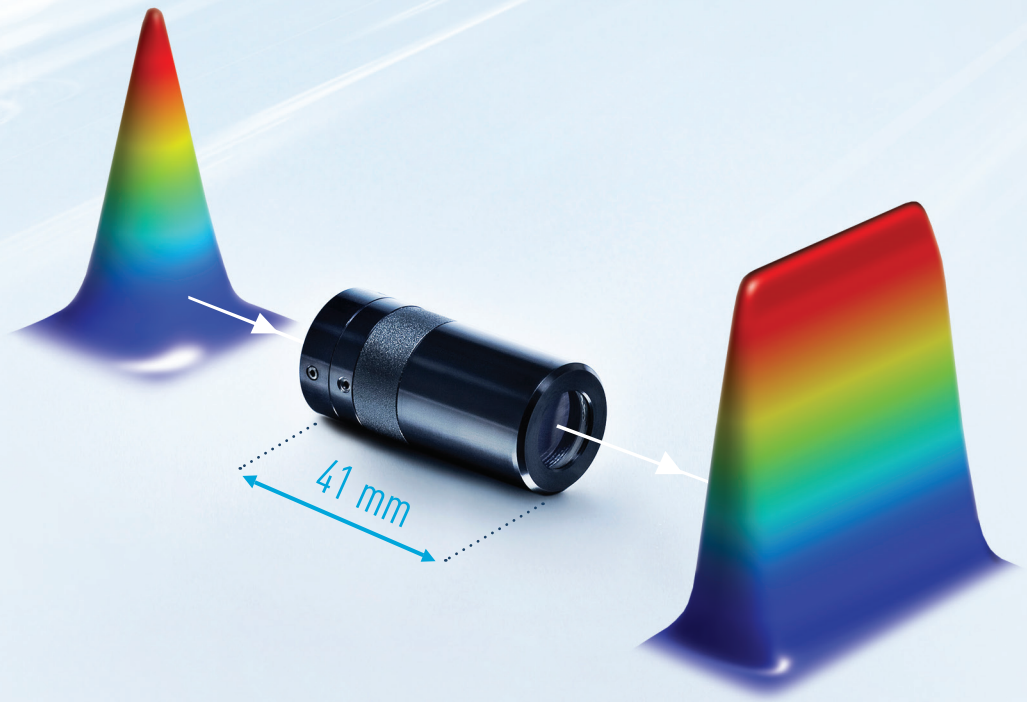
Osela Inc.

STRUCTURED LIGHT AND
LASER BEAM SHAPING SOLUTIONS

TOP HAT BEAM SHAPER

Converts a gaussian laser beam to a top hat profile with high uniformity, high efficiency with no high frequency noise in a flexible compact module.



FEATURES

- Achromatic
- High efficiency, all glass optics
- Smooth slow variations with no high frequency noise
- High edge steepness
- Flat top size from 50um to several mm
- Flexible aspect ratio from gaussian to flat top axis

APPLICATIONS

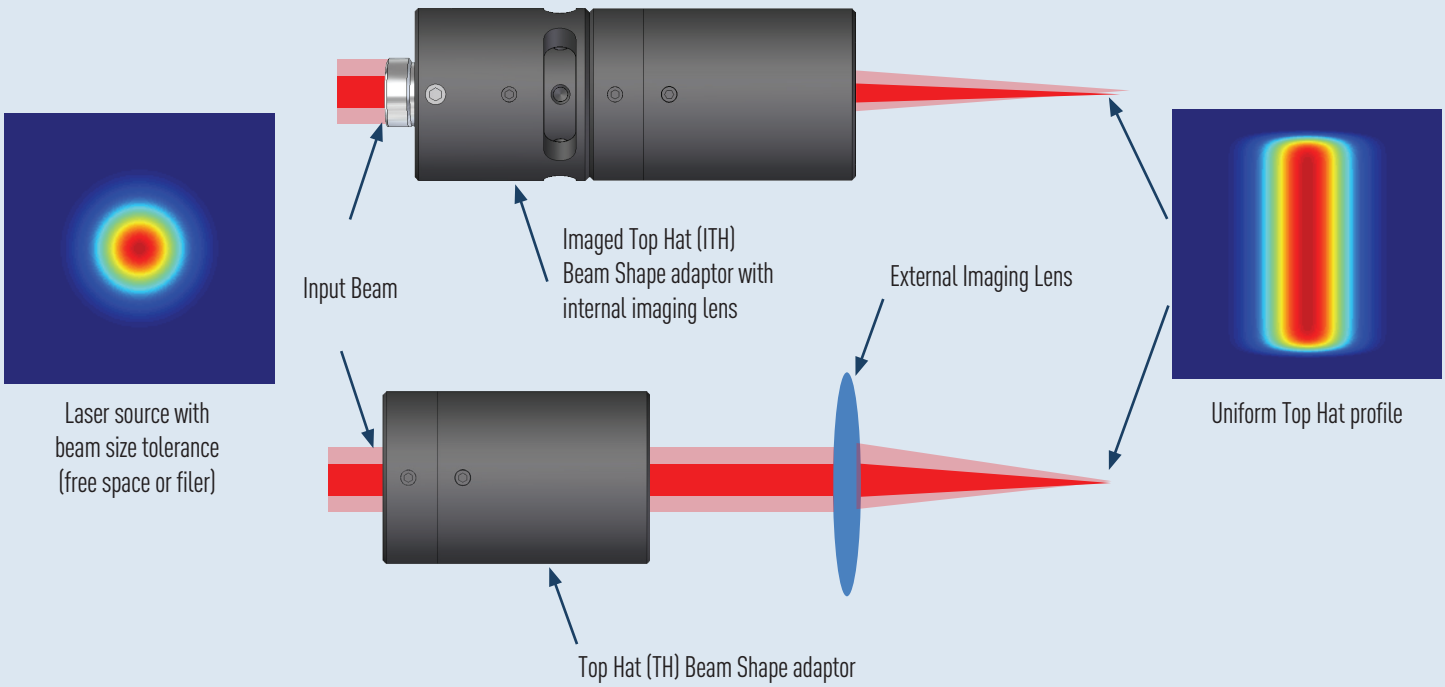
- Flow cytometry
- DNA sequencing
- Micromachining
- Confocal microscopy

Osela's Top Hat Module efficiently transforms a freespace laser beam or laser beam from a fiber into a uniform slow varying profile with no high frequency noise. The Top hat module is based on all glass optics providing a Top Hat profile at the focal plane of an imaging system.

The Top Hat dimension at the image plane is directly proportional to the the effective focal length, f, of your imaging system:

Top Hat Dimension = K * F

Where F is the focal length and K is a constant for specific Top Hat model. It can be offered with an internal imaging lens (model ITH) or without (model TH) to be used with an external imaging lens system (i.e. microscope objective).

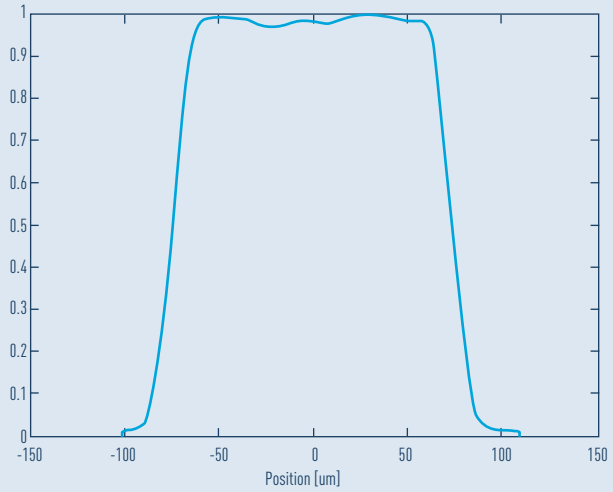


SPECIFICATIONS

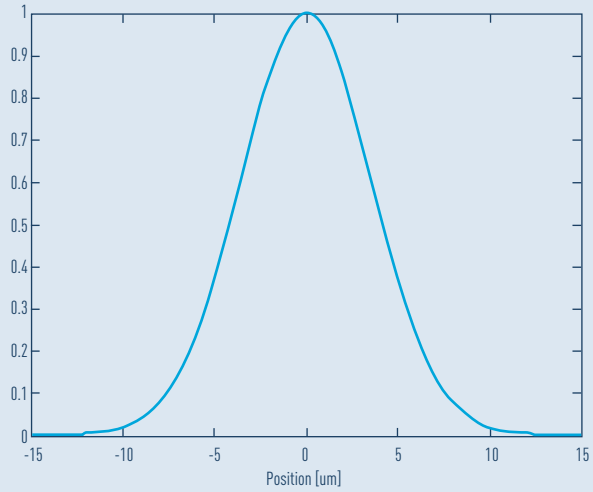
ITEM	SPECIFICATION	CONDITION
Input beam size	0.5 to 4.0mm	At 1/e2
Operating wavelength	250 to 1300nm	AR coating needs to be considered
Top Hat size constant (K)	0.001 to 0.6	
Cv Uniformity	<2% for fiber version <3% for free space	TEM00 beam
Contained energy	>70%	Over the region of interest
Efficiency	>95%	>97% of diverging TH
Glass material	Fused silica	Other material upon demand
Imaging lens	14, 20 30, 40 60, 75, 80 or 100mm	Other focal lengths upon demand

TOP HAT PROFILES

TOP HAT AXIS PROFILE, CV UNIFORMITY <1%



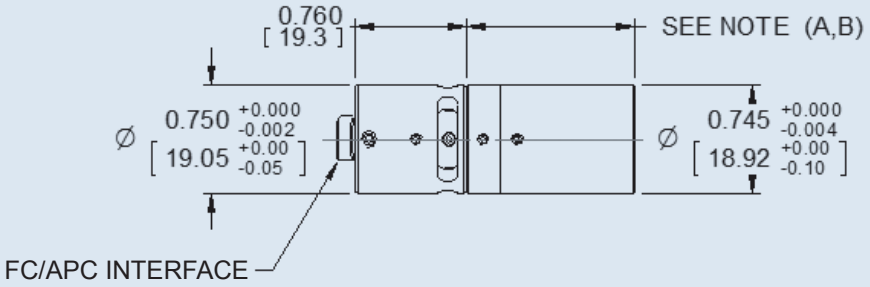
GAUSSIAN AXIS PROFILE



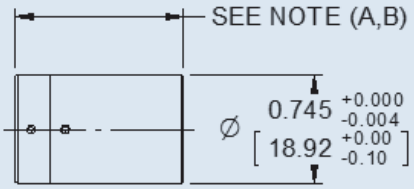
Real profiles from a 405 nm, 100 mw free spaced laser focused at 40mm

MECHANICAL SPECIFICATIONS

Fiber Option



Free Space Option



NOTE: (A) ADD 1.155 ±0.010 [29.34 ±0.25] FOR DIVERGING TOP HAT
(B) ADD 1.625 ±0.010 [41.28 ±0.25] FOR FOCUSED TOP HAT

DIMENSION ARE IN : inch [mm]

ORDERING CODE

Model	-	Wavelength	-	Input beam size	-	Constant	-	Image lens	-	Option
ITH		250		0.5		0.001		14, 20, 30		FS: Free space
TH		to		to		to		40, 60, 70		FC/APC:
		1300nm		4.0mm		0.6		80, 100		Fiber input