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NATA

LumCAT: 3-1550-A3
Luminaire: 99.02.73.172+92.76.365.00
Report No: NATA0100
Test No: GC2019011517
LampCAT: CITIZEN CLU720
Lamp flux(lm): 1995.0
Number of Lamps: 1
Length(mm): 78
Phm Type: C

Voltage(V): 35.0000
Current(A): 0.5000
Power (W): 17.5000
PF: 0.0000
Ballast type: DC
Width(mm): 78
Height(mm): 0

Photometric Results

Lumens(lm): 1817.14
Efficiency(%): 91.08%
Lumens(lm)/Power(W): 104.84
Central intensity(cd): 3223.266
Maximum intensity(cd): 3223.266
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=42.1
[C90/270]Total=42.1
Field angle(10%Imax): [C0/180]Total=73.6
[C90/270]Total=73.6
Maximum s/h(1/2): C0_180=0.68 C90_270=0.68
Maximum s/h(1/4): C0_180=0.70 C90_270=0.70
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 91.96%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 97.808%

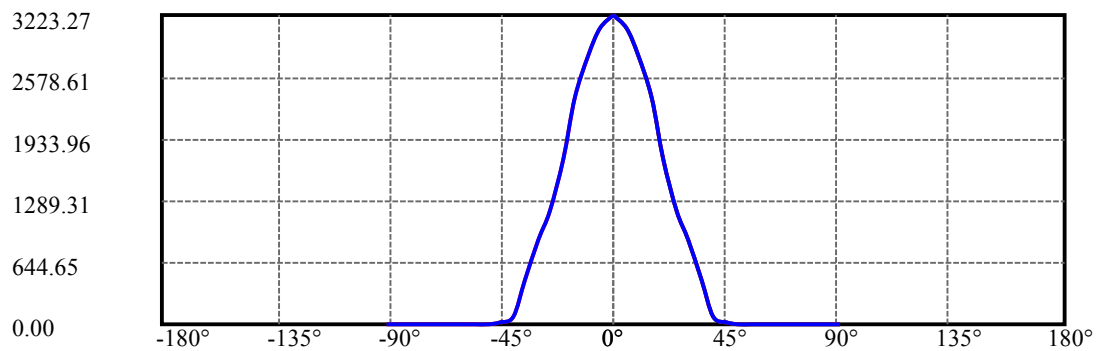
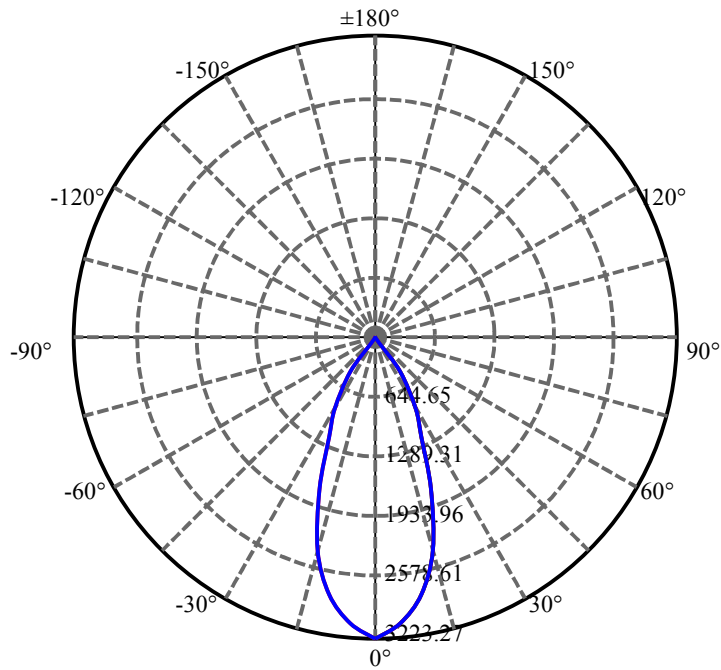
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	3223.266	19.276	19.276	.966%	1.061%
5.0	3078.211	147.056	166.332	7.371%	9.154%
10.0	2802.445	266.745	433.077	13.371%	23.833%
15.0	2362.781	335.204	768.281	16.802%	42.280%
20.0	1728.141	323.981	1092.263	16.240%	60.109%
25.0	1181.130	273.612	1365.875	13.715%	75.166%
30.0	873.485	239.395	1605.27	12.000%	88.341%
35.0	459.963	144.612	1749.882	7.249%	96.299%
40.0	76.099	26.812	1776.694	1.344%	97.774%
45.0	14.027	5.437	1782.131	.273%	98.074%
50.0	9.893	4.154	1786.285	.208%	98.302%
55.0	9.098	4.085	1790.371	.205%	98.527%
60.0	8.620	4.092	1794.463	.205%	98.752%
65.0	8.248	4.097	1798.56	.205%	98.978%
70.0	7.995	4.118	1802.678	.206%	99.204%
75.0	7.812	4.136	1806.814	.207%	99.432%
80.0	7.664	4.137	1810.951	.207%	99.660%
85.0	7.573	4.135	1815.086	.207%	99.887%
90.0	7.481	2.050	1817.136	.103%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1605.27	80.46%	88.34%
0-40	1776.69	89.06%	97.77%
0-60	1794.46	89.95%	98.75%
0-90	1815.09	90.98%	99.89%
0-120	1815.09	90.98%	99.89%
0-180	1817.14	91.08%	100.00%
60-90	24.72	1.24%	1.36%
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%
0-26.83	1453.71	72.87%	80.00%

ZONAL LUMEN SUMMARY

0-10	433.08
10-20	659.19
20-30	513.01
30-40	171.42
40-50	9.59
50-60	8.18
60-70	8.22
70-80	8.27
80-90	4.14
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:

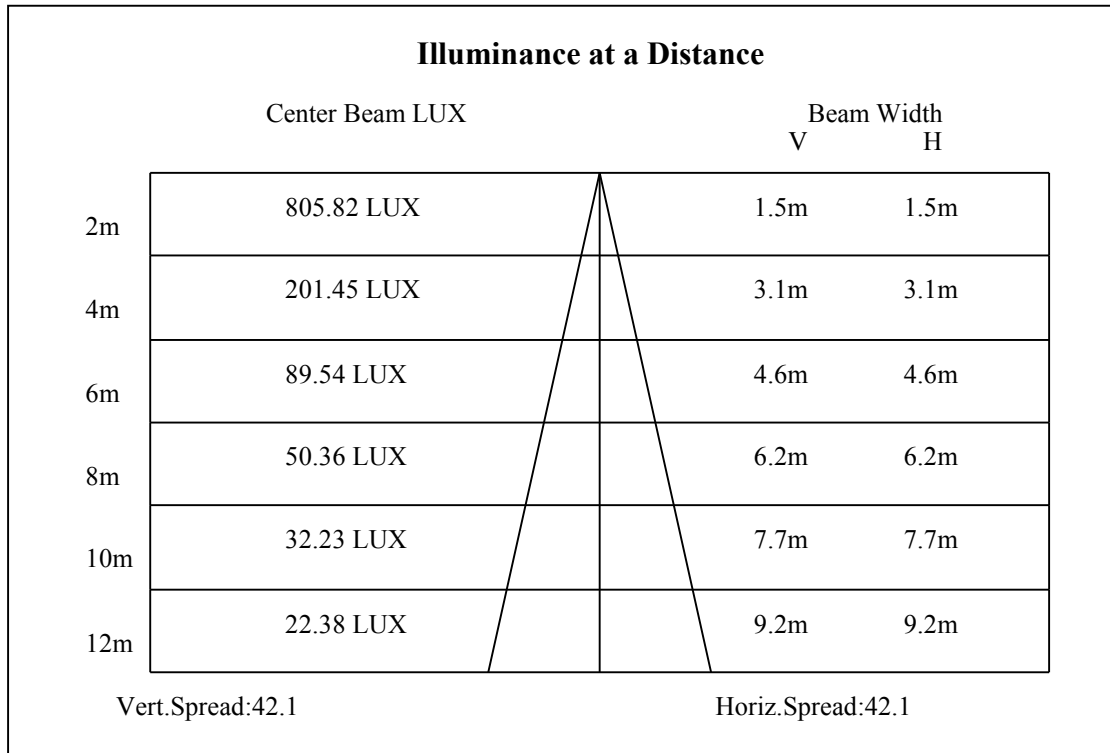
C90/C270:

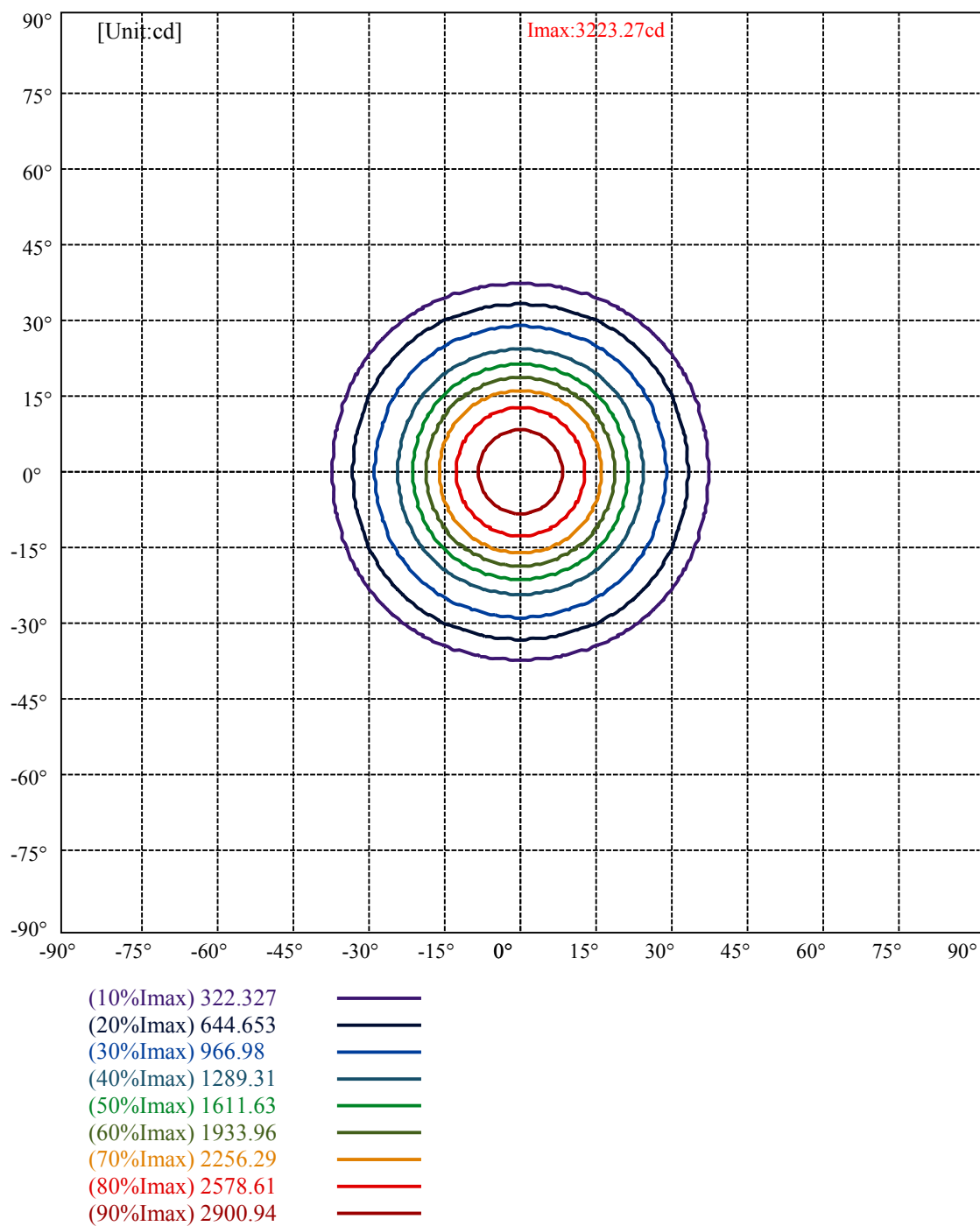
Field angle(10%Imax):C0/180Left:36.8 Right:36.8

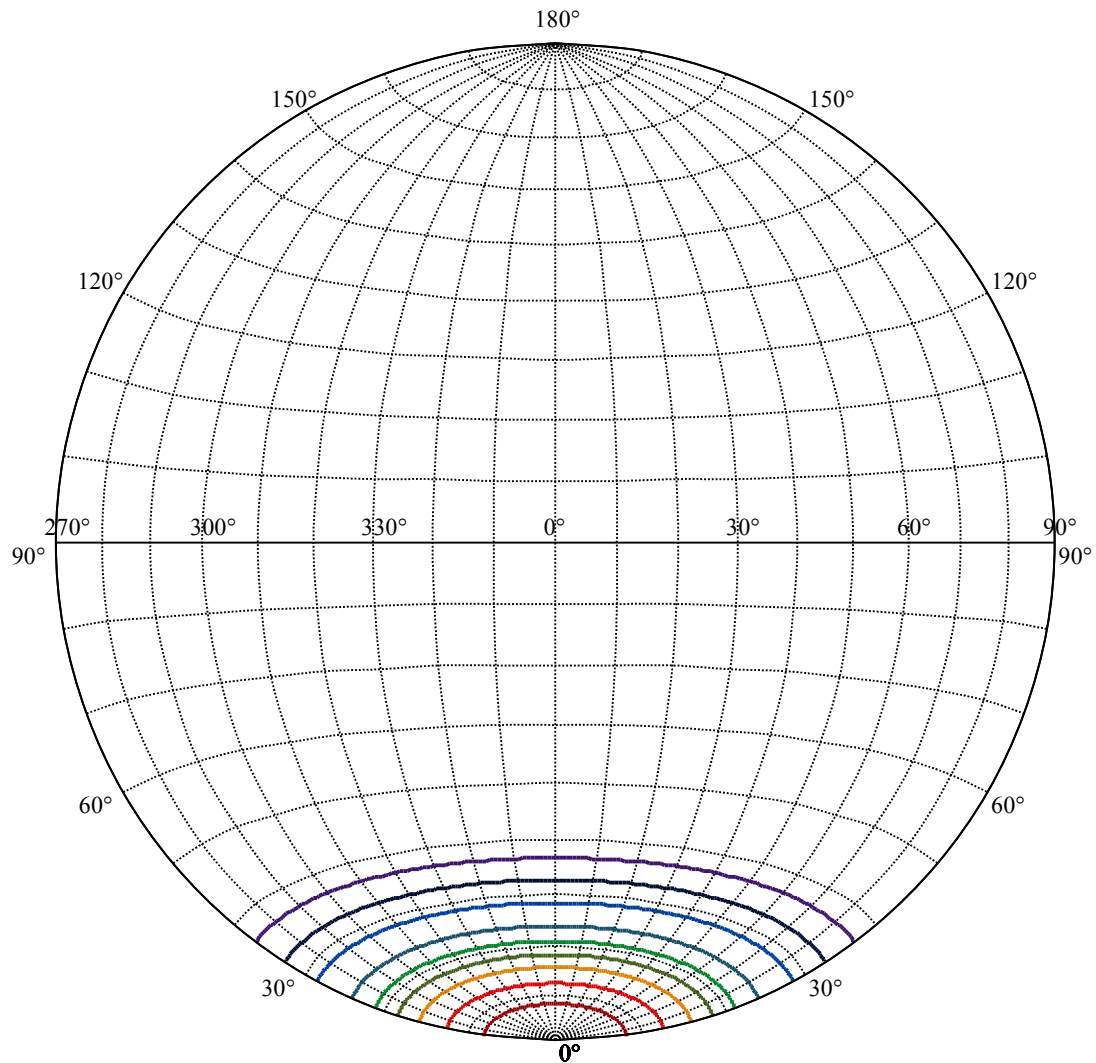
:C90/270Left:36.8 Right:36.8

Beam Angle(50%Imax):C0/180Left:21.1 Right:21.1

:C90/270Left:21.1 Right:21.1







House

[Unit:cd]

Road

Imax:3223.27

(10%Imax) 322.327

(20%Imax) 644.653

(30%Imax) 966.98

(40%Imax) 1289.31

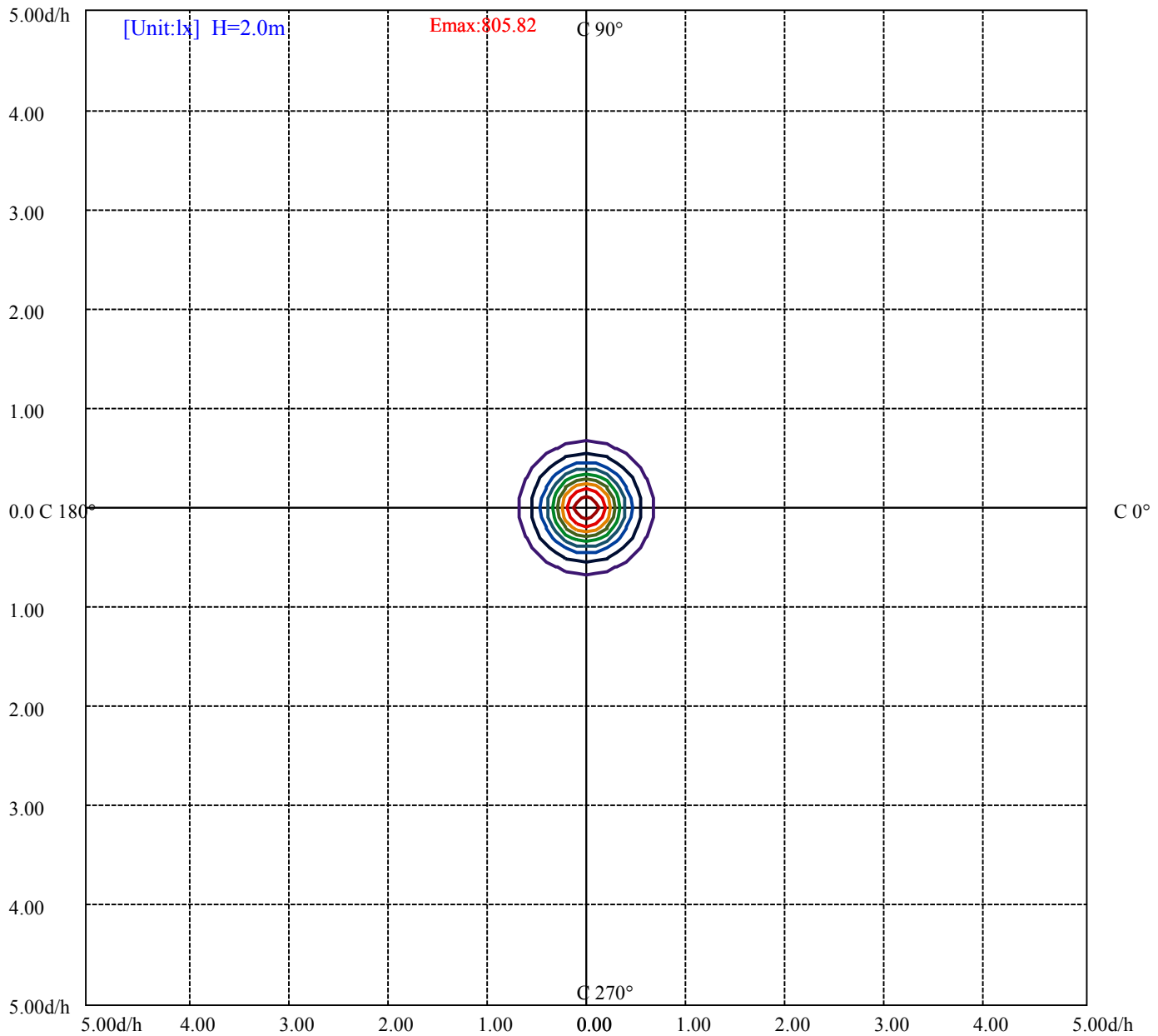
(50%Imax) 1611.63

(60%Imax) 1933.96

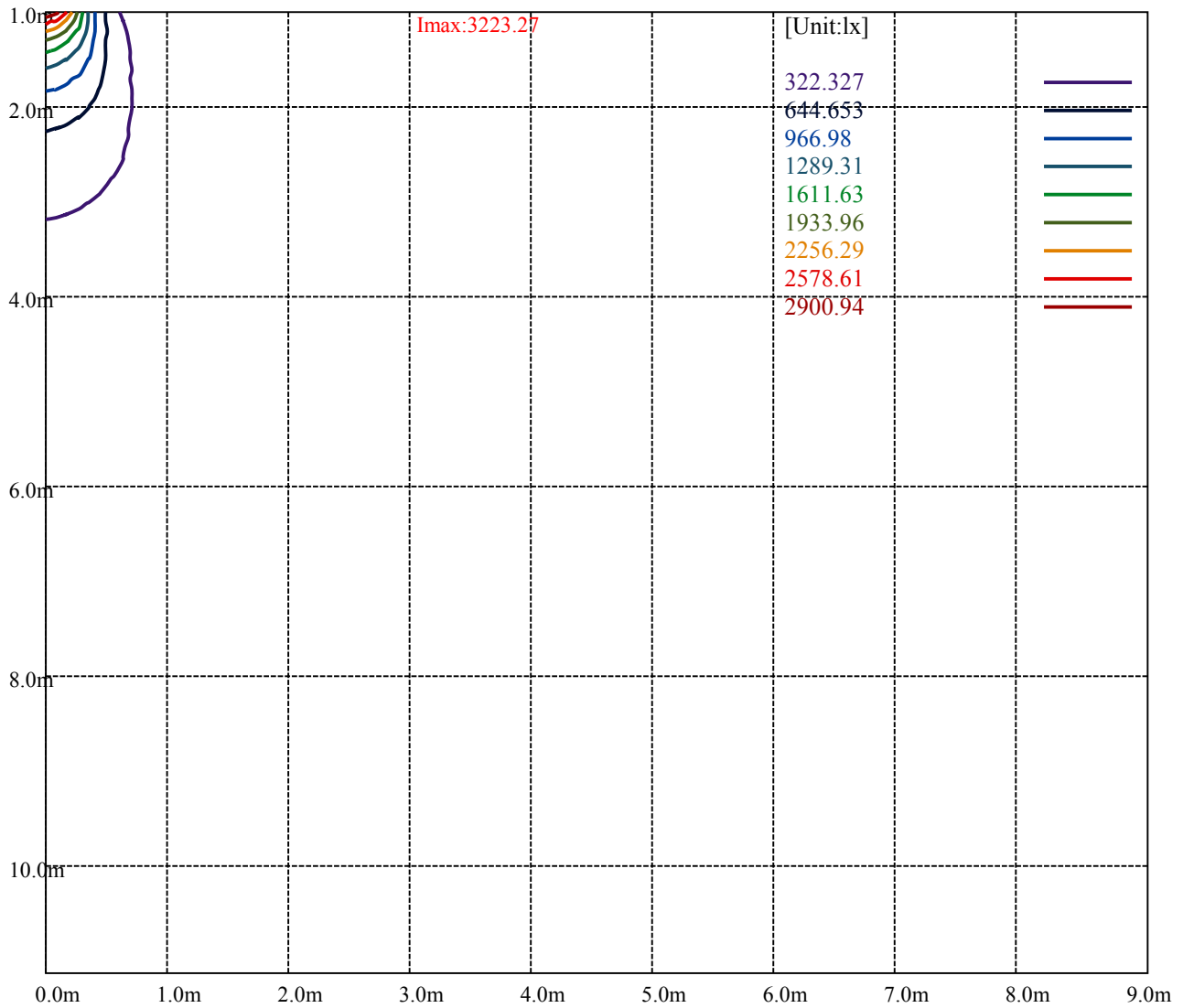
(70%Imax) 2256.29

(80%Imax) 2578.61

(90%Imax) 2900.94



(10%Emax) 80.5815	—
(20%Emax) 161.163	—
(30%Emax) 241.7445	—
(40%Emax) 322.325	—
(50%Emax) 402.9075	—
(60%Emax) 483.49	—
(70%Emax) 564.07	—
(80%Emax) 644.6525	—
(90%Emax) 725.235	—



Luminance Table

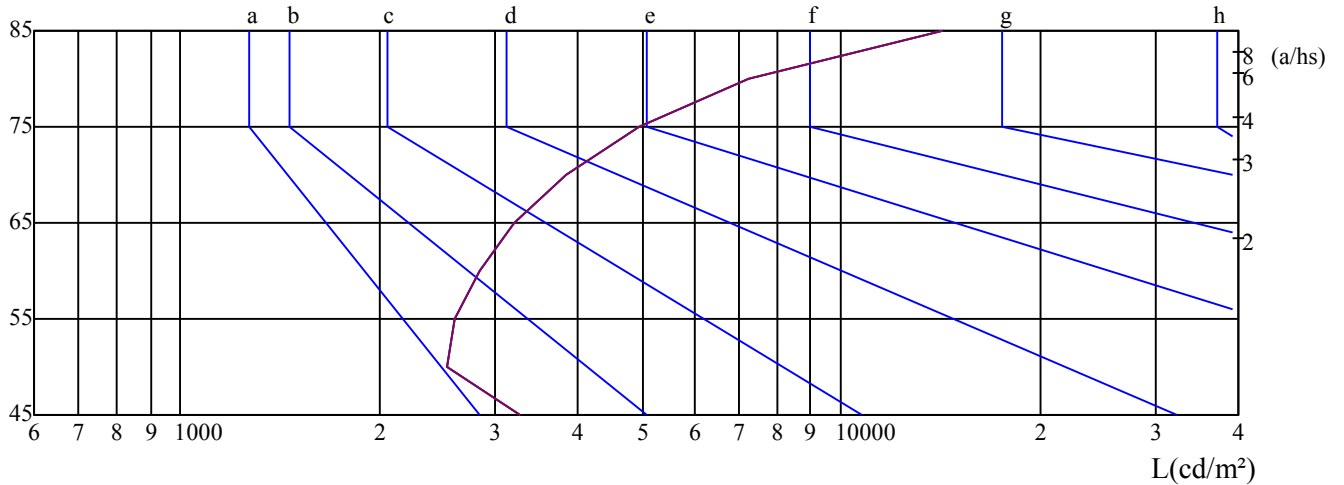
γ	45	50	55	60	65	70	75	80	85
C0	3261	2530	2607	2834	3208	3842	4961	7254	14281
C45	3261	2530	2607	2834	3208	3842	4961	7254	14281
C90	3261	2530	2607	2834	3208	3842	4961	7254	14281

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
3208	3208	3208	4961	4961	4961	14281	14281	14281

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

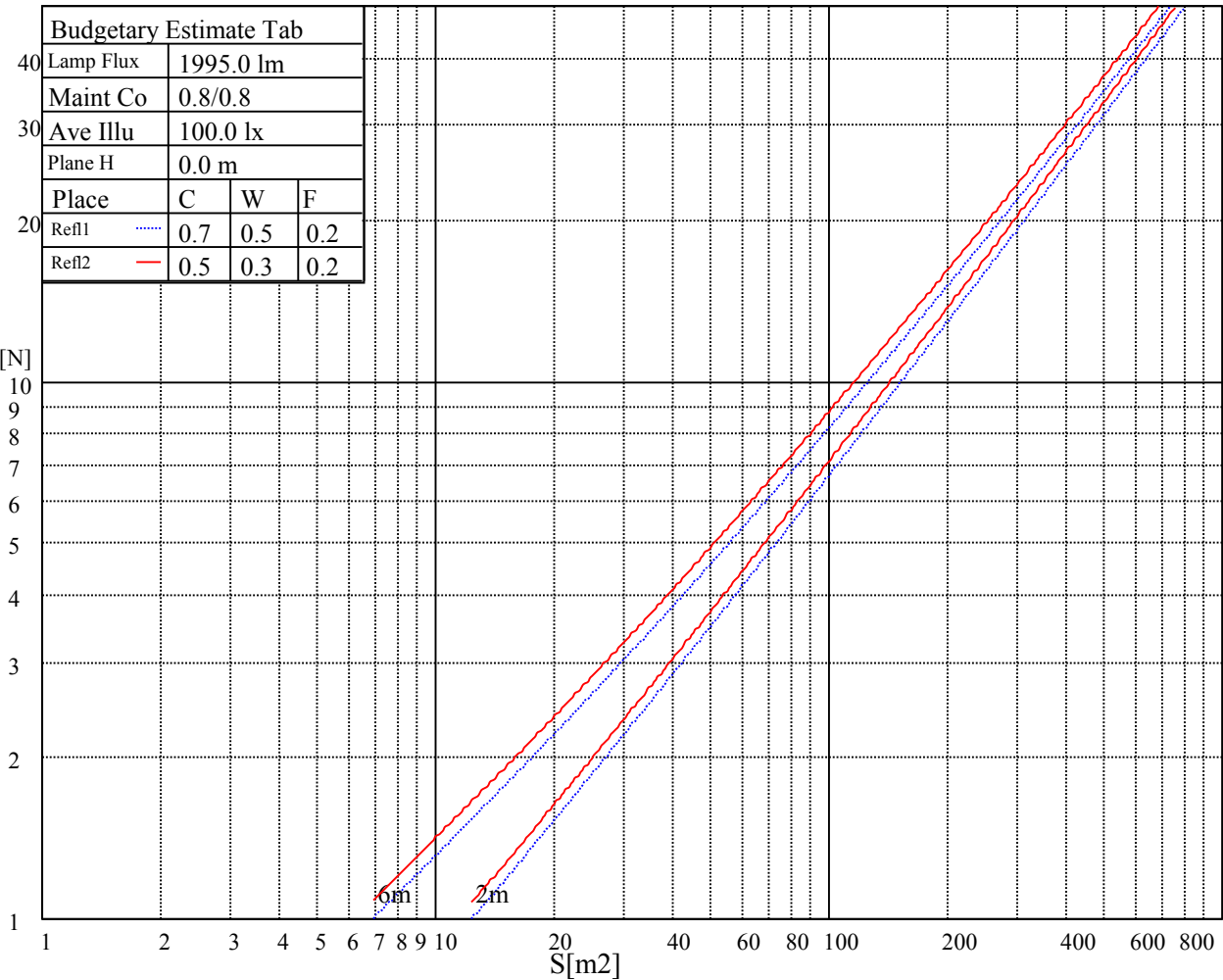
 $\gamma(^{\circ})$ 

C0 ———

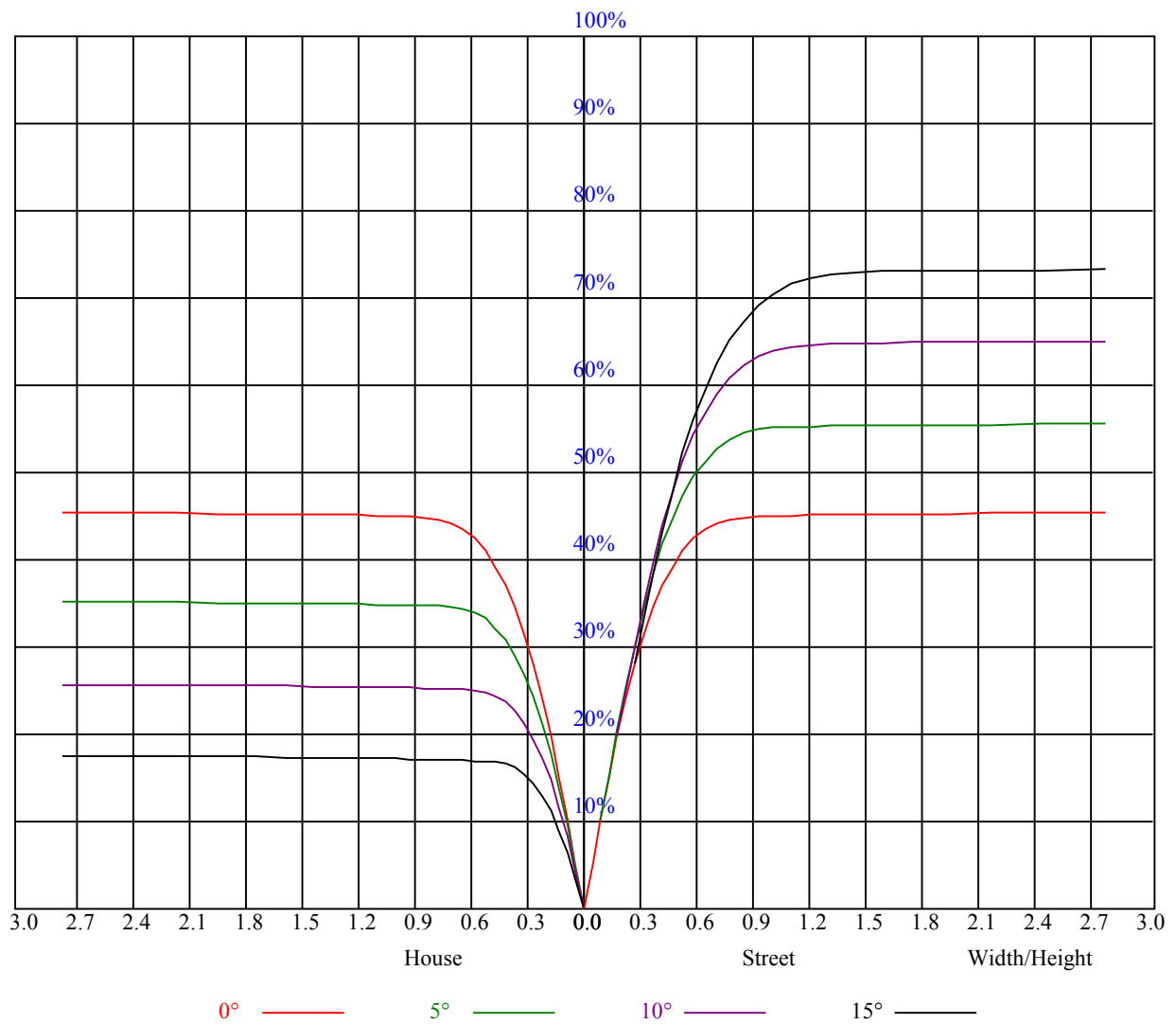
C45 ———

C90 ———

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	2.24	3.15	2.60	3.46	3.78	2.26	3.17	2.62	3.48	3.80
	3H	5.35	6.16	5.74	6.49	6.86	5.40	6.20	5.78	6.54	6.91
	4H	7.05	7.80	7.46	8.15	8.54	7.09	7.83	7.50	8.19	8.58
	6H	8.96	9.64	9.38	10.02	10.41	9.00	9.68	9.42	10.06	10.46
	8H	10.02	10.66	10.46	11.05	11.46	10.07	10.71	10.51	11.10	11.51
	12H	11.75	12.36	12.18	12.74	13.17	11.81	12.42	12.24	12.80	13.23
4H	2H	3.11	3.86	3.52	4.22	4.61	3.13	3.88	3.54	4.23	4.62
	3H	6.48	7.10	6.90	7.51	7.91	6.50	7.12	6.92	7.53	7.93
	4H	8.35	8.90	8.79	9.32	9.77	8.37	8.92	8.81	9.34	9.79
	6H	10.42	10.88	10.89	11.34	11.81	10.45	10.91	10.92	11.36	11.84
	8H	11.58	12.01	12.05	12.46	12.94	11.62	12.05	12.10	12.51	12.98
	12H	13.21	13.58	13.70	14.07	14.55	13.26	13.64	13.76	14.13	14.61
8H	4H	9.06	9.50	9.54	9.95	10.42	9.08	9.51	9.56	9.97	10.44
	6H	11.40	11.74	11.91	12.25	12.74	11.43	11.77	11.94	12.28	12.76
	8H	12.75	13.05	13.29	13.58	14.08	12.79	13.10	13.33	13.62	14.12
	12H	14.53	14.79	15.05	15.28	15.87	14.58	14.84	15.11	15.34	15.93
12H	4H	9.26	9.64	9.75	10.12	10.60	9.28	9.65	9.77	10.14	10.62
	6H	11.92	12.02	12.25	12.49	13.04	11.94	12.04	12.28	12.52	13.07
	8H	13.20	13.46	13.72	13.95	14.54	13.24	13.50	13.76	14.00	14.58
Variation with the observer position at spacings:											
S = 1.0H		5.7/-8.2					5.7/-8.2				
S = 1.5H		8.0/-6.2					8.0/-6.2				
S = 2.0H		9.5/-4.7					9.5/-4.7				
Standard tables:		BK2					BK2				
Uncorrected UGR		0.5					0.5				



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	1.09	1.09	1.09	1.07	1.07	1.07	1.02	1.02	1.02	0.98	0.98	0.98	0.94	0.94	0.94	0.92
1	1.02	0.99	0.97	1.00	0.97	0.95	0.96	0.94	0.93	0.92	0.91	0.90	0.89	0.88	0.87	0.86
2	0.96	0.92	0.89	0.94	0.91	0.88	0.91	0.89	0.86	0.88	0.86	0.85	0.86	0.84	0.83	0.81
3	0.91	0.86	0.83	0.89	0.86	0.83	0.87	0.84	0.81	0.85	0.82	0.80	0.83	0.81	0.79	0.77
4	0.86	0.82	0.78	0.85	0.81	0.78	0.83	0.80	0.77	0.81	0.78	0.76	0.80	0.77	0.75	0.74
5	0.82	0.77	0.74	0.81	0.77	0.74	0.80	0.76	0.73	0.78	0.75	0.72	0.77	0.74	0.72	0.70
6	0.78	0.74	0.70	0.78	0.73	0.70	0.76	0.72	0.69	0.75	0.72	0.69	0.74	0.71	0.69	0.67
7	0.75	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
8	0.72	0.67	0.64	0.71	0.67	0.64	0.70	0.66	0.63	0.69	0.66	0.63	0.69	0.65	0.63	0.62
9	0.69	0.64	0.61	0.68	0.64	0.61	0.68	0.64	0.61	0.67	0.63	0.61	0.66	0.63	0.60	0.59
10	0.66	0.62	0.59	0.66	0.62	0.59	0.65	0.61	0.58	0.64	0.61	0.58	0.64	0.61	0.58	0.57



NATA 3-1550-A3

Intensity data(cd)

Appendix Page: 15 Total:15

C/γ(°)	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0
0.0	3215.25	3165.75	2921.63	2597.63	2015.44	1366.88	1025.44	698.63	341.44
45.0	3225.94	3087.56	2827.13	2455.88	1851.75	1267.31	921.94	570.94	61.37
90.0	3218.63	3002.06	2721.38	2269.13	1607.63	1109.48	811.24	370.80	28.24
135.0	3233.25	3023.44	2740.50	2250.56	1651.50	1139.63	827.44	367.88	27.62
180.0	3215.25	2981.25	2679.19	2135.81	1430.44	1058.85	751.84	203.29	22.22
225.0	3225.94	3067.88	2764.13	2241.56	1612.13	1119.26	804.66	376.88	27.00
270.0	3218.63	3159.00	2896.31	2499.75	1828.13	1265.63	930.94	547.31	51.36
315.0	3233.25	3138.75	2869.31	2451.94	1828.13	1122.02	914.40	543.99	49.56
360.0	3215.25	3165.75	2921.63	2597.63	2015.44	1366.88	1025.44	698.63	341.44
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	21.99	10.46	9.39	8.83	8.44	8.16	7.88	7.76	7.65
45.0	17.04	10.24	9.28	8.72	8.33	7.99	7.88	7.65	7.54
90.0	11.14	9.73	9.00	8.55	8.16	7.93	7.76	7.65	7.48
135.0	10.97	9.73	9.00	8.55	8.21	7.99	7.76	7.65	7.54
180.0	10.52	9.56	8.89	8.49	8.16	7.93	7.76	7.65	7.59
225.0	10.86	9.68	8.94	8.49	8.16	7.88	7.76	7.59	7.59
270.0	14.68	9.84	9.17	8.66	8.27	8.04	7.82	7.65	7.59
315.0	15.02	9.90	9.11	8.66	8.27	8.04	7.88	7.71	7.59
360.0	21.99	10.46	9.39	8.83	8.44	8.16	7.88	7.76	7.65
C/γ(°)	90.0								
0.0	7.54								
45.0	7.43								
90.0	7.48								
135.0	7.48								
180.0	7.48								
225.0	7.48								
270.0	7.48								
315.0	7.48								
360.0	7.54								