TECHSPEC® HIGH RESOLUTION FIXED FOCAL LENGTH LENS
#63-778 • 12mm FL • f/1.8
PRIMARY WD: 400 – 2000mm

Our TECHSPEC® High Resolution 5 Megapixel Fixed Focal Length Lenses are available in multiple focal lengths and feature multiple versions to optimize for different working distance ranges. Perfect for use on high-end 5 megapixel sensors that require 145 lp/mm resolution, these lenses offer an attractive price-to-performance ratio. All lenses feature locking focus and iris rings and a front filter thread to allow the use of standard optical filters, for increased versatility.

Focal Length:	12mm
Minimum Working Distance[1]:	100mm
Focus Range[1]:	150mm - ∞
Primary Working Distance Range:	400 - 2000mm
Length at Near Focus:	42.8mm
Length at Far Focus:	40.2mm
Filter Thread:	M30.5 x 0.5
Maximum Rear Protrusion:	0.8mm
Camera Mount:	C-Mount

Maximum Sensor Format:	⅔"
Aperture (f/#) (lockable):	f/1.8 - f/16
Magnification Range:	0X - 0.07X
Distortion[2]:	<3.3%
Object Space NA[2]:	0.015
Number of Elements (Groups):	10 (6)
AR Coating:	425 - 675nm BBAR
Weight:	103g

Sensor Size	¼"	⅓"	½.5"	½"	⅓.8"	⅔"	1"
Field of View[3, 4]	37.1mm - 17.4°	49.7mm - 23.2°	60.2mm - 27.9°	66.6mm - 30.7°	75.2mm - 34.4°	92.7mm - 41.7°	N/A
Field of View[3, 5]	129.5 - 619.6mm	173.2 - 828.7mm	206.3 - 986.8mm	232.2 - 1110.8mm	262.1 - 1253.6mm	322.8 - 1543.0mm	N/A

1. From front of housing 2. At 200mm W.D. 3. Horizontal FOV on standard 4:3 sensor format
4. For focusing range: Min. W.D. - infinite conjugate angular FOV 5. For primary range

Specifications subject to change

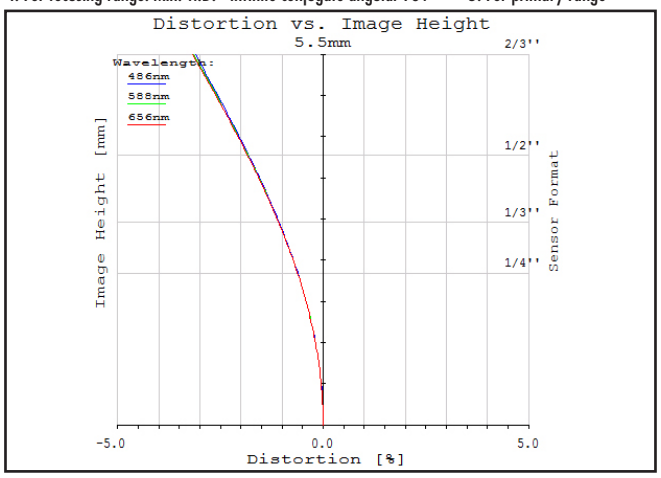

Figure 1: Distortion at the maximum sensor format. Positive values correspond to pincushion distortion, negative values correspond to barrel distortion.

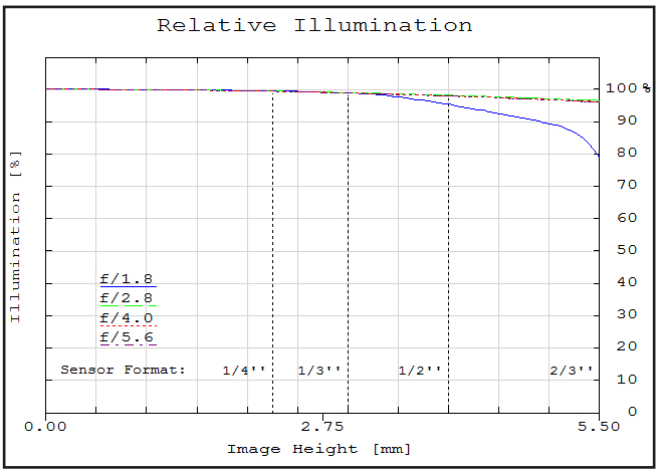

Figure 2: Relative illumination (center to corner)

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.

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MTF & DOF: f/2.8
WD: 1000mm

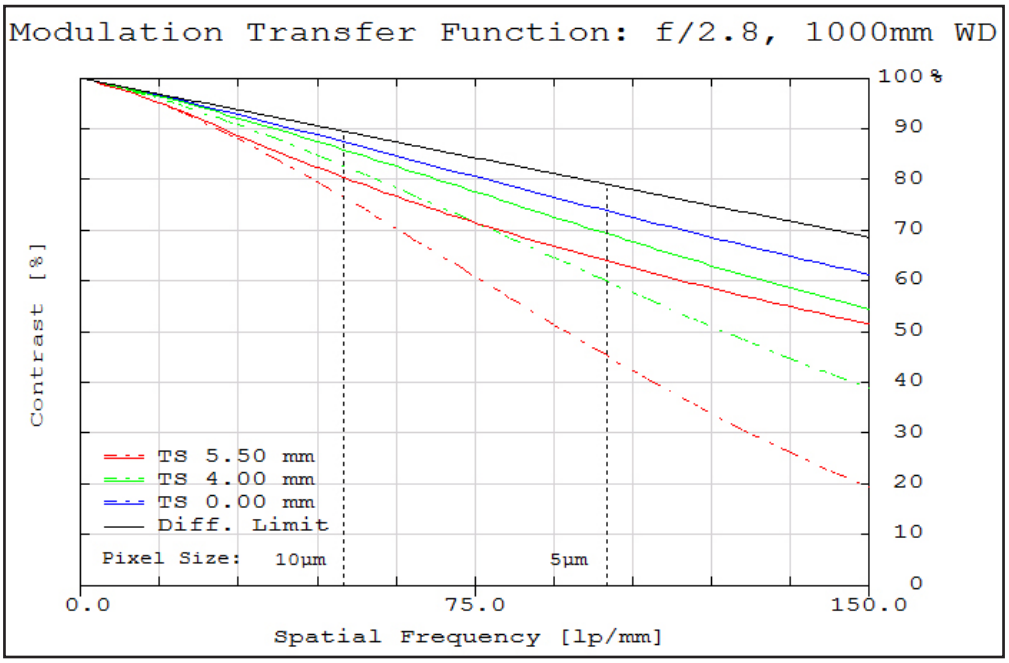

Figure 3: Image space polychromatic diffraction FFT Modulation Transfer Function (MTF) for λ = 486nm to 656nm. Included are Tangential and Sagittal values for field points on center, at 70% of full field and at the maximum sensor format. Solid black line indicates diffraction limit determined by f/#-defined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

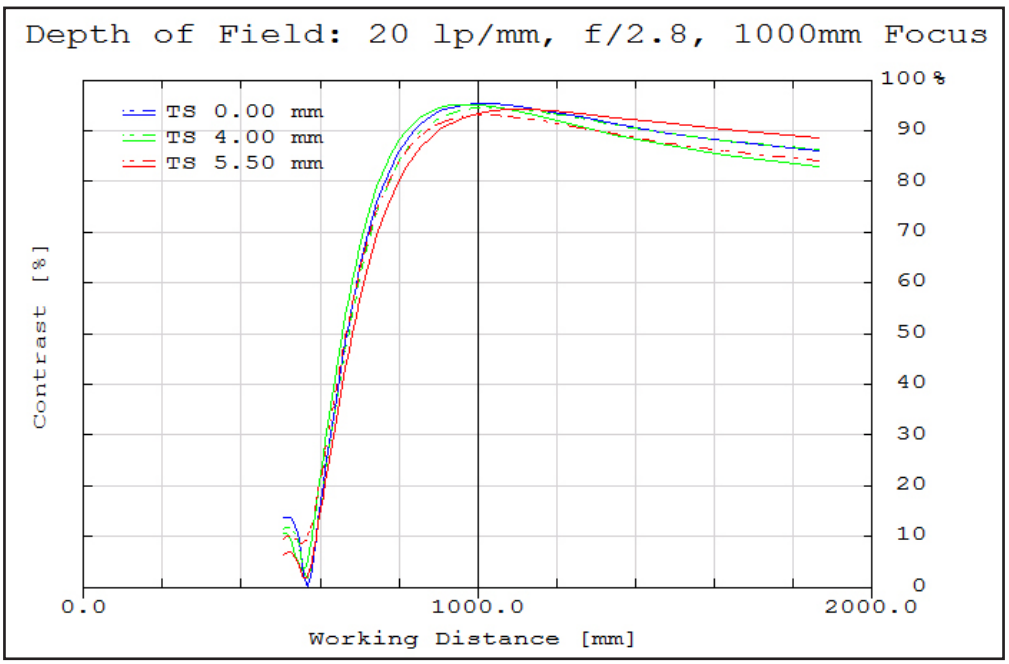

Figure 4: Polychromatic diffraction through-focus MTF at 20 linepairs/mm (image space). Contrast is plotted to two times the focus distance. Note object spatial frequency changes with working distance.

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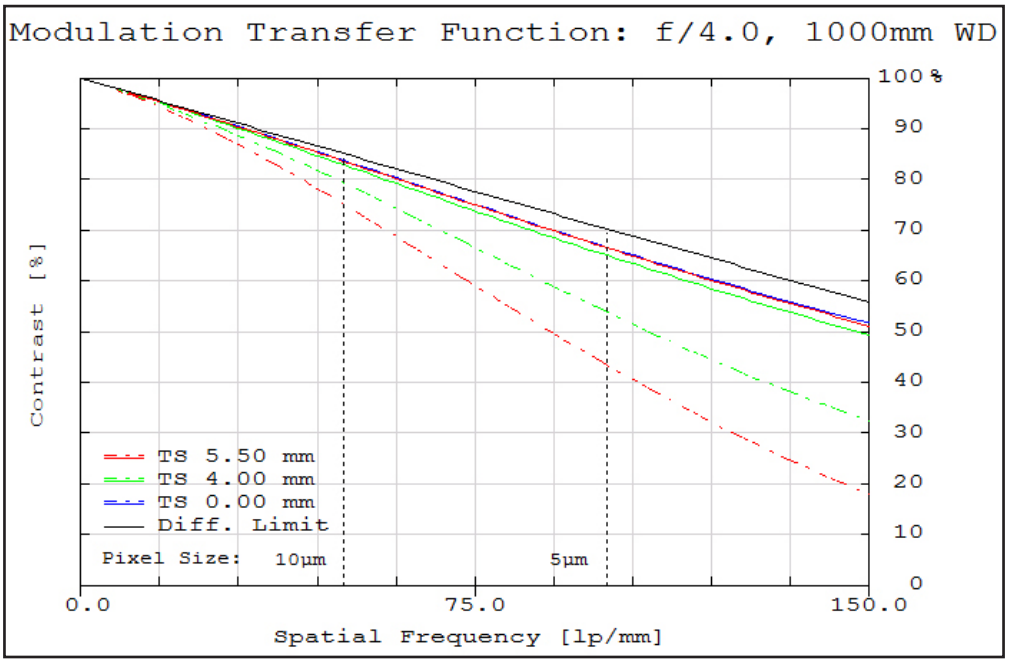

Figure 5: Image space polychromatic diffraction FFT Modulation Transfer Function (MTF) for λ = 486nm to 656nm. Included are Tangential and Sagittal values for field points on center, at 70% of full field and at the maximum sensor format. Solid black line indicates diffraction limit determined by f/#-defined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

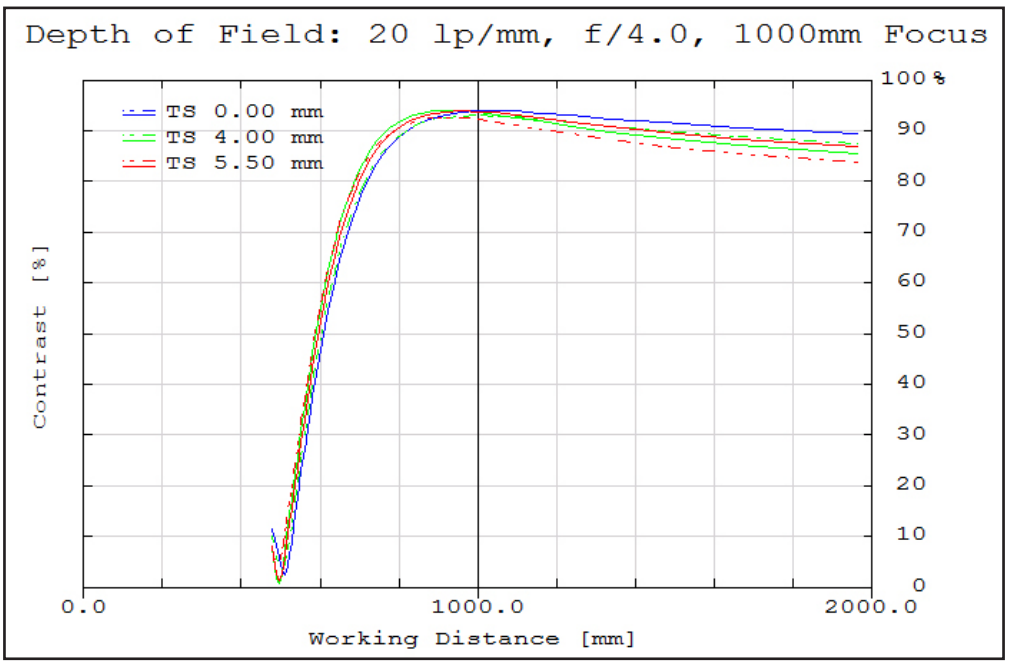

Figure 6: Polychromatic diffraction through-focus MTF at 20 linepairs/mm (image space). Contrast is plotted to two times the focus distance. Note object spatial frequency changes with working distance.

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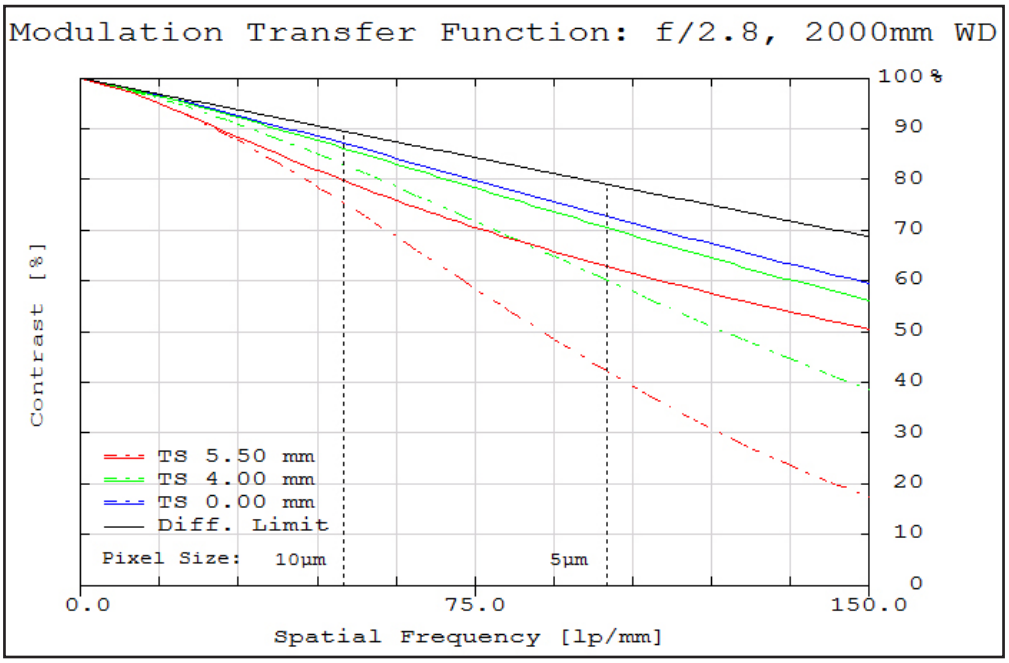

Figure 7: Image space polychromatic diffraction FFT Modulation Transfer Function (MTF) for λ = 486nm to 656nm. Included are Tangential and Sagittal values for field points on center, at 70% of full field and at the maximum sensor format. Solid black line indicates diffraction limit determined by f/#-defined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

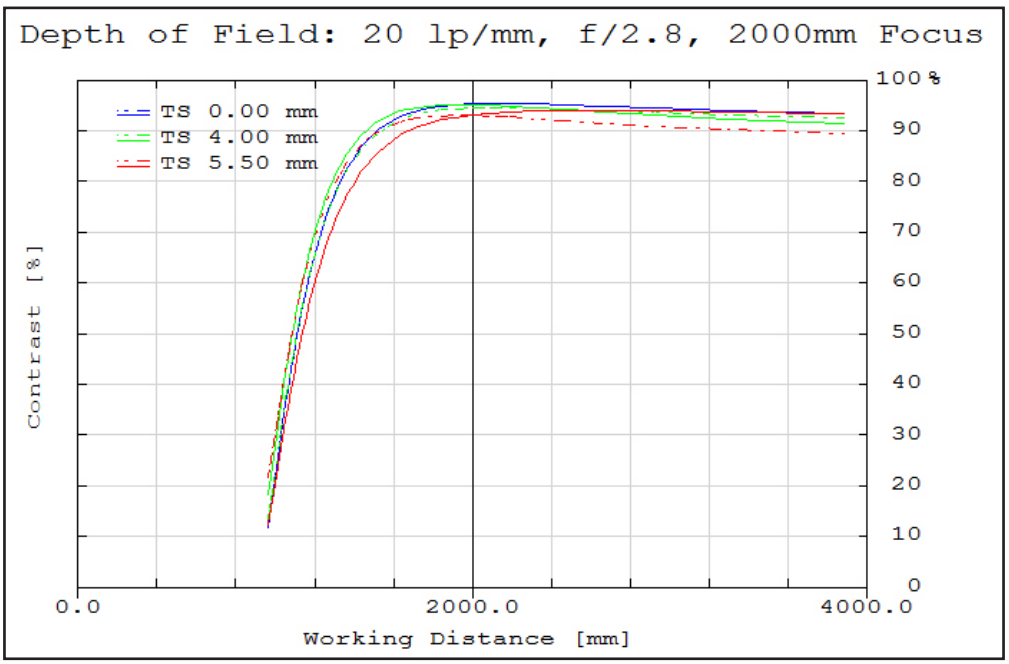

Figure 8: Polychromatic diffraction through-focus MTF at 20 linepairs/mm (image space). Contrast is plotted to two times the focus distance. Note object spatial frequency changes with working distance.

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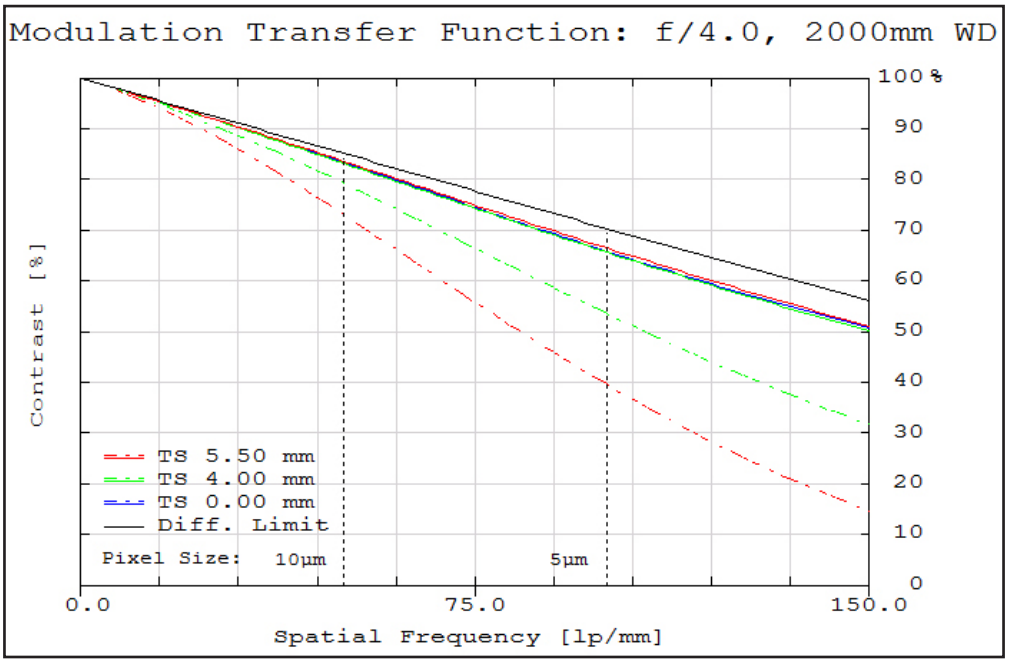

Figure 9: Image space polychromatic diffraction FFT Modulation Transfer Function (MTF) for λ = 486nm to 656nm. Included are Tangential and Sagittal values for field points on center, at 70% of full field and at the maximum sensor format. Solid black line indicates diffraction limit determined by f/#-defined aperture. Frequencies corresponding to the Nyquist resolution limit of pixel sizes are indicated.

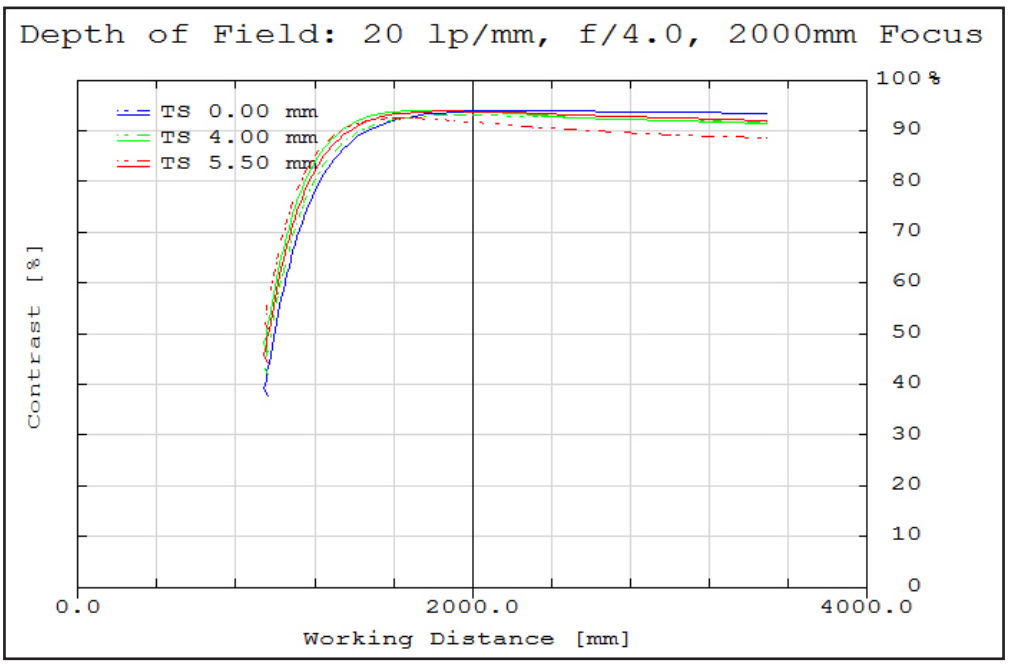

Figure 10: Polychromatic diffraction through-focus MTF at 20 linepairs/mm (image space). Contrast is plotted to two times the focus distance. Note object spatial frequency changes with working distance.

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