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NATA

LumCAT: 1534-E

Luminaire:

Report No: NATA0100

Voltage(V): 28.8000

Test No: GC2019010902

Current(A): 0.3500

LampCAT: XICATO XTM LES 9MM

Power (W): 10.0800

Lamp flux(lm): 568.0

PF: 0.0000

Number of Lamps: 1

Ballast type: DC

Length(mm): 26

Width(mm): 26

Phm Type: C

Height(mm): 0

Photometric Results

Lumens(lm): 501.83

Efficiency(%): 88.35%

Lumens(lm)/Power(W): 50.33

Central intensity(cd): 999.323

Maximum intensity(cd): 999.323

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=32.4

[C90/270]Total=32.4

Field angle(10%Imax): [C0/180]Total=80.2

[C90/270]Total=80.2

Maximum s/h(1/2): C0_180=0.53 C90_270=0.53

Maximum s/h(1/4): C0_180=0.56 C90_270=0.56

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 89.32%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 97.411%

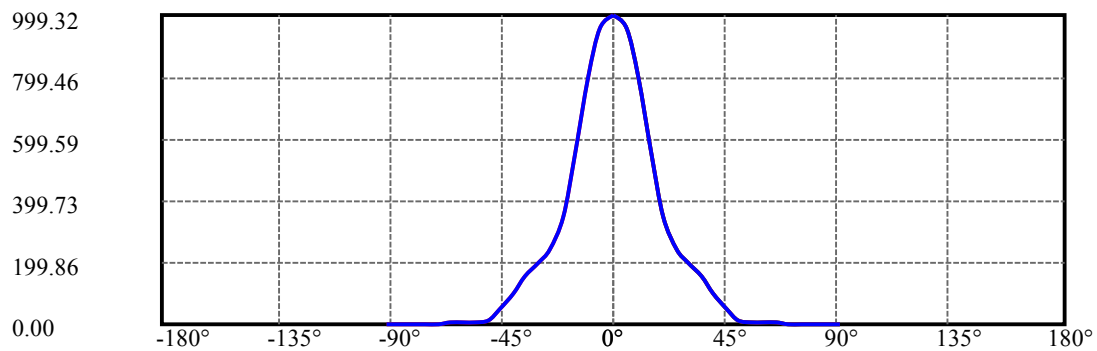
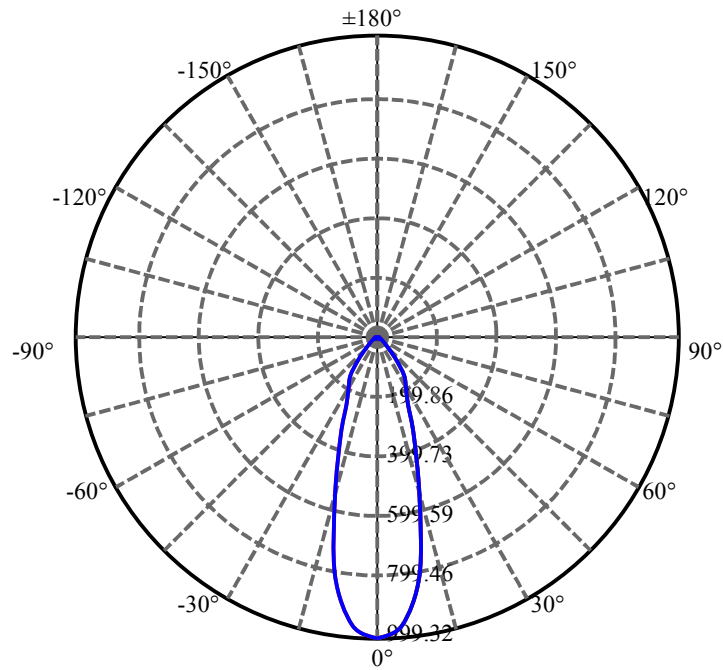
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	999.323	5.976	5.976	1.052%	1.191%
5.0	958.613	45.796	51.772	8.063%	10.317%
10.0	801.633	76.302	128.074	13.433%	25.521%
15.0	547.158	77.624	205.699	13.666%	40.990%
20.0	346.085	64.882	270.58	11.423%	53.919%
25.0	243.373	56.378	326.958	9.926%	65.153%
30.0	195.666	53.626	380.584	9.441%	75.839%
35.0	152.972	48.094	428.678	8.467%	85.423%
40.0	101.004	35.587	464.266	6.265%	92.514%
45.0	51.173	19.834	484.1	3.492%	96.467%
50.0	13.184	5.536	489.636	.975%	97.570%
55.0	5.766	2.589	492.225	.456%	98.086%
60.0	4.148	1.969	494.194	.347%	98.478%
65.0	3.305	1.642	495.836	.289%	98.805%
70.0	2.932	1.510	497.346	.266%	99.106%
75.0	2.672	1.415	498.761	.249%	99.388%
80.0	2.454	1.325	500.085	.233%	99.652%
85.0	2.187	1.194	501.279	.210%	99.890%
90.0	2.011	0.551	501.83	.097%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	380.58	67.00%	75.84%
0-40	464.27	81.74%	92.51%
0-60	494.19	87.01%	98.48%
0-90	501.28	88.25%	99.89%
0-120	501.28	88.25%	99.89%
0-180	501.83	88.35%	100.00%
60-90	9.05	1.59%	1.80%
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%
0-32.17	401.46	70.68%	80.00%

ZONAL LUMEN SUMMARY

0-10	128.07
10-20	142.51
20-30	110.00
30-40	83.68
40-50	25.37
50-60	4.56
60-70	3.15
70-80	2.74
80-90	1.19
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

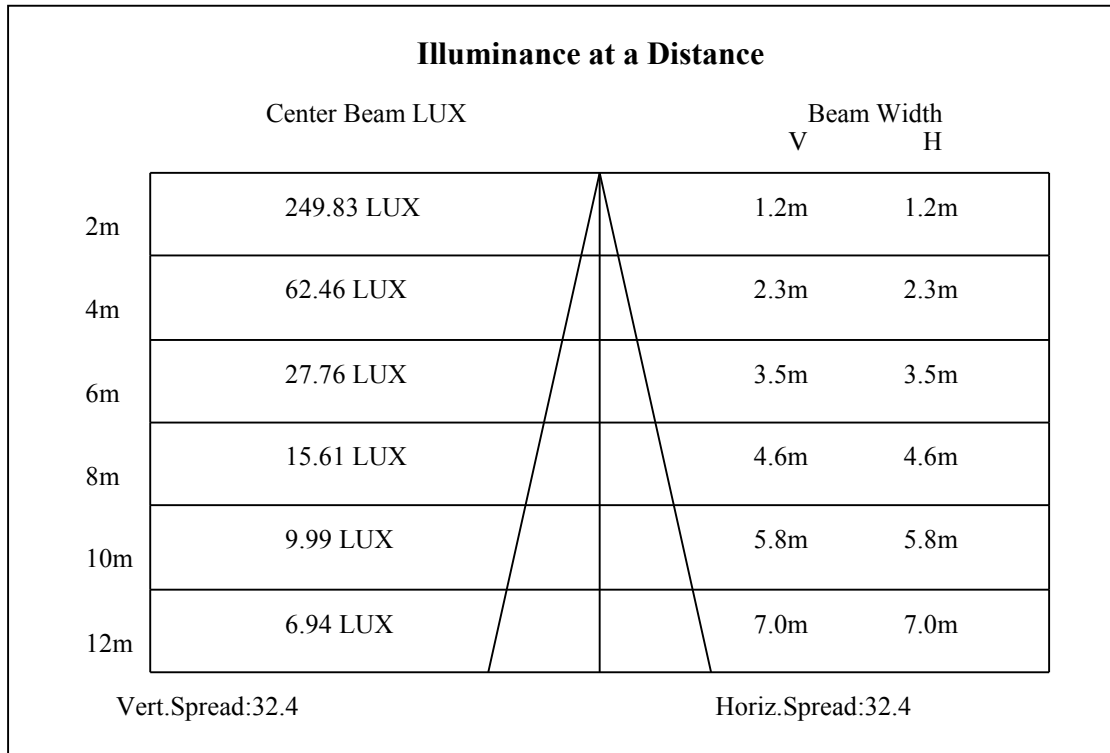
C0(Max): —————C0/C180: —————C90/C270: —————

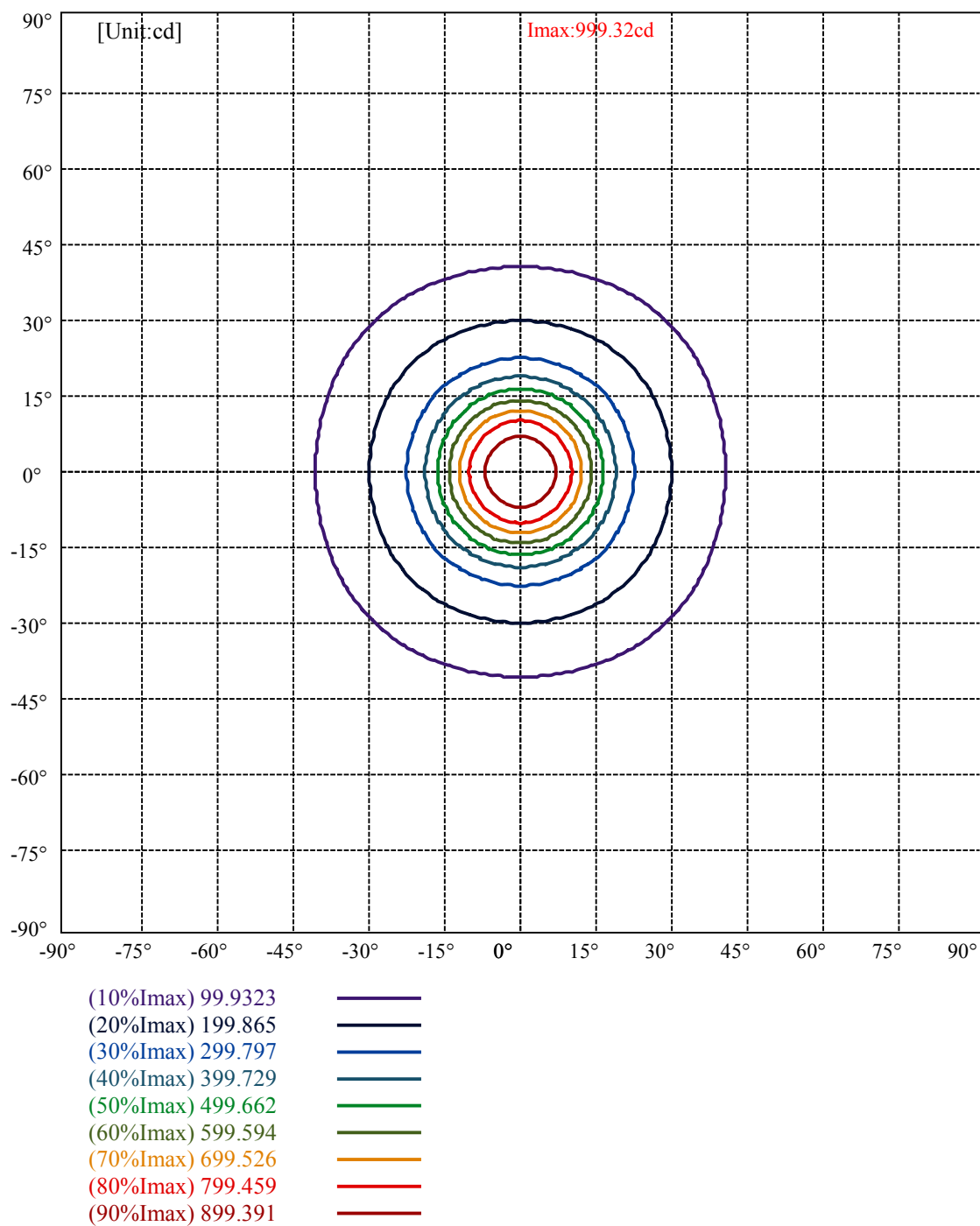
Field angle(10%Imax):C0/180Left:40.1 Right:40.1

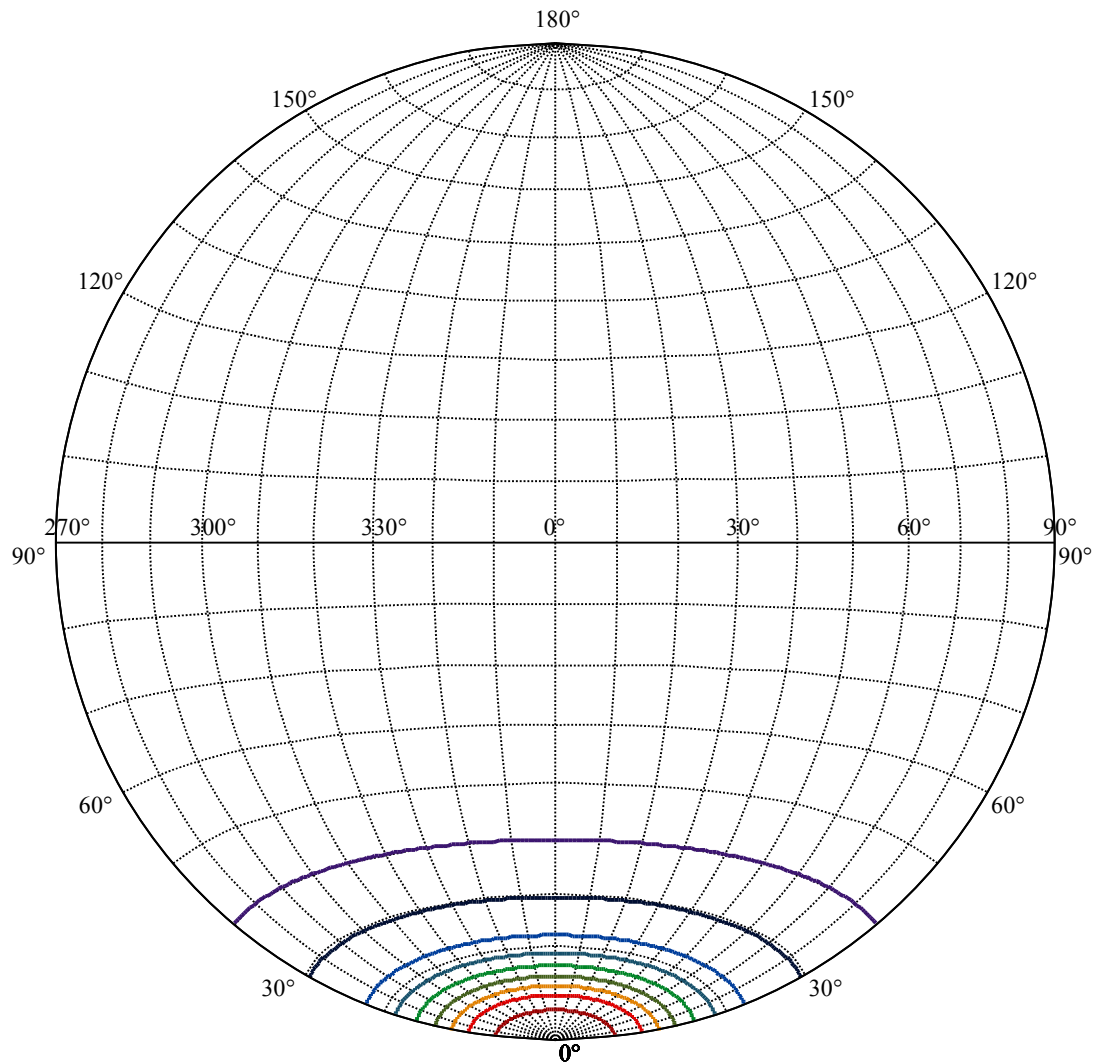
:C90/270Left:40.1 Right:40.1

Beam Angle(50%Imax):C0/180Left:16.2 Right:16.2

:C90/270Left:16.2 Right:16.2







House

[Unit:cd]

Road

Imax:999.32

(10%Imax) 99.9323

(20%Imax) 199.865

(30%Imax) 299.797

(40%Imax) 399.729

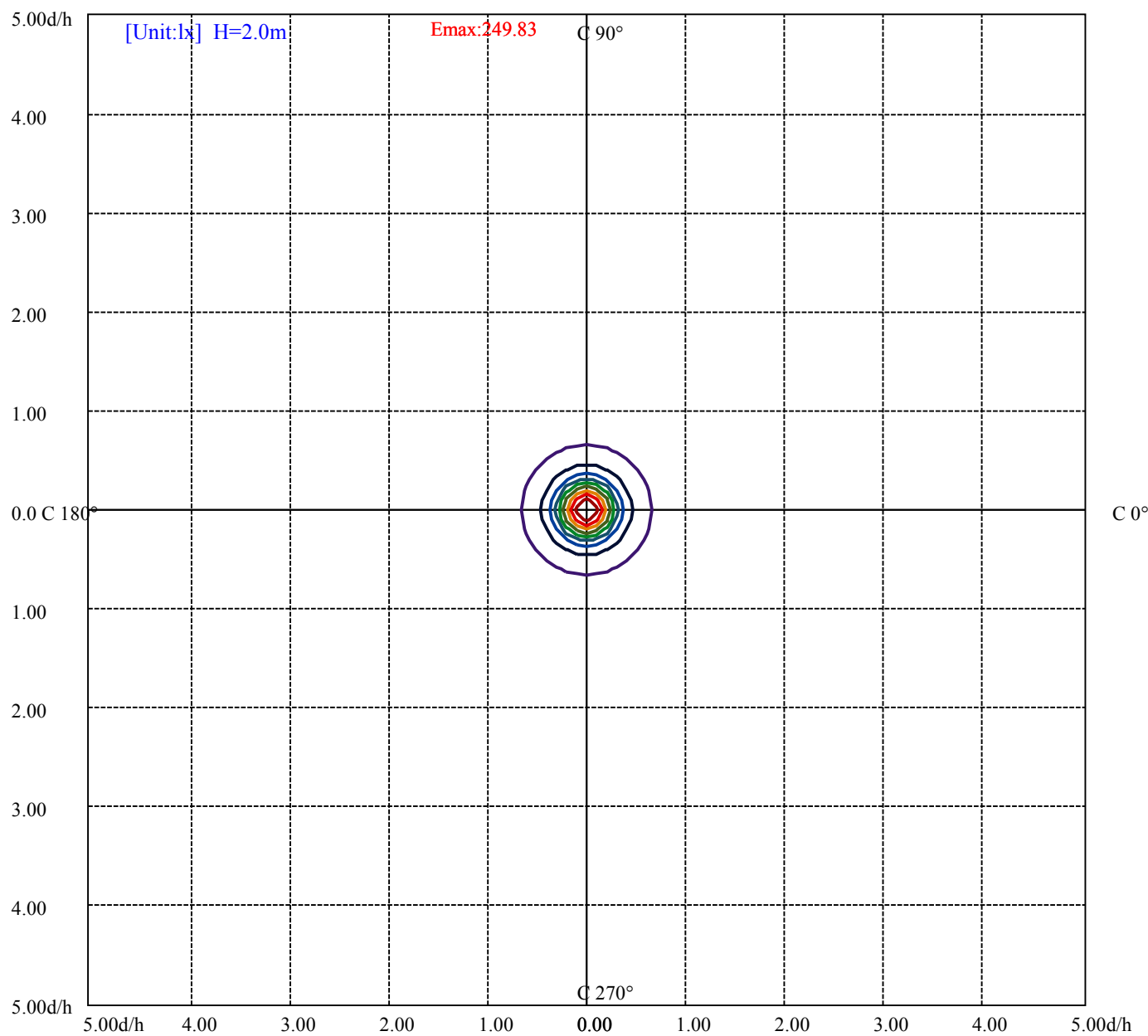
(50%Imax) 499.662

(60%Imax) 599.594

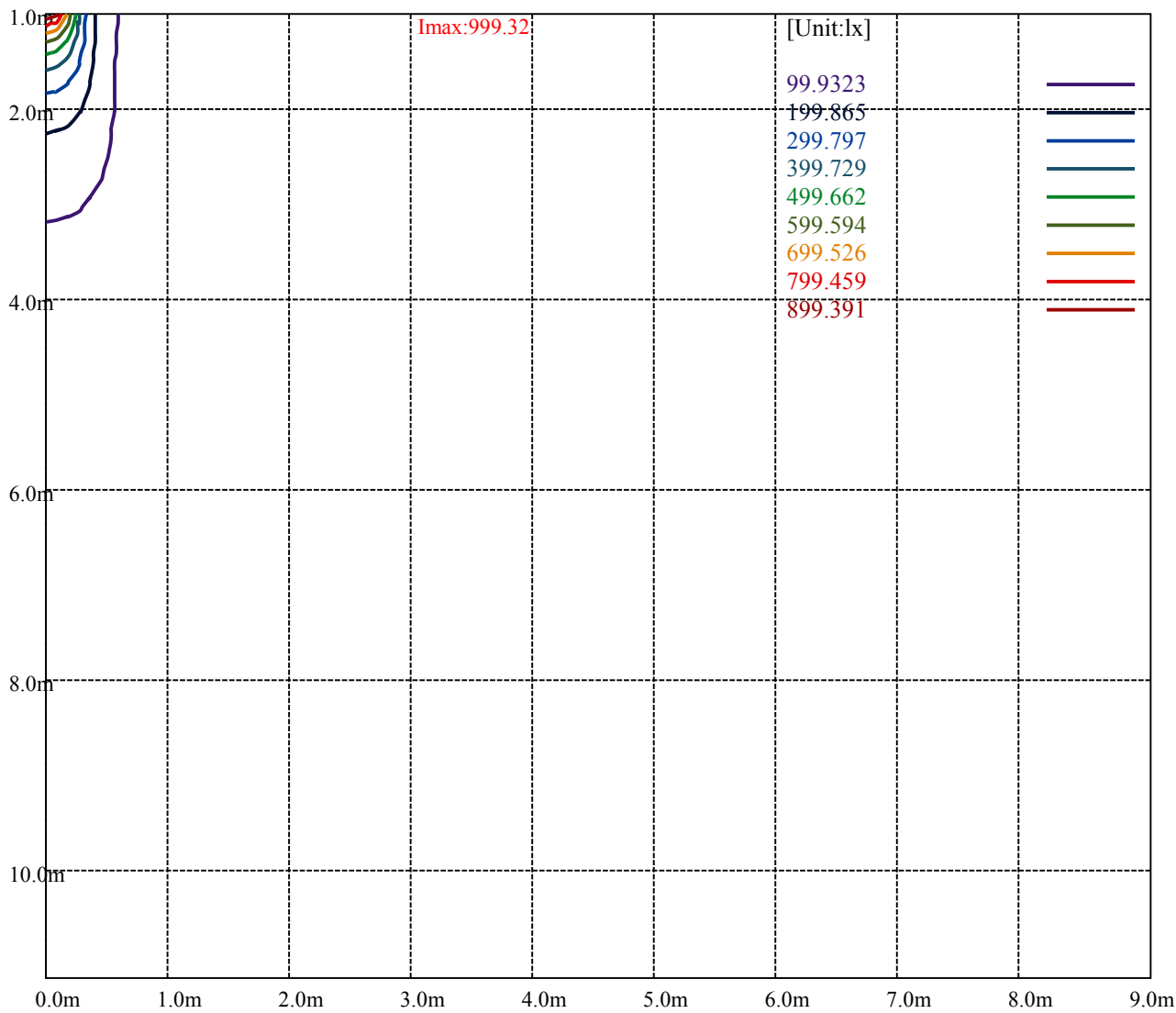
(70%Imax) 699.526

(80%Imax) 799.459

(90%Imax) 899.391



(10%Emax) 24.98305	—
(20%Emax) 49.966	—
(30%Emax) 74.94925	—
(40%Emax) 99.93225	—
(50%Emax) 124.9153	—
(60%Emax) 149.8983	—
(70%Emax) 174.8815	—
(80%Emax) 199.8645	—
(90%Emax) 224.8475	—



Luminance Table

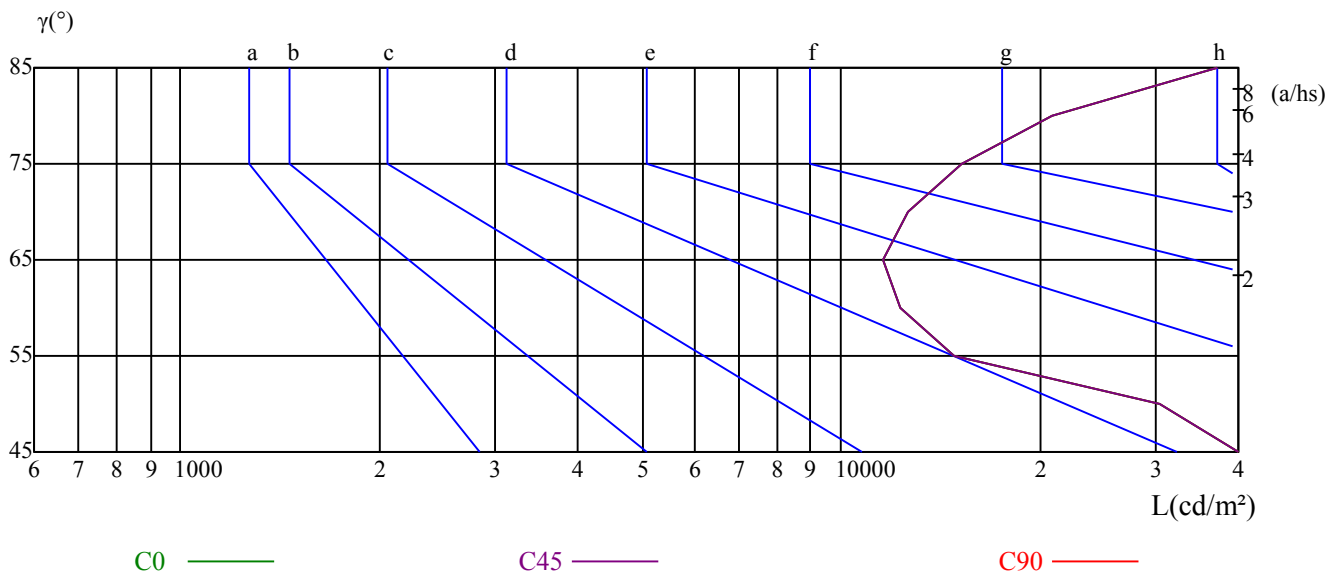
γ	45	50	55	60	65	70	75	80	85
C0	107057	30340	14870	12273	11567	12681	15271	20905	37115
C45	107057	30340	14870	12273	11567	12681	15271	20905	37115
C90	107057	30340	14870	12273	11567	12681	15271	20905	37115

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
11567	11567	11567	15271	15271	15271	37115	37115	37115

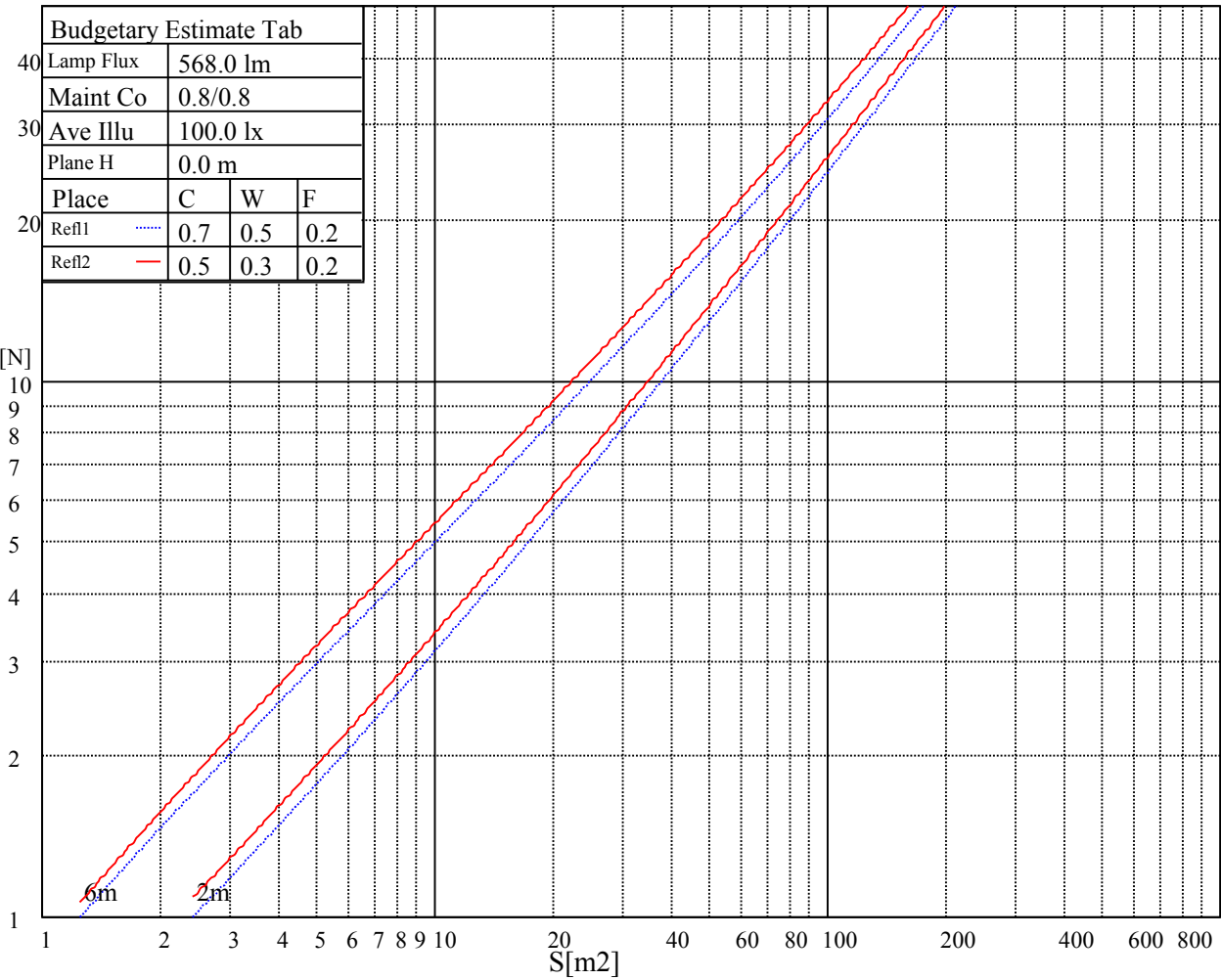
Glare Table

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

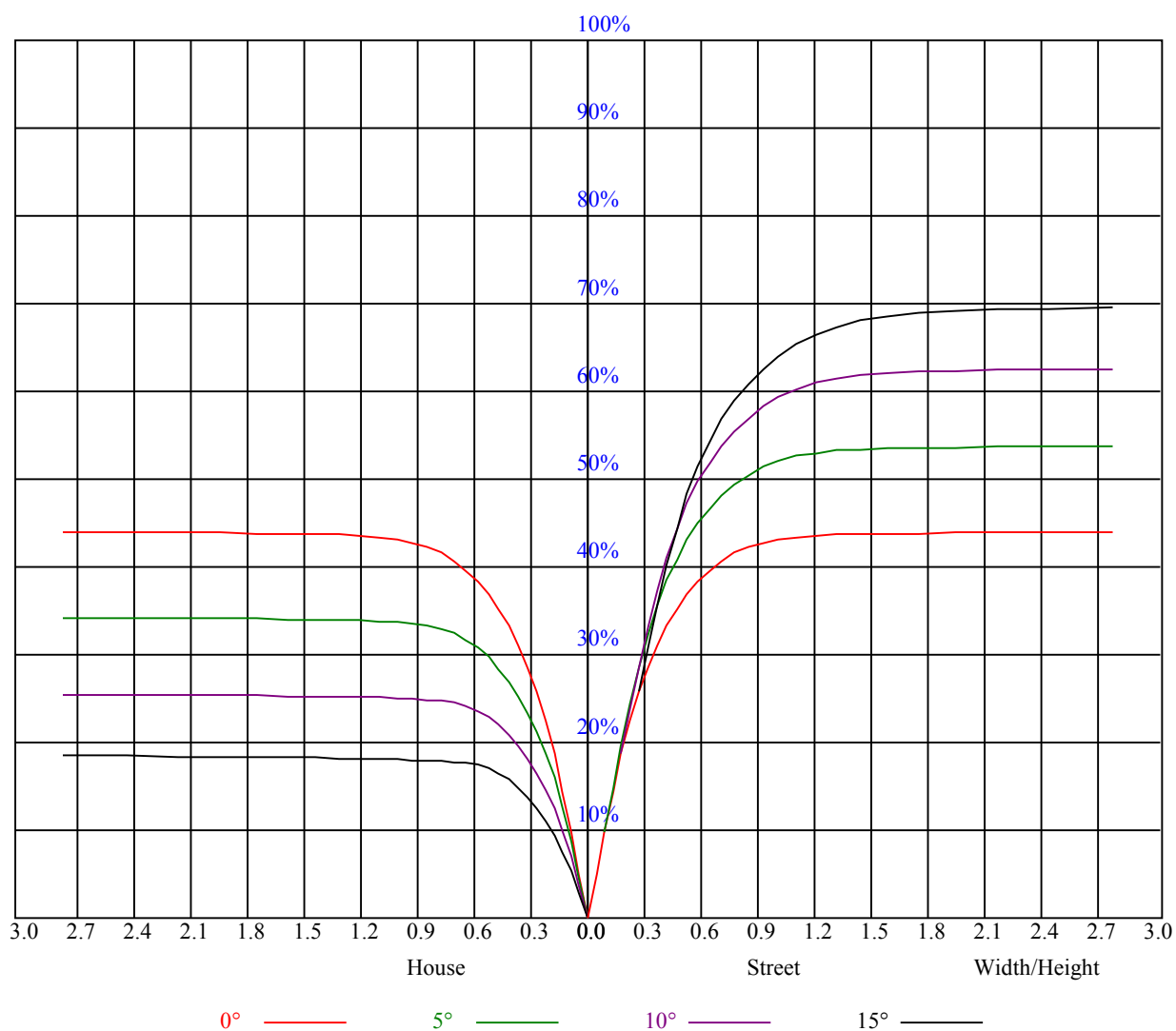
Luminance Limiting Curve



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	15.09	16.11	15.46	16.43	16.74	14.11	15.13	14.47	15.45	15.76
	3H	16.80	17.70	17.18	18.03	18.40	15.92	16.82	16.30	17.15	17.52
	4H	17.87	18.71	18.28	19.06	19.45	17.00	17.83	17.41	18.19	18.58
	6H	19.16	19.92	19.58	20.30	20.69	18.30	19.07	18.72	19.44	19.84
	8H	19.87	20.59	20.31	20.98	21.39	19.06	19.78	19.50	20.17	20.58
	12H	21.06	21.75	21.50	22.13	22.56	20.36	21.05	20.80	21.43	21.86
4H	2H	15.37	16.20	15.78	16.56	16.95	14.56	15.39	14.96	15.74	16.13
	3H	17.44	18.12	17.85	18.53	18.93	16.73	17.41	17.15	17.82	18.23
	4H	18.75	19.36	19.19	19.78	20.23	18.04	18.65	18.48	19.07	19.52
	6H	20.18	20.70	20.65	21.15	21.63	19.52	20.04	19.99	20.49	20.96
	8H	21.06	21.54	21.53	21.99	22.47	20.41	20.90	20.89	21.35	21.82
	12H	22.28	22.70	22.77	23.19	23.67	21.71	22.13	22.20	22.62	23.09
8H	4H	19.17	19.66	19.65	20.11	20.58	18.59	19.07	19.06	19.52	20.00
	6H	20.91	21.30	21.42	21.80	22.29	20.37	20.76	20.88	21.26	21.75
	8H	21.98	22.33	22.51	22.85	23.35	21.46	21.81	21.99	22.33	22.82
	12H	23.45	23.76	23.98	24.25	24.83	22.98	23.28	23.50	23.78	24.36
12H	4H	19.28	19.70	19.77	20.19	20.66	18.74	19.16	19.23	19.65	20.12
	6H	21.43	21.47	21.66	21.94	22.49	20.94	20.98	21.17	21.45	22.00
	8H	22.31	22.62	22.84	23.11	23.69	21.85	22.15	22.37	22.65	23.23
Variation with the observer position at spacings:											
S = 1.0H		3.0/-7.5					3.0/-7.5				
S = 1.5H		5.3/-6.3					5.3/-6.3				
S = 2.0H		6.9/-5.3					6.9/-5.3				
Standard tables:		BK1					BK1				
Uncorrected UGR		5.8					5.8				



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	1.06	1.06	1.06	1.04	1.04	1.04	0.99	0.99	0.99	0.95	0.95	0.95	0.91	0.91	0.91	0.89
1	0.98	0.96	0.93	0.96	0.94	0.92	0.92	0.91	0.89	0.89	0.88	0.86	0.86	0.85	0.84	0.82
2	0.92	0.88	0.85	0.90	0.87	0.84	0.87	0.85	0.82	0.85	0.83	0.81	0.82	0.81	0.79	0.77
3	0.86	0.82	0.79	0.85	0.81	0.78	0.83	0.80	0.77	0.81	0.78	0.76	0.79	0.76	0.74	0.73
4	0.82	0.77	0.73	0.81	0.76	0.73	0.79	0.75	0.72	0.77	0.74	0.71	0.75	0.73	0.70	0.69
5	0.77	0.72	0.69	0.76	0.72	0.68	0.75	0.71	0.68	0.73	0.70	0.67	0.72	0.69	0.67	0.65
6	0.73	0.68	0.65	0.73	0.68	0.65	0.71	0.67	0.64	0.70	0.67	0.64	0.69	0.66	0.63	0.62
7	0.70	0.65	0.61	0.69	0.65	0.61	0.68	0.64	0.61	0.67	0.63	0.61	0.66	0.63	0.60	0.59
8	0.67	0.62	0.58	0.66	0.62	0.58	0.65	0.61	0.58	0.64	0.61	0.58	0.64	0.60	0.58	0.57
9	0.64	0.59	0.56	0.63	0.59	0.56	0.63	0.58	0.56	0.62	0.58	0.55	0.61	0.58	0.55	0.54
10	0.61	0.57	0.53	0.61	0.56	0.53	0.60	0.56	0.53	0.59	0.56	0.53	0.59	0.55	0.53	0.52



NATA 1534-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	999.51	965.64	807.13	537.08	339.41	243.23	197.10	159.08	111.88		
45.0	999.84	938.70	747.73	502.20	322.76	229.78	187.54	146.36	96.41		
90.0	997.09	916.65	706.84	464.12	300.49	220.39	177.08	129.77	80.72		
135.0	1000.86	946.13	783.90	528.02	344.93	254.48	203.46	160.43	103.95		
180.0	999.51	955.86	778.78	549.23	346.16	248.85	206.49	157.28	97.48		
225.0	999.84	978.47	850.50	599.01	370.35	257.18	200.14	160.03	106.37		
270.0	997.09	996.47	911.42	648.45	403.31	258.47	201.88	160.14	109.69		
315.0	1000.86	970.99	826.76	549.17	341.27	234.62	191.64	150.69	101.53		
360.0	999.51	965.64	807.13	537.08	339.41	243.23	197.10	159.08	111.88		
C/ γ (°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0		
0.0	53.94	11.87	5.29	4.16	3.21	2.81	2.48	2.31	2.14		
45.0	49.16	13.11	5.57	3.77	3.21	2.87	2.59	2.36	2.08		
90.0	39.88	11.19	5.63	4.16	3.43	3.09	2.87	2.53	2.14		
135.0	50.74	12.71	5.12	3.83	3.15	2.81	2.59	2.42	2.14		
180.0	46.80	9.90	4.50	3.83	3.15	2.76	2.59	2.36	2.14		
225.0	56.70	15.30	6.36	4.28	3.26	2.98	2.70	2.53	2.36		
270.0	60.36	19.63	7.76	5.06	3.83	3.32	3.04	2.76	2.36		
315.0	51.81	11.76	5.91	4.11	3.21	2.81	2.53	2.36	2.14		
360.0	53.94	11.87	5.29	4.16	3.21	2.81	2.48	2.31	2.14		
C/ γ (°)	90.0										
0.0	2.03										
45.0	1.97										
90.0	1.91										
135.0	2.03										
180.0	2.08										
225.0	2.08										
270.0	1.97										
315.0	2.03										
360.0	2.03										