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## Nata

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Client:

LumCAT: 3-2019-A

Luminaire: 92.70.045.00+92.70.089.00

Report No: NT2018031904

Test No: nata-0100

LampCAT: CREE CXA2520

Lamp flux(lm): 2355.0

Number of Lamps: 1

Length(mm): 86

Phm Type: C

Voltage(V): 36.0000

Current(A): 0.8000

Power (W): 28.8000

PF: 0.0000

Ballast type: DC

Width(mm): 86

Height(mm): 0

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## Photometric Results

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Lumens(lm): 1918.11, Efficiency(%): 81.45% , Luminous Efficacy(lm/W): 66.60

Central intensity(cd): 10455.350, Maximum intensity(cd): 10455.350

Angle of maximum intensity: C=0.0  $\gamma$ =0.0

Beam Angle(50%Imax): [C0/180]Total=19.6

[C90/270]Total=19.6

Field angle(10%Imax): [C0/180]Total=39.4

[C90/270]Total=39.4

Maximum s/h(1/2): C0\_180=0.33 C90\_270=0.33

Maximum s/h(1/4): C0\_180=0.34 C90\_270=0.34

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 84.03%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in  $\pi$  solid angle : 95.785%

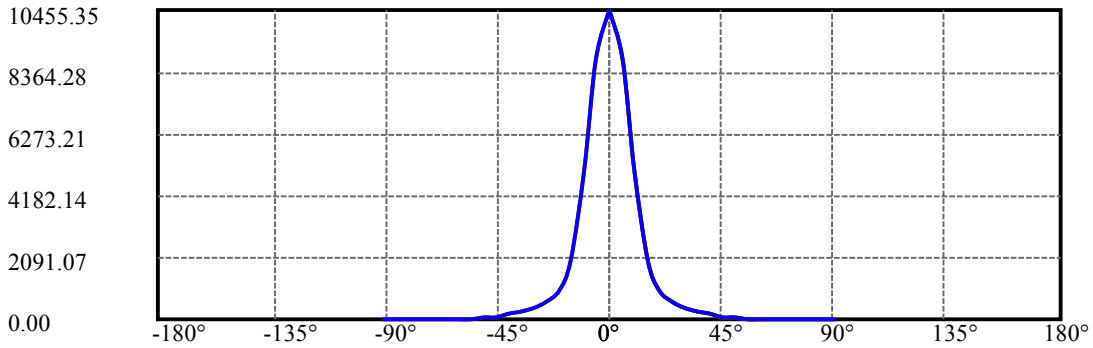
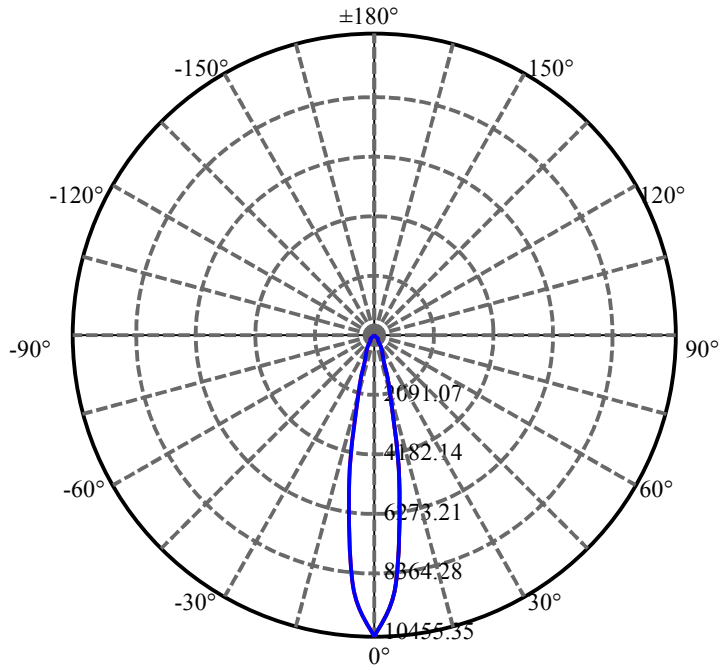
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	10455.348	62.525	62.525	2.655%	3.260%
5.0	8751.077	418.068	480.593	17.752%	25.056%
10.0	5071.520	482.723	963.316	20.498%	50.222%
15.0	2024.149	287.163	1250.479	12.194%	65.193%
20.0	974.595	182.711	1433.19	7.758%	74.719%
25.0	610.830	141.501	1574.69	6.009%	82.096%
30.0	420.872	115.348	1690.038	4.898%	88.110%
35.0	276.507	86.933	1776.972	3.691%	92.642%
40.0	164.178	57.846	1834.817	2.456%	95.658%
45.0	86.652	33.586	1868.403	1.426%	97.409%
50.0	40.983	17.208	1885.611	.731%	98.306%
55.0	13.269	5.958	1891.569	.253%	98.616%
60.0	8.086	3.839	1895.408	.163%	98.816%
65.0	7.880	3.915	1899.322	.166%	99.021%
70.0	7.811	4.023	1903.346	.171%	99.230%
75.0	7.797	4.128	1907.474	.175%	99.446%
80.0	7.846	4.235	1911.709	.180%	99.666%
85.0	7.963	4.348	1916.057	.185%	99.893%
90.0	7.488	2.052	1918.109	.087%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1690.04	71.76%	88.11%
0-40	1834.82	77.91%	95.66%
0-60	1895.41	80.48%	98.82%
0-90	1916.06	81.36%	99.89%
0-120	1916.06	81.36%	99.89%
0-180	1918.11	81.45%	100.00%
60-90	24.49	1.04%	1.28%
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%
0-23.58	1534.49	65.16%	80.00%

ZONAL LUMEN SUMMARY

0-10	963.32
10-20	469.87
20-30	256.85
30-40	144.78
40-50	50.79
50-60	9.80
60-70	7.94
70-80	8.36
80-90	4.35
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



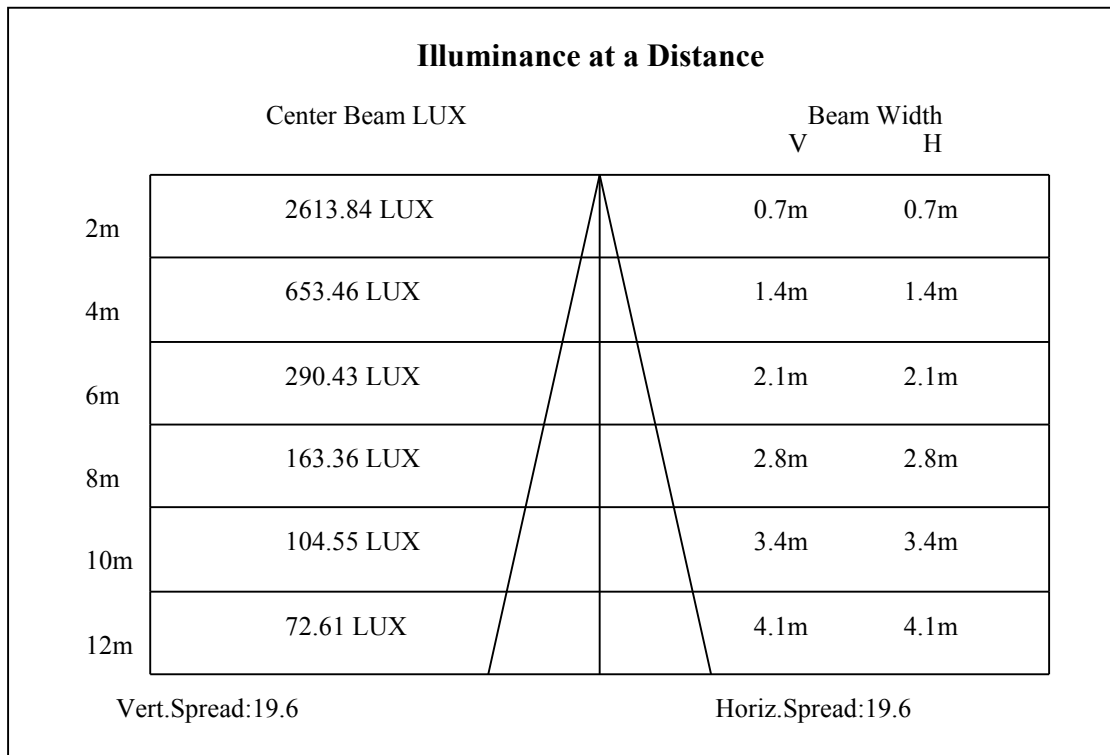
C0(Max): —————

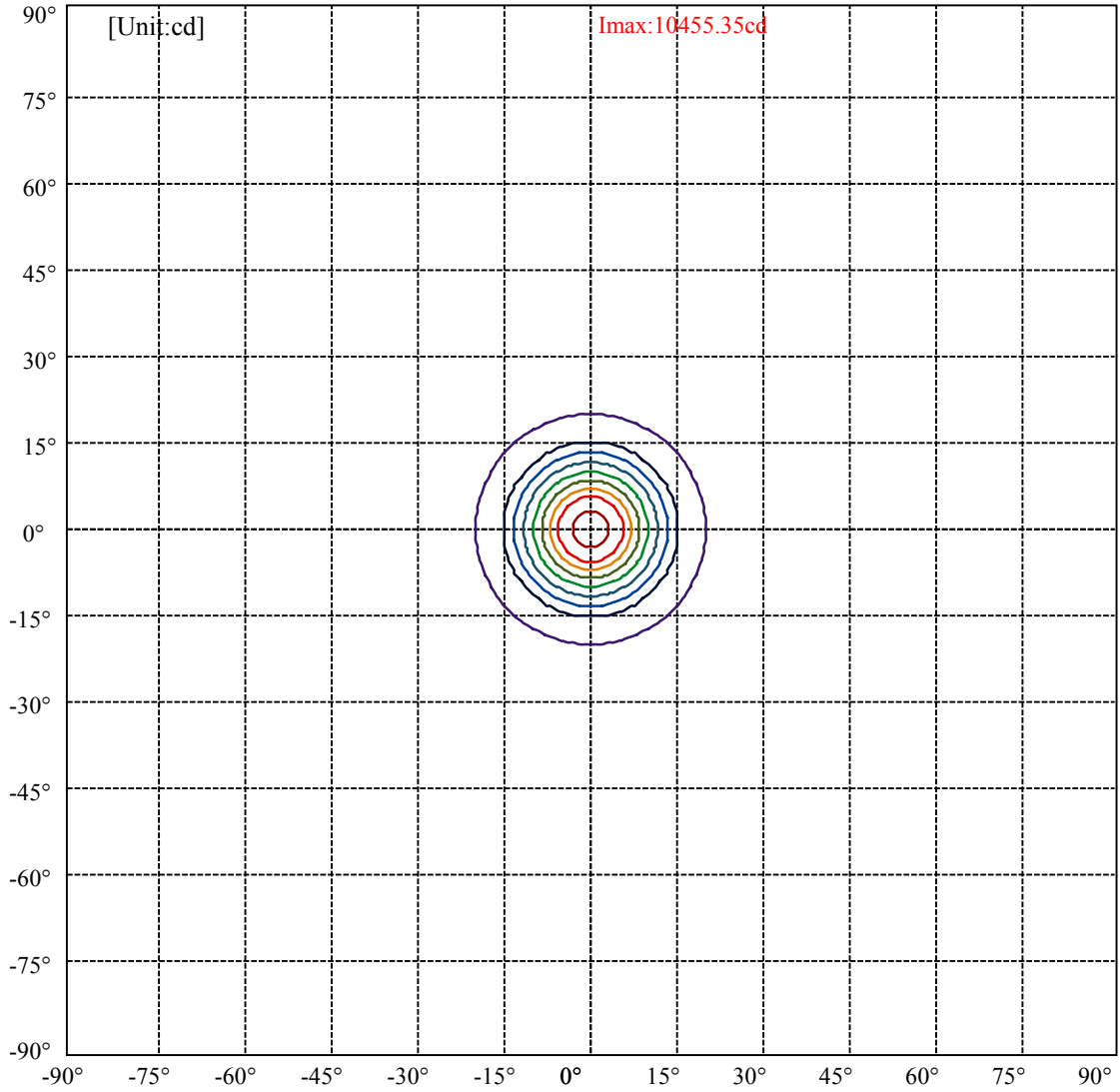
C0/C180: —————

C90/C270: —————

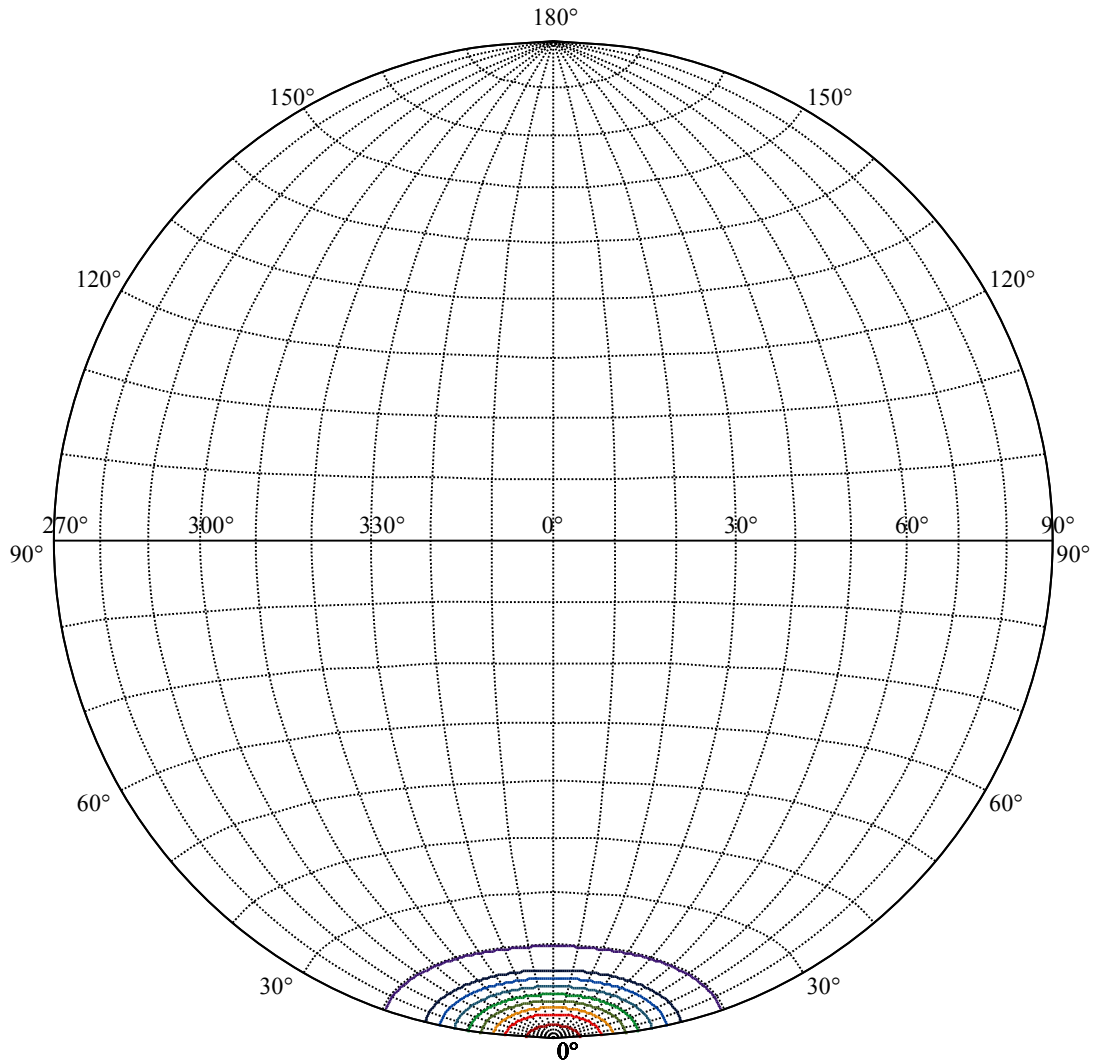
Field angle(10%Imax):C0/180Left:19.7 Right:19.7  
:C90/270Left:19.7 Right:19.7

Beam Angle(50%Imax):C0/180Left:9.8 Right:9.8  
:C90/270Left:9.8 Right:9.8





(10%Imax) 1045.53	—
(20%Imax) 2091.07	—
(30%Imax) 3136.6	—
(40%Imax) 4182.14	—
(50%Imax) 5227.67	—
(60%Imax) 6273.21	—
(70%Imax) 7318.74	—
(80%Imax) 8364.28	—
(90%Imax) 9409.81	—



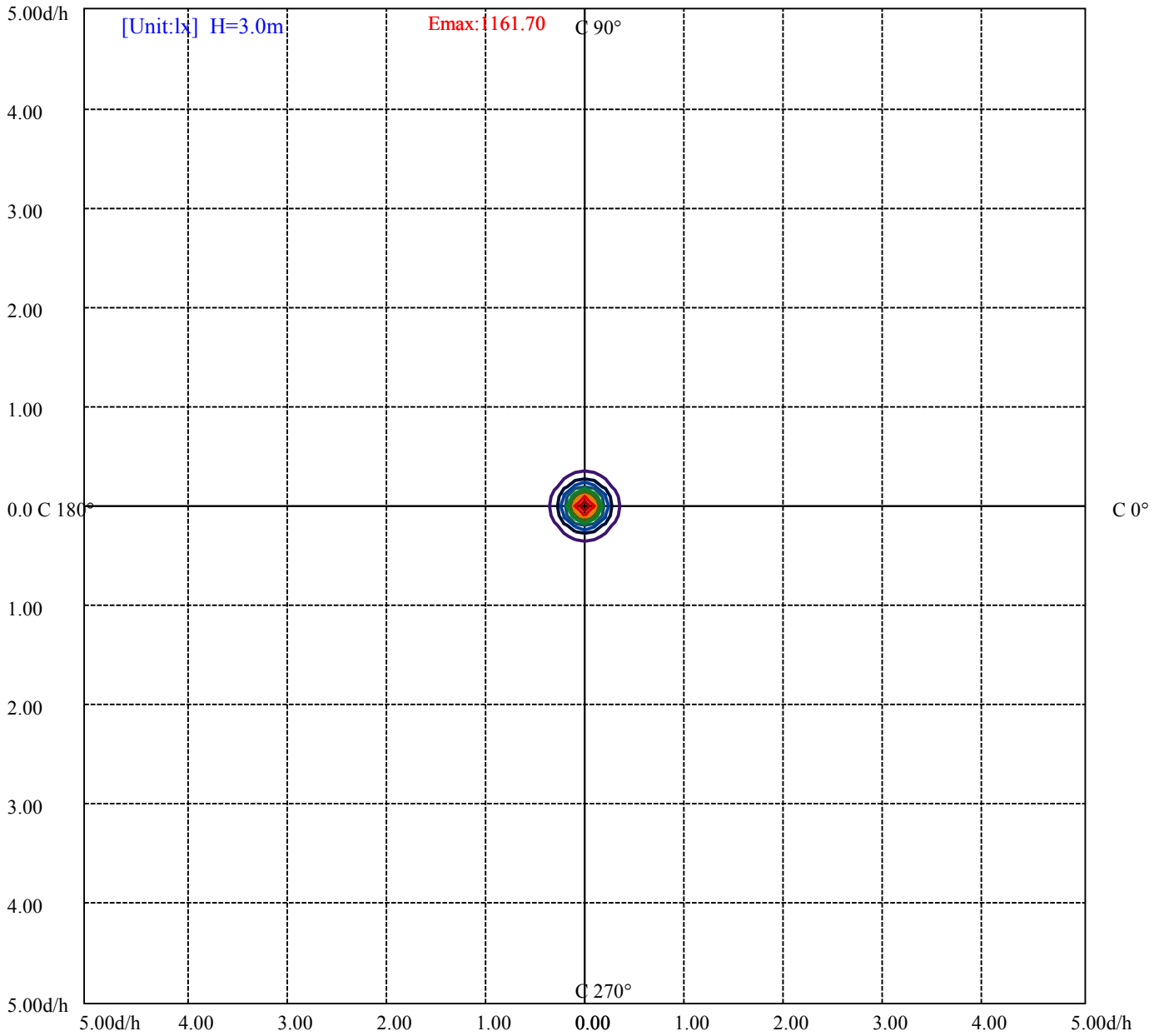
House

[Unit:cd]

Road

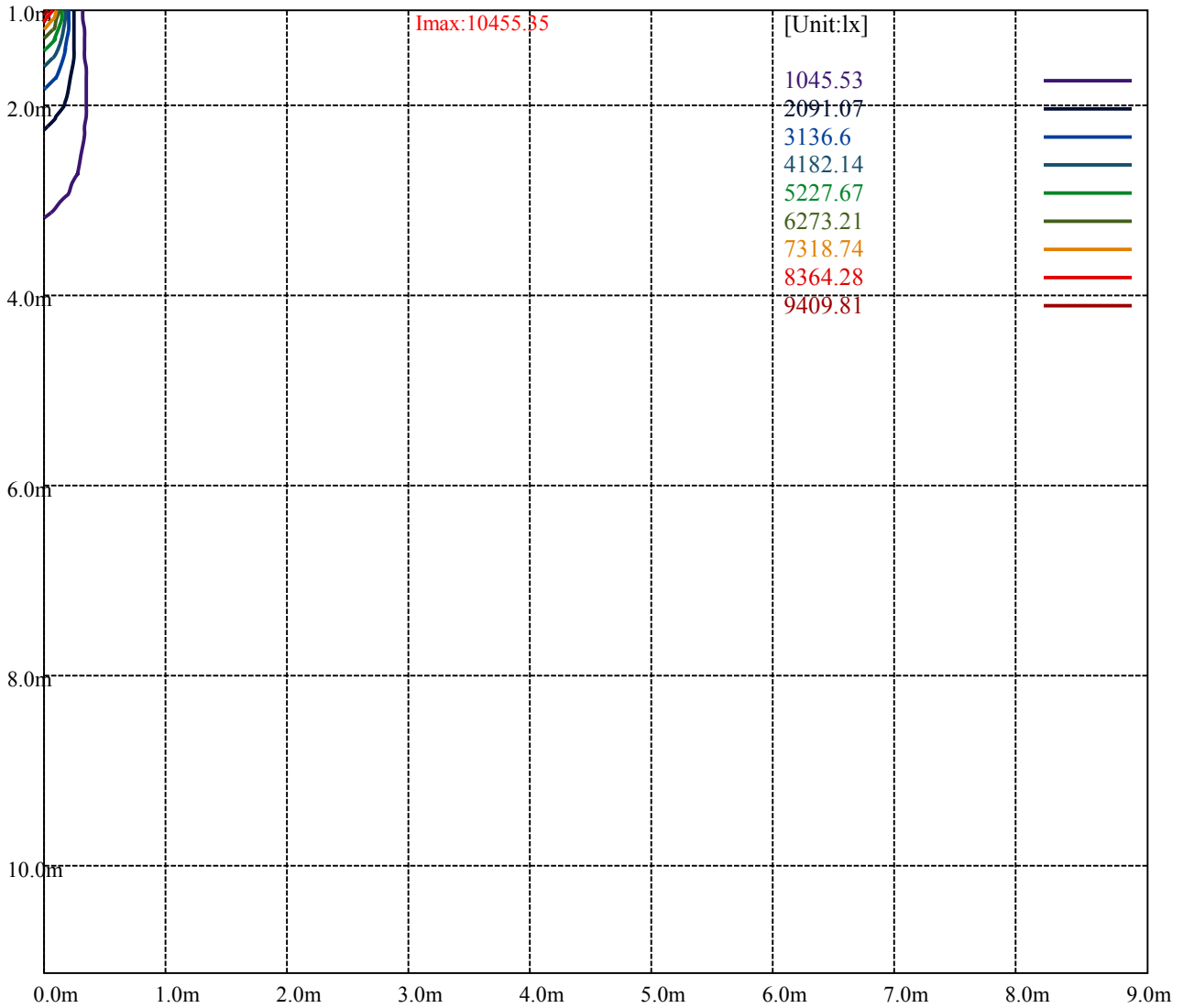
Imax:10455.35

(10%Imax)	1045.53	—
(20%Imax)	2091.07	—
(30%Imax)	3136.6	—
(40%Imax)	4182.14	—
(50%Imax)	5227.67	—
(60%Imax)	6273.21	—
(70%Imax)	7318.74	—
(80%Imax)	8364.28	—
(90%Imax)	9409.81	—



(10%Emax) 116.17	—
(20%Emax) 232.34	—
(30%Emax) 348.51	—
(40%Emax) 464.68	—
(50%Emax) 580.85	—
(60%Emax) 697.02	—
(70%Emax) 813.19	—
(80%Emax) 929.36	—
(90%Emax) 1045.53	—





Luminance Table

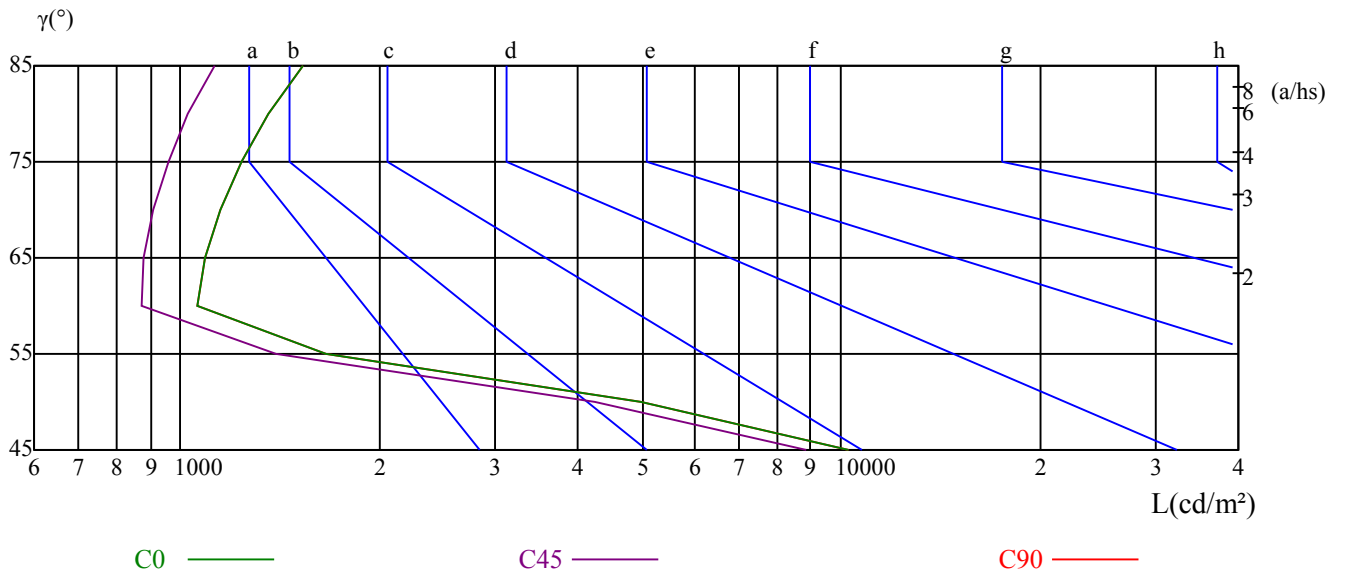
$\gamma$	45	50	55	60	65	70	75	80	85
C0	10251	4970	1664	1058	1086	1147	1234	1359	1536
C45	8853	4229	1393	871	879	910	958	1028	1127
C90	10251	4970	1664	1058	1086	1147	1234	1359	1536

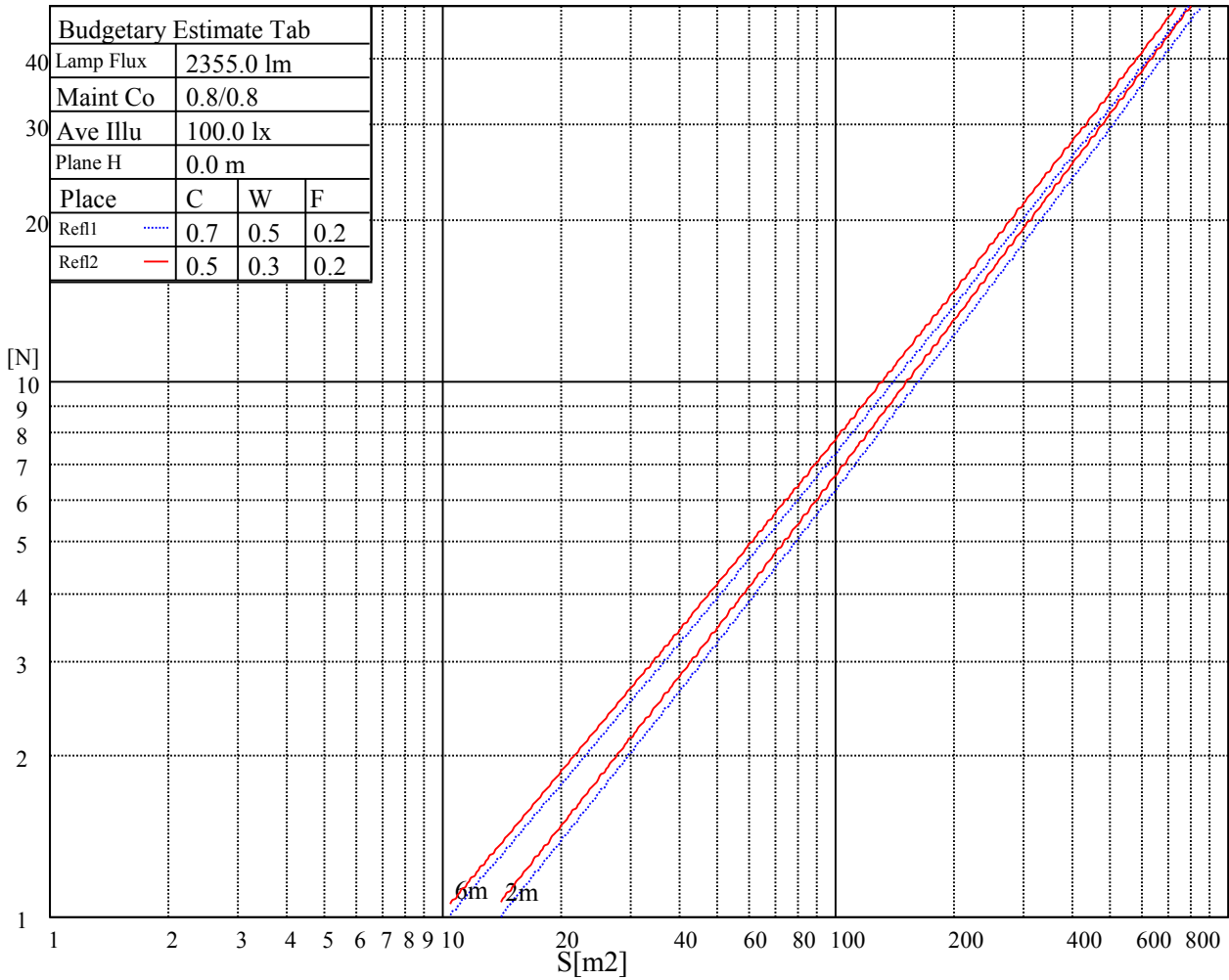
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
2521	2521	2521	4073	4073	4073	12353	12353	12353

Glare Table

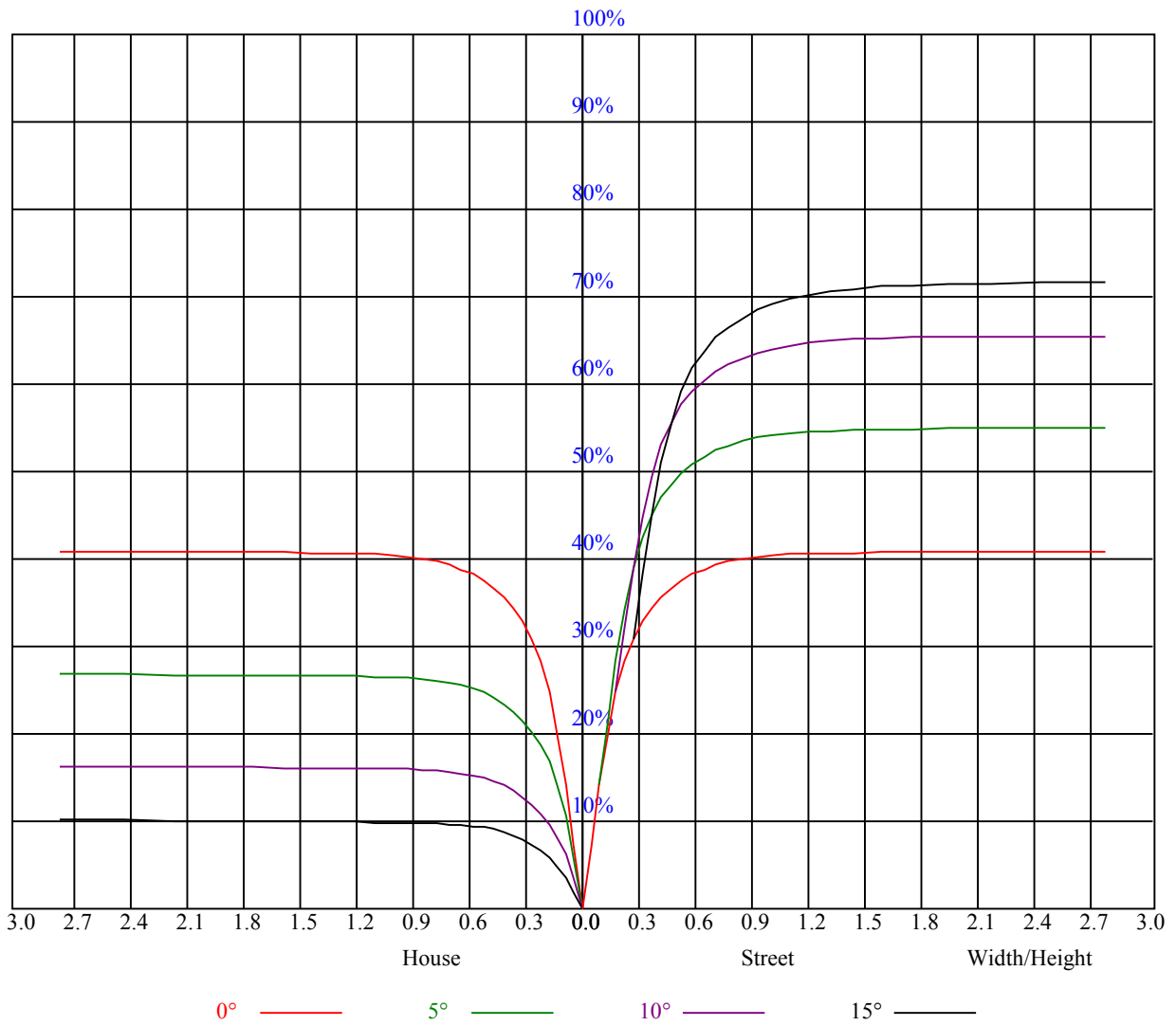
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

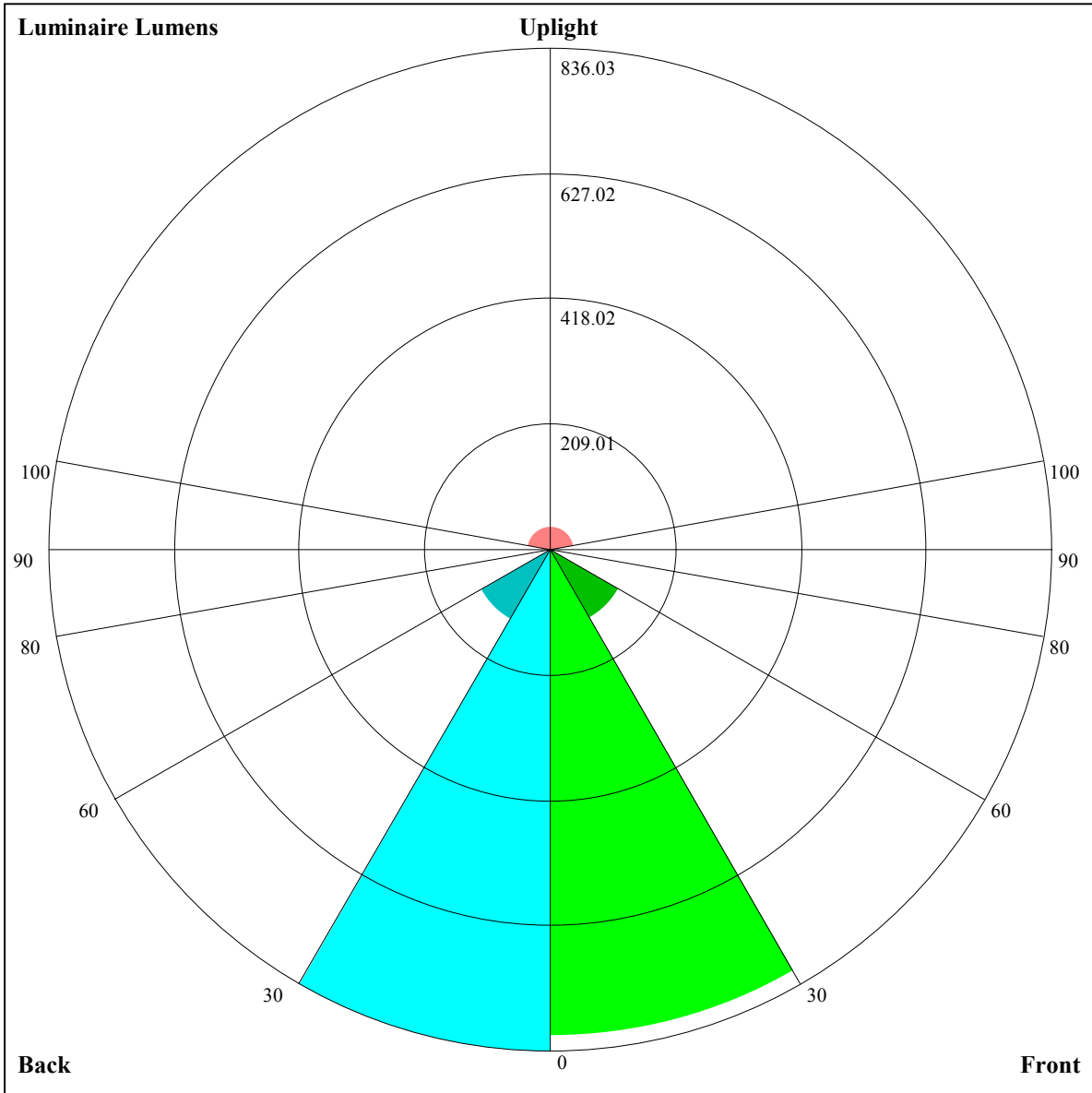
Luminance Limiting Curve





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	1.00	1.00	1.00	0.98	0.98	0.98	0.93	0.93	0.93	0.89	0.89	0.89	0.86	0.86	0.86	0.84
1	0.91	0.89	0.86	0.89	0.87	0.85	0.86	0.84	0.82	0.83	0.81	0.80	0.80	0.79	0.77	0.76
2	0.87	0.83	0.80	0.85	0.82	0.80	0.82	0.80	0.78	0.80	0.78	0.76	0.78	0.76	0.75	0.73
3	0.83	0.79	0.76	0.82	0.78	0.75	0.79	0.77	0.74	0.77	0.75	0.73	0.76	0.74	0.72	0.71
4	0.79	0.75	0.72	0.79	0.75	0.72	0.77	0.74	0.71	0.75	0.73	0.70	0.74	0.71	0.70	0.68
5	0.76	0.73	0.70	0.76	0.72	0.69	0.74	0.71	0.69	0.73	0.70	0.68	0.72	0.69	0.68	0.66
6	0.74	0.70	0.67	0.73	0.70	0.67	0.72	0.69	0.66	0.71	0.68	0.66	0.70	0.68	0.66	0.65
7	0.72	0.68	0.65	0.71	0.67	0.65	0.70	0.67	0.64	0.69	0.66	0.64	0.68	0.66	0.64	0.63
8	0.70	0.66	0.63	0.69	0.65	0.63	0.68	0.65	0.63	0.68	0.65	0.63	0.67	0.64	0.62	0.61
9	0.68	0.64	0.61	0.67	0.64	0.61	0.67	0.63	0.61	0.66	0.63	0.61	0.65	0.63	0.61	0.60
10	0.66	0.62	0.60	0.66	0.62	0.60	0.65	0.62	0.60	0.65	0.62	0.60	0.64	0.61	0.59	0.59





Luminaire Lumens:

FL=810.79,FM=130.7,FH=8.07,FVH=4.27

BL=836.03,BM=133.52,BH=8.05,BVH=4.24

UL=8.17,UH=38.88

BUG Rating:B2-U2-G0

Intensity data(cd)

C/γ(°)	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0
0.0	10530.64	9090.36	5345.43	2304.11	1006.43	640.31	462.47	295.65	169.24
45.0	10479.99	7952.90	4408.37	1653.89	861.08	548.91	382.64	278.59	143.92
90.0	10306.56	7712.85	3577.01	1502.49	832.62	534.10	377.47	238.45	138.52
135.0	10504.21	8755.07	5075.65	1942.94	976.15	604.52	412.37	280.79	164.95
180.0	10530.64	8538.70	4782.75	1796.49	907.99	607.44	423.22	258.38	156.64
225.0	10479.99	9436.67	5968.66	2440.65	1079.38	659.69	446.34	288.44	182.51
270.0	10306.56	9684.97	6403.61	2736.85	1174.35	702.52	469.08	311.07	196.83
315.0	10504.21	8837.10	5010.68	1815.76	958.75	589.16	393.38	260.69	160.82
360.0	10530.64	9090.36	5345.43	2304.11	1006.43	640.31	462.47	295.65	169.24

C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	92.27	42.72	13.60	8.04	7.87	7.82	7.82	7.87	8.20
45.0	74.93	33.64	9.03	8.09	7.87	7.82	7.76	7.82	7.87
90.0	70.86	30.50	8.48	7.98	7.87	7.82	7.82	7.87	7.71
135.0	85.34	44.16	12.77	8.09	7.93	7.87	7.82	7.87	8.04
180.0	80.44	36.50	11.29	8.04	7.82	7.76	7.76	7.82	7.98
225.0	100.04	48.67	17.07	8.15	7.87	7.71	7.71	7.71	7.82
270.0	106.15	51.15	20.98	8.26	7.93	7.82	7.76	7.82	7.93
315.0	83.19	40.52	12.94	8.04	7.87	7.87	7.93	7.98	8.15
360.0	92.27	42.72	13.60	8.04	7.87	7.82	7.82	7.87	8.20

C/γ(°)	90.0
0.0	7.49
45.0	7.49
90.0	7.49
135.0	7.49
180.0	7.43
225.0	7.43
270.0	7.54
315.0	7.54
360.0	7.49