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SUBJECT:

**DPU
THERMAL VACUUM TEST SPECIFICATION
PFM delta acceptance test**

PREPARED BY: E Sawyer

DISTRIBUTION LIST

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CHANGE RECORD

ISSUE	SECTIONS	REASON FOR CHANGE
1	all	New issue

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1. SCOPE

This document specifies an extra thermal vacuum test following problems found on the CFM during tests at IFSI. Ref PACS-ME-NCR-204

2. DOCUMENTS

- AD (1) Herschel PFM SPIRE DPU thermal vacuum cycling test procedure HRS-SPIRE-PR-CGS-004
AD (2)

3. BUILD STANDARD

This unit is the flight model and is therefore full flight standard.
It will have connector savers fitted.

4. TEST OBJECTIVES

To check the functionality of the unit at hot and cold temperatures. Problems with memory corruption were identified on the CFM2 ref PACS-ME-NCR-204. Some thermal tests were carried out on the PFM, but not a traditional TV test. This test will confirm functionality of the PFM.

5. TEST REQUIREMENTS

5.1. Summary

The unit shall be subjected to a standard thermal vacuum test consisting of cycles and temperatures as specified below.

5.2. Test set up

The DPU contains temperature sensors, the data is included in the normal data stream readout by the EGSE.

The temperature reference points of the DPU is shown in fig 1

Three temperature sensors shall be fitted to the outside of the unit.

EGSE will be stationed outside the chamber and connected to the DPU via vacuum feed throughs to enable functional testing.

Feed through cables with the following connectors are required as follows:-

- 9S 2 off DPU power, prime and redundant
9P 2 off 1553 bus, prime and redundant

5.3. Cold Starts

Cold starts shall be performed by members of the SPIRE project team at the positions indicated in fig 1.

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5.4. Electrical functional test

Functional tests shall be carried out by a member of the SPIRE project team.

5.5. Pump down

No specific requirements

5.6. Test conditions

The following conditions apply:-

Vacuum	1x10 ⁻⁵ mb
Tmax non operating	70°C
Tmax operating	55°C
Tmin non operating	-45°C
Tcold start	-40°C
Tmin operating	-25°C
Number of cycles	1
Rate of change of temperature	To be agreed with facility
Minimum dwell time	Sufficient to carry out the functional test, probably about 4 hours.

See figure 1 for detailed profile.

5.7. Re pressurisation

No specific requirements

6. REJECTION AND RETEST

If a failure, malfunction or out of tolerance performance occurs during or after test as appropriate the test shall be discontinued. This also includes test equipment qualification. A deficiency, including any design defect, shall be corrected and the applicable procedures repeated until successfully completed. If the corrective action subsequently affects the significance of results of previously completed test in the sequence, such test shall be repeated.

7. SAFETY

No hazardous materials

8. DOCUMENTATION

A test report shall be produced.

9. PRODUCT ASSURANCE

Before a test can proceed a Test Readiness Review (TRR) shall be convened by the SPIRE project manager. All the relevant test and facility documentation will be made available. The TRR must give approval before the test can commence.

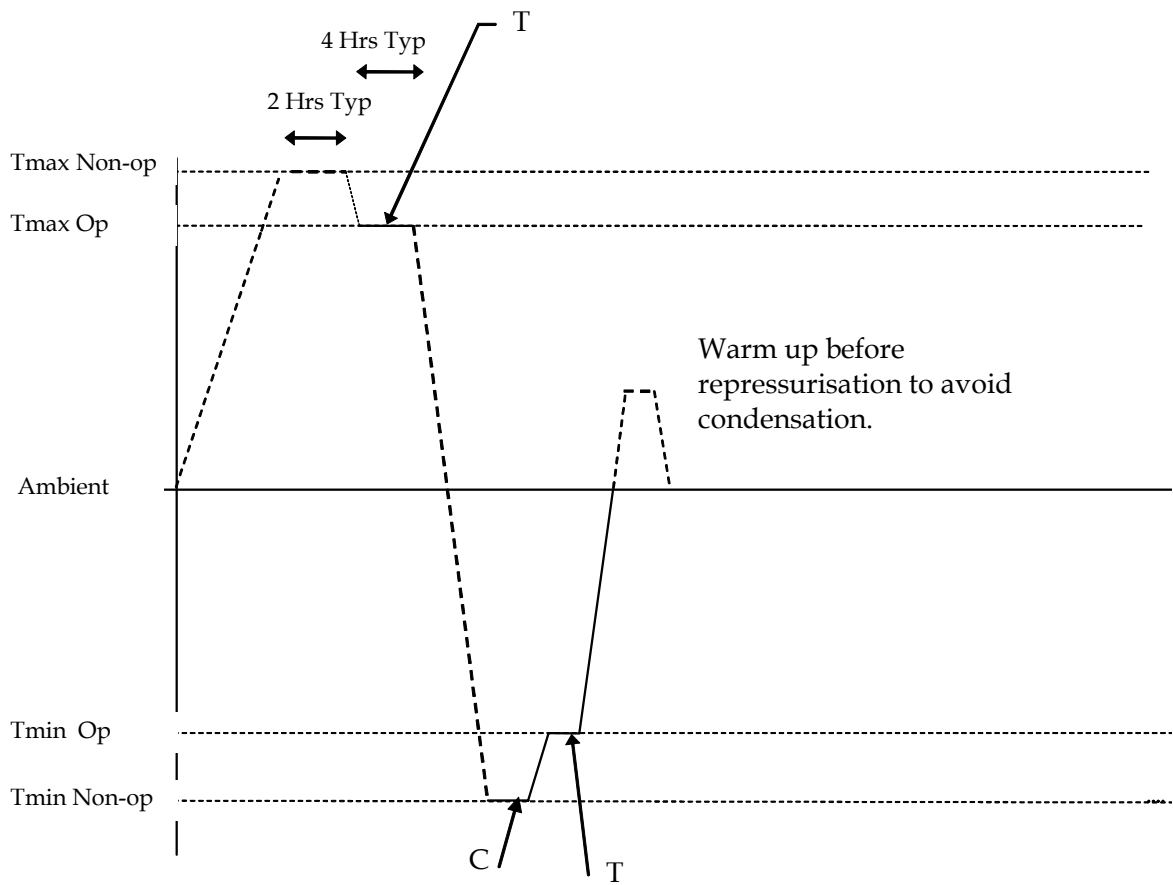


Figure 1

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T = Functional test
C = Cold start
Solid line = Units on
Broken line = Units off

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10. FIGURE 1 DPU INTERFACE DRAWING

