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|  | IFSI<br>CNR | <b>Herschel SPIRE<br/>DPU Configuration<br/>Item Data List</b> | Ref.: SPIRE-IFS-DOC-001485<br>Issue: Issue 1.8<br>Date: 11/4/2003 |
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Herschel  
 SPIRE DPU Configuration Item  
 Data List

Document Ref: SPIRE-IFS-DOC-001485

**Issue: 1.8**

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Date: 11 April 2003



IFSI  
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# Herschel SPIRE DPU Configuration Item Data List

Ref.: SPIRE-IFS-DOC-001485

Issue: Issue 1.8

Date: 11/4/2003

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## Document Status Sheet

| <b>Document Title:</b> SPIRE DPU Configuration Item Data List |                 |             |                            |
|---|-----------------|-------------|----------------------------|
| <b>Issue</b>  | <b>Revision</b> | <b>Date</b> | <b>Reason for Change</b>   |
| Issue 1   | 0               | 23/11/2001  | First Issue                |
|   | 1               | 11/02/2002  | Updating for IBDR          |
|   | 2               | 11/02/2002  | More documents added       |
|   | 3               | 23/7/2002   | More documents added       |
|   | 4               | 10/10/2002  | Changed Title and updated. |
|   | 5               | 15/01/2003  | Updated                    |
|   | 6               | 13/03/2003  | Updated                    |
|   | 7               | 24/03/2003  | Updated for IHDR           |
|   | 8               | 11/04/2003  | Updated for IHDR           |

## Document Change Record


| <b>Document Title:</b> SPIRE DPU Configuration Item Data List |   |
|---|---|
| <b>Document Reference Number:</b> SPIRE-IFS-DOC-001485        |   |
| <b>Document Issue/Revision Number:</b> Issue 1.7              |   |
| <b>Section</b>  | <b>Reason For Change</b>                                |
| All   | <b>Issue 1.0</b>  |
|   | <b>Issue 1.1</b>  |
|   | Added CGS Test Procedures                               |
|   | <b>Issue 1.2</b>  |
|   | Added Derating and Worst case Analysis                  |
|   | Added DPU/ICU Spacecraft Interface Acceptance Test Plan |
|   | <b>Issue 1.3</b>  |
|   | Added a sequence of numbers                             |
|   | Added Test Reports                                      |
|   | Added 1553B Test Report                                 |
|   | <b>Issue 1.4</b>  |

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|   |  |
|---|--|
|   | Changed Title and content like the old issue of document "SPIRE DPU Configuration Status List" Issue 1.3 |
|   | Inserted distinct design pages.  |
|   | <b>Issue 1.5</b>   |
| 5 | Added Virtual Machine Document # 11  |
| 5 | Updated document # 9 Issue   |
|   | <b>Issue 1.6</b>   |
| 3 | Added DPU/ICU Mass Budget  |
| 3 | Added DPU/ICU Power Budget   |
| 3 | Updated document # 8 and 14  |
|   | <b>Issue 1.7</b>   |
|   | Removed documents # 40 and 41  |
|   | <b>Issue 1.8</b>   |
| 3 | Added documents # 33, 34, 35, 36, 37, 45, 46   |
| 5 | Updated document #12   |

## Acronyms

|      |                                     |
|------|-------------------------------------|
| AD   | Architectural Design                |
| ATP  | Acceptance Test Plan                |
| AVM  | Avionic Model                       |
| BSW  | Basic SW                            |
| CGS  | Carlo Gavazzi Space                 |
| CIDL | Configuration Item Data List        |
| CSL  | Configuration Status List           |
| CNR  | Consiglio Nazionale delle Ricerche  |
| CPP  | Coordinated Parts Procurement       |
| CPP  | Coordinated Parts Procurement Board |
| CPU  | Control Processing Unit             |
| CDMS | Central Data Management System      |
| CDMU | Central Data Management Unit        |
| CQM  | Cryogenic Qualification Model       |
| DCU  | Detector Control Unit               |

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|        |   |
|--------|---|
| DDD    | Detailed Design Document                            |
| DPU    | Digital Processing Unit                             |
| EEPROM | Electrically Erasable Programmable Read Only Memory |
| EMC    | Electro Magnetic Compatibility                      |
| EMI    | Electro Magnetic Interference                       |
| ESA    | European Space Agency                               |
| FIRST  | Far InfraRed and Submillimeter Telescope            |
| HK     | HouseKeeping  |
| HW     | HardWare  |
| IBDR   | Instrument Baseline Design Review                   |
| ICD    | Interface Control Document                          |
| ICDR   | Instrument Critical Design Review                   |
| ICU    | Instrument Control Unit                             |
| IHDR   | Instrument Hardware Design Review                   |
| IFSI   | Istituto di Fisica dello Spazio Interplanetario     |
| ISVR   | Instrument Science Verification Review              |
| MCU    | Mechanism Control Unit                              |
| NA     | Not Applicable                                      |
| OBS    | On-Board Software                                   |
| PA     | Product Assurance                                   |
| PDU    | Power Distribution Unit                             |
| PROM   | Programmable Read Only Memory                       |
| S/C    | SpaceCraft  |
| SCC    | SpaceCraft Components                               |
| SCU    | S..... Control Unit                                 |
| SEU    | Single Event Upset                                  |
| SPIRE  | Spectral and Photometric Imaging Receiver           |
| S/S    | SubSystem   |
| SVM    | Service Module                                      |
| SW     | Software  |
| TBC    | To Be Confirmed                                     |
| TBD    | To Be Defined                                       |

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TBW            To Be Written  
TV             Thermal Vacuum  
WBS           Work Breakdown Structure

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## 1 INTRODUCTION

### 1.1 SCOPE

The purpose of this document is to define a list of documents that describe the DPU and their issue status, in order to establish a configuration control of the design (as design status) and a configuration of the actual manufactured subsystem (as built status).

It has to be noted that in some cases the document is common to the three Herschel satellite instruments (i.e. PACS, HIFI and SPIRE) and in these cases the document is DPU/ICU.... instead of simply DPU.....

## 2 DOCUMENTS

### 2.1 APPLICABLE DOCUMENTS

| AD | Name   |
|----|--|
| 01 | Herschel/Planck Instrument Interface Document, part A                  |
| 02 | Herschel/Planck Instrument Interface Document, part B-Instrument SPIRE |
| 04 | SPIRE Instrument Specification   |
| 07 | DPU/ICU P.A.Plan   |
| 10 | DPU/ICU OBS PA Plan  |

### 2.2 Reference documents

| Reference Document | Name |
|--------------------|------|
|                    |      |

|   |                     |  |  |
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|  | <b>IFSI<br/>CNR</b> | <b>Herschel SPIRE<br/>DPU Configuration<br/>Item Data List</b> | <b>Ref.:</b> SPIRE-IFS-DOC-001485<br><b>Issue:</b> Issue 1.8<br><b>Date:</b> 11/4/2003 |
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### 3 List of Hardware documents

|       |  |  |
|-------|--|--|
| 1     | SPIRE DPU Subsystem Specification Document                 | SPIRE-IFS-PRJ-000462 Issue 1.2                       |
| 2     | DPU/ICU Development Plan                                   | SPIRE-IFS-PRJ-000469 Issue 1.4                       |
| 3     | SPIRE DPU HW User Manual                                   | SPIRE-IFS-PRJ-001390 Issue 1                         |
| 4     | SPIRE DPU AIV and Test Plan                                | SPIRE-IFS-DOC-001028                                 |
| 5     | SPIRE-DPU Handling, Packing, Storage, Shipping Procedures  | SPIRE-IFS-PRJ-001386 Issue 1                         |
| 6     | DPU/ICU Switch-On Procedure                                | CNR.IFSI.2001TR01 Issue 1                            |
| 8     | DPU/ICU Derating and Worst Case Analysis                   | CNR.IFSI.2001TR06 Issue 1.3                          |
| 10    | DPU/ICU PA Plan  | IFSI/ICU/PL/1999-001 Issue 1<br>SPIRE-IFS-PRJ-000399 |
| 11    | DPU/ICU ESD Control procedure                              | IFSI/ICU/PR/2001-001 Issue 1                         |
| 12    | SPIRE DPU Configuration Status List                        | SPIRE-IFS-DOC-001033 Issue 1.4                       |
| 13    | SPIRE AVM Log-Book   | SPIRE-IFS-PRJ-001387 Issue 1                         |
| 14    | SPIRE DPU AVM Design Description                           | SPIRE-IFS-PRJ-001389 Issue 2                         |
| 15    | SPIRE DPU HW User Manual                                   | SPIRE-IFS-PRJ-001390 Issue 1                         |
| 16    | SPIRE-DPU-IF-CNTRL-Drawing                                 | SPIRE_DPUBox5.pdf                                    |
| 17    | SPIRE DPU Interface Control Document                       | SPIRE-IFS-PRJ-000650                                 |
| 18    | SPIRE DPU Declared Components, Material and Processes List | SPIRE-IFS-DOC-001031 Issue 1.1                       |
| 19    | CPU Board Specification                                    | DPU-SP-CGS-001 Issue 1                               |
| 20    | I/F Board Specification                                    | DPU-SP-CGS-002 Issue 1                               |
| 21    | Mother-Board Specification                                 | DPU-SP-CGS-005 Issue 1                               |
| 22    | DC/DC Board Specification                                  | DPU-SP-CGS-004 Issue 1                               |
| 23    | DPU/ICU Spacecraft Interface Acceptance Test Plan          | CNR.IFSI.2001TR04 Draft 0.1                          |
| 24    | CPU Board Design   | Herschel CPU Main EM1.DSN                            |
| 24.1  | CPU Board Design Electrical Assembly page 1/2              | DPU-EM-110.00-0                                      |
| 24.2  | CPU Board Design Electrical Assembly page 2/2              | DPU-EM-110.00-0                                      |
| 24.3  | CPU Board General Block Diagram page 1/8                   | DPU-EM-110.02-0                                      |
| 24.4  | CPU Board Boot Loader & Clocks Generator page 2/8          | DPU-EM-110.02-0                                      |
| 24.5  | CPU Board Control Block page 3/8                           | DPU-EM-110.02-0                                      |
| 24.6  | CPU Board Data Memory page 4/8                             | DPU-EM-110.02-0                                      |
| 24.7  | CPU Board DM Mezzanine I/F page 5/8                        | DPU-EM-110.02-0                                      |
| 24.8  | CPU Board DSP_PGA page 6/8                                 | DPU-EM-110.02-0                                      |
| 24.9  | CPU Board PM Mezzanine page 7/8                            | DPU-EM-110.02-0                                      |
| 24.10 | CPU Board Program Memory page 8/8                          | DPU-EM-110.02-0                                      |
| 25    | CPU Board Piggy-Back Design                                | Herschel CPU DM PIGGY EM1.DSN                        |
| 25.1  | CPU Piggy-Back Electrical Assembly page 1/2                | DPU-EM-120.00-0                                      |
| 25.2  | CPU Piggy-Back Electrical Assembly page 2/2                | DPU-EM-120.00-0                                      |
| 25.3  | CPU Piggy-Back Electrical Block Diagram page 1/3           | DPU-EM-120.02-0                                      |
| 25.4  | CPU Piggy-Back Electrical EEPROM Block page 2/3            | DPU-EM-120.02-0                                      |
| 25.5  | CPU Piggy-Back SMCS332 (NA for SPIRE) page 3/3             | DPU-EM-120.02-0                                      |
| 26    | Interface Board Design                                     | PSI-E000_0.00.DSN                                    |
| 26.1  | Interface Board Electrical Assembly page 1/2               | DPU-EM-210.00-0                                      |



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| 26.2  | Interface Board Electrical Assembly page 2/2            | DPU-EM-210.00-0              |
| 26.3  | Interface Board Electrical Block Diagram page 1/8       | DPU-EM-210.02-0              |
| 26.4  | Interface Board IEEE 1553 Interface page 2/8            | DPU-EM-210.02-0              |
| 26.5  | Interface Board Analogue Inputs page 3/8                | DPU-EM-210.02-0              |
| 26.6  | Interface Board Control Logic page 4/8                  | DPU-EM-210.02-0              |
| 26.7  | Interface Board FSL,LSL Interfaces page 5/8             | DPU-EM-210.02-0              |
| 26.8  | Interface Board FSL Channel 0,1 FIFOs page 6/8          | DPU-EM-210.02-0              |
| 26.9  | Interface Board FSL Channel 2,3 FIFOs page 7/8          | DPU-EM-210.02-0              |
| 26.10 | Interface Board Power and Spares page 8/8               | DPU-EM-210.02-0              |
| 27    | DC/DC Converter Board Design                            | DC DC FIRST DESIGN1 EM.DSN   |
| 27.1  | DC/DC Converter Board Electrical Assembly page 1/2      | DPU-EM-310.00-0              |
| 27.2  | DC/DC Converter Board Electrical Assembly page 2/2      | DPU-EM-310.00-0              |
| 27.3  | DC/DC Converter Board Electrical Block Diagram page 1/6 | PDU-EM-310.02-0              |
| 27.4  | DC/DC Converter Board Electrical Drawing page 2/6       | PDU-EM-310.02-0              |
| 27.5  | DC/DC Converter Board Electrical Drawing page 3/6       | PDU-EM-310.02-0              |
| 27.6  | DC/DC Converter Board Electrical Drawing page 4/6       | PDU-EM-310.02-0              |
| 27.7  | DC/DC Converter Board Electrical Drawing page 5/6       | PDU-EM-310.02-0              |
| 27.8  | DC/DC Converter Board Electrical Drawing page 6/6       | PDU-EM-310.02-0              |
| 28    | Motherboard Design                                      | MOTHERBOARD_2_D.DSN          |
| 28.1  | Motherboard Electrical Assembly page 1/1                | DPU-EM-410.00-0              |
| 28.2  | Motherboard Electrical Drawing page 1/3                 | DPU-EM-410.02-0              |
| 28.3  | Motherboard Electrical Drawing page 2/3                 | DPU-EM-410.02-0              |
| 28.4  | Motherboard Electrical Drawing page 3/3                 | DPU-EM-410.02-0              |
| 29    | CPU BOARD Test Procedure                                | DPU-PR-CGS-001 Issue 2       |
| 30    | I/F BOARD Test Procedure                                | DPU-PR-CGS-002 Issue 1       |
| 31    | DC/DC BOARD Test Procedure                              | DPU-PR-CGS-003 Issue 1       |
| 32    | MOTHER BOARD Test Procedure                             | DPU-PR-CGS-004 Issue 1       |
| 33    | SPIRE DPU Physical Properties Test Procedure            | SPIRE-IFS-PRC-001589 Issue 1 |
| 34    | SPIRE DPU Electrical Test Procedure                     | SPIRE-IFS-PRC-001590 Issue 1 |
| 35    | DPU EMC Test Procedure                                  | CNR.IFSI.2003TR01 Issue 1    |
| 36    | DPU EMC Test Procedure                                  | CNR.IFSI.2003TR01 Issue 1    |
| 37    | DPU-ICU Vibration Test Procedure                        | CNR.IFSI.2002TR01 Issue 1.1  |
| 38    | CPU Board S/N 05 Test Report                            | DPU-RP-CGS-026 Issue 1       |
| 39    | I/F Board S/N 05 Test Report                            | DPU-RP-CGS-032 Issue 1       |
| 40    | DC/DC Converter S/N 03 Board Test Report                | DPU-RP-CGS-031 Issue 1       |
| 41    | Mother- Board S/N 05 Test Report                        | DPU-RP-CGS-011 Issue 1       |
| 42    | SPIRE 1553B Test Report                                 | SPIRE-IFS-REP-001385 Issue 1 |
| 43    | SPIRE AVM DPU Test Summary Report                       | SPIRE-IFS-REP-001394 Issue 1 |
| 44    | SPIRE DPU Design Verification Matrix                    | SPIRE-IFS-PRJ-001593         |
| 45    | SPIRE DPU AVM Verification Control Matrix               | SPIRE-IFS-PRJ-001596         |
| 46    | SPIRE-DPU-IF-CNTRL-Drawing                              | SPIRE_DPUBox5.pdf            |

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#### 4 List of Management Documents

|                                |                      |         |
|--------------------------------|----------------------|---------|
| SPIRE DPU Communication Matrix | SPIRE-IFS-DOC-001032 | Issue 1 |
|--------------------------------|----------------------|---------|

#### 5 List of Software documents

|    |  |                                |
|----|--|--------------------------------|
| 1  | DPU-BSW SOFTWARE REQUIREMENTS DOCUMENT | DPU-SQ-CGS-001 Issue 2         |
| 2  | DPU-BSW SOFTWARE A.D. DOCUMENT         | DPU-AD-CGS-001 Issue 1         |
| 3  | DPU SW VV Plan/Acceptance Test         | DPU-PL-CGS-002 Issue 1         |
| 4  | DPU Basic SW Test Report               | DPU-RP-CGS-030 Issue 1         |
| 5  | DPU Basic SW User Manual               | DPU-MA-CGS-003 Issue 1         |
| 6  | SPIRE DPU OBS SSD                      | SPIRE-IFS-PRJ-001036 draft 0.9 |
| 7  | HSO DPU/ICU OBS Product Assurance Plan | IFSI/OBS/PL/2000-001 Issue 1.1 |
| 8  | SPIRE OBS URD                          | SPIRE-IFS-PRJ-000444 Issue 1.1 |
| 9  | SPIRE OBS SVVP/Acceptance Test Plan    | SPIRE-IFS-DOC-001392 Issue 1.1 |
| 10 | SPIRE DPU OBS Test Report (TBW)        | SPIRE-IFS-REP-001393 Issue 1   |
| 11 | SPIRE DPU Virtual Machine              | CNR.IFSI.2003.TR01 Issue 1     |
| 12 | SPIRE DPU OBS Software User Manual     | SPIRE-IFS-PRJ-001391 Draft 0.5 |