

### MLQF4550



### Description

Designed and manufactured by Thorlabs, the MLQF4550 is a turnkey quantum cascade laser system with emission centered at a wavelength of 4.55  $\mu\text{m}$ . It provides a collimated CW output at room temperature. Each turnkey laser system consists of a quantum cascade laser head and a touchscreen controller.

This document contains the specifications that are associated with the laser head (i.e., all specifications related to the optical output). The specifications associated with the controller are available in the manual.

### Specifications

MLQF4550					
		Symbol	Minimum	Typical	Maximum
Center Wavelength		$\lambda_c$	4.45 $\mu\text{m}$	4.55 $\mu\text{m}$	4.65 $\mu\text{m}$
Optical Output Power <sup>a</sup>		$P_{CW}$	250 mW	-	500 mW
Spectral Bandwidth (5 - 95% Integrated Power)		$\Delta\lambda$	-	130 nm	-
Beam Pointing	Horizontal	-	-2.0°	0°	+2.0°
	Vertical <sup>b</sup>	-	-0.5°	0°	+0.5°
Beam Divergence <sup>c</sup>	Horizontal	$\theta_H$	-	3.5 mrad	-
	Vertical	$\theta_V$	-	3.0 mrad	-
$M^2$ (See Footnote a)	Horizontal	$M^2_H$	1	-	1.3
	Vertical	$M^2_V$	1	-	1.3
Output Power Stability over Operating Temperature Range (+15 to +35 °C)		-	-3%	-	3%
Output Power Stability over 24 Hours at Room Temperature		-	-2.5%	-	2.5%
Laser Current		$I_{max}$	-	-	1.2 A

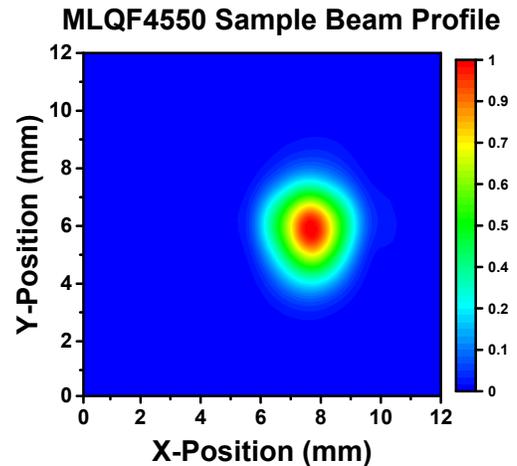
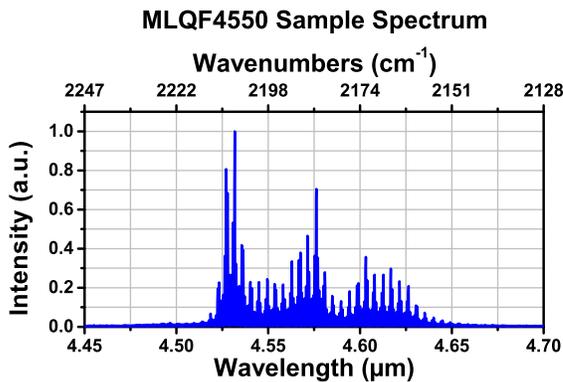
- The  $M^2$  value is guaranteed at the minimum optical output power of the laser head. Operation beyond the minimum output power may result in a reduction in beam quality.
- The SWB/M Mounting Feet on the bottom of the laser head allow the user to fine tune the vertical beam pointing.
- Beam divergence was measured using the second order moment method. Beam data is obtained from camera images taken at several distances from the laser emitter. Beam width at each point is extracted using the second order moment of the power distribution and beam parameters are determined from a hyperbolic fit of the beam width versus the propagation distance.



## Specifications Continued

General Laser Head Specifications	
External Dimensions (W x H x D)	114.0 mm x 132.8 mm x 208.4 mm (4.49" x 5.23" x 8.21")
Operating Temperature Range	+15 to +35 °C, Non-Condensing
Storage Temperature Range	0 to +50 °C, Non-Condensing
Weight of Laser Head	2.1 kg (4.6 lbs)

## Sample Performance Plots



Each device has a unique spectrum. This typical sample spectrum was measured at 25 °C. For the spectrum of a specific, serial-numbered device, see [www.thorlabs.com](http://www.thorlabs.com).

Representative beam profile measured 100 cm from the front of the laser head, using a pyroelectric camera with a 100 µm pixel pitch.

## Mechanical Drawings

