THE MERCURY RADIOMETER AND THERMAL INFRARED IMAGING SPECTROMETER (MERTIS) ONBOARD BEPI COLOMBO: FIRST INFLIGHT CALIBRATION RESULTS

Abstract

The MERcury Radiometer and Thermal Infrared Spectrometer (MERTIS) is an instrument to study the mineralogy and temperature distribution of Mercury's surface in unprecedented detail. During the nominal mission, MERTIS will map the whole surface at 300 m scale, combining a push-broom IR grating spectrometer (TIS) with a radiometer (TIR) sharing the same optics, instrument electronics and in-flight calibration components for the whole wavelength range of 7-14μm (TIS) and 7-40μm (TIR). MERTIS successfully completed its planned tests of the Near Earth Commissioning Phase (NECP) between 13 and 14 November, collecting thousands of measurements of its internal calibration bodies and deep space. The data collected during NECP in particular, are going to be used to verify the operational performances of onboard sub-modules, in particular the spectrometer and radiometer sensor sensitivity. A preliminary look at calibrated data shows a performance comparable with ground-based measurements.

Instrument and Operations

Schematic view of the MERTIS instrument. Clearly visible is the planet baffle (gray), the space port baffle (bluish-greenish) and the housing structure. Dimensions of the instrument are approximately 180x180x130 mm³. The external baffles are 200 and 90 mm long, the diameter is 75 mm. Total mass on the order of 3.0 kg.

References