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NATA

Client:

LumCAT: 1680-S

Luminaire: 92.70.046.00

Report No: nt0100

Test No: GC2020010814

LampCAT: LUMINUS CLM-9-AA40

Lamp flux(lm): 1288.0

Number of Lamps: 1

Length(mm): 0

Phm Type: C

Voltage(V): 34.1800

Current(A): 0.3070

Power (W): 10.4900

PF: 0.0000

Ballast type: DC

Width(mm): 0

Height(mm): 0

Photometric Results

Lumens(lm): 1108.06, Efficiency(%): 86.03% , Luminous Efficacy(lm/W): 105.63

Central intensity(cd): 1121.723, Maximum intensity(cd): 1121.723

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=62.4

[C90/270]Total=62.4

Field angle(10%Imax): [C0/180]Total=84.6

[C90/270]Total=84.6

Maximum s/h(1/2): C0_180=1.00 C90_270=1.00

Maximum s/h(1/4): C0_180=0.92 C90_270=0.92

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 86.03%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 97.988%

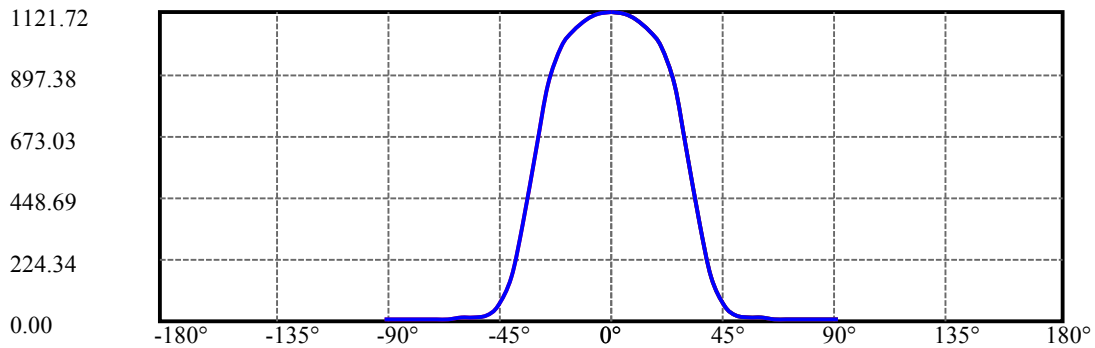
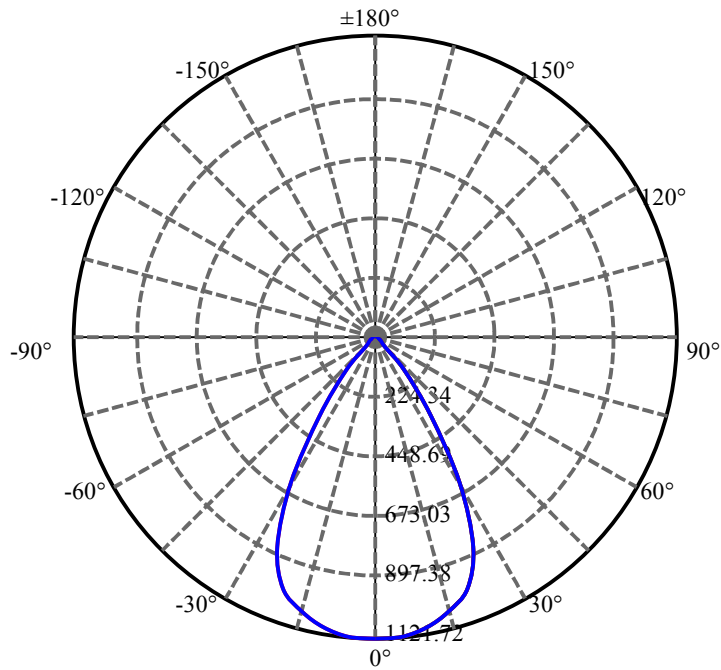
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	1121.723	0.000	0	.000%	.000%
5.0	1115.515	26.746	26.746	2.077%	2.414%
10.0	1093.345	79.018	105.763	6.135%	9.545%
15.0	1054.434	127.405	233.168	9.892%	21.043%
20.0	998.452	169.187	402.355	13.136%	36.312%
25.0	856.786	194.580	596.935	15.107%	53.872%
30.0	627.905	187.889	784.824	14.588%	70.829%
35.0	356.147	144.908	929.732	11.251%	83.906%
40.0	161.859	86.425	1016.158	6.710%	91.706%
45.0	53.627	39.899	1056.057	3.098%	95.307%
50.0	24.363	15.759	1071.816	1.224%	96.729%
55.0	13.823	8.303	1080.119	.645%	97.478%
60.0	10.610	5.648	1085.767	.438%	97.988%
65.0	8.965	4.759	1090.526	.369%	98.417%
70.0	7.910	4.273	1094.798	.332%	98.803%
75.0	6.933	3.880	1098.678	.301%	99.153%
80.0	6.054	3.475	1102.153	.270%	99.467%
85.0	5.407	3.114	1105.267	.242%	99.748%
90.0	4.795	2.793	1108.061	.217%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	784.82	60.93%	70.83%
0-40	1016.16	78.89%	91.71%
0-60	1085.77	84.30%	97.99%
0-90	1105.27	85.81%	99.75%
0-120	1105.27	85.81%	99.75%
0-180	1108.06	86.03%	100.00%
60-90	25.15	1.95%	2.27%
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%
0-33.51	886.45	68.82%	80.00%

ZONAL LUMEN SUMMARY

0-10	105.76
10-20	296.59
20-30	382.47
30-40	231.33
40-50	55.66
50-60	13.95
60-70	9.03
70-80	7.35
80-90	3.11
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:

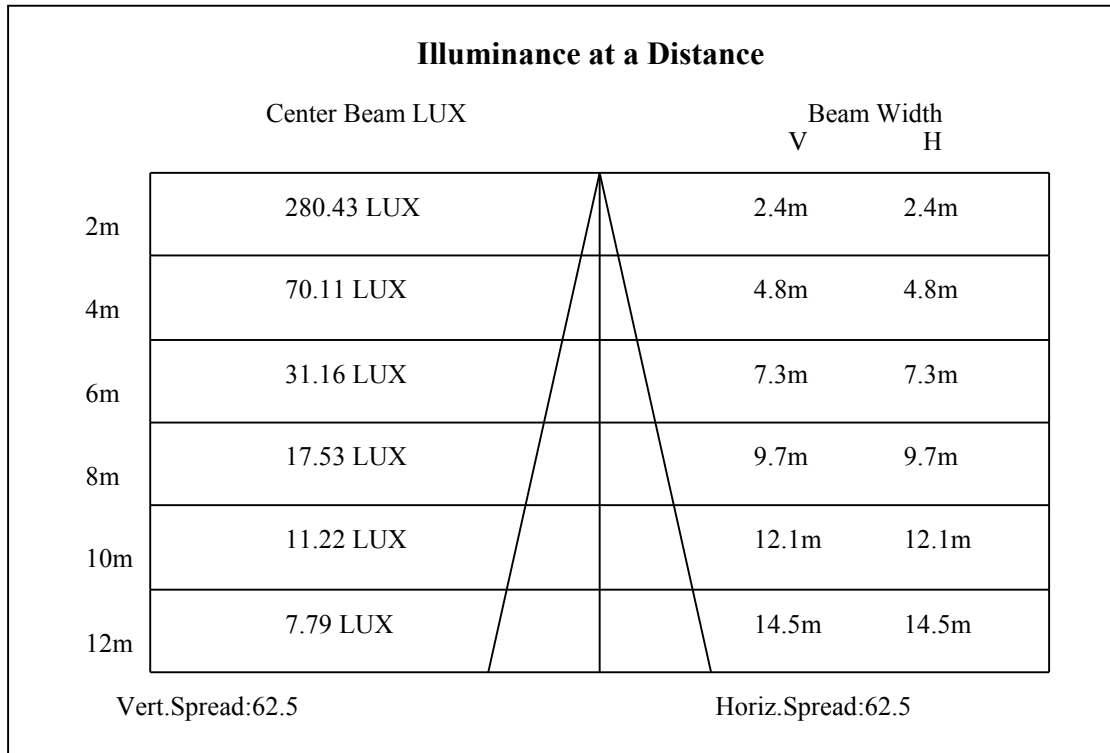
C90/C270:

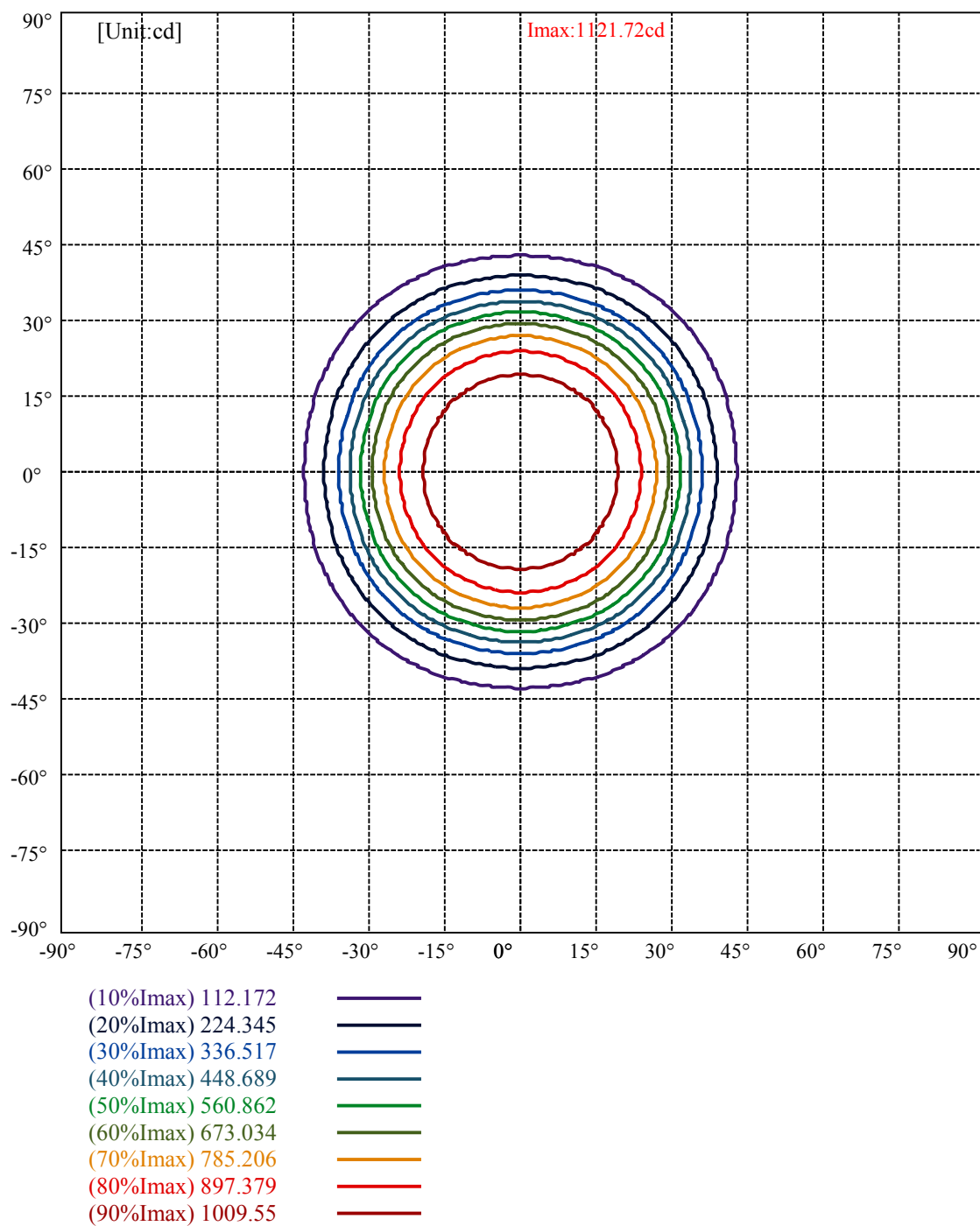
Field angle(10%Imax):C0/180Left:42.3 Right:42.3

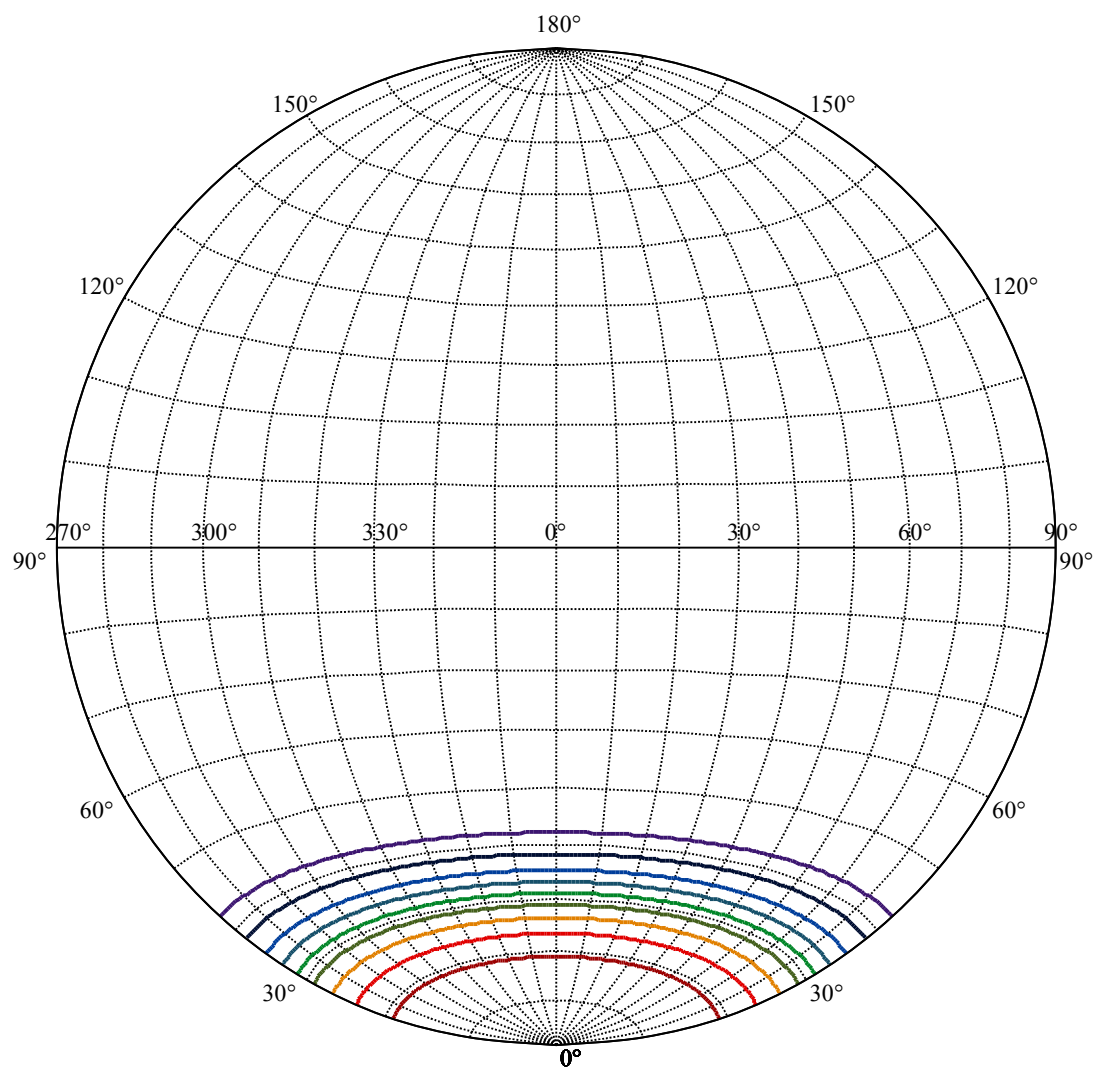
:C90/270Left:42.3 Right:42.3

Beam Angle(50%Imax):C0/180Left:31.2 Right:31.2

:C90/270Left:31.2 Right:31.2







House

[Unit:cd]

Road

Imax:1121.72

(10%Imax) 112.172

(20%Imax) 224.345

(30%Imax) 336.517

(40%Imax) 448.689

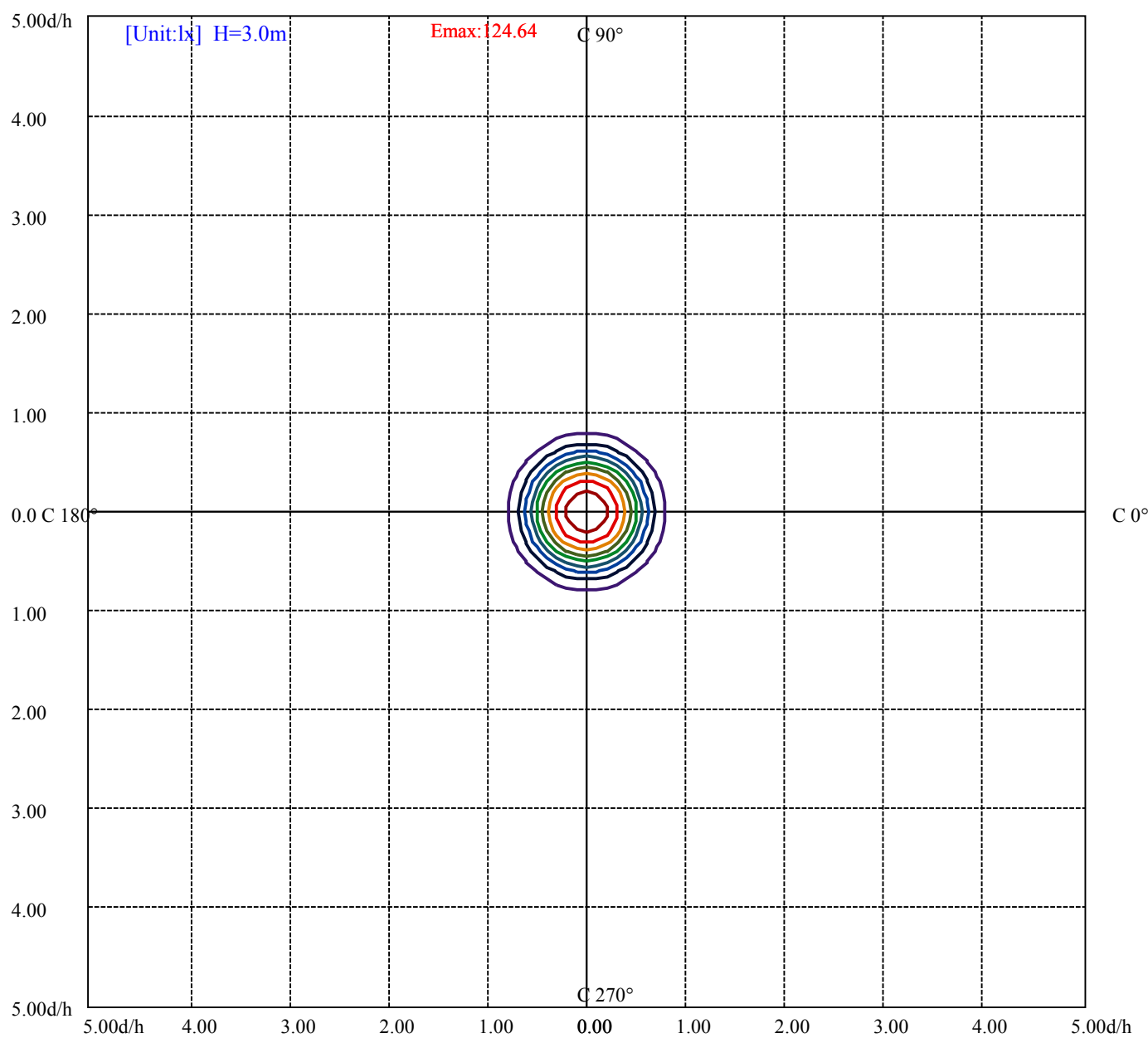
(50%Imax) 560.862

(60%Imax) 673.034

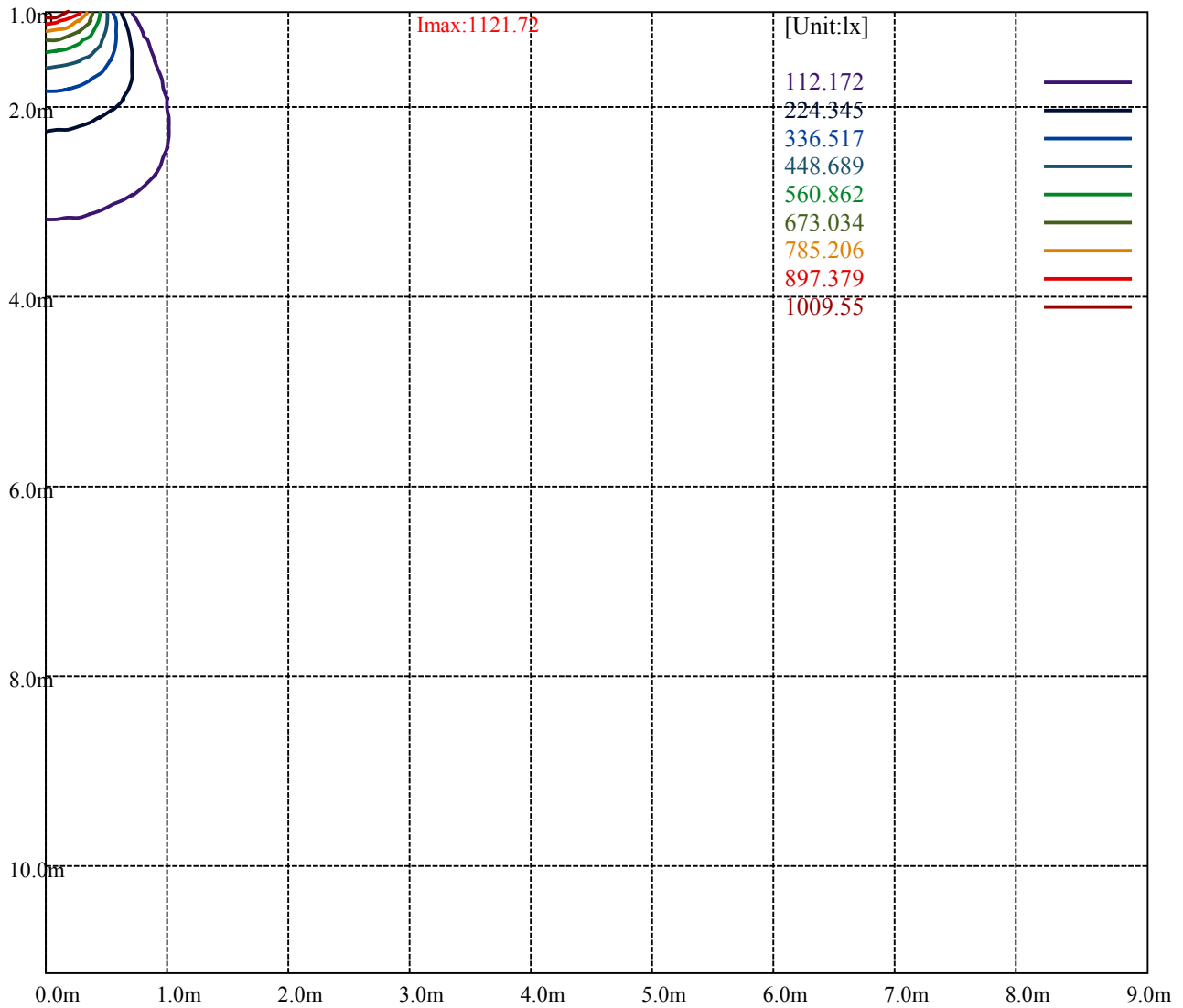
(70%Imax) 785.206

(80%Imax) 897.379

(90%Imax) 1009.55



(10%E _{max}) 12.46356	—
(20%E _{max}) 24.92722	—
(30%E _{max}) 37.39078	—
(40%E _{max}) 49.85433	—
(50%E _{max}) 62.318	—
(60%E _{max}) 74.78156	—
(70%E _{max}) 87.24511	—
(80%E _{max}) 99.70878	—
(90%E _{max}) 112.1722	—



Luminance Table

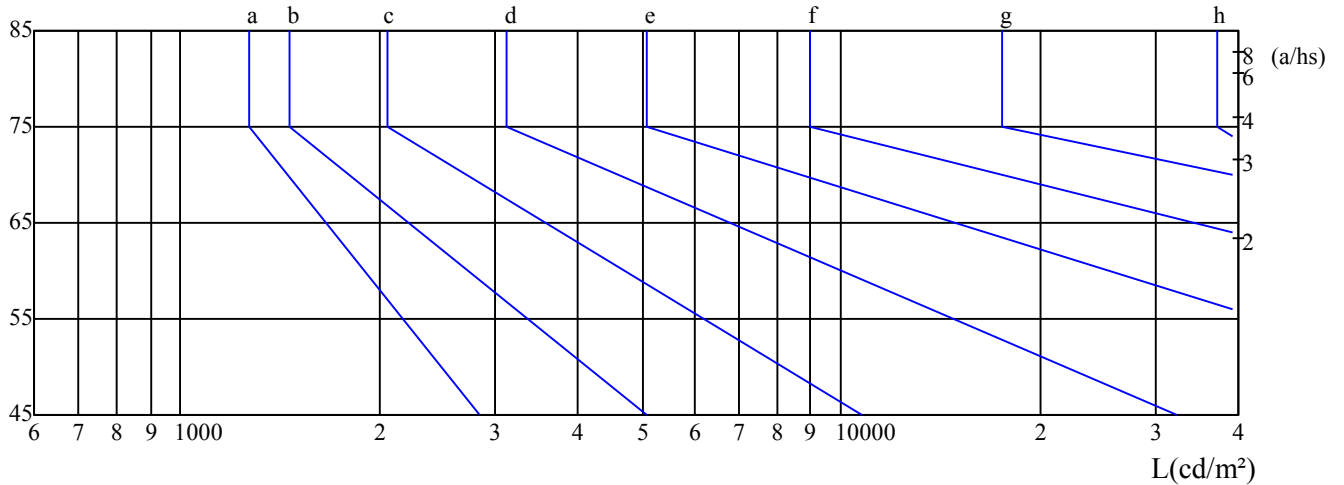
γ	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

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

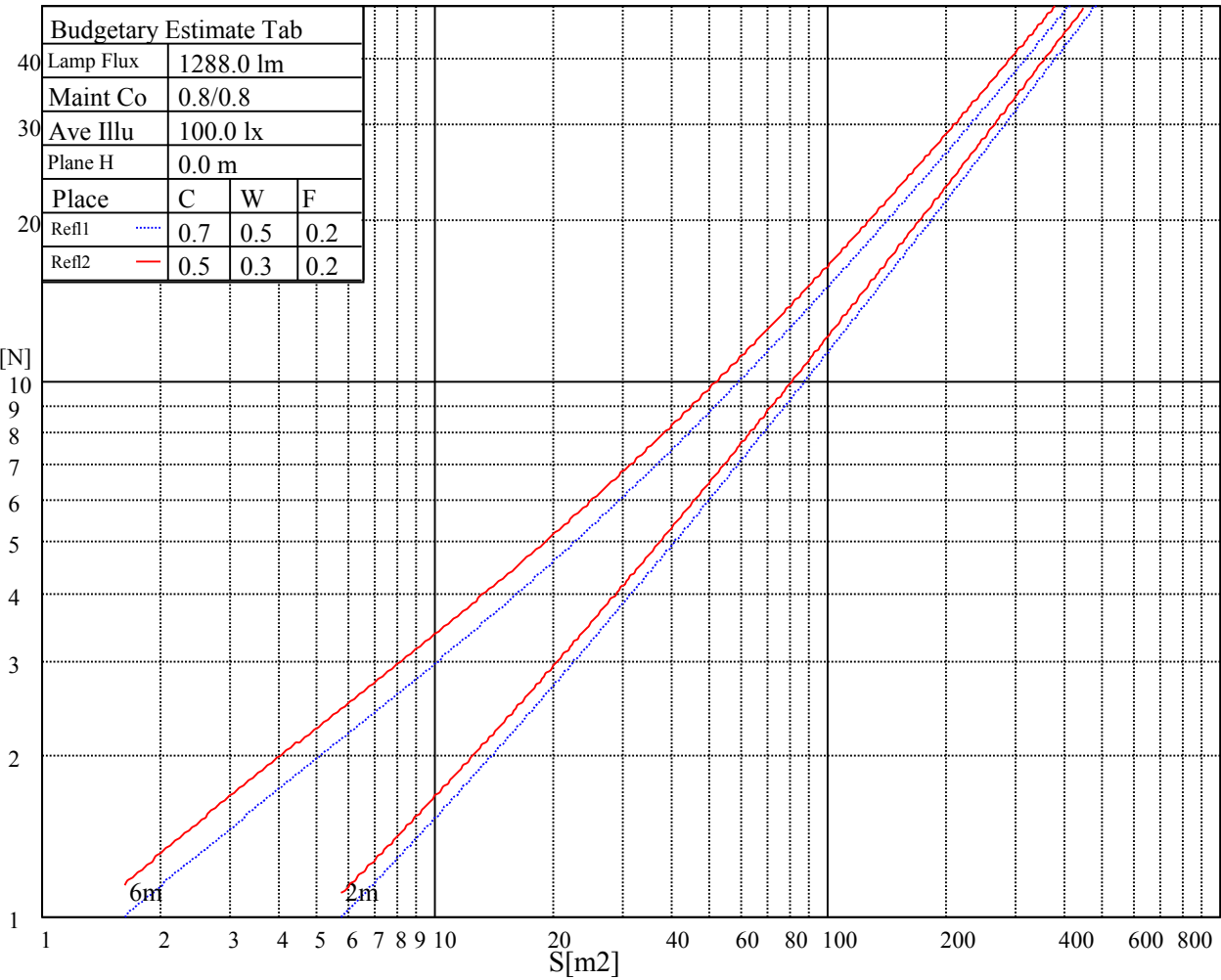
Luminance Limiting Curve

 $\gamma(^{\circ})$ 

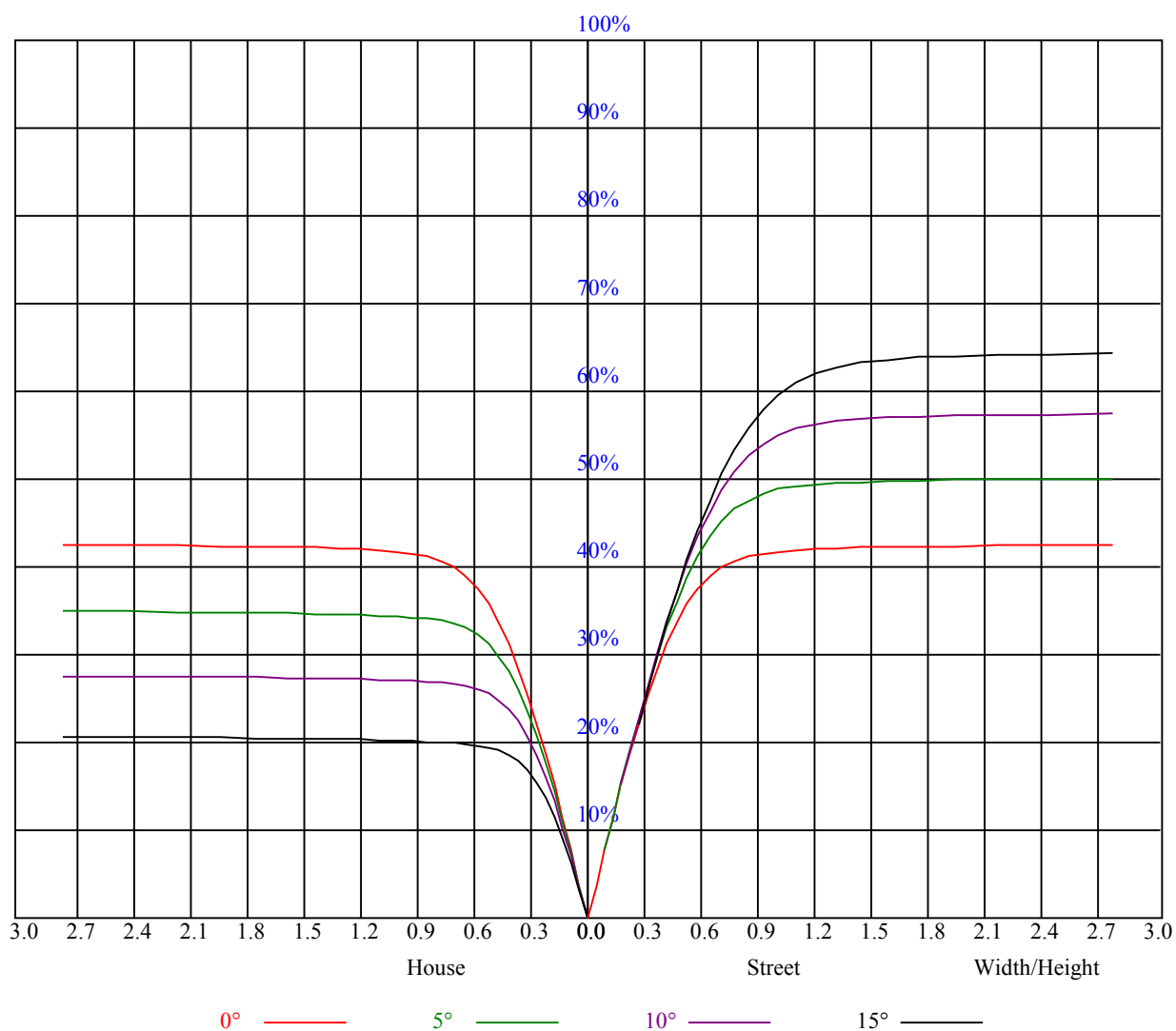
C0 ———

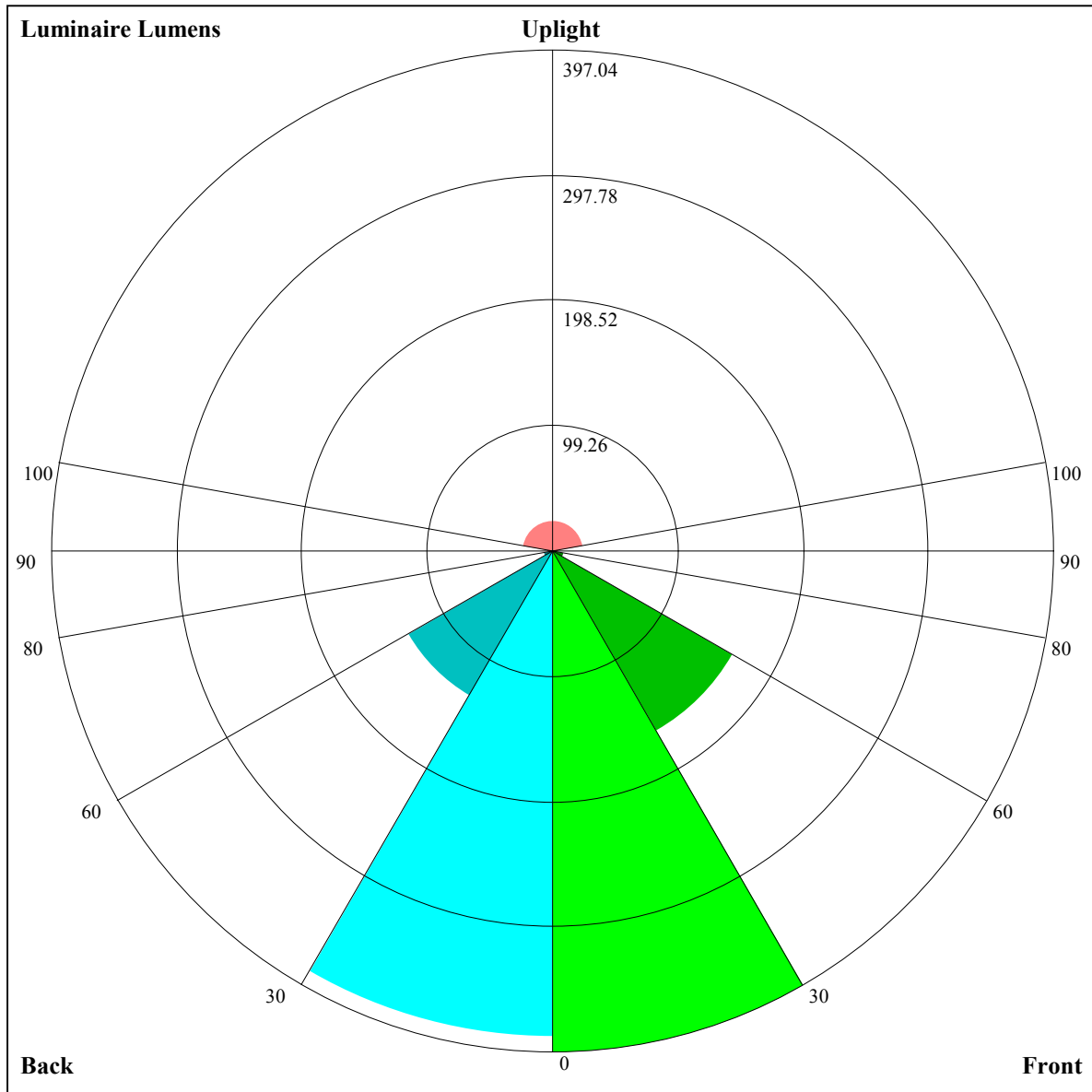
C45 ———

C90 ———



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	1.02	1.02	1.02	1.00	1.00	1.00	0.96	0.96	0.96	0.92	0.92	0.92	0.88	0.88	0.88	0.86
1	0.95	0.93	0.91	0.93	0.91	0.89	0.89	0.88	0.86	0.86	0.85	0.84	0.83	0.82	0.81	0.80
2	0.88	0.84	0.81	0.87	0.83	0.80	0.84	0.81	0.79	0.81	0.79	0.77	0.79	0.77	0.75	0.74
3	0.82	0.77	0.74	0.81	0.77	0.73	0.78	0.75	0.72	0.76	0.73	0.71	0.74	0.72	0.70	0.69
4	0.76	0.72	0.68	0.75	0.71	0.67	0.74	0.70	0.67	0.72	0.69	0.66	0.70	0.67	0.65	0.64
5	0.71	0.66	0.63	0.71	0.66	0.62	0.69	0.65	0.62	0.68	0.64	0.61	0.66	0.63	0.61	0.59
6	0.67	0.62	0.58	0.66	0.61	0.58	0.65	0.61	0.57	0.64	0.60	0.57	0.63	0.59	0.57	0.55
7	0.63	0.58	0.54	0.62	0.57	0.54	0.61	0.57	0.54	0.60	0.56	0.53	0.59	0.56	0.53	0.52
8	0.59	0.54	0.50	0.59	0.54	0.50	0.58	0.53	0.50	0.57	0.53	0.50	0.56	0.52	0.50	0.48
9	0.56	0.51	0.47	0.55	0.51	0.47	0.55	0.50	0.47	0.54	0.50	0.47	0.53	0.49	0.47	0.45
10	0.53	0.48	0.44	0.52	0.48	0.44	0.52	0.47	0.44	0.51	0.47	0.44	0.50	0.47	0.44	0.43





Luminaire Lumens:

FL=397.04,FM=164.31,FH=8.48,FVH=2.99

BL=384.48,BM=132.63,BH=8.29,BVH=2.94

UL=5.23,UH=24.9

BUG Rating:B1-U2-G0

NATA 1680-S

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	1121.96	1148.06	1122.19	1078.88	1035.00	940.50	726.75	464.63	295.88		
45.0	1113.36	1115.94	1099.18	1066.67	1020.71	910.69	716.96	454.84	230.34		
90.0	1117.58	1100.42	1077.36	1046.19	982.91	854.78	629.55	377.44	182.14		
135.0	1134.00	1110.38	1082.81	1042.88	991.13	869.63	648.00	376.88	166.89		
180.0	1121.96	1107.96	1088.66	1045.74	987.98	793.07	542.08	276.64	94.84		
225.0	1113.36	1098.62	1085.12	1055.53	984.99	803.64	539.16	254.64	88.37		
270.0	1117.58	1120.50	1094.06	1051.31	997.31	844.88	605.25	320.06	113.23		
315.0	1134.00	1122.24	1097.38	1048.28	987.58	837.11	615.49	324.06	123.19		
360.0	1121.96	1148.06	1122.19	1078.88	1035.00	940.50	726.75	464.63	295.88		
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0		
0.0	77.85	32.46	16.26	11.08	8.66	7.65	6.64	6.02	5.51		
45.0	91.80	43.03	20.64	12.66	9.17	7.59	6.69	5.96	5.34		
90.0	71.78	31.11	16.54	12.54	10.63	9.28	7.76	6.58	5.51		
135.0	58.22	24.02	13.44	10.86	9.79	8.89	7.65	6.58	5.57		
180.0	30.60	16.31	10.91	8.94	7.65	6.81	6.36	5.51	5.12		
225.0	27.06	14.29	10.18	8.61	7.54	6.69	6.24	5.46	5.23		
270.0	34.09	16.43	11.59	10.80	9.96	8.83	7.43	6.36	5.46		
315.0	37.63	17.27	11.03	9.39	8.33	7.54	6.69	5.96	5.51		
360.0	77.85	32.46	16.26	11.08	8.66	7.65	6.64	6.02	5.51		
C/γ(°)	90.0										
0.0	5.12										
45.0	4.95										
90.0	4.78										
135.0	4.73										
180.0	4.73										
225.0	4.67										
270.0	4.67										
315.0	4.73										
360.0	5.12										