

SPIR Notes

Special Projects in Radiometry (SPIR) is a division dedicated to providing turnkey systems in spectral radiometry and optical remote-sensing instrumentation. Our team includes over 80 highly qualified engineers, scientists and technicians.

Expanding ABB Bomem's excellence in building state-of-the-art instruments:

- Optical instruments for use on aircrafts, balloons or satellites
- Hyperspectral imagers
- Optical calibration systems
- Software for data processing and instrument modeling

Imaging FT-Spectroradiometer

The system is a high-resolution, fast-scanning imaging spectroradiometer for the measurement of the spatial/spectral characteristics of various targets. The spectroradiometer is based on the ABB MB series of Fourier transform interferometer and is capable of more than 60 frames per second at 4 wavenumber unapodized spectral resolution. The optical head of the spectroradiometer includes a 5-inch entrance telescope, a boresighted CCD camera, a cold infrared calibration source along with the optics to interface to an external warm infrared calibration source. The present system uses an 8 x 8 InSb detector array to cover the 3.5 to 5 μm spectral range. The system however, is fully compatible with long wave operation.

The IRIS system offers an outstanding performance and is easy to use. The graphical user interface of the software provides clear and simple commands and real-time spatial and spectral feedback. The bore sighted CCD camera provides additional feedback.

The IISR system provides spectral data of extremely high quality by relying on a field-grade interferometer module designed by ABB. The performance of the system has been modeled in detail and verified experimentally. These include predicted Signal to Noise Ratio, radiometric accuracy and stability as well as spectral characteristics. Particular emphasis was devoted to the behavior of the ILS with respect to off-axis position in the focal plane. The absolute radiometric

accuracy, at any wavelength and any pixel, is better than 2%.

The radiometric stability is better than 2.5% over 5 hours. The spectral stability is better than 0.01 cm^{-1} .

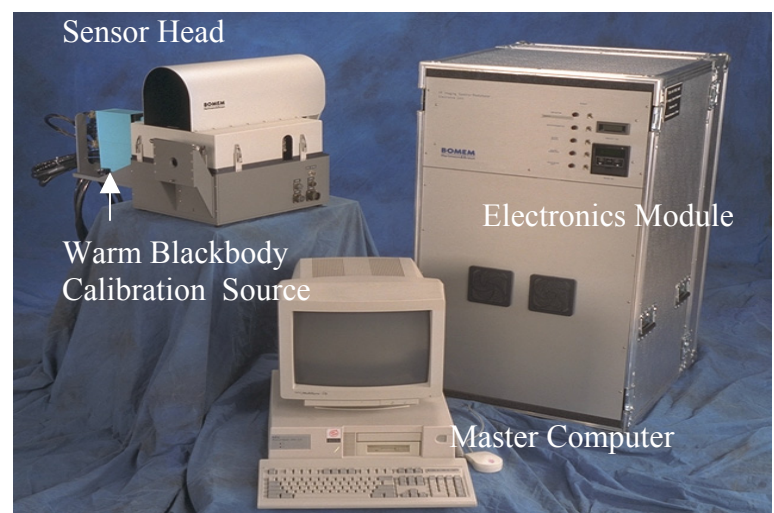


Figure 1 : Imaging Spectroradiometer



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