

shaping the future of optics



Optotune/Kowa 35mm lens

Fast autofocus using tunable lens technology

1" sensor rated

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Kowa

Fast Autofocus Solution

Kowa lens and Optotune liquid lens

- 35mm focal length
- F5.6 to F32
- 250 - 500mm WD with Optotune EL-10-30
- 250mm - ∞ (Infinity) with Optotune EL-16-40
- No orientation dependence

Kowa lens design rated for 1" camera sensors

	1"	1.8"	2.3"	3.0"
FOCAL LENGTH	35mm			
MAX SUBJECT DIST	F=1.5x-∞			
DIAPHRAGM GROUP	6 GROUPS / 7 ELEMENTS			
FLUOREN	10.0mm - 22.0mm			
TYPE	19.5x12.5mm 1.8x0.8mm 1.5x0.7mm			
FIELD OF VIEW	HR 27.0mm 18.6mm 15.2mm			
FR WAD WADH	HR 36.0mm 24.8mm 20.0mm			
	DA 45.0mm 30.0mm 25.3mm			
FIELD OF VIEW	HR 76.0mm 52.6mm 43.0mm			
FR WAD WADH	HR 102.0mm 70.2mm 57.4mm			
	DA 178.0mm 127.8mm 107.8mm			
TV DISTORTION %	0.0%			
TV DISTORTION @ 100	-0.2%			
FLANGE BACK	17.82mm in. 0.7"			
BACK FOCUS	18.7mm in. 0.7"			
FLYING BEAMS DIA				
FRONT/REAR EFFECTIVE DIA	FRONT: 41.3mm REAR: 40mm			
WADH	C-MOUNT			
TEMPERATURE RANGE	-10 ~ 50°C			
USUAL TEMPERATURE RANGE	-20 ~ 20°C			
SECTION THROUGH	CENTER 150.0mm CORNER 80.0mm			
LENS LOGGING	MULTI-COATING			

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Fast autofocus solution

Containing Optotune EL-10-30 focus tunable lens technology

- 35mm focal length
- F5.6 to F32
- 250 – 500mm WD
- No orientation dependence
- Kowa lens design

Rated for 1" camera sensors

Optical setup for performance measurements



Camera used for evaluation:

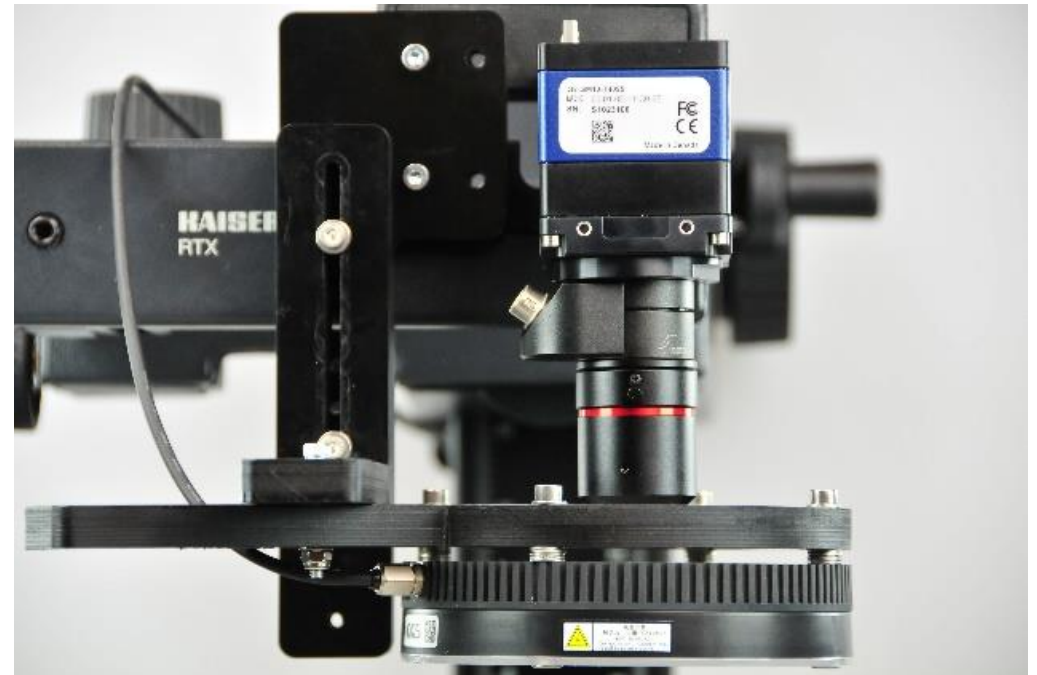
Dalsa Genie TS-M4096

12 Megapixel

6 μ m pixel size

Cropped to 1" sensor size:

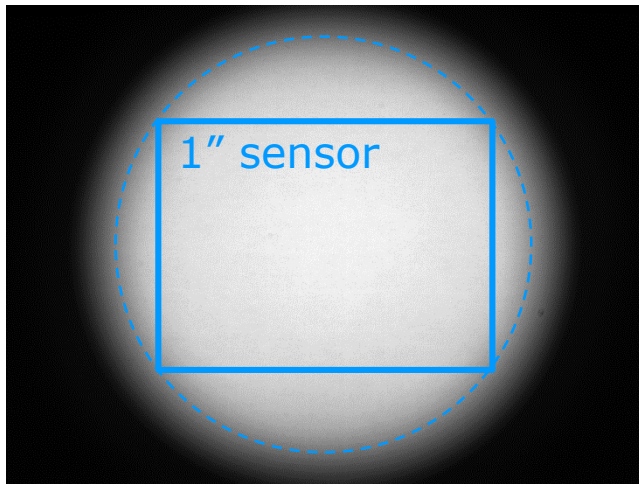
2166 x 1600px



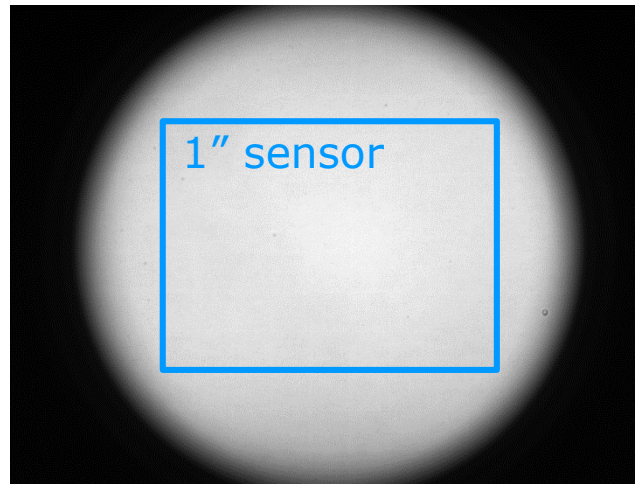
No vignetting with 1" sensors



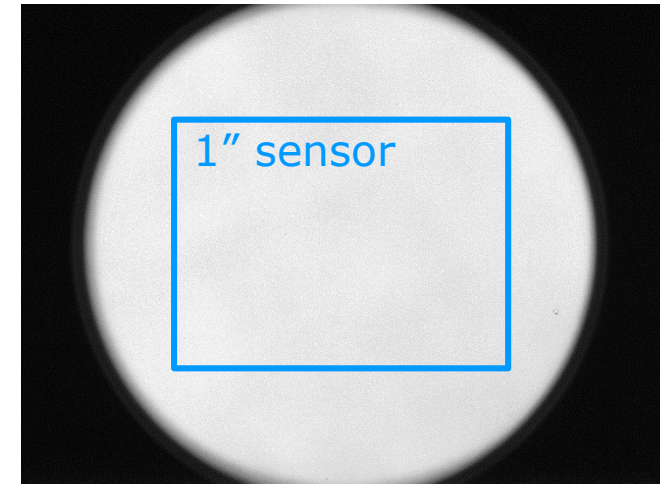
F5.6



F11

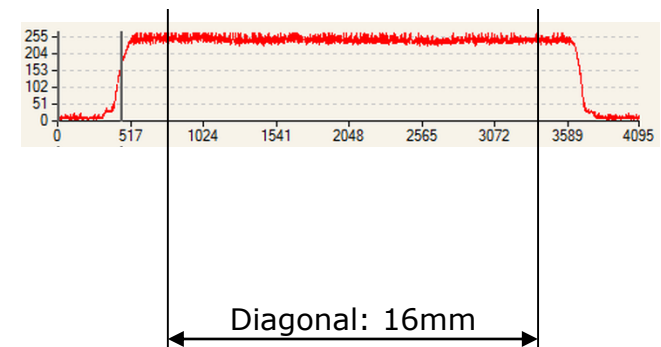
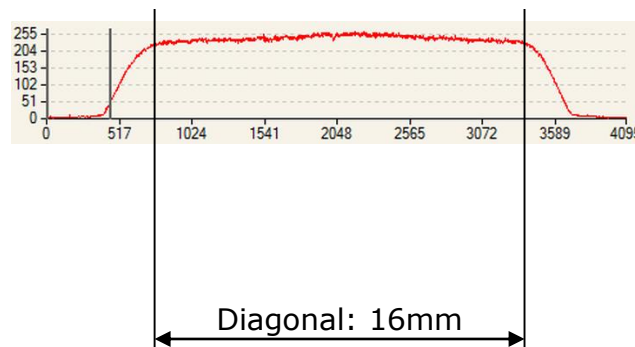
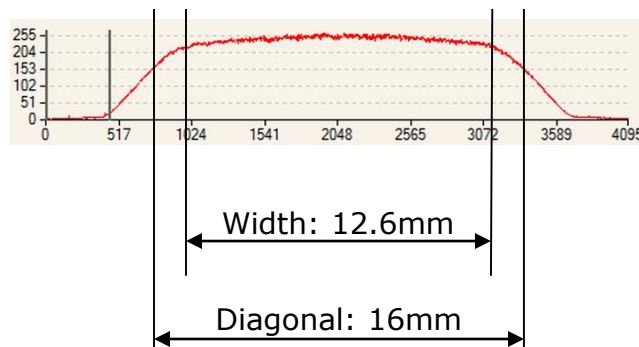


F32

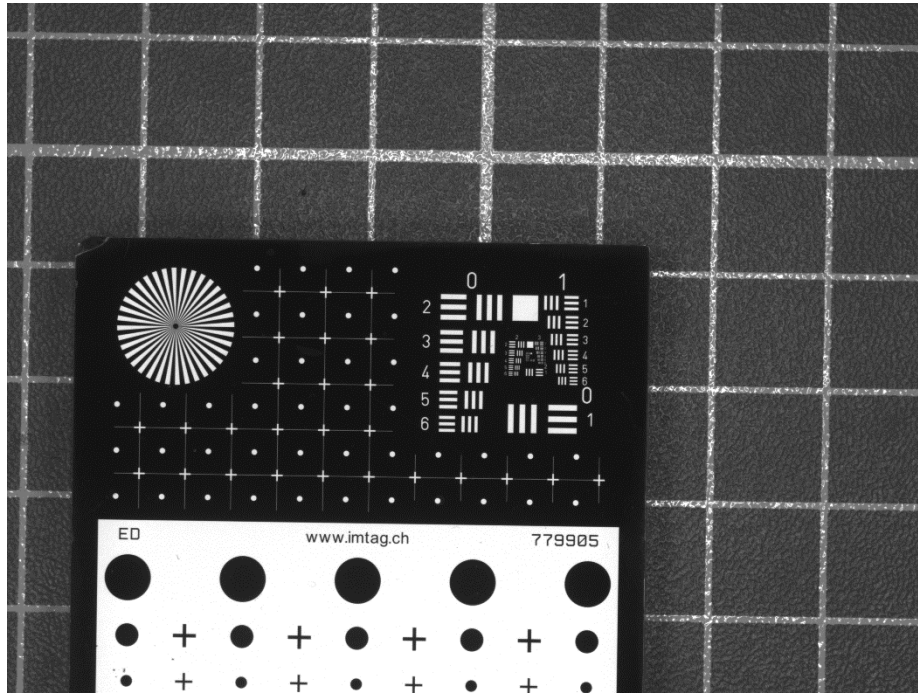


Plots below show precise brightness data of the individual pictures.

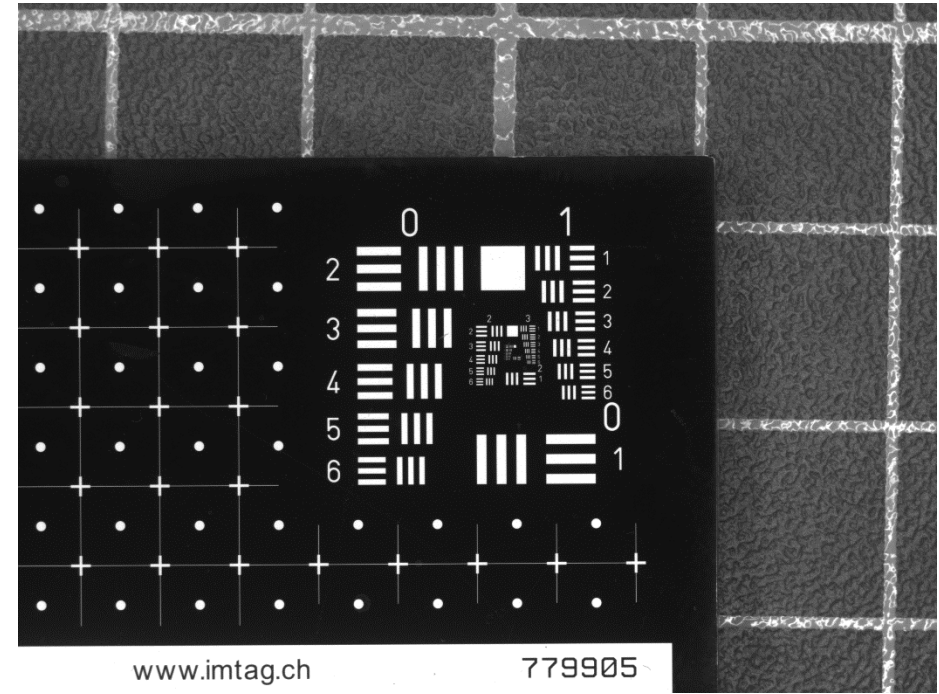
At lowest F# the brightness drops by approx. 30%. F11 upwards shows no more vignetting at all.



Tuning range with EL-10-30-Ci-VIS-LD-MV: 270 to 490mm WD



EL-10-30 @ -1dpt
WD: 490mm
HFOV: 150mm



EL-10-30 @ 3.5dpt
WD: 270mm
HFOV: 96mm

Need more tuning range/larger WD?

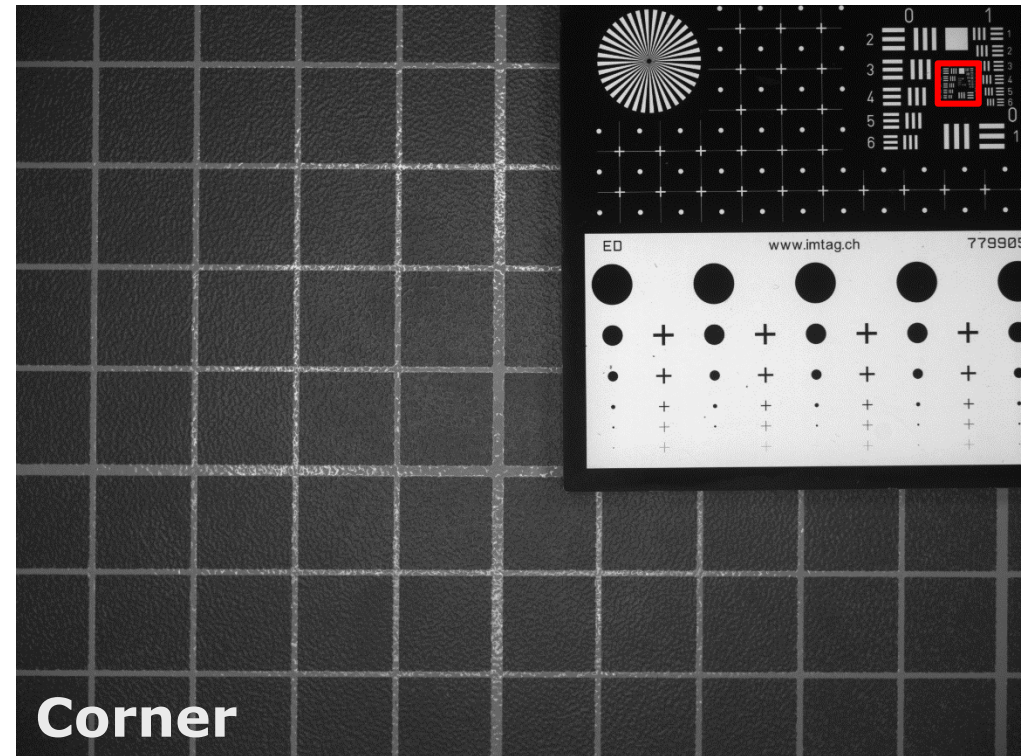
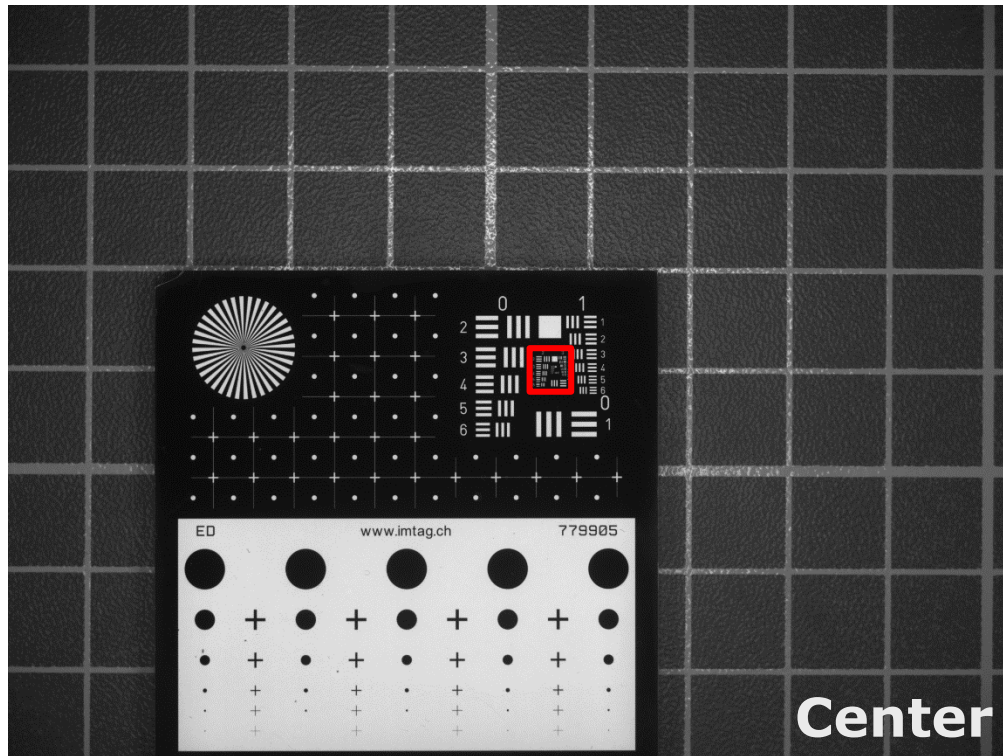


Use EL-16-40-TC-VIS-5D-C instead
of EL-10-30-Ci-VIS-LD-MV

EL-16 will provide tuning over
250mm – ∞ (Infinity)



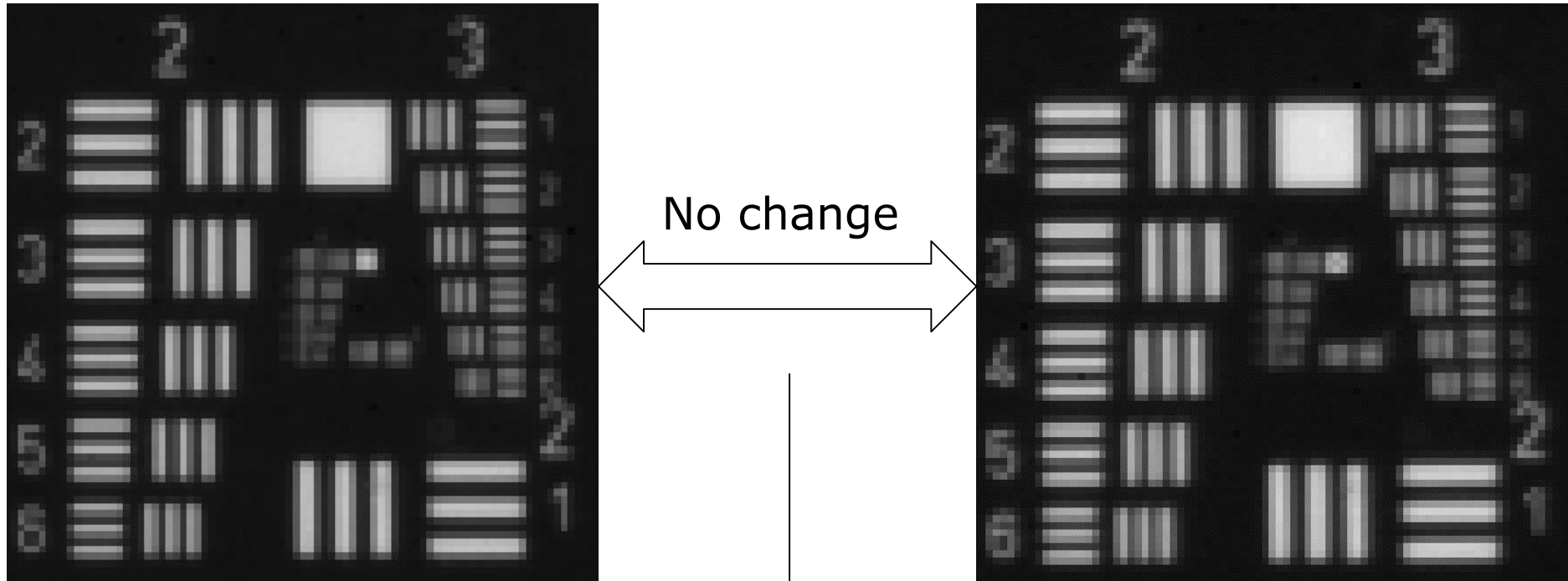
Complete resolution test scene



The red rectangles mark the crop areas of the following images

1" camera sensor (6um pixel size, 3.5 Megapixel)

No resolution drop towards the image corner



Resolution center
more than 80 lp/mm

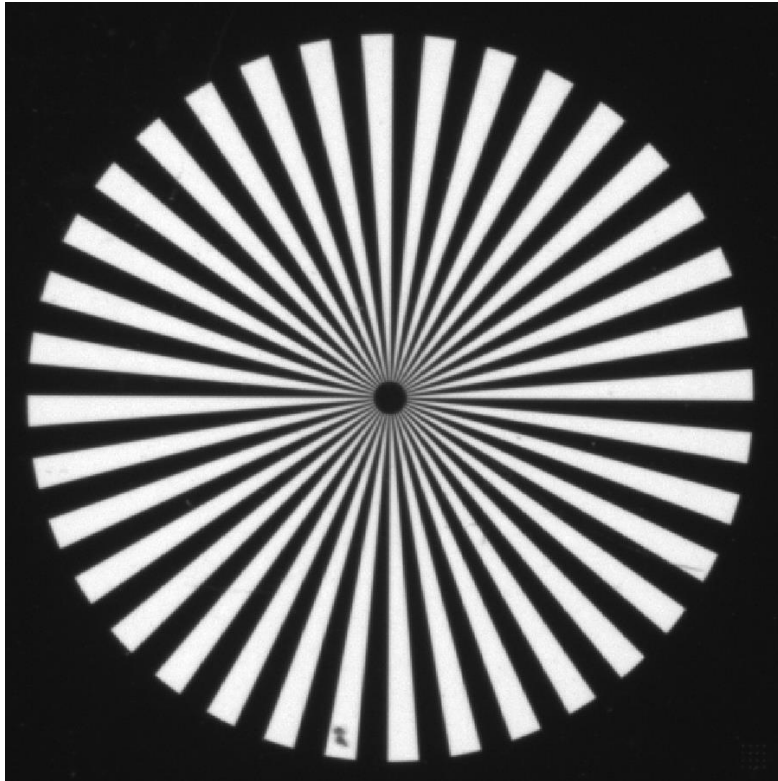
Resolution corner
more than 80 lp/mm

EL-10-30 @ 3.5dpt

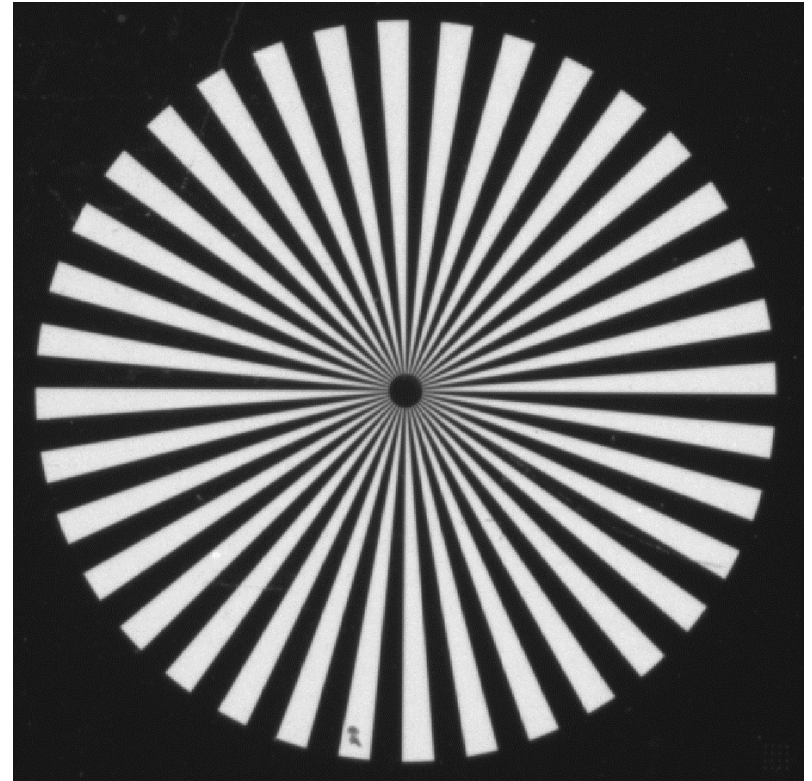
Aperture F5.6

With this setup resolution is only **limited by 6um pixel size**

No orientation dependence



Vertical optical axis



Horizontal optical axis

Camera with 2.2um pixel size was used to image this star target.

No visible difference