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## NATA

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LumCAT: 2-1701-A  
Luminaire: 99.02.73.173+92.76.365.00  
Report No: NATA0100  
Test No: GC2018101102  
LampCAT: CITIZEN CLU048  
Lamp flux(lm): 3977.0  
Number of Lamps: 1  
Length(mm): 71  
Phm Type: C

Voltage(V): 49.9000  
Current(A): 0.5000  
Power (W): 24.9500  
PF: 0.0000  
Ballast type: DC  
Width(mm): 71  
Height(mm): 0

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## Photometric Results

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Lumens(lm): 3535.05  
Efficiency(%): 88.89%  
Lumens(lm)/Power(W): 144.07  
Central intensity(cd): 10519.450  
Maximum intensity(cd): 10519.450  
Angle of maximum intensity: C=0.0  $\gamma$ =0.0  
Beam Angle(50%Imax): [C0/180]Total=26.2  
                                  [C90/270]Total=26.2  
Field angle(10%Imax): [C0/180]Total=66.3  
                                  [C90/270]Total=66.3  
Maximum s/h(1/2): C0\_180=0.45 C90\_270=0.45  
Maximum s/h(1/4): C0\_180=0.45 C90\_270=0.45  
Up flux rate of lamp(%): 0.00%  
Down flux rate of lamp(%): 90.38%  
Up flux rate of LUM(%): - -  
Down flux rate of LUM(%): 100.00%  
CIE Type : Direct lighting  
Output flux ratio in  $\pi$  solid angle : 96.777%

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Equipment:  
Temperature(°C): 25.0

Date: 2018/10/11  
Humidity(%): 60.0%

Operator: NT07  
Distance(m): 7.50

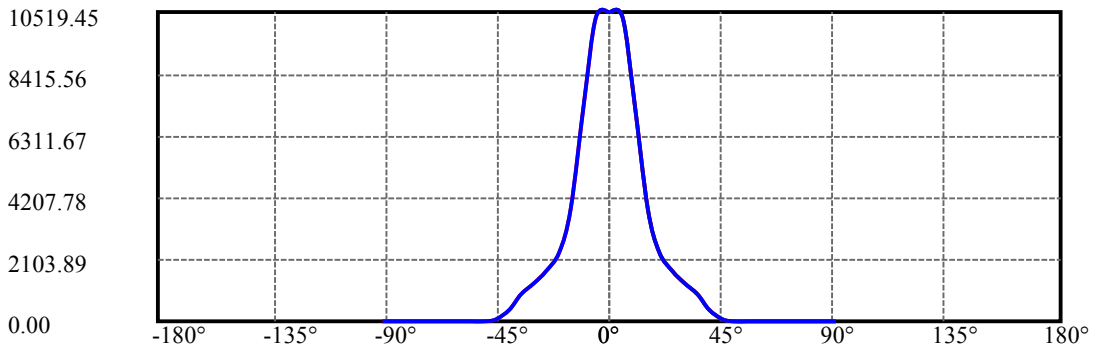
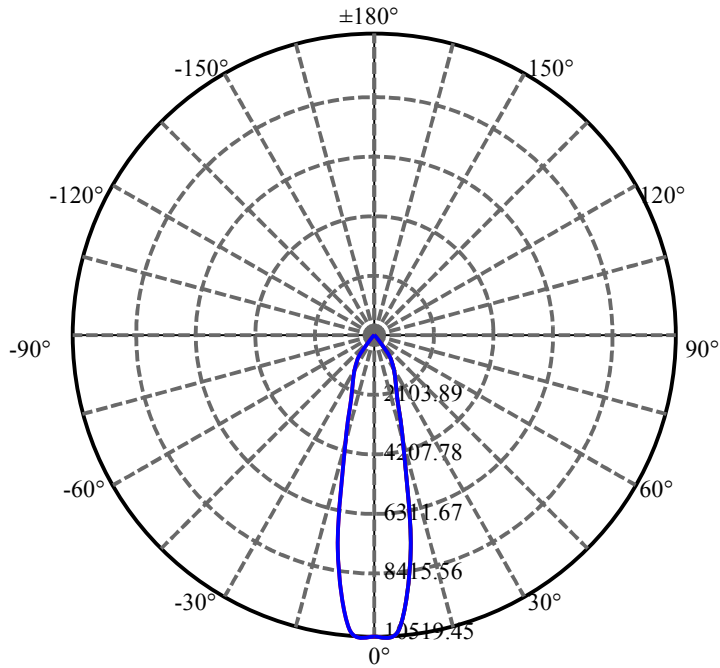
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	10519.453	62.908	62.908	1.582%	1.780%
5.0	10296.773	491.911	554.819	12.369%	15.695%
10.0	7523.438	716.104	1270.923	18.006%	35.952%
15.0	3885.047	551.165	1822.089	13.859%	51.544%
20.0	2324.672	435.816	2257.904	10.958%	63.872%
25.0	1685.953	390.556	2648.46	9.820%	74.920%
30.0	1337.920	366.682	3015.142	9.220%	85.293%
35.0	883.652	277.819	3292.961	6.986%	93.152%
40.0	397.364	140.006	3432.967	3.520%	97.112%
45.0	48.241	18.698	3451.665	.470%	97.641%
50.0	20.447	8.586	3460.251	.216%	97.884%
55.0	18.577	8.341	3468.592	.210%	98.120%
60.0	21.382	10.150	3478.742	.255%	98.407%
65.0	22.598	11.226	3489.968	.282%	98.725%
70.0	21.867	11.263	3501.231	.283%	99.043%
75.0	20.433	10.818	3512.05	.272%	99.349%
80.0	18.577	10.028	3522.078	.252%	99.633%
85.0	16.615	9.073	3531.15	.228%	99.890%
90.0	14.224	3.898	3535.049	.098%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	3015.14	75.81%	85.29%
0-40	3432.97	86.32%	97.11%
0-60	3478.74	87.47%	98.41%
0-90	3531.15	88.79%	99.89%
0-120	3531.15	88.79%	99.89%
0-180	3535.05	88.89%	100.00%
60-90	62.56	1.57%	1.77%
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%
0-27.45	2828.04	71.11%	80.00%

ZONAL LUMEN SUMMARY

0-10	1270.92
10-20	986.98
20-30	757.24
30-40	417.82
40-50	27.28
50-60	18.49
60-70	22.49
70-80	20.85
80-90	9.07
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: —————

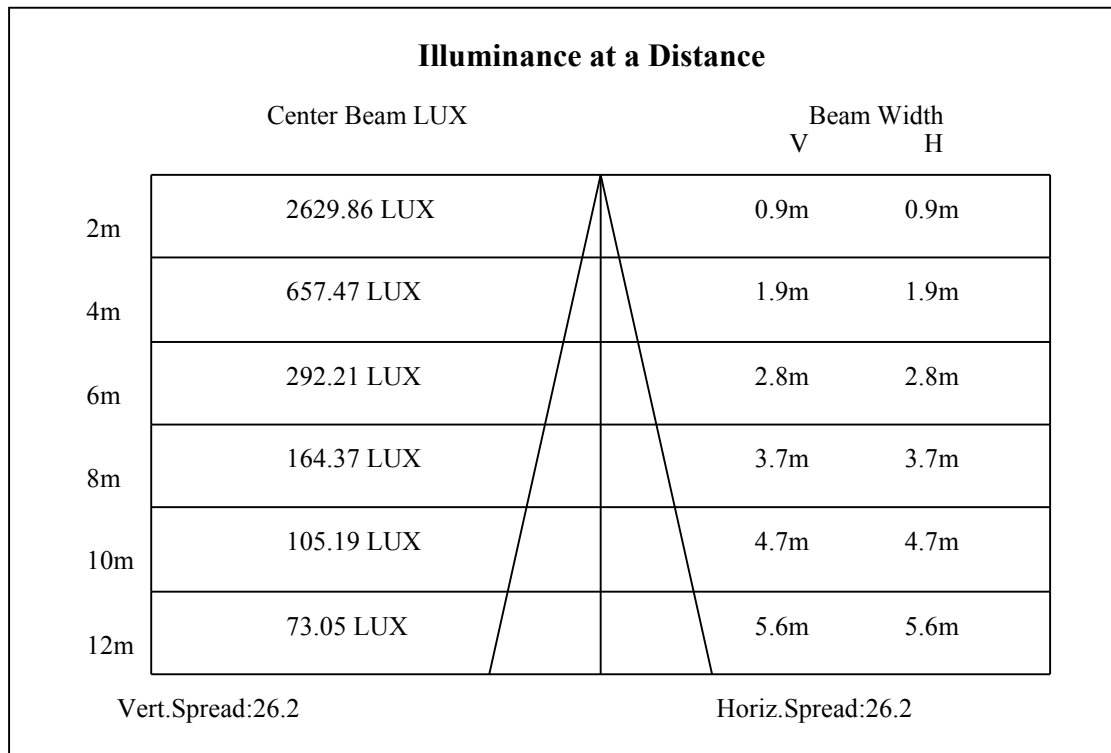
C90/C270: —————

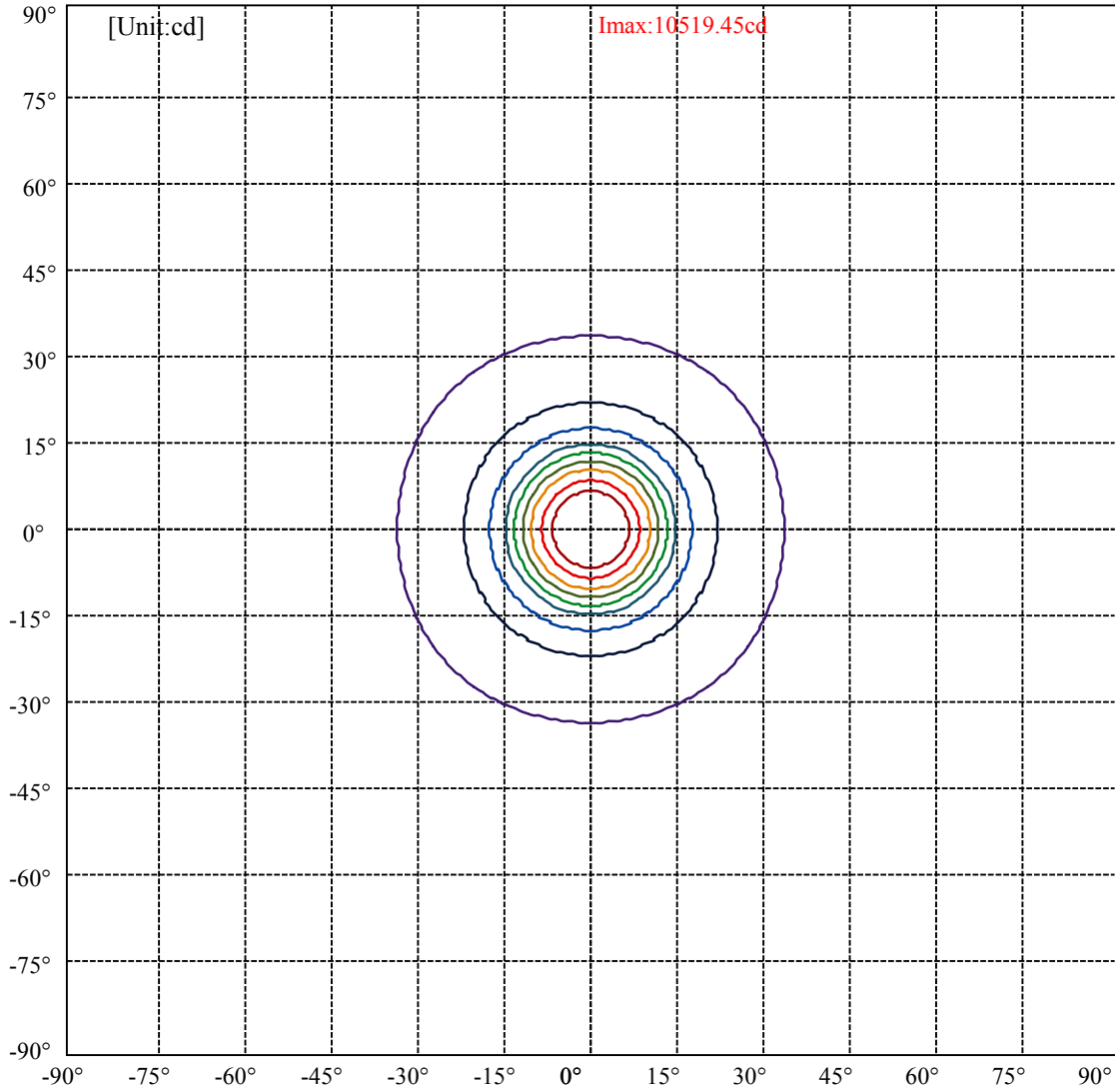
Field angle(10%Imax):C0/180Left:33.1 Right:33.1

:C90/270Left:33.1 Right:33.1

Beam Angle(50%Imax):C0/180Left:13.1 Right:13.1

:C90/270Left:13.1 Right:13.1



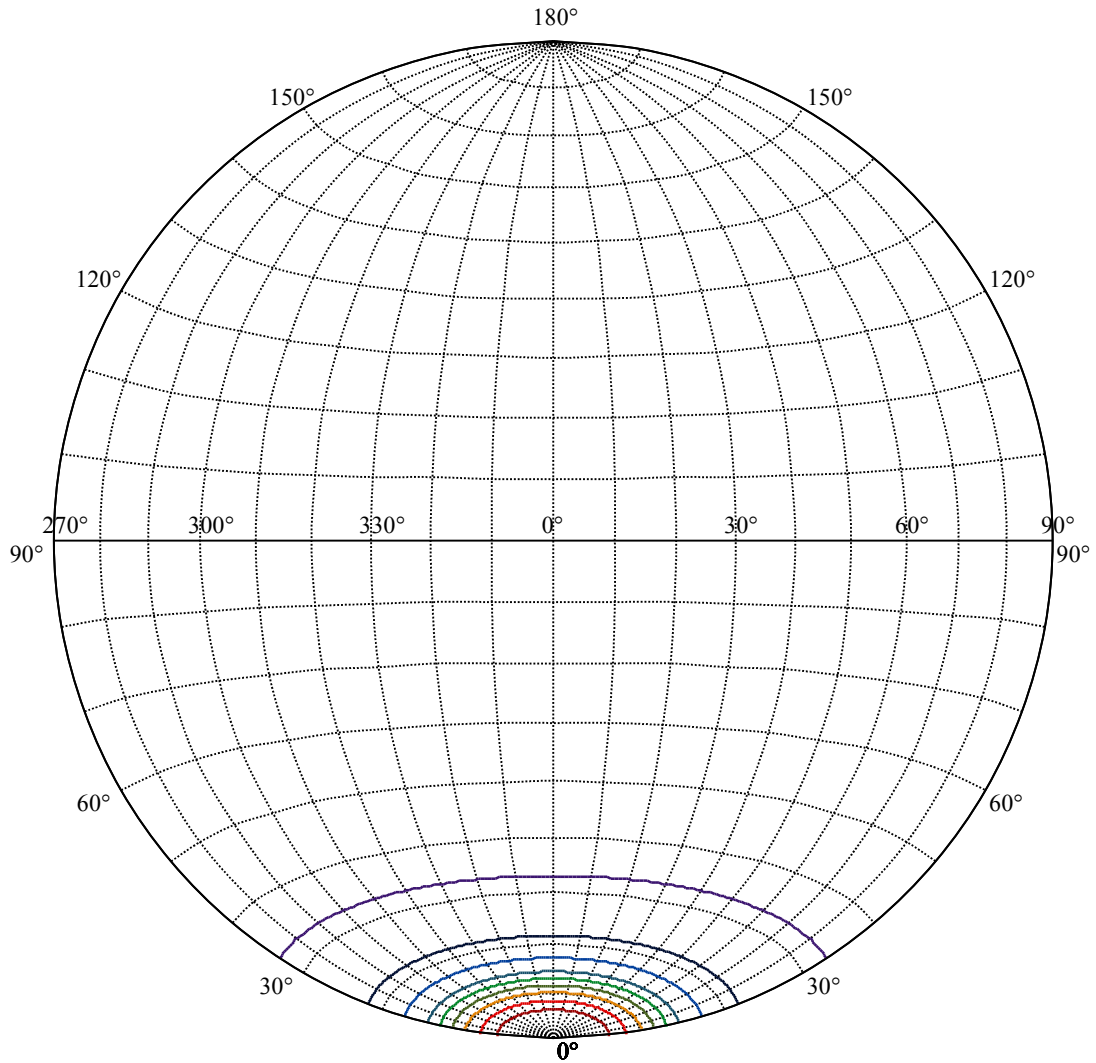


(10%Imax) 1051.95	—
(20%Imax) 2103.89	—
(30%Imax) 3155.84	—
(40%Imax) 4207.78	—
(50%Imax) 5259.73	—
(60%Imax) 6311.67	—
(70%Imax) 7363.62	—
(80%Imax) 8415.56	—
(90%Imax) 9467.51	—

Equipment:  
Temperature(°C): 25.0

Date: 2018/10/11  
Humidity(%): 60.0%

Operator: NT07  
Distance(m): 7.50



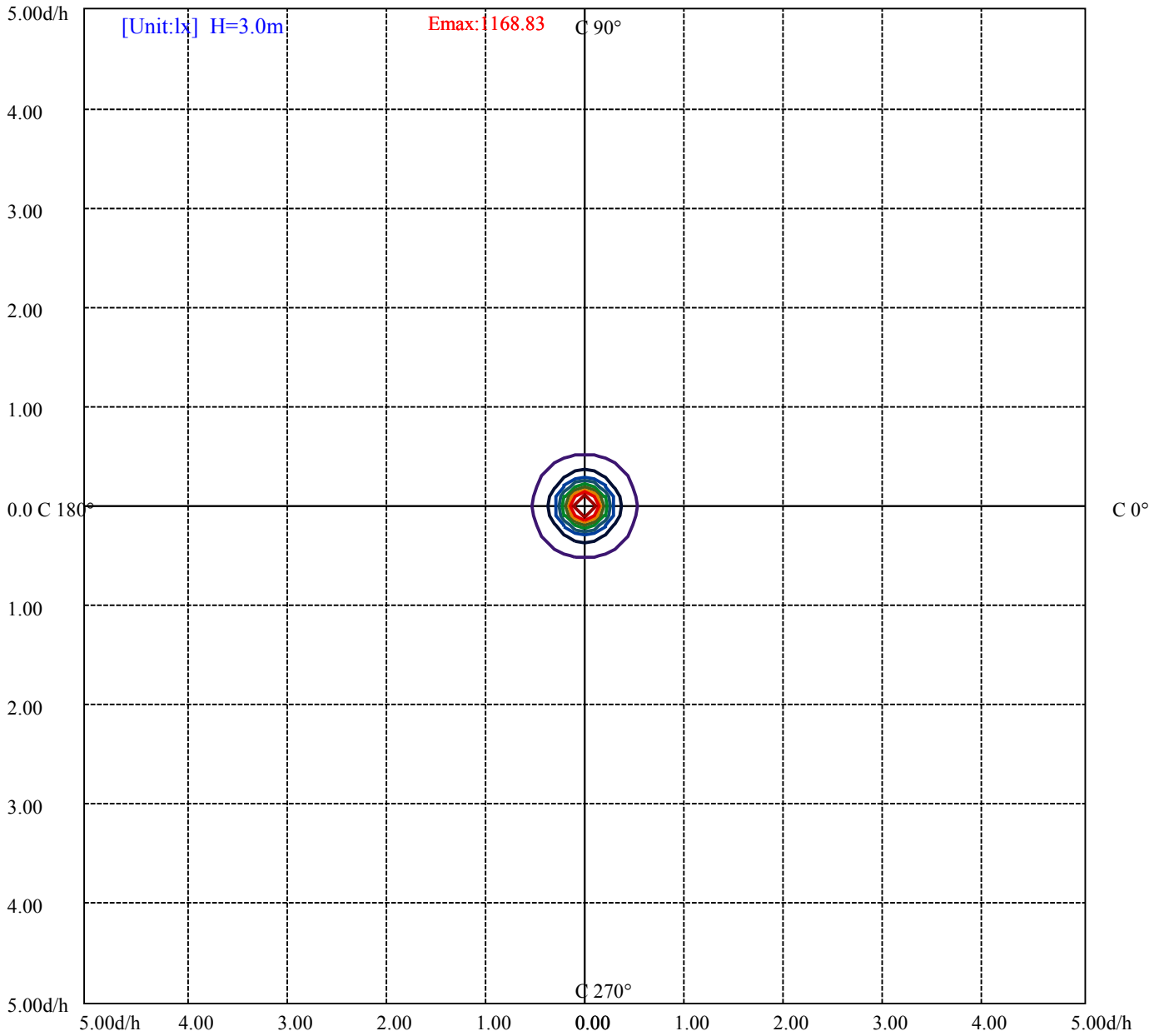
House

[Unit:cd]

Road

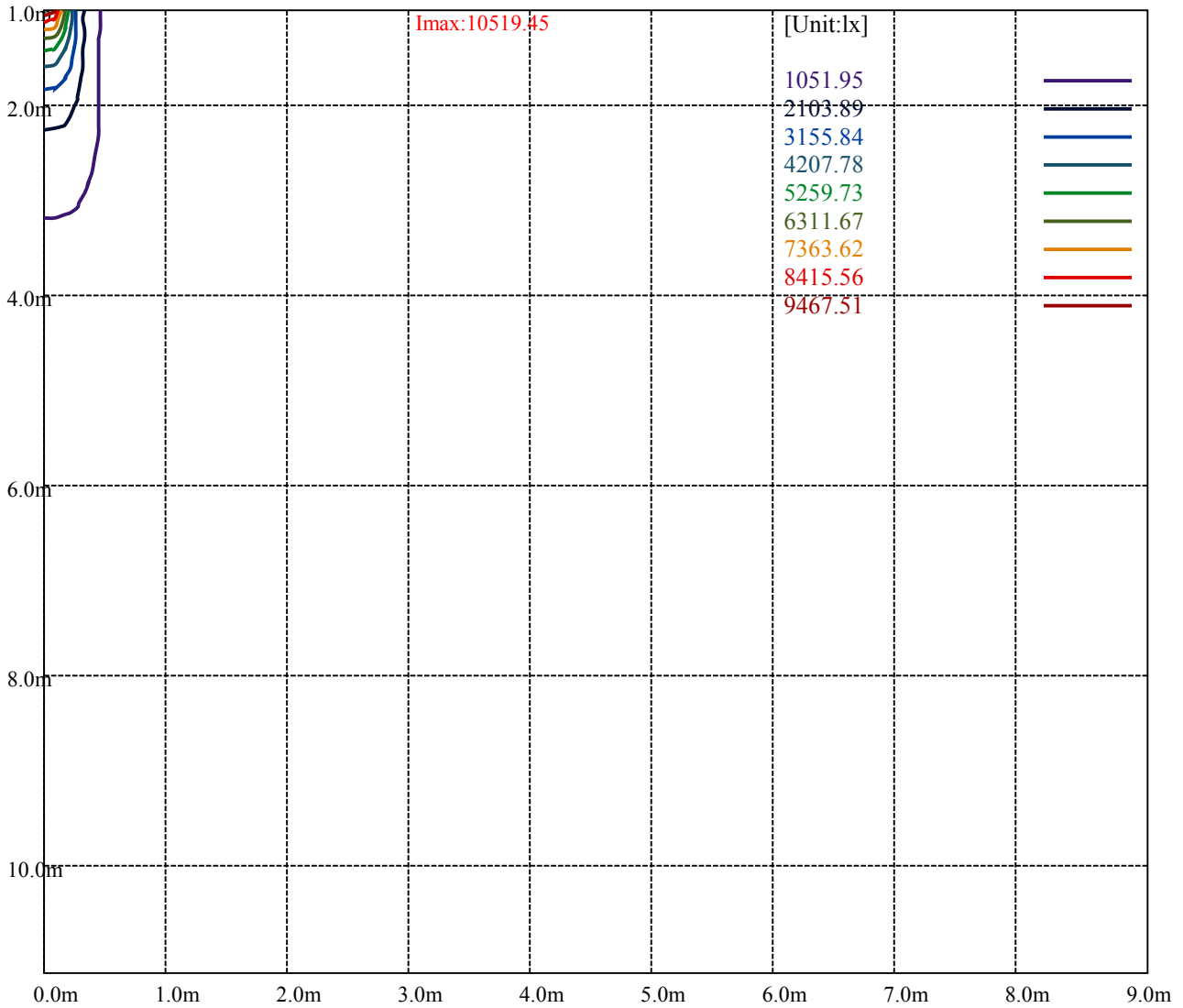
**Imax:10519.45**

(10%Imax)	1051.95	—
(20%Imax)	2103.89	—
(30%Imax)	3155.84	—
(40%Imax)	4207.78	—
(50%Imax)	5259.73	—
(60%Imax)	6311.67	—
(70%Imax)	7363.62	—
(80%Imax)	8415.56	—
(90%Imax)	9467.51	—



- (10%E<sub>max</sub>) 116.8822
- (20%E<sub>max</sub>) 233.7655
- (30%E<sub>max</sub>) 350.6478
- (40%E<sub>max</sub>) 467.5311
- (50%E<sub>max</sub>) 584.4133
- (60%E<sub>max</sub>) 701.2966
- (70%E<sub>max</sub>) 818.1789
- (80%E<sub>max</sub>) 935.0622
- (90%E<sub>max</sub>) 1051.944





Luminance Table

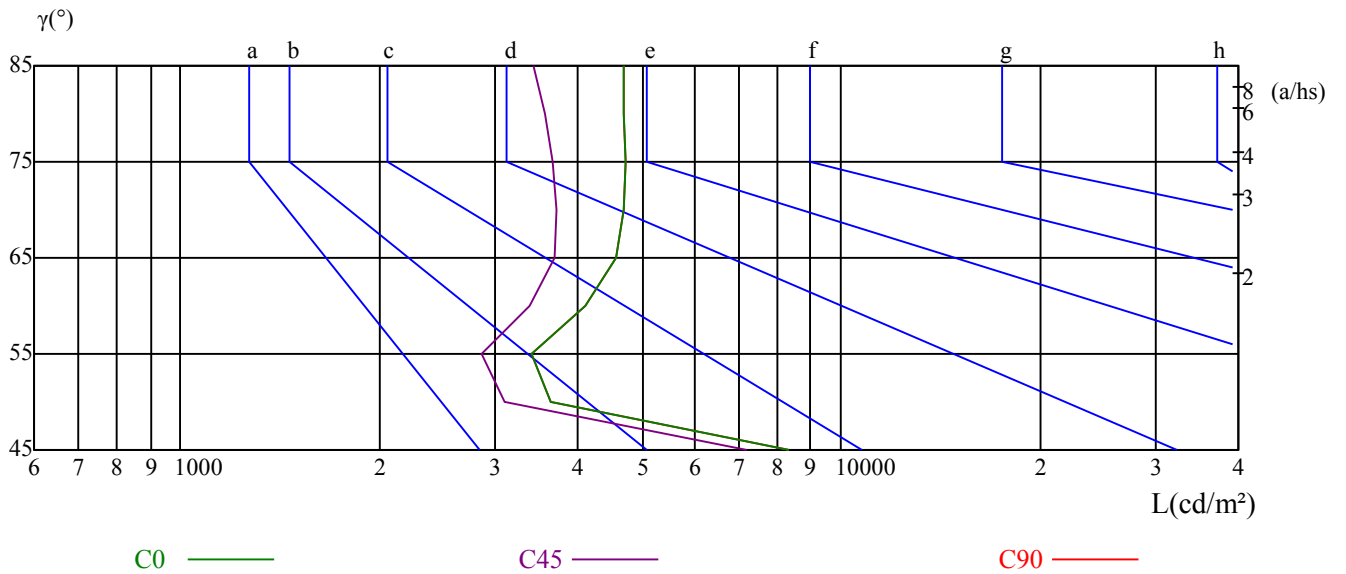
$\gamma$	45	50	55	60	65	70	75	80	85
C0	8356	3630	3408	4092	4555	4693	4727	4701	4678
C45	7213	3086	2853	3369	3684	3722	3667	3554	3432
C90	8356	3630	3408	4092	4555	4693	4727	4701	4678

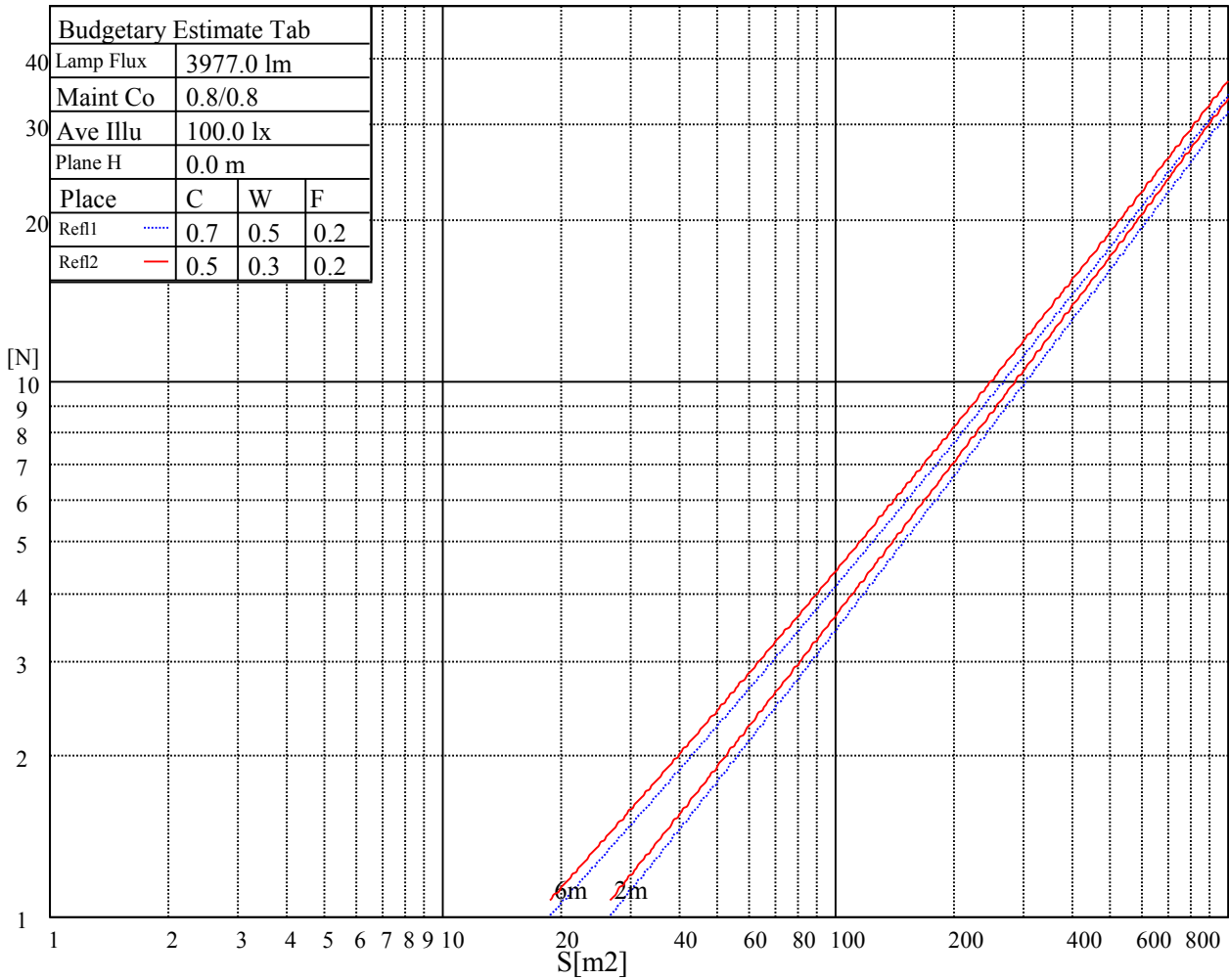
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
10608	10608	10608	15661	15661	15661	37817	37817	37817

Glare Table

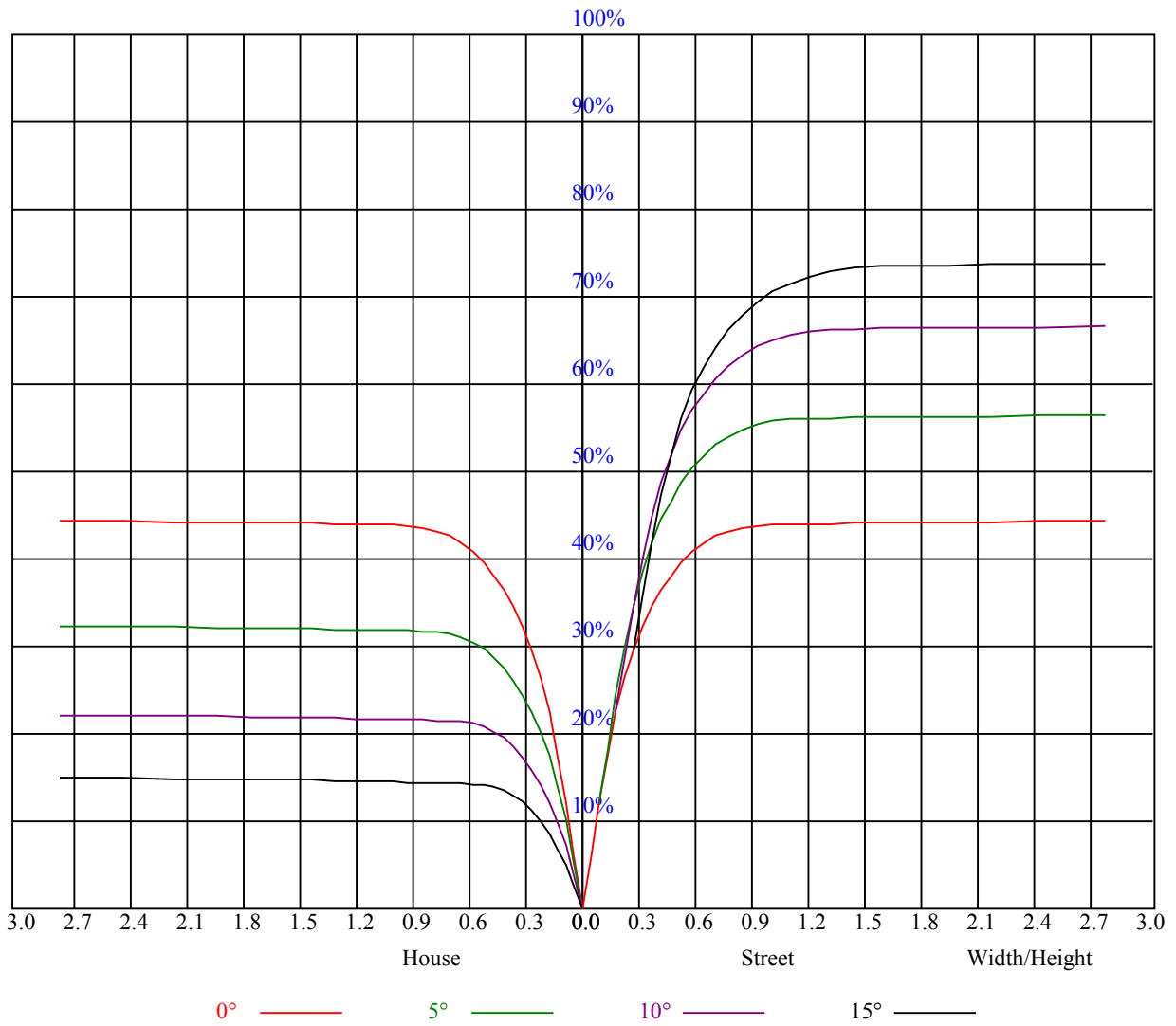
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

Luminance Limiting Curve





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	1.05	1.05	1.05	1.00	1.00	1.00	0.96	0.96	0.96	0.92	0.92	0.92	0.90
1	0.99	0.97	0.94	0.97	0.95	0.93	0.94	0.92	0.90	0.90	0.89	0.87	0.87	0.86	0.85	0.83
2	0.94	0.90	0.87	0.92	0.89	0.86	0.89	0.87	0.84	0.87	0.84	0.83	0.84	0.82	0.81	0.79
3	0.89	0.85	0.82	0.88	0.84	0.81	0.85	0.82	0.80	0.83	0.81	0.78	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	0.79	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	0.74	0.71	0.68	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	0.72	0.67	0.64	0.71	0.67	0.64	0.70	0.66	0.64	0.69	0.66	0.64	0.63
9	0.70	0.65	0.62	0.69	0.65	0.62	0.68	0.65	0.62	0.68	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	0.63	0.60	0.66	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	10528.88	10304.44	7339.50	3821.63	2292.75	1688.63	1341.00	847.13	367.88
45.0	10507.50	10363.50	7831.13	4030.31	2419.31	1707.75	1378.13	924.19	426.94
90.0	10522.69	10260.56	7490.25	3801.94	2280.94	1681.88	1365.19	869.51	391.89
135.0	10518.75	10526.06	8644.50	4685.63	2536.31	1815.75	1442.81	987.75	543.94
180.0	10528.88	10406.25	7752.94	3906.56	2361.94	1690.88	1351.13	913.73	412.26
225.0	10507.50	10296.00	7164.00	3593.81	2253.94	1643.06	1334.81	870.36	374.18
270.0	10522.69	10307.81	7765.31	3921.75	2344.50	1671.75	1375.88	907.88	398.81
315.0	10518.75	9909.56	6199.88	3318.75	2107.69	1587.94	1114.43	748.69	263.03
360.0	10528.88	10304.44	7339.50	3821.63	2292.75	1688.63	1341.00	847.13	367.88

C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	38.48	20.42	18.79	25.82	26.66	25.88	23.51	19.24	16.43
45.0	48.04	20.53	18.84	20.53	22.78	22.61	21.26	19.29	16.59
90.0	40.89	19.63	18.34	20.59	20.36	19.58	18.56	17.49	16.20
135.0	83.31	22.33	18.90	21.09	21.54	20.31	19.01	18.28	17.16
180.0	51.02	19.35	17.78	18.11	19.29	19.24	18.56	17.44	16.31
225.0	40.22	19.86	18.23	18.23	20.31	20.19	19.46	18.06	16.43
270.0	54.17	21.15	18.62	22.22	23.18	22.22	20.70	19.01	17.04
315.0	29.81	20.31	19.13	24.47	26.66	24.92	22.39	19.80	16.76
360.0	38.48	20.42	18.79	25.82	26.66	25.88	23.51	19.24	16.43

C/γ(°)	90.0
0.0	14.12
45.0	14.29
90.0	14.29
135.0	14.23
180.0	14.06
225.0	14.29
270.0	14.29
315.0	14.23
360.0	14.12