



Meta-optic Imaging Module Evaluation Kit

Metalenz's evaluation kit demonstrates the benefits of its revolutionary technology when imaging a near-infrared laser illuminated scene onto a camera sensor.



EVALUATION KIT OVERVIEW

Metalenz's evaluation kit demonstrates the benefits of its revolutionary imaging technology for 3D sensing applications. The evaluation kit consists of a camera module that utilizes a single meta-optic that produces a high contrast, telecentric image onto a VGA sensor (640 x 480). Although the evaluation kit is designed for a particular sensor, Metalenz can optimize customer specific design requirements for most near-infrared sensors. The evaluation kit is intended to be used with laser illumination centered at 940 nm, not LED illumination. Metalenz can provide a diffuse VCSEL source with the kit. The evaluation kit includes the camera module, a driver, and software to operate the system. A detailed instruction manual and test report are included.

META-OPTIC IMAGING LENS ADVANTAGES:

Better: 4X Improvement in SNR

Brighter: 2-3X brighter

Simpler: Packaging & manufacturing advantages of a single wafer level optic

Great Image Quality: Excellent MTF and low stray light in a thin form factor

**Please note this EVK does not demonstrate the improvement in noise filtering because it includes a standard bandpass filter. A next generation EVK is planned with a narrower bandpass filter.*



WHAT IS A META-OPTIC?

Meta-optics consist of sub-wavelength structures with a single physical height, which act as waveguides to manipulate light. Produced using standard semiconductor processes, meta-optics are fabricated in the same foundries that make microelectronics and CMOS image sensors. The planar form factor and 2D processing technology enables facile integration of meta-optics with image sensors, greatly reducing module assembly cost and complexity

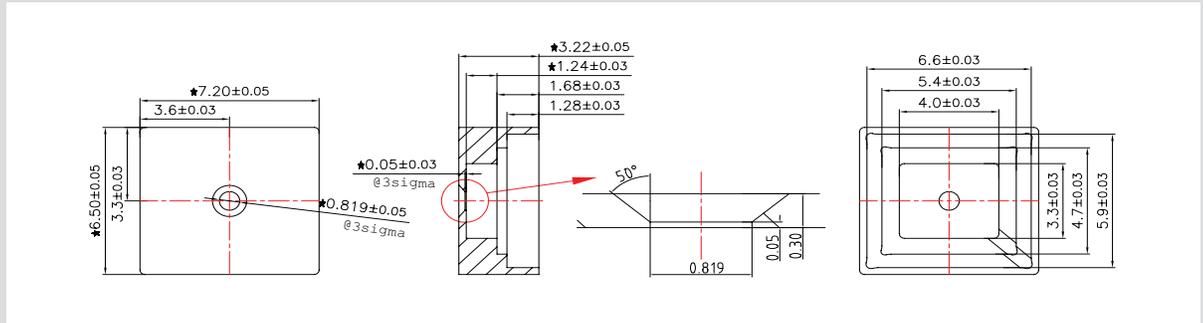


BENEFITS OF META-OPTIC IMAGING LENS

For many monochromatic imaging systems, including time-of-flight (ToF), structured light, eye tracking and active stereo vision applications, a single meta-optic can outperform multi-element refractive lens systems. The package footprint can be reduced substantially by replacing several refractive elements with a single meta-optic, while maintaining superior optical performance. Low f/# telecentric imaging provides greater than 4X improvement in signal-to-noise ratio (SNR) in ambient light as a result of a 2-3X higher signal and also a 2X improvement in filtering noise. The improvement in signal is because telecentric imaging more uniformly illuminates the detector than traditional solutions since it has little roll-off in relative illumination across the field. The enhancement in filtering noise is the effect of a 0 degree chief ray angle, which enables a 2X narrower bandpass filter.* A meta-optic is the only wafer level optic that can image a scene with resolution comparable to a high-performance refractive stack and with extremely low stray light.

For more on purchasing this evaluation kit or customizing a meta-optic for a specific sensor, please contact us at sales@metalenz.com.

● ● ●
DIMENSIONED
DRAWING



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SPECIFICATIONS This evaluation kit is intended to be used with laser illumination centered at 940 nm, not LED illumination.

Parameter	Units	Specification
Sensor size	pixels	640H x 480W
Sensor pixel	um	2.61
Internal Filter	nm	940 nm +/- 25 nm
Typical Lens MTF @		
Nyq/2 (0.0 F)		73.7%
Nyq/2 (0.4 F)		52.6%
Nyq/2 (0.6 F)		55.6%
Camera F#		1.7
Camera FOV	Degrees	+/-45
Distortion ⁺	%	21%
Chief Ray Angle	Degrees	5
EFL	mm	1.39
Optical TTL	mm	2.9
Nyq/2 frequency	cycles/mm	96
Typical Module MTF* @		
Nyq/2 (0.0 F)	%	35%
Nyq/2 (0.4 F)	%	27%
Nyq/2 (0.6 F)	%	25%
Relative Illumination	%	56%
Power source		USB
Output file format		raw, bmp
Optical format of camera		1/8"
Exposure time range		10us–50ms
Weight for camera module and circuit boards	grams	26

⁺ Distortion is correctable via software

* Please note module MTF = sensor MTF x lens MTF