

# TECHSPEC® GREEN SERIES

## M16 IMAGING LENSES

#54-855 • 25mm • f/2.1

TECHSPEC® Green Series M16 Imaging Lenses designed for use in compact and board level cameras provide excellent image quality in a small, versatile package. Optimized to cover 1/8" and 1/2" sensor formats and weighing only a few grams, these machine vision lenses meet the most demanding space and weight restrictions.



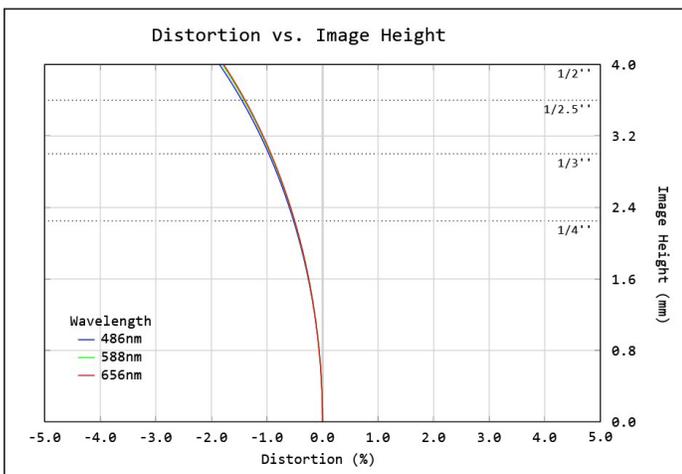
<b>Focal Length:</b>	25mm
<b>Working Distance<sup>1</sup>:</b>	150mm - ∞
<b>Max. Sensor Format:</b>	1/2"
<b>Camera Mount:</b>	M16 x 0.5
<b>Aperture (f/#):</b>	f/2.1
<b>Distortion %<sup>2</sup>:</b>	<1.80%
<b>Object Space NA<sup>2</sup>:</b>	0.042853

<b>Magnification Range:</b>	0 - 0.187X
<b>Type:</b>	M16 Imaging Lens
<b>Length:</b>	24.2mm
<b>Weight:</b>	13g
<b>RoHS:</b>	Compliant
<b>Number of Elements (Groups):</b>	4 (4)
<b>AR Coating:</b>	400-700nm MgF <sub>2</sub>

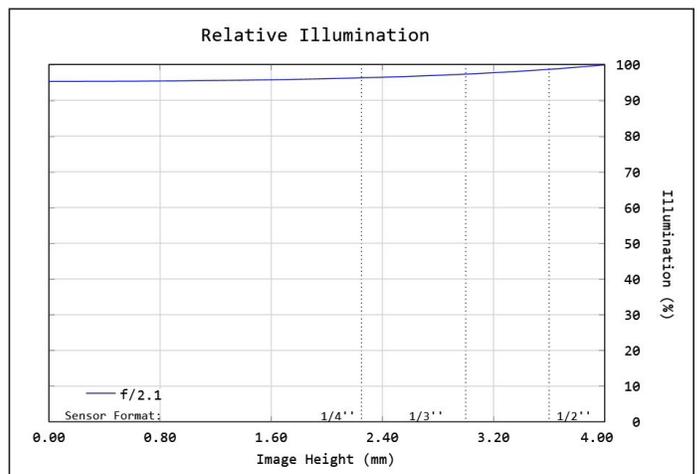
1. From front housing 2. Image space MTF contrast

At Minimum W.D. (150mm)						
Sensor Size	1/4"	1/3"	1/2.5"	1/2"	1/1.8"	2/3"
<b>Field Of View<sup>3</sup></b>	19.4mm - 8.2°	26.0mm - 11.0°	31.5mm - 13.3°	34.8mm - 14.7°	N/A	N/A

3. 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 & DOF: f/2.1

WD: 300mm

HORIZONTAL FOV: 74mm

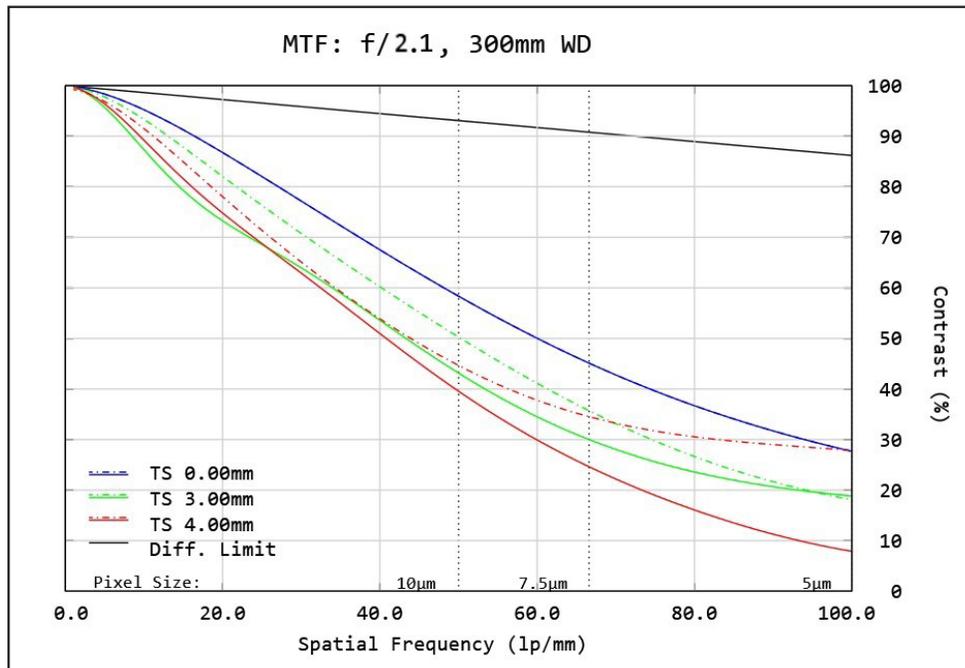


Figure 3: Image space polychromatic diffraction FFT Modulation Transfer Function (MTF) for  $\lambda = 486\text{nm}$  to  $656\text{nm}$ . Included are the Tangential and Sagittal values for field points on center, at 70% of full field and the maximum sensor format. Solid black line indicates diffraction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

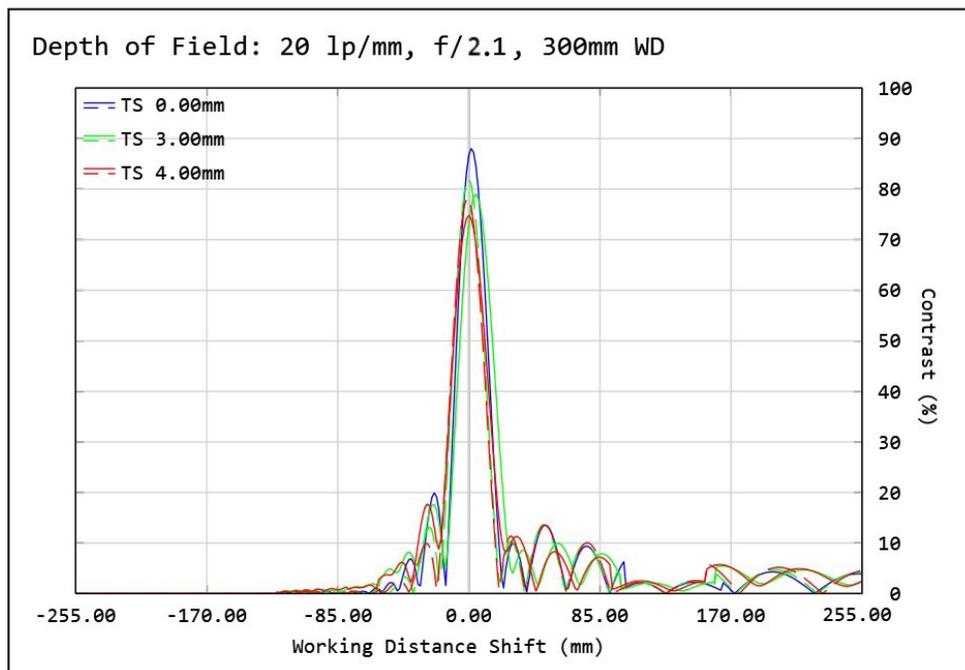


Figure 4: Polychromatic diffraction through-focus MTF at 20 linepairs/mm (image space). Contrast is plotted to two times the focus distance. Note object spatial frequency changes with working distance.

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

MTF & DOF: f/2.1

WD: 402mm

HORIZONTAL FOV: 100mm

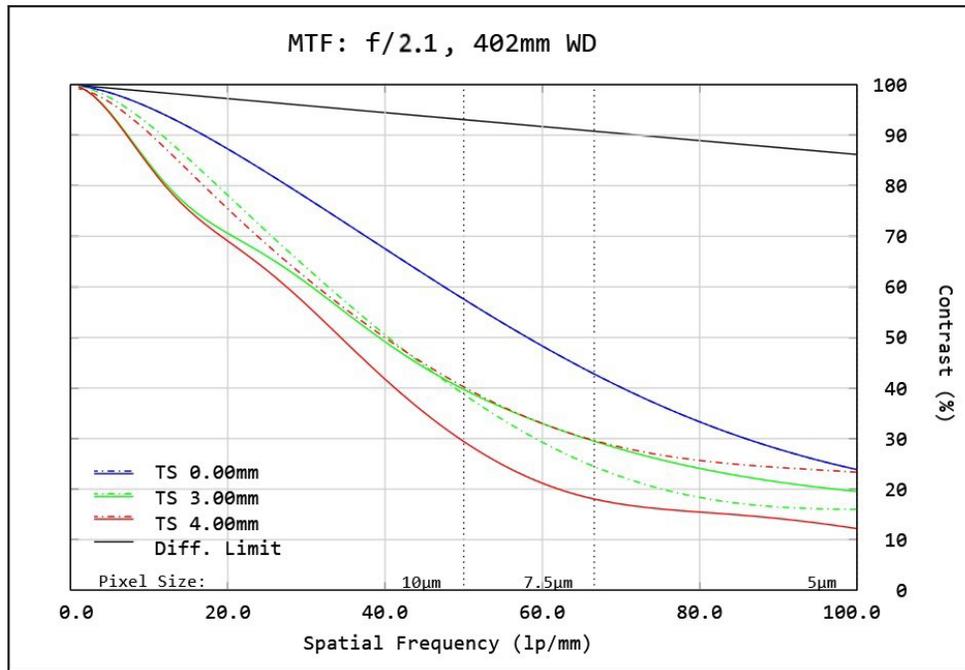


Figure 5: Image space polychromatic diffraction FFT Modulation Transfer Function (MTF) for  $\lambda = 486\text{nm}$  to  $656\text{nm}$ . Included are the Tangential and Sagittal values for field points on center, at 70% of full field and the maximum sensor format. Solid black line indicates diffraction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

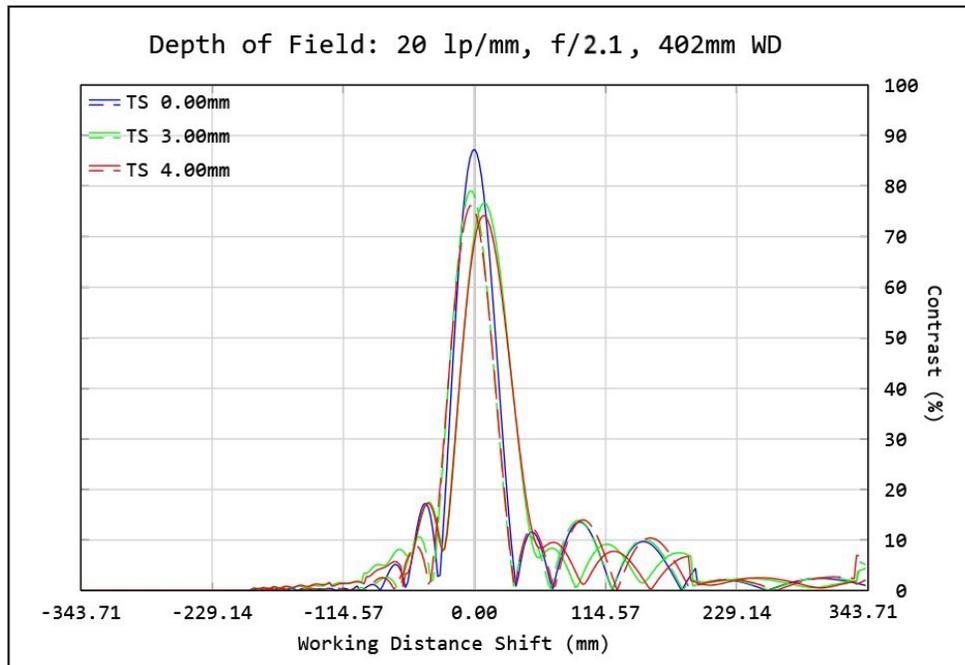


Figure 6: Polychromatic diffraction through-focus MTF at 20 linepairs/mm (image space). Contrast is plotted to two times the focus distance. Note object spatial frequency changes with working distance.

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

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