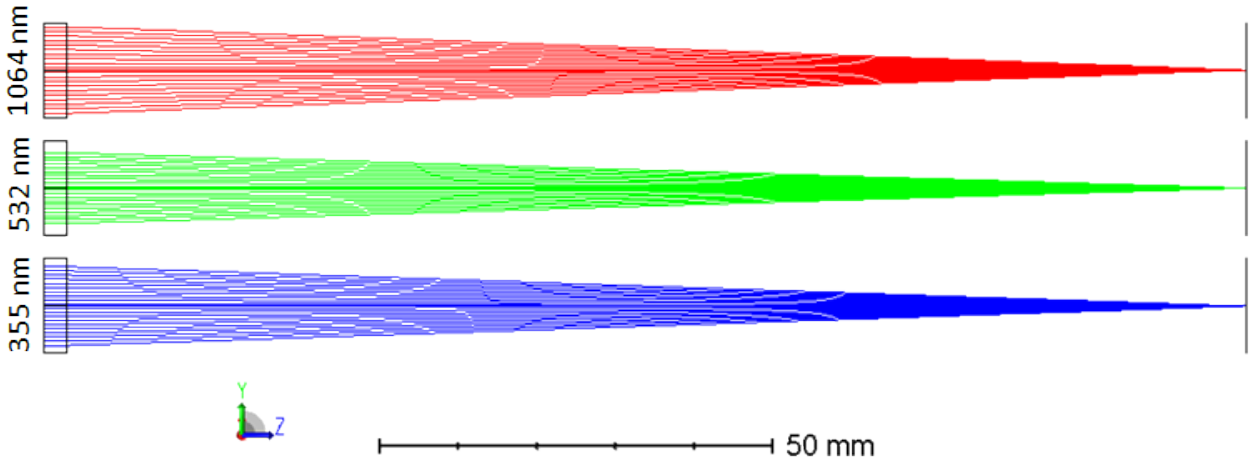
Diffractive Achromat

HOLO/OR offers diffractive Achromat lenses that have the same focal length for 3 harmonies of Nd:YAG lasers (355nmm 532nm and 1064nm). These Triple Wavelength (TW) lenses are ideally suitable for high power applications, where standard Achromats made by using lenses with different refractive indices often suffer from limited laser damage threshold. Due to the high accuracy of the manufacturing methods of diffractive optical elements, our lenses are aberration-free at all 3 design wavelengths, enabling tighter focusing and higher power density at focus compared to standard Achromat lenses.

All TW elements are planar, light and thin windows that are easy to integrate into limited spaces in high power systems. These diffractive lenses are also called Multi-Order Diffractive Lenses ("MOD lenses"). For more data and comparison to standard Achromats, read here.



Advantages and Disadvantages

Parameter/Solution	Regular Fused Silica lens	Refractive Achromat	Diffractive Achromat
Spherical aberrations correction	✗	✓	✓
Chromatic aberrations correction	✗	✓	✓
Compact	✓	✗	✓
Coefficient of thermal defocus	-21.1	Depends on used materials	1.1
Laser damage threshold (LDT)	High	Low	High

Efficiency	Close to 100%	Close to 100%	>90% for designed wavelengths

Standard Products Specifications

HOLO/OR currently offers the Triple Wavelength TW-001-UQI-Y-A, with a focal length of 150mm and diffraction limited spot size performance for 355, 532 and 1064nm wavelengths. Other element sizes and EFL values are available on demand.

Part Number	Focal Length	Element Thickness	Element Diameter	Clear Aperture	Material	Wavelengths [nm]
TW-001-UQI-Y-A	150 [mm]	3 [mm]	15 [mm]	12 [mm]	Fused Silica	355, 532, and 1064