SPIRE

SUBJECT: **SPIRE AVM HANDLING AND INTEGRATION PROCEDURE**

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References

Applicable Documents

AD1	SPIRE-RAL-PRC-001923	FPU handling and integration procedure.
AD2	H-P-3-ASP-TS-0868	SCE Functional test at ambient on AVM
AD2	H-P-1-ASPI-TN-0164	AVM requirements and design

Reference Documents

1. INTRODUCTION

2. SCOPE

This document describes the procedures to be followed when handing the SPIRE AVM units after delivery to ESA/Alcatel.
It covers the handling and integration procedures to be followed for the following units:

HSDPU   Herschel Spire Digital Processor Unit
DRCU simulator
Harness

3. EQUIPMENT DESCRIPTION

3.1 HSDPU

The DPU AVM is mechanically and functionally representative of the flight unit. It uses commercial components and does not contain the redundant sections present in the flight model.

3.2 DRCU Simulator

The DRCU simulator is a standard PC with additional cards integrated into it to allow connection to the DPU. It has a monitor and will require 240v mains power.
It simulates in software the SPIRE instrument i.e. DCU, FCU and FPU.

3.3 Power consumption simulator

This unit simulates the power consumed by SPIRE.
This unit will not be supplied for the early communications tests.

3.4 Harness

Harnesses will be supplied to connect the DPU to the DRCU simulator.
1   DPU J7 to Simulator J2
2   DPU J8 to Simulator J3
3   DPU J9 to Simulator J4

These are test leads and are approximately 3m long.

Figures 1 and 2 show the interconnection of the units.

4. DELIVERY CONDITION

The SPIRE instrument warm units will be delivered in the following condition:-

The units will be supplied in dedicated, re-useable, containers.

5. TRANSPORT

5.1 In dedicated experiment containers

Protect from rain and moisture.
Transport in closed vehicles only.
Protect from extremes of temperature, -10°C to +50°C, and prevent the formation of dew at any time.

6. STORAGE

6.1 In dedicated experiment container

Protect from rain and moisture.
Protect from extremes of temperature, 10°C to +30°C.

6.2 Out of container (in cleanroom, awaiting integration)

No specific requirement.

7. HANDLING

7.1 General.

The SPIRE warm electronics units are typical of any spacecraft electronics units with only the normal handing requirements.
These units are ESD sensitive.

7.2 ESD protection

All the units are sensitive to ESD.
On delivery all connectors will be protected by covers.
When handling, all personnel shall wear anti static protection (wrist straps or other suitable method)

7.3 Unpacking from dedicated experiment container.

Before any entrance in a clean room, the container must be cleaned with isopropyl alcohol.
The containers of the can be opened outside a clean room, in an area whose environment isn't controlled.
Before opening the container check the external condition, report any damage.
Open the container.

Inspect the condition of the inside of the container.
Remove unit from the container and from the antistatic bag.
Check of the external condition of the units
Close the container and store it in a clean location.
Record the operations in the logbook.

7.4 Preparation for integration.

No specific activities

7.5 Preparation for packing.

No specific activities

7.6 Packing in containers.

Package unit into its antistatic bag, seal the bag.
- Place unit into the container.
- Close the container.
- Record the operations in the logbook.

8. INTEGRATION

8.1 Required tools/MGSE

SPIRE supplied tools/MGSE:-   Antistatic bag for repacking

 Supplied by spacecraft   Earth conductor bracelets
                                              Fixation bolts, if required
                                              Tools
                                              DVM for electrical isolation testing

8.2 Mechanical integration to AVM spacecraft.

The DPU can be mounted on a panel similar to the Herschel panel; the mechanical interface is the same as for FM.

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The DRCU simulator is a standard PC and can be located on any convenient table within 3m of the DPU.
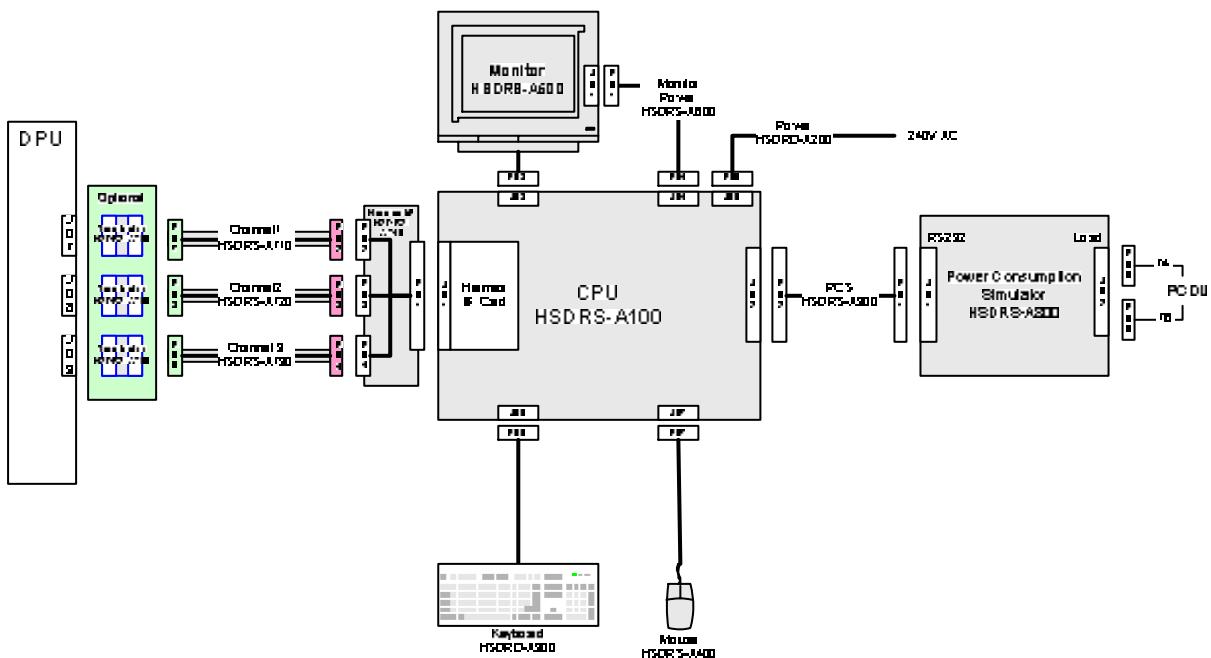
8.3 Electrical integration

The units should be connected as shown in figure 1 if the power consumption simulator is being used or as in figure 2 if it is not.
Figure 2 is the configuration for the first interface checks at Alenia.

8.4 Removal from AVM spacecraft.

Removal is the reverse of the integration procedure.

FIG 1   AVM DRCU Simulator Integration, with power consumption simulator

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FIG 2   AVM DRCU Simulator Integration without power consumption simulator