

Study Spotlight: AT ELANA® 841P optical performance measurements (in vitro bench evaluation)



Seeing beyond

AT ELANA 841P showed good optical performance, an extended range of focus and robust performance under various spectral and SA conditions.

Source



Title

Optical-Quality Analysis and Defocus-Curve Simulations of a Novel Hydrophobic Trifocal Intraocular Lens



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Publication

Clinical Ophthalmology:
December 18, 2023
DOI: <https://doi.org/10.2147/OPHTH.S445461>

Methodology

Conditions

- In vitro bench evaluation
- Aperture sizes of 3.0 & 4.5 mm
- Image Quality Metrics:
 - Condition 1: +0.27- μ m SA cornea, polychromatic light
 - Condition 2: +0.27- μ m SA cornea, monochromatic light
 - Condition 3: SA-neutral cornea, monochromatic light

Sample Size



Two 20 D
AT ELANA 841P IOLs

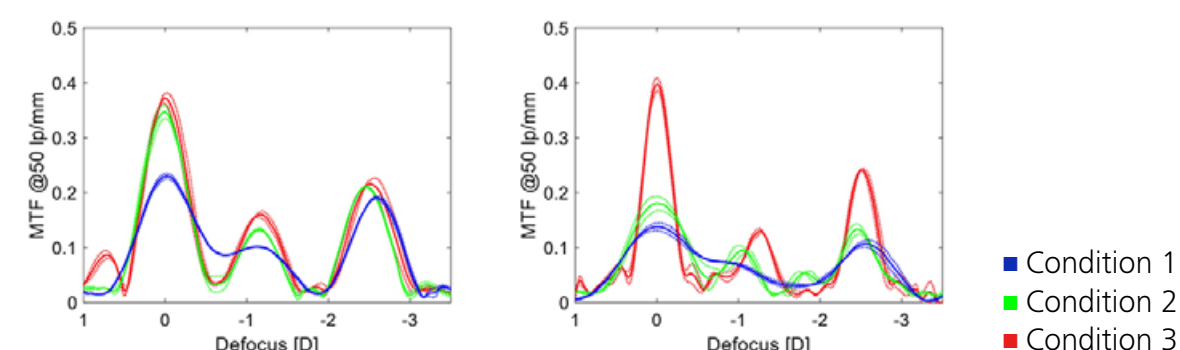
Measures

- Modular Transfer Function (MTF)
 - Through-Focus MTF
 - MTF and visual acuity simulations
- United States Air Force Resolution Imaging
- Simulated Photopic Phenomena

Results

Optical Performance

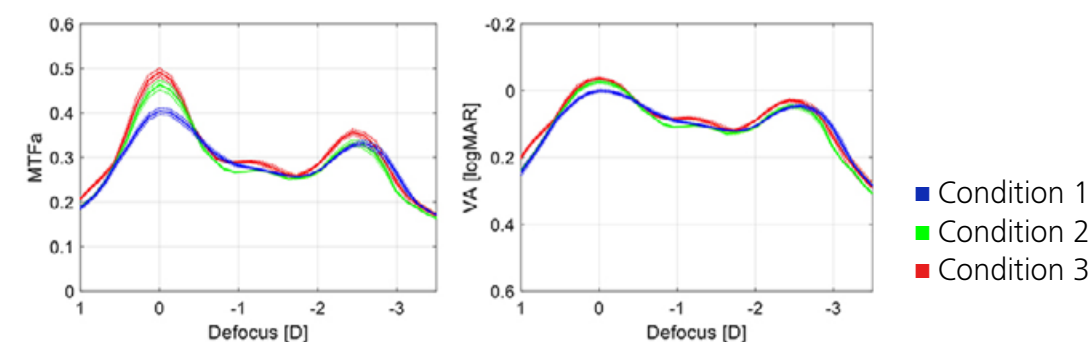
Based on laboratory simulation, the AT ELANA 841P showed good optical performance, an extended range of focus spanning from far through intermediate to near distances, and robust performance under various spectral and SA conditions.



The highest MTF values were obtained under monochromatic conditions using an SA-neutral corneal model (Condition 3). Nevertheless, after introducing SA (Condition 2) and polychromatic light (Condition 1), the IOL performance remained good.

Predictability

The range of vision provided by the AT ELANA 841P appears comparable to that of the AT LISA tri 839MP lens. Simulated VA results of the AT ELANA 841P (logMAR values of 0.09, 0.10, and 0.11 at defocus levels of -1 D, -2 D, and -3 D) were comparable to those of AT LISA tri 839MP at -1 D and -3 D, with a half-a-line improvement in VA at -2 D in favor of the AT ELANA lens.



Simulated VA values were 0.00 logMAR for distance, 0.1 logMAR at 100 cm, and progressively improving to 0.05 logMAR at 40 cm from the intermediate point.