

	<b>HERSCHEL EGSE INTEGRATION PLAN</b>	<b>Doc. no. : SRON-U/HIFI/PL/2001-1</b> <b>Issue : Issue 1</b> (= draft 4) <b>Date : 6 November, 2001</b> <b>Page : 1 of 13</b>
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**Title**                     **Herschel EGSE integration plan**

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**Distribution**

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### Document Change Record

Issue	Date	Changed Section	Description of Change
1	Nov 6, 2001		No changes with respect to Draft 4, dated July 1, 2001

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## 1 INTRODUCTION

The purpose of this document is to specify the activities and responsibilities required for the integration of the EGSE-ILT for the three Herschel instruments.

## 2 DOCUMENT REFERENCES

### 2.1 Reference documents

- RD.1. FIRST-PLANCK CDMS interface test-requirements specifications SRON-U-HIFI-SP-2000-5
- RD.2. EGSE-ILT Users Requirements Document FIRST-SPI-DOC-000127

## 3 INTEGRATION FLOW

The Herschel EGSE-ILT consists of the following blocks:

<b>Item</b>	<b>delivered by</b>
SCOS-2000	ESA
SCOS gateway	ESTeC
Test-equipment interface	HIFI
TM-TC router	HIFI
Test control	PACS
CDMS-simulator	SPIRE
OBSM	ESA
MIB editor	ESA

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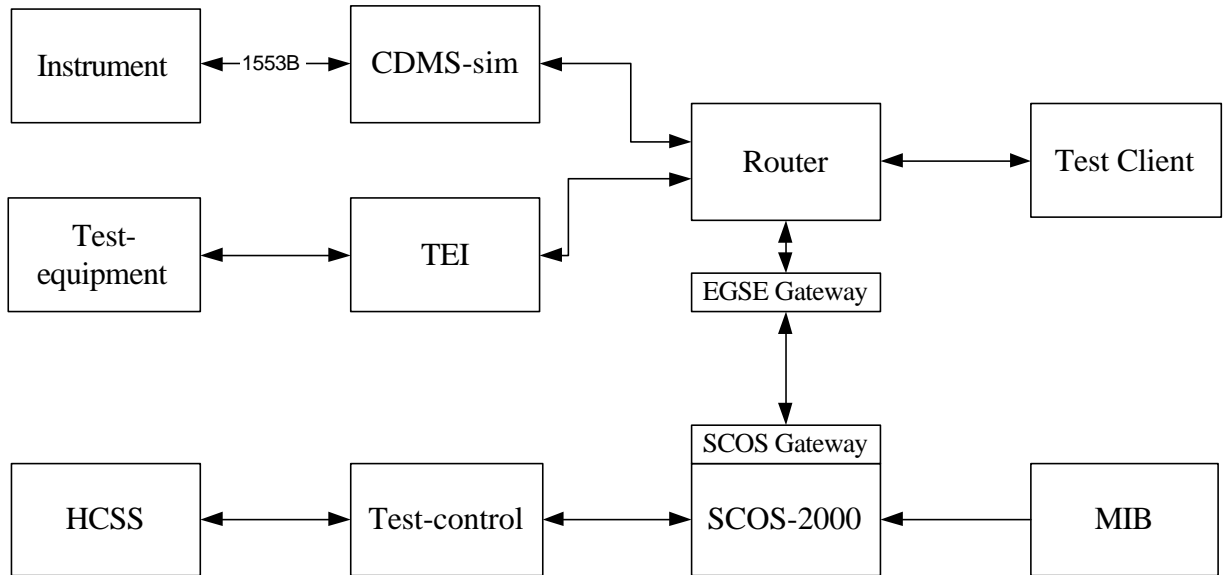


FIG 3-1 Overview of the EGSE-ILT

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### 3.1 Test of the Router

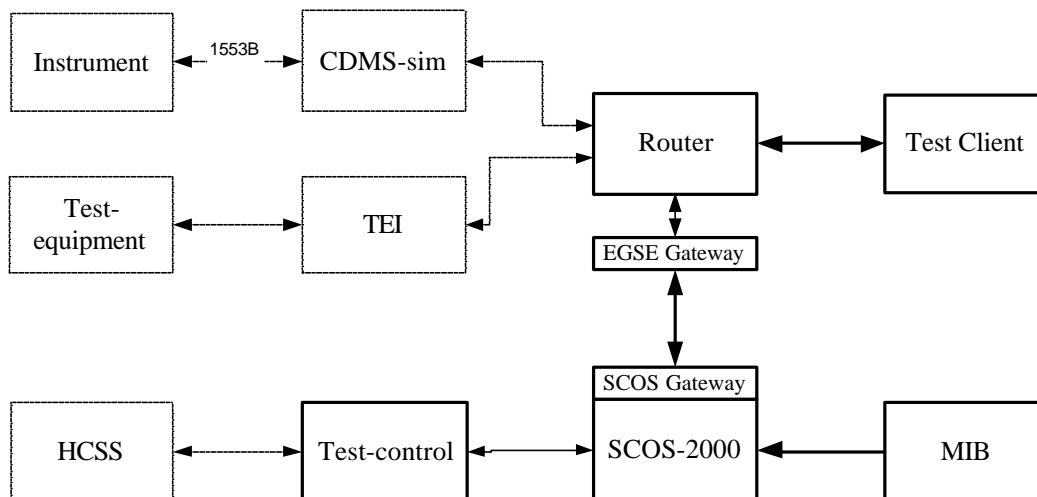


Figure 3.1-1 Router test configuration

#### ***Subsystem under test***

Router

#### ***Functions to be demonstrated:***

- Routing of TM packets from Test Client to SCOS 2000
- Routing of TC packets from SCOS 2000 to Test Client
- Throughput

#### ***Test requisites:***

- Test Client
  - transmitting TM packets with defined content
  - displaying incoming TCs
- SCOS 2000, including SCOS-gateway
- EGSE gateway
- MIB describing the used TM and TC packets
- Test-control (with limited functionality)
- For the performance test one or more test-clients shall be connected, for example to simulate the increased TM-traffic towards the HCSS .

#### ***Test steps:***

1. Connect all sub-systems
2. Import test MIB into SCOS 2000
3. Start TTA-2000
4. Start Router
5. Start EGSE gateway
6. Start SCOS-gateway
7. Configure Router to allow Test Client – SCOS 2000 routing

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8. Configure Test Client to transmit TM packets
9. Verify reception of TM packets with SCOS 2000
10. Verify proper content of TM packets with SCOS 2000
11. Transmit TC packet from SCOS 2000
12. Verify reception of TC packet with TC display of Test Client

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### 3.2 Test of Test-equipment interface

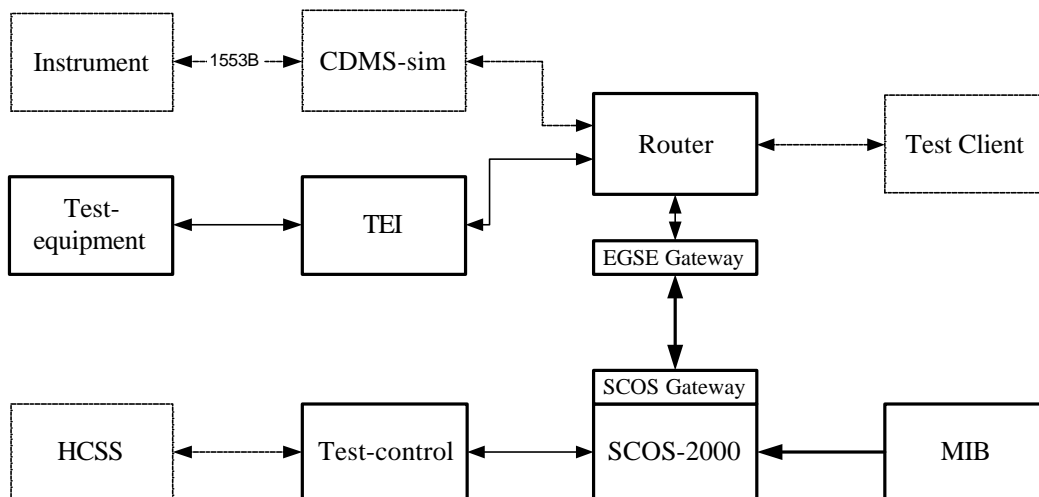


Figure 3.2-1 TEI test configuration

**Subsystems under test:**

- TEI (test equipment interface)

**Functions to be demonstrated:**

- Routing of TM packets from test equipment to SCOS 2000
- Routing of TC packets from SCOS 2000 to test equipment

**Test requisites:**

- Test equipment
  - transmitting TM packets with defined content
  - responding to incoming TCs
- Router
- SCOS 2000 (including TM/TC front-end)
- MIB describing the used TM and TC packets

**Test steps:**

1. Connect all sub-systems
2. Load test MIB into SCOS 2000
3. Configure Router to allow TEI – SCOS 2000 routing
4. Configure test equipment to transmit TM packets
5. Verify reception of TM packets with SCOS 2000
6. Verify proper content of TM packets with SCOS 2000
7. Transmit TC packet from SCOS 2000
8. Verify proper response of test equipment as response to received TC

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***Comments / Questions / Open Issues***

- As the TEI very likely is a proper LabView interface a PC running LabView may be sufficient to as test equipment to support this test.



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### 3.3 Test of the CDMS-simulator

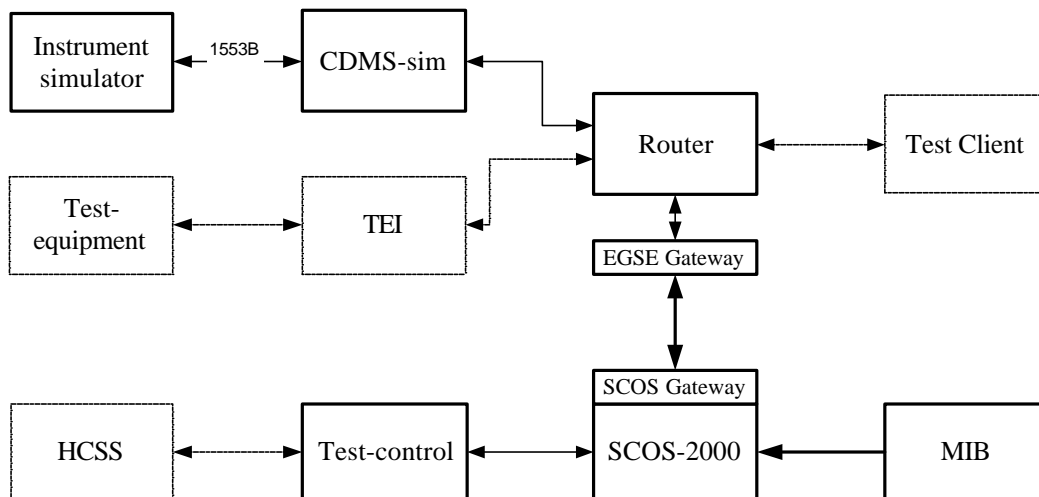


Figure 3.3-1 CDMS-sim test configuration

#### **Subsystems under test:**

- CDMS Simulator

The test-requirements of the CDMS-simulator are described in RD.1 Most of these tests can be carried out without the CDMS-sim connected to the instrument or to SCOS-2000. It is assumed here that the instrument can be simulated adequately by a simulator.

After acceptance of the CDMS-simulator the CDMS-simulator shall be connected to the Router and SCOS-2000.

#### **Functions to be demonstrated:**

- Routing of TM packets from Instrument (Simulator) to SCOS 2000
- Routing of TC packets from SCOS 2000 to Instrument (Simulator)
- Command-interface of CDMS-sim
- Handling of the time packet protocol (TBC)

#### **Test requisites:**

- Instrument Simulator
  - transmitting TM packets with defined content
  - displaying incoming TCs
- Router
- SCOS 2000 (including TM/TC front-end)
- MIB describing the used TM and TC packets

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***Test steps:***

1. Connect all sub-systems
2. Load test MIB into SCOS 2000
3. Configure Router to allow CDMS Simulator – SCOS 2000 routing
4. Configure Instrument Simulator to transmit TM packets
5. Verify reception of TM packets with SCOS 2000
6. Verify proper content of TM packets with SCOS 2000  
These tests will be described in detail in RD.1, section 4.8.
7. Transmit TC packet from SCOS 2000
8. Verify reception of TC packet with TC display of Instrument Simulator  
These tests will be described in detail in RD.1, section 4.8.
9. The CDMS-sim can be configured by means of some commands, that can be issued by SCOS-2000

***Comments / Questions / Open Issues***

- How to test the timing protocol?

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### 3.4 Test of Test-Control

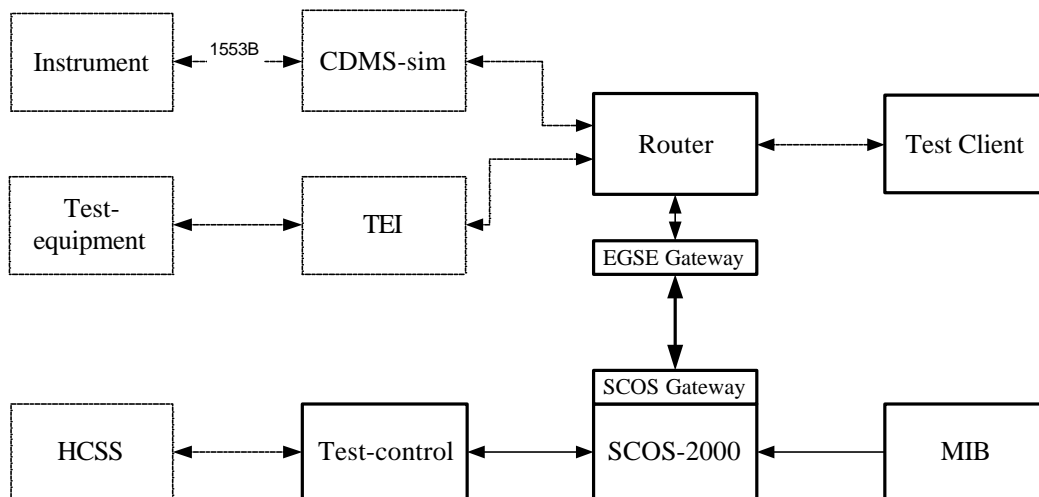


Figure 3.4-1 Test-Control test configuration

#### **Functions to be demonstrated:**

- Retrieving actual values of HK (TM) parameters from SCOS 2000
- Uplinking TC from Test Control
- Test Procedures RD.2 section 3.3.1
- Command Mnemonic Sequences RD.2 section 3.3.2
- Autonomy Procedure RD.2 section 3.3.3

#### **Test requisites:**

- Test Client
  - transmitting TM packets with defined content
  - displaying incoming TCs
- Router
- SCOS 2000 (including TM/TC front-end)
- MIB describing the used TM and TC packets
- Test Procedure to display selected HK parameters

#### **Test steps:**

1. Connect all sub-systems
2. Load test MIB into SCOS 2000
3. Configure Router to allow Test Client – SCOS 2000 routing
4. Configure Test Client to transmit TM packets
5. Verify reception of TM packets with SCOS 2000
6. Verify proper content of TM packets with SCOS 2000
7. Run Test Procedure that periodically displays the values of selected HK parameter and verify their proper values.

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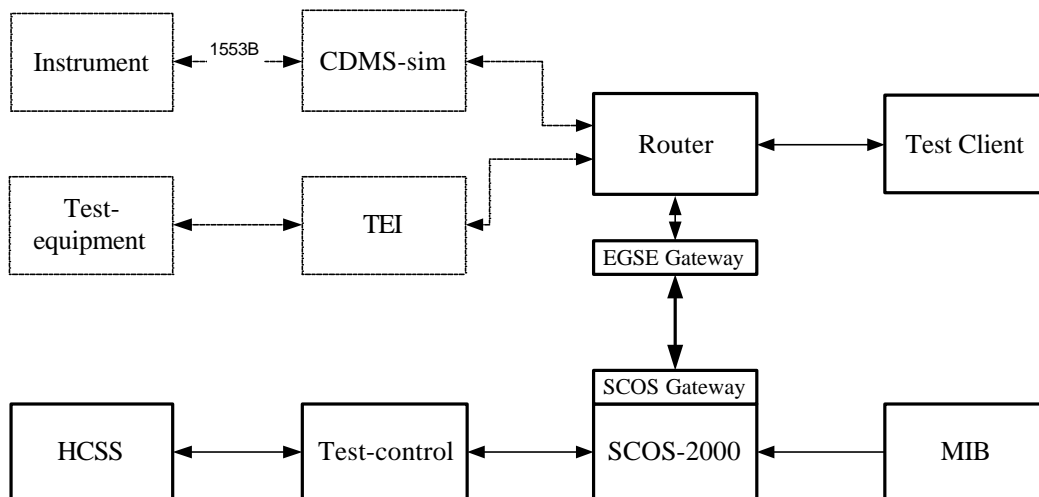
8. Transmit TC packet from Test Control
9. Verify reception of TC packet with TC display of Test Client

***Comments / Questions / Open Issues***

- The Router test and the Test Control Test may share the same Test Client.

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### 3.5 Test-Control and HCSS



**Subsystems under test:**

- HCSS – Test Control Interface

**Functions to be demonstrated:**

- Communication between Test Control and HCSS
- Communication between Test-Control and Test-Client

**Test requisites:**

- Test Control
- HCSS
- Test Procedure to verify proper communication

**Test steps:**

1. Connect all sub-systems
2. Execute Test Procedure
3. Verify proper Test Procedure output

## 4 OPEN ITEM: OBSM