

	IFSI CNR	Herschel SPIRE DPU AVM LOG-BOOK	Ref.: SPIRE-IFS-DOC-001387 Issue: ISSUE 1 Date: 23/07/2002
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**Herschel SPIRE
DPU AVM LOG-BOOK**

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1 INTRODUCTION

1.1 Scope of the document

The purpose of this document is to report all relevant actions, both hardware and software, pertinent to the manufacturing and testing of the DPU AVM. All the testing activities at board level and at integrated boards level took place in Carlo Gavazzi Space. Other integration and testing activities take place at IFSI.

2 Log-Book

DATE	ACTIVITY
	Mechanical Activities
25-10-2001	Purchase of Aluminum Alloy Slabs Type: Anticorodal 6082 Thickness: 40 mm; dimensions 265x282 mm 10 mm; ½ Slab

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	<p align="center">6 mm 1 Slab</p> <p>Firm: Pontecorvo</p>
22-11-2001	Alloy in Institute
28-11-2001	<p>Start of Mechanical Work: Slab Gross Cutting of three base-plates</p> <p>End of base-plates 18-12-2001</p>
19-12-2001	Start of Lateral Walls machining
29-01-2002	<p>End of Boxes Manufacturing:</p> <p>Base-plate: 1071 g</p> <p>Lateral Wall: 494 g</p> <p>Back Wall: 230 g</p> <p>Cover: 368 g</p> <p>Front Wall: 184-220 g (Depending on Instrument)</p> <p>Roughness: better than 3micron, Estimated 1 micron</p> <p>Flatness: Better than 0.1 mm over 10 cm (Measured with Granite Planometer)</p>
28-02-2002	<p>Box sent for Surface Treatment</p> <p>Firm: Galvanica Italia</p> <p>Optical Surface Properties:</p> <p>Alfa Solar: 0.604</p> <p>R Solar: 0.396</p> <p>Epsilon IR: 0.172</p> <p>R-IR: 0.828</p>

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17-03-2002	Box back in Institute
	<p>Electrical-Integration Activities</p>
22-10-2001	Mother-Board S/N 01,02 and 03 at IFSI (for the 3 instruments)
2-11-2001	Cabling Mother Board–Front Wall Connectors Finished
5-11-2001	<p>1st Set of Boards: Acceptance Tests at CGS Milan</p> <p>CPU S/N 03: PACS Configuration (usable also for SPIRE)</p> <p>I/F Board S/N 01: HIFI Configuration (usable also for SPIRE)</p>
12-11-2001	<p>Boards at IFSI: Electrical Tests Started and SW Tests Started.</p> <p style="text-align: center;">For SPIRE Boards Test Reports See:</p> <p>CPU Board S/N 05 Test Report (DPU-RP-CGS-026 Issue 1)</p> <p>I/F Board S/N 05 Test Report (DPU-RP-CGS-032 Issue 1)</p> <p>DC/DC Converter Board S/N 03 Test Report (SPIRE) (DPU-RP-CGS-031 Issue 1)</p> <p>Mother-Board S/N 05 Test Report (DPU-RP-CGS-011 Issue 1)</p> <p>DPU Basic SW Test Report (DPU-RP-CGS-030 Issue 1)</p> <p>DPU OBS Test Report (SPIRE-IFS-REP-001393 Issue 1)</p>
21-2-2002	<p style="text-align: center;">Boards Weight:</p> <p>Motherboard with Connectors: 524 g</p> <p>CPU: 480 g</p>

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	I/F : 310 g DC/DC Board: 600 g (Delivered on 19-05-2002)
	<p style="text-align: center;">ANALOGUE CHANNELS:</p> TEMP Monitor: 2,79 ; +5V Monitor: 4,16 V +15V Monitor: 4,18 V - 15 V Monitor: 4.11 V
29-03-2002	Received from CGS the Boot Programme EPROMs
15-04-2002	Redundant Connectors Location Holes on the Box closed with glued Al Foil As per mail of Laurent Trougnou to M. von Berg of 12-04-2002
15-05-2002	SPIRE SS simulators (IFSI): 1 out of 3 boards tested and working
19-05-2002	Received from CGS DC/DC Converter S/N 03 Integration of all boards inside the Box Power: < 0,4 A @ 28 V (11,2 W) SW Tests continued
20-05-2002	Bus+ and Bus – wires inverted both on DPU and on triax-9-ways connector
22-05-2002	Integration tests DPU DRCU Simulator: OK
29-05-2002	Full AVM weight in delivery conditions: 4799 g
30-05-2002	2 nd subsystem simulator board tested and working
11-06-2002	Continuity checks on connectors pins
11-06-2002	Bonding checks

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2.1 CONTINUITY CHECKS ON CONNECTORS PINS

In the following table the measurements of the relevant pins with respect to GND and to the circuital connected pins are reported.

For resistance measurements the PROTEK 506 Digital Multimeter was used.

For capacitance measurements the Wayne Kerr Automatic LCR Meter 4250 was used.

NOTE: the column 1 pin is connected to the instrument COMMON.

2.1.1 Connector JO1		Resistance Measured	Resistance Nominal	Passed
Pin	Pin			
2	7	0	0	OK
2	GND	> 10 MOHM	> 1 MOHM	OK
2	GND	7.34 nF	< 10 nF	OK
4	9	0	0	OK
4	GND	> 10 MOHM	> 1 MOHM	OK
4	GND	7.6 nF	< 10 nF	OK



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2	4	24.3	> 20 KOHM	OK
2.1.2 Connector JO2		Resistance Measured	Resistance Nominal	Passed
Pin	Pin	NA FOR AVM		
2	7	NA FOR AVM		
2	GND	NA FOR AVM		
2	GND	NA FOR AVM		
4	9	NA FOR AVM		
4	9	NA FOR AVM		
4	GND	NA FOR AVM		
2	4	NA FOR AVM		
2.1.3 Connector JO3		Resistance Measured	Resistance Nominal	Passed
Pin	Pin			
2	GND	> 10 MOHM	> 1 MOHM	OK
6	GND	> 10 MOHM	> 1 MOHM	OK
2	6	2.6 OHM	> 0 OHM	OK



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2.1.4 Connector JO4		Resistance Measured	Resistance Nominal	Passed
Pin	Pin			
2	GND	> 10 MOHM	> 1 MOHM	OK
6	GND	> 10 MOHM	> 1 MOHM	OK
2	6	2.6 OHM	> 0 OHM	OK
2.1.5 Connector JO5		Resistance Measured	Resistance Nominal	Passed
Pin	Pin			
2	GND	NA FOR AVM		
6	GND	NA FOR AVM		
2	6	NA FOR AVM		
2.1.6 Connector JO6		Resistance Measured	Resistance Nominal	Passed
Pin	Pin			
2	GND	NA FOR AVM		
6	GND	NA FOR AVM		
2	6	NA FOR AVM		



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2.1.7 Connector JO7		Resistance Measured	Resistance Nominal	Passed
Pin	Pin			
1	GND	0	0	OK
2	GND	2 MOHM	> 10 KOHM	OK
3	GND	1.85 MOHM	> 10 KOHM	OK
4	GND	10.38 KOHM	> 10 KOHM	OK
8	GND	7.46 KOHM	> 7 KOHM	OK
10	GND	100 KOHM	> 99KOHM	OK
11	GND	7.4 KOHM	> 7 KOHM	OK
14	GND	0	0	OK
15	GND	39.5 KOHM	> 10 KOHM	OK
16	GND	268.8 KOHM	> 10 KOHM	OK
17	GND	10.34 KOHM	> 10 KOHM	OK
21	GND	7.42 KOHM	> 7 KOHM	OK
22	GND	100 KOHM	> 10 KOHM	OK
24	GND	7.38 KOHM	> 10 KOHM	OK
2	15	> 10 MOHM	> 20 KOHM	OK
3	16	> 10 MOHM	> 20 KOHM	OK
4	17	20.66 KOHM	> 20 KOHM	OK
8	21	14.8 KOHM	> 14 KOHM	OK
10	22	200 KOHM	> 14 KOHM	OK



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11	24	14.7 KOHM	> 14 KOHM	OK
2.1.8 Connector JO8		Resistance Measured	Resistance Nominal	Passed
Pin	Pin			
1	GND	0	0	OK
2	GND	1.98 MOHM	> 10 KOHM	OK
3	GND	1.93 MOHM	> 10 KOHM	OK
4	GND	10.38 KOHM	> 10 KOHM	OK
8	GND	7.46 KOHM	> 7 KOHM	OK
10	GND	99.8 KOHM	> 99KOHM	OK
11	GND	7.42 KOHM	> 7 KOHM	OK
14	GND	0	0	OK
15	GND	1.9 MOHM	> 10 KOHM	OK
16	GND	1.89 MOHM	> 10 KOHM	OK
17	GND	10.34 KOHM	> 10 KOHM	OK
21	GND	7.44 KOHM	> 7 KOHM	OK
22	GND	100.2 KOHM	> 10 KOHM	OK
24	GND	7.4 KOHM	> 10 KOHM	OK
2	15	> 10 MOHM	> 20 KOHM	OK
3	16	> 10 MOHM	> 20 KOHM	OK
4	17	20.64 KOHM	> 20 KOHM	OK



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8	21	14.82 KOHM	> 14 KOHM	OK
10	22	200 KOHM	> 14 KOHM	OK
11	24	14.74 KOHM	> 14 KOHM	OK
2.1.9 Connector JO9				
Pin		Resistance Measured	Resistance Nominal	Passed
Pin	Pin			
1	GND	0	0	OK
2	GND	2 MOHM	> 10 KOHM	OK
3	GND	1.95 MOHM	> 10 KOHM	OK
4	GND	10.9 KOHM	> 10 KOHM	OK
8	GND	7.4 KOHM	> 7 KOHM	OK
10	GND	100.6 KOHM	> 99KOHM	OK
11	GND	7.4 KOHM	> 7 KOHM	OK
14	GND	0	0	OK
15	GND	2 MOHM	> 10 KOHM	OK
16	GND	1.9 MOHM	> 10 KOHM	OK
17	GND	10.38 KOHM	> 10 KOHM	OK
21	GND	7.4 KOHM	> 7 KOHM	OK
22	GND	100 KOHM	> 10 KOHM	OK
24	GND	7.4 KOHM	> 10 KOHM	OK
2	15	> 10 MOHM	> 20 KOHM	OK



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3	16	> 10 MOHM	> 20 KOHM	OK
4	17	21.18 KOHM	> 20 KOHM	OK
8	21	14.72 KOHM	> 14 KOHM	OK
10	22	200.6 KOHM	> 14 KOHM	OK
11	24	14.72 KOHM	> 14 KOHM	OK
2.1.10 Connector J10		Resistance Measured	Resistance Nominal	Passed
Pin	Pin			
1	GND	NA FOR AVM		
2	GND	NA FOR AVM		
3	GND	NA FOR AVM		
4	GND	NA FOR AVM		
8	GND	NA FOR AVM		
9	GND	NA FOR AVM		
10	GND	NA FOR AVM		
11	GND	NA FOR AVM		
14	GND	NA FOR AVM		
15	GND	NA FOR AVM		
16	GND	NA FOR AVM		
17	GND	NA FOR AVM		



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21	GND	NA FOR AVM		
22	GND	NA FOR AVM		
24	GND	NA FOR AVM		
2	15	NA FOR AVM		
3	16	NA FOR AVM		
4	17	NA FOR AVM		
8	21	NA FOR AVM		
10	22	NA FOR AVM		
11	24	NA FOR AVM		
2.1.11 Connector J11		Resistance Measured	Resistance Nominal	Passed
Pin	Pin			
1	GND	NA FOR AVM		
2	GND	NA FOR AVM		
3	GND	NA FOR AVM		
4	GND	NA FOR AVM		
8	GND	NA FOR AVM		
10	GND	NA FOR AVM		
11	GND	NA FOR AVM		
14	GND	NA FOR AVM		
15	GND	NA FOR AVM		



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16	GND	NA FOR AVM		
17	GND	NA FOR AVM		
21	GND	NA FOR AVM		
22	GND	NA FOR AVM		
24	GND	NA FOR AVM		
2	15	NA FOR AVM		
3	16	NA FOR AVM		
4	17	NA FOR AVM		
8	21	NA FOR AVM		
10	22	NA FOR AVM		
11	24	NA FOR AVM		
2.1.12 Connector J12		Resistance Measured	Resistance Nominal	Passed
Pin	Pin			
1	GND	NA FOR AVM		
2	GND	NA FOR AVM		
3	GND	NA FOR AVM		
4	GND	NA FOR AVM		
8	GND	NA FOR AVM		
10	GND	NA FOR AVM		
11	GND	NA FOR AVM		

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14	GND	NA FOR AVM		
15	GND	NA FOR AVM		
16	GND	NA FOR AVM		
17	GND	NA FOR AVM		
21	GND	NA FOR AVM		
22	GND	NA FOR AVM		
24	GND	NA FOR AVM		
2	15	NA FOR AVM		
3	16	NA FOR AVM		
4	17	NA FOR AVM		
8	21	NA FOR AVM		
10	22	NA FOR AVM		
11	24	NA FOR AVM		

2.2 BONDING CHECKS

In the following table the measurements of the resistance between the relevant parts of the box/connectors and the bonding lug are reported.

The measurements were carried out by means of the instrument CROPICO Digital Ohmmeter –D05.

2.2.1 Measurements between adjacent faces of the equipment chassis



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BOX PART1	BOX PART2	Measured Value (mOHM)	Maximum Value (mOHM)	PASSED
Base-plate	Front Wall	0.56	2.5	OK
Base-plate	Top	0.33	2.5	OK
Base-plate	Back Wall	0.18	2.5	OK
Front Wall	Top	0.32	2.5	OK
Back Wall	Top	0.35	2.5	OK

2.2.2 Measurements between bonding lug and underside of the mounting feet

POINT 1	POINT 2	Measured Value (mOHM)	Maximum Value (mOHM)	PASSED
Bonding lug	Ref foot (say 1)	0.59	2.5	OK
Bonding lug	Foot (say 2)	0.59	2.5	OK
Bonding lug	Foot (say 3)	0.59	2.5	OK
Bonding lug	Foot (say 4)	0.59	2.5	OK

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Bonding lug	Foot (say 5)	0.59	2.5	OK
Bonding lug	Foot (say 6)	0.59	2.5	OK

The tests between the 6 mounting feet and the bonding lug give the same result with both measuring polarities (the box bottom is made out of a unique slab of Al alloy), feet 1-3 on one side, feet 4-6 on the opposite side.

2.2.3 Measurements between instrument star point and bonding lug

POINT 1	POINT 2	Measured Value (mOHM)	Maximum Value (mOHM)	PASSED
Bonding lug	Box Star Point	3.47	5.0	OK

2.2.4 Measurements between any shield ground and chassis

POINT 1	CONNECTOR Pin	Measured Value (mOHM)	Maximum Value (mOHM)	PASSED
Screwlock Assy	J07 Pin 1	3.5	TBD	OK



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Screwlock Assy	J07 Pin 14	3.5	TBD	OK
Screwlock Assy	J08 Pin 1	3.1	TBD	OK
Screwlock Assy	J08 Pin 14	3.3	TBD	OK
Screwlock Assy	J09 Pin 1	2.8	TBD	OK
Screwlock Assy	J09 Pin 14	2.8	TBD	OK
Screwlock Assy	J10 Pin 1	NA FOR AVM		
Screwlock Assy	J10 Pin 14	NA FOR AVM		
Screwlock Assy	J11 Pin 1	NA FOR AVM		
Screwlock Assy	J11 Pin 14	NA FOR AVM		
Screwlock Assy	J12 Pin 1	NA FOR AVM		
Screwlock Assy	J12 Pin 14	NA FOR AVM		

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2.2.5 Measurements between bonding lug and connectors screw-lock assembly

POINT 1	CONNECTORS SCREW-LOCK ASSEMBLY	Measured Value (mOHM)	Maximum Value (mOHM)	PASSED
Bonding lug	J01	1.04	TBD	OK
Bonding lug	J02	NA FOR AVM		
Bonding lug	J03	1.27	TBD	OK
Bonding lug	J04	1.07	TBD	OK
Bonding lug	J05	NA FOR AVM		
Bonding lug	J06	NA FOR AVM		
Bonding lug	J07	0.93	TBD	OK
Bonding lug	J08	1.19	TBD	OK
Bonding lug	J09	0.71	TBD	OK
Bonding lug	J10	NA FOR AVM		
Bonding lug	J11	NA FOR AVM		
Bonding lug	J12	NA FOR AVM		

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10-06-2002	CGS at IFSI to support the SW integration with SCOS 2000 and the CDMS simulator
19-07-2002	Electrical Tests on 1553B
23-07-2002	Missing electrical tests on 1553B
24-07-2002	OBS testing
17-01-2003	AVM Acceptance Tests
23-01-2003	Delivery to RAL