

TH-041 Manual

The optical scheme for TH-041 is comprised of a converging gaussian beam, created by a focusing lens, as presented on the drawing Fig. 1

The laser, here, introduces a Gaussian beam (M^2 near to 1.0). The convention for the beam diameter is that it was measured at the level of about $\frac{1}{e^2}=0.14$ regarding intensity normalized to maximum intensity (not total power).

It is recommended to put a 110m BFL lens after a collimator, and the TH-041 diffractive beam shaping element at a distance of about 5 mm from the lens .A variable beam expander can be used in order to achieve 2.0 mm incident beam diameter on the plane of TH-041

(At the level of $\frac{1}{e^2}=0.14$ regarding intensity normalized to maximum intensity).

A Squared Top-hat with dimensions about 0.100 x 0.100 mm should appear at about 100 mm from the TH-041 plane.

The intensity distribution at distances <100 mm should feature intensity decrease at edges of spot (a bit similar to Gaussian, (the intensity distribution at >100 mm distances should feature intensity increase at edges spot (overcorrected) ,

In the cases where the incident diameter is a bit different the best Top Hat might appear in a different distance along optical axis.

FAQs

What is the tolerance on input beam diameter? – A few percents.

What is the tolerance on angle of incidence? – A few degrees

Is there a convenient way to estimate input beam diameter? – Using a Beam-Profiler from www.duma.co.il or another company.

Is there a convenient way to identify the exact "working distance" of the optic? By result.

How can it be confirmed that a "top hat" profile exists? By obtaining a uniform profile using a beam profiler(camera)

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