

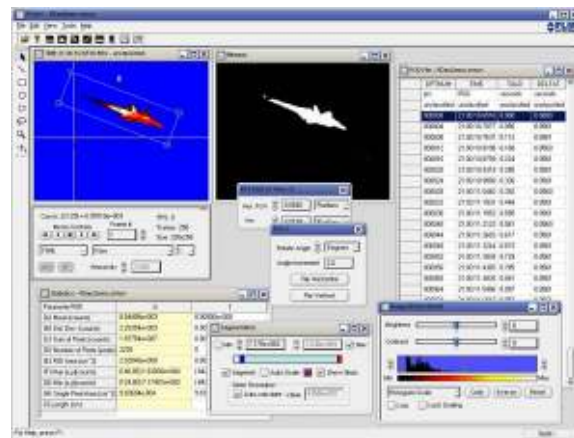
Infrared Camera Spectral Response Measurement System

Optronic Laboratories, Inc. (Orlando, FL) and **FLIR Systems, Inc** (Portland, OR) have teamed up to provide a turnkey system for characterizing the relative or absolute spectral response of IR imagers and materials such as optics & filters utilized with these instruments. Characterization of the spectral response of these devices aids in the methodology needed for accurate and reliable results. The system is based on the OL 750 Automated Spectroradiometric Measurement System and includes the enhancements provided by the FLIR Systems versatile ThermoCAM RTools™ software suite. The measurement system is easy to set up and operate, and can be used for all IR devices as well as UV & Visible applications. With the well known and trusted OL Series 750 Spectroradiometer and the FLIR Systems ThermoCAM RTools™ software suite, this system provides an affordable solution with easy operation and accurate results.



- **Spectral Response Measurement of Infrared Camera Systems**
- **Accurate Measurement of Lens & Filter Transmittance**
- **Easily Create Accurate Radiometric Calibrations**
- **Automated Controls for Painless Operation**
- **Low Cost, Reliable, NIST-Traceable Results**

Infrared cameras generally operate in a relatively narrow band, such as 3 – 5 or 8 – 12 microns, however the spectral response across those bands is dependent not only on the material composition of the sensor elements, but also the spectral properties of any materials such as a filter or lens in the optical path. Accurate measurement of the detector and each element in the optical path yields much more accurate measurement results when in use, thus more reliable data acquisition. This becomes important as we recognize that not all sensors, lenses, and filters have the same characteristics. It is important to know the response of your individual infrared system and be able to trace those results back to your calibration and system setup.



The OL Series 750 Automated Spectroradiometric Measurement System

The OL Series 750 is an extremely versatile spectroradiometric measurement system capable of performing a variety of highly accurate optical radiation measurements under computer control in the ultraviolet, visible, and infrared. The modular approach of the OL Series 750 coupled with an extensive selection of accessories and powerful application software packages enables the user to tailor a turn-key system to their exact requirements while ensuring expandability in the future. The basic system, along with an extensive selection of optional items and accessories, enables the OL Series 750 to measure over all or part of the entire 200 nm to 30 mm wavelength range. An automated computer-controlled tri-grating mount is standard. Up to three gratings can be placed on the mount for continuous scanning over extended wavelength ranges. Precision direct drive wavelength positioning provides high speed scanning under computer controls. A fully automated second-order blocking filter wheel is included, completely transparent to the operator, as well as automated slits that allow selection of the system half-bandwidth (FWHM).



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A collimating optic provides a uniform monochromatic beam from the OL 750 Spectroradiometer, and reference detectors with a known spectral response are used to characterize the monochromatic energy across the spectrum of interest. The software automatically steps the spectroradiometer through the desired wavelength range at the desired interval while data is acquired from the camera under test. Transmission measurements are performed in the same quick and easy manner, and the resultant data easily integrates into the FLIR Systems RTools™ software suite, thus more accurate calibrations). Each system is configured for the desired spectral measurement range with the appropriate optics and detectors included, with the ability to expand the measurement range in the future.

ThermaCAM RTools™ & RSys

ThermaCAM RTools™ is a highly sophisticated package developed for engineers and scientists to acquire, calibrate, process, and analyze data from various digital infrared camera systems. The ThermaCAM RTools™ toolkit is comprised of several stand-alone modules including RDac™ for camera acquisition, RCal™ for IR camera calibration, REdit™ for file archival and maintenance, and RView™ for data review and analysis. Created for flexible and extensible use in data archiving Rtools™ utilizes the US Air Force Standard Archive Format (SAF). The RTools™ suite can be used to calibrate in-band infrared (IR) instrumentation and automatically calculate polynomial equations that can be used to convert IR camera measurements to radiance, irradiance, or temperature values. Measurement, spectral response data and calibration data can be stored in calibration files and retrieved for future use.

The FLIR Systems RSys™ was designed to meld the ThermaCAM RTools™ Radiometric Software Suite into a complete package for use with infrared imagers and other instruments such as the OL Series 750 Spectroradiometer. This turnkey solution allows customers to add advanced data acquisition, calibration and analysis to their infrared cameras.

- **Real-time radiometric output: radiance, radiant intensity, temp, target length/area, and more**
- **Multiple color tables (grayscale default) with real-time image scale control**
- **Multiple imager support: Indigo Systems Phoenix and Merlin, and many other imagers with RS-422, LVDS, FibreExtreme, or TTL outputs**
- **Integrated IRIG-B timestamp capability**
- **Embedded spatial and spectral radiometric calibration support**
- **Indigo Phoenix two and four channel Preset/Superframe support**
- **SAF file format compatibility**



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Optronics Laboratories is a world leader in optical radiation measurement solutions including the designs and manufacture of [light measurement systems](#) that provide accurate, repeatable research-grade measurements in the UV-VIS-NIR-IR wavelength ranges for research, academia, industry and the military.



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