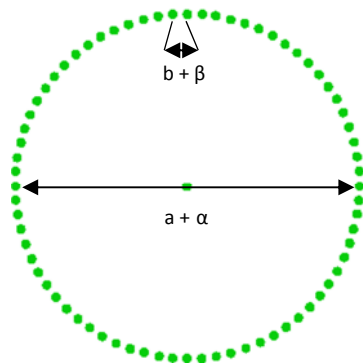


# DE-R 221 Diffractive Optical Element



- **Element Number:** DE-R 221
- **Current Product Revision:** A
- **Description:** 1 : 72 Dot Circle
- **Number of Dots:** 72 + 1 Dots
- **Substrate material:** Polymethyl Methacrylate (PMMA)
- **Size (Ø x Thickness):** 8 x 1 mm
- **Design wavelengths:** 532 nm
- **Recommended wavelength range:** 400-570 nm
- **Minimum recommended beam diameter:** 1.5-2.0 mm

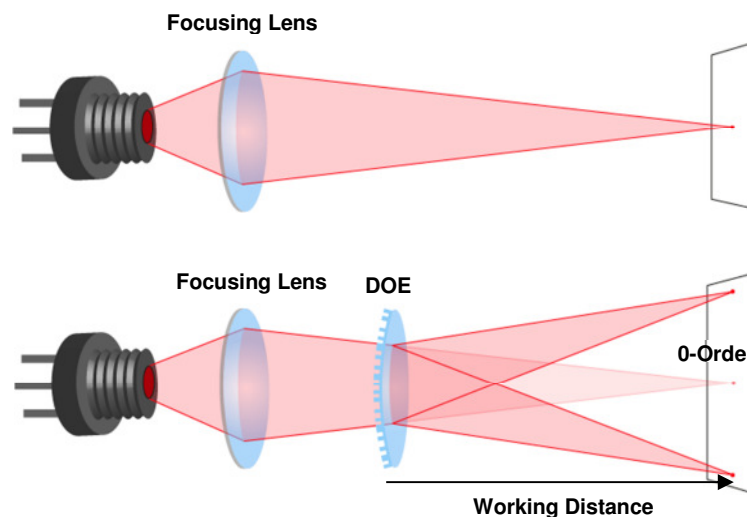
Pattern size and pattern angles and the intensity in the undiffracted central spot ('zero order intensity', see reverse page) will vary most with the wavelength. At the optimum wavelength given on this datasheet, the element shows the lowest intensity in the central spot.

Diffraction efficiencies given on this datasheet have been measured using elements of product revision A.

## Geometry and Diffraction Angles

Wavelength	Pattern Size @ 100 mm Distance		Pattern Angles	
	a	b	$\alpha$	$\beta$
450 nm	31 mm	1.4 mm	17.7°	0.78°
515 nm	36 mm	1.6 mm	20°	0.89°
532 nm	37 mm	1.6 mm	21°	0.92°
635 nm	44 mm	1.9 mm	25°	1.11°
650 nm	45 mm	2.0 mm	26°	1.14°
730 nm	51 mm	2.2 mm	29°	1.29°
780 nm	55 mm	2.4 mm	31°	1.38°
808 nm	57 mm	2.5 mm	32°	1.43°

## Setup



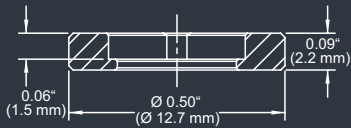
Laser diodes are the most common light source to be used with diffractive optical elements, but other laser light sources may also be used.

The DOEs are best used with collimated or convergent laser sources. The microstructure surface should be oriented towards the laser.

The 0-order spot is equivalent in size and shape to the original beam, but its power is attenuated.

### MOUNTED VERSION

For testing or setups under laboratory conditions we offer a version mounted in 12.7 mm stainless steel frame for use with standard laboratory holders.



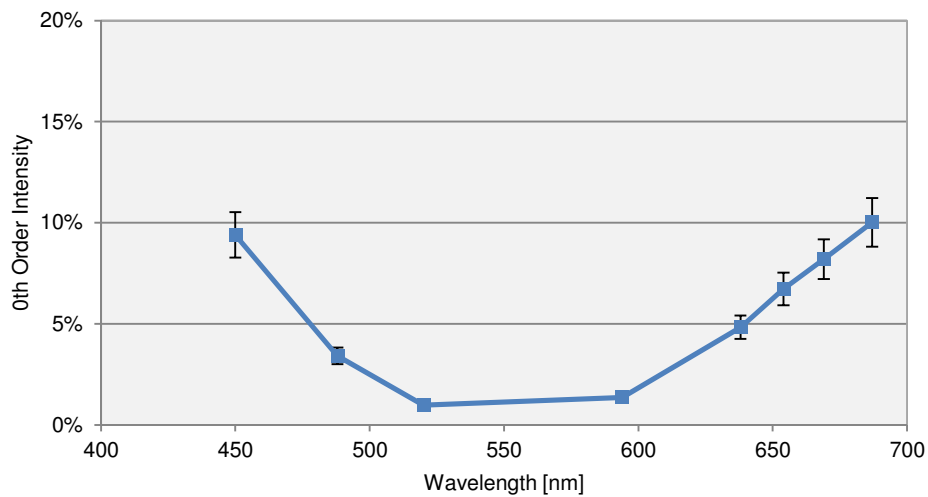
### COLLIMATED / CONVERGING LASER

The laser can be collimated for long range use or converging for a fixed working distance.

Please note that the size/thickness of each spot or line depends on the focusing of the laser.

## Diffraction Zero Order Intensity:

Wavelength	0-Order Intensity
450	9.4%
488	3.4%
520	1.0%
594	1.4%
638	4.8%
654	6.7%
669	8.2%
687	10.0%



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