

ACIS Verification Summary Report

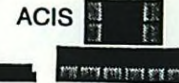
Specification:	ACIS Contract End Item Specification
Requirement Number/Title:	3.7.2.2.2 ACIS Focal Plane Control (VRSD 3.7.2.2.2-1)
Requirement Statement:	The ACIS Focal Plane shall be actively controlled to -120 ± 1 ° C during normal ACIS operation.
Verification Method:	Test and Analysis
Procedure Number:	MIT 36-01306, Rev. C, ACIS TV Test Procedure
Configuration:	During ACIS TV Test #2, the ACIS Flight Unit (FU) Focal Plane (FP) was tested at hot and cold protoflight conditions in a TV Chamber with LN ₂ shroud, with the FU PSMC, radiators, DH, DEA, DPA, and Support Structure.
Cycle Time:	6 days
Verification Discussion/Results:	
<p>MIT Verification Report 36-01510.086 contains log sheets showing the FP temperature controlled between -116.6 C at hot protoflight conditions and -120 C at cold protoflight conditions, during ACIS TV Test #2, without specular sun and telescope shades, and heat-sink by an LN₂ shroud. Analysis shows that the hot case on-orbit FP temperature will achieve cooling to -120 C with additional heater margin of 1.15 W (Reference LMA Report ACIS-600-A-05VR) because of specular reflections off the sun and telescope shades, and the colder heat-sink of deep space (-273 C) vs. the LN₂ shroud (-170 C).</p>	

Ellen M Ser 5/15/97

ACIS Cognizant Engineer

Date

ACIS DH and FP Heater Requirements (Hot Case)



- Detector Housing Heaters

- Normal Operation (-60°C) 2.99 Watts
- Bakeout Mode (+25°C) 27.56 Watts Steady State
- Survival Mode (-76°C) 1.400 Watts

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- Focal Plane Heaters (Assumes No CCD dissipation)

- Normal Operation (-120°C) 1.15 Watts
- Bakeout Mode (+30°C) 20.53 Watts
- Survival Mode (-137°C) 0.00 Watts

Note: These Powers are Predicted Values and do not Include Design Margin

*From LMA Report ACIS-600-A-05 VR, "Verification Assessment Report - Power and Thermal Control Structure - Thermal Analysis Report,"
March 18, 1997*