

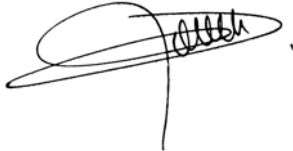



## Herschel – SPIRE

### SPIRE SMEC FM

## Mechanical interface measurement report

Fichier: LAM.SSP.SPI.PR.V.041011\_01\_10\_SMEC CQM Mech I-F Measur report.doc

|   |   |
|---|---|
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## Distribution List

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|          |               |                |     |  |  |  |  |  |  |  |  |
|          | SMEC FM ADP   |                |     |  |  |  |  |  |  |  |  |



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## 1 Introduction

This document gives the status of the verification carried out on the mechanical interface of the SMEC

## 2 Documents

### 2.1 Applicable Documents

| no.  | document name                            | document number, Iss./Rev.                     |
|------|--|--|
| AD 1 | SPIRE ICD Structure mechanical interface | SPIRE-MSSL-PRJ-000... Iss1 Apr 2001            |
| AD 2 | SPIRE SMEC ICD                           | LAM.SSP.SPI.DCI.040611_01                      |
| AD 3 | SPIRE SMEC MICD                          | SPI-MEC-00-DI-02-D F1<br>SPI-MEC-00-DI-02-D F2 |
|      |  |  |

## 3 Mechanical interface definition

The interface definition is given in the MICD whose reference is given here after:

- SPI-MEC-00-DI-02-E F1
- SPI-MEC-00-DI-02-E F2

## 4 Interface verification

The interface verification has been carried out at different levels:

- Mechanical measurement of the SMEC baseplate (called "structure de base") which is directly in contact with the SOB
- Overall volume verification
- Mechanical Interface verification

### 4.1 Mechanical measurement of the SMEC baseplate

The mechanical control report is given in annex of the document.

There is no Non Conformance at mechanical interface level.

### 4.2 Overall volume verification

The SMEC FM is absolutely identical to the SMEC Development Model. The SMEC DM was integrated in the SOB for the SPIRE Vibration test in cold conditions and no discrepancy was identified during the integration.

### 4.3 Mechanical interface verification

During the LAM operation on the SMEC FM, the model was integrated several times on different tools representative of the mechanical interface of the SOB. All the mounting operations have been implemented without problem and no discrepancy have been identified.

The picture taken during these operations are given in the following sheets.

## ANNEX

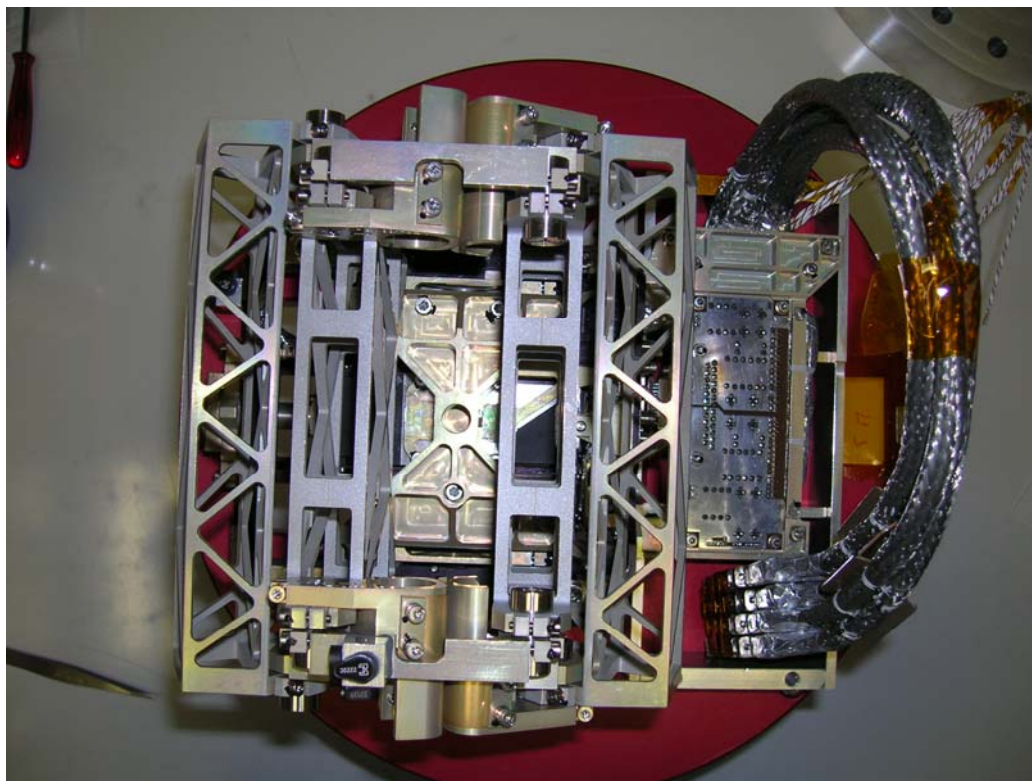


Figure 1 : SMEC on its mounting tool equipped with the RIB simulator

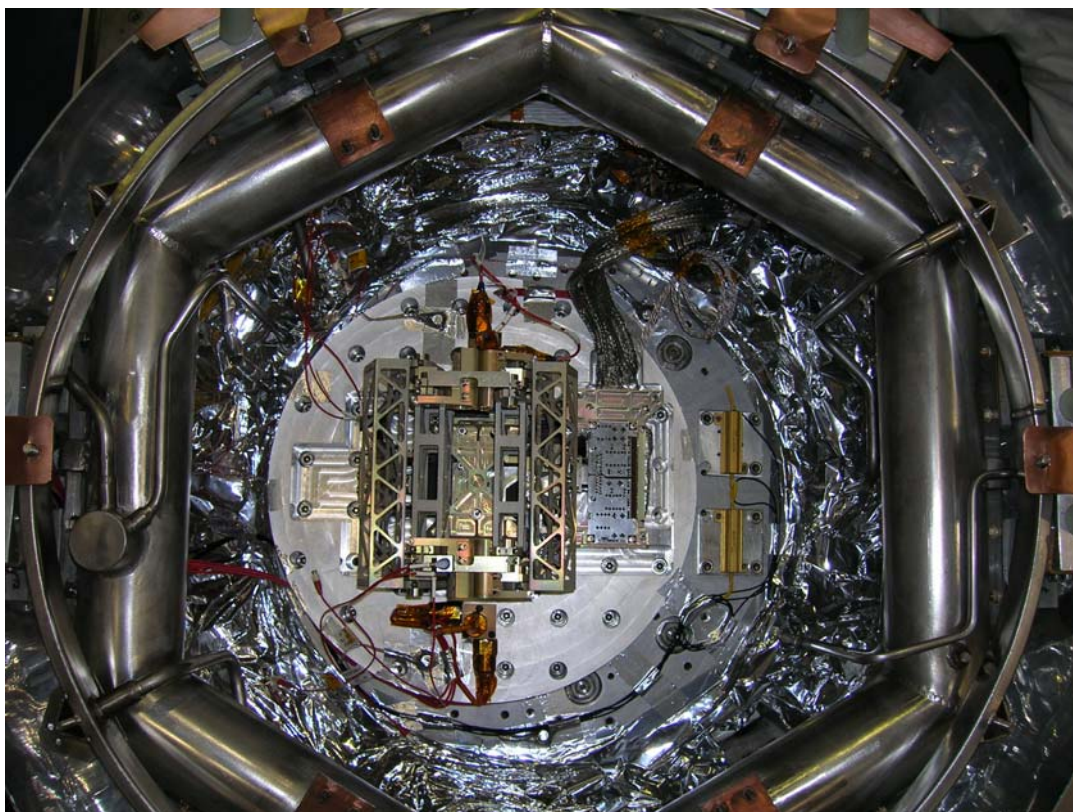




Figure 2: SMEC on the Interface plate developed for the Vibration Test at 4K

**The two interface plates are representative of the SOB interface**

Pièce: 63 / Interface structure de base 10

30.03.06 11:11

|   |  |  |  |   |
|---|--|--|--|---|
|  |  | Atelier du Laboratoire d'Astrophysique de Marseille (UMR-6110) - Traverse du Siphon, B.P. 8 - 13376 Marseille cedex 12 - France<br>Tel.: 04.91.05.59.94 Métrologie: 04.91.05.69.42 Site: www.lam.oamp.fr |  |  |
|   |  | Machine: TRIMESURE MT 704 Logiciel: METROSOFT CM 3.41  |  |   |
| <b>PROCES VERBAL DE MESURE 3D N°: Joe528</b>                                      |  |  |  |   |
| Organisme : <b>CNRS</b>   |  | Date : <b>30.03.06</b>   |  |   |
| Projet : <b>HERSCHEL</b>  |  | Désignation pièce : <b>STRUCT BASE Interface SO</b>  |  |   |
|   |  | Numéro de plan : <b>SPI-MEC-10-DD-01-G</b>   |  |   |
|   |  | Numéro de pièce : <b>10</b>  |  |   |

| n° | Elément caractéristique          |      |            | n° réf. | pp | etendue | nom nom    | nom ecart | Mise à profit tol. |
|----|----------------------------------|------|------------|---------|----|---------|------------|-----------|--------------------|
|    | val. nominale                    | tol. | limit sup. |         |    |         |            |           |                    |
| 63 | Cercle/cylindre, palpé           |      |            | 6       | 2  | 4       | 0.005      |           |                    |
|    | 2 Localisation vectorielle [X Y] |      |            |         |    |         |            |           |                    |
|    | X 0.000                          |      |            | 0.110   |    | -0.110  | X 0.000    | X 0.000   | 0% ----*----       |
|    | Y 0.000                          |      |            | 0.110   |    | -0.110  | Y 0.000    | Y 0.000   | 0% ----*----       |
| 63 | Cercle/cylindre, palpé           |      |            | 3       | 2  | 4       | 0.002      |           |                    |
|    | 3 Localisation vectorielle [X Y] |      |            |         |    |         |            |           |                    |
|    | X 0.000                          |      |            | 0.110   |    | -0.110  | X 0.000    | X 0.000   | 0% ----*----       |
|    | Y -120.000                       |      |            | 0.110   |    | -0.110  | Y -119.992 | Y 0.008   | 7% ----,*----      |
| 63 | Cercle/cylindre, palpé           |      |            | 4       | 2  | 4       | 0.005      |           |                    |
|    | 4 Localisation vectorielle [X Y] |      |            |         |    |         |            |           |                    |
|    | X -100.000                       |      |            | 0.110   |    | -0.110  | X -99.995  | X 0.005   | 5% ----,*----      |
|    | Y -120.000                       |      |            | 0.110   |    | -0.110  | Y -120.006 | Y -0.006  | -5% ----*,-----    |
| 63 | Cercle/cylindre, palpé           |      |            | 5       | 2  | 4       | 0.005      |           |                    |
|    | 5 Localisation vectorielle [X Y] |      |            |         |    |         |            |           |                    |
|    | X -100.000                       |      |            | 0.110   |    | -0.110  | X -100.000 | X 0.000   | 0% ----*----       |
|    | Y 0.000                          |      |            | 0.110   |    | -0.110  | Y -0.013   | Y -0.013  | -12% ----*,-----   |
| 63 | Cercle/cylindre, palpé           |      |            | 6       | 2  | 4       | 0.005      |           |                    |
|    | 6 Diamètre                       |      |            |         |    |         |            |           |                    |
|    | D 5.300                          |      |            | 0.038   |    | -0.038  | D 5.281    | -0.019    | -50% --*,-----     |
| 63 | Cercle/cylindre, palpé           |      |            | 7       | 2  | 4       | 0.002      |           |                    |
|    | 7 Diamètre                       |      |            |         |    |         |            |           |                    |
|    | D 5.300                          | JS11 |            | 0.038   |    | -0.038  | D 5.302    | 0.002     | 5% ----,*----      |
| 63 | Cercle/cylindre, palpé           |      |            | 8       | 2  | 4       | 0.005      |           |                    |
|    | 8 Diamètre                       |      |            |         |    |         |            |           |                    |
|    | D 5.300                          | JS11 |            | 0.038   |    | -0.038  | D 5.291    | -0.009    | -24% ----*,-----   |
| 63 | Cercle/cylindre, palpé           |      |            | 9       | 2  | 4       | 0.005      |           |                    |
|    | 9 Diamètre                       |      |            |         |    |         |            |           |                    |
|    | D 5.300                          |      |            | 0.038   |    | -0.038  | D 5.288    | -0.012    | -31% ----*,-----   |
| 63 | Plan, palpé                      |      |            | 2       | -- | 16      | 0.024      |           |                    |
|    | 10 Planéité                      |      |            |         |    |         |            |           |                    |
|    | 0.000                            |      | t=         | 0.020   |    |         | 0.024      | 0.024     | 121% 0.004         |

**Figure 3: "Structure de base" - Mechanical control report**