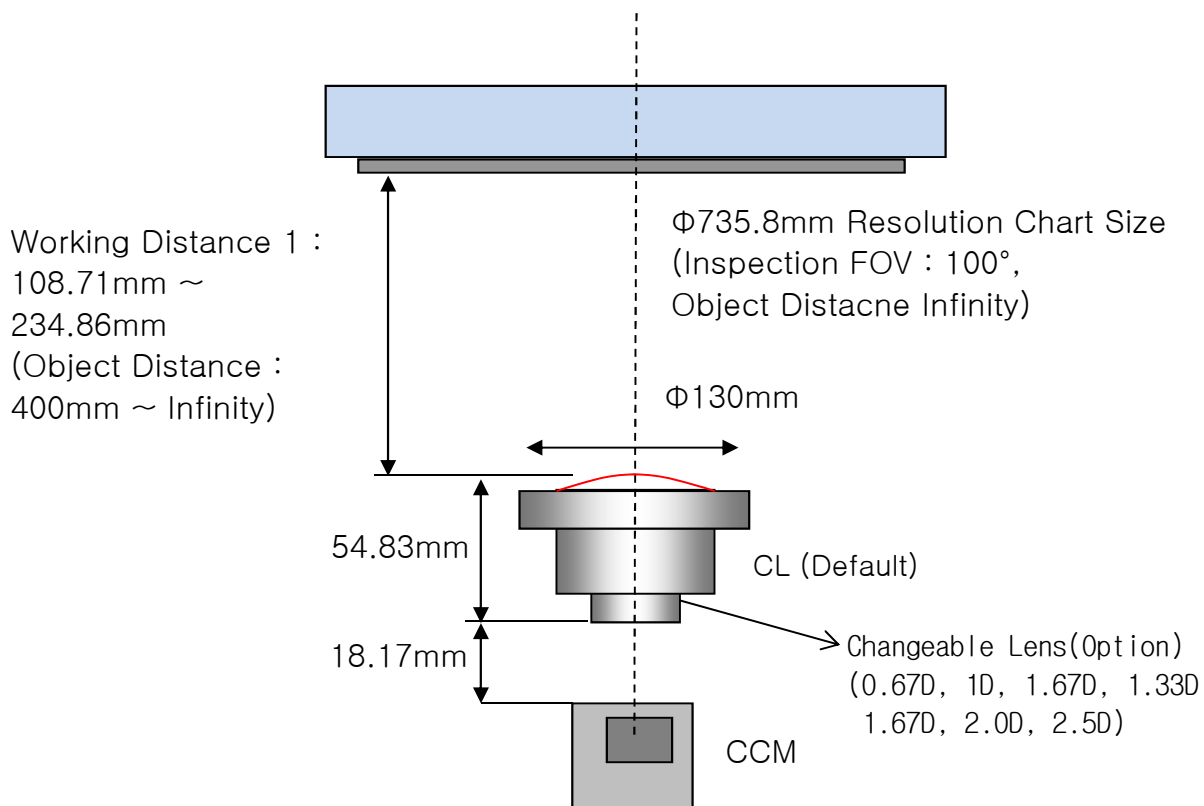


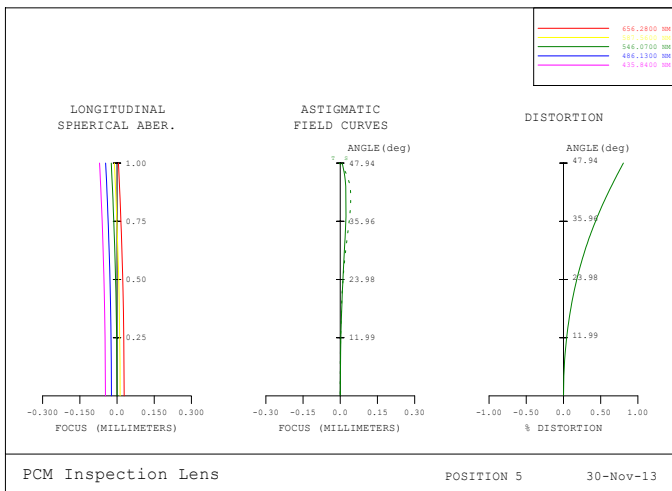
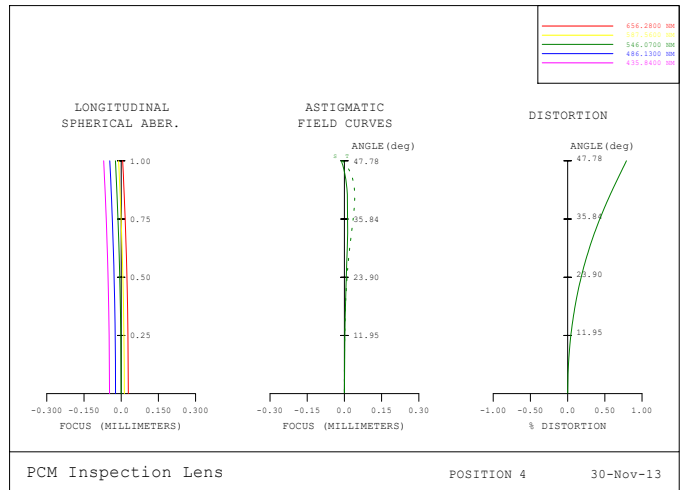
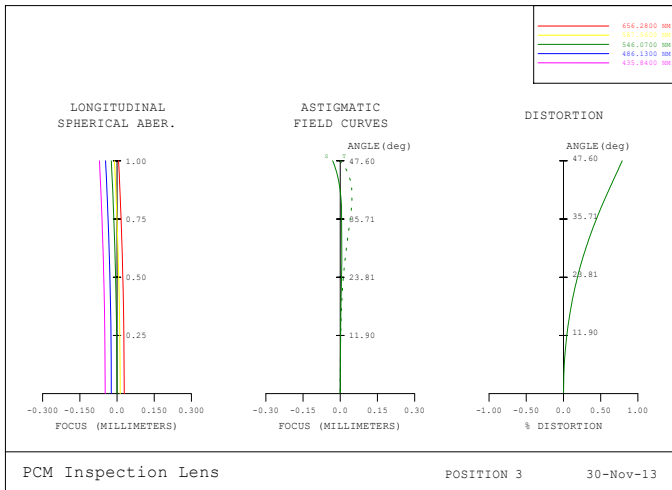
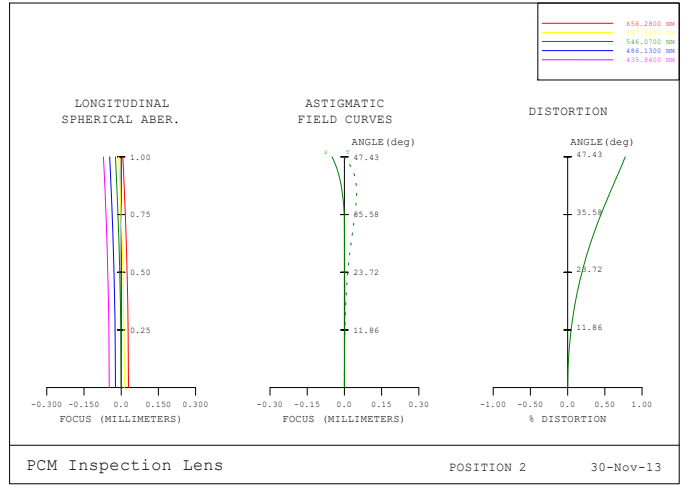
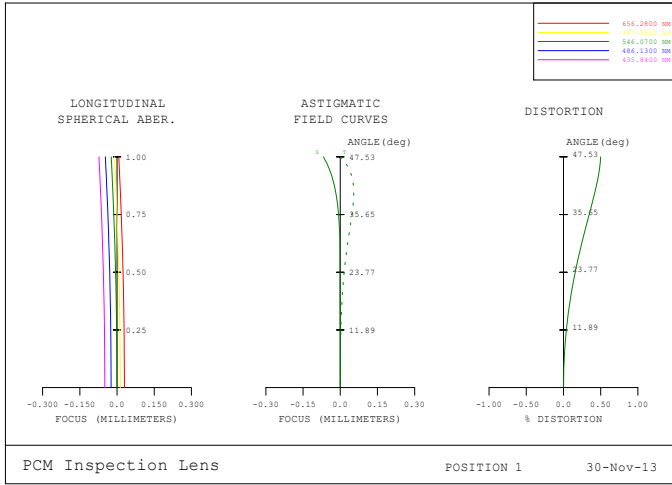
# CL-1021D Specification

2019-07-25  
OneStone

<b>Model name</b>	CL-1021D (Designed by OneStone)
<b>Characteristic of CL-1021D</b>	Changeable Lens
<b>Lens Composition (Default)</b>	3 Glass Lenses (1 ED Glass, 1 HRI Glass)
<b>(Option)</b>	6 Glass Lenses (0.67D, <b>1D</b> , 1.67D, 1.33D, <b>2D</b> , 2.5D)
	Generally use 1D or 2D
<b>EFL</b>	300.0mm
<b>Inspectable FOV of CCM</b>	100°
<b>Ass'y Size</b>	Φ130mm X L54.83mm, 1.00kg
<b>Exit Pupil Size</b>	Φ4.5mm
<b>Exit Pupil Position</b>	21.0mm (from Vertex of CL CCM side to CCM)
<b>Working Distace 1</b>	
(from CL 1st Lens R1 surface to Chart)	162.87mm at Object Distance 1m (1D)
	125.86mm at Object Distance 0.5m (2D)

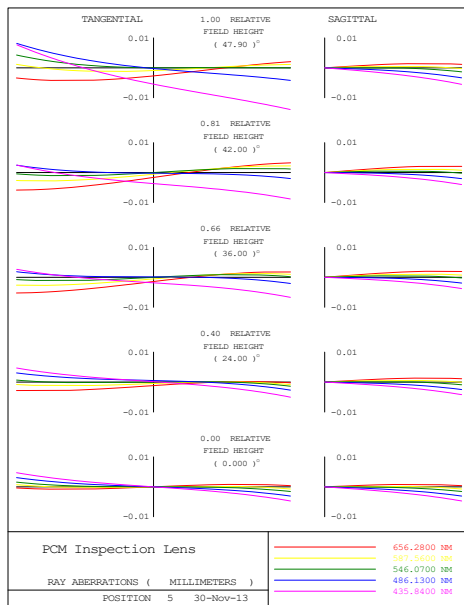
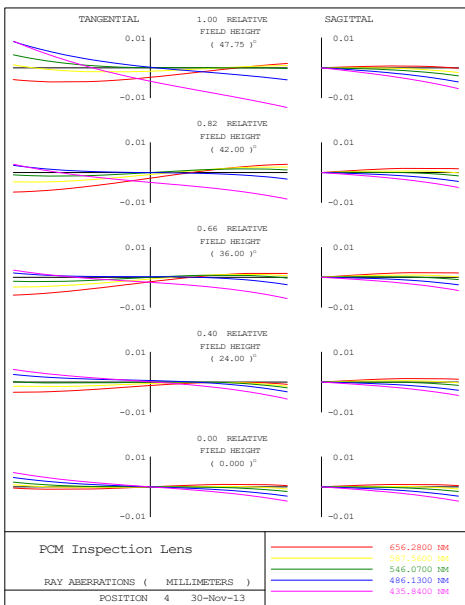
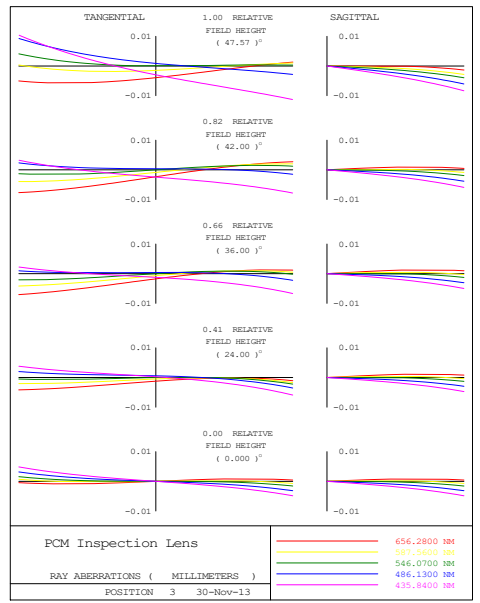
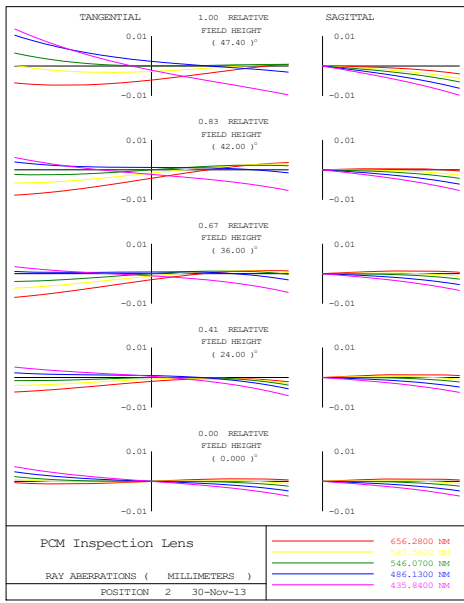
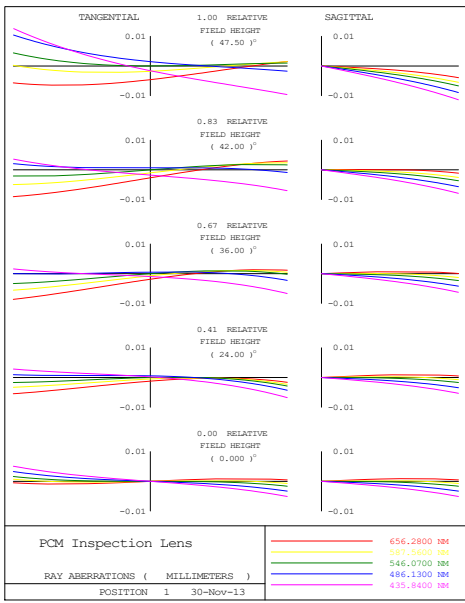


# Optical Performance of CL-1021D Lens



Astigmatism : less than 0.04D  
 Field Curvature : less than 0.03D  
 Distortion : less than 1%

# Optical Performance of CL-1021D Lens



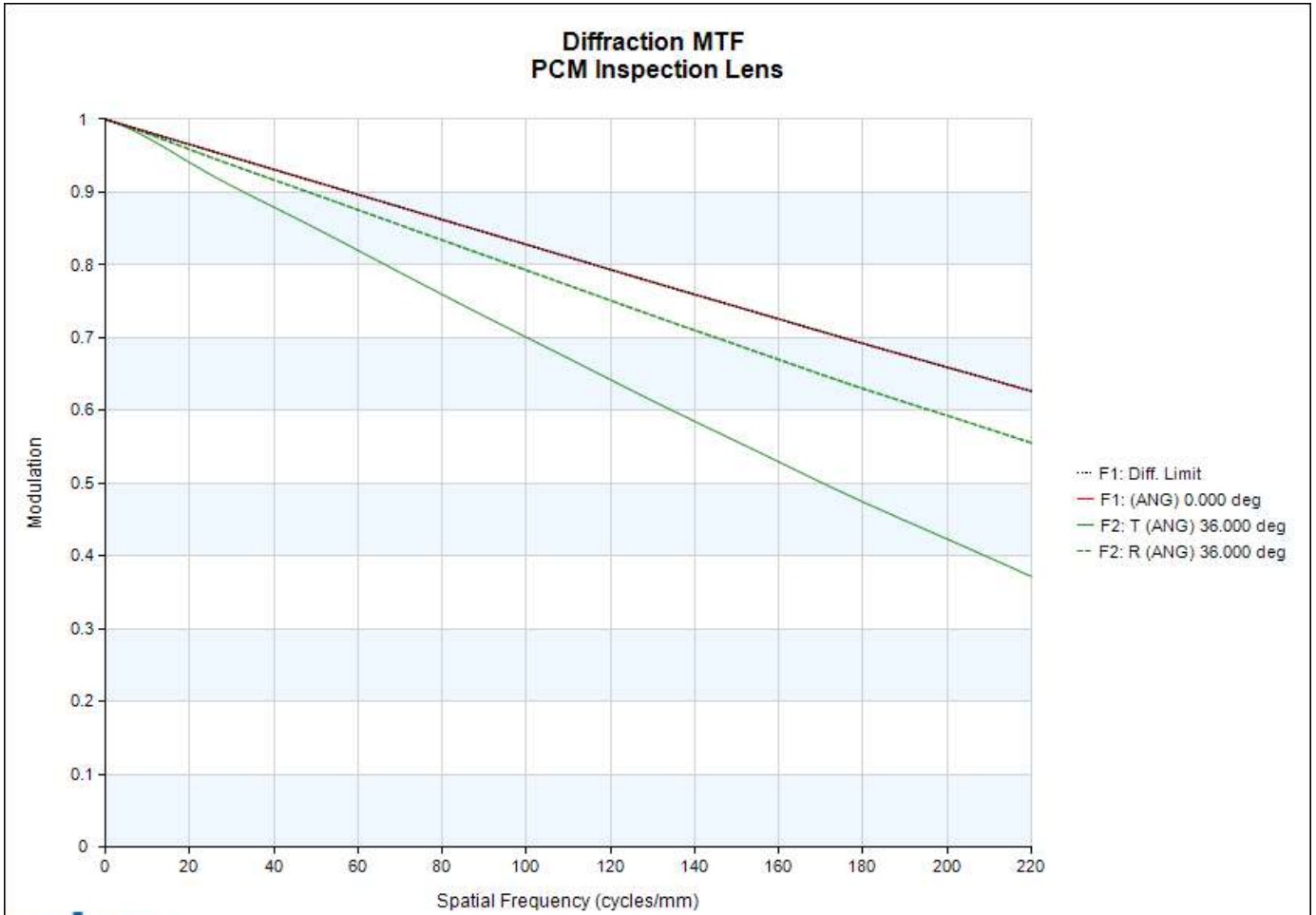
Longitudinal Chromatic Aberration : less than 0.09D  
 Lateral Chromatic Aberration : less than 0.01D

### MTF Analysis for FOV 89.5° Lens of A-Company

e<sub>fl</sub> = 1.22mm      F<sub>no</sub> = 2.45

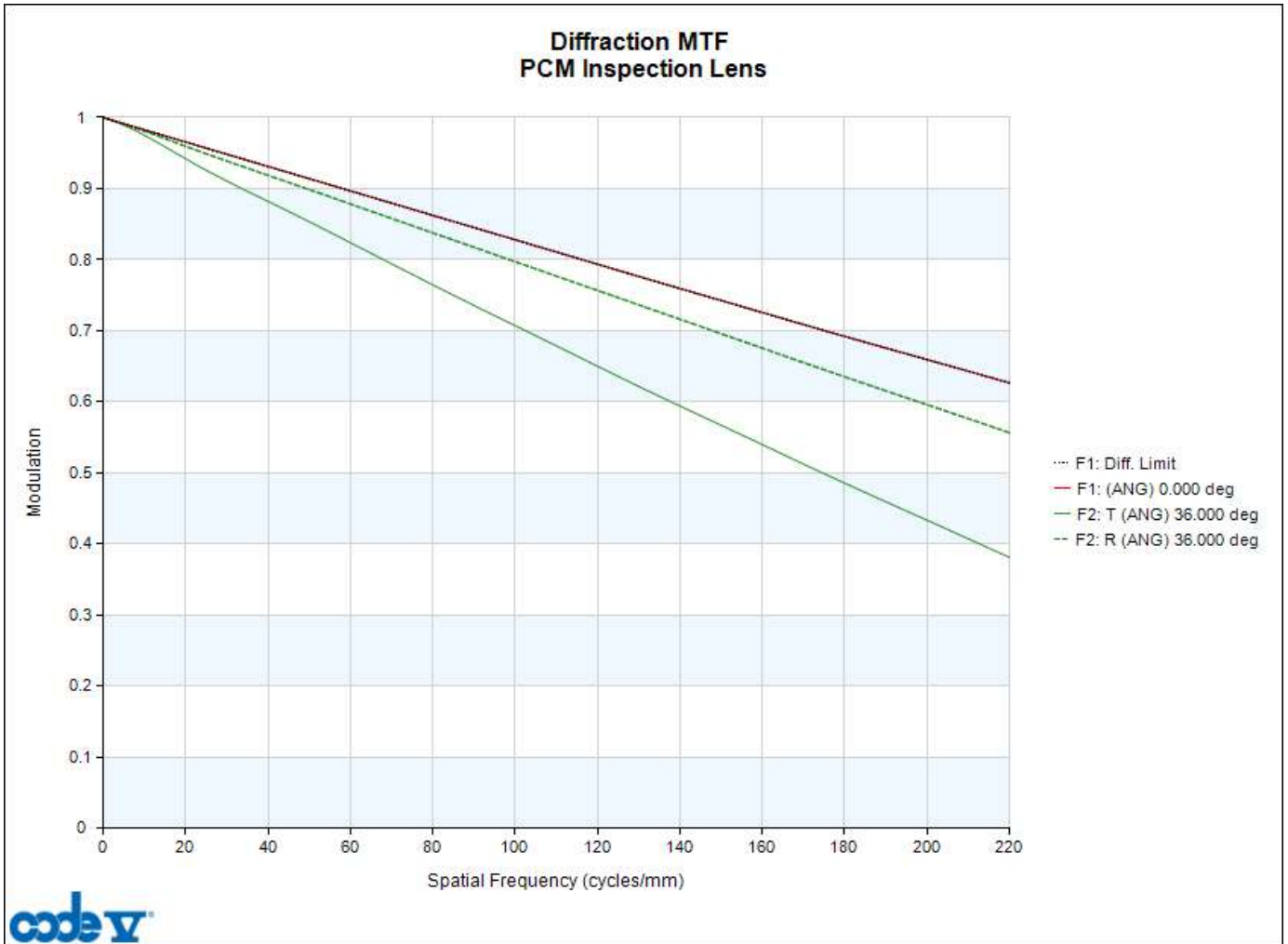
EPD = 0.498mm ( = e<sub>fl</sub>/F<sub>no</sub>)

Object Distance : 1m (Center, 0.7F)



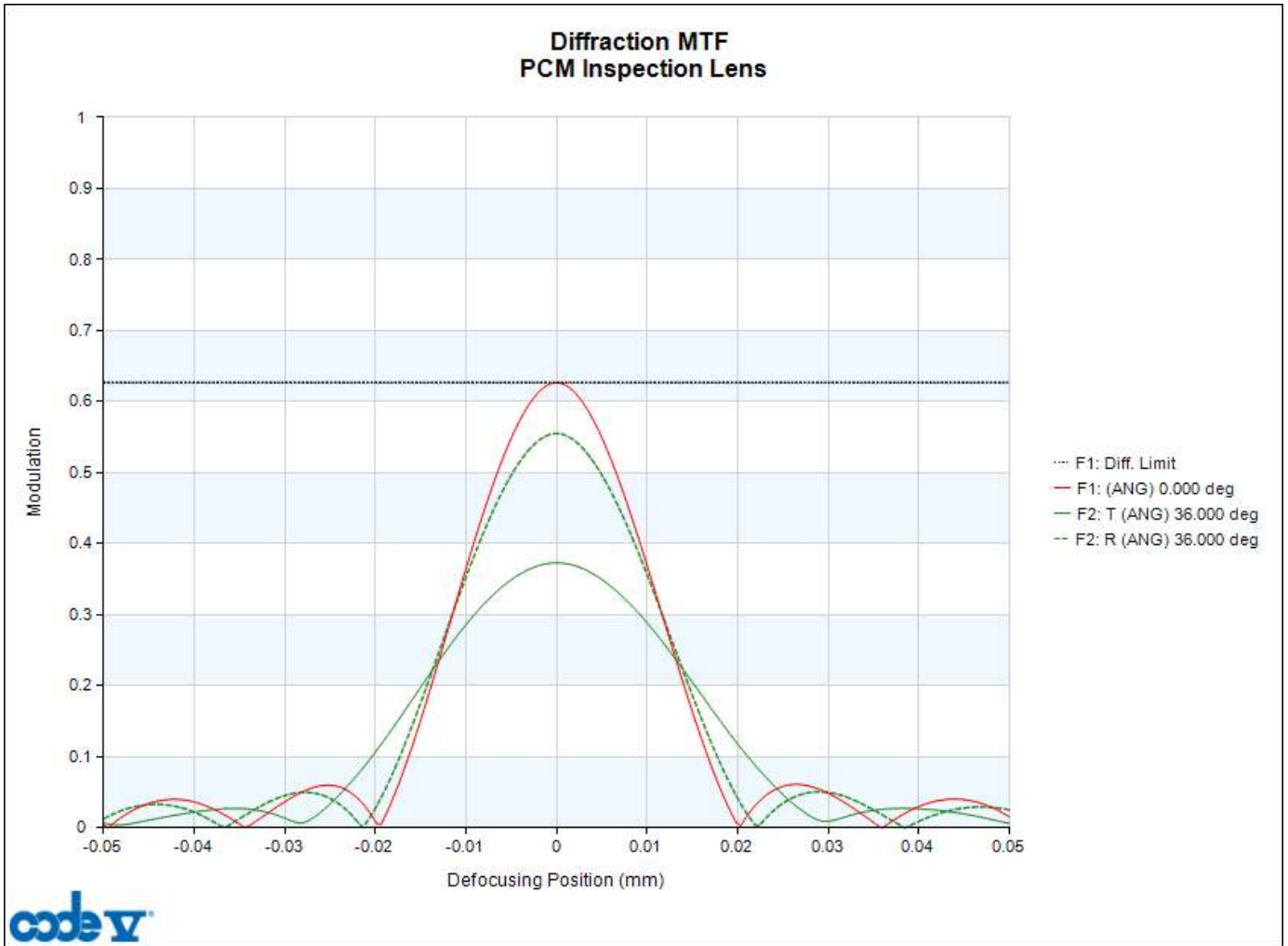
F300_90CV1.len	Position: 2	Wavelength (nm)	Weight
30-Nov-13	Defocusing: 0.000 mm	656.2800	9
		587.5600	15
		546.0700	16
		486.1300	10
		435.8400	7

Object Distance : 0.5m (Center, 0.7F)



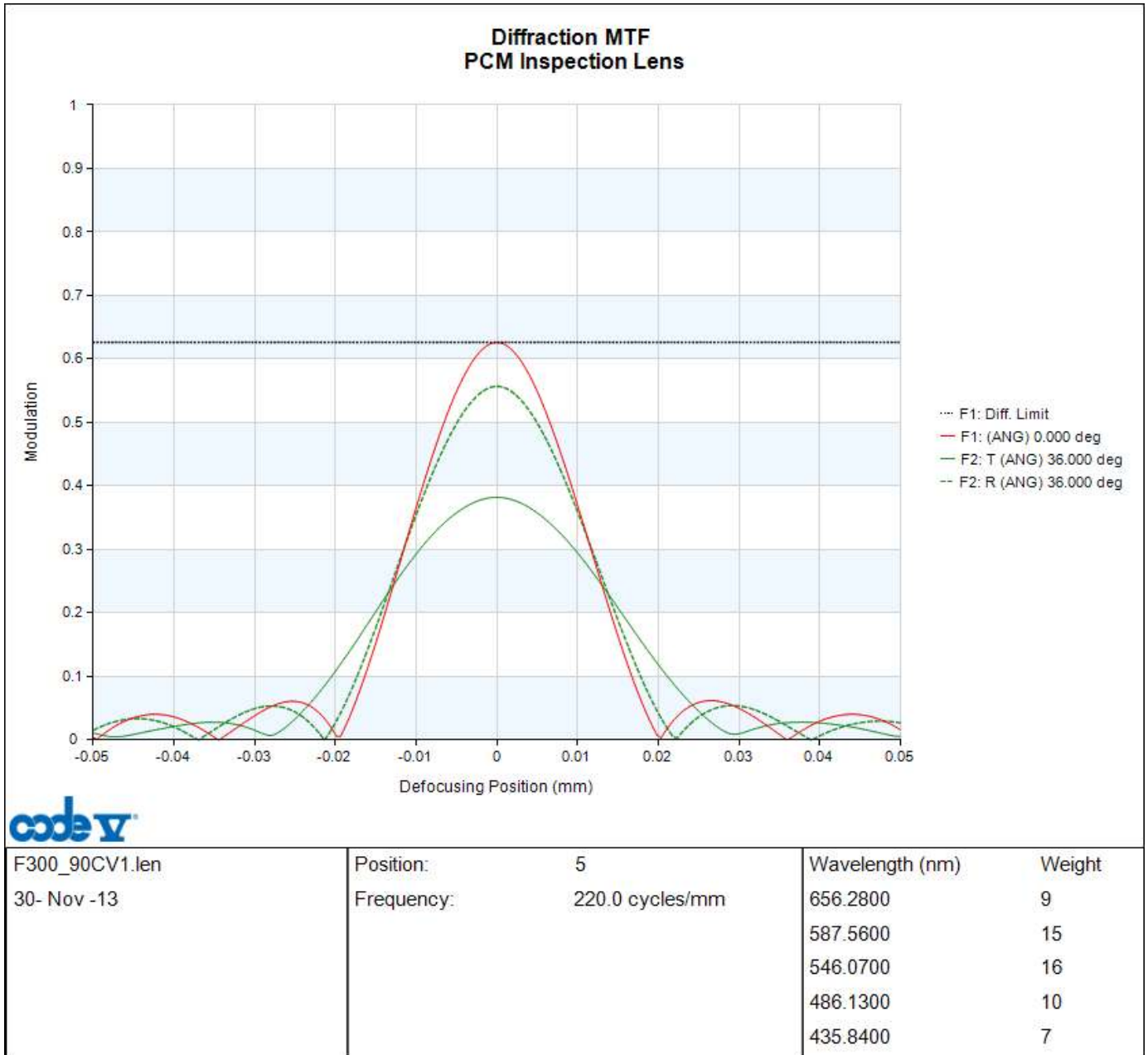
F300_90CV1.len	Position: 5	Wavelength (nm)	Weight
30- Nov -13	Defocusing: 0.000 mm	656.2800	9
		587.5600	15
		546.0700	16
		486.1300	10
		435.8400	7

Object Distance : 1m (Center, 0.7F)

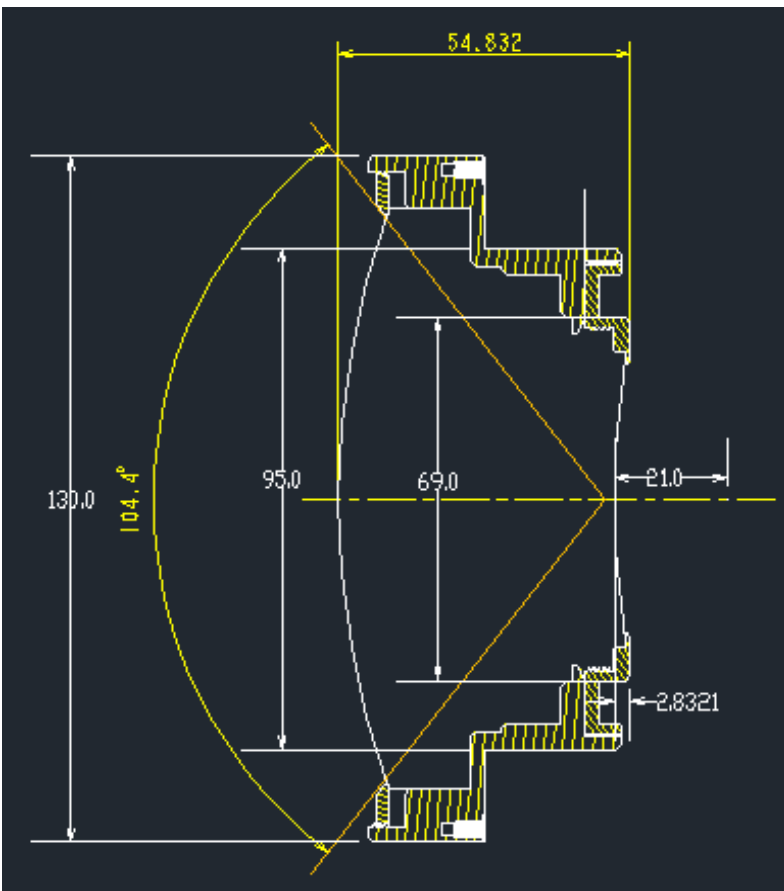
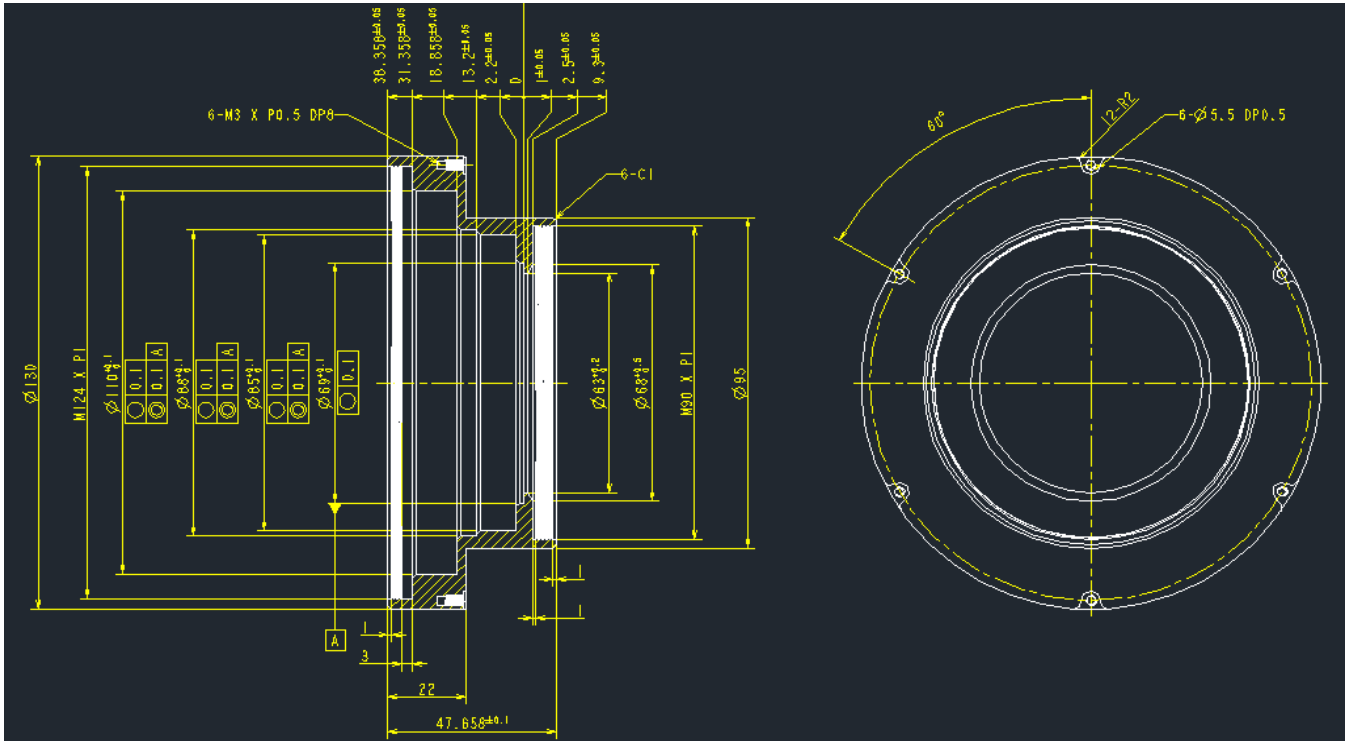


<p>F300_90CV1.len 30- Nov -13</p>	<p>Position: 2 Frequency: 220.0 cycles/mm</p>	<p>Wavelength (nm) 656.2800 587.5600 546.0700 486.1300 435.8400</p>	<p>Weight 9 15 16 10 7</p>
---------------------------------------	---	---	--

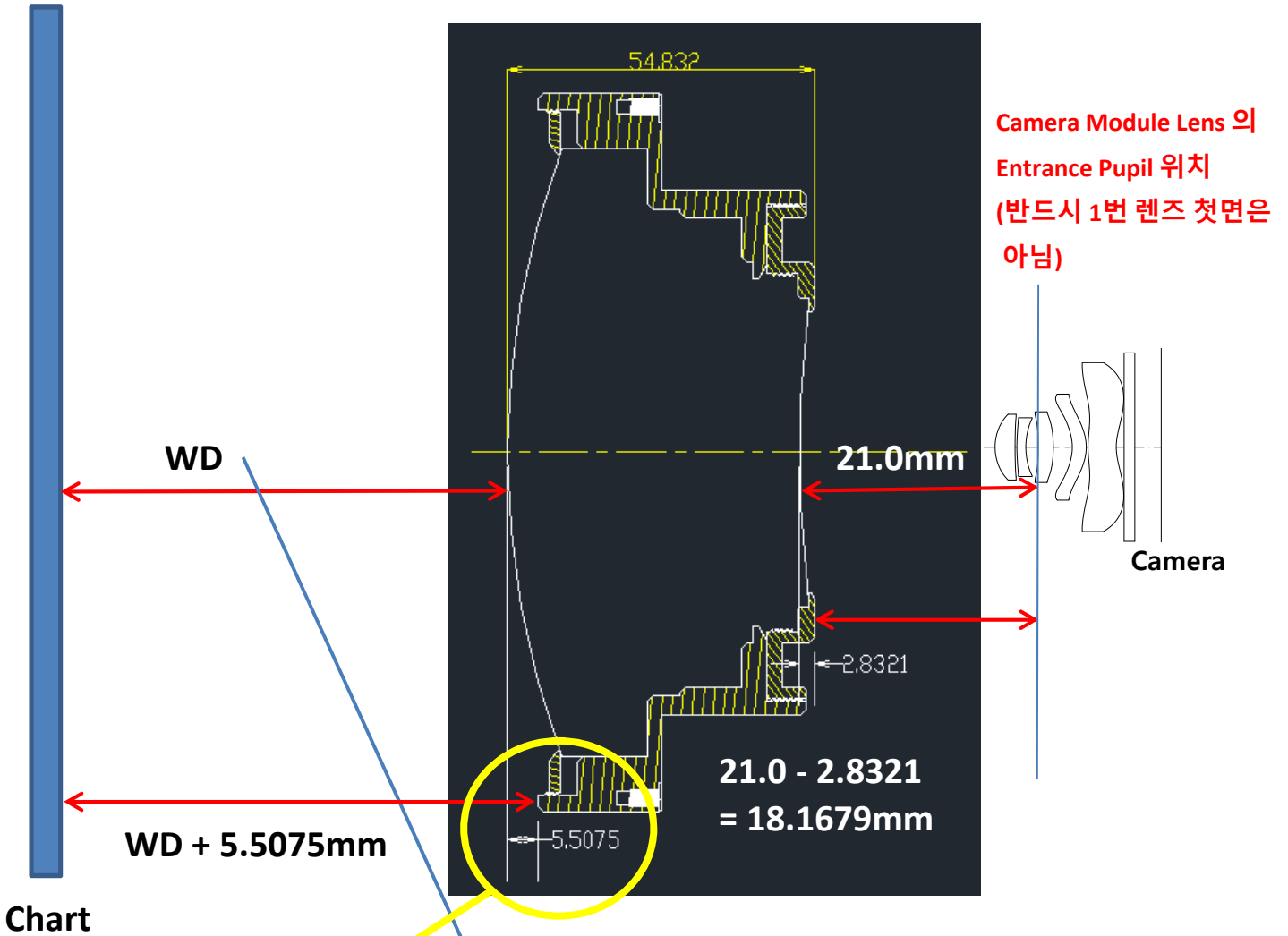
Object Distance : 0.5m (Center, 0.7F)



# CL-1021D Outer Mechanical Drawings



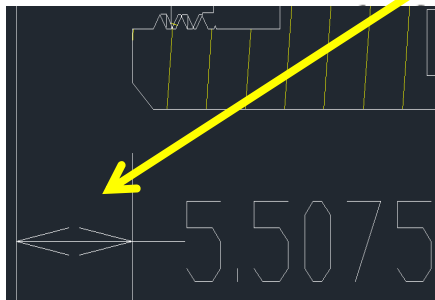




Chart

**Chart Size (전체 Sub Lens 사용)**

2016-01-11  
OneStone



Camera에서 실제로 촬영하는 거리  
Sub Lens 정점에서 Chart 까지의 거리  
화각을 기준으로 작성한 차트크기표입니다.

PCM Module	
FOV	100
HFOV	50

Object Distance (Object ~ PCM)	Sub Lens (권장)	Working Distance (Chart ~ C/L 정점)	Chart Size (Φ, mm)
1.00E+100	0.67D	226.2	713.8
5000	0.67D	209.3	669.8
4500	0.67D	207.5	665.3
4000	0.67D	205.4	659.6

## CL-1021의 Chart Size (전체 Sub Lens 사용)

2016-01-11  
OneStone

Object Distance : Phone Camera에서 실제로 촬영하는 거리

Working Distance : Collimator Lens 정점에서 Chart 까지의 거리

※ 이 Table은 CCM Lens의 화각을 기준으로 작성한 차트크기표입니다.

PCM Module	
FOV	100
HFOV	50

Object Distance (Object ~ PCM)	Sub Lens (권장)	Working Distance (Chart ~ C/L 정점)	Chart Size (Φ, mm)
1.00E+100	0.67D	226.2	713.8
5000	0.67D	209.3	669.8
4500	0.67D	207.5	665.3
4000	0.67D	205.4	659.6
3500	0.67D	202.7	652.6
3000	0.67D	199.1	643.3
2500	0.67D	194.3	630.9
2000	0.67D	187.5	613.0
1900	0.67D	185.7	608.5
1800	0.67D	183.8	603.5
1700	0.67D	181.7	598.0
1600	0.67D	179.4	592.0
1500	0.67D	176.9	585.3
1400	0.67D	174.0	577.9
1300	0.67D	170.8	569.5
1200	1.0D	172.3	573.1
1100	1.0D	167.9	561.7
1000	1.0D	162.9	548.7
900	1.0D	157.0	533.7
800	1.33D	153.5	527.0
750	1.33D	149.4	516.4
600	1.67D	137.1	486.9
500	2D	125.9	459.5
400	2.5D	110.9	421.9

## CL-1021의 Chart Size (1D/2D Sub Lens 사용)

2016-01-11  
OneStone

Object Distance : Phone Camera에서 실제로 촬영하는 거리

Working Distance : Collimator Lens 정점에서 Chart 까지의 거리

※ 이 Table은 CCM Lens의 화각을 기준으로 작성한 차트크기표입니다.

PCM Module	
FOV	100
HFOV	50

Object Distance (Object ~ PCM)	Sub Lens (권장)	Working Distance (Chart ~ C/L 정점)	Chart Size (Φ, mm)
1.00E+100	1.0D	234.9	735.8
10000	1.0D	225.6	711.7
9000	1.0D	224.6	709.1
8000	1.0D	223.3	705.9
7000	1.0D	221.8	701.8
6000	1.0D	219.7	696.4
5000	1.0D	216.9	689.0
4500	1.0D	215.0	684.2
4000	1.0D	212.7	678.2
3500	1.0D	209.8	670.7
3000	1.0D	206.1	660.9
2500	1.0D	201.0	647.7
2000	1.0D	193.7	628.8
1900	1.0D	191.9	624.1
1800	1.0D	189.9	618.8
1700	1.0D	187.6	613.1
1600	1.0D	185.2	606.7
1500	1.0D	182.5	599.7
1400	1.0D	179.5	591.8
1300	1.0D	176.1	583.0
1200	1.0D	172.3	573.1
1100	1.0D	167.9	561.7
1000	1.0D	162.9	548.7
900	1.0D	157.0	533.5
800	1.0D	150.2	515.7
700	1.0D	142.0	494.4
700	2.0D	150.5	524.8
600	2.0D	139.5	495.5
500	2.0D	125.9	459.5
400	2.0D	108.7	414.1

**Pictures**

