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NATA

LumCAT: 1680-S	
Luminaire: 92.70.064.00	
Report No: NATA0100	Voltage(V): 37.6000
Test No: GC2018120301	Current(A): 0.3100
LampCAT: CITIZEN CLU028	Power (W): 11.6560
Lamp flux(lm): 1470.8	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 32	Width(mm): 32
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 1306.66
Efficiency(%): 88.84%
Lumens(lm)/Power(W): 112.66
Central intensity(cd): 1297.828
Maximum intensity(cd): 1298.250
Angle of maximum intensity: $C=0.0$ $\gamma=5.0$
Beam Angle(50%Imax): [C0/180]Total=63.7
[C90/270]Total=63.7
Field angle(10%Imax): [C0/180]Total=85.4
[C90/270]Total=85.4
Maximum s/h(1/2): C0_180=1.03 C90_270=1.03
Maximum s/h(1/4): C0_180=0.93 C90_270=0.93
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 89.28%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 97.906%

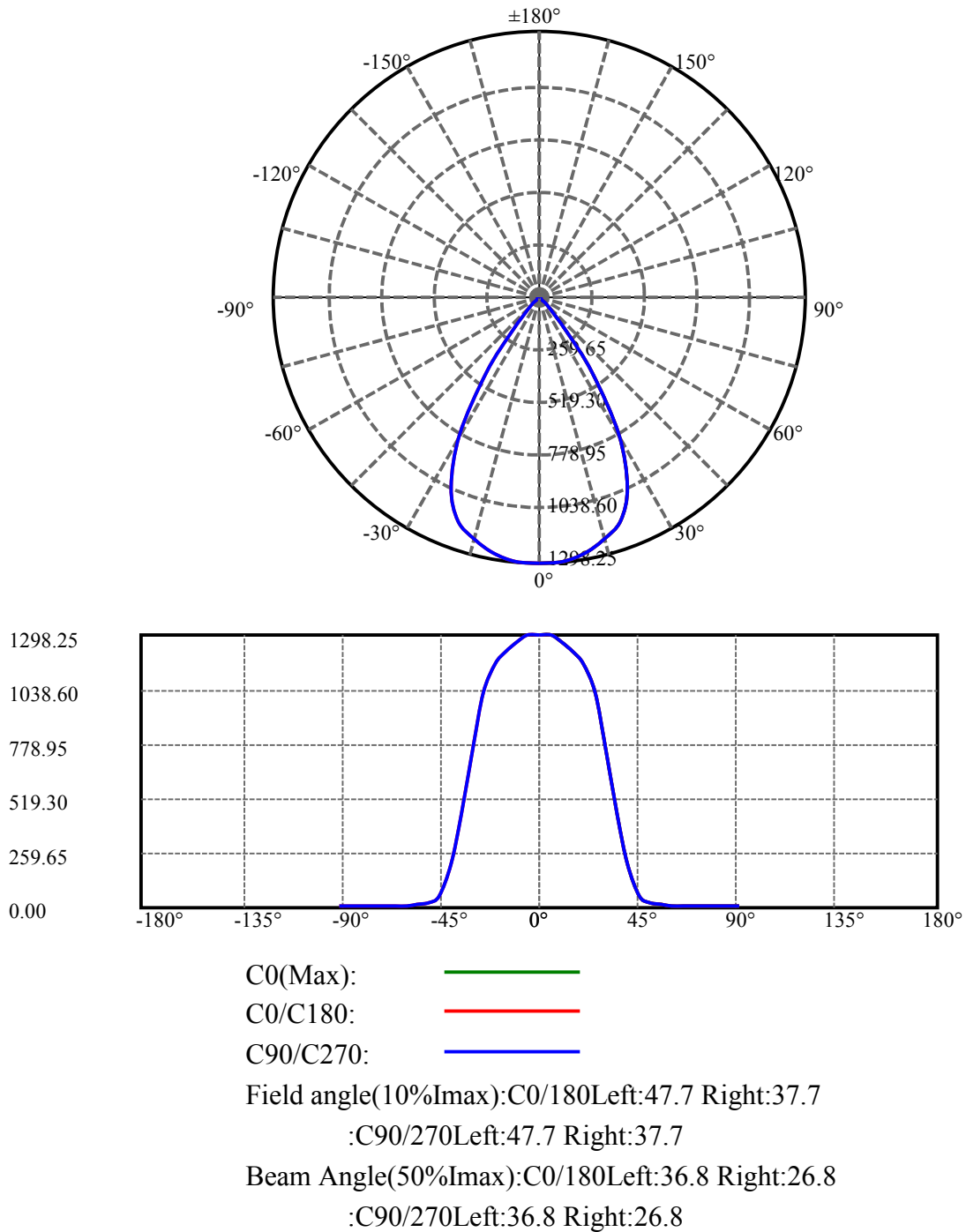
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	1297.828	7.761	7.761	.528%	.594%
5.0	1298.250	62.022	69.783	4.217%	5.341%
10.0	1266.750	120.573	190.356	8.198%	14.568%
15.0	1221.609	173.308	363.664	11.783%	27.832%
20.0	1162.505	217.939	581.603	14.818%	44.511%
25.0	1025.789	237.627	819.23	16.156%	62.696%
30.0	769.275	210.834	1030.064	14.335%	78.832%
35.0	440.332	138.440	1168.504	9.413%	89.427%
40.0	211.669	74.579	1243.083	5.071%	95.134%
45.0	59.091	22.903	1265.986	1.557%	96.887%
50.0	22.261	9.347	1275.333	.636%	97.602%
55.0	12.319	5.531	1280.864	.376%	98.026%
60.0	10.146	4.816	1285.681	.327%	98.394%
65.0	9.028	4.485	1290.166	.305%	98.737%
70.0	8.269	4.259	1294.425	.290%	99.063%
75.0	7.348	3.890	1298.315	.265%	99.361%
80.0	6.666	3.598	1301.913	.245%	99.637%
85.0	5.977	3.264	1305.177	.222%	99.886%
90.0	5.421	1.486	1306.663	.101%	100.000%

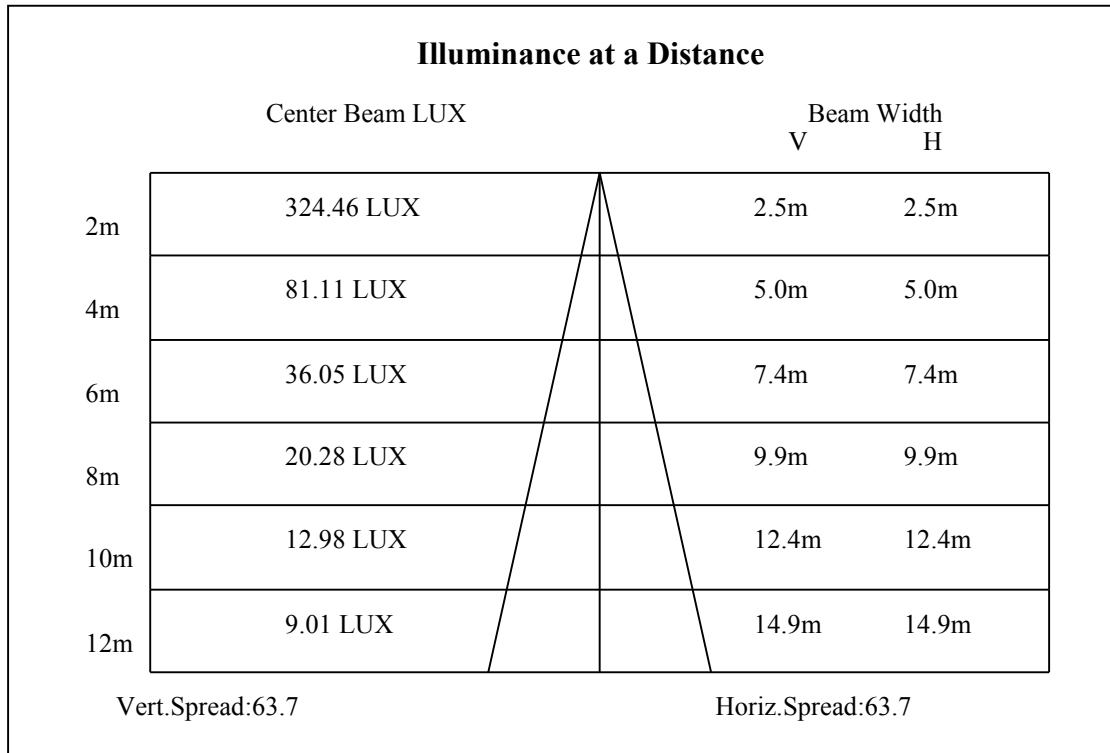
ZONAL LUMEN SUMMARY

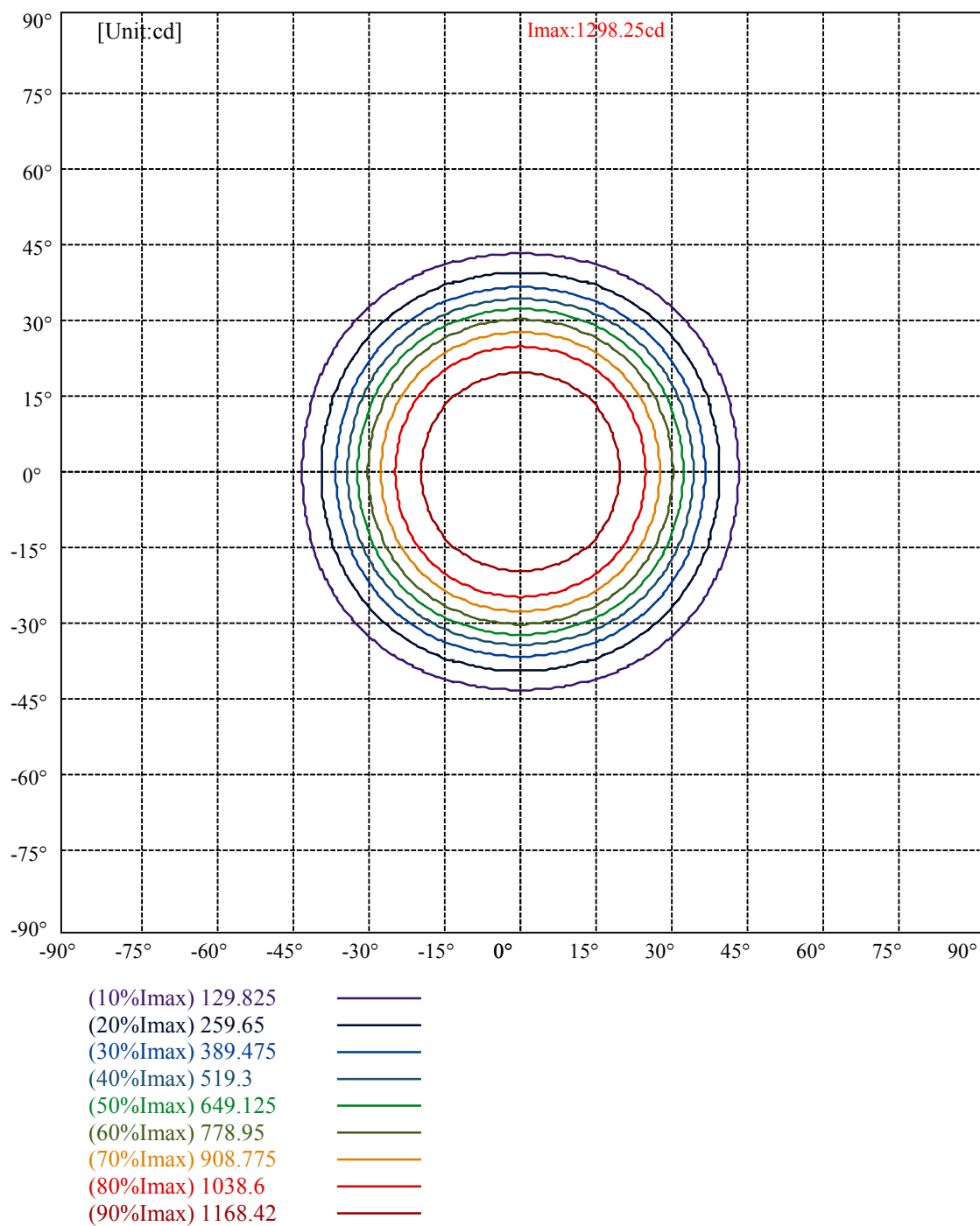
Zone	Lumens	%Lamp	%Fixt
0-30	1030.06	70.03%	78.83%
0-40	1243.08	84.52%	95.13%
0-60	1285.68	87.41%	98.39%
0-90	1305.18	88.74%	99.89%
0-120	1305.18	88.74%	99.89%
0-180	1306.66	88.84%	100.00%
60-90	24.31	1.65%	1.86%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-30.55	1045.33	71.07%	80.00%

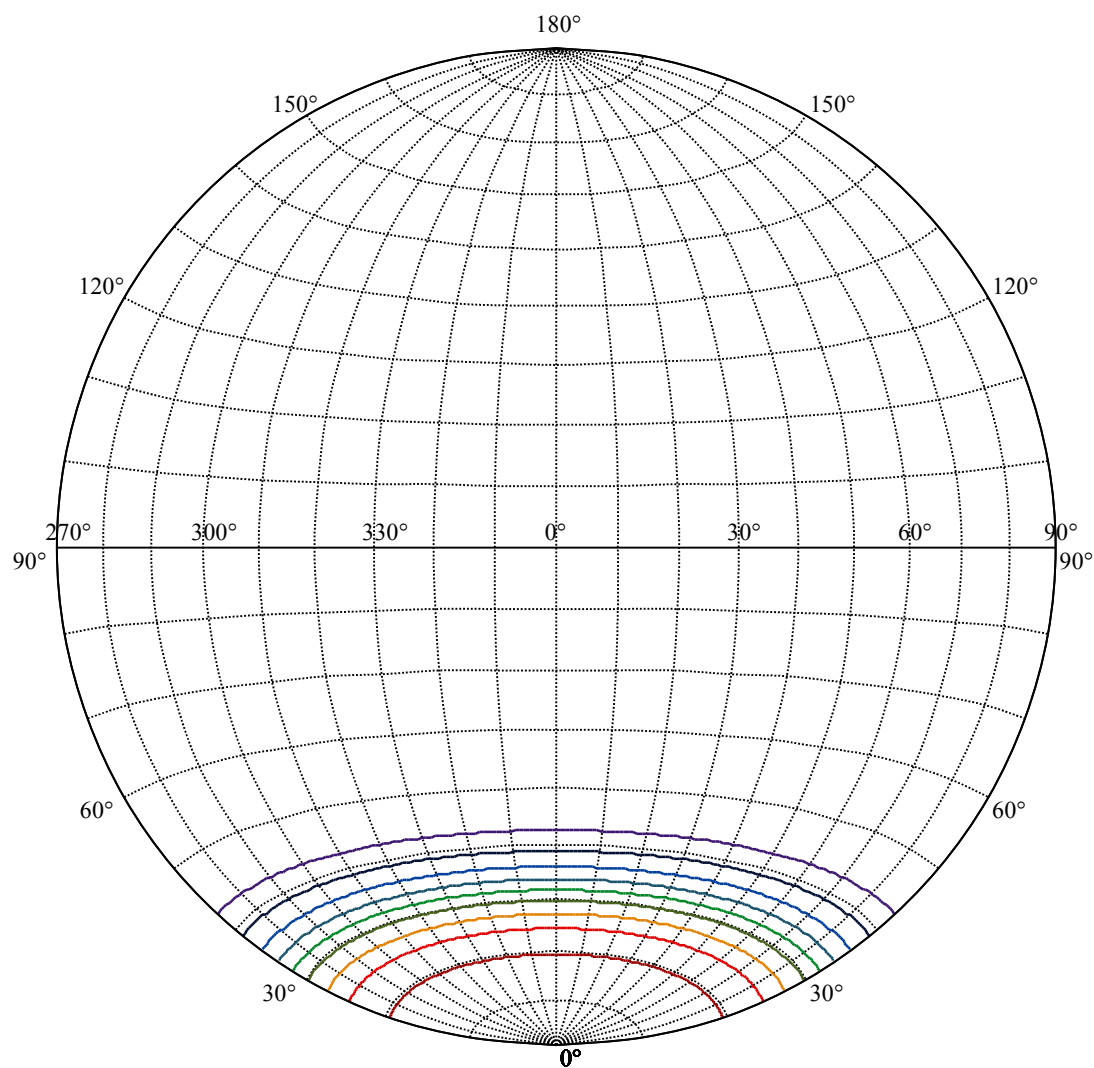
ZONAL LUMEN SUMMARY

0-10	190.36
10-20	391.25
20-30	448.46
30-40	213.02
40-50	32.25
50-60	10.35
60-70	8.74
70-80	7.49
80-90	3.26
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:1298.25

(10%Imax) 129.825

(20%Imax) 259.65

(30%Imax) 389.475

(40%Imax) 519.3

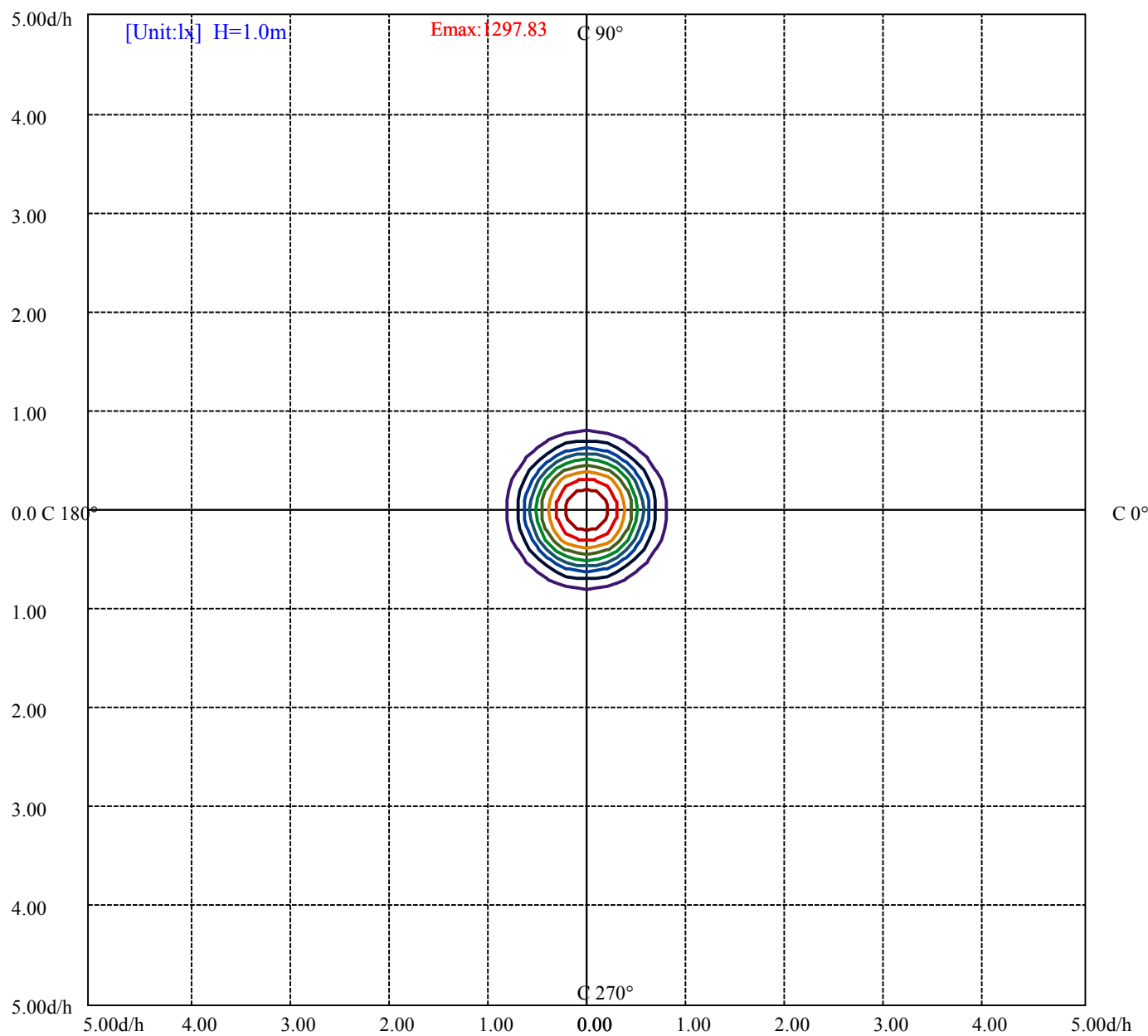
(50%Imax) 649.125

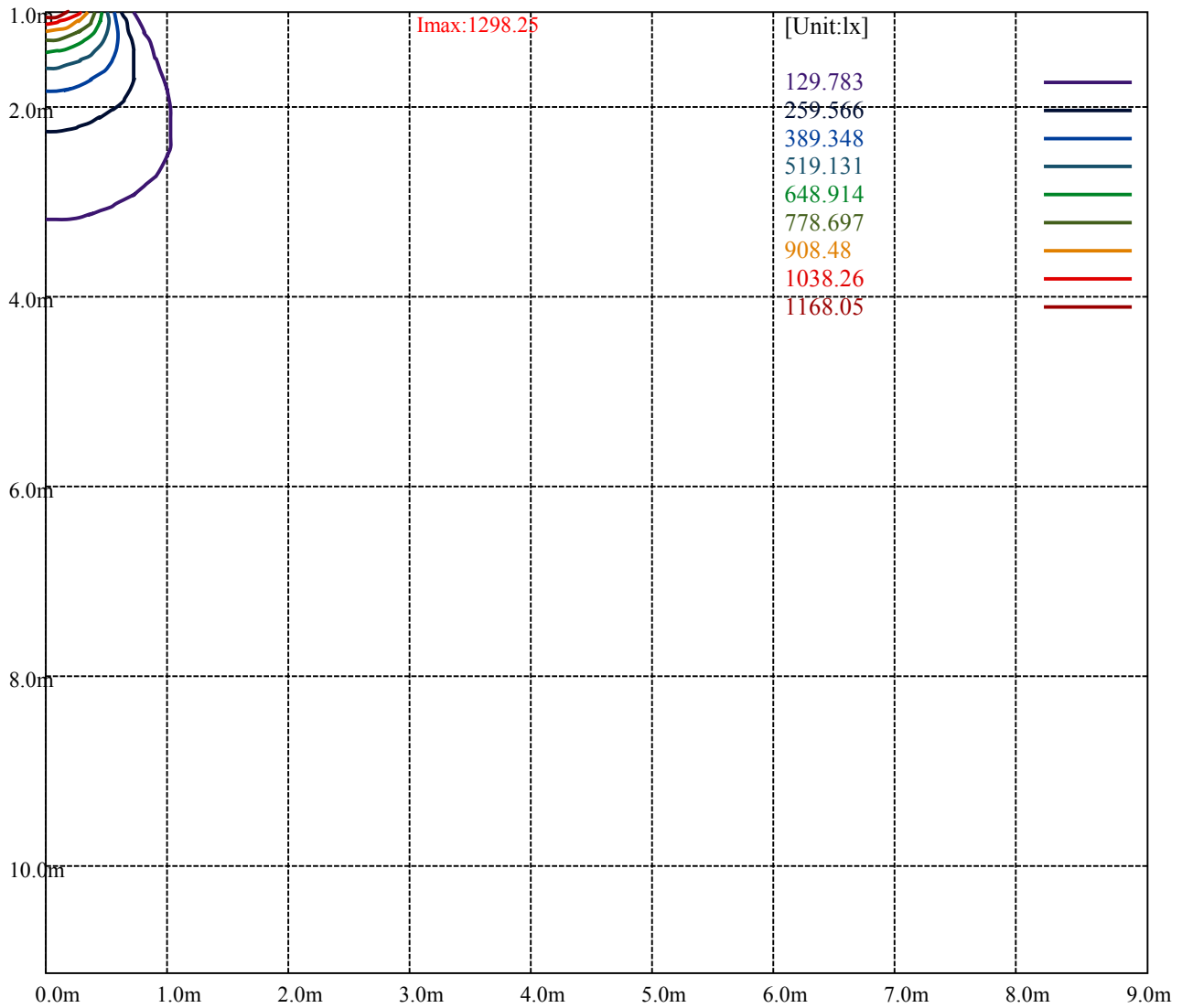
(60%Imax) 778.95

(70%Imax) 908.775

(80%Imax) 1038.6

(90%Imax) 1168.42

(10%E_{max}) 129.783(20%E_{max}) 259.566(30%E_{max}) 389.348(40%E_{max}) 519.131(50%E_{max}) 648.914(60%E_{max}) 778.697(70%E_{max}) 908.48(80%E_{max}) 1038.26(90%E_{max}) 1168.05



Luminance Table

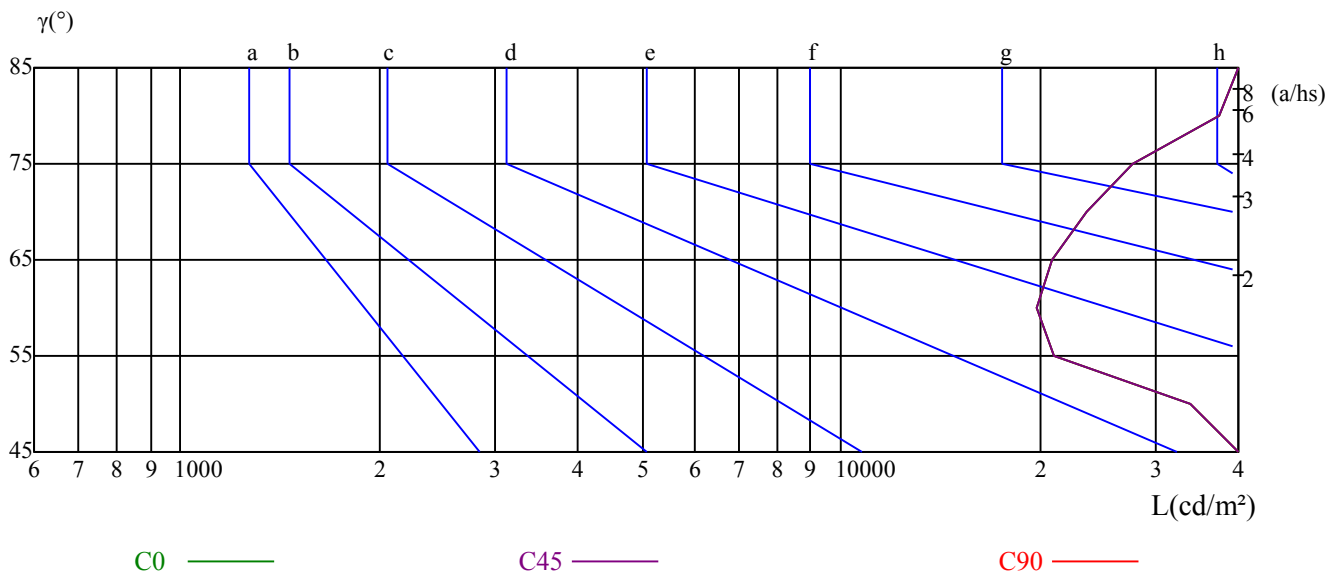
γ	45	50	55	60	65	70	75	80	85
C0	81608	33820	20974	19817	20862	23610	27724	37486	66966
C45	81608	33820	20974	19817	20862	23610	27724	37486	66966
C90	81608	33820	20974	19817	20862	23610	27724	37486	66966

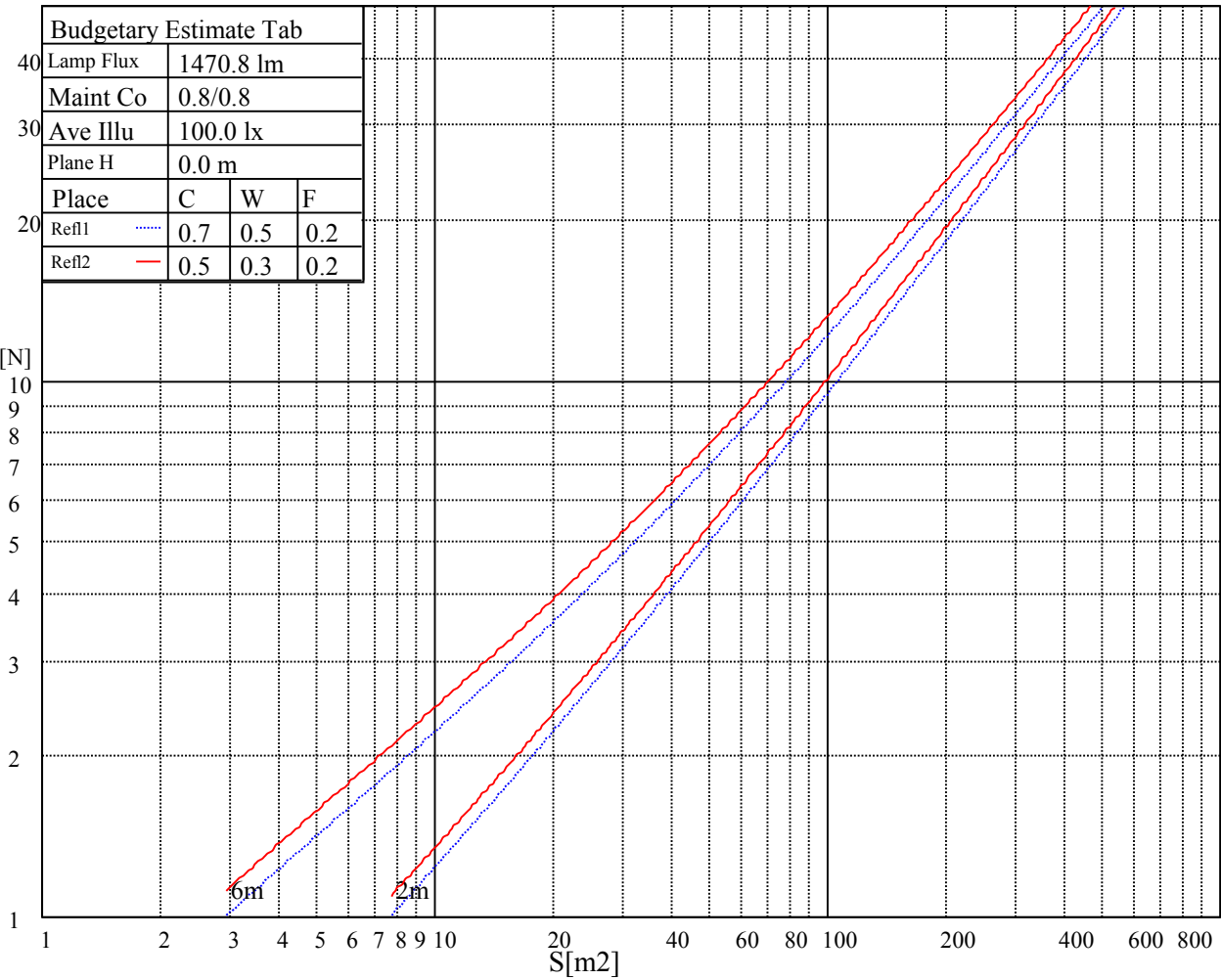
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
20862	20862	20862	27724	27724	27724	66966	66966	66966

Glare Table

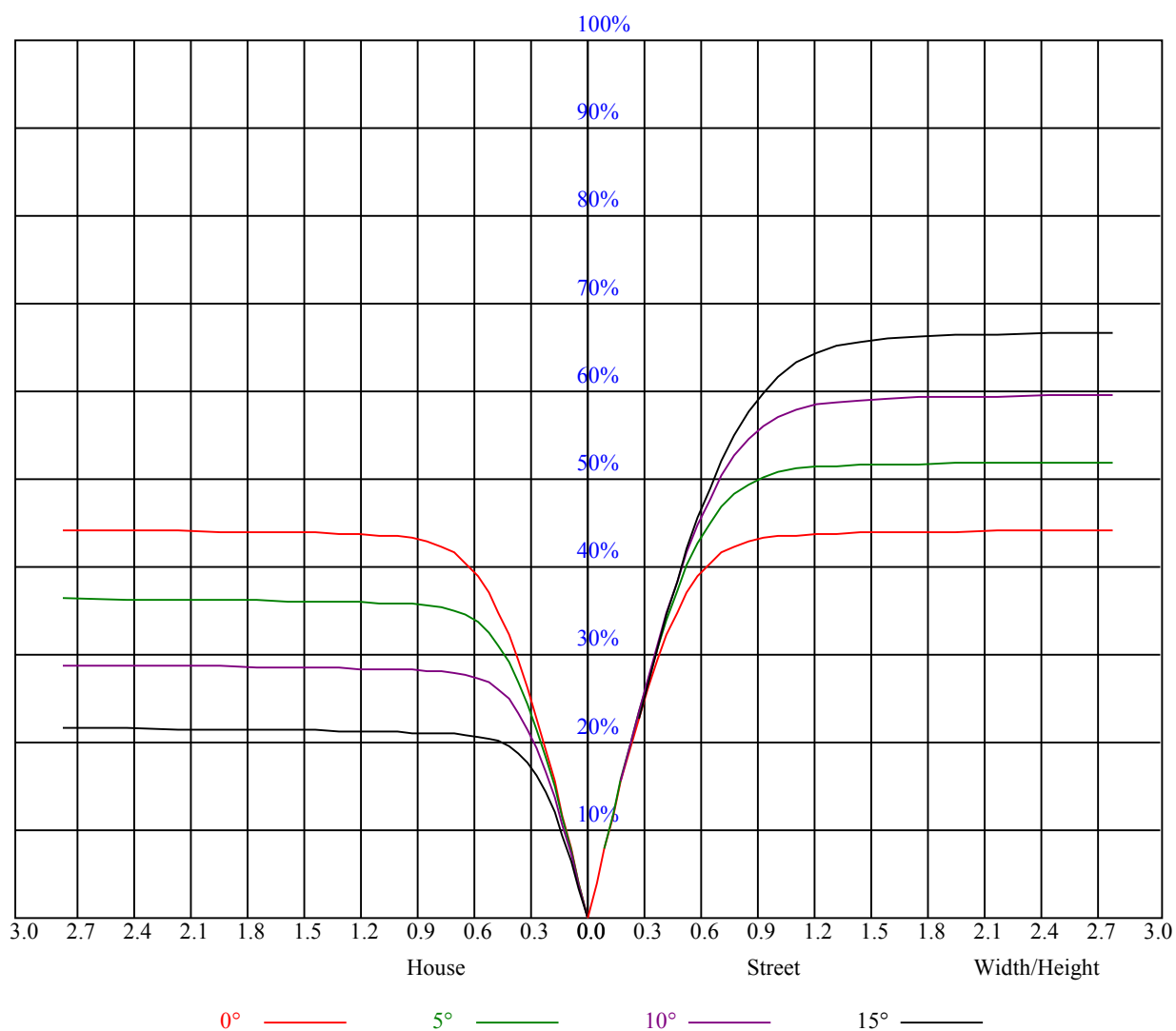
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

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	1.06	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	0.94	0.96	0.94	0.92	0.93	0.91	0.90	0.89	0.88	0.87	0.86	0.85	0.84	0.83
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	0.78	0.85	0.81	0.78	0.82	0.79	0.76	0.80	0.78	0.75	0.78	0.76	0.74	0.73
4	0.81	0.76	0.72	0.80	0.75	0.72	0.78	0.74	0.71	0.76	0.73	0.70	0.75	0.72	0.70	0.68
5	0.76	0.71	0.67	0.75	0.71	0.67	0.74	0.70	0.67	0.72	0.69	0.66	0.71	0.68	0.65	0.64
6	0.72	0.67	0.63	0.71	0.66	0.63	0.70	0.66	0.63	0.69	0.65	0.62	0.68	0.64	0.62	0.60
7	0.68	0.63	0.59	0.67	0.63	0.59	0.66	0.62	0.59	0.65	0.61	0.59	0.64	0.61	0.58	0.57
8	0.65	0.59	0.56	0.64	0.59	0.56	0.63	0.59	0.56	0.62	0.58	0.55	0.61	0.58	0.55	0.54
9	0.61	0.56	0.53	0.61	0.56	0.53	0.60	0.56	0.53	0.59	0.55	0.52	0.59	0.55	0.52	0.51
10	0.58	0.53	0.50	0.58	0.53	0.50	0.57	0.53	0.50	0.57	0.53	0.50	0.56	0.52	0.50	0.49



NATA 1680-S

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	1298.81	1306.69	1297.13	1263.94	1207.69	1077.19	807.75	489.38	298.13
45.0	1300.50	1315.13	1296.56	1271.81	1231.88	1122.75	881.44	520.88	292.50
90.0	1298.81	1307.81	1287.56	1269.56	1213.88	1085.74	847.41	484.14	181.52
135.0	1293.19	1297.69	1274.63	1242.00	1212.75	1108.69	875.81	519.19	297.00
180.0	1298.81	1294.88	1246.50	1182.94	1111.16	956.08	690.41	387.96	149.74
225.0	1300.50	1292.63	1248.75	1170.56	1088.78	920.87	656.38	353.48	150.98
270.0	1298.81	1284.75	1240.88	1177.31	1115.44	974.81	713.81	398.81	174.60
315.0	1293.19	1286.44	1242.00	1194.75	1118.48	960.19	681.19	368.83	148.89
360.0	1298.81	1306.69	1297.13	1263.94	1207.69	1077.19	807.75	489.38	298.13
C/ γ (°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	60.81	22.56	11.93	10.29	9.56	8.89	7.93	7.20	6.19
45.0	64.91	20.08	11.53	11.03	10.58	9.79	8.38	7.37	6.47
90.0	52.65	18.06	10.69	9.34	8.21	7.48	6.92	6.30	5.91
135.0	61.82	19.52	10.97	9.45	8.33	7.65	6.92	6.53	5.91
180.0	47.14	17.44	11.70	11.19	10.58	9.56	8.10	7.03	5.96
225.0	57.43	23.85	12.83	10.24	9.06	8.33	7.48	6.75	5.91
270.0	71.78	31.61	16.03	10.35	8.04	7.26	6.53	6.08	5.74
315.0	56.19	24.98	12.88	9.28	7.88	7.20	6.53	6.08	5.74
360.0	60.81	22.56	11.93	10.29	9.56	8.89	7.93	7.20	6.19
C/ γ (°)	90.0								
0.0	5.40								
45.0	5.40								
90.0	5.40								
135.0	5.46								
180.0	5.34								
225.0	5.46								
270.0	5.46								
315.0	5.46								
360.0	5.40								