

**ACIS Verification Summary Report**

|                       |                                      |
|-----------------------|--------------------------------------|
| <b>Specification:</b> | ACIS Contract End Item Specification |
|-----------------------|--------------------------------------|

|                                  |                                       |
|----------------------------------|---------------------------------------|
| <b>Requirement Number/Title:</b> | 3.7.4.2 Bus Protection (VRSD 3.7.4.2) |
|----------------------------------|---------------------------------------|

**Requirement Statement:** The instrument shall be compatible with internal bus control and protection in accordance with the paragraphs of 3.5.1.4 of the Observatory to Science Instrument ICD.

|                             |             |
|-----------------------------|-------------|
| <b>Verification Method:</b> | Measurement |
|-----------------------------|-------------|

**Procedure Number:** ACIS-400-24-02

**Configuration:** Power Supply and Mechanism Controller Testing

**Cycle Time:**

**Verification Discussion/Results:**

The "inrush current verification" section of Appendix A of the PSMC Performance Test Procedure (ACIS-400-24-02) is provided as an attachment to this verification summary report. The PSMC rise and fall times are  $< 2 \text{ A}/\mu\text{s}$  and the peak inrush is less than 150% of the maximum dc current. This data may be used by TRW in determining PSMC effects on the Observatory Science Instrument Power bus fusing.

  
 ACIS Cognizant Engineer

6/3/97  
 Date

- o) Set SW5 to position 8 and depress/toggle HLP. Return SW1 back to the "OFF" position. Using a DVM, measure the following points:
- p) Set SW5 to position 6 and depress/toggle HLP. Return SW1 back to the "OFF" position. Using a DVM, measure the following points:

1.5 INRUSH CURRENT VERIFICATION

**Note:** The following test need only be performed during the first Performance Test unless directed by the PIE.

PIE to Record Applicability

Yes  No

1.5.1 INRUSH CURRENT, S/C POWER "A"

- a) With the Spacecraft Power Simulator Powered "OFF" and the PSMC Spacecraft Power "A" mated, connect an oscilloscope current probe to the "A" RTN line. If the Spacecraft Impedance Simulator is connected between the Spacecraft Simulator Power and the UUT, connect the current probe between the Spacecraft Impedance Simulator and the UUT. Set the oscilloscope for a positive triggered stored 1ms/Div single sweep at 2 Amp/Div. Set the control switch for the Spacecraft Power Simulator Powered "ON" an measure/record the peak current, steady state current, rise time from initial power up to the peak current and fall time from the peak current to the steady state current. Power the Spacecraft Simulator 'OFF" and make the same measurement using a negative trigger.

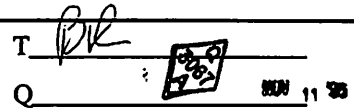
POWER UP

Peak Current Record 800 mA  
 Steady State Current Record 100 mA  
 Rise Time Record 3.1 ms  
 Fall Time Record 300 μs

POWER DOWN

Peak Current Record —  
 Steady State Current Record 0  
 Rise Time Record —  
 Fall Time Record 180 ms

b) Step buy off.



1.5.2 INRUSH CURRENT, S/C POWER "B"

a) With the Spacecraft Power Simulator Powered "OFF" and the PSMC Spacecraft Power "B" mated, connect an oscilloscope current probe to the "B" RTN line. If the Spacecraft Impedance Simulator is connected between the Spacecraft Simulator Power and the UUT, connect the current probe between the Spacecraft Impedance Simulator and the UUT. Set the oscilloscope for a positive triggered stored 1ms/Div single sweep at 2 Amp/Div. Set the control switch for the Spacecraft Power Simulator Powered "ON" and measure/record the peak current, steady state current, rise time from initial power up to the peak current and fall time from the peak current to the steady state current. Power the Spacecraft Simulator 'OFF' and make the same measurement using a negative trigger.

POWER UP

Peak Current

Record 950 mA

Steady State Current

Record 100 mA

Rise Time

Record 3.1 ms

Fall Time

Record 450 μs

POWER DOWN

Peak Current

Record —

Steady State Current

Record 0

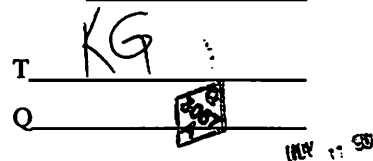
Rise Time

Record —

Fall Time

Record 180 ms

d) Step buy off.



Element:  
ACIS

Requirement Number:  
3.7.4.2

Verification Item:  
3.7.4.2-1

Requirement Title:  
Bus Protection

**AXAF-I  
Verification  
Requirement  
Compliance Data  
Submittal**

Evaluators:  
POWR, EDI

Type of Review:  
 Verification Item Closure  
 Requirement Closure

Compliance Data/Location:  
MA-201/36-01510.220/Rm 522 Bldg 4200

Verification Method:  
Analysis - Post Delivery

Comments:  
THE SISTER VERIFICATION REQUIREMENT THAT INVOLVES TESTING SHOWED THAT THE RESULTS VERIFIED THE REQUIREMENT. HOWEVER THIS VERIFICATION ITEM IS TO BE CLOSED BY ANALYSIS AND ACIS STATES THAT THE ANALYSIS WILL BE PERFORMED BY TRW TO SHOW THAT THE ACIS SYSTEM IS COMPATIBLE WITH TRW FUSING. THIS REQUIREMENT MUST STAY OPEN UNTIL TRW COMPLETES THE ANALYSIS (IF THEY KNOW ABOUT IT) OR THIS VERIFICATION REQUIREMENT CANCELLED.  
  
EDI TOPS CONCURS WITH POWR TOPS RECOMMENDATION.  
JEFF WESLEY / EB14, 6/22/97

Status:  
Open 6/12/97

Recommendation:  Approve  
 Disapprove  
 Other (Explain)

Action Required for Closure:  
RECOMMEND THAT THIS VERIFICATION ITEM BE DELETED DUE TO THE FACT THAT IT REQUIRES ANALYSIS BY TRW AND THAT ACIS HAS ALREADY PASSED THE TEST ASSOCIATED WITH THE INRUSH CURRENT SPECIFICATION.

MSFC Evaluator: STEVEN L. LUNA      Date: 6/20/97      Organization: EB11      Phone Number: 4-3402

Disposition:  Approve  
 Disapprove  
 Other (Explain)

Action Required for Closure:  
As far as ACIS goes, this is closed. However, TRW needs to assess the numbers. Close this for ACIS but keep it open for TRW. Also, we need TRW to evaluate the In-rush data from the EMC test done in June of 1997 at MSFC, since it was repeated here because of a discrepancy in the setup earlier.

Chief Engineer: Anthony R. Lavoie      Date: 6/24/97