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NATA

LumCAT: 1546-E	
Luminaire: 92.70.043.00	
Report No: NATA0100	Voltage(V): 9.4000
Test No: GC2019010203	Current(A): 0.3000
LampCAT: CREE CXA1304	Power (W): 2.8200
Lamp flux(lm): 322.0	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 21	Width(mm): 21
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 278.53
Efficiency(%): 86.50%
Lumens(lm)/Power(W): 99.56
Central intensity(cd): 417.966
Maximum intensity(cd): 417.966
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=39.4
[C90/270]Total=39.4
Field angle(10%Imax): [C0/180]Total=88.0
[C90/270]Total=88.0
Maximum s/h(1/2): C0_180=0.62 C90_270=0.62
Maximum s/h(1/4): C0_180=0.69 C90_270=0.69
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 87.19%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 97.407%

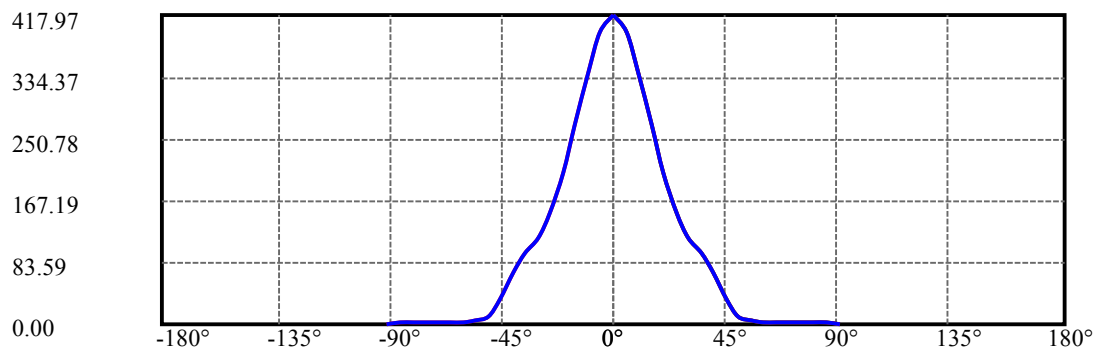
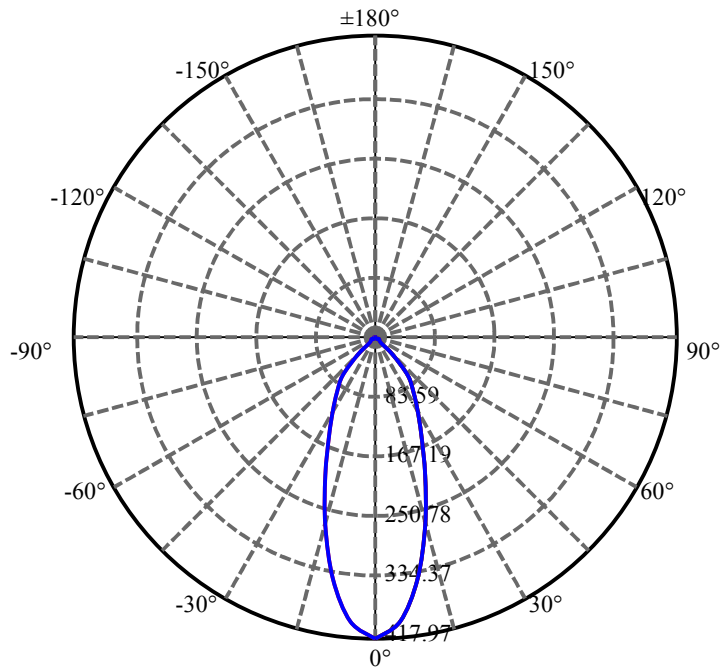
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	417.966	2.500	2.5	.776%	.897%
5.0	395.220	18.881	21.38	5.864%	7.676%
10.0	339.384	32.304	53.684	10.032%	19.274%
15.0	269.318	38.208	91.892	11.866%	32.992%
20.0	205.052	38.442	130.334	11.939%	46.794%
25.0	150.623	34.892	165.226	10.836%	59.321%
30.0	115.945	31.777	197.003	9.869%	70.730%
35.0	94.936	29.848	226.851	9.269%	81.446%
40.0	69.405	24.454	251.305	7.594%	90.226%
45.0	34.713	13.455	264.759	4.178%	95.056%
50.0	10.371	4.355	269.114	1.352%	96.620%
55.0	6.405	2.876	271.99	.893%	97.652%
60.0	3.143	1.492	273.482	.463%	98.188%
65.0	2.341	1.163	274.646	.361%	98.606%
70.0	1.990	1.025	275.67	.318%	98.974%
75.0	1.744	0.923	276.594	.287%	99.305%
80.0	1.603	0.865	277.459	.269%	99.616%
85.0	1.434	0.783	278.242	.243%	99.897%
90.0	1.048	0.287	278.529	.089%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	197.00	61.18%	70.73%
0-40	251.30	78.05%	90.23%
0-60	273.48	84.93%	98.19%
0-90	278.24	86.41%	99.90%
0-120	278.24	86.41%	99.90%
0-180	278.53	86.50%	100.00%
60-90	6.25	1.94%	2.24%
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%
0-34.33	222.82	69.20%	80.00%

ZONAL LUMEN SUMMARY

0-10	53.68
10-20	76.65
20-30	66.67
30-40	54.30
40-50	17.81
50-60	4.37
60-70	2.19
70-80	1.79
80-90	0.78
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

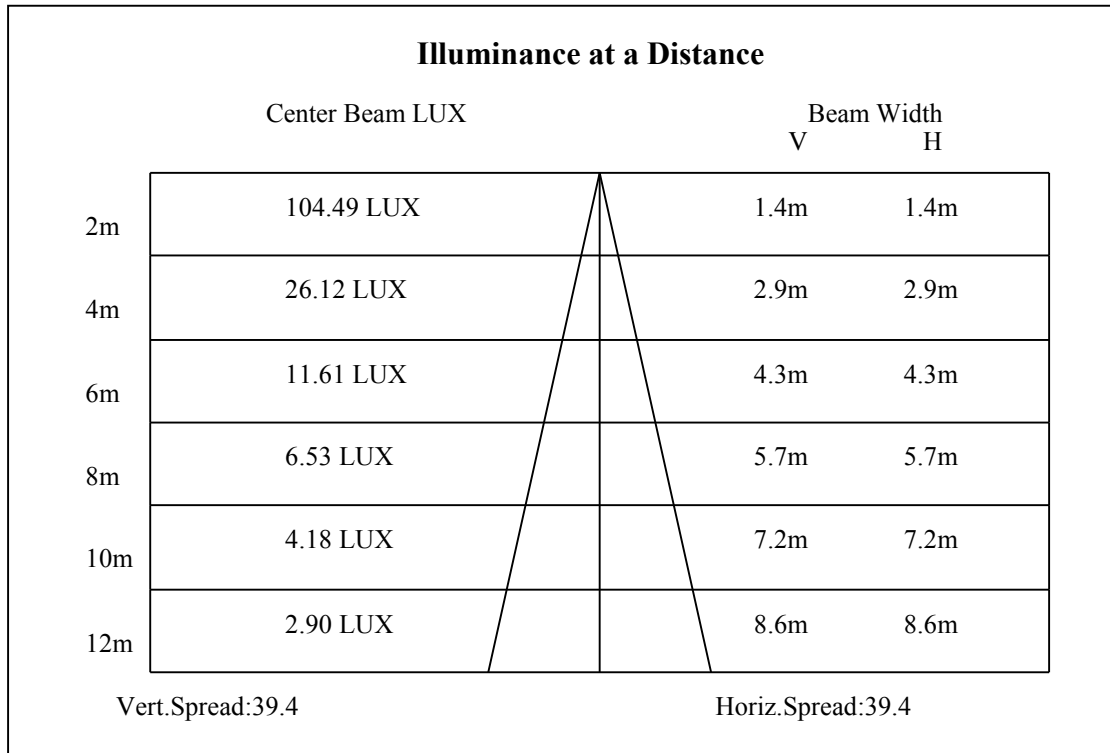
C0(Max): —————C0/C180: —————C90/C270: —————

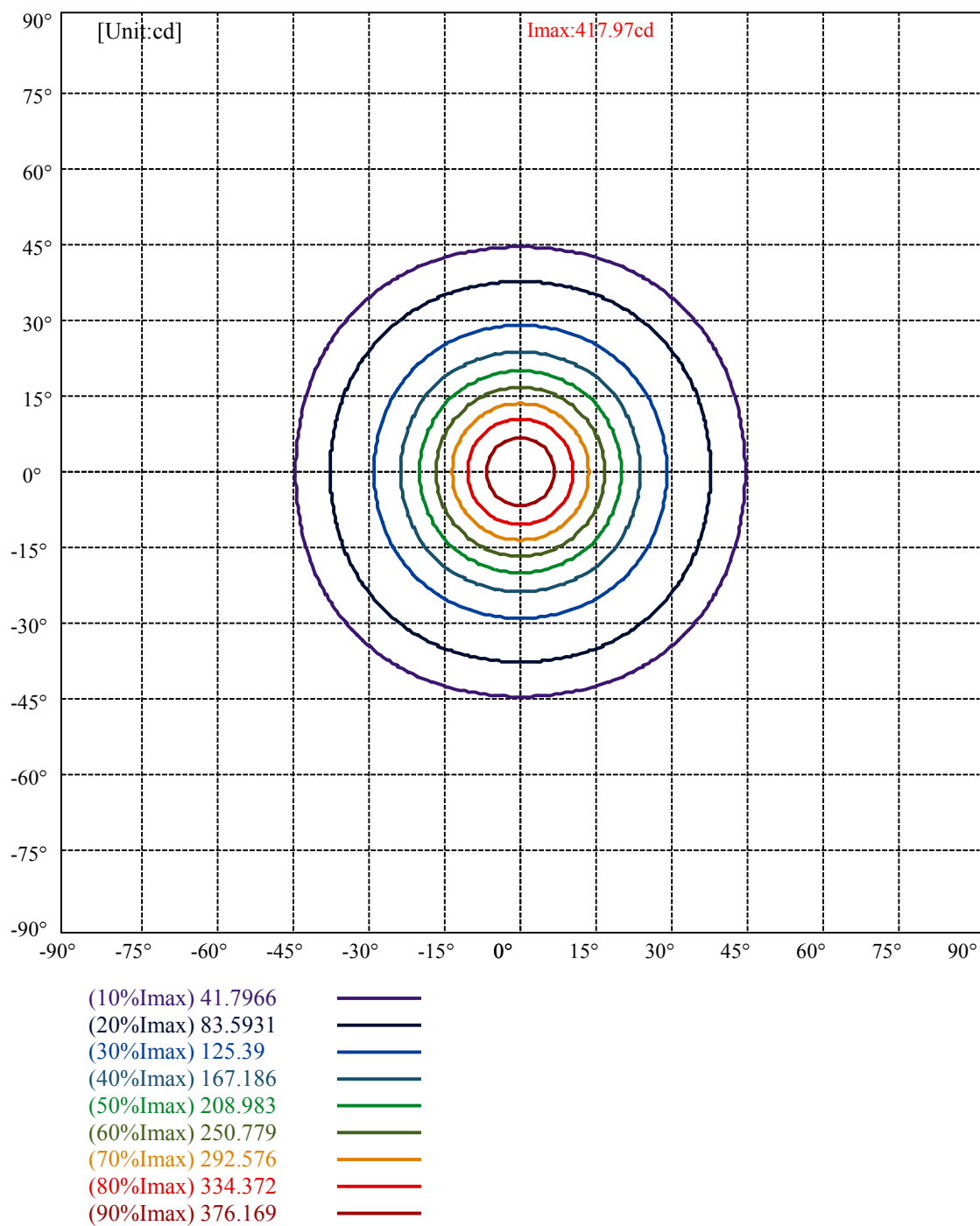
Field angle(10%Imax):C0/180Left:44.0 Right:44.0

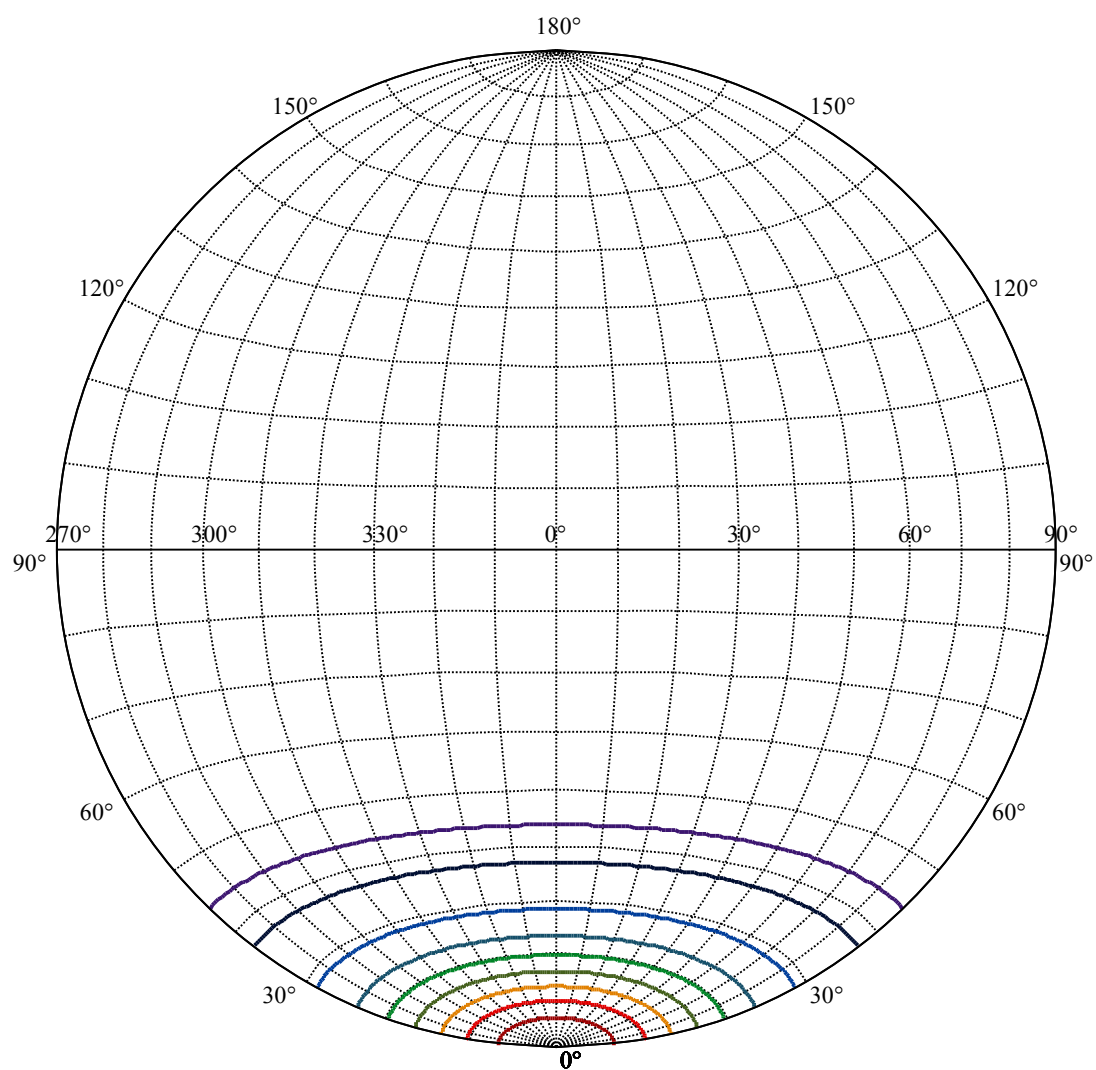
:C90/270Left:44.0 Right:44.0

Beam Angle(50%Imax):C0/180Left:19.7 Right:19.7

:C90/270Left:19.7 Right:19.7





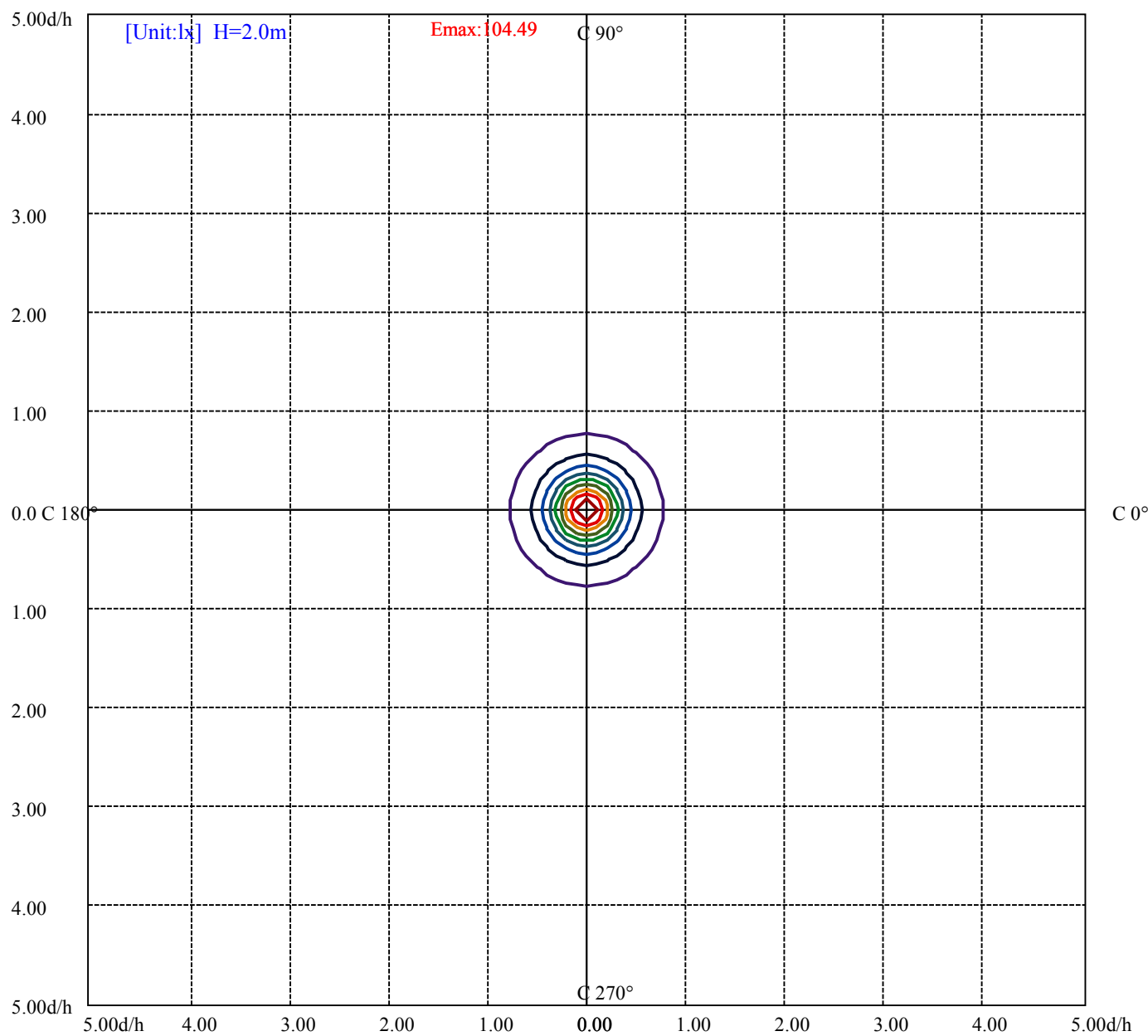


House

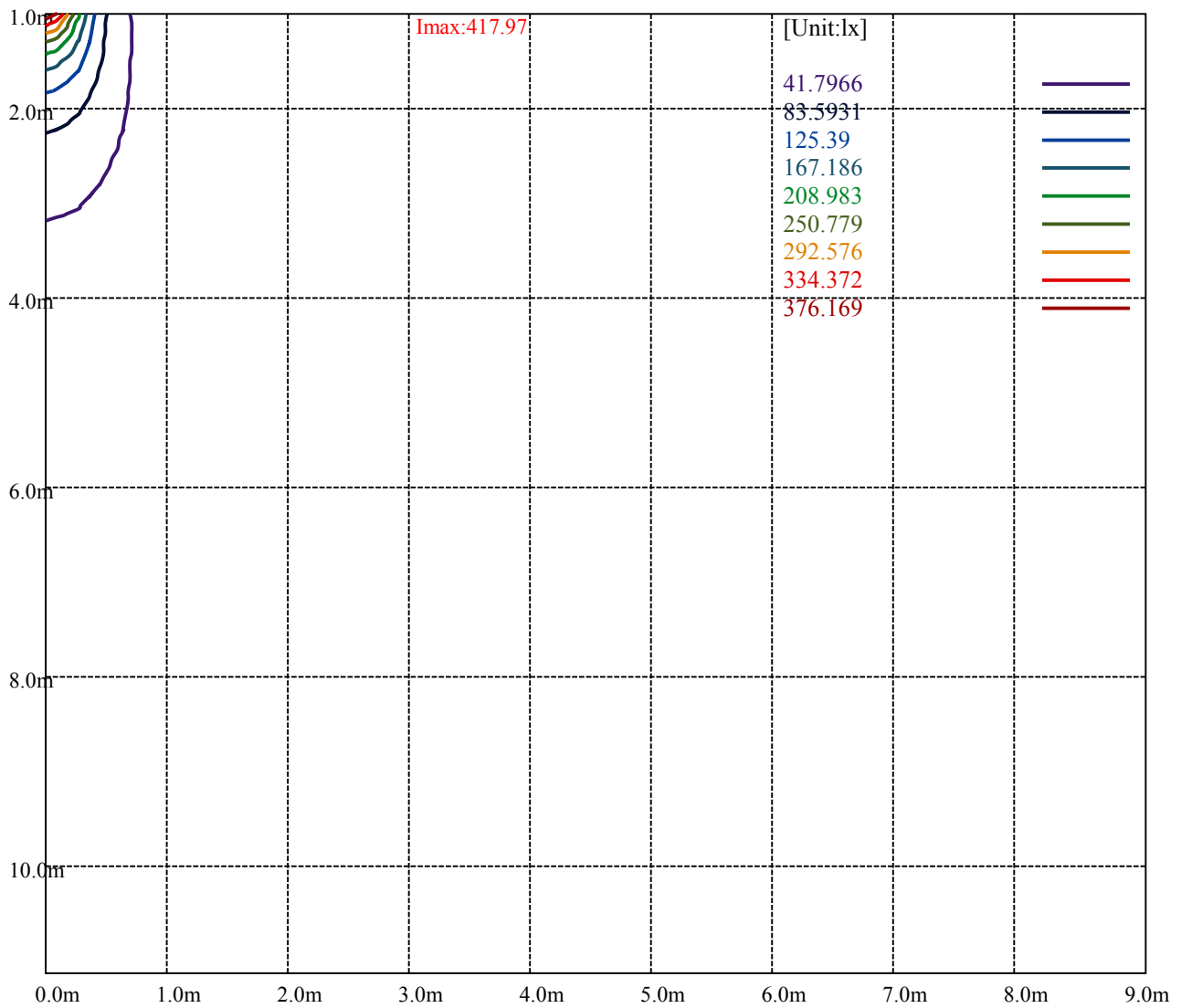
[Unit:cd]

Road

I_{max}:417.97(10%I_{max}) 41.7966(20%I_{max}) 83.5931(30%I_{max}) 125.39(40%I_{max}) 167.186(50%I_{max}) 208.983(60%I_{max}) 250.779(70%I_{max}) 292.576(80%I_{max}) 334.372(90%I_{max}) 376.169



(10%E _{max}) 10.44913	—
(20%E _{max}) 20.89825	—
(30%E _{max}) 31.34725	—
(40%E _{max}) 41.7965	—
(50%E _{max}) 52.2455	—
(60%E _{max}) 62.69475	—
(70%E _{max}) 73.14375	—
(80%E _{max}) 83.593	—
(90%E _{max}) 94.042	—



Luminance Table

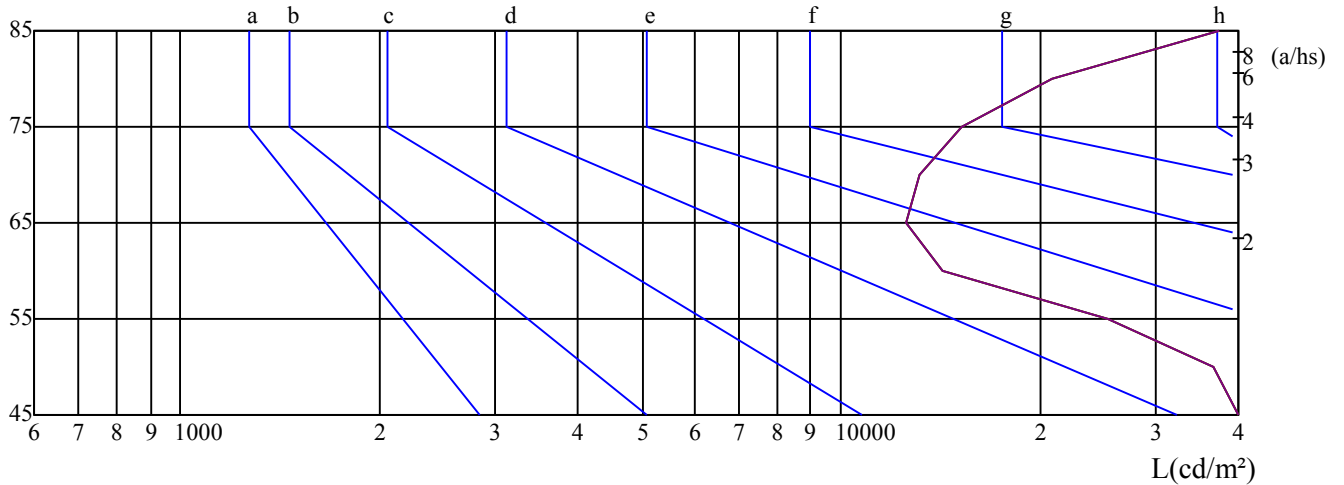
γ	45	50	55	60	65	70	75	80	85
C0	111320	36586	25323	14254	12563	13193	15277	20934	37319
C45	111320	36586	25323	14254	12563	13193	15277	20934	37319
C90	111320	36586	25323	14254	12563	13193	15277	20934	37319

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
12563	12563	12563	15277	15277	15277	37319	37319	37319

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

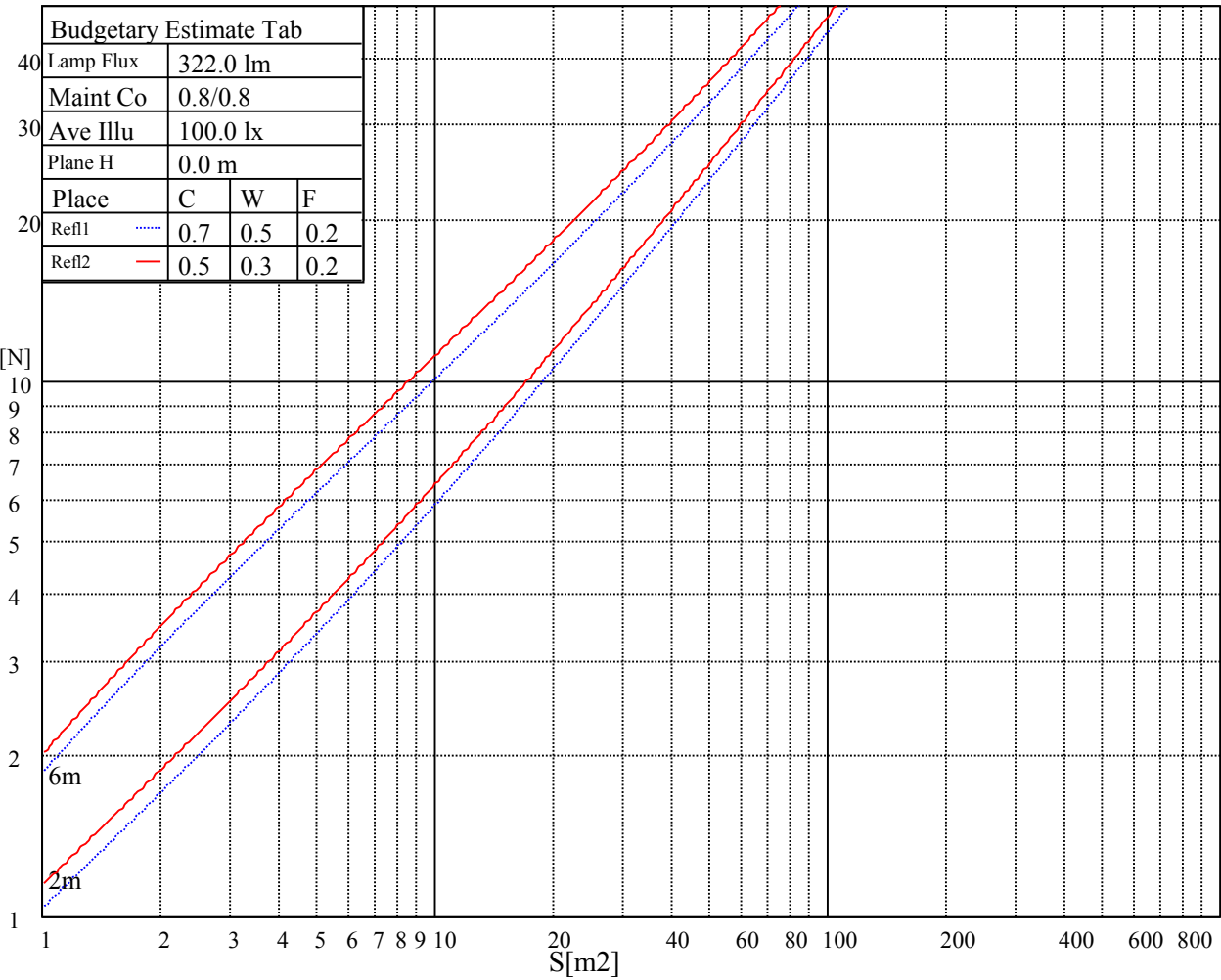
 $\gamma(^{\circ})$ 

C0 ———

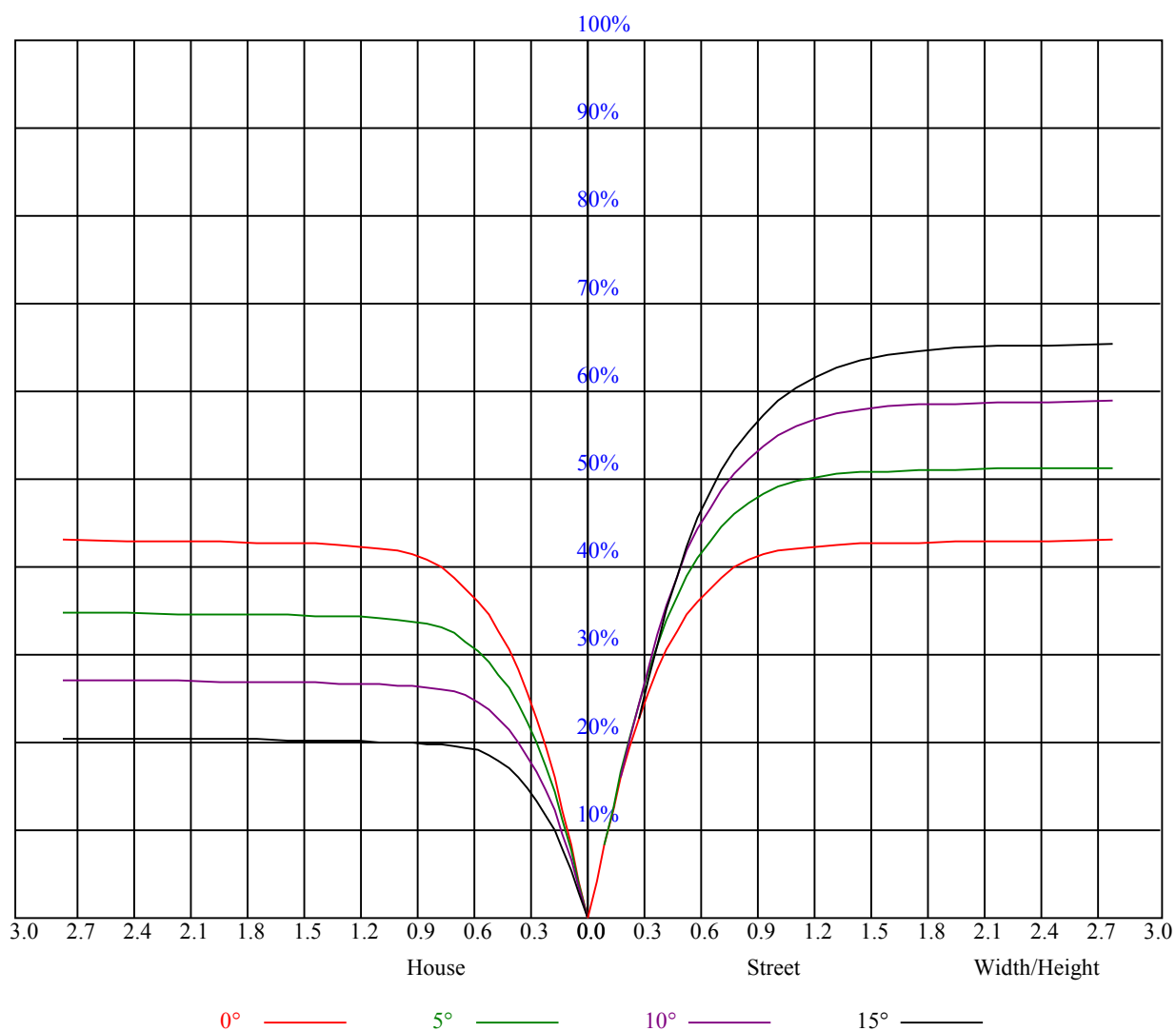
C45 ———

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	19.28	20.35	19.64	20.66	20.98	20.26	21.33	20.62	21.64	21.96
	3H	20.35	21.29	20.73	21.62	21.99	21.10	22.05	21.49	22.38	22.75
	4H	21.05	21.92	21.46	22.28	22.67	21.69	22.57	22.10	22.92	23.31
	6H	22.01	22.81	22.43	23.18	23.58	22.51	23.31	22.93	23.68	24.08
	8H	22.59	23.35	23.03	23.74	24.15	23.02	23.77	23.45	24.16	24.57
	12H	23.63	24.34	24.06	24.73	25.16	23.94	24.66	24.38	25.04	25.47
4H	2H	19.45	20.32	19.85	20.68	21.06	20.32	21.20	20.73	21.55	21.94
	3H	20.85	21.57	21.27	21.97	22.38	21.47	22.19	21.89	22.59	23.00
	4H	21.79	22.42	22.23	22.85	23.30	22.29	22.92	22.73	23.35	23.79
	6H	22.90	23.44	23.37	23.89	24.37	23.27	23.81	23.74	24.26	24.73
	8H	23.66	24.17	24.14	24.62	25.09	23.96	24.46	24.43	24.91	25.39
	12H	24.77	25.21	25.26	25.70	26.18	24.99	25.43	25.48	25.92	26.39
8H	4H	22.17	22.68	22.65	23.13	23.61	22.60	23.11	23.08	23.56	24.03
	6H	23.60	24.01	24.11	24.51	25.00	23.89	24.30	24.40	24.80	25.29
	8H	24.57	24.94	25.10	25.46	25.95	24.79	25.16	25.32	25.68	26.17
	12H	25.95	26.27	26.47	26.77	27.35	26.12	26.44	26.64	26.93	27.51
12H	4H	22.27	22.71	22.76	23.20	23.68	22.68	23.12	23.17	23.61	24.09
	6H	24.17	24.19	24.35	24.66	25.21	24.44	24.45	24.62	24.93	25.47
	8H	24.92	25.24	25.44	25.73	26.31	25.11	25.43	25.63	25.93	26.51
Variation with the observer position at spacings:											
S = 1.0H		2.7/-6.4					2.7/-6.4				
S = 1.5H		4.7/-6.2					4.7/-6.2				
S = 2.0H		6.4/-5.3					6.4/-5.3				
Standard tables:		BK1					BK1				
Uncorrected UGR		6.4					6.4				



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	1.04	1.04	1.04	1.01	1.01	1.01	0.97	0.97	0.97	0.93	0.93	0.93	0.89	0.89	0.89	0.87
1	0.96	0.93	0.91	0.94	0.91	0.89	0.90	0.88	0.87	0.87	0.85	0.84	0.84	0.83	0.82	0.80
2	0.89	0.85	0.82	0.88	0.84	0.81	0.85	0.82	0.80	0.82	0.80	0.78	0.80	0.78	0.76	0.75
3	0.83	0.79	0.75	0.82	0.78	0.75	0.80	0.76	0.73	0.78	0.75	0.72	0.76	0.73	0.71	0.70
4	0.78	0.73	0.70	0.77	0.73	0.69	0.75	0.71	0.68	0.73	0.70	0.68	0.72	0.69	0.67	0.65
5	0.73	0.68	0.65	0.73	0.68	0.64	0.71	0.67	0.64	0.70	0.66	0.63	0.68	0.65	0.63	0.61
6	0.69	0.64	0.61	0.69	0.64	0.60	0.67	0.63	0.60	0.66	0.62	0.60	0.65	0.62	0.59	0.58
7	0.66	0.61	0.57	0.65	0.60	0.57	0.64	0.60	0.56	0.63	0.59	0.56	0.62	0.58	0.56	0.55
8	0.62	0.57	0.54	0.62	0.57	0.54	0.61	0.56	0.53	0.60	0.56	0.53	0.59	0.56	0.53	0.52
9	0.59	0.54	0.51	0.59	0.54	0.51	0.58	0.54	0.51	0.57	0.53	0.50	0.56	0.53	0.50	0.49
10	0.56	0.52	0.48	0.56	0.51	0.48	0.55	0.51	0.48	0.55	0.51	0.48	0.54	0.50	0.48	0.47



NATA 1546-E

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	417.09	401.74	351.56	278.83	216.17	165.04	126.84	104.68	86.34		
45.0	417.09	400.67	349.09	276.75	212.01	156.71	119.93	97.48	77.91		
90.0	419.74	394.43	332.89	260.33	195.92	142.48	110.14	89.72	62.66		
135.0	417.94	397.01	343.86	270.73	204.92	149.85	113.79	93.66	67.50		
180.0	417.09	388.41	325.18	259.14	194.74	141.30	114.08	93.71	61.48		
225.0	417.09	387.90	330.36	261.68	197.89	143.27	111.04	89.72	59.29		
270.0	419.74	396.73	346.39	276.86	212.63	155.81	116.21	94.89	69.13		
315.0	417.94	394.88	335.76	270.23	206.16	150.53	115.54	95.63	70.93		
360.0	417.09	401.74	351.56	278.83	216.17	165.04	126.84	104.68	86.34		
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0		
0.0	49.16	17.66	10.58	3.32	2.19	1.86	1.58	1.41	1.24		
45.0	45.51	16.03	9.11	2.93	2.19	1.80	1.58	1.41	1.35		
90.0	29.03	7.82	5.40	2.70	2.19	1.91	1.63	1.52	1.29		
135.0	30.88	8.38	4.78	3.09	2.48	2.08	1.80	1.63	1.46		
180.0	23.91	6.86	4.84	3.26	2.64	2.19	1.97	1.80	1.52		
225.0	27.39	6.86	4.61	3.09	2.48	2.19	1.97	1.91	1.69		
270.0	35.78	9.23	5.01	3.99	2.36	2.03	1.80	1.69	1.46		
315.0	36.06	10.13	6.92	2.76	2.19	1.86	1.63	1.46	1.46		
360.0	49.16	17.66	10.58	3.32	2.19	1.86	1.58	1.41	1.24		
C/γ(°)	90.0										
0.0	1.01										
45.0	1.01										
90.0	1.07										
135.0	1.07										
180.0	1.07										
225.0	1.07										
270.0	1.07										
315.0	1.01										
360.0	1.01										