



## Test Procedure

Herschel

Title: Cryo-Harness Treatment prior and after HPLM Mating with SVM

CI-No: 121432-01, 121432-02 & 121432-03

Prepared by:	J. Lang <i>J. Lang</i>	Date:	10.09.07
Checked by:	W. Hund <i>W. Hund</i>		11.09.07
Product Assurance:	A. Zumstein <i>A. Zumstein</i>		11.09.07
Configuration Control:	W. Wietbrock <i>W. Wietbrock</i>		24.09.07
Project Management:	Dr. W. Fricke <i>W. Fricke</i>		24/09/07

Distribution: See Distribution List (last page)

Copying of this document, and giving it to others and the use or communication of the contents thereof, are forbidden without express authority. Offenders are liable to the payment of damages. All rights are reserved in the event of the grant of a patent or the registration of a utility model or design.

Issue	Date	Sheet	Description of Change	Release
1	10.09. 07	all	Initial issue	

**Table of Content**

<b>1</b>	<b>Scope</b>	<b>7</b>
1.1	Objective	7
1.2	Flow	7
1.2.1	Preparation on HPLM prior to mating with HPLM	7
1.2.2	Preparation on SVM UCP prior to mating with HPLM	7
1.2.3	Cryo-Harness Routing & Fixation after HPLM mating with SVM	8
<b>2</b>	<b>Documents/Drawings</b>	<b>9</b>
2.1	Data Packages	9
2.2	Applicable Documents & Drawings	10
2.3	Reference Documents & Drawings	11
2.4	Other Documents	11
<b>3</b>	<b>Requirements to be verified</b>	<b>12</b>
<b>4</b>	<b>Configuration</b>	<b>13</b>
4.1	PLM Configuration	13
4.2	SVM Configuration	14
4.3	Set-up	15
<b>5</b>	<b>Conditions</b>	<b>16</b>
5.1	Personnel	16
5.2	Environmental	17
5.3	General Precautions and Safety	17
5.3.1	General Safety Requirements, Precautions	17
5.3.2	ESD constraints	18
5.3.3	Special QA Requirements	18
5.4	GSE	19
5.4.1	MGSE	19
5.4.2	EGSE	19
5.4.3	Special Equipment	19
<b>6</b>	<b>Step by Step Procedure</b>	<b>20</b>
6.1	HPLM Cryo-Harness Preparation prior Lifting	20

6.2	SVM Cryo-Harness Preparation prior Lifting	24
6.3	Cryo-Harness Installation on SVM UCP after mechanical PLM Mating	25
6.3.1	SVM upper closure panel I/F-CB Bond-strap Bonding Measurements	32
<b>7</b>	<b>Summary Sheets</b>	<b>35</b>
7.1	Procedure Variation Summary	36
7.2	Gluing Report for EC 2216 Connector fixation screw locking	37
7.3	Non Conformance Report (NCR) Summary	38
7.4	Sign-off Sheet	39
<b>8</b>	<b>Document Amendments</b>	<b>40</b>
8.1	Detailed Procedure Variation Records	41
8.2	As-built / integrated Photo Documentation	42
8.3	Implemented additional Cryo-Harness attachment mass	43

## Table of Figures

## List of Tables

<b>Table 5.4-1: MGSE .....</b>	<b>19</b>
<b>Table 8.2-1: Gluing Report .....</b>	<b>37</b>
<b>Table 8.3-1: Non-Conformance Record Sheet.....</b>	<b>38</b>

## 1 Scope

### 1.1 Objective

This procedure define the Cryo-Harness preparation work on the HPLM and the SVM prior and after HPLM mating with the SVM. The CVV external harness removal from the TTAP with installed PFM SVM I/F-CBs installed on the CVV ext. CCH & SIH bundles.

In addition the preparation of the PFM SVM upper closure panel (UCP) and upper SVM sub-platform prior and after the HPLM mating with the SVM.

Preparation of SVM Instrumentation Harness prior to the HPLM mating is defined too.

### 1.2 Flow

#### **1.2.1 Preparation on HPLM prior to mating with HPLM**

Preparation on HPLM CVV ext. CCH and SIH Bundles & I/F connector-brackets ( I/F-CB)

Removal from CVV ext. CCH & SIH I/F-CBs from SVM UCP

Bonding measurements of removed SVM I/F-CBs w.r.t. ESD sensitive Cold Units CVV int.

Additional SIH I/F-CB bondingto CVV ext. structures w.r.t. ESD sensitive CVV int installed PACS FPU

Lifting of all SVM PFM UCP CCH & SIH I/F-CBs & Cryo-/ Instrumentation Harness from TTAP

#### **1.2.2 Preparation on SVM UCP prior to mating with HPLM**

Cleaning of SVM UCP prior to mating

Removal of SVM Instrumentation Harness out of HPLM mounting areas

Closure of SVM UCP cut-outs with ESD plastic foils prior to HPLM Cryo-Harness re-integration

### **1.2.3 *Cryo-Harness Routing & Fixation after HPLM mating with SVM***

Installation of PFM SVM I/F-CBs and CVV ext. Cryo-Harness on PFM SVM UCP

Installation of Bond-straps between SVM I/F-CB and UCP structure

Bonding measurements of SVM I/F-CBs & SVM Shear-panel ( SHP ) fixation insert bushes

HPLM CVV ext. Cryo-Harness routing and fixation on SVM UCP without Mating with SVM Cryo-Harness and SVM Harness connectors



## 2 Documents/Drawings

The following documents of the latest issue in effect or as defined herein form a part of this document to the extent specified herein.

In the event of conflict between higher level documents referenced and this document, the higher level document shall have precedence.

### 2.1 Data Packages

DP 1	Herschel SVM PFM	
DP 2	Herschel SVM PFM Build Standard	H-P-ED-AI-0031
DP 3	HIFI PFM End Item Data Package	SRON- U/HIFI/LI/2007-002
DP 3	EIDP PFM HIFI LOU Bundle 06 to 12 (§12)	HP-2-ASSE-DP-0004
DP 4	PACS PFM End Item Data Package	PACS-ME-DP-003
DP 5	SPIRE PFM End Item Data Package	SPIRE-RAL-PRJ- 002017
DP 6	Herschel Cryo-Harness Machined Parts	HP-2-ASED-DP-0028

## 2.2 Applicable Documents & Drawings

AD 1	ESD-Rules for Herschel PLM & Integration Activities	HP-2-ASED-PR-0062
AD 2	Making SPIRE ESD Safe	SPIRE-RAL-NOT-002028
AD 3	FPU ESD Protection Connectors	PACS-ME-TN-053
AD 4	PA Plan	HP-2-ASED-PL-0007
AD 5	Contamination Control Plan	HP-2-ASED-PL-0023
AD 6	Red/Green-Tag Item List for Herschel EPLM	HP-2-ASED-LI-0027
AD 7	Herschel Cryo-Harness CVV external	HP-2-ASED-ID-0081-01-00
AD 8	Herschel Cryo-Harness SVM	HP-2-ASED-ID-0083-01-00
AD 9	Herschel Cryo-Harness SVM HIFI SIH-SH-01 to -12	HP-200CK1301/-12 P00
AD 10	Herschel Cryo-Harness SVM SPIRE SIH-SS-01 to -13	HP-200CK2301/-13 P00
AD 11	Herschel Cryo-Harness SVM PACS SIH-SP-01 to -15	HP-200CK3301/-15 P00
AD 12	Herschel Cryo-Harness SVM CCH-SCA & SCB	HP-200CK4301/-02 P00
AD 13	Cryo-Harness SVM panel Tybase Locations	HP-200CK5301/-05 P00
AD 14	Herschel Cryo-Harness Stand-off	HP200CE7021/ -26 P00

### 2.3 Reference Documents & Drawings

RD 1	Guidelines for Herschel PFM PLM / SVM Mechanical Mating	H-P-ASP-SP-1047
RD 2	Documentation Identification Procedure and Documentation Management	HP-2-ASED-PR-0001
RD 3	Cryo-Harness Interconnection Diagram CCH (PFM)	HP-2-ASED-ID-0088-03-0E
RD 4	Cryo Harness Interconnection Diagram PACS (PFM)	HP-2-ASED-ID-0089-01-0D
RD 5	Cryo Harness Interconnection Diagram HIFI (PFM)	HP-2-ASED-ID-0090-01-0D
RD 6	Cryo-Harness Interconnection Diagram SPIRE (PFM)	HP-2-ASED-ID-0091-01-0B
RD 7	Herschel SVM MLI General	G3210-300-000-00-0C
RD 8	Herschel SVM Upper closure Panel ASSY (Grounding wires)	0400HP001
RD 9	Herschel SVM Grounding Wire	300HP205-401& 405
RD10	Herschel SVM Grounding Wire	300HP207-401,403,405

### 2.4 Other Documents

N/A

### 3 Requirements to be verified

SVM I/F-connector bracket bonding to SVM UCP =>  $R < 10 \text{ m}\Omega$

SVMF-connector-bracket bond-strap bonding to SVM UCP =>  $R < 10 \text{ m}\Omega$

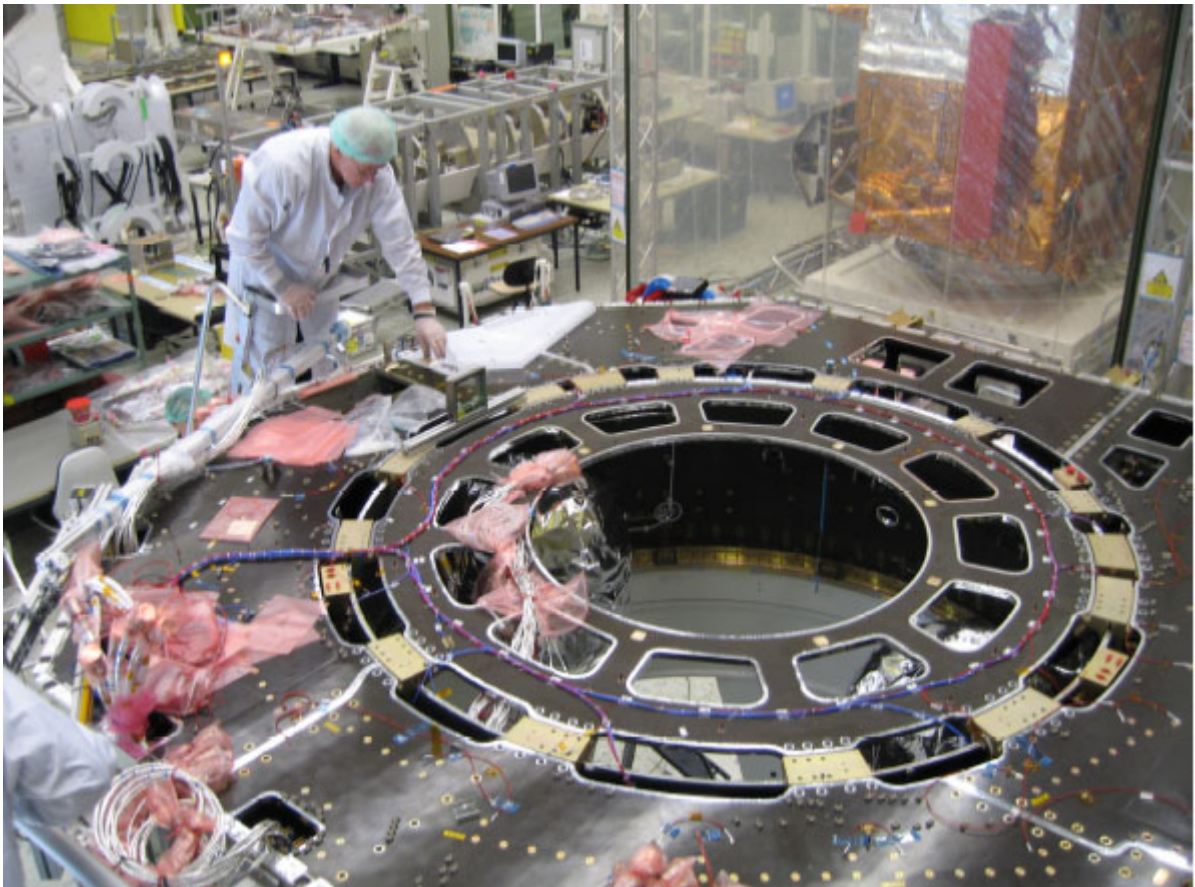
## 4 Configuration

### 4.1 PLM Configuration



HPLM during lower bulkhead MLI integration and CVV ext. Cryo-Harness installed on TTAP.

## 4.2 SVM Configuration



SVM with removed I/F-CBs and PFM Accelerometer Instrumentation Harness attached prior to upper sub-platform MLI Integration

#### 4.3 Set-up

<b>Environmental</b>	<b>Nominal</b>	<b>Actual</b>	<b>P</b>	<b>N</b>
Clean Room Class	class 100 000			
Temperature	22°C ± 3°C			
Rel. Humidity	40 % - 60 %			
Pressure	ambient			

## 5 Conditions

### 5.1 Personnel

Responsibility	Name / Organization
Harness Operator	*)
Test Manager	*)
Test Engineer	*)
EGSE Operator	*)
Support Engineer	*)
ASED Instrument Responsible	*)
PACS Instrument Responsible	*)
PA Responsible	*)
Customer Representative	*)

\*) Names and possible additional personal are to be registered prior to the integration activities.



## 5.2 Environmental

See § 4.3

## 5.3 General Precautions and Safety

### 5.3.1 General Safety Requirements, Precautions

- Respect of the standard technical rules for mechanical and electrical integration and test activities are sufficient.
- Other special hazard precautions are not expected, except for the comments mentioned in the step by step procedure for the relevant item
- The flight H/W has to be handled by authorized personnel only
- During non integration phase the flight H/W has to be protected against contamination by appropriate means like blind flanges, caps or protective foils
- The following tasks have to be regarded before start of any integration/test activity:
- IRR has been successfully held to ensure that the relevant procedures, drawings, applicable documents are available, reviewed and approved
- Formal release to start with activity is given by QA
- The necessary GSE and H/W is available, accepted and applicable for use
- Safe working conditions for personnel and H/W are existing and will be applied
- Skilled and authorized personnel is available
- Incoming inspection of H/W have been performed by QA and engineering

### 5.3.2 ESD constraints

During all PFM HPLM handling activities of all CVV ext & SVM CCH & SIH, special attention must be paid AD 1.

#### **NOTE for PACS , SPIRE & HIFI Cold-units mated currently with CVV ext. SIH :**

All PFM Instrument cold-units contain very sensitive components that are susceptible to damage by Electro static discharge. All CVV ext. mated termination connectors shall be NOT disconnected during any time, ONLY on request of Instrument responsible.

When handling the CVV ext. Cryo-Harness, all personnel shall wear controlled anti static protection wrist straps connected to CVV structure and ESD discharging suits & shoes, for details see AD-1.

The proper wrist-strap function shall be checked all times prior & after FPU / SIH handling.

### 5.3.3 Special QA Requirements

#### **It is forbidden to touch the PFM panels or any Cro-Harness with the bare skin!**

It is mandatory to wear clean ESD gloves during handling of the PFM hardware and during integration. These shall be changed frequently to avoid build up of contamination.

QA shall monitor all operations (handlings, transportation and installation) as necessary to assure compliance with this procedure and the applicable sections of the PA Plan (AD-4 ).

In the course of this procedure QA shall pay particular attention to

- ensure adequate cleanliness conditions
- ensure that all safety aspects are considered
- the application of adequate protections to critical surfaces
- the records in the log sheet
- to ensure that tools and test equipment used is within current calibration cycle

**5.4 GSE**

Test Equipment List					
Item	Manuf.	Model No.	SN No.	Invent No.	Next Calib.
Digital Multimeter Test probes Bonding Multimeter					

**5.4.1 MGSE**

The PLM with mounted TTAP are installed to the MPT , meanwhile the SVM is installed on the vertical integration stand.

Qty.	Designation/Manufacturer	Provided by	Drawing/Ident. NR:	Calibr. Date
1	Set of tools	ASED		
1	Torque wrench to cover 0,5 Nm	ASED		
	Isopropyl alcohol	ASED		

Table 5.4-1: MGSE

**5.4.2 EGSE**

Take care for mated SVM EGSE harness still mated. Contact shift-leader that SVM is switched down prior handling of any SVM harness.

**5.4.3 Special Equipment**

N/A

**6 Step by Step Procedure**

Integration/Test Step: <b>6.1 HPLM Cryo-Harness Preparation prior Lifting</b>								
Step No.	Test Step Description	Pin		Test Results/Values			passed Yes/No	Remark
			-	Expected	Tolerance	Measured		
001	Check all fixation bolts on all SVM I/F-CBs are removed							
002	Check all lacing cord & ty-rap fixations on TTAP are cut							
003	Check all STM1/2 Instrumentation Harness is disconnected from thermal H/W attached on TTAP							
004	Check all SVM I/F-CB connectors are protected by metal caps or termination connectors							
005	Check all P-clamp fixations removed on TTAP							
006	Check all CCH is disconnected from SVM Cone dummy I/F-CBs							
007	Lift SVM I/F-CBs by use of <b>long</b> lacing cords DPTH-18 and fix it to mid-side of CVV Harness rails							Take care for CCH & SIH bundles bendradii
008	Perform diagonal lacings cords to limit the I/F-CB movement during crane transfer to SVM							
009	Lift and fix I/F-CB 311100 ( HIFI FPU )							Take care for FPU termination plugs mated
010	Left blank							

Integration/Test Step: <b>6.1 HPLM Cryo-Harness Preparation prior Lifting</b>								
Step No.	Test Step Description	Pin		Test Results/Values			passed Yes/No	Remark
			-	Expected	Tolerance	Measured		
	<b>General note to all bonding resistance measurements:</b> In case any Bonding resistance measured is bigger than the specified value, an additional Bond-strap shall be attached between I/F-CB and CVV structure and measurement repeated!							Proper bonding is requested w.r.t. PFM Cold unit installed CVV internal
011	Measure Bonding resistance between CB 311100 & CVV structure	CB	- GND	≤ 100 mΩ	n.a.			Bonding to CVV is provided by Harness bundle over-shield
012	Remove I/F-CB 311200 ( HIFI LOU )							CVV ext. HIFI LOU SIH not installed
013	Lift and fix I/F-CB 311300 ( HIFI FPU Coax )							CVV ext. HIFI LOU SIH not installed
014	Measure Bonding resistance between CB 311300 & CVV structure	CB	- GND	≤ 100 mΩ	n.a.			
015	Lift and fix I/F-CB 321100 ( CCH )							
016	Measure Bonding resistance between CB 321100 & CVV structure	CB	- GND	≤ 100 mΩ	n.a.			
017	Take care all connectors disconnected from Dummy SVM Cone I/F-CB 321400							
018	Lift and fix I/F-CB 312100 ( SPIRE SIH )							Take care for SIH bundle double shielded Over-shield bendradii & mated Termination plugs
019	Measure Bonding resistance between CB 312100 & CVV structure	CB	- GND	≤ 100 mΩ	n.a.			

Integration/Test Step: <b>6.1 HPLM Cryo-Harness Preparation prior Lifting</b>								
Step No.	Test Step Description	Pin		Test Results/Values			passed Yes/No	Remark
			-	Expected	Tolerance	Measured		
020	Lift and fix I/F-CB 312200 ( SPIRE SIH )							Take care for SIH bundle double shielded Over-shield bendradii & mated Termination plugs
021	Measure Bonding resistance between CB 312200 & CVV structure	CB	- GND	≤ 100 mΩ	n.a.			
022	Lift and fix I/F-CB 316100 ( SPIRE SIH )							Take care for SIH bundle double shielded Over-shield bendradii & mated Termination plugs
023	Measure Bonding resistance between CB 316100 & CVV structure	CB	- GND	≤ 100 mΩ	n.a.			
024	Lift and fix I/F-CB 312300 (SPIRE SIH )							Take care for SIH bundle double shielded Over-shield bendradii & mated Termination plugs
025	Measure Bonding resistance between CB 312300 & CVV structure	CB	- GND	≤ 100 mΩ	n.a.			
026	Lift and fix I/F-CB 312200 ( CCH )							
027	Measure Bonding resistance between CB 312200 & CVV structure	CB	- GND	≤ 100 mΩ	n.a.			
028	Lift and fix I/F-CB 321300 ( CCH )							
029	Measure Bonding resistance between CB 312300 & CVV structure	CB	- GND	≤ 100 mΩ	n.a.			
030	Lift and fix I/F-CB 315100 ( CCH )							
031	Measure Bonding resistance between CB 315100 & CVV structure	CB	- GND	≤ 100 mΩ	n.a.			

Integration/Test Step: <b>6.1 HPLM Cryo-Harness Preparation prior Lifting</b>								
Step No.	Test Step Description	Pin		Test Results/Values			passed Yes/No	Remark
			-	Expected	Tolerance	Measured		
032	Take care all connectors disconnected from Dummy SVM Cone I/F-CB 314100 ( CCH )							
033	Lift and fix I/F-CB 314200 ( CCH )							
034	Measure Bonding resistance between CB 314200 & CVV structure	CB	- GND	≤ 100 mΩ	n.a.			
035	Lift and fix I/F-CB 313100 ( PACS SIH )							Take care for SIH bundleshielded Over-shield & mated Shorting plugs
036	Measure Bonding resistance between CB 313100 & CVV structure	CB	- GND	≤ 100 mΩ	n.a.			
037	Lift and fix I/F-CB 313200 ( PACS SIH )							Take care for SIH bundle double shielded Over-shield bendradii & mated Shorting plugs
038	Measure Bonding resistance between CB 313200 & CVV structure	CB	- GND	≤ 100 mΩ	n.a.			
039	Take care all connectors disconnected from Dummy SVM Cone I/F-CB 314300 ( CCH )							
040	Check PLM Bond-strap for PLM lifting is still connected to SVM Grounding-Star-point	PLM	SVM	≤ 100 mΩ	n.a.			
AIT					QA			
Date: _____ Sign: _____					Date: _____ Sign: _____			

Integration/Test Step: <b>6.2 SVM Cryo-Harness Preparation prior Lifting</b>							
Step No.	Test Step Description	Pin -	Test Results/Values		passed Yes/No	Remark	
			Expected	Tolerance			Measured
001	Check all SVM ACC Instrumentation harness out are of PLM I/F-CB mounting plane						
002	Check all SVM I/F-CBs removed from SVM upper closure panel						
003	Check SVM upper closure panel cleaned by vacuum cleaner and IPA						
004	Check no tape attached on SVM upper closure panel ist getting underneath any mounting bracket during PLM fitting						
005	Check HIFI LOU Wave-guide bridge is installed for SVM HIFI FPU SIH fixation						
006	Check no SVM Harness bundle will get in handling area of CVV ext. SIH & CCH						
007	Install temporary HIFI LOU Waveguide bridge for HIFI FPU SIH bundle attachments					Temporary, due to not yet integrated HIFI LOU SIH & SVM LOU Heater-harness , which request bridge removal for bundle integration	
AIT				QA			
Date: Sign:				Date: Sign:			



Integration/Test Step: <b>6.3 Cryo-Harness Installation on SVM UCP after mechanical PLM Mating</b>							
Step No.	Test Step Description	Pin -	Test Results/Values		passed Yes/No	Remark	
			Expected	Tolerance			Measured
001	Keep I/F-CB 311100 ( CCH ) in hand , open lacing cords and place CB on SVM UCP in position						
002	Install PFM SVM I/F-CB Bond-strap to I/F-CB 311100						
003	Measure bonding between IF-CB 311100 to SVM UCP SHP Inserts bushes	CB - GND	$\leq 10 \text{ m}\Omega$	n.a.			
004	Keep I/F-CB 311200 ( CCH ) in hand , open lacing cords and place CB on SVM UCP in position						
005	Install PFM SVM I/F-CB Bond-strap to I/F-CB 311200						
006	Measure bonding between IF-CB 311200 to SVM UCP SHP Inserts bushes	CB - GND	$\leq 10 \text{ m}\Omega$	n.a.			
007	Keep I/F-CB 311300 ( CCH ) in hand , open lacing cords and place CB on SVM UCP in position						
008	Install PFM SVM I/F-CB Bond-strap to I/F-CB 311300						
009	Measure bonding between IF-CB 311300 to SVM	CB - GND	$\leq 10 \text{ m}\Omega$	n.a.			

Integration/Test Step: <b>6.3 Cryo-Harness Installation on SVM UCP after mechanical PLM Mating</b>							
Step No.	Test Step Description	Pin -	Expected	Test Results/Values		passed Yes/No	Remark
				Tolerance	Measured		
	UCP SHP Inserts bushes						
010	Keep I/F-CB 321100 ( CCH ) in hand , open lacing cords and place CB on SVM UCP in position						
011	Install PFM SVM I/F-CB Bond-strap to I/F-CB 321100						
012	Measure bonding between IF-CB 321100 to SVM UCP SHP Inserts bushes	CB - GND	$\leq 10 \text{ m}\Omega$	n.a.			
013	Keep I/F-CB 312100 ( CCH ) in hand , open lacing cords and place CB on SVM UCP in position						
014	Install PFM SVM I/F-CB Bond-strap to I/F-CB 312100						
015	Measure bonding between IF-CB 312100 to SVM UCP SHP Inserts bushes	CB - GND	$\leq 10 \text{ m}\Omega$	n.a.			
016	Keep I/F-CB 312200 ( CCH ) in hand , open lacing cords and place CB on SVM UCP in position						
017	Install PFM SVM I/F-CB Bond-strap to I/F-CB 312200						
0018	Measure bonding between IF-CB 312200 to SVM UCP SHP Inserts bushes	CB - GND	$\leq 10 \text{ m}\Omega$	n.a.			
019	Keep I/F-CB 316100 ( CCH ) in hand , open lacing cords and place CB on SVM UCP in position						

Integration/Test Step: <b>6.3 Cryo-Harness Installation on SVM UCP after mechanical PLM Mating</b>							
Step No.	Test Step Description	Pin -	Expected	Test Results/Values		passed Yes/No	Remark
				Tolerance	Measured		
020	Install PFM SVM I/F-CB Bond-strap to I/F-CB 316100						
021	Measure bonding between IF-CB 316100 to SVM UCP SHP Inserts bushes	CB - GND	≤ 10 mΩ	n.a.			
022	Keep I/F-CB 312300 ( CCH ) in hand , open lacing cords and place CB on SVM UCP in position						
023	Install PFM SVM I/F-CB Bond-strap to I/F-CB 312300						
024	Measure bonding between IF-CB 312300 to SVM UCP SHP Inserts bushes	CB - GND	≤ 10 mΩ	n.a.			
025	Keep I/F-CB 321200 ( CCH ) in hand , open lacing cords and place CB on SVM UCP in position						
026	Install PFM SVM I/F-CB Bond-strap to I/F-CB 321200						
027	Measure bonding between IF-CB 321300 to SVM UCP SHP Inserts bushes	CB - GND	≤ 10 mΩ	n.a.			
028	Keep I/F-CB 321300 ( CCH ) in hand , open lacing cords and place CB on SVM UCP in position						
029	Install PFM SVM I/F-CB Bond-strap to I/F-CB 321300						
030	Measure bonding between IF-CB 321300 to SVM UCP SHP Inserts bushes	CB - GND	≤ 10 mΩ	n.a.			
031	Keep I/F-CB 315100 ( CCH ) in hand , open lacing cords and place CB on SVM UCP in position						

Integration/Test Step: <b>6.3 Cryo-Harness Installation on SVM UCP after mechanical PLM Mating</b>							
Step No.	Test Step Description	Pin -	Expected	Test Results/Values		passed Yes/No	Remark
				Tolerance	Measured		
032	Install PFM SVM I/F-CB Bond-strap to I/F-CB 315100						
033	Measure bonding between IF-CB 315100 to SVM UCP SHP Inserts bushes	CB - GND	$\leq 10 \text{ m}\Omega$	n.a.			
034	Keep I/F-CB 314200 ( CCH ) in hand , open lacing cords and place CB on SVM UCP in position						
035	Install PFM SVM I/F-CB Bond-strap to I/F-CB 314200						
036	Measure bonding between IF-CB 314200 to SVM UCP SHP Inserts bushes	CB - GND	$\leq 10 \text{ m}\Omega$	n.a.			
037	Keep I/F-CB 313100 ( CCH ) in hand , open lacing cords and place CB on SVM UCP in position						
038	Install PFM SVM I/F-CB Bond-strap to I/F-CB 313100						
039	Measure bonding between IF-CB 313100 to SVM UCP SHP Inserts bushes	CB - GND	$\leq 10 \text{ m}\Omega$	n.a.			
40	Keep I/F-CB 313200 ( CCH ) in hand , open lacing cords and place CB on SVM UCP in position						
041	Install PFM SVM I/F-CB Bond-strap to I/F-CB 313200						
042	Measure bonding between IF-CB 313200 to SVM UCP SHP Inserts bushes	CB - GND	$\leq 10 \text{ m}\Omega$	n.a.			
043	Left blank						

Integration/Test Step: <b>6.3 Cryo-Harness Installation on SVM UCP after mechanical PLM Mating</b>							
Step No.	Test Step Description	Pin -	Test Results/Values		passed Yes/No	Remark	
			Expected	Tolerance Measured			
	<b>CVV ext. CCH &amp; SIH Fixation on SVM UCP</b>						
044	Route CVV ext. 311100 HIFI FPU SIH bundles on SVM UCP and fix on attachments					Add bundle protections in PFM configuration	
045	Route CVV ext. 311200 HIFI LOU SIH bundles on SVM UCP and fix on attachments					LOU SIH not yet installed	
046	Route CVV ext. 311300 HIFI FPU Coax & LOU SIH bundles on SVM UCP and fix on attachments					LOU SIH not yet installed	
047	Route CVV ext. 321100 CCH bundles on SVM UCP and fix on attachments						
048	Route CVV ext. 321400 CCH bundles on SVM UCP and fix on attachments					<b>Note: Do NOT mate CCH on 321400</b>	
049	Route CVV ext. 312100 SPIRE SIH bundles on SVM UCP and fix on attachments						
050	Route CVV ext. 312200 SPIRE SIH bundles on SVM UCP and fix on attachments						
051	Route CVV ext. 316100 SPIRE SIH bundles on SVM UCP and fix on attachments						
052	Route CVV ext. 312300 SPIRE SIH bundles on SVM UCP and fix on attachments						
053	Route CVV ext. 321200 CCH bundles on SVM UCP and fix on attachments						

Integration/Test Step: <b>6.3 Cryo-Harness Installation on SVM UCP after mechanical PLM Mating</b>							
Step No.	Test Step Description	Pin -	Expected	Test Results/Values		passed Yes/No	Remark
				Tolerance	Measured		
054	Route CVV ext. 321300 CCH bundles on SVM UCP and fix on attachments						
055	Route CVV ext. 315100 CCH bundles on SVM UCP and fix on attachments						
056	Route CVV ext. 314100 CCH bundles on SVM UCP and fix on attachments						<b>Note: Do NOT mate CCH on 314100</b>
057	Route CVV ext. 314200 CCH bundles on SVM UCP and fix on attachments						
058	Check mechanical integration of PACS ESD Unit = modified I/F-CB 313100 in between CVV ext. and SVM PACS SIH						
059	Measure 313100 SVM I/F-CB ESD Unit bonding to SVM UCP SHP Inserts bush	CB - GND	≤ 10 mΩ	n.a.			
060	Adjust CVV ext. PACS SIH routing to modified SVM I/F-CB / ESD unit						
061	Route CVV ext. 313100 PACS SIH bundles on SVM UCP and fix on attachments						
062	Route CVV ext. 313200 PACS SIH bundles on SVM UCP and fix on attachments						
063	Route CVV ext. 314400 CCH bundles on SVM UCP and fix on attachments						<b>Note: Do NOT mate CCH on 314400</b>

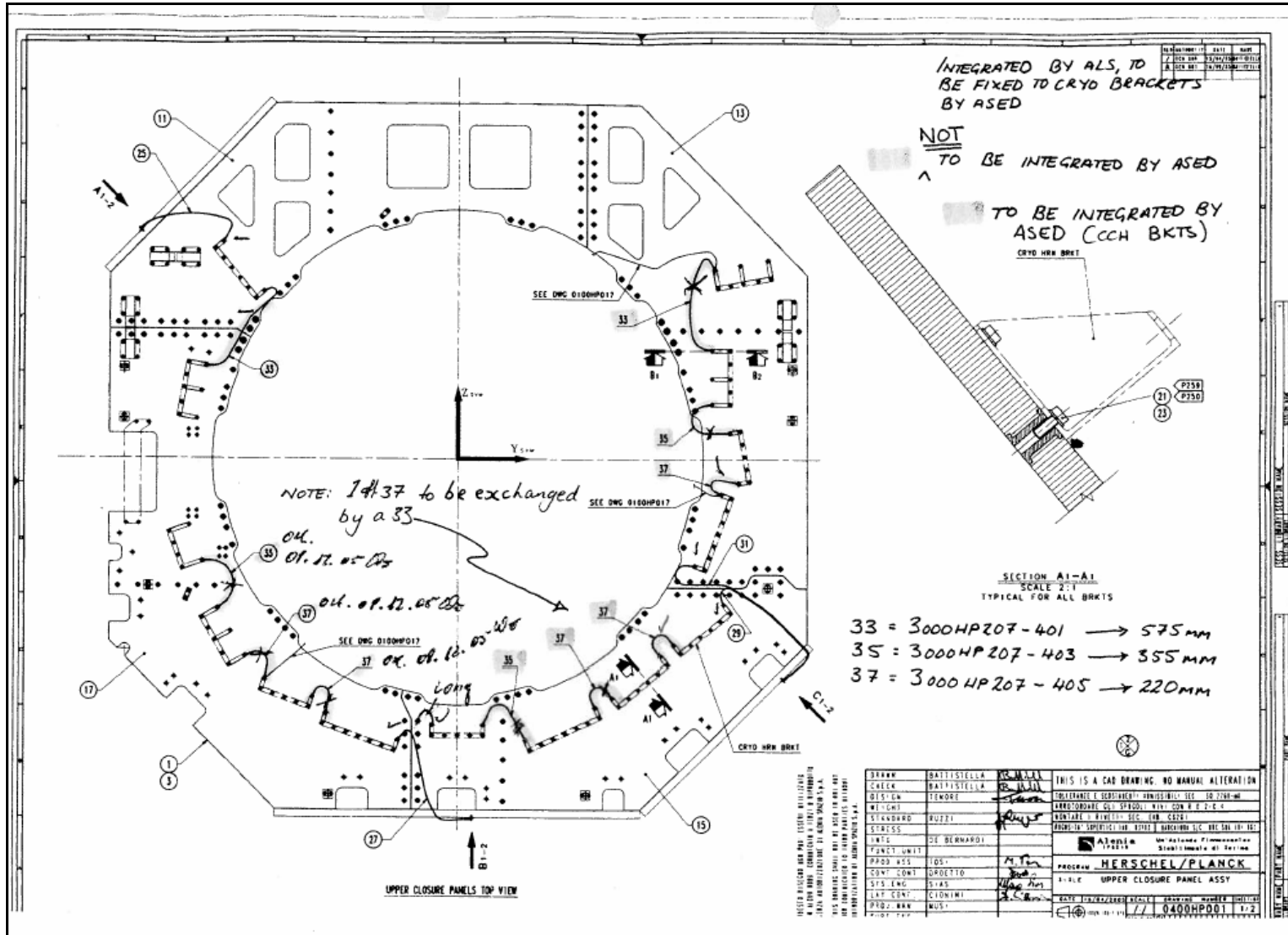


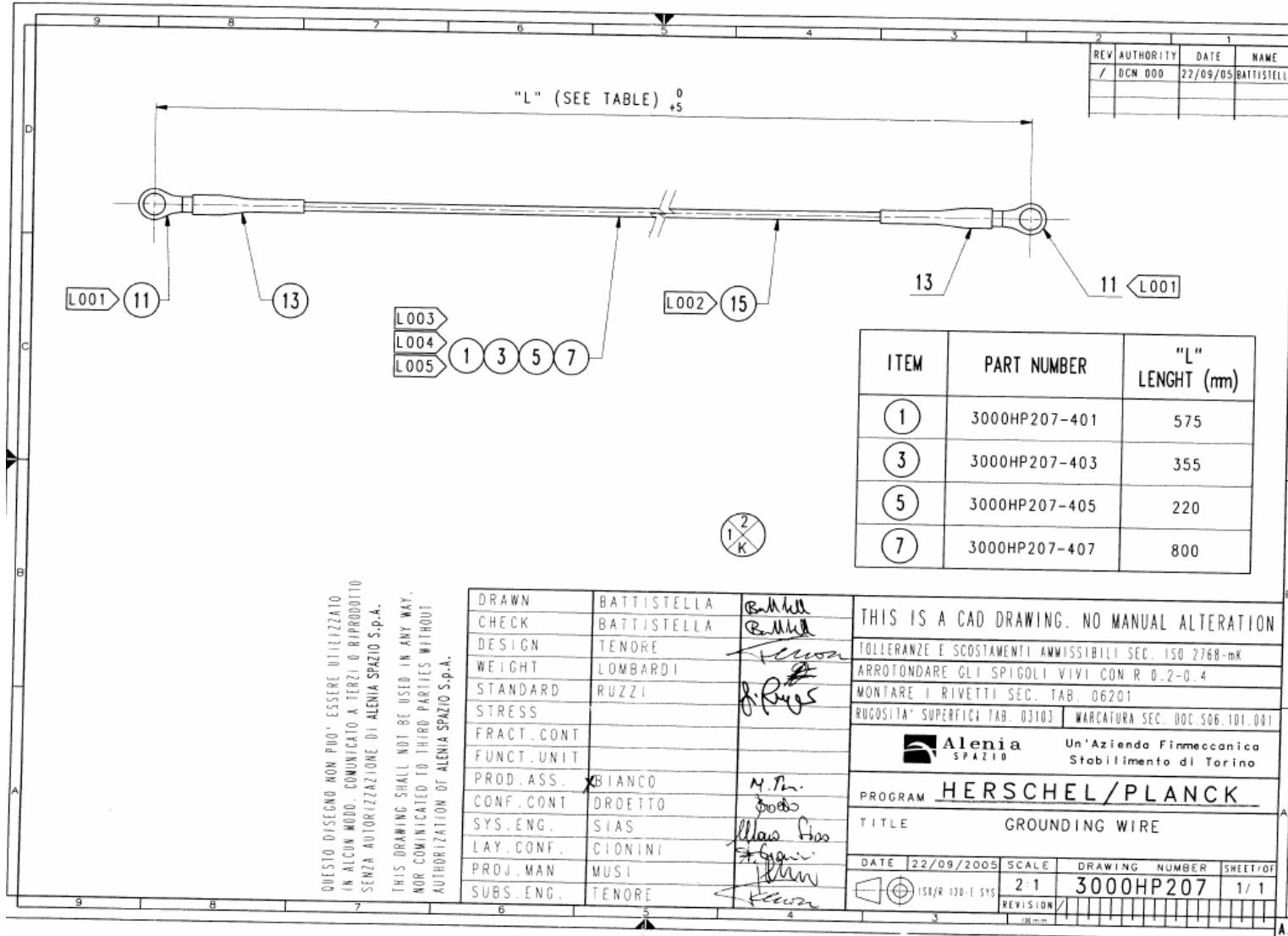
Integration/Test Step: <b>6.3 Cryo-Harness Installation on SVM UCP after mechanical PLM Mating</b>						
Step No.	Test Step Description	Pin -	Test Results/Values		passed Yes/No	Remark
			Expected	Tolerance Measured		
AIT			QA			
Date:	Sign:		Date:	Sign:		

**6.3.1 SVM upper closure panel I/F-CB Bond-strap Bonding Measurements**

Model	Ident-No	Part No	Length mm	Interface	from	to	R_[mΩ]	Integrated	M5_CB Torque	M4_LP Torque	Date	Operator
PFM SVM	33	3000HP207-401	575	PACS SIH	CB 313200	CB 313100						
PFM SVM	35	3000HP207-403	355	PACS SIH	CB 313100	CB 314200						
PFM SVM	37	3000HP207-405	220	Cryo-Cover	CB 314200	CB 3145100						
PFM SVM	31	3000HP205-407	1070	CCH	CB 315100	PACS Sidepanel* / Bonding point						
PFM SVM	29	3000HP205-405	780	CCH	CB 321300	PACS Sidepanel* / Bonding point						
PFM SVM	37	3000HP207-405	220	CCH	CB 321300	CB 321200						
PFM SVM	37	3000HP207-405	220	CCH	CB 321200	CB 312300						
PFM SVM	35	3000HP207-403	355	CCH	CB 312300	CB 316100						
PFM SVM	27	3000HP205-403	670	SPIRE SIH	CB 312200	SPIRE Sidepanel* / Bonding point						
PFM SVM	37	3000HP207-405	220	SPIRE SIH	CB 312200	CB 312100						
PFM SVM	37	3000HP207-405	220	SIH - CCH	CB 312100	CB 321100						
PFM SVM	35	3000HP207-403	355	LOU - CCH	CB 321100	CB 311300						
PFM SVM	25	3000HP205-401	560	HIFI SIH	CB 311100	HIFI Sidepanel* / Bonding point						
PFM SVM	33	3000HP207-401	575	HIFI SIH	CB 311100	CB 311200						
PFM SVM					CB 314100							
PFM SVM					CB 314300							
PFM SVM					CB 321400							
Integrators:			Date:			Testoperators:			Date:			







## 7 Summary Sheets

**7.1 Procedure Variation Summary**

	Test Change	Curr. No.:HP-2-ASED-TP-0165 Date: 04.09.07 Page                      of	
Test designation	Test Procedure	Issue	Rev.
Test step changed	Reason for Change		
Prepared by:	Resp. Test Leader	Project Engineer	
PA/QA	Prime	Customer	

**7.2 Gluing Report for EC 2216 Connector fixation screw locking**

<h2>Gluing Report</h2>			
Panel / Unit    Harness connector fixation screw locking			
Adhesive Mixture No.		Date:	
Start of mixing : Date: _____	Time: _____	End of mixing : Date: . _____	Time: _____
Start of gluing : Date: _____	Time: _____	End of gluing : Date: . _____	Time: _____
<p>Items to be glued:</p>          <p>Securing time for Items to be mounted on top by screws:</p>			
Operator: Date: _____		PA: _____	Date: _____

Table 7.2-1: Gluing Report

**7.3 Non Conformance Report (NCR) Summary**

If any failure or anomaly is found during work according to this procedure a Non-conformance report shall be written.

All Non - Conformances generated during this integration shall be recorded in Annex-2.

NCR - No.	NCR - Title	Date	Open Closed	PA sig.

Table 7.3-1: Non-Conformance Record Sheet

7.4 Sign-off Sheet

	Date	Signature
<b>AIT Harness Operator</b>		
<b>AIT Mechanical Operator</b>		
<b>ASED Instrument Responsible</b>		
<b>PACS Instrument Responsible</b>		
<b>ESA Instrument Responsible</b>		
<b>Test Manager</b>		
<b>Test Operator</b>		
<b>ASED PA Responsible</b>		
<b>THA PA Responsible</b>		
<b>ESA PA Representative</b>		

## 8 Document Amendments



## 8.1 Detailed Procedure Variation Records

## 8.2 As-built / integrated Photo Documentation

### 8.3 Implemented additional Cryo-Harness attachment mass



END OF DOCUMENT

	Name	Dep./Comp.		Name	Dep./Comp.
	Alberti von Mathias Dr.	ASG23	X	Schmidt Thomas	AED15
	Baldock Richard	FAE12		Schuler Günter	ASA42
X	Barlage Bernhard	AED13		Schweickert Gunn	ASG23
X	Bayer Thomas	ASA42	X	Sonn Nico	ASG51
	Brune Holger	ASA45		Steininger Eric	AED32
	Edelhoff Dirk	AED2	X	Stritter Rene	AED11
X	Fehringer Alexander	ASG13		Suess Rudi	OTN/ASA44
X	Fricke Wolfgang Dr.	AED 65		Theunissen Martijn	DSSA
	Geiger Hermann	ASA42		Vascotto Riccardo	AED11
X	Grasl Andreas	OTN/ASA44		Wagner Klaus	ASG23
	Grasshoff Brigitte	AET12	X	Wietbrock Walter	AET12
	Hamer Simon	Terma		Wöhler Hans	ASG23
	Hendrikse Jeffrey	HE Space	X	Wössner Ulrich	ASE252
X	Hendry David	Terma	X	Zumstein Armin	ASQ42
X	Hengstler Reinhold	ASA42			
	Hinger Jürgen	ASG23			
X	Hohn Rüdiger	AED65			
	Hölzle Edgar Dr.	AED32			
X	Hopfgarten Michael	AED32			
	Huber Johann	ASA42			
X	Hund Walter	ASE252			
X	Idler Siegmund	AED312			
X	Ivány von András	FAE12			
X	Jahn Gerd Dr.	ASG23			
X	Kalde Clemens	ASM2			
	Kameter Rudolf	OTN/ASA42	X	ESA/ESTEC	ESA
X	Kettner Bernhard	AET42	X	Thales Alenia Space Cannes	TAS-F
X	Knoblauch August	AET32	X	Thales Alenia Space Torino	TAS-I
	Koelle Markus	ASA43			
X	Koppe Axel	AED312		<b>Instruments:</b>	
X	Kroeker Jürgen	AED65	X	MPE (PACS)	MPE
X	La Gioia Valentina	Terma	X	RAL (SPIRE)	RAL
X	Lang Jürgen	ASE252	X	SRON (HIFI)	SRON
X	Langenstein Rolf	AED15			
X	Langfermann Michael	ASA41			
	Martin Olivier	ASA43		<b>Subcontractors:</b>	
	Maukisch Jan	ASA43		Austrian Aerospace	AAE
	Much Christoph	ASA43		Austrian Aerospace	AAEM
	Müller Jörg	ASA42		BOC Edwards	BOCE
X	Müller Martin	ASA43		Dutch Space Solar Arrays	DSSA
	Peltz Heinz-Willi	ASG13		EADS Astrium Sub-Subsyst. & Equipment	ASSE
	Pietroboni Karin	AED65		EADS CASA Espacio	CASA
X	Platzer Wilhelm	AED2		EADS CASA Espacio	ECAS
X	Reichle Konrad	ASA42		European Test Services	ETS
	Runge Axel	OTN/ASA44		Patria New Technologies Oy	PANT
X	Sauer Maximilian Dr.	AED65		SENER Ingenieria SA	SEN
X	Schink Dietmar	AED32		Thales Alenia Space, Antwerp	TAS-ETCA