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NATA

LumCAT: 3-2441-A
Luminaire: 92.70.151.00+92.70.153.00
Report No: NATA0100
Test No: GC2020011306
LampCAT: CITIZEN LCN-C03A
Lamp flux(lm): 2216.0
Number of Lamps: 1
Length(mm): 0
Phm Type: C

Voltage(V): 33.8800
Current(A): 0.4970
Power (W): 16.8000
PF: 0.0000
Ballast type: DC
Width(mm): 0
Height(mm): 0

Photometric Results

Lumens(lm): 1884.22
Efficiency(%): 85.03%
Lumens(lm)/Power(W): 112.16
Central intensity(cd): 5153.625
Maximum intensity(cd): 5153.625
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=28.1
[C90/270]Total=28.1
Field angle(10%Imax): [C0/180]Total=67.5
[C90/270]Total=67.5
Maximum s/h(1/2): C0_180=0.47 C90_270=0.47
Maximum s/h(1/4): C0_180=0.49 C90_270=0.49
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 85.03%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.528%

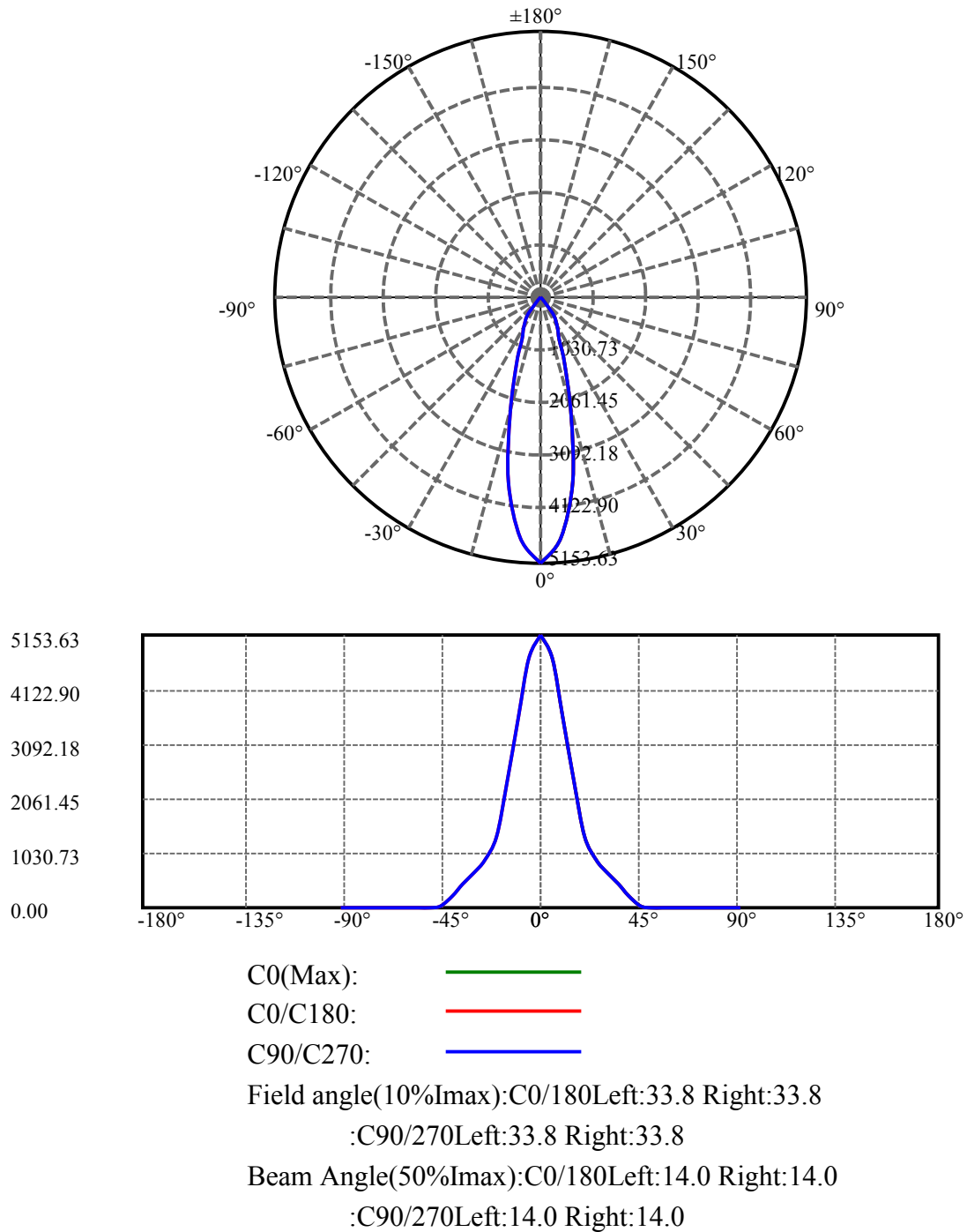
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	5153.625	0.000	0	.000%	.000%
5.0	4691.391	117.694	117.694	5.311%	6.246%
10.0	3622.922	297.429	415.123	13.422%	22.032%
15.0	2330.508	353.153	768.277	15.937%	40.774%
20.0	1343.011	302.750	1071.026	13.662%	56.842%
25.0	892.209	234.433	1305.46	10.579%	69.284%
30.0	688.022	199.980	1505.439	9.024%	79.897%
35.0	459.021	168.910	1674.35	7.622%	88.861%
40.0	212.688	112.070	1786.419	5.057%	94.809%
45.0	45.513	47.808	1834.227	2.157%	97.347%
50.0	13.345	11.893	1846.121	.537%	97.978%
55.0	11.363	5.372	1851.493	.242%	98.263%
60.0	10.230	4.991	1856.484	.225%	98.528%
65.0	9.464	4.788	1861.272	.216%	98.782%
70.0	9.000	4.675	1865.947	.211%	99.030%
75.0	8.677	4.620	1870.567	.209%	99.275%
80.0	8.508	4.598	1875.165	.207%	99.519%
85.0	8.367	4.585	1879.751	.207%	99.763%
90.0	7.973	4.474	1884.225	.202%	100.000%

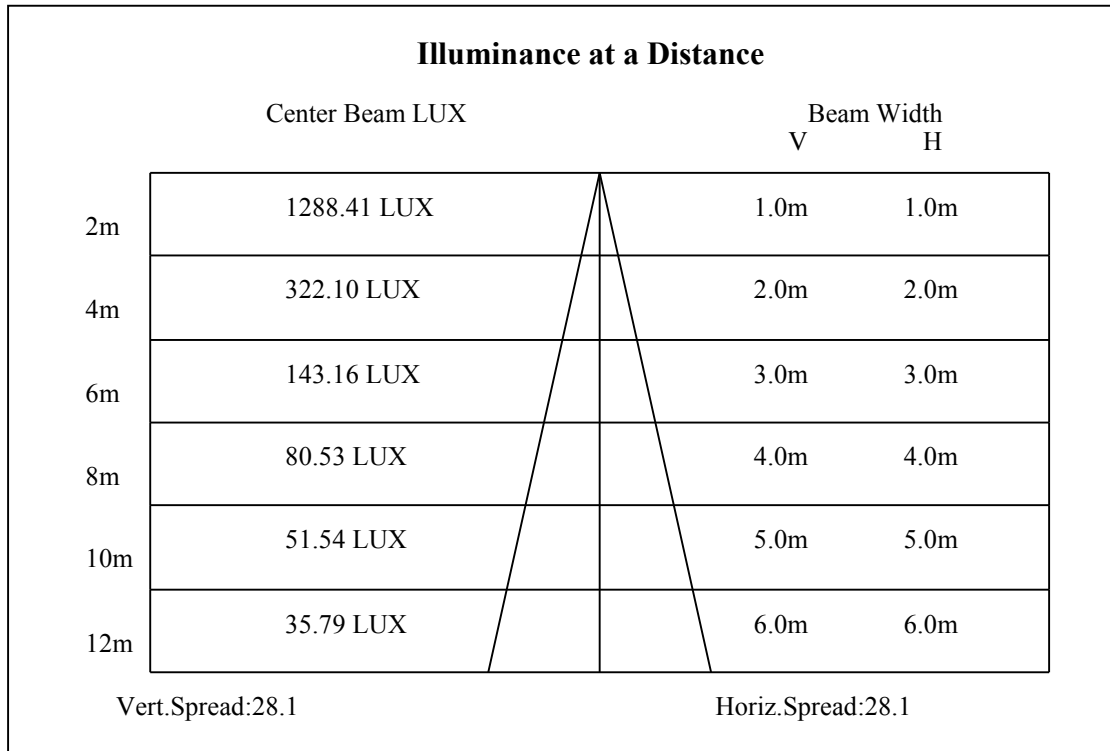
ZONAL LUMEN SUMMARY

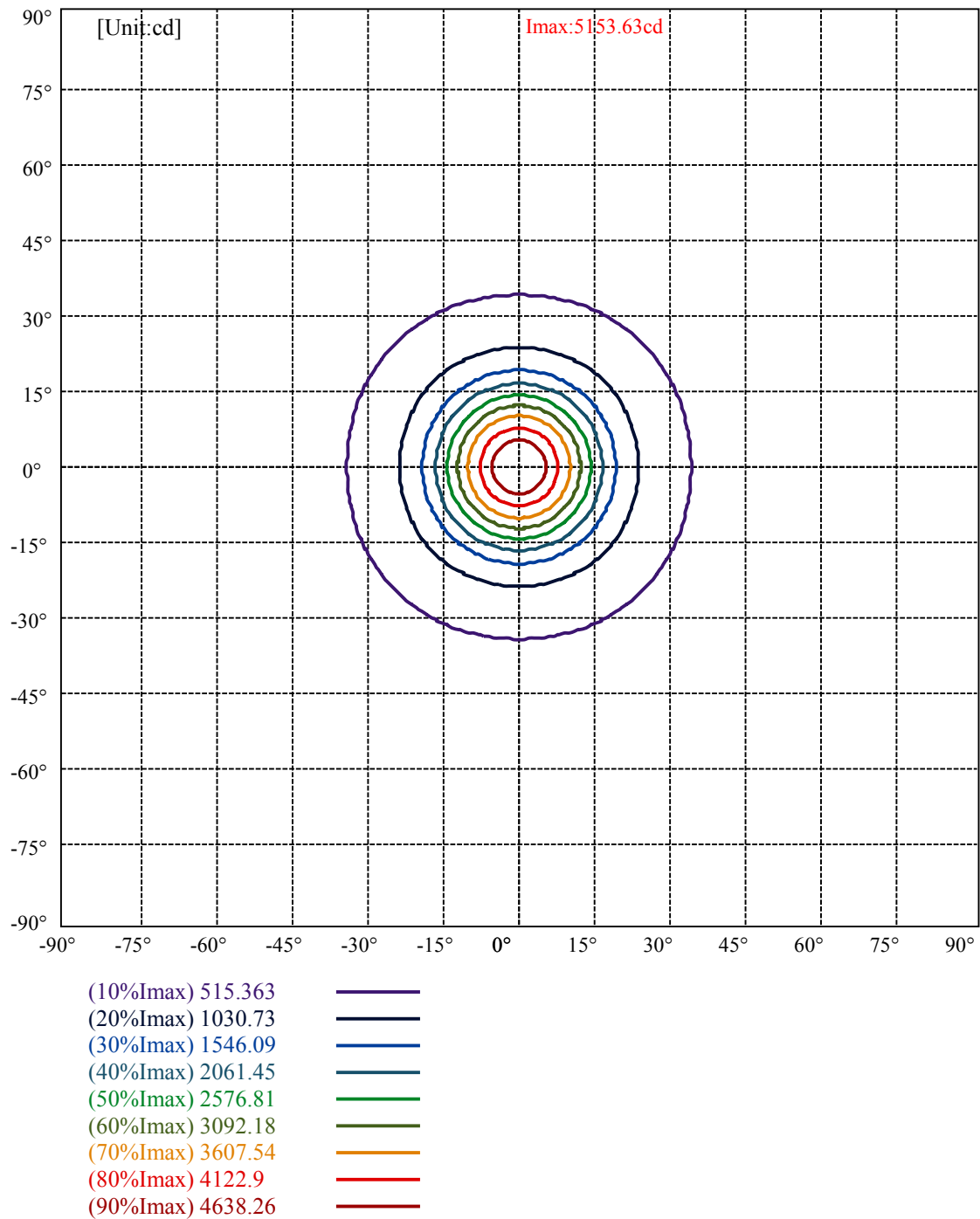
Zone	Lumens	%Lamp	%Fixt
0-30	1505.44	67.93%	79.90%
0-40	1786.42	80.61%	94.81%
0-60	1856.48	83.78%	98.53%
0-90	1879.75	84.83%	99.76%
0-120	1879.75	84.83%	99.76%
0-180	1884.22	85.03%	100.00%
60-90	28.26	1.28%	1.50%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-30.06	1507.38	68.02%	80.00%

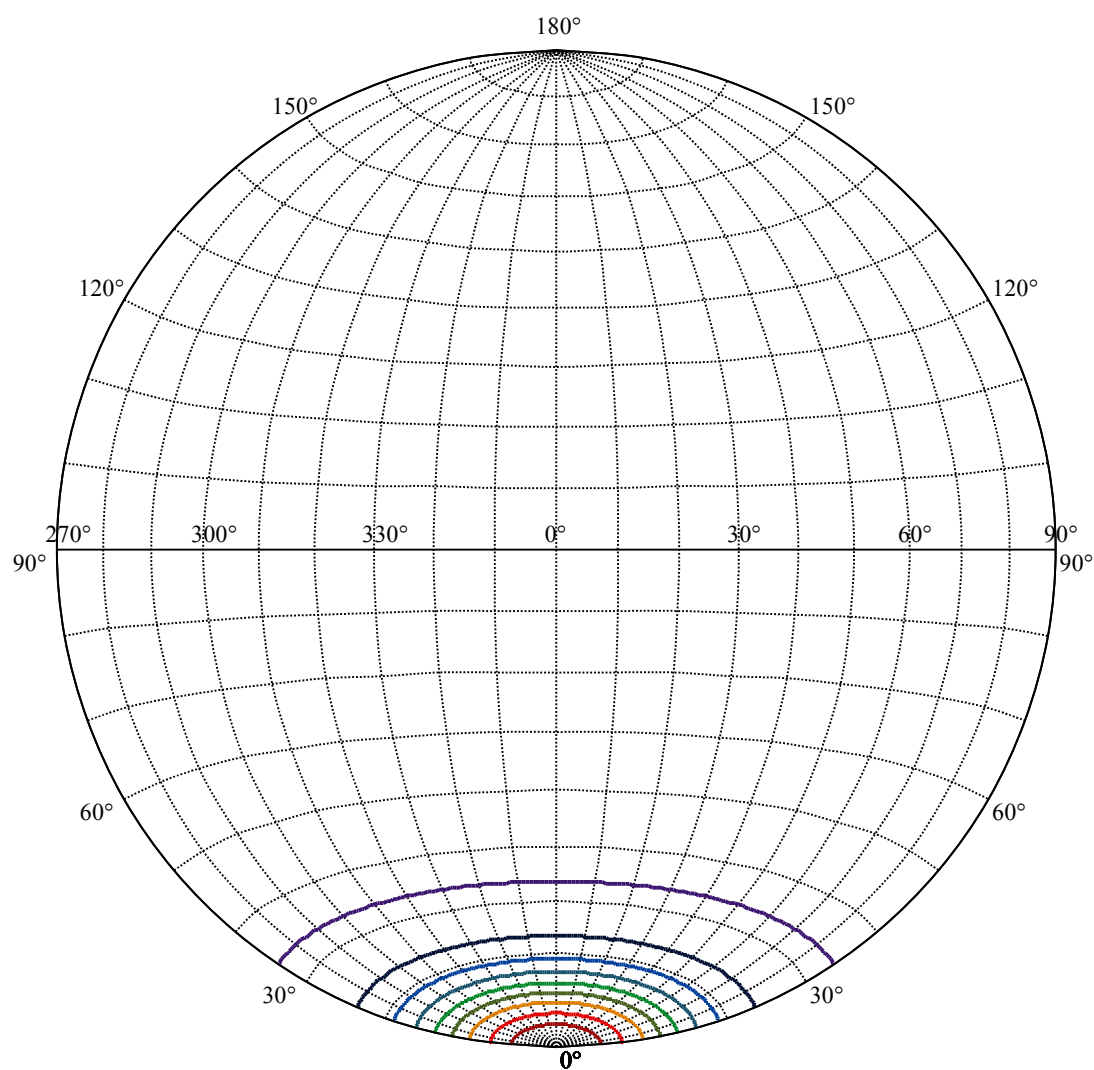
ZONAL LUMEN SUMMARY

0-10	415.12
10-20	655.90
20-30	434.41
30-40	280.98
40-50	59.70
50-60	10.36
60-70	9.46
70-80	9.22
80-90	4.59
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









House

[Unit:cd]

Road

Imax:5153.63

(10%Imax) 515.363

(20%Imax) 1030.73

(30%Imax) 1546.09

(40%Imax) 2061.45

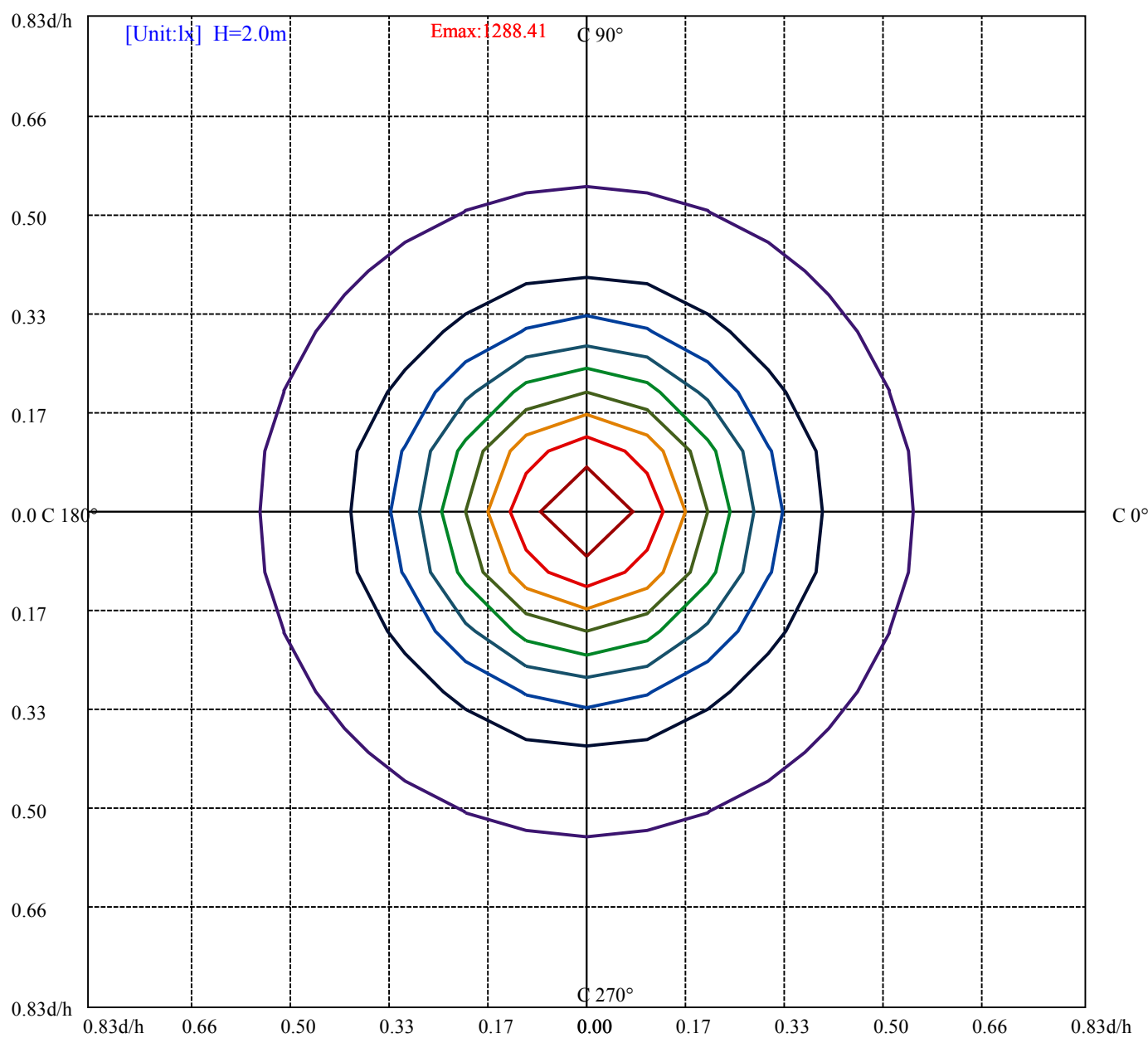
(50%Imax) 2576.81

(60%Imax) 3092.18

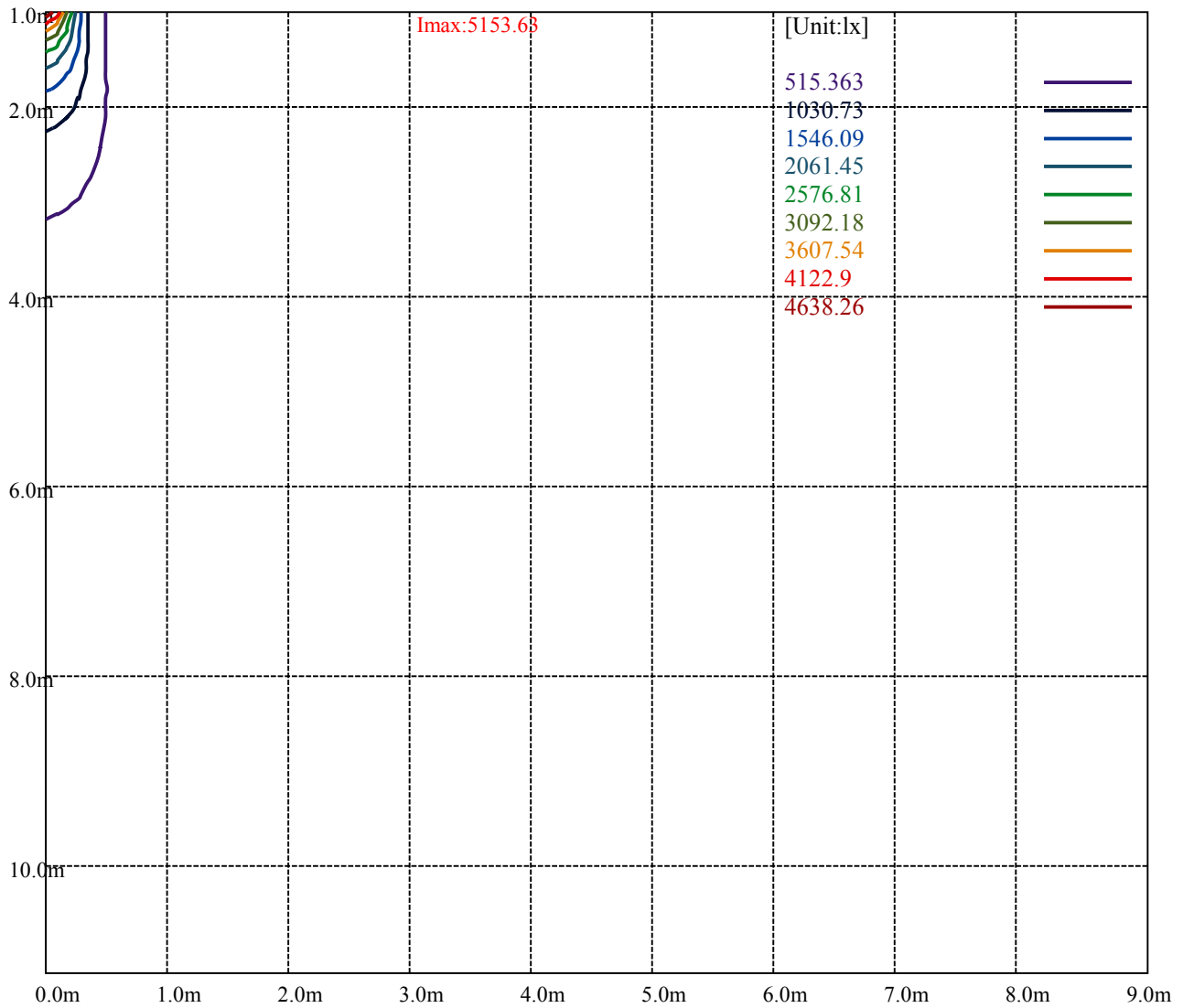
(70%Imax) 3607.54

(80%Imax) 4122.9

(90%Imax) 4638.26



(10%Emax) 128.8403	—
(20%Emax) 257.68	—
(30%Emax) 386.52	—
(40%Emax) 515.36	—
(50%Emax) 644.2025	—
(60%Emax) 773.0425	—
(70%Emax) 901.8825	—
(80%Emax) 1030.723	—
(90%Emax) 1159.563	—



Luminance Table

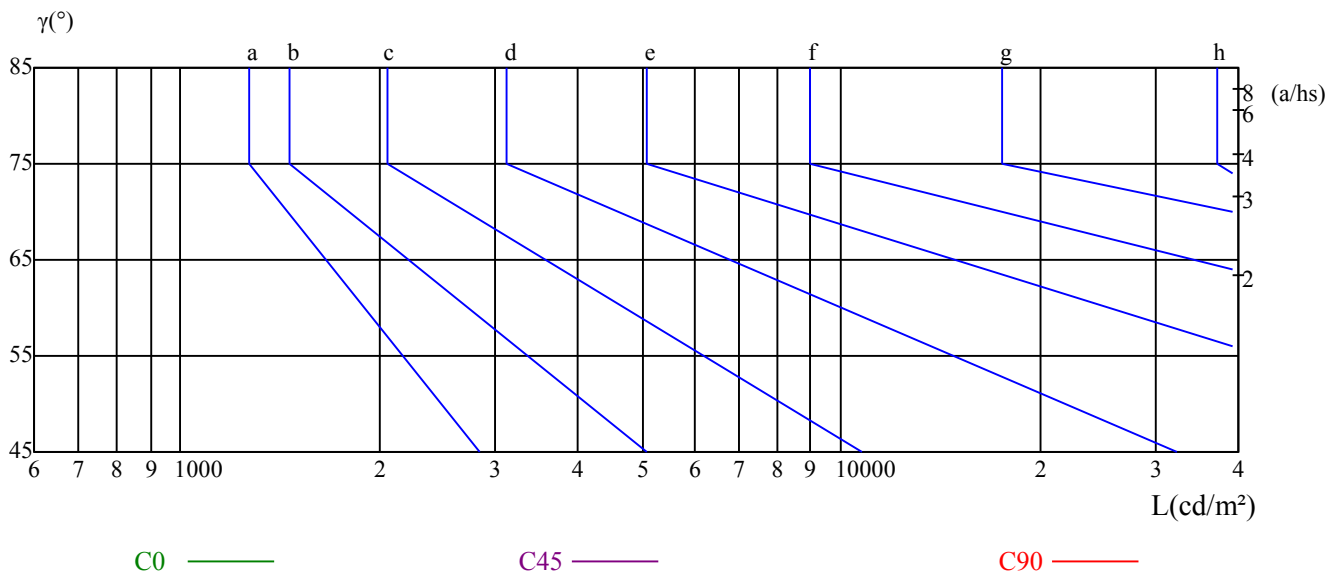
γ	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

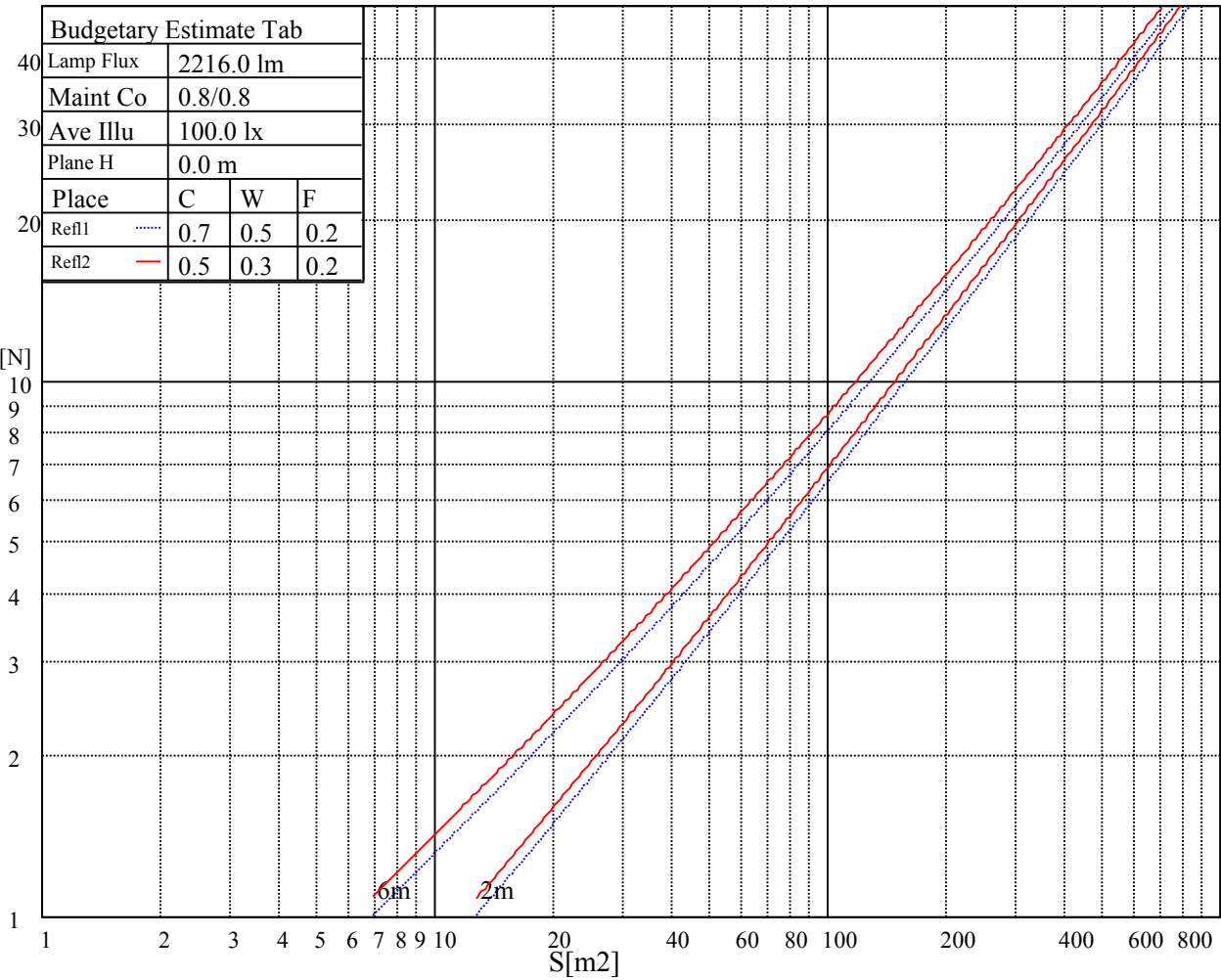
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

Glare Table

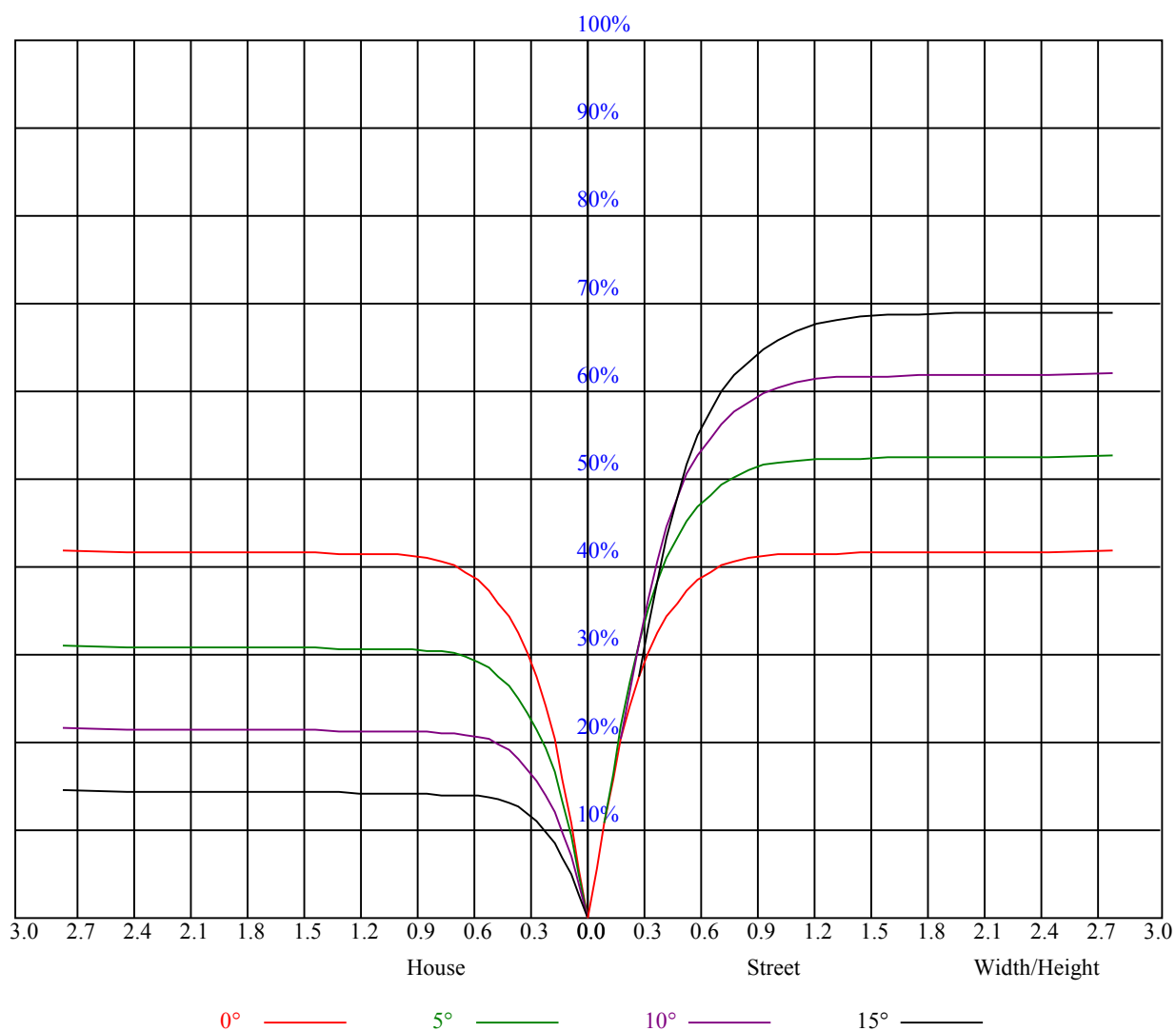
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

Luminance Limiting Curve





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	1.01	1.01	1.01	0.99	0.99	0.99	0.94	0.94	0.94	0.90	0.90	0.90	0.87	0.87	0.87	0.85
1	0.95	0.93	0.91	0.93	0.91	0.89	0.89	0.88	0.87	0.86	0.85	0.84	0.83	0.83	0.82	0.80
2	0.89	0.86	0.83	0.87	0.85	0.82	0.85	0.82	0.80	0.82	0.80	0.79	0.80	0.78	0.77	0.76
3	0.84	0.80	0.77	0.83	0.79	0.76	0.81	0.78	0.75	0.79	0.76	0.74	0.77	0.75	0.73	0.72
4	0.79	0.75	0.72	0.78	0.75	0.72	0.77	0.73	0.71	0.75	0.72	0.70	0.73	0.71	0.69	0.68
5	0.75	0.71	0.68	0.75	0.70	0.67	0.73	0.70	0.67	0.72	0.69	0.66	0.70	0.68	0.66	0.65
6	0.72	0.67	0.64	0.71	0.67	0.64	0.70	0.66	0.63	0.69	0.65	0.63	0.68	0.65	0.63	0.61
7	0.68	0.64	0.61	0.68	0.64	0.61	0.67	0.63	0.60	0.66	0.62	0.60	0.65	0.62	0.60	0.59
8	0.65	0.61	0.58	0.65	0.61	0.58	0.64	0.60	0.58	0.63	0.60	0.57	0.62	0.59	0.57	0.56
9	0.63	0.58	0.55	0.62	0.58	0.55	0.61	0.58	0.55	0.61	0.57	0.55	0.60	0.57	0.55	0.54
10	0.60	0.56	0.53	0.60	0.56	0.53	0.59	0.55	0.53	0.58	0.55	0.53	0.58	0.55	0.52	0.51



NATA 3-2441-A

Intensity data(cd)										Appendix Page: 14 Total:14	
C/γ(°)	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0		
0.0	5200.31	4397.06	3287.25	2097.00	1242.00	837.56	657.00	385.88	148.67		
45.0	5173.31	4524.75	3401.44	2275.31	1297.69	864.56	676.69	405.56	160.99		
90.0	5134.50	4570.31	3539.81	2247.75	1102.95	866.14	679.22	439.14	164.42		
135.0	5106.38	5022.00	4099.50	2725.31	1693.69	1008.56	747.56	577.69	293.06		
180.0	5200.31	5061.38	3978.00	2532.38	1481.63	916.88	700.43	511.71	270.28		
225.0	5173.31	4849.31	3889.13	2464.31	1436.06	944.33	721.07	513.11	258.19		
270.0	5134.50	4772.25	3708.56	2428.31	1377.56	930.94	700.88	492.19	292.50		
315.0	5106.38	4334.06	3079.69	1873.69	1112.51	768.71	621.34	346.89	113.40		
360.0	5200.31	4397.06	3287.25	2097.00	1242.00	837.56	657.00	385.88	148.67		
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0		
0.0	31.33	13.78	11.70	10.46	9.62	9.11	8.83	8.55	8.21		
45.0	36.06	11.14	10.41	9.84	9.28	8.89	8.55	8.38	8.21		
90.0	34.93	10.74	10.01	9.51	9.11	8.83	8.55	8.38	8.21		
135.0	74.42	15.58	12.26	10.74	9.84	9.28	9.06	8.83	8.61		
180.0	64.18	15.92	12.66	10.80	9.73	9.11	8.66	8.44	8.27		
225.0	55.07	13.39	11.53	10.29	9.45	8.94	8.55	8.38	8.33		
270.0	45.45	12.66	10.97	10.01	9.23	8.89	8.55	8.44	8.27		
315.0	22.67	13.56	11.36	10.18	9.45	8.94	8.66	8.66	8.83		
360.0	31.33	13.78	11.70	10.46	9.62	9.11	8.83	8.55	8.21		
C/γ(°)	90.0										
0.0	7.88										
45.0	7.99										
90.0	7.93										
135.0	8.04										
180.0	7.99										
225.0	8.04										
270.0	7.99										
315.0	7.93										
360.0	7.88										