

LASER SPECTRUM ANALYZER

772 Series



Key Features:

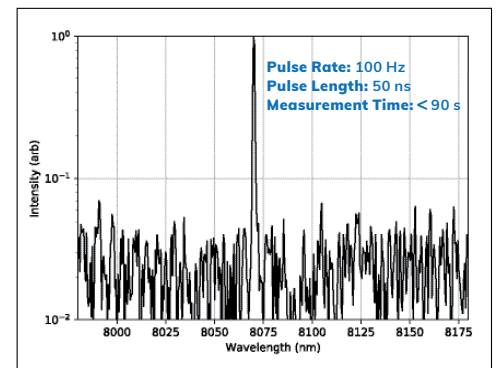
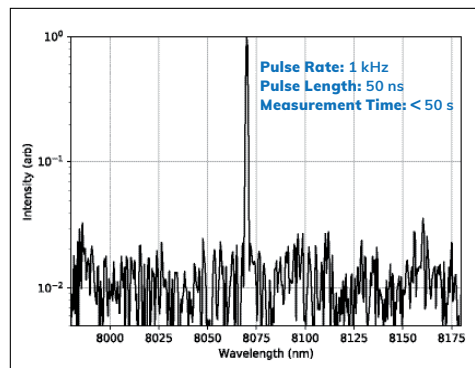
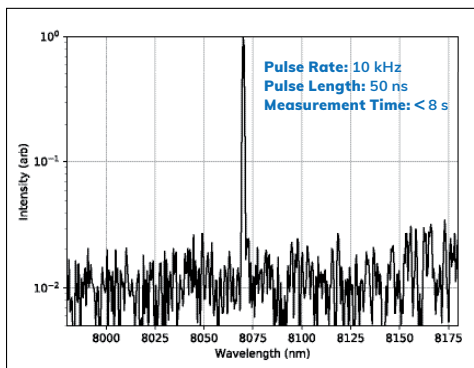
- Spectral analysis of pulsed and CW lasers.
- Operation from 1 to 12 μm .
- Spectral resolution of 4 GHz.
- Wavelength accuracy as high as ± 0.01 nm.
- Optical rejection ratio as high as 20 dB.

Spectral analysis of pulsed IR and Mid-IR lasers.

The 772B-MIR Laser Spectrum Analyzer from Bristol Instruments combines proven Michelson interferometer technology with fast Fourier transform analysis to characterize the spectral properties of lasers that operate from 1 to 12 μm . What makes this system so unique is that it employs a sophisticated algorithm to enable the measurement of pulsed lasers that have a repetition rate as low as 100 Hz.

The model 772B-MIR collects laser pulses over time to “build” an interferogram that is sufficient to convert to a spectrum. This spectrum has a resolution of 4 GHz and wavelength accuracy of ± 10 parts per million (± 0.08 nm at 8 μm). An optical rejection ratio of greater than 20 dB is achieved assuming a sufficient number of pulses (~30,000) are used to generate the interferogram.

PRELIMINARY
SPECIFICATIONS



Spectra of QCL operating with a pulse length of 50 ns and at various repetition rates.

SPECIFICATIONS

772 Series

MODEL	772B-MIR
LASER TYPE ¹	CW and pulsed (repetition rate > 100 Hz)
WAVELENGTH	
Range	1 - 12 μm
Accuracy ^{2,3}	± 10 ppm ± 0.08 nm @ 8 μm ± 0.0125 cm^{-1} @ 1250 cm^{-1} ± 875 MHz @ 37,500 GHz
Spectral Resolution ⁴	4 GHz
Calibration	Continuous - built-in standard HeNe laser
Display Resolution	8 digits
Units ⁵	nm, μm , cm^{-1} , GHz, THz
OPTICAL REJECTION RATIO ⁶	> 20 dB (> 30,000 pulses)
MINIMUM INPUT POWER ⁶	0.005 - 2.5 μW
MEASUREMENT TIME ⁶	Approximately 2x time required to collect chosen number of pulses (i.e., 6 s for 30,000 pulses from 10 kHz repetition rate laser)
INPUTS/OUTPUTS	
Optical Input ⁷	Collimated beam 3 mm diameter aperture, visible tracer beam to facilitate alignment
Instrument Interface	USB and Ethernet with Windows-based display program Library of commands (SCPI) for custom and LabVIEW programming using any PC operating system
COMPUTER REQUIREMENTS ⁸	PC running Windows 10, 1 GB available RAM, USB 2.0 (or later) port, monitor, pointing device
ENVIRONMENTAL ⁶	
Warm-Up Time	None
Temperature Pressure Humidity	+15°C to +30°C (-10°C to +70°C storage) 500 – 900 mm Hg $\leq 90\%$ R.H. at + 40°C (no condensation)
DIMENSIONS AND WEIGHT	
Dimensions (H x W x D)	7.5" x 6.5" x 15.0" (191 mm x 165 mm x 381 mm)
Weight	14 lbs (6.3 kg)
POWER REQUIREMENTS	90 - 264 VAC, 47 - 63 Hz, 50 VA max
WARRANTY	5 Years (parts and labor)

- (1) Specifications are for pulsed laser mode of operation. For CW lasers, operation and specifications are identical to model 771B-MIR.
- (2) Defined as measurement uncertainty, or maximum wavelength error, with a confidence level of $\geq 99.7\%$.
- (3) Wavelength axis is calibrated to system's accuracy specification.
- (4) Defined as the measured full width at half maximum intensity (FWHM) of an infinitely narrow optical signal.
- (5) Data in units of nm, μm , and cm^{-1} are given as vacuum values.
- (6) Characteristic performance, but non-warranted.
- (7) MIR required beam height is 5.4 ± 0.25 ".
- (8) For use with Windows-based display program. Interface with SCPI can be done using any PC operating system.
- (9) MIR instrument height is adjustable (7.25 ± 0.25 ") for alignment purposes.



Bristol Instruments reserves the right to change the specifications as may be required to permit improvements in the design of its products. Specifications are subject to change without notice.