# Solar-B EIS

**MULLARD SPACE SCIENCE LABORATORY**
**UNIVERSITY COLLEGE LONDON** **Author: Jason A Tandy**

# DM SLA Cold Survival TV Test Report

**Document Number: MSSL/SLB-EIS/TR/015.02**
**21th June 2006**

| | | | |
|---|---|---|---|
| Author: | Jason A Tandy | Date: | 4th July 2006 |
| Authorised By | A. M. James | Date: | 4th July 2006 |
| Distributed: | A. Spencer | Date: | 4th July 2006 |

## Distribution

| | |
|---|---|
| EIS-Science | |
| EIS-Tech | ✓ |
| EIS-Soft | |

## Change Record

| ISSUE | DATE | PAGES CHANGED | COMMENTS |
|---|---|---|---|
| 1 | 21st June 2006 | All new | |
| 2 | 4th July 2006 | All, minor | First release |
| | | | |
| | | | |
| | | | |
| | | | |

Saved as C:\Documents and Settings\Jason A Tandy\My Documents\Solar B System\FM Testing\Unit Level\SLA_TV_test\DM_SLA_TV_Test_Report_TR-015-02.doc

## Table of Contents



## Applicable References

(ref:1) DM SLA Cold Survival TV Test, MSSL/SLB-EIS/SP/055.04 (Copy can be found on www.mssl.ucl.ac.uk )
(ref:2) Environmental Test Report, AIV-2006-087-TVC. (Copy can be found on www.mssl.ucl.ac.uk )
(ref:3) Email from Louisa Bradley, MSSL. Subject: Re: EIS Slit/Slots. Sent 31 May 2006 12:41
(ref:4) Email from John Shea, Perdix. Subject: SLA post TV data. Sent: 17 May 2006 01:41
(ref:5) Email from Charles Brown, NRL. Subject: Returned slits. Sent: 05 June 2006 19:59

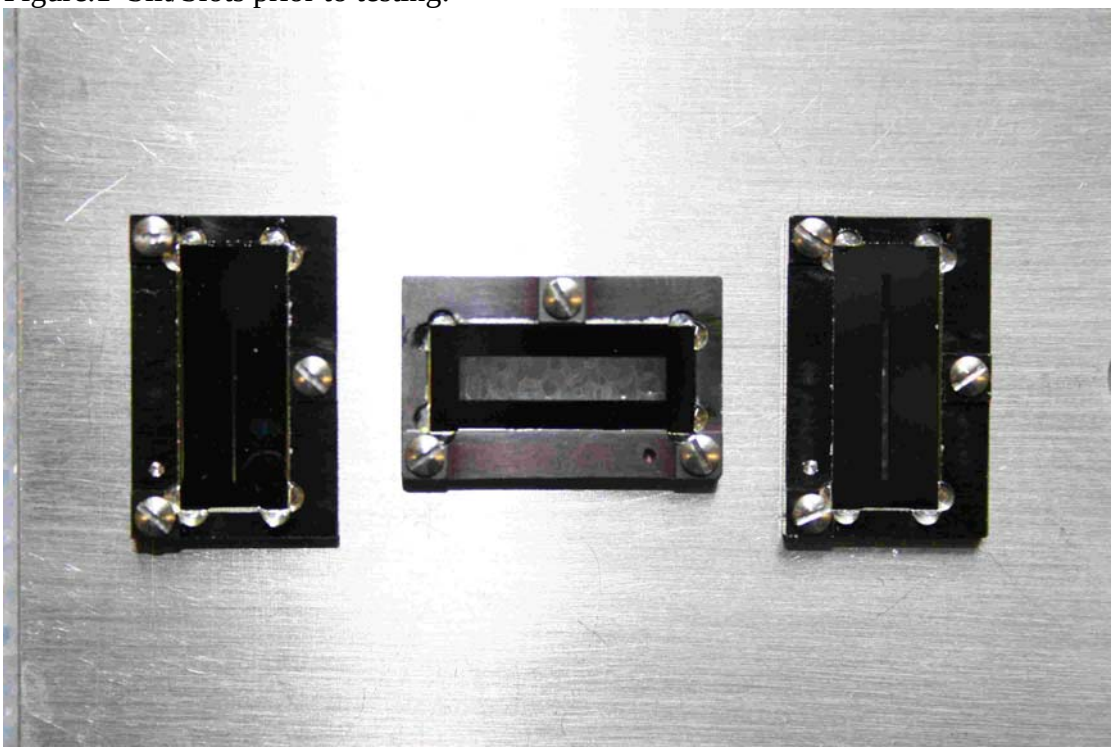
## 1.0 Introduction

The EIS thermal model in the cold survival case shows the SLA getting to a colder temperature than it has previously been qualified to. The new temperature prediction is -26°C where the previous qualification temperature was -10degC. This test was to re-qualify the sub-system to meet this temperature with some margin. A margin of 10°C is normally used by J-side so the unit was tested down to -35degC.
The procedure defined in (ref:1) was followed to test the DM SLA to -35degC.

## 2.0 Results

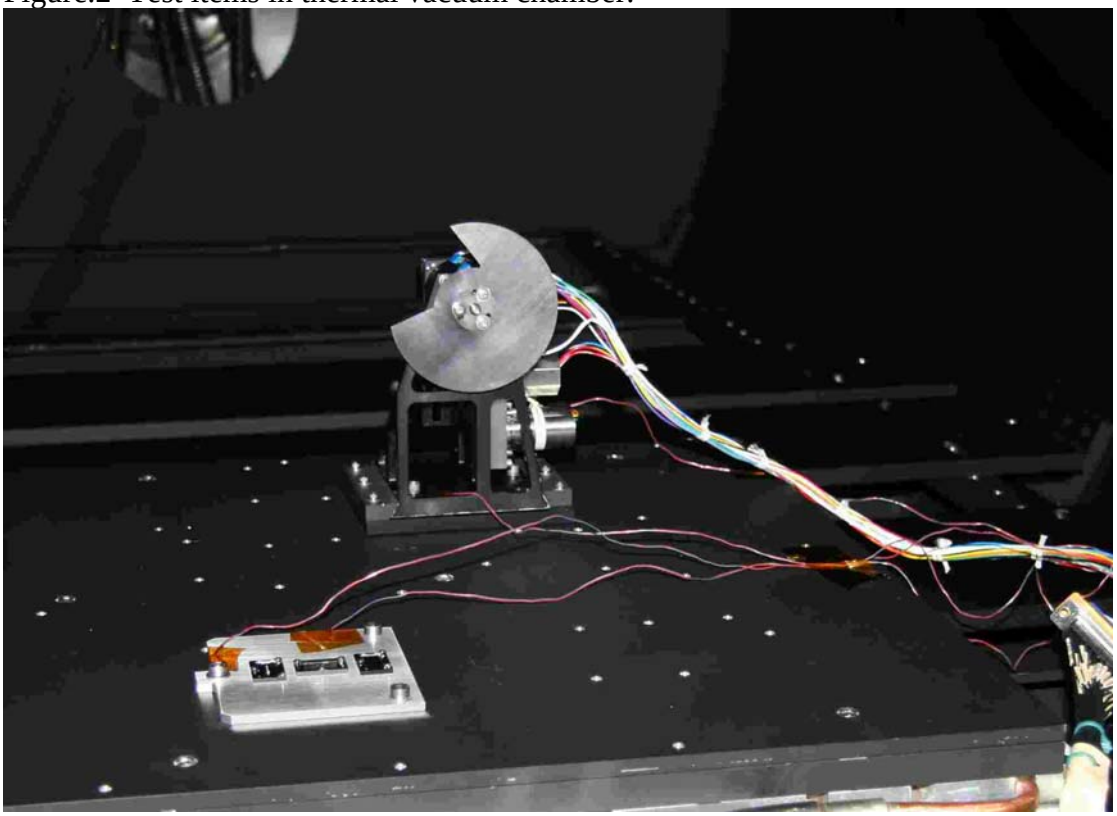
The three Slit/Slots on their carrier were inspected prior to the testing. The photo below, figure.1 is an example of those taken. For a complete set of the high resolution images please follow the link or contact the author.
http://www.mssl.ucl.ac.uk/~jat/docs/Solar_B/SLA_tv_test/Slit-slots_28-Apr-06/

Figure.1 Slit/Slots prior to testing.



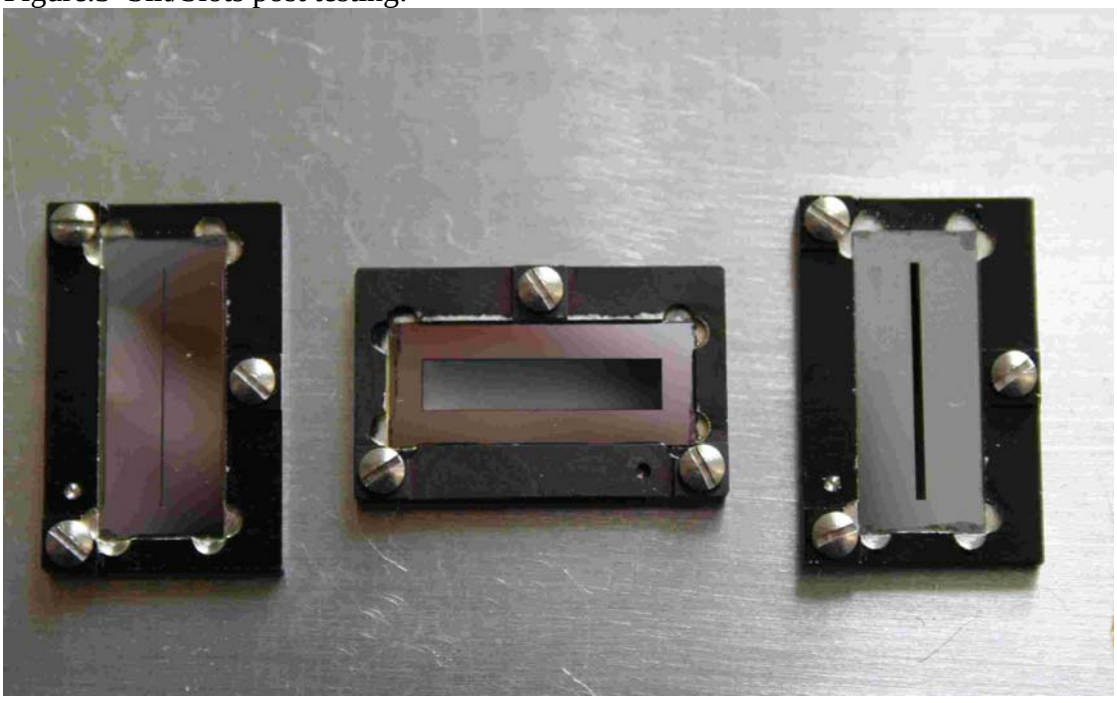
The DM SLA thermal vacuum test is reported in (ref:2). Summary: Four Cycles -35'C to +30'C. 'The test was completed successfully'. Figure.2 shows the items in the thermal vacuum chamber.

Figure.2 Test items in thermal vacuum chamber.



The three Slit/Slots on their carrier were inspected after the testing. No change in the Slit/Slots was seen (ref:3) The photo below, figure.3 is an example of those taken. For a complete set of the high resolution images please follow the link or contact the author.
http://www.mssl.ucl.ac.uk/~jat/docs/Solar_B/SLA_tv_test/Slit-slots_12-May-06/

Figure.3 Slit/Slots post testing.



The SLA was re-integrated with the DM system and tested as per (ref:1). The Shutter test passed testing with out incident. During the Slit Slot motor tests, Nacks were seen, but the data was analysed and the motor and position read back are working fine, (ref:4). Nacks similar to this have been seen prior to this test.

The Slits/Slots were returned to NRL and C.Brown reported (ref:5) after their inspection that 'There were no cracks or structural damage'.

## 3.0 Summary

The SLA assembly can survive a temperature of -35degC in an un-powered state.

An NCR, NCR101 has been raised to track the NACKs seen in the post thermal vacuum testing.