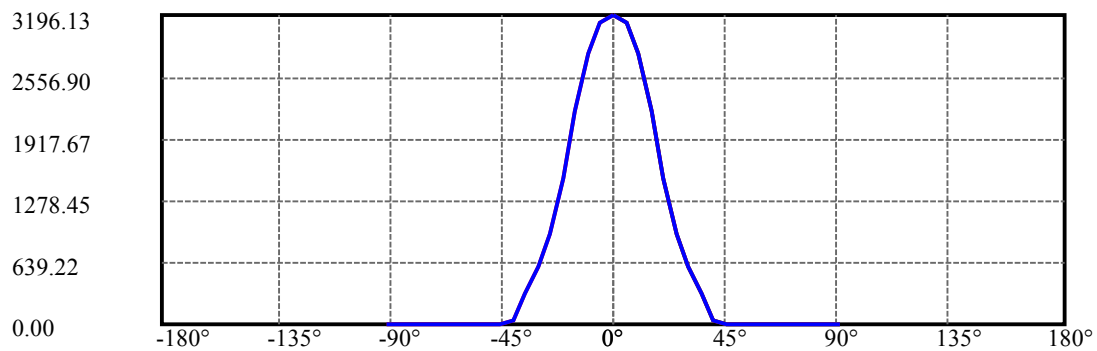
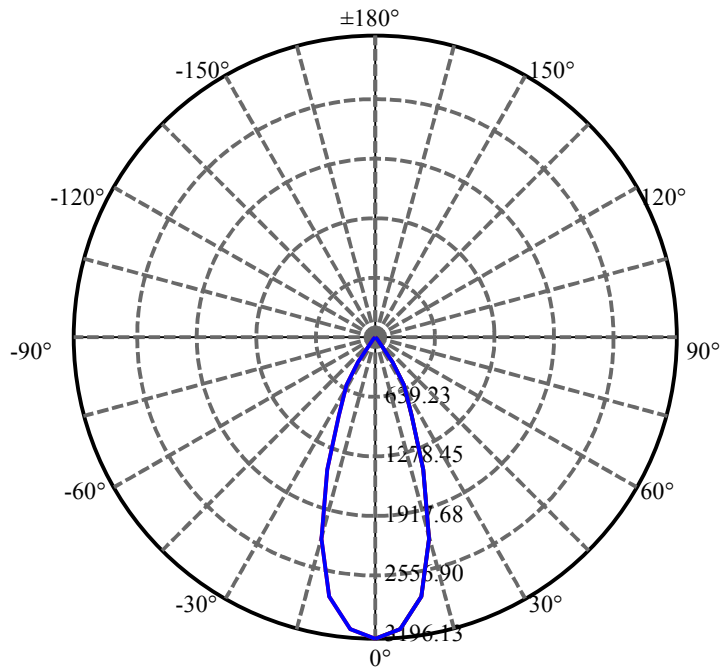
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	3196.125	19.113	19.113	1.132%	1.230%
5.0	3113.648	148.749	167.863	8.807%	10.803%
10.0	2799.633	266.478	434.34	15.777%	27.952%
15.0	2206.828	313.079	747.42	18.536%	48.101%
20.0	1503.239	281.818	1029.238	16.686%	66.237%
25.0	926.339	214.589	1243.827	12.705%	80.047%
30.0	594.338	162.889	1406.716	9.644%	90.530%
35.0	327.066	102.829	1509.545	6.088%	97.148%
40.0	31.177	10.985	1520.53	.650%	97.855%
45.0	8.986	3.483	1524.013	.206%	98.079%
50.0	8.009	3.363	1527.376	.199%	98.295%
55.0	7.559	3.394	1530.769	.201%	98.514%
60.0	7.277	3.455	1534.224	.205%	98.736%
65.0	7.045	3.500	1537.724	.207%	98.961%
70.0	6.891	3.549	1541.273	.210%	99.190%
75.0	6.764	3.581	1544.854	.212%	99.420%
80.0	6.694	3.613	1548.468	.214%	99.653%
85.0	6.602	3.605	1552.073	.213%	99.885%
90.0	6.546	1.794	1553.867	.106%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1406.72	83.29%	90.53%
0-40	1520.53	90.03%	97.85%
0-60	1534.22	90.84%	98.74%
0-90	1552.07	91.89%	99.88%
0-120	1552.07	91.89%	99.88%
0-180	1553.87	92.00%	100.00%
60-90	21.30	1.26%	1.37%
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%
0-24.98	1243.09	73.60%	80.00%

ZONAL LUMEN SUMMARY

0-10	434.34
10-20	594.90
20-30	377.48
30-40	113.81
40-50	6.85
50-60	6.85
60-70	7.05
70-80	7.19
80-90	3.61
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

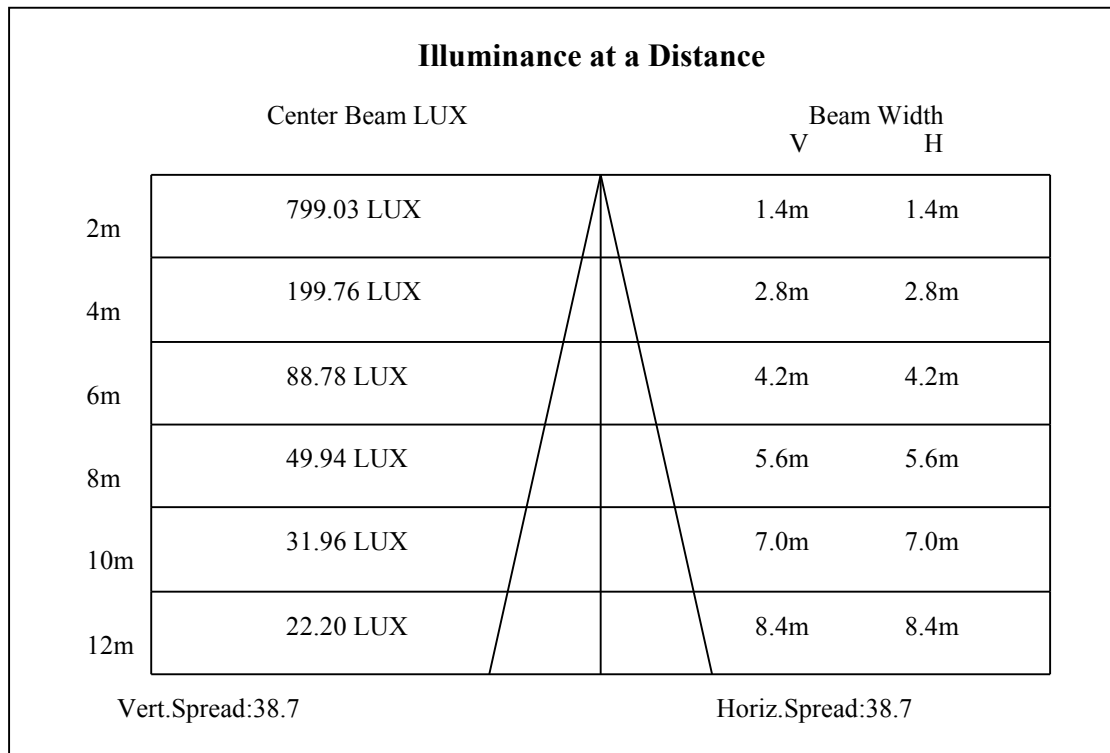
C0(Max): —————C0/C180: —————C90/C270: —————

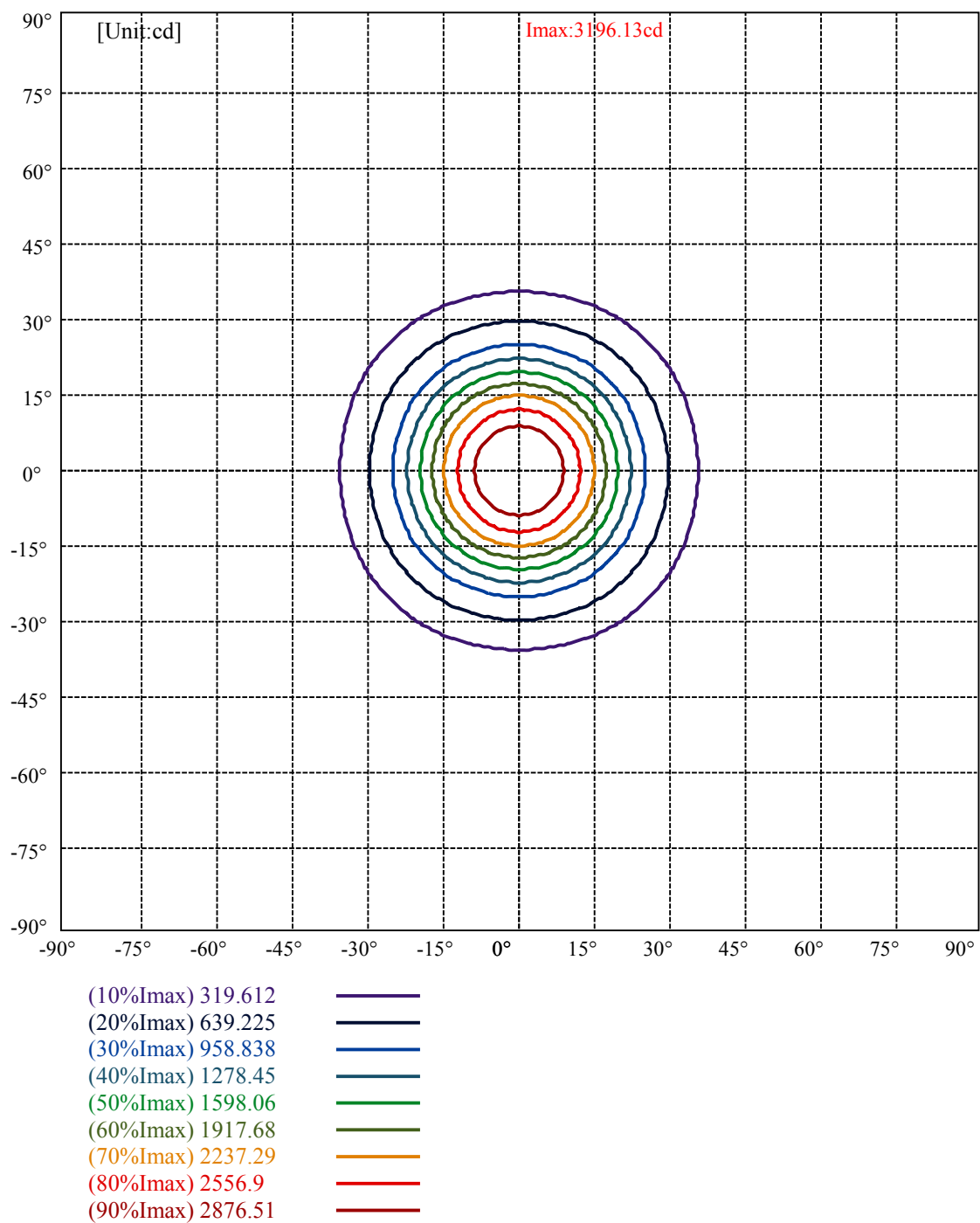
Field angle(10%Imax):C0/180Left:35.1 Right:35.1

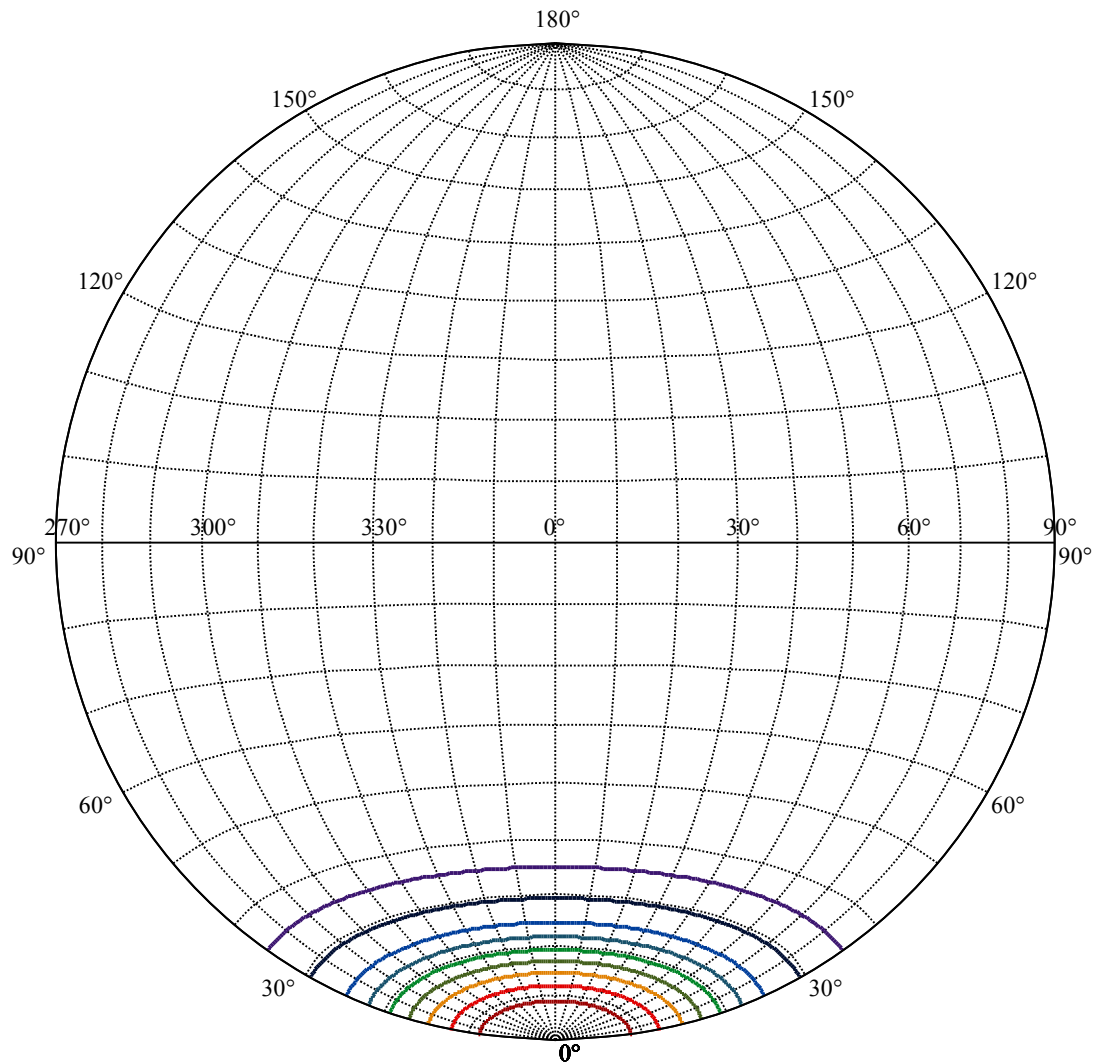
:C90/270Left:35.1 Right:35.1

Beam Angle(50%Imax):C0/180Left:19.3 Right:19.3

:C90/270Left:19.3 Right:19.3







House

[Unit:cd]

Road

Imax:3196.13

(10%Imax) 319.612

(20%Imax) 639.225

(30%Imax) 958.838

(40%Imax) 1278.45

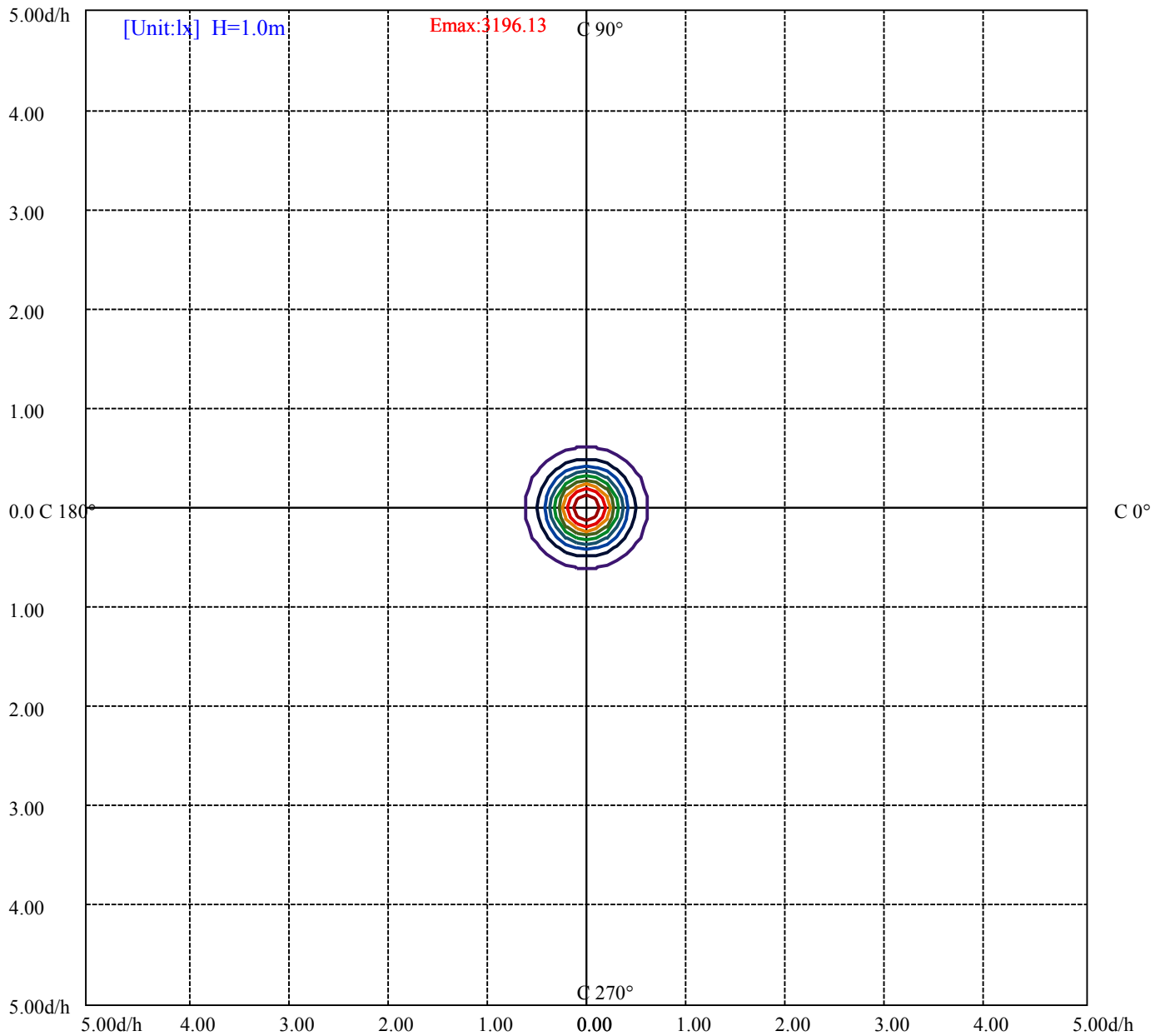
(50%Imax) 1598.06

(60%Imax) 1917.68

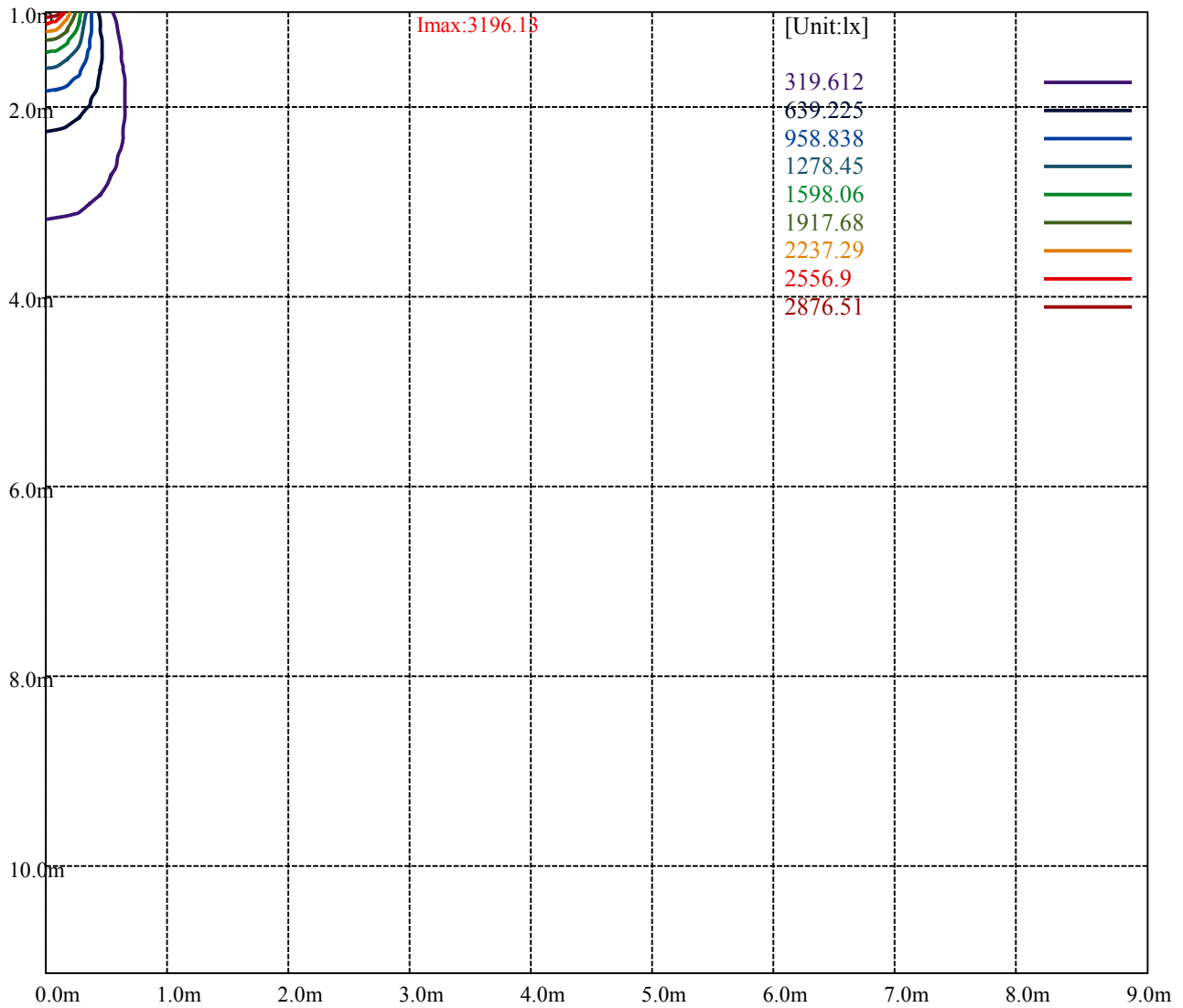
(70%Imax) 2237.29

(80%Imax) 2556.9

(90%Imax) 2876.51



(10%Emax)	319.612	—
(20%Emax)	639.224	—
(30%Emax)	958.837	—
(40%Emax)	1278.45	—
(50%Emax)	1598.06	—
(60%Emax)	1917.67	—
(70%Emax)	2237.29	—
(80%Emax)	2556.9	—
(90%Emax)	2876.51	—



Luminance Table

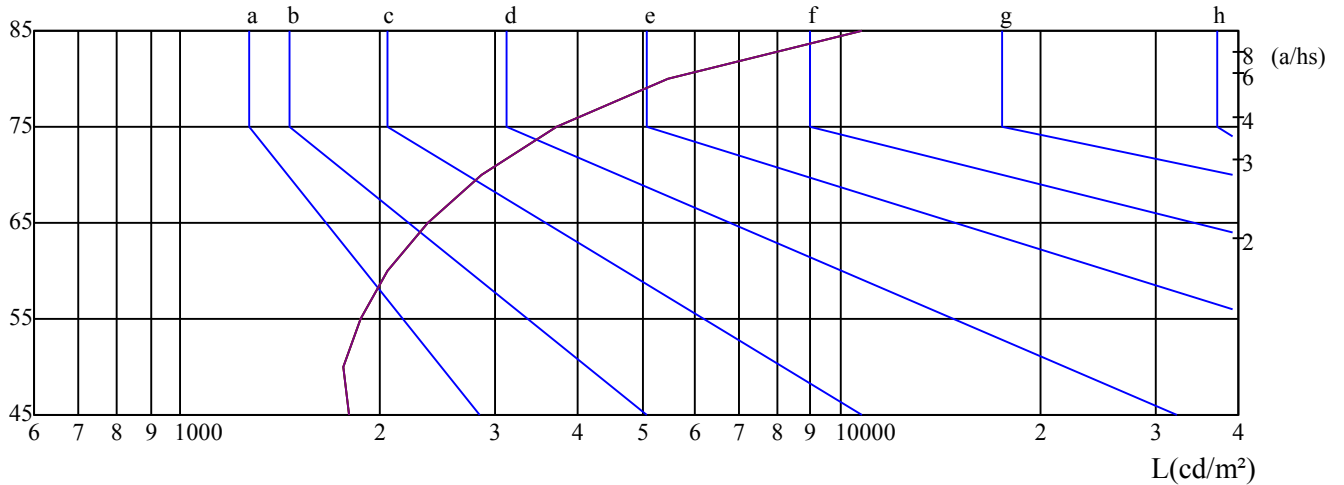
γ	45	50	55	60	65	70	75	80	85
C0	1801	1766	1868	2063	2363	2855	3704	5463	10736
C45	1801	1766	1868	2063	2363	2855	3704	5463	10736
C90	1801	1766	1868	2063	2363	2855	3704	5463	10736

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
2363	2363	2363	3704	3704	3704	10736	10736	10736

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

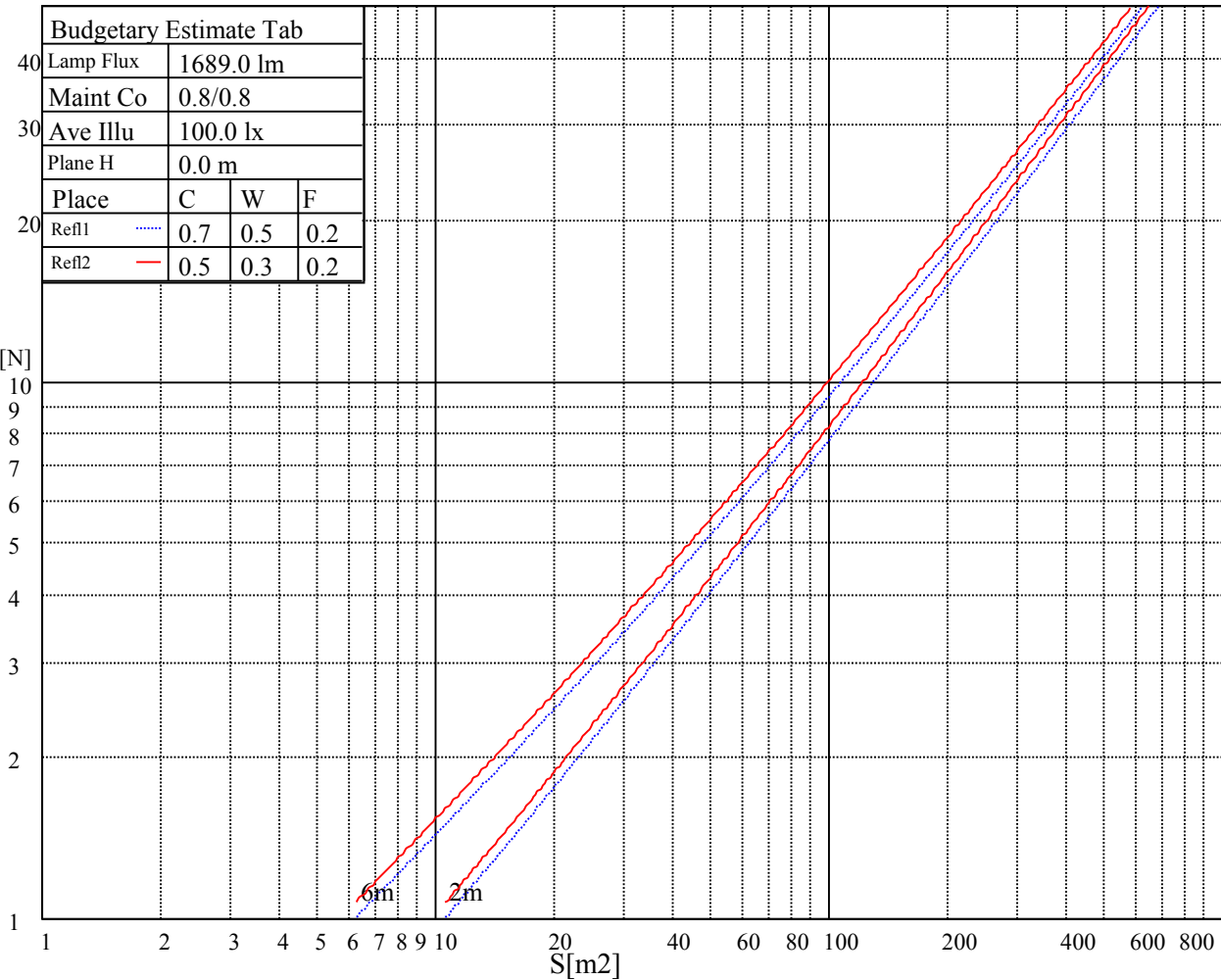
Luminance Limiting Curve

 $\gamma(^{\circ})$ 

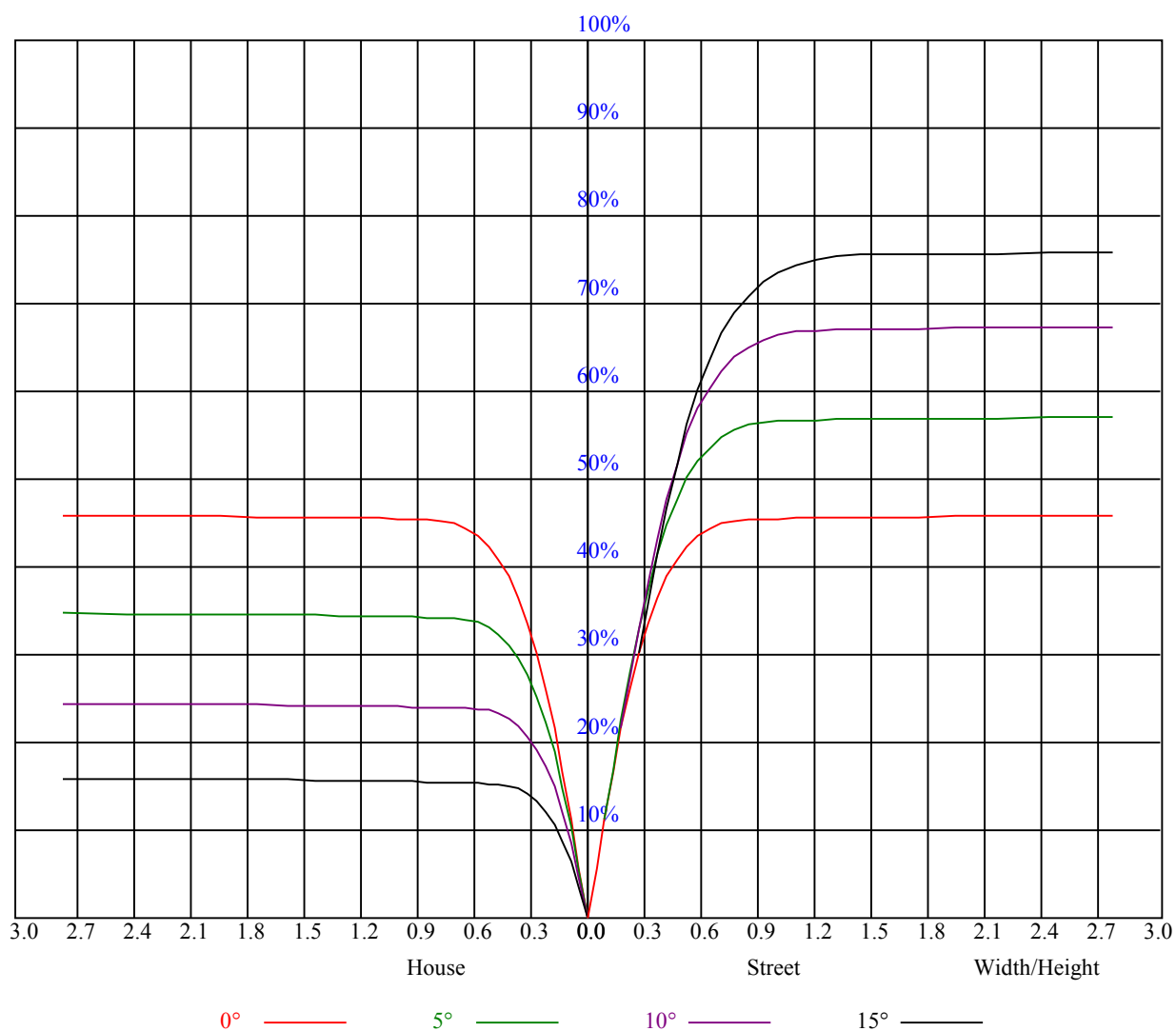
C0 ———

C45 ———

C90 ———



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	1.11	1.11	1.11	1.08	1.08	1.08	1.03	1.03	1.03	0.99	0.99	0.99	0.95	0.95	0.95	0.93
1	1.03	1.00	0.98	1.01	0.99	0.97	0.97	0.95	0.94	0.93	0.92	0.91	0.90	0.89	0.88	0.87
2	0.97	0.94	0.91	0.96	0.92	0.90	0.93	0.90	0.88	0.90	0.88	0.86	0.87	0.86	0.84	0.83
3	0.92	0.88	0.85	0.91	0.87	0.84	0.89	0.86	0.83	0.86	0.84	0.82	0.84	0.82	0.80	0.79
4	0.88	0.84	0.80	0.87	0.83	0.80	0.85	0.82	0.79	0.83	0.80	0.78	0.82	0.79	0.77	0.76
5	0.84	0.80	0.76	0.83	0.79	0.76	0.82	0.78	0.75	0.80	0.77	0.75	0.79	0.76	0.74	0.73
6	0.81	0.76	0.73	0.80	0.76	0.72	0.79	0.75	0.72	0.77	0.74	0.71	0.76	0.73	0.71	0.70
7	0.77	0.73	0.70	0.77	0.72	0.69	0.76	0.72	0.69	0.75	0.71	0.69	0.74	0.71	0.68	0.67
8	0.74	0.70	0.67	0.74	0.70	0.67	0.73	0.69	0.66	0.72	0.69	0.66	0.71	0.68	0.66	0.65
9	0.72	0.67	0.64	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
10	0.69	0.65	0.62	0.69	0.65	0.62	0.68	0.64	0.62	0.68	0.64	0.62	0.67	0.64	0.61	0.60



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Intensity data(cd)										Appendix Page: 14 Total:14	
C/γ(°)	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0		
0.0	3203.44	3153.94	2922.19	2445.19	1756.69	1079.44	676.13	441.00	50.40		
45.0	3190.50	3089.81	2771.44	2116.69	1436.06	856.13	565.31	304.31	16.59		
90.0	3188.25	3029.06	2602.69	1930.50	1110.04	741.21	537.75	191.14	13.05		
135.0	3202.31	3137.06	2769.75	2121.19	1470.38	861.75	561.94	290.81	17.49		
180.0	3203.44	3078.56	2732.06	2043.00	1267.88	803.70	539.72	166.44	15.24		
225.0	3190.50	3134.81	2853.56	2296.13	1615.50	991.97	609.53	376.65	24.92		
270.0	3188.25	3166.31	2911.50	2415.38	1729.13	1097.44	656.44	461.25	82.86		
315.0	3202.31	3119.63	2833.88	2286.56	1640.25	979.09	607.89	384.92	28.86		
360.0	3203.44	3153.94	2922.19	2445.19	1756.69	1079.44	676.13	441.00	50.40		
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0		
0.0	9.51	8.16	7.65	7.37	7.14	6.98	6.81	6.75	6.64		
45.0	8.61	7.93	7.54	7.26	7.03	6.92	6.75	6.69	6.58		
90.0	8.38	7.88	7.48	7.20	7.03	6.86	6.75	6.64	6.58		
135.0	8.66	7.88	7.48	7.26	7.03	6.86	6.75	6.69	6.58		
180.0	8.44	7.82	7.43	7.20	6.98	6.81	6.75	6.69	6.58		
225.0	9.11	8.10	7.59	7.31	7.03	6.86	6.75	6.69	6.64		
270.0	10.01	8.27	7.71	7.37	7.09	6.92	6.81	6.69	6.64		
315.0	9.17	8.04	7.59	7.26	7.03	6.92	6.75	6.69	6.58		
360.0	9.51	8.16	7.65	7.37	7.14	6.98	6.81	6.75	6.64		
C/γ(°)	90.0										
0.0	6.58										
45.0	6.53										
90.0	6.58										
135.0	6.53										
180.0	6.53										
225.0	6.53										
270.0	6.58										
315.0	6.53										
360.0	6.58										