

GROUND BASED MICROGRAVITY EMISSIONS TESTING OF FLIGHT HARDWARE

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ABSTRACT

To control microgravity environment on the International Space Station (ISS), NASA developed payloads have to meet the payload integration requirements of the Space Station Program, specifically a microgravity allocation plan.

The Microgravity Emissions Laboratory (MEL) was developed at NASA Glenn Research Center (GRC) for verification of the payloads' compliance with payload integration requirements.

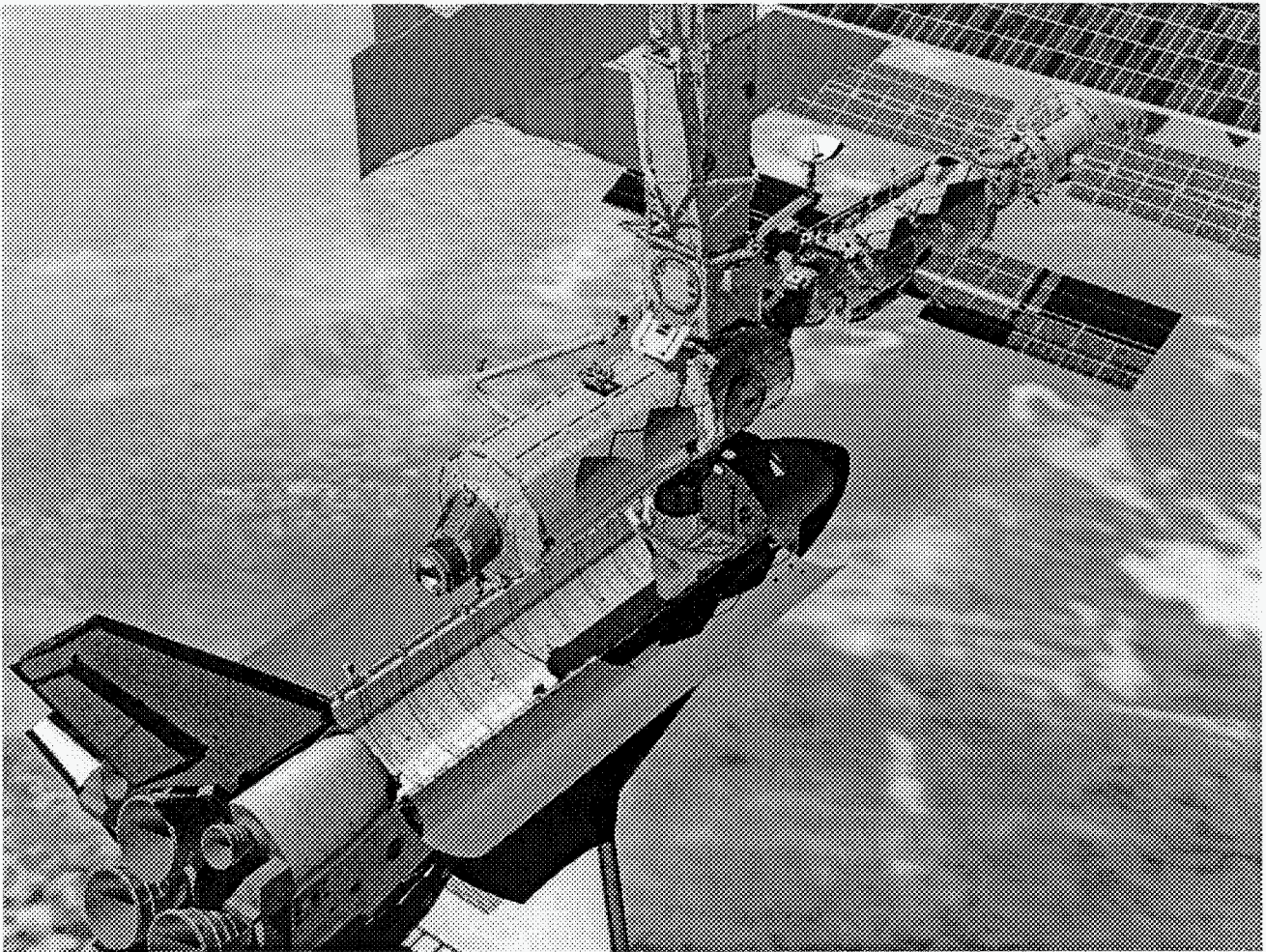
MEL is a 6 degree of freedom inertial measurement system capable of characterizing the microgravity emissions, generated by a disturber, down to a micro g.

Microgravity Emissions tests provide a payload developer with a tool to assess payload's compliance with the requirements, i.e. forces and moments, generated by the payload at its center of gravity. Forces and moments are presented in time domain for both stationary and transient signals, and in frequency domain for the stationary signals.

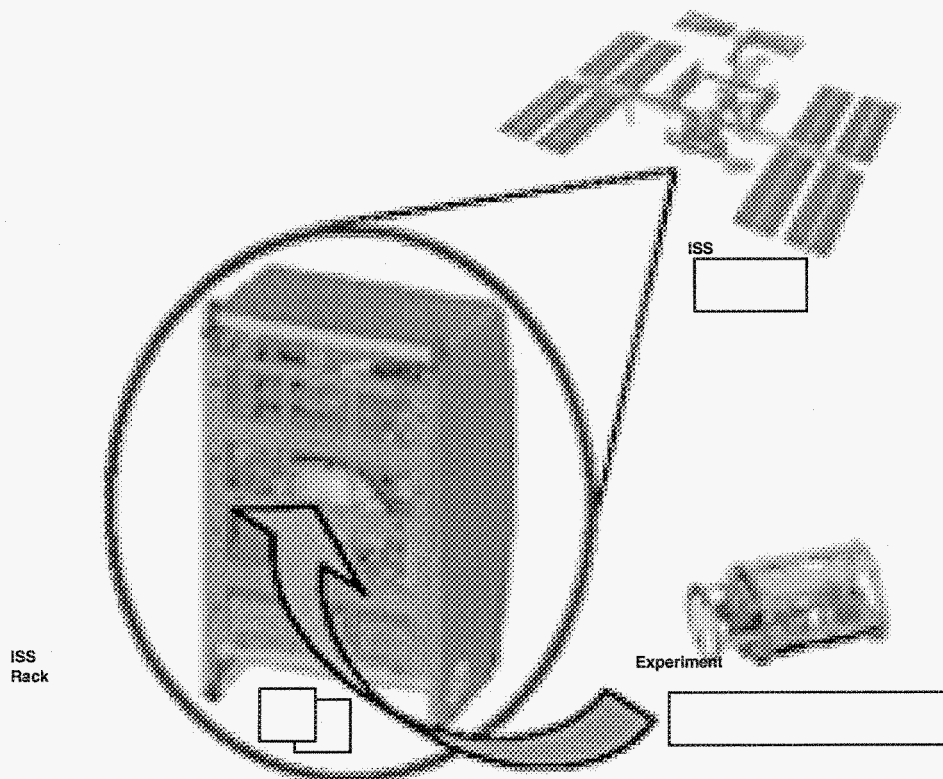
To date, MEL conducted over thirty tests of ISS hardware.

The test results are being successfully used by the payload developers for design verification and improvement.

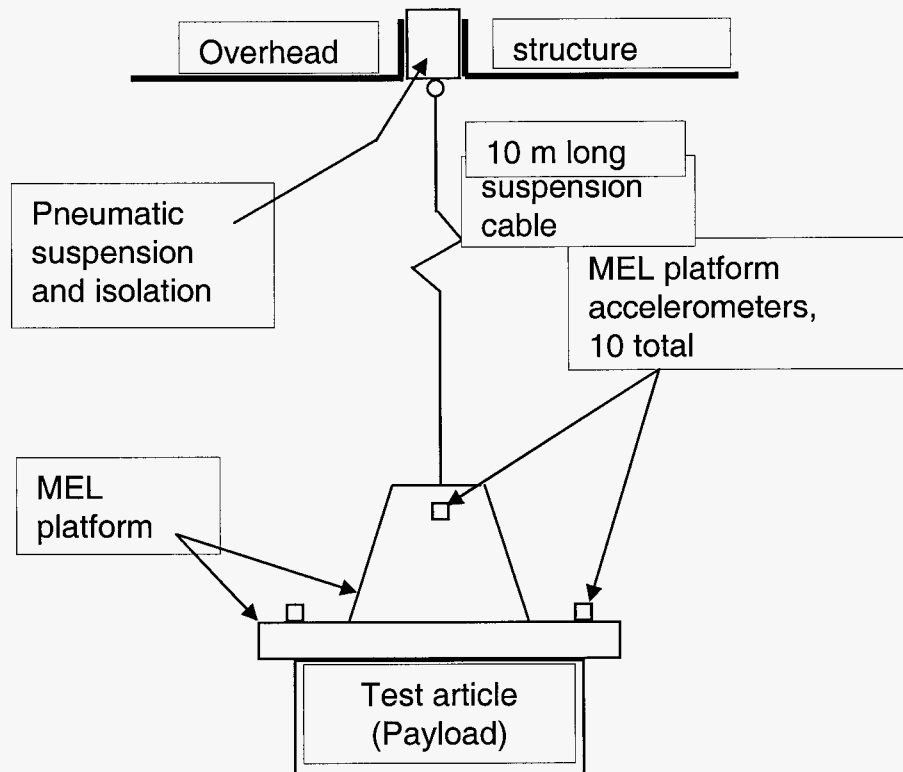
The purpose



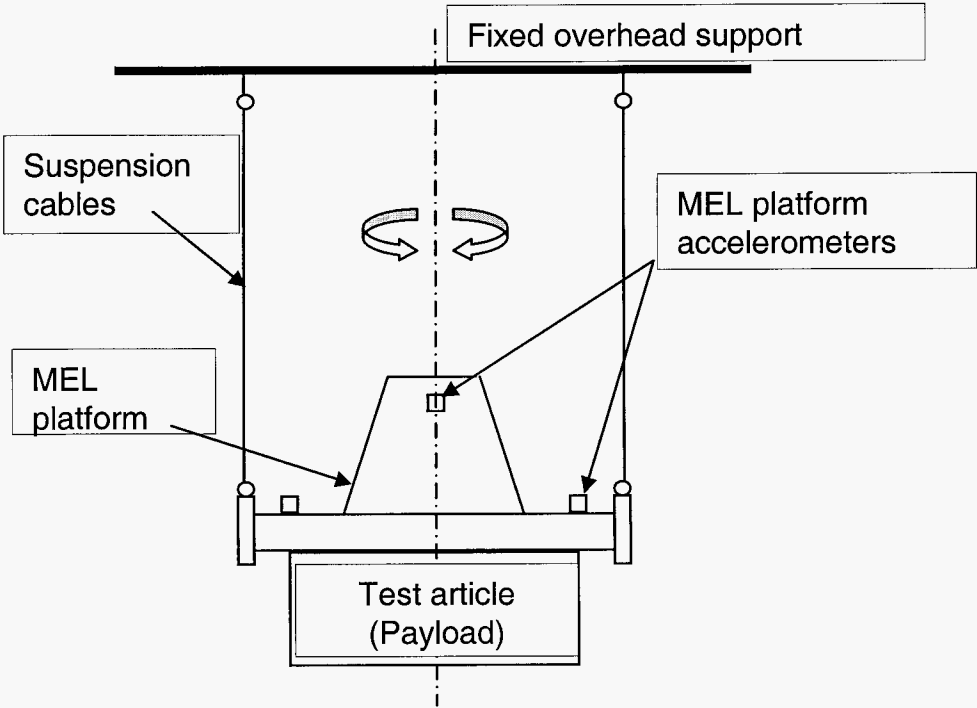
ISS-Rack-Component



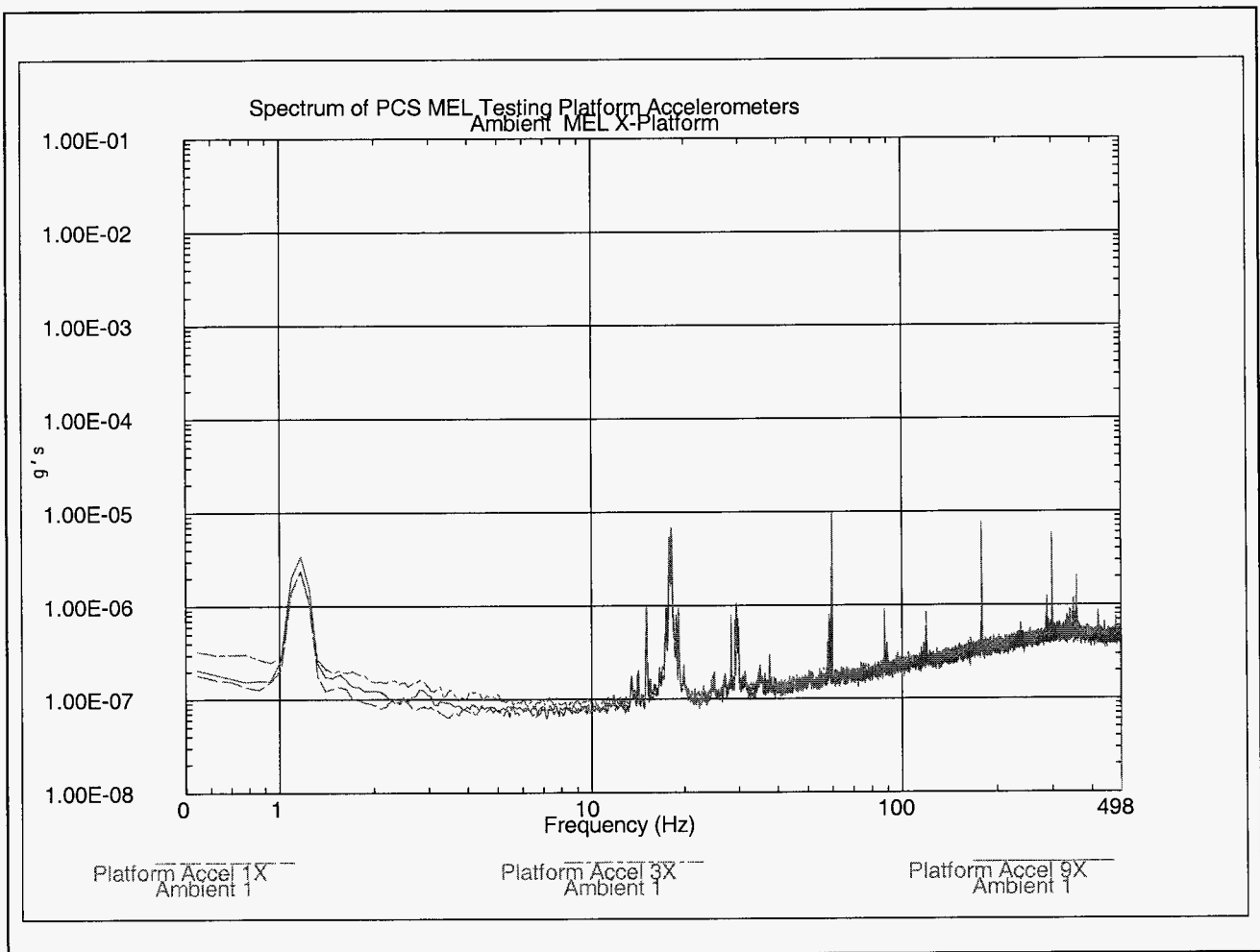
Test Setup



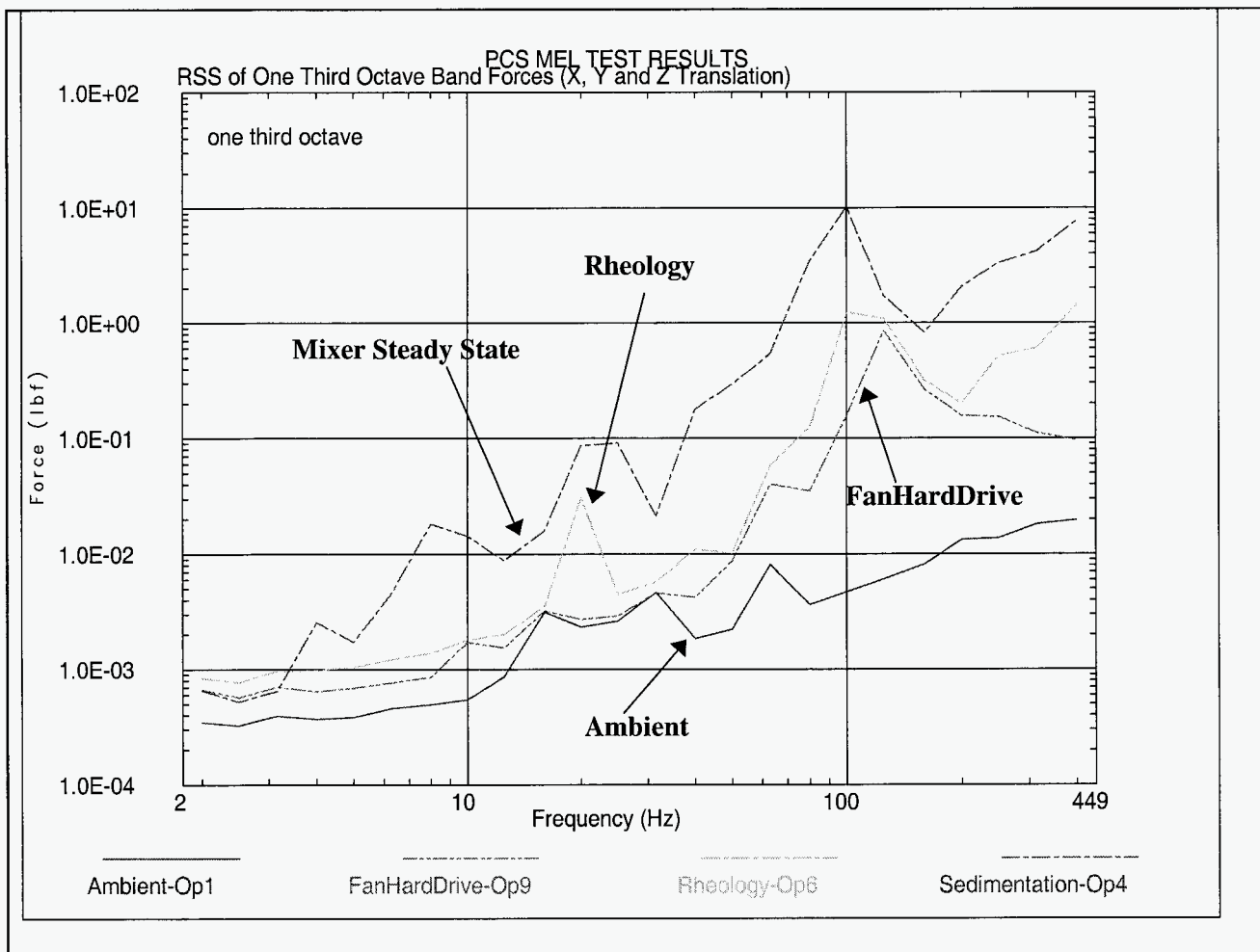
MOI Measurement



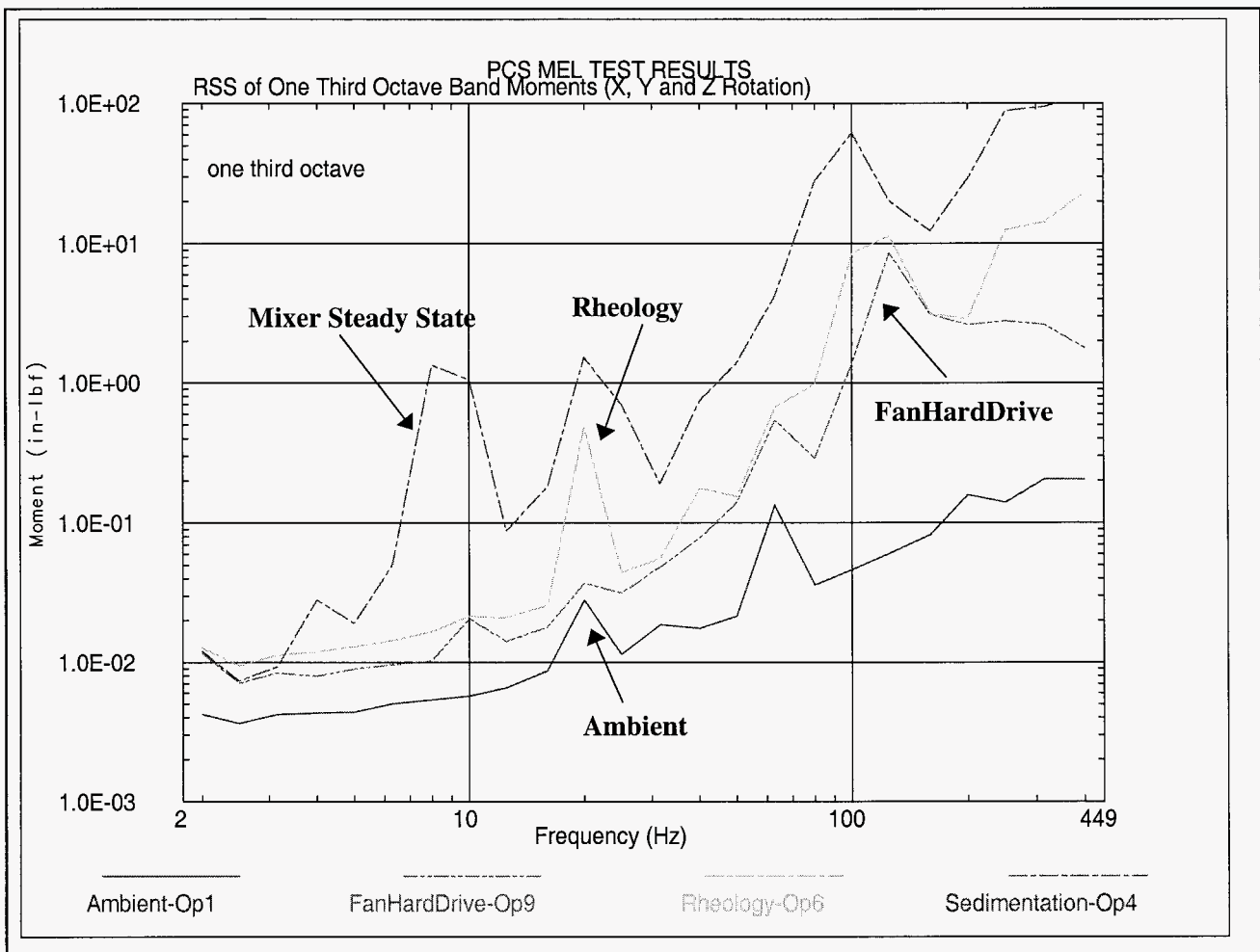
MEL Background



MEL Data



MEL Data 1



MEL Data 2

