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NATA

LumCAT: CT01D03538AF

Luminaire:

Report No: NATA0100

Test No: GC2018112803

LampCAT: CITIZEN CLU710

Lamp flux(lm): 1778.0

Number of Lamps: 1

Length(mm): 33

Phm Type: C

Voltage(V): 35.9000

Current(A): 0.4500

Power (W): 16.1550

PF: 0.0000

Ballast type: DC

Width(mm): 33

Height(mm): 0

Photometric Results

Lumens(lm): 1650.02

Efficiency(%): 92.80%

Lumens(lm)/Power(W): 103.16

Central intensity(cd): 3023.438

Maximum intensity(cd): 3023.438

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=38.9

[C90/270]Total=38.9

Field angle(10%Imax): [C0/180]Total=68.0

[C90/270]Total=68.0

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(%): 93.73%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 91.426%

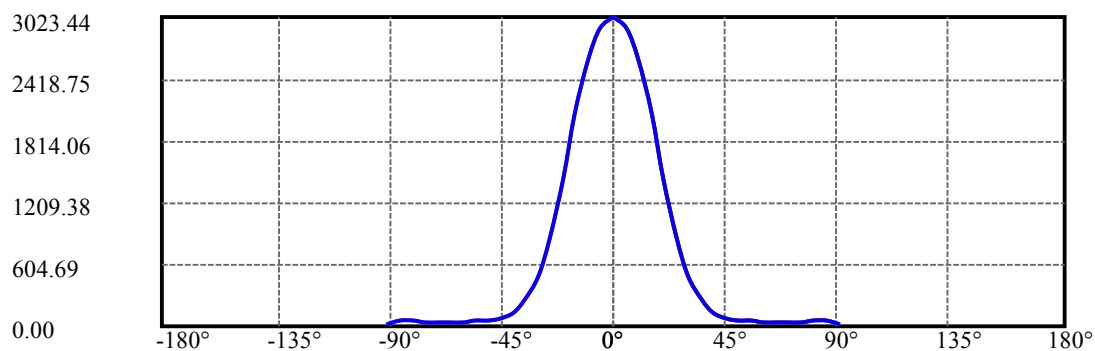
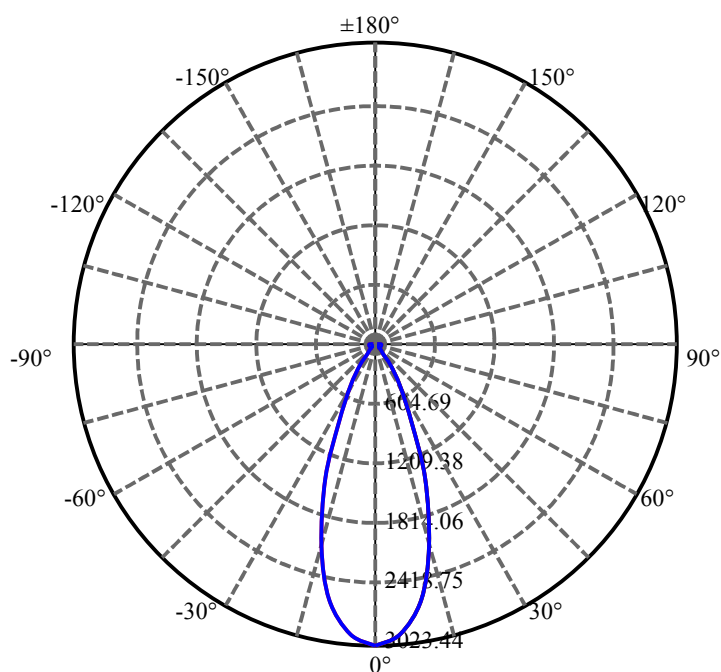
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	3023.438	18.081	18.081	1.017%	1.096%
5.0	2915.156	139.267	157.347	7.833%	9.536%
10.0	2607.961	248.234	405.581	13.961%	24.580%
15.0	2090.953	296.640	702.221	16.684%	42.558%
20.0	1442.341	270.402	972.623	15.208%	58.946%
25.0	864.155	200.184	1172.807	11.259%	71.078%
30.0	483.715	132.571	1305.378	7.456%	79.113%
35.0	256.655	80.692	1386.07	4.538%	84.003%
40.0	133.242	46.946	1433.016	2.640%	86.848%
45.0	69.363	26.885	1459.9	1.512%	88.478%
50.0	52.024	21.845	1481.745	1.229%	89.802%
55.0	49.155	22.071	1503.816	1.241%	91.139%
60.0	41.759	19.823	1523.639	1.115%	92.341%
65.0	34.214	16.997	1540.636	.956%	93.371%
70.0	30.312	15.613	1556.249	.878%	94.317%
75.0	43.453	23.007	1579.256	1.294%	95.711%
80.0	64.167	34.638	1613.894	1.948%	97.811%
85.0	59.991	32.758	1646.652	1.842%	99.796%
90.0	12.284	3.367	1650.018	.189%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1305.38	73.42%	79.11%
0-40	1433.02	80.60%	86.85%
0-60	1523.64	85.69%	92.34%
0-90	1646.65	92.61%	99.80%
0-120	1646.65	92.61%	99.80%
0-180	1650.02	92.80%	100.00%
60-90	142.84	8.03%	8.66%
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%
0-30.91	1320.02	74.24%	80.00%

ZONAL LUMEN SUMMARY

0-10	405.58
10-20	567.04
20-30	332.76
30-40	127.64
40-50	48.73
50-60	41.89
60-70	32.61
70-80	57.64
80-90	32.76
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

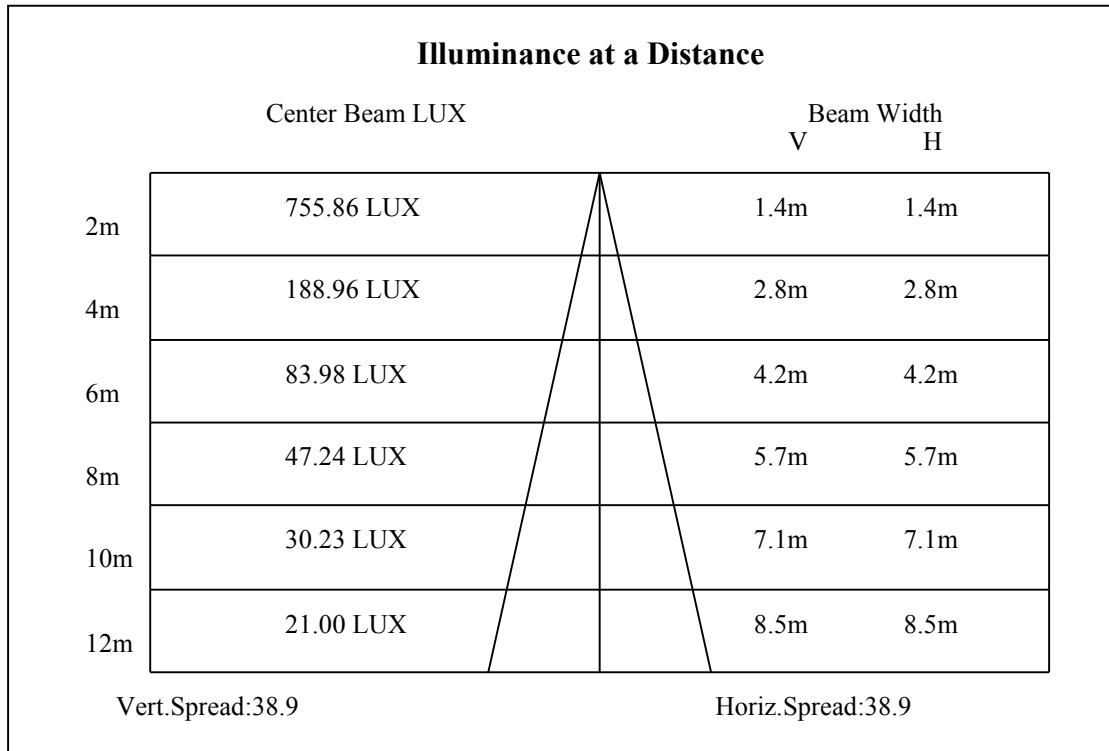
C0(Max): —————C0/C180: —————C90/C270: —————

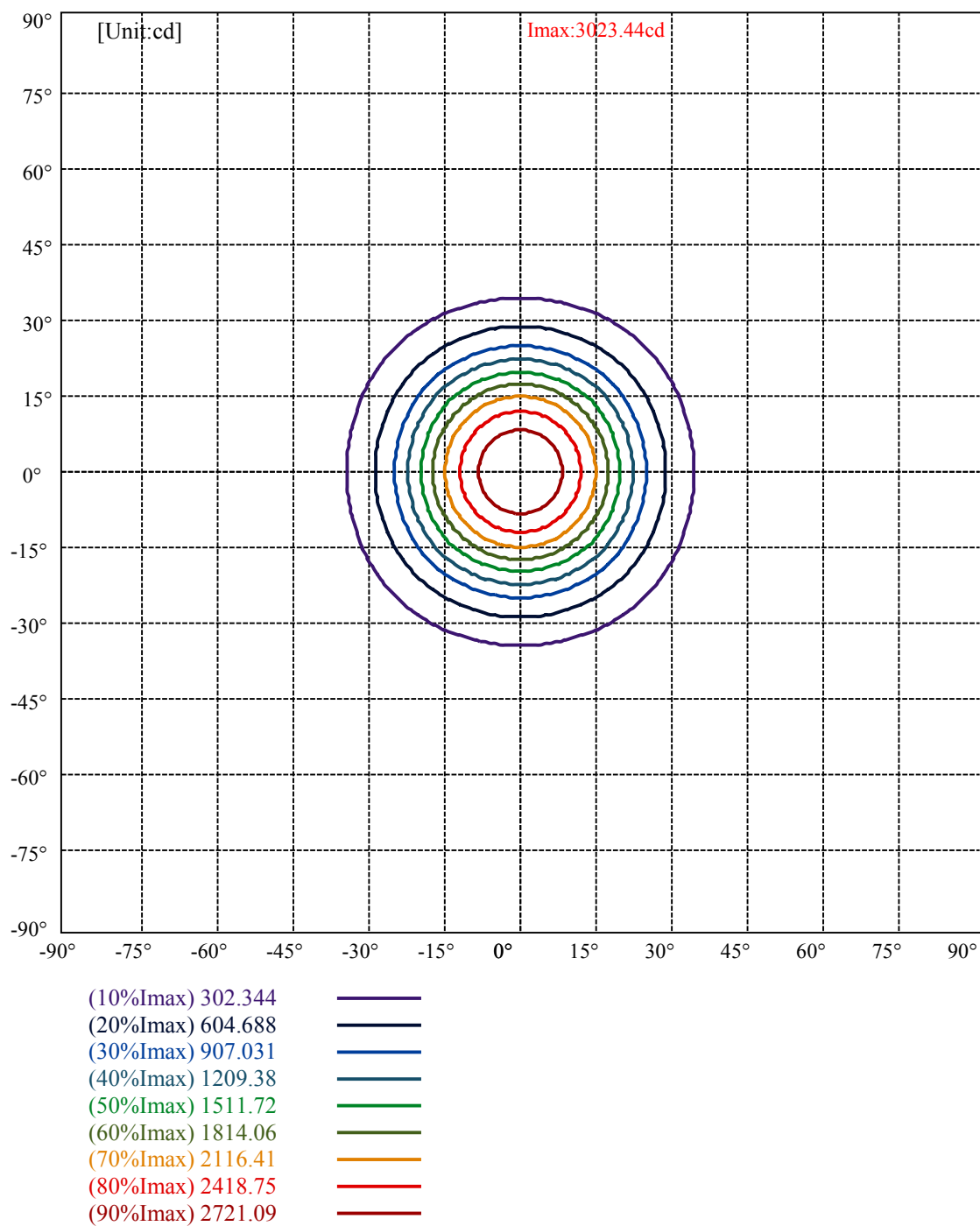
Field angle(10%Imax):C0/180Left:34.0 Right:34.0

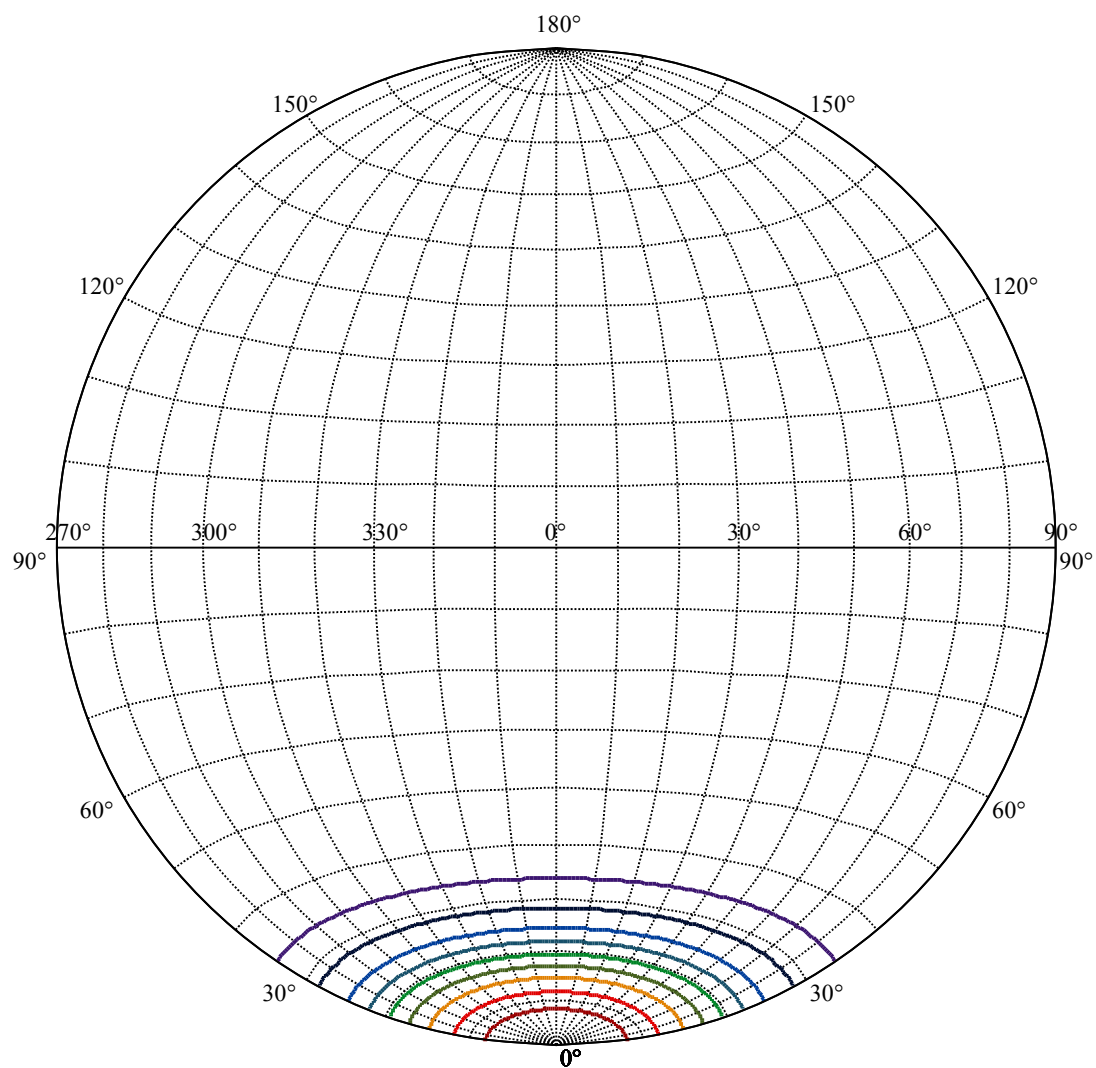
:C90/270Left:34.0 Right:34.0

Beam Angle(50%Imax):C0/180Left:19.5 Right:19.5

:C90/270Left:19.5 Right:19.5







House

[Unit:cd]

Road

Imax:3023.44

(10%Imax) 302.344

(20%Imax) 604.688

(30%Imax) 907.031

(40%Imax) 1209.38

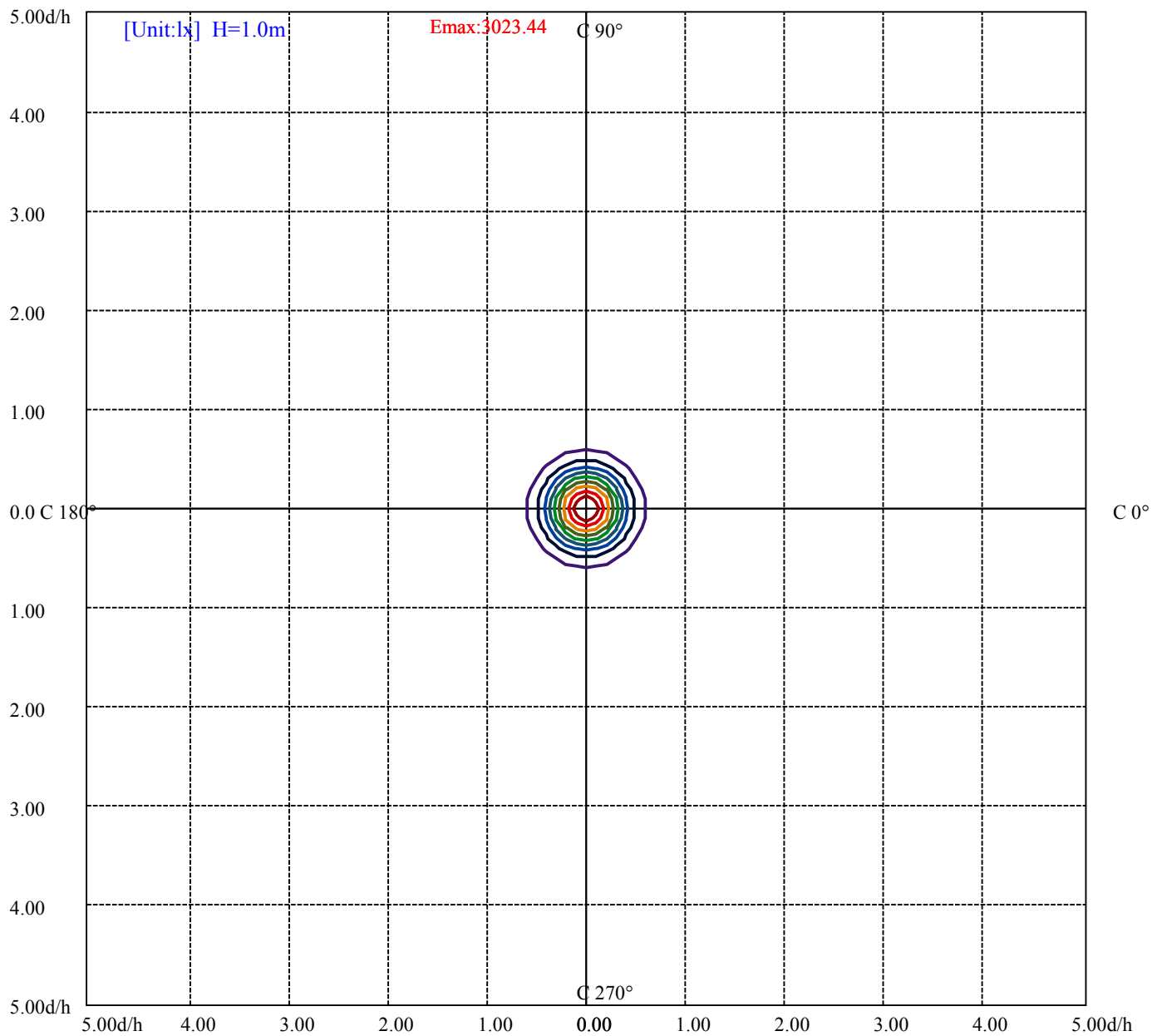
(50%Imax) 1511.72

(60%Imax) 1814.06

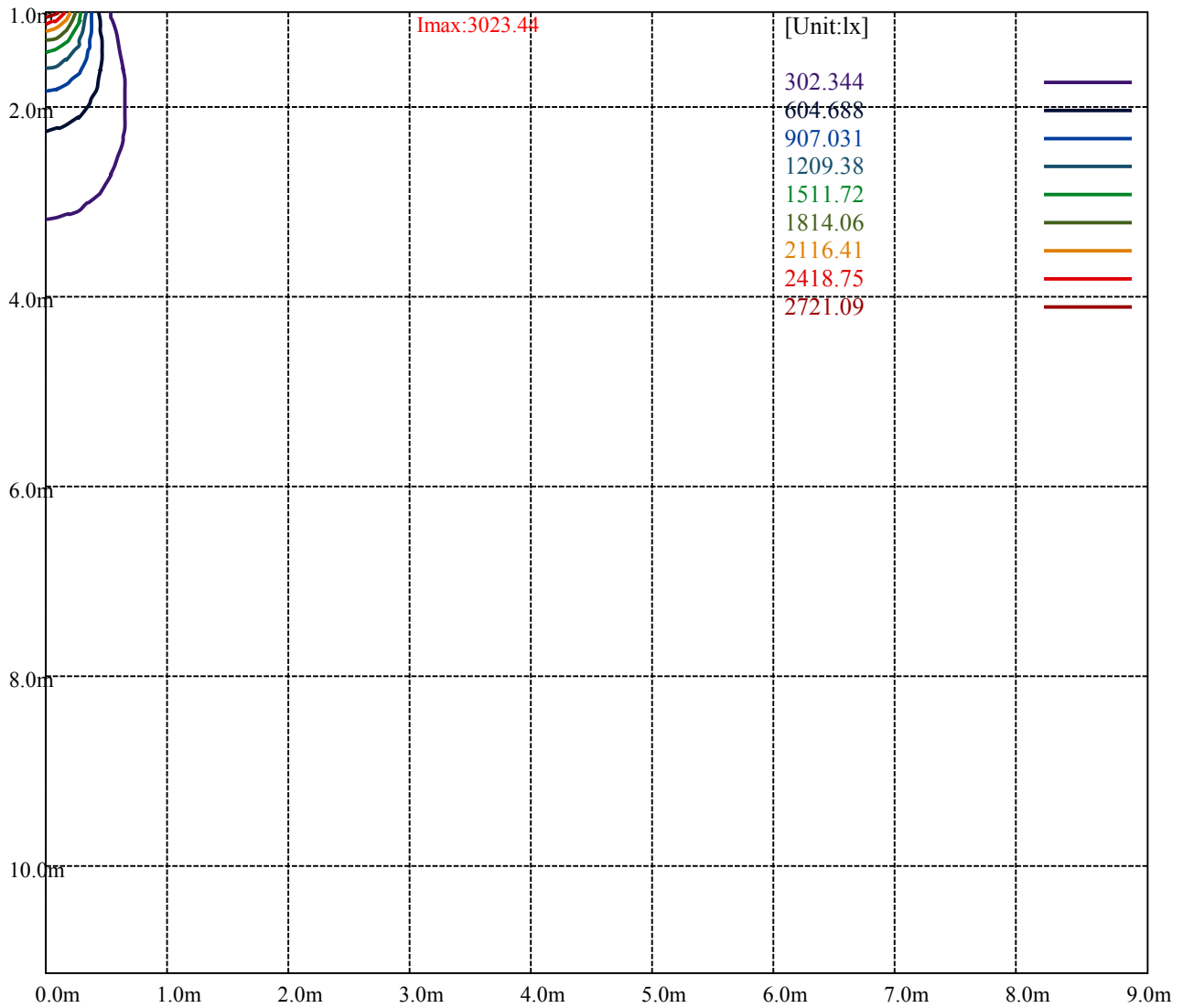
(70%Imax) 2116.41

(80%Imax) 2418.75

(90%Imax) 2721.09



(10%Emax) 302.343	—
(20%Emax) 604.687	—
(30%Emax) 907.03	—
(40%Emax) 1209.37	—
(50%Emax) 1511.72	—
(60%Emax) 1814.06	—
(70%Emax) 2116.4	—
(80%Emax) 2418.75	—
(90%Emax) 2721.09	—



Luminance Table

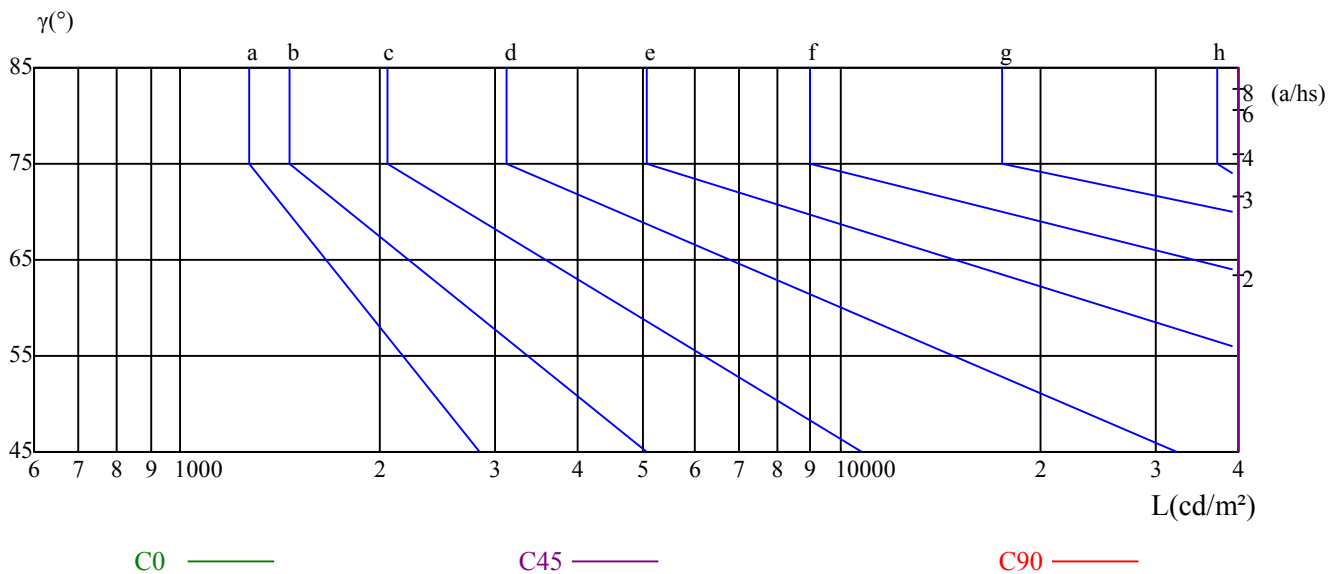
γ	45	50	55	60	65	70	75	80	85
C0	90078	74321	78696	76692	74341	81382	154169	339324	632062
C45	90078	74321	78696	76692	74341	81382	154169	339324	632062
C90	90078	74321	78696	76692	74341	81382	154169	339324	632062

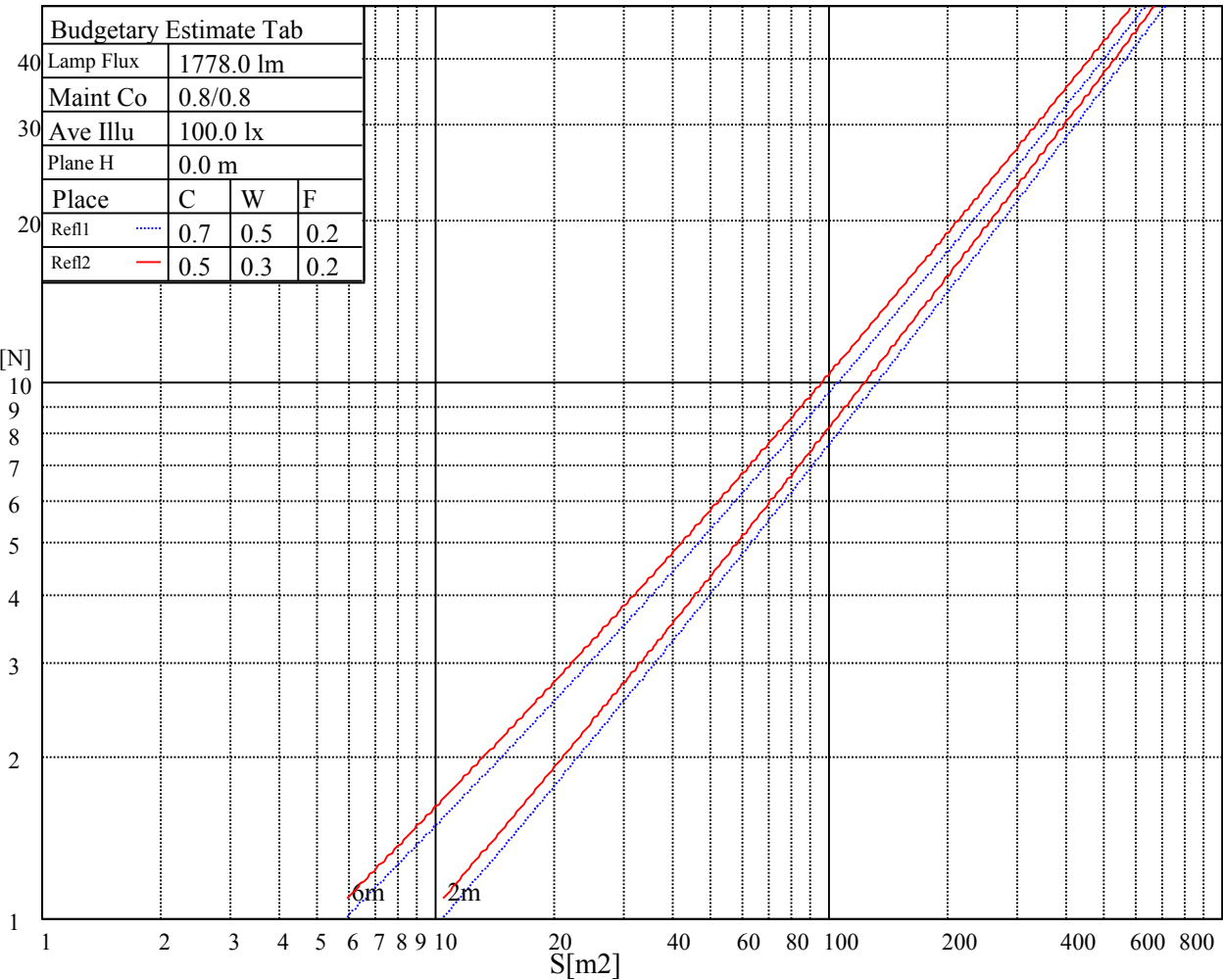
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
74341	74341	74341	154169	154169	154169	632062	632062	632062

Glare Table

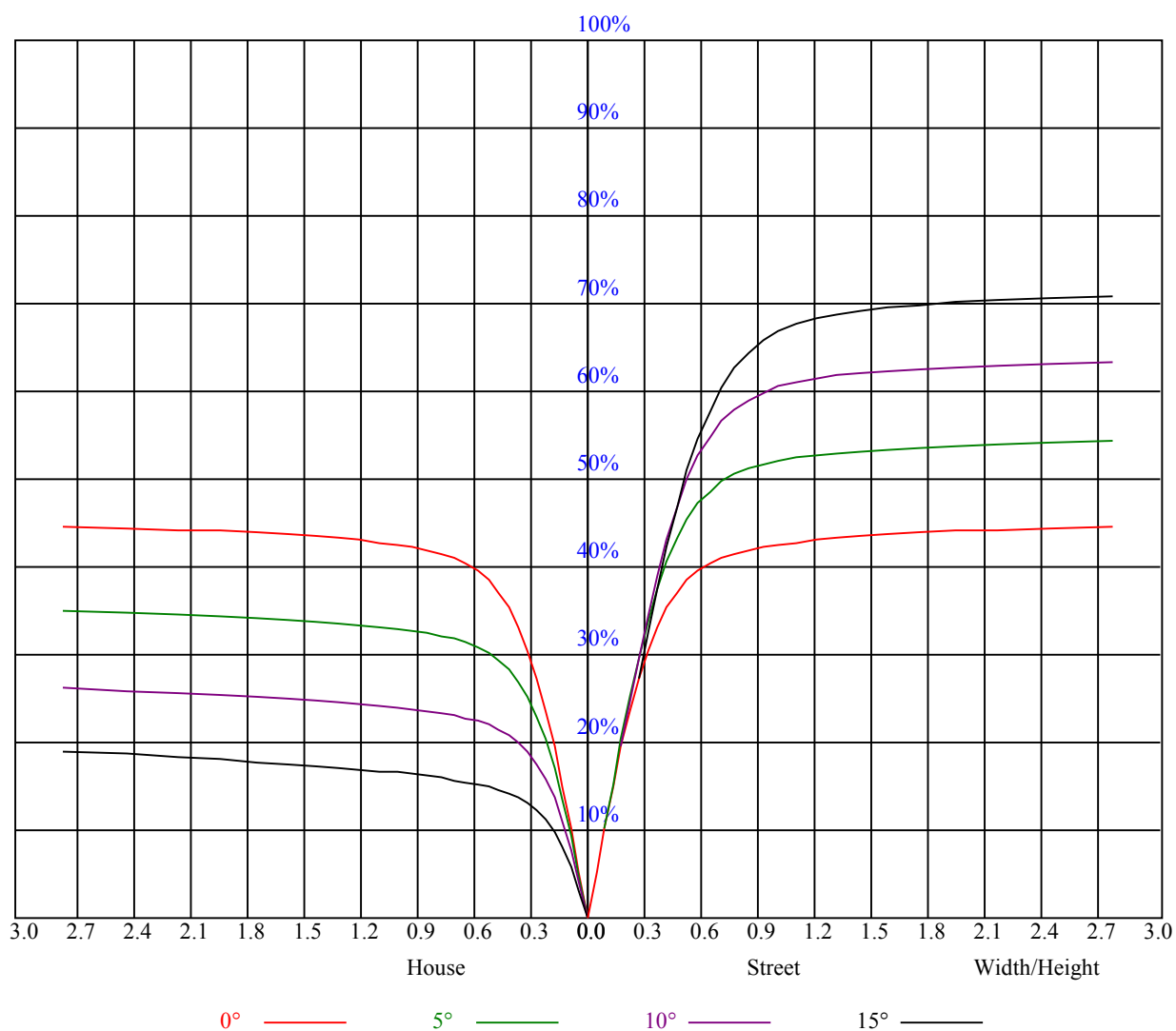
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

Luminance Limiting Curve





RHOC	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	1.12	1.12	1.12	1.09	1.09	1.09	1.04	1.04	1.04	1.00	1.00	1.00	0.96	0.96	0.96	0.94
1	1.01	0.98	0.96	0.99	0.96	0.94	0.95	0.93	0.91	0.92	0.90	0.88	0.88	0.87	0.86	0.84
2	0.94	0.90	0.86	0.93	0.89	0.85	0.90	0.86	0.83	0.87	0.84	0.82	0.84	0.82	0.80	0.78
3	0.89	0.84	0.80	0.87	0.83	0.79	0.85	0.81	0.78	0.82	0.79	0.76	0.80	0.78	0.75	0.74
4	0.84	0.78	0.74	0.83	0.78	0.74	0.81	0.76	0.73	0.79	0.75	0.72	0.77	0.74	0.71	0.70
5	0.79	0.74	0.70	0.79	0.74	0.70	0.77	0.72	0.69	0.75	0.72	0.69	0.74	0.71	0.68	0.67
6	0.76	0.70	0.66	0.75	0.70	0.66	0.74	0.69	0.66	0.72	0.68	0.65	0.71	0.68	0.65	0.64
7	0.72	0.67	0.63	0.72	0.67	0.63	0.71	0.66	0.63	0.69	0.65	0.62	0.68	0.65	0.62	0.61
8	0.69	0.64	0.61	0.69	0.64	0.60	0.68	0.63	0.60	0.67	0.63	0.60	0.66	0.62	0.60	0.59
9	0.67	0.62	0.58	0.66	0.61	0.58	0.65	0.61	0.58	0.64	0.60	0.58	0.64	0.60	0.57	0.56
10	0.64	0.59	0.56	0.64	0.59	0.56	0.63	0.59	0.56	0.62	0.58	0.56	0.62	0.58	0.55	0.54



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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	3025.13	3008.81	2804.63	2373.75	1753.31	1117.69	646.31	347.63	198.62		
45.0	3037.50	2908.69	2581.88	2046.94	1397.25	848.81	475.88	284.06	125.38		
90.0	2994.19	2790.00	2364.75	1756.13	1095.92	619.88	317.98	159.13	81.79		
135.0	3036.94	2831.06	2440.69	1859.06	1170.00	639.00	345.94	164.98	82.86		
180.0	3025.13	2838.38	2449.69	1826.44	1110.38	635.57	350.66	174.71	83.36		
225.0	3037.50	2948.06	2666.25	2187.56	1526.06	884.53	507.99	263.31	135.56		
270.0	2994.19	2997.56	2800.13	2384.44	1810.69	1126.13	636.75	347.63	183.04		
315.0	3036.94	2998.69	2755.69	2293.31	1675.13	1041.64	588.21	311.79	175.33		
360.0	3025.13	3008.81	2804.63	2373.75	1753.31	1117.69	646.31	347.63	198.62		
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0		
0.0	93.99	57.15	52.31	47.53	38.36	32.85	41.06	63.00	63.79		
45.0	63.62	48.32	47.03	42.08	35.04	30.66	42.86	62.04	58.33		
90.0	50.01	45.28	44.16	36.68	30.21	27.39	45.45	63.45	57.83		
135.0	50.96	45.56	44.38	37.18	30.21	27.00	41.85	65.36	56.19		
180.0	55.52	52.37	49.33	39.04	32.40	31.61	50.79	68.51	51.58		
225.0	68.51	53.27	51.53	42.08	34.37	29.87	44.38	70.48	67.22		
270.0	86.68	56.36	51.47	44.89	36.11	30.94	37.58	59.12	67.33		
315.0	85.61	57.88	53.04	44.61	37.01	32.18	43.65	61.37	57.66		
360.0	93.99	57.15	52.31	47.53	38.36	32.85	41.06	63.00	63.79		
C/γ(°)	90.0										
0.0	25.43										
45.0	7.88										
90.0	7.48										
135.0	7.59										
180.0	7.65										
225.0	10.80										
270.0	15.36										
315.0	16.09										
360.0	25.43										