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NATA

LumCAT: 2-1702-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

Photometric Results

Lumens(lm): 3538.72
Efficiency(%): 88.98%
Lumens(lm)/Power(W): 143.53
Central intensity(cd): 7653.093
Maximum intensity(cd): 7653.093
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=35.9
[C90/270]Total=35.9
Field angle(10%Imax): [C0/180]Total=71.8
[C90/270]Total=71.8
Maximum s/h(1/2): C0_180=0.60 C90_270=0.60
Maximum s/h(1/4): C0_180=0.58 C90_270=0.58
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 90.05%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 97.433%

Equipment:
Temperature(°C): 25.0

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

Operator: NT07
Distance(m): 7.50

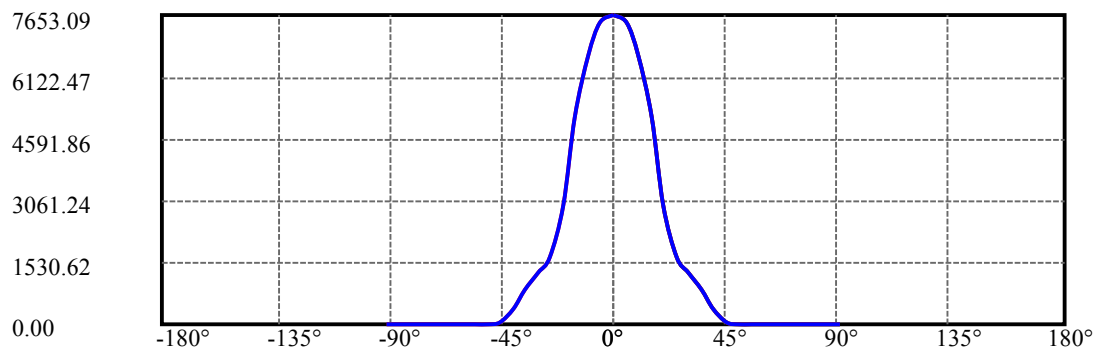
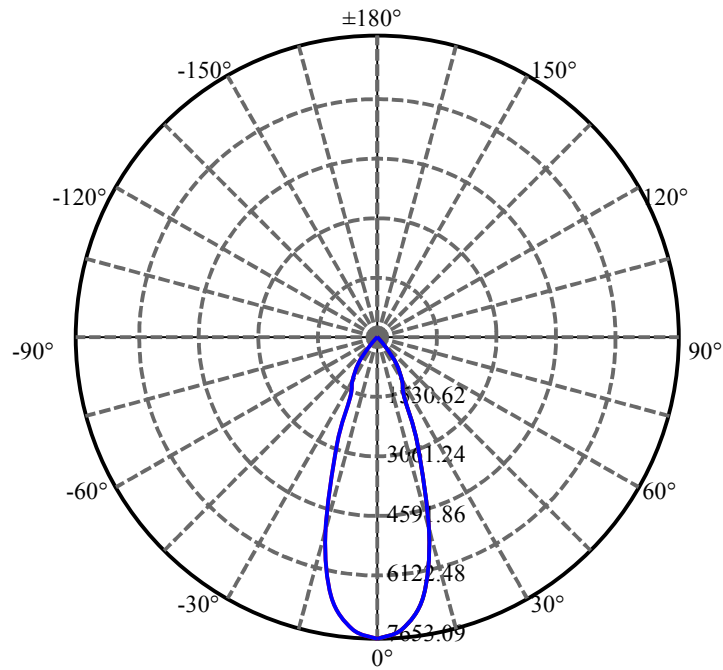
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	7653.094	45.767	45.767	1.151%	1.293%
5.0	7459.734	356.376	402.143	8.961%	11.364%
10.0	6663.234	634.227	1036.37	15.947%	29.287%
15.0	5128.102	727.516	1763.886	18.293%	49.845%
20.0	2929.992	549.297	2313.183	13.812%	65.368%
25.0	1662.961	385.230	2698.413	9.686%	76.254%
30.0	1274.055	349.179	3047.592	8.780%	86.121%
35.0	854.100	268.528	3316.12	6.752%	93.710%
40.0	372.185	131.134	3447.254	3.297%	97.415%
45.0	46.301	17.946	3465.2	.451%	97.922%
50.0	19.259	8.087	3473.286	.203%	98.151%
55.0	17.726	7.959	3481.245	.200%	98.376%
60.0	16.713	7.934	3489.179	.199%	98.600%
65.0	17.395	8.642	3497.821	.217%	98.844%
70.0	18.120	9.333	3507.154	.235%	99.108%
75.0	17.944	9.500	3516.654	.239%	99.376%
80.0	17.318	9.348	3526.003	.235%	99.641%
85.0	16.095	8.788	3534.791	.221%	99.889%
90.0	14.337	3.929	3538.72	.099%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	3047.59	76.63%	86.12%
0-40	3447.25	86.68%	97.42%
0-60	3489.18	87.73%	98.60%
0-90	3534.79	88.88%	99.89%
0-120	3534.79	88.88%	99.89%
0-180	3538.72	88.98%	100.00%
60-90	53.55	1.35%	1.51%
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%
0-26.90	2830.98	71.18%	80.00%

ZONAL LUMEN SUMMARY

0-10	1036.37
10-20	1276.81
20-30	734.41
30-40	399.66
40-50	26.03
50-60	15.89
60-70	17.97
70-80	18.85
80-90	8.79
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

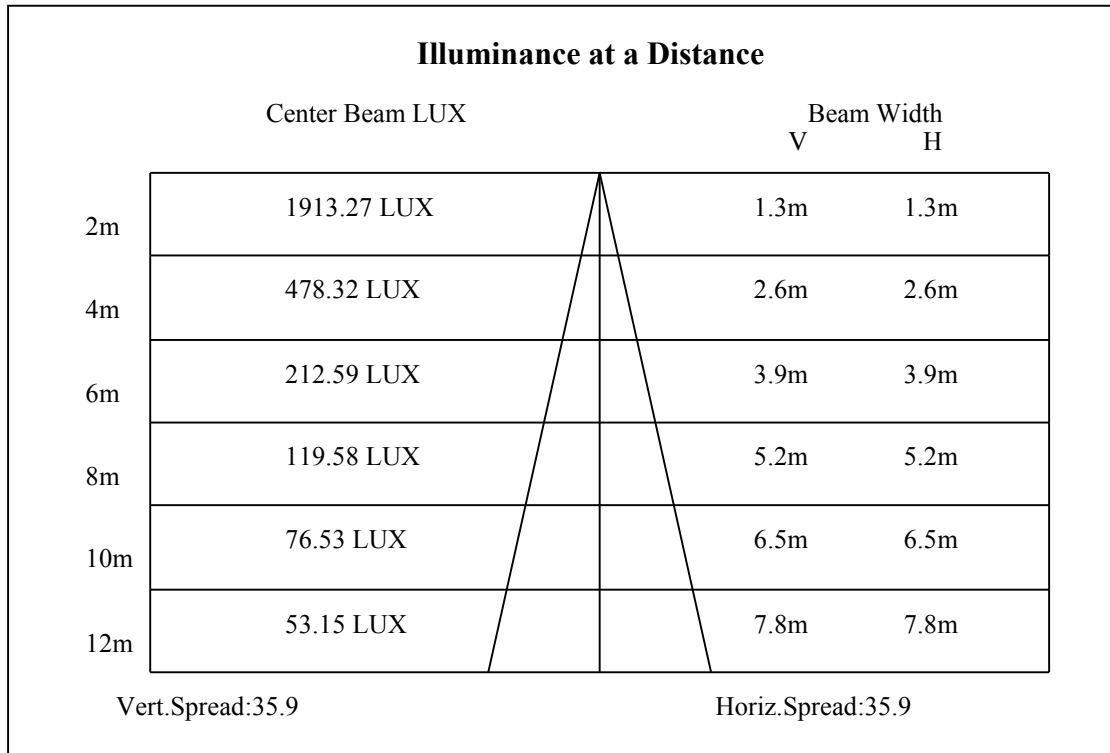
C0(Max): —————C0/C180: —————C90/C270: —————

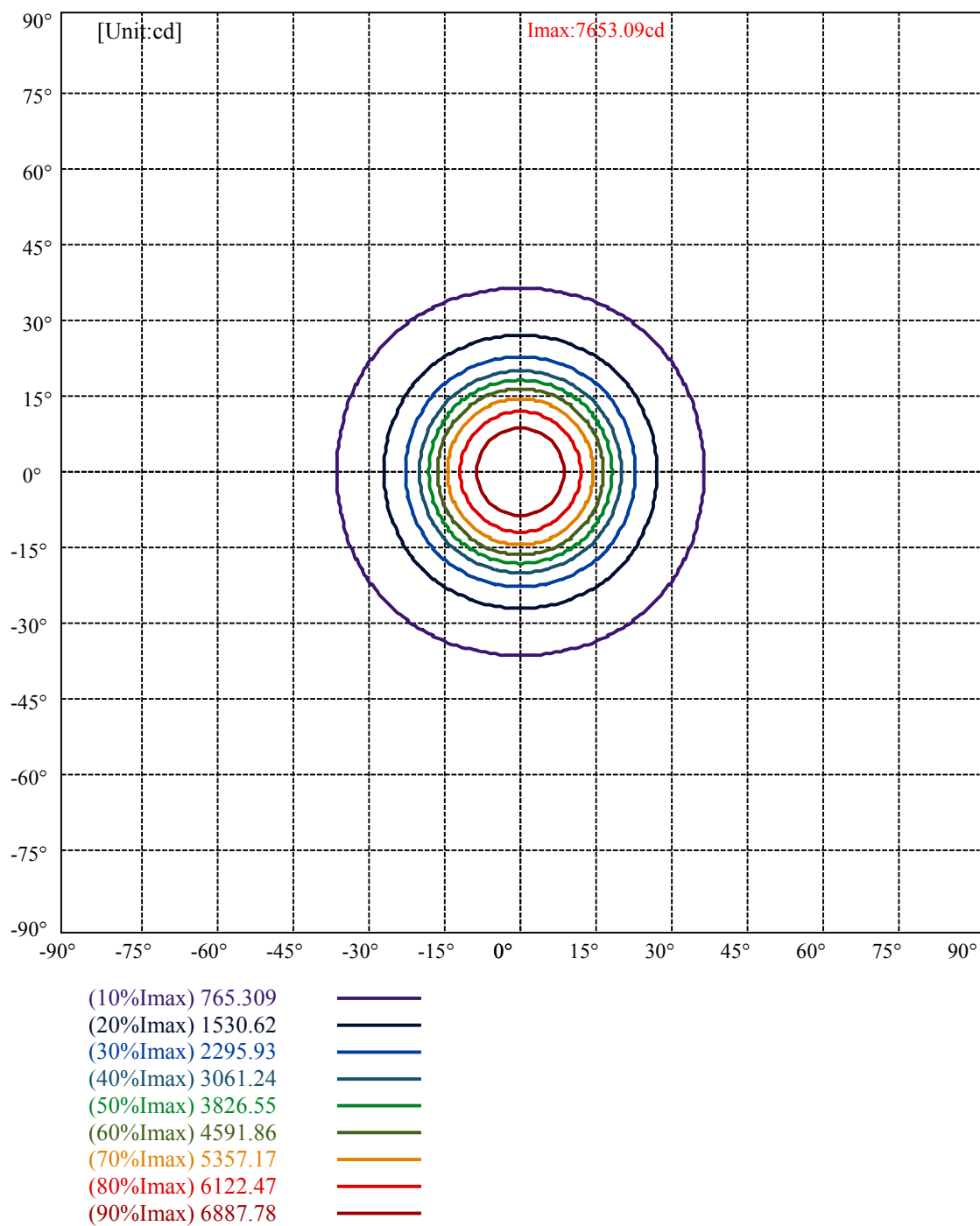
Field angle(10%Imax):C0/180Left:35.9 Right:35.9

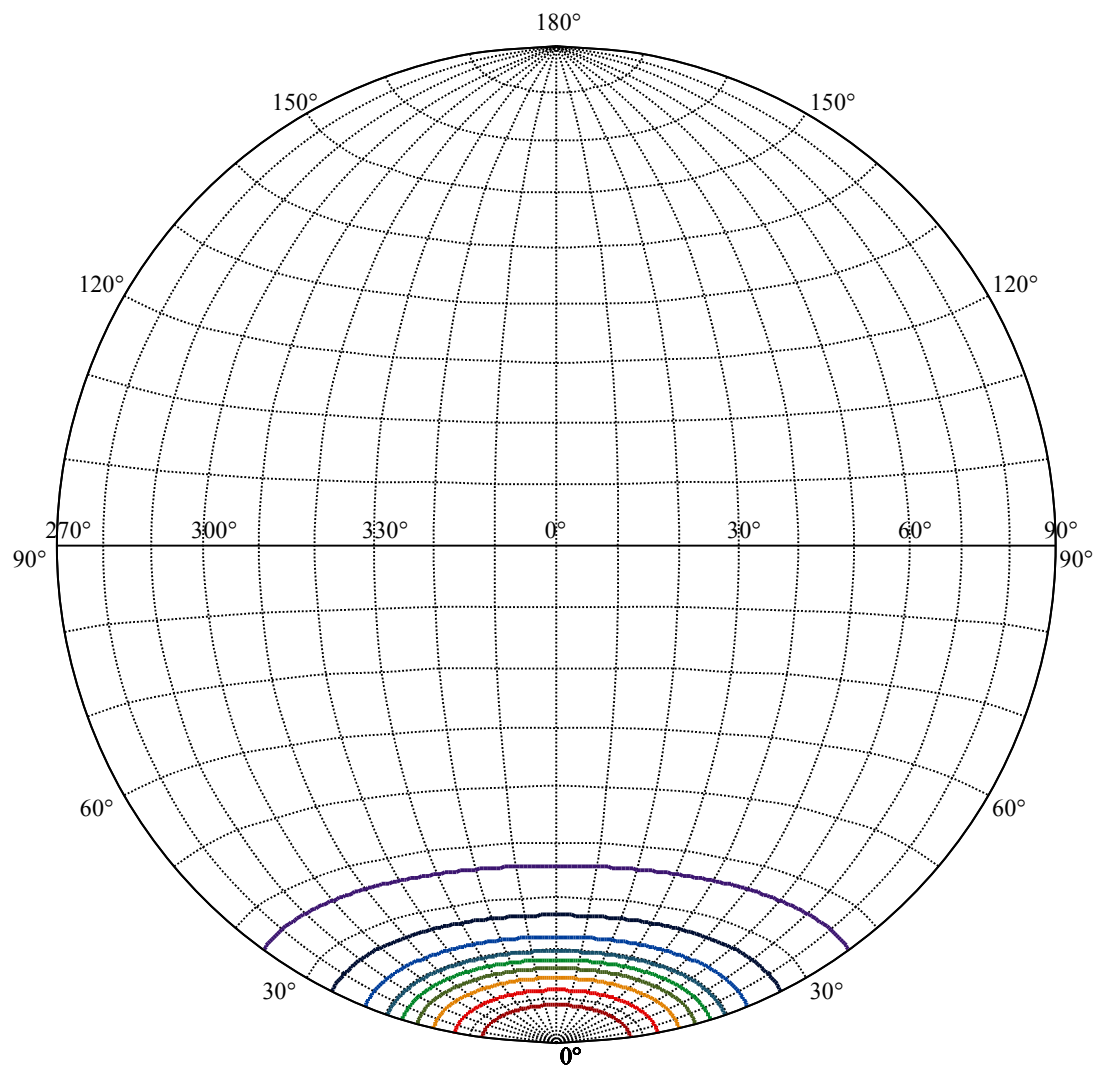
:C90/270Left:35.9 Right:35.9

Beam Angle(50%Imax):C0/180Left:18.0 Right:18.0

:C90/270Left:18.0 Right:18.0





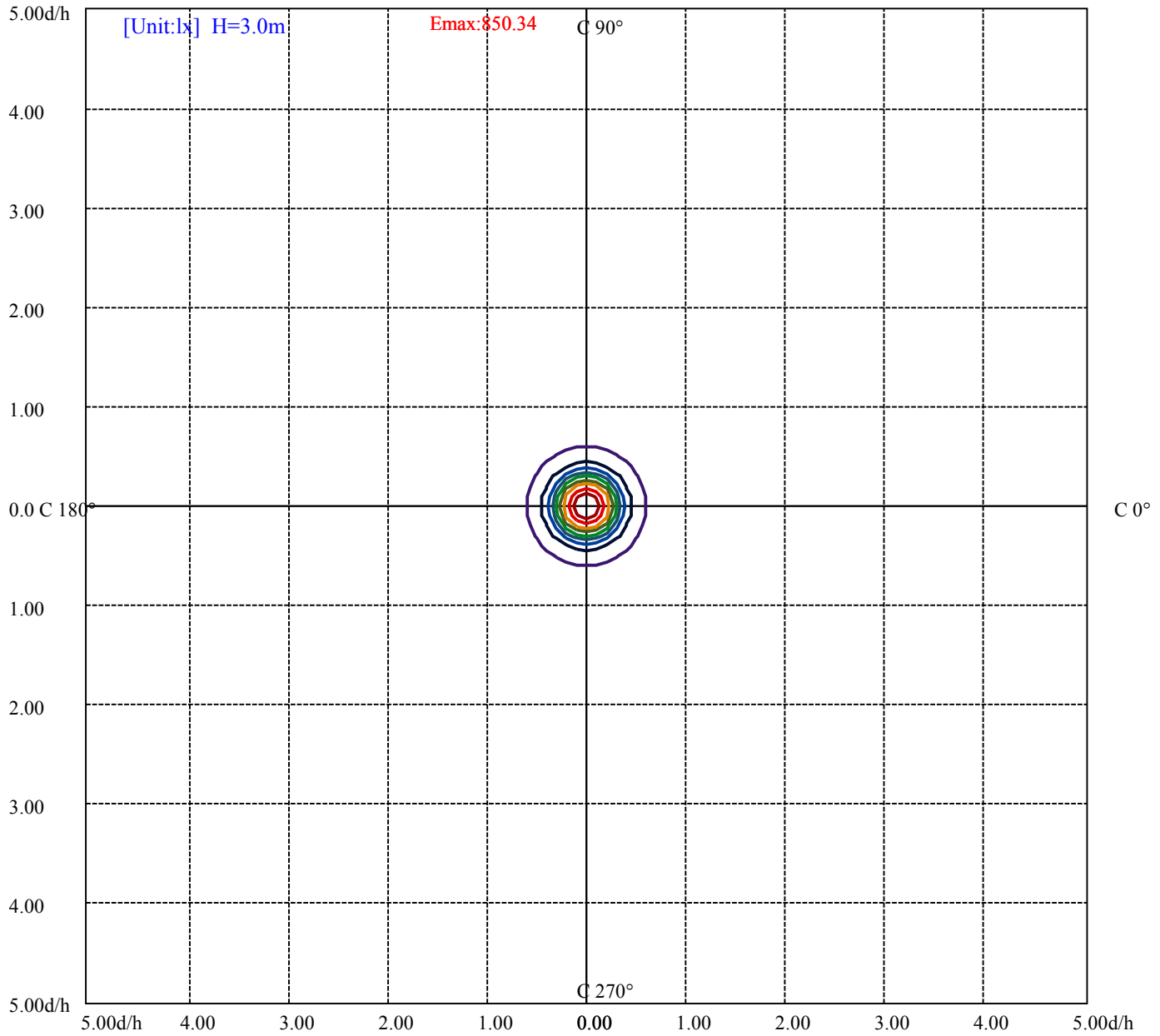


House

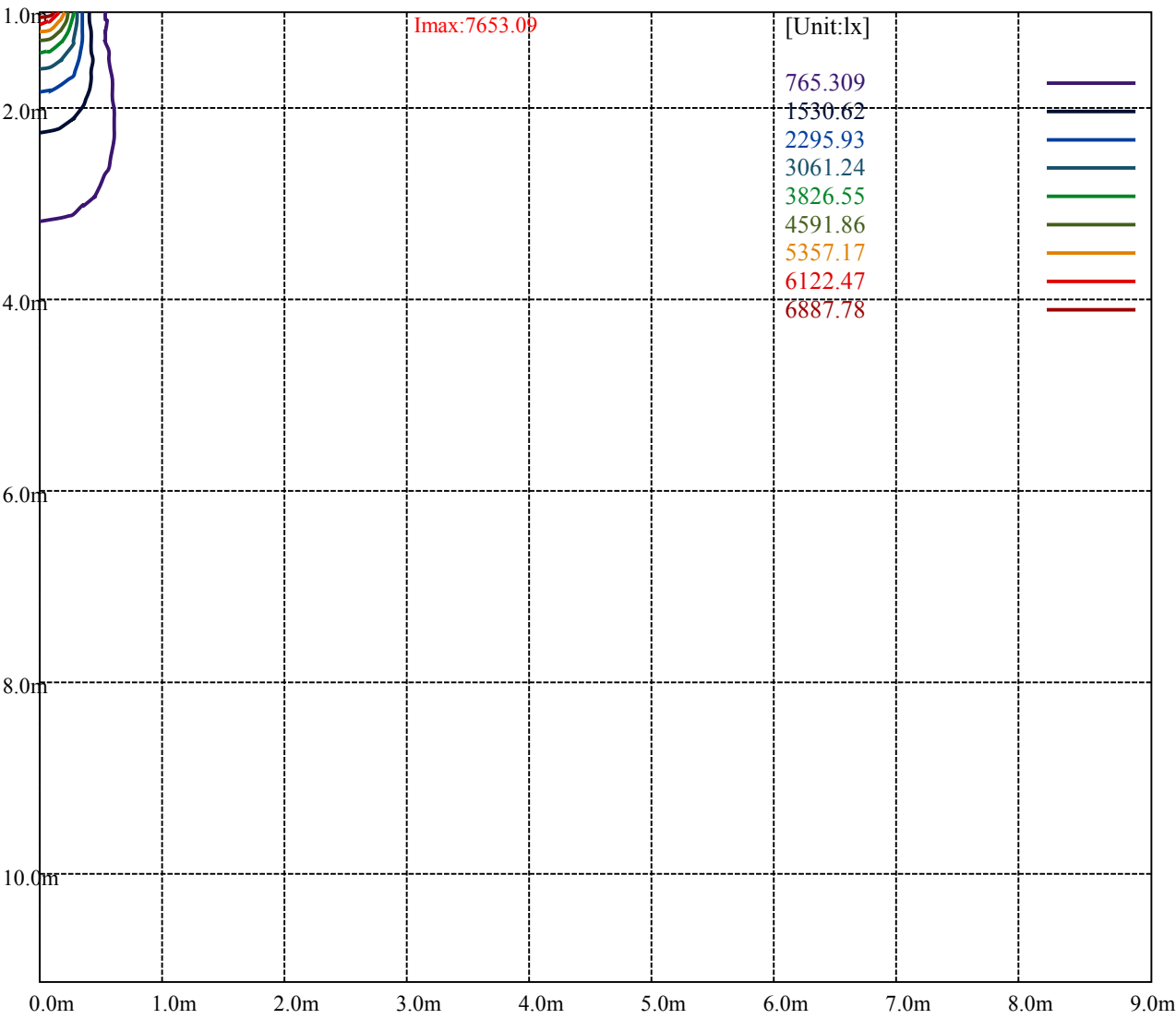
[Unit:cd]

Road

Imax:7653.09	
(10%Imax) 765.309	
(20%Imax) 1530.62	
(30%Imax) 2295.93	
(40%Imax) 3061.24	
(50%Imax) 3826.55	
(60%Imax) 4591.86	
(70%Imax) 5357.17	
(80%Imax) 6122.47	
(90%Imax) 6887.78	



(10%Emax)	85.03433	—
(20%Emax)	170.0689	—
(30%Emax)	255.1033	—
(40%Emax)	340.1367	—
(50%Emax)	425.1711	—
(60%Emax)	510.2056	—
(70%Emax)	595.24	—
(80%Emax)	680.2745	—
(90%Emax)	765.3088	—



Luminance Table

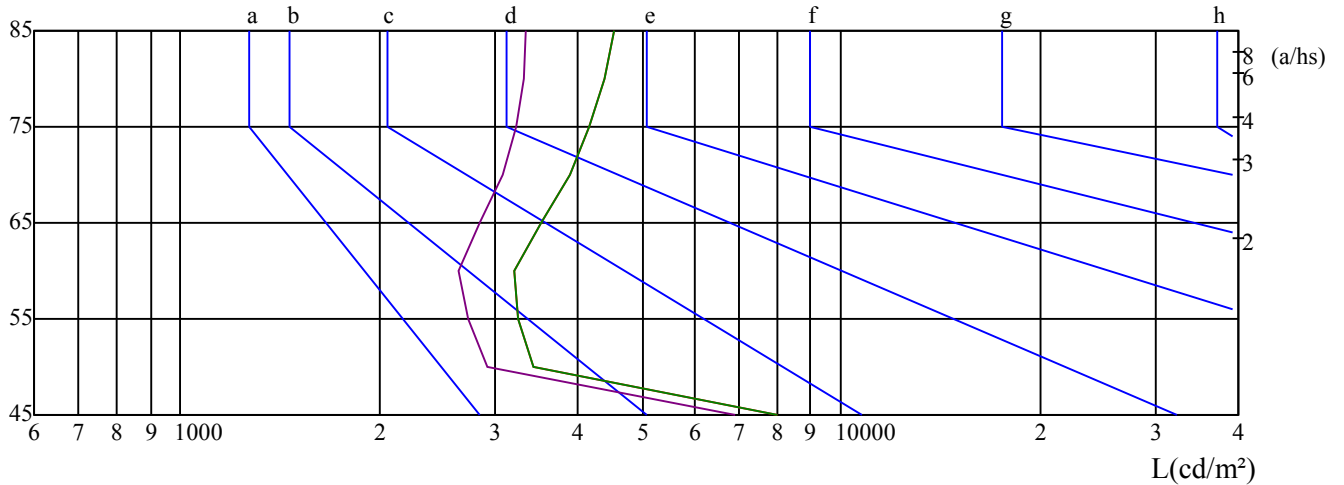
γ	45	50	55	60	65	70	75	80	85
C0	8019	3419	3252	3198	3506	3889	4151	4382	4532
C45	6922	2907	2723	2633	2836	3084	3220	3314	3325
C90	8019	3419	3252	3198	3506	3889	4151	4382	4532

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
8165	8165	8165	13753	13753	13753	36632	36632	36632

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

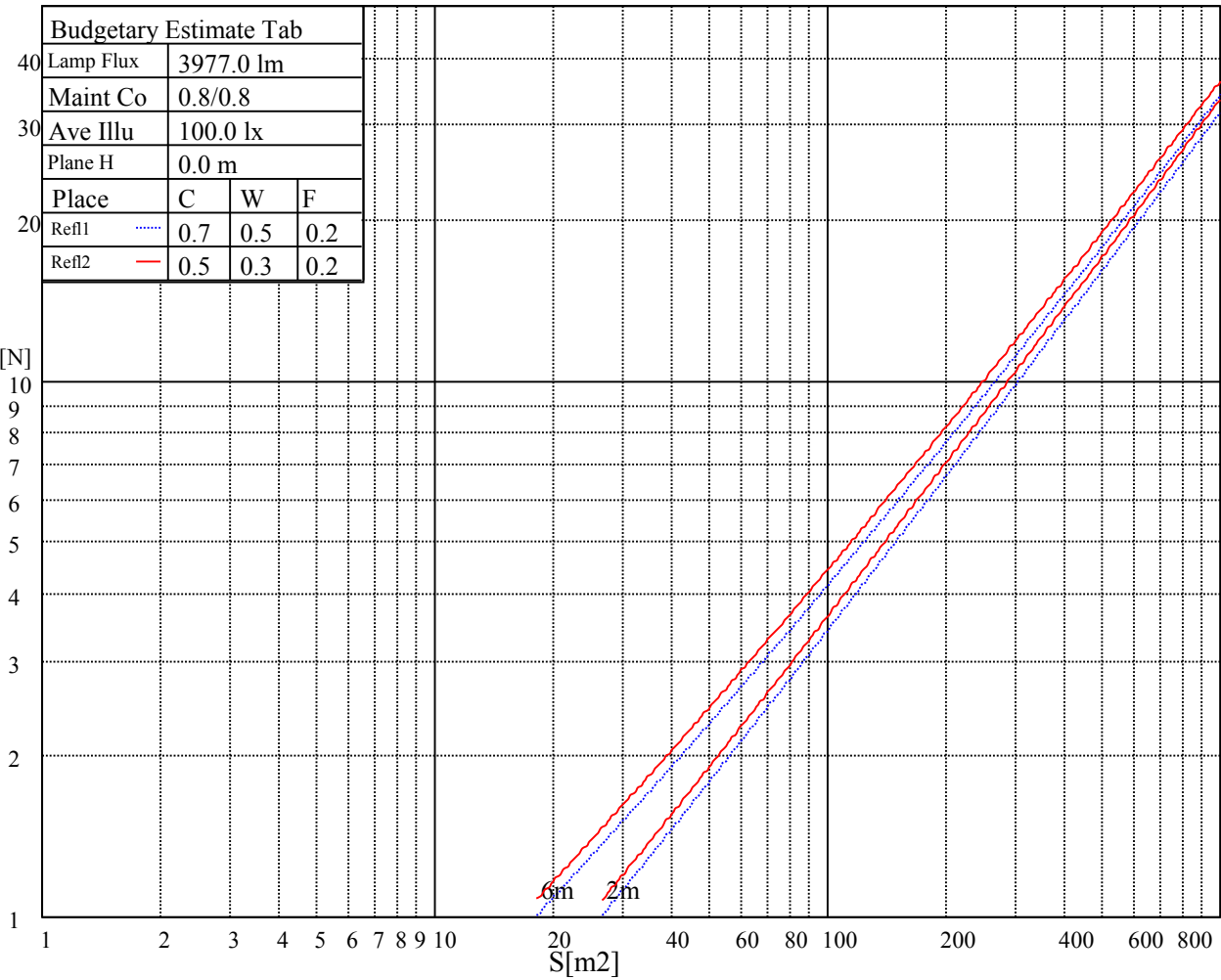
Luminance Limiting Curve

 $\gamma(^{\circ})$ 

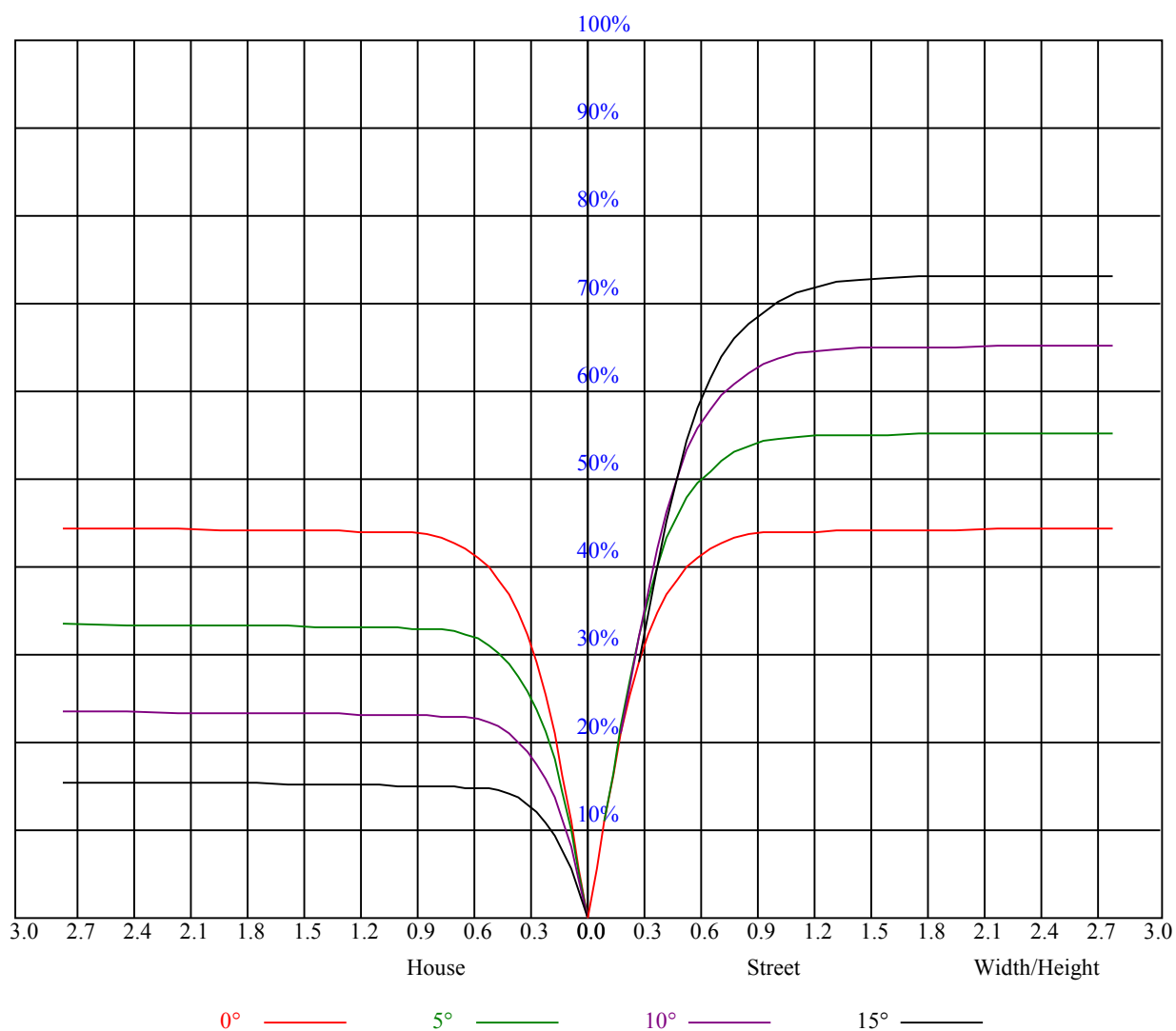
C0 ———

C45 ———

C90 ———



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	1.07	1.07	1.07	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	0.95	0.97	0.95	0.93	0.94	0.92	0.90	0.90	0.89	0.88	0.87	0.86	0.85	0.84
2	0.94	0.90	0.87	0.92	0.89	0.86	0.89	0.87	0.85	0.87	0.85	0.83	0.84	0.83	0.81	0.80
3	0.89	0.85	0.82	0.88	0.84	0.81	0.85	0.82	0.80	0.83	0.81	0.79	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	0.78	0.76	0.74	0.73
5	0.81	0.76	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	0.77	0.73	0.70	0.77	0.73	0.69	0.75	0.72	0.69	0.74	0.71	0.69	0.73	0.70	0.68	0.67
7	0.74	0.70	0.67	0.74	0.69	0.66	0.73	0.69	0.66	0.72	0.68	0.66	0.71	0.68	0.65	0.64
8	0.71	0.67	0.64	0.71	0.67	0.64	0.70	0.66	0.64	0.69	0.66	0.63	0.68	0.65	0.63	0.62
9	0.69	0.64	0.62	0.68	0.64	0.61	0.68	0.64	0.61	0.67	0.63	0.61	0.66	0.63	0.61	0.60
10	0.66	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	0.59	0.58



NATA 2-1702-E

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	7650.56	7569.00	6914.81	5544.56	3304.69	1757.81	1426.50	975.38	470.81		
45.0	7647.19	7574.63	6899.63	5466.38	3191.06	1791.56	1388.25	917.44	457.88		
90.0	7651.69	7440.19	6503.06	4867.88	2623.50	1584.00	1112.34	759.38	286.71		
135.0	7662.94	7438.50	6629.63	5130.56	2866.50	1632.38	1324.69	834.19	353.25		
180.0	7650.56	7321.50	6397.88	4632.19	2441.81	1566.56	1097.04	748.58	294.98		
225.0	7647.19	7331.63	6481.13	4786.88	2580.19	1557.56	1109.31	779.12	270.79		
270.0	7651.69	7502.06	6804.56	5442.75	3452.06	1748.81	1391.06	933.19	451.69		
315.0	7662.94	7500.38	6675.19	5153.63	2980.13	1665.00	1343.25	885.54	391.39		
360.0	7650.56	7569.00	6914.81	5544.56	3304.69	1757.81	1426.50	975.38	470.81		
C/ γ (°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0		
0.0	80.94	18.68	17.10	16.54	16.09	16.71	16.99	16.71	15.92		
45.0	59.68	18.96	17.55	16.71	16.09	16.99	17.27	17.10	15.98		
90.0	28.63	20.08	18.00	16.71	17.94	18.17	18.11	17.44	16.20		
135.0	34.20	19.46	18.96	17.33	20.03	20.53	19.07	18.34	16.71		
180.0	31.11	19.74	17.89	16.88	19.52	20.03	19.52	18.00	16.31		
225.0	30.32	18.90	17.61	16.82	17.04	18.62	18.51	17.66	15.92		
270.0	61.31	18.39	17.33	16.48	16.20	16.82	17.04	16.54	15.64		
315.0	44.21	19.86	17.38	16.26	16.26	17.10	17.04	16.76	16.09		
360.0	80.94	18.68	17.10	16.54	16.09	16.71	16.99	16.71	15.92		
C/ γ (°)	90.0										
0.0	14.40										
45.0	14.29										
90.0	14.29										
135.0	14.40										
180.0	14.40										
225.0	14.29										
270.0	14.29										
315.0	14.34										
360.0	14.40										

Equipment:
Temperature(°C): 25.0

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

Operator: NT07
Distance(m): 7.50