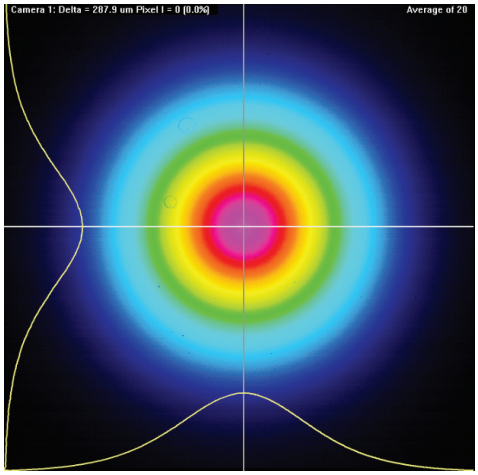
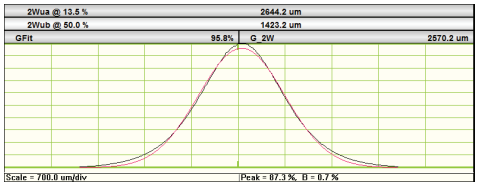
Beam Profiling At A Glance

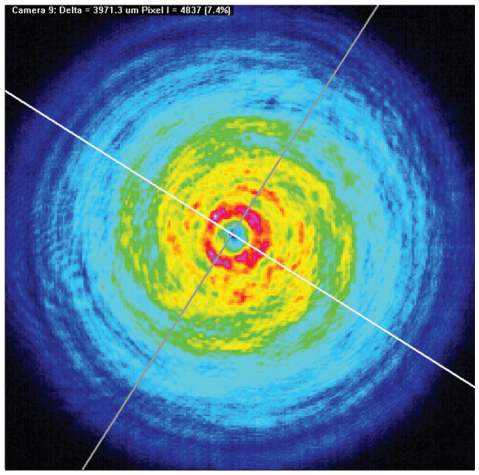
Today, lasers are used for countless applications in many industries. Whatever the application, whether it's laser surgery, telecommunications, surveying tools, or general measurement, understanding your beam's characteristics and quality is vital.

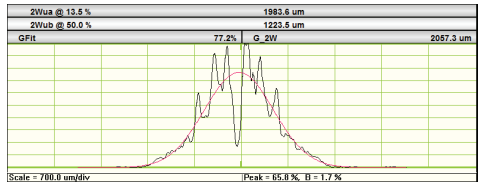
Does your beam look like this?



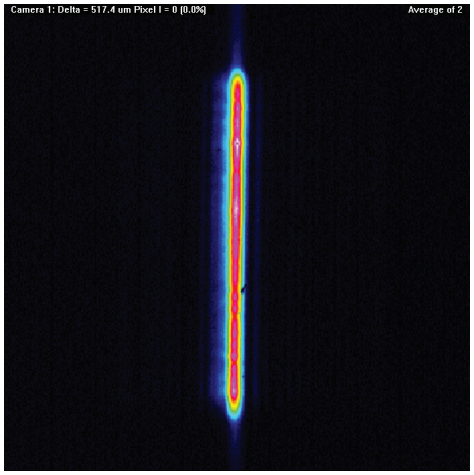


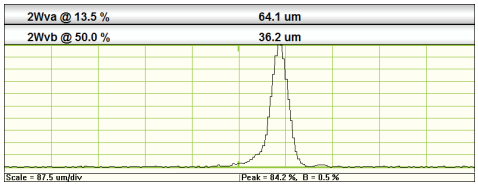
... or this?





... or even this?





When selecting a laser beam profiler, there are several basic questions to be answered:

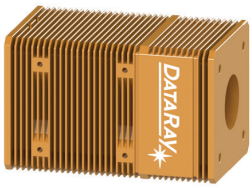
- **Wavelength(s)** Do I need a broad wavelength range system or a limited spectrum?
- **Beam Diameter** Is my beam small (a few microns) or is it larger, in the mm range?
- **Power/Energy** Am I dealing with µW/µJ, mW/mJ, or higher? Do I need attenuation/sampling?
- **Accuracy** What measurement accuracy do I need?
- **CW or Pulsed Beam** Do I have a CW (continuous) output or a pulsed beam? If pulsed what PRR?

Next, what measurements are needed?

- Beam Diameter(s)?
- Beam XY Position, Wander?
- Beam XYZ Focus Position?
- Beam Divergence, Pointing?
- Beam Shape (Gaussian, TopHat, Line Projection)?
- Beam Quality (e.g. M^2 Propagation Parameter, Uniformity)?

The answer to these questions will help narrow the selection of profilers that will best measure your beam.

Camera-based systems offer the broadest use for beam profiling, but lack the highest resolutions, which may be required for very small beams (below 32 µm in size). If you have a low pulse-rate beam, have irregularly (non-Gaussian) shaped beams, or if you're looking for a general purpose profiler, these are a good choice.



Wavelength Range	WinCamD™ LCM Series	TaperCamD™ LCM Series	BladeCam2™ Series	WinCamD™ QD Series	WinCamD™ IR-BB
UV	✓	✓	✓	—	—
VIS	✓	✓	✓	✓	—
NIR	✓	✓	✓	✓	—
SWIR	✓*	—	✓*	✓	—
MWIR	—	—	—	—	✓
FIR	—	—	—	—	✓

**with phosphor coating*

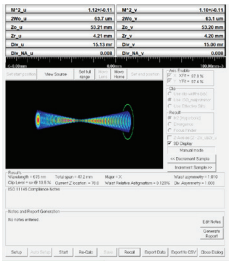
See our Selection Guide and datasheets for complete details

Scanning slit profiling systems offer the high resolution that may be required for very small beams below a few tens of microns, and cover wavelength ranges not available in reasonably priced camera systems. While they do not give an image of the beam, in many cases XY or XYZΘΦ profiling is all that is required.

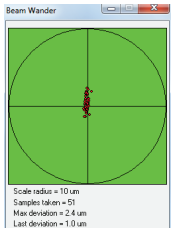
Wavelength Range	Beam'R™2	BeamMap™2
UV	✓	✓
VIS	✓	✓
NIR	✓	✓
SWIR	✓	✓
MWIR	—	—
FIR	—	—

See our Selection Guide and datasheets for complete details

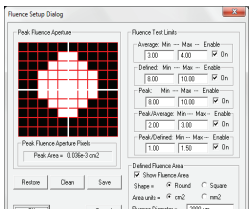
Sample Screenshots



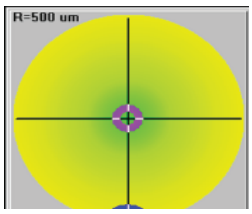
M² Scan



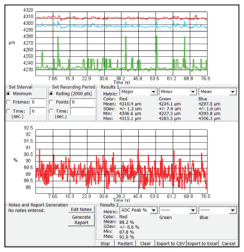
Beam Wander



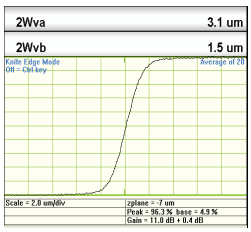
Fluence



Alignment



Strip Chart



Knife-Edge Mode