TECHSPEC® Ci SERIES
FIXED FOCAL LENGTH LENSES
#86-603 • 8.5mm • f/5.6

Our TECHSPEC® Ci Series Fixed Focal Length Lenses are a streamlined version of our C Series Fixed Focal Length Lenses. They feature the same low lens-to-lens variation and broadband anti-reflection (BBAR) coating for maximum light transmission, while offering reduced weight and size. An adjustable, lockable focus allows for setting and locking the best focus position for instrumentation integration.

Focal Length:	8.5mm
Working Distance[1]:	100mm - ∞
Max. Sensor Format:	$^2/_3$"
Camera Mount:	C-Mount
Aperture (f/#):	f/5.6
Distortion %[2]:	<18.31%
Object Space NA[3]:	0.006902

Magnification Range:	0 - 0.079X
Type:	Fixed Focal Length Lens
Length:	29.98mm
Weight:	33g
RoHS:	Compliant
Number of Elements (Groups):	6 (5)
AR Coating:	425 - 675nm BBAR

1. From front housing   2. At 750mm W.D.   3. At minimum W.D.

At Minimum W.D. (100mm)									
Sensor Size	$^1/_4$"	$^1/_3$"	$^1/_{2.5}$"	$^1/_2$"	$^1/_{1.8}$"	$^2/_3$"	1"	28.7mm	$^4/_3$"
Field Of View[4]	46.4mm - 24.3°	62.7mm - 32.5°	76.9mm - 39.4°	85.8mm - 43.6°	98.1mm - 49.2°	124.8mm - 60.6°	N/A	N/A	N/A

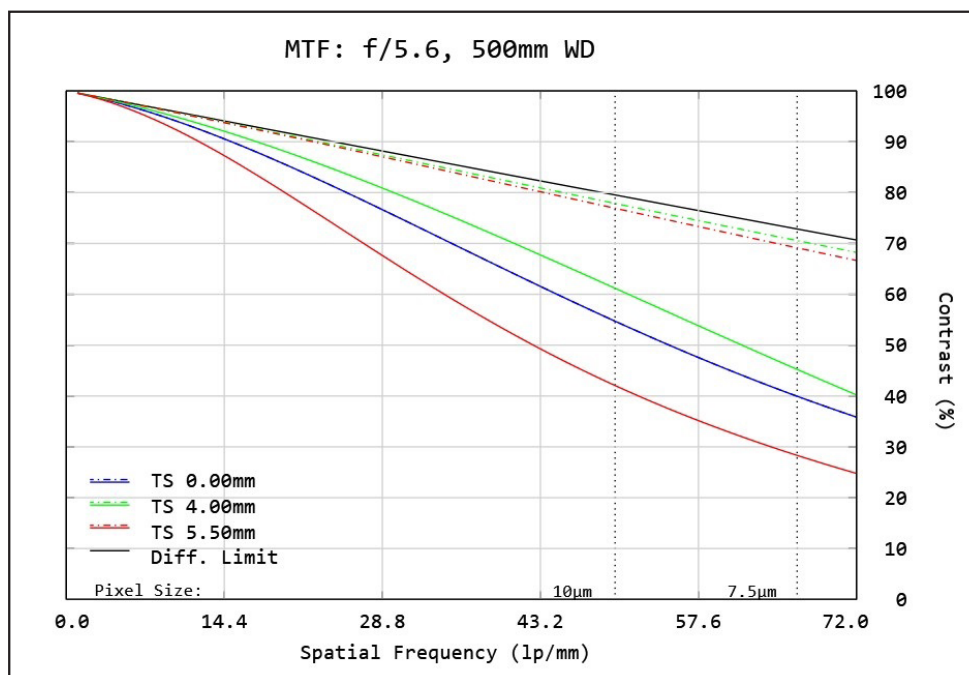4. Horizontal FOV on Standard (4:3) sensor format. Min W.D.
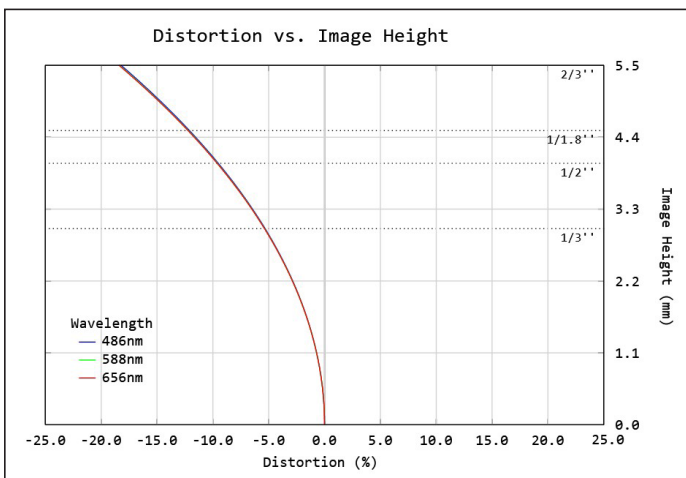
Figure 1: Distortion at the maximum sensor format. Positive values correspond to pincushion distortion, negative values correspond to barrel distortion.
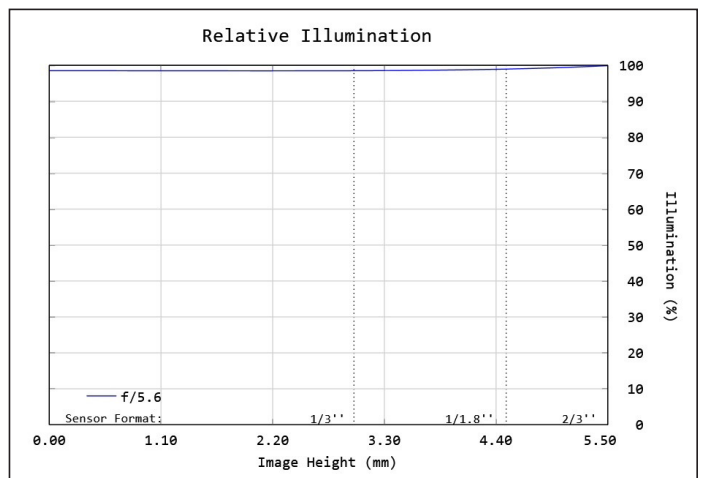

Figure 2: Relative illumination (center to corner)

In both plots, field points corresponding to the image circle of common sensor formats are included. Plots represent theoretical values from lens design software. Actual lens performance varies due to manufacturing tolerances.

MTF: f/5.6, 500mm WD

TS 0.00mm
TS 4.00mm
TS 5.50mm
Diff. Limit
Pixel Size:

10μm   7.5μm

Spatial Frequency (lp/mm)

Contrast (%)
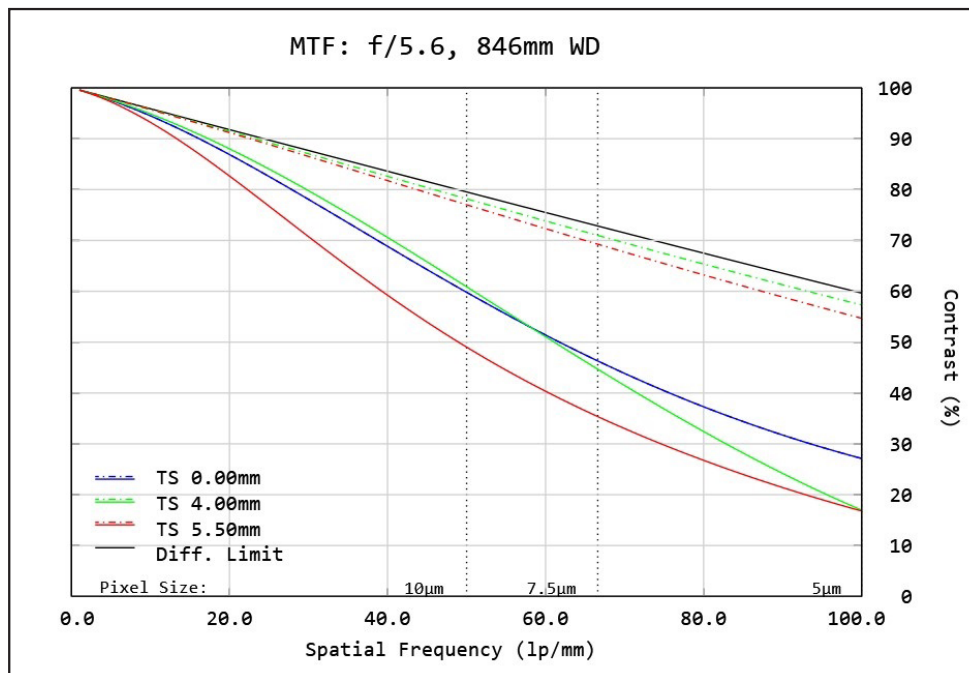
Figure 3: Image space polychromatic diffraction FFT Modulation Transfer Function (MTF) for λ = 486nm to 656nm. Included are the Tangential and Sagittal values for field points on center, at 70% of full field and the maximum sensor format. Solid black line indicates diffraction limit determined by f/#-defined aperture. Frequencies corresponding to the Nyquist resolution limit of pixel sizes are indicated.

Depth of Field: 20 lp/mm, f/5.6, 500mm WD

TS 0.00mm
TS 4.00mm
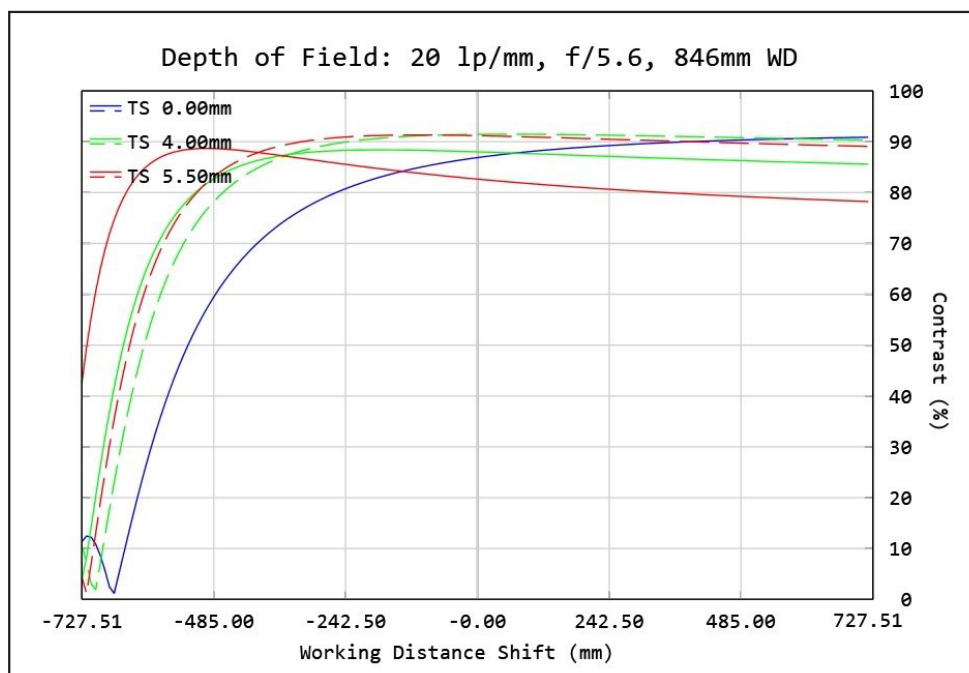TS 5.50mm

Working Distance Shift (mm)
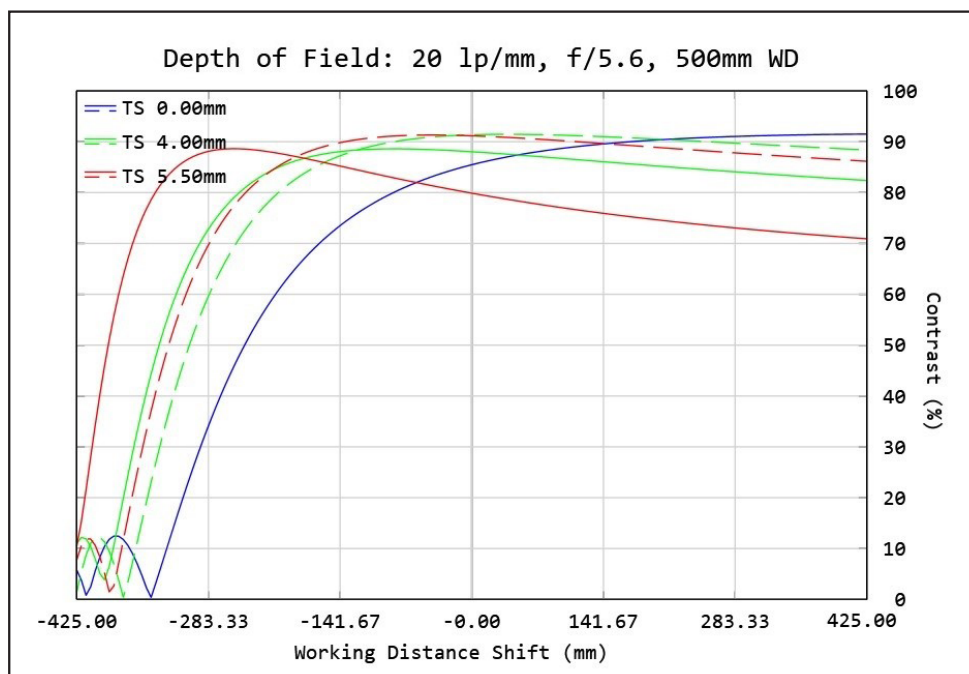
Contrast (%)

Figure 4: Polychromatic diffraction through-focus MTF at 20 linepairs/mm (image space). Contrast is plotted to two times the focus distance. Note object spatial frequency changes with working distance.

Plots represent theoretical values from lens design software. Actual lens performance varies due to manufacturing tolerances.
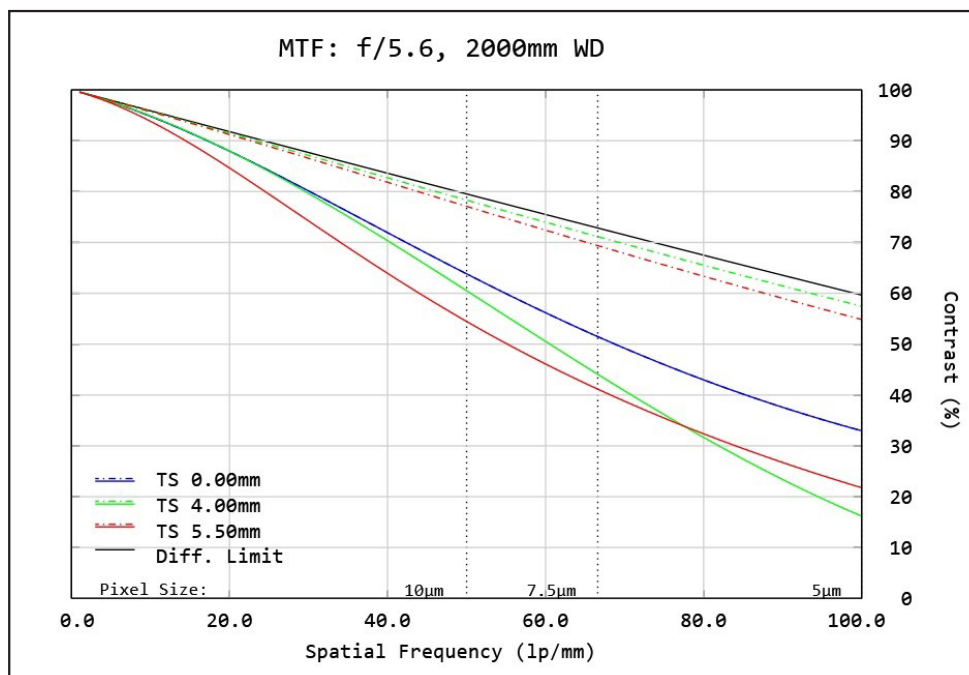
Figure 5: Image space polychromatic diffraction FFT Modulation Transfer Function (MTF) for λ = 486nm to 656nm. Included are the Tangential and Sagittal values for field points on center, at 70% of full field and the maximum sensor format. Solid black line indicates diffraction limit determined by f/#-defined aperture. Frequencies corresponding to the Nyquist resolution limit of pixel sizes are indicated.
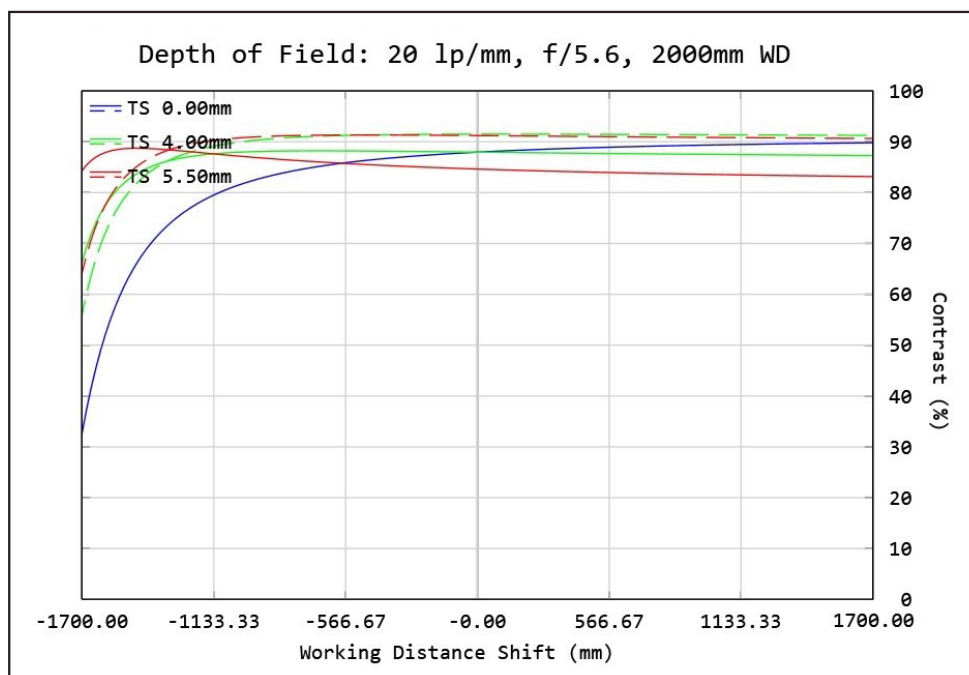

Figure 6: Polychromatic diffraction through-focus MTF at 20 linepairs/mm (image space). Contrast is plotted to two times the focus distance. Note object spatial frequency changes with working distance.

Plots represent theoretical values from lens design software. Actual lens performance varies due to manufacturing tolerances.

MTF: f/5.6, 2000mm WD

Legend:
- TS 0.00mm
- TS 4.00mm
- TS 5.50mm
- Diff. Limit

Pixel Size: 10µm, 7.5µm, 5µm

X-axis: Spatial Frequency (lp/mm)
Y-axis: Contrast (%)

Figure 7: Image space polychromatic diffraction FFT Modulation Transfer Function (MTF) for λ = 486nm to 656nm. Included are the Tangential and Sagittal values for field points on center, at 70% of full field and the maximum sensor format. Solid black line indicates diffraction limit determined by f/#-defined aperture. Frequencies corresponding to the Nyquist resolution limit of pixel sizes are indicated.

Depth of Field: 20 lp/mm, f/5.6, 2000mm WD

Legend:
- TS 0.00mm
- TS 4.00mm
- TS 5.50mm

X-axis: Working Distance Shift (mm)
Y-axis: Contrast (%)

Figure 8: Polychromatic diffraction through-focus MTF at 20 linepairs/mm (image space). Contrast is plotted to two times the focus distance. Note object spatial frequency changes with working distance.

Plots represent theoretical values from lens design software. Actual lens performance varies due to manufacturing tolerances.