

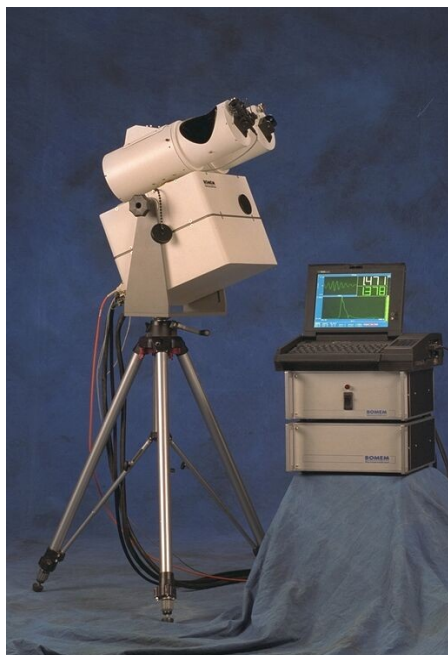
# SPIR Notes

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

## CATSI: Compact Atmospheric Sounding Interferometer



*Compact Atmospheric Sounding Interferometer*

CATSI is a fast scanning interferometer covering the spectral range from  $3 \mu\text{m}$  to  $18 \mu\text{m}$  ( $560 \text{ cm}^{-1}$  to  $3300 \text{ cm}^{-1}$ ) providing state-of-the-art radiometric accuracy for thermal emission measurements. This technology offers better sensitivity and spectral purity than most other IR spectroscopic techniques.

The spectroradiometer is based on the ABB MR-series of Fourier transform interferometer. CATSI has several features suited to high accuracy radiometry. It has two input ports and two output ports. Its internal design is such that the output is the subtraction of the two input ports. The spectral resolution is better than  $1 \text{ cm}^{-1}$  and the sweep speed is  $8 \text{ cm/s}$  OPD yielding 4 measurements/sec at full resolution. The detection is performed by a Stirling-cooled two-color detector (InSb on top of a MCT).

CATSI is a compact instrument; excluding the external power supply module, it measures  $13 \times 13 \times 12$  inches and weighs 42 pounds. Two sets of telescopes are available providing 45 mrad and 12 mrad field-of-view. The system operates under a single 28 VDC source and the total power consumption (including the Pentium 100 MHz acquisition PC) is 180 watts.

The output data is transmitted over fiber optics to the DSP acquisition board located in the PC. The acquisition card includes 16 Mbytes of dedicated RAM (expendable to 64 MB). Also included is all the software for operation of the instrument, calibration of the data and read-out of the various temperature measurements. The operation of CATSI is controlled by the computer.

The CATSI 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 spectral feedback. The boresighted CCD cameras provide additional feedback. The CATSI system provides spectral data of extremely high quality by relying on a field-grade interferometer module designed by ABB for Defence R & D Canada - Valcartier.



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