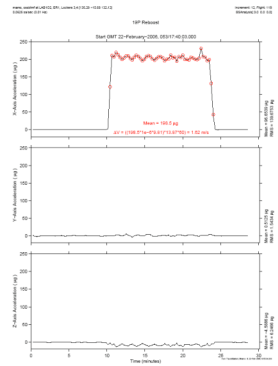
Microgravity Acceleration Measurement System (MAMS)

Glenn Research Center

PM: Robert Hawersaat, GRC
Engineering Team: ZIN Technologies, Inc.

MAMS reboost data



MAMS Front Panel

Objective:

- Provide acceleration measurement system that measures the Quasi steady and vibratory acceleration data in the 0.00001 to 100 Hz frequency range on board the International Space Station (ISS) vehicle.

Relevance/Impact:

- MAMS will measure the acceleration environment for ISS structures as requested and provide data to vehicle dynamics for analysis.

Development Approach:

- MAMS was developed to operate with minimum crew interaction, and can be commanded with ground commands.
- MAMS supports the ISS reboosts, docking and undocking, thruster tests and exercise.

Current On Orbit Configuration:

- MAMS current on board mass is 53.1 kg, with a volume of 0.154 cubic meters.
- MAMS consists two sensor subsystems, the Orbital Sensor Subsystem (OSS) tuned to the fundamental frequency of ISS ~ 1 Hz, and the High Resolution Acceleration Project (HiRAP) calibration tool for OSS (frequency range of 1-100 Hz).

ISS Resource Requirements

Accommodation (carrier)	EXPRESS rack 1
Upmass (kg) (w/o packing factor)	53.1
Volume (m^3) (w/o packing factor)	0.154
Power (kw) (peak)	0.083
Crew Time (hrs) (installation/operations)	0.17 (10 minutes)
Launch/Increment	6A/Inc 1 (MAMS on orbit)

Revision Date: 08/21/2009

Project Life Cycle Schedule

Milestones	SCR	RDR	PDR	CDR	VRR	Safety	FHA	Launch	Ops	Return	Final Report
Actual/ Baseline	N/A	N/A	4/1997	9/1998	1/2000	7/2000	12/2000	6A Apr 2001	Inc. 1 =>	N/A	N/A
Documentation	Website:http://spaceflightsystems.grc.nasa.gov/Advanced/ISSResearch/Acceleration/MAMS eRoom:https:/collaboration.grc.nasa.gov/eRoom/NASAc1f1/ISSHumanResearchProjectsOffice				SRD: EDMP:http://edmp.grc.nasa.gov			Project Plan:https://collaboration.grc.nasa.gov/eRoom/NASAc1f1/ISSReseachProjectOffice SEMP:			