EADS Astrium

Test Report

HERSCHEL

Title: **SPIRE LPU Electrical Integration Test Report**

CI-No: 125200

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Distribution: See Distribution List (last page)

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0 Test Summary

Instrument tested: SPIRE LPU

Model: **FM**
S/N: .....
CI: **112 200** .....

Applied Test procedure:

HP-2-ASED-TP-0169, issue 1

Summary and Conclusion:

The procedure which covers the SVM power interface on connectors P/J41 and P/J42 to the SPIRE LPU has been successfully executed.
The bonding resistance of the LPU box to the panel ground has been improved from initially 21.9 mOhm to 3.7 mOhm by the integration of an additional bond strap (see HP-2-ASED-NC-3728).
The LPU high level pulse commands were not available on the HERSCHEL CCS and therefore PLANCK commands have been used instead without problems (see HP-2-ASED-NC-3703).

Following NCR's had been raised.

HP-2-ASED-NC-3703	SPIRE LPU High Level Pulse commands not executed
HP-2-ASED-NC-3728	SPIRE LPU Ground resistance too high

Open Issues:

none

Issue	Date	Sheet	Description of Change	Release
1	22.10.07		Initial issue	

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1 Scope

This procedure details the general rules and necessary steps to be followed during the electrical integration and test of the Herschel SPIRE Launch Lock Unit on the SVM –Z panel. The LPU is directly mounted to the SPIRE FCU.

This procedure is relevant for the connection of the LPU to the SVM power interface on connectors P/J41 and P/J42. The electrical interface of the LPU to the FCU is covered by a respective instrument procedure (RD4) since it affects an instrument internal interface and is, hence, performed by SPIRE personnel with ASED support.

2 Objective

2.1 General Overview

The purpose of this integration steps is to install and test the relevant electrical interfaces of the SPIRE LPU and to mate the harness connectors to the units. A detailed electrical connection diagram of the SPIRE LPU is given in Fig. 2.1-1 below.

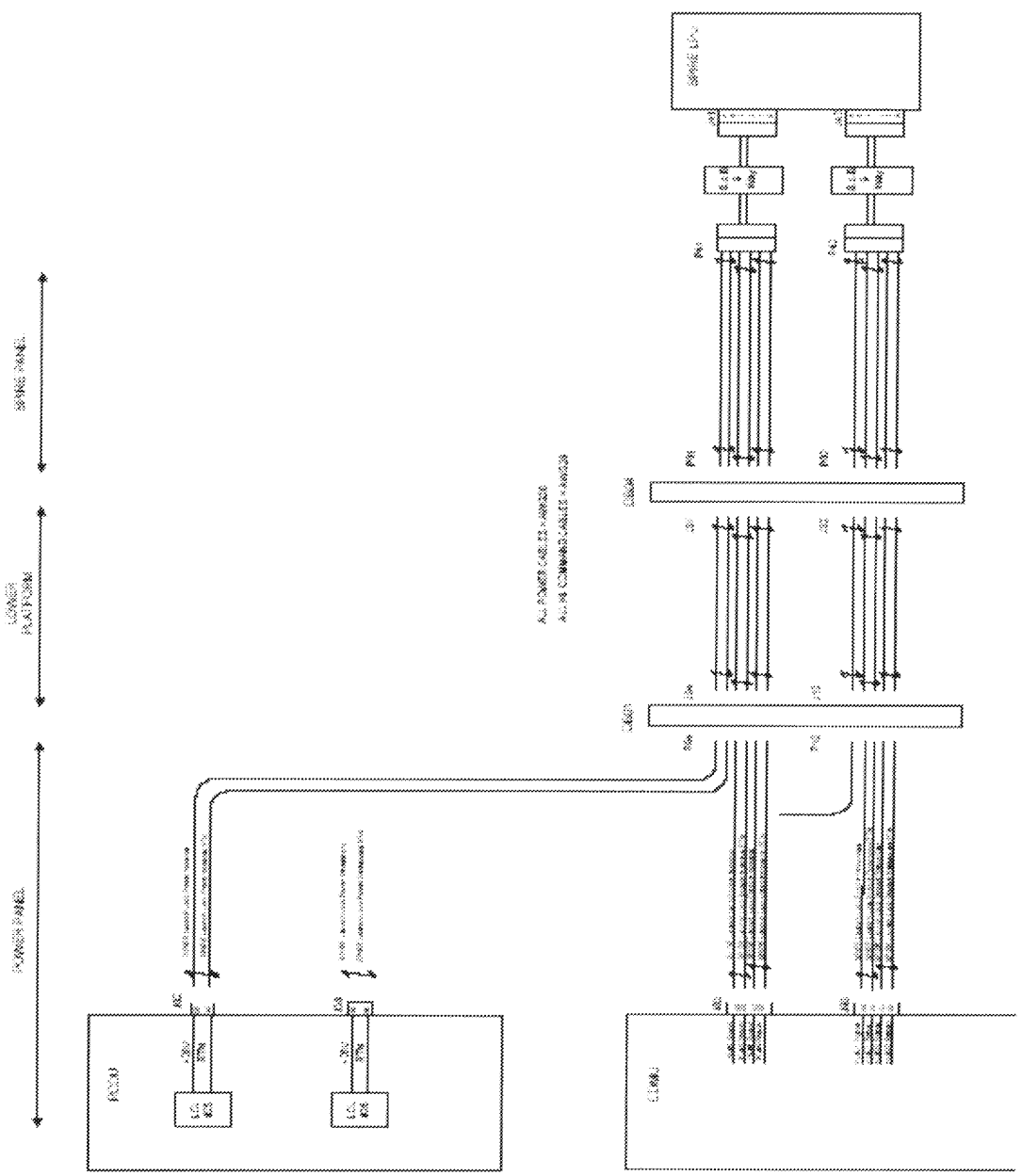


Figure 2.1-1: Electrical Connection Diagram of the Herschel SPIRE LPU

2.2 Test Specimen

The test specimen to be integrated by this procedure is the SPIRE LPU on the HERSCHEL satellite.
The details are listed in following "Test Article List".

Test Article List			
Name	**HSLPU**	**CI Number**	112 200
Serial No.		**Model**	FM
Drawing No.	SPI-MEC-82-DO-01-D	**Change. St.**	Iss. A
Remarks			

3 Documents/Drawings

3.1 Applicable Documents

No.	Document Name	Document Number	Issue/Revision
AD1	PA-Plan	HP-2-ASED-PL-0007	2-1
AD2	SPIRE-ICD	SCI-PT-IIDB/SPIRE-02124	~~3-3~~ 4
AD3	SPIRE Launch Lock Unit – SVM Electrical Integration Specification	H-P-2-ASP-TS-1431	1

3.2 Reference Documents

No.	Document Name	Document Number	Issue/Revision
RD1	SPIRE LPU Electrical Design	LAM.PJT.SPI.SPT.070724_01	1 rev.1
RD2	ESD – Regeln für HERSCHEL PLM und Integrations- Aktivitäten	HP-2-ASED-PR-0062	1
RD3	LPU Mounting Procedure on the SPIRE E-box	LAM.SSP.SPI.PRC.070911_02	1.0

3.3 Other Documents

NA

4 Configuration and Requirements

4.1 PLM Configuration

The SPIRE LPU is mounted to the SPIRE FCU acc. to RD3, the S/C Harness is prepared but not connected.

The S/C must be grounded.

4.2 Test Setup

IDAS-5 Configuration during tests:

IDAS-5 Test Heads are connected via test adapters to the relevant

"Unit under Test" - Connectors. For current measurements (Inrush and Steady-State) a current probe will be used.

The IDAS-Rack must be grounded to the SVM panel ground.

4.2.1 Test Environment

The tests shall be performed in Cl.100 000 Clean Room

4.2.2 ESD constraints

During handling and connection to the SPIRE LPU the ESD precautions acc. to RD2 have to be applied, e.g. personnel must be grounded.

ESD caps shall be installed on the SPIRE FCU as required.

The SVM must be grounded.

4.2.3 QA Requirements

In general the PA Plan shall be followed (see AD1).

Quality Assurance will be a major part of AIT activities in order to ensure that all activities are performed in a controlled manner and documented in accordance with the corresponding requirements.

The main AIT-QA tasks are as follows:

- assurance that activities are performed in accordance with released procedures
- release of hardware for integration/testing

- witnessing of all AIT activities and environmental conditions
- performance of visual inspections
- application of non-conformance reporting system and relevant logbooks
- preparation and performance of KIP's/MIP's/TRP's and PTR's
- to assure that materials/parts/units etc. are traceable
- hazard identification and tracking.

4.2.4 Documentation Requirements

All data, results and possible special events received during this test have to be entered into the integration report

- **Sequence Diary**

  The obtained records shall be marked with

  - date of the test
  - title of the procedure
  - identification number of procedure
  - test article identification number

  Each activity and operation has to be entered in the log sheets.

- **Summary of Deviation**

  - In the event that the specimen exhibits any major failure or deviations from the requirement this procedure shall not be further executed and a NCR shall be raised.
  - Testing shall be continued only upon authorisation of Product Assurance and Project engineering acc. to the NCR decision.

- **Post Test Documentation**

  After performance of the activities the summary sheets must be filled-in.

  A copy of the filled-in summary sheets (see para 6.2 and 6.3) has to be incorporated to the summary report for the integration.

  After end of integration a test report shall be written.

5 Conditions

5.1 Personnel

Responsibility	Name / Organization
Test Manager	none
Test Engineer	A. Koppe / ASED
EGSE Operator	S. Hamer / Terma
Support Engineer	S. Sonn / ASED
PA Responsible	Th. Schmidt / ASED
Customer Representative	K. Goodey / ESA
SPIRE Representative	none

5.2 Environmental

Environmental	Nominal	Actual	P	N
Clean Room Class	100 000	100	√	
Temperature	(22±3) ºC	19.9°C	√	
Rel. Humidity	40….60 %	48.5 %	√	
Pressure	ambient	ambient	√	

Note: Clean room class acc. to Federal Standard 209 E

5.3 GSE Equipment and Tools

5.3.1 EGSE

EGSE List					
Item	**Manuf.**	**Model No.**	**SN No.**	**Invent No.**	**Next Calib.**
Power-SCOE	Sat. Services	-	CI3A 2210-SE840/30	NA	NA
CDMU-SCOE	Sat. Services	-	CI3A 2200-SE841/01	NA	NA
TM/TC DFE					
CCS					

Test Equipment List					
Item	**Manuf.**	**Model No.**	**SN No.**	**Invent No.**	**Next Calib.**
IDAS-Rack	ASTRIUM	2			
Scope	LeCroy	LC584 AM	10539		21.02.08
Current-Probe	Tektronix	A6302XL	B0103879		10.10.07
Probe-Amplifier	Tektronix	TM5003	B030378		21.02.08
Test-Head 1	ASTRIUM				
Test-Head 2	ASTRIUM				
Multimeter					

5.3.2 Special Equipment for IDAS:

Test Adaptors for following connector-types shall be available:

- Connector : DEMA 9s/9p No. 9D

5.3.3 Test Software Status

The actual IDAS Software Status is:

Software Status	Version	Remark
IDAS5.	V4.6.1	(i.e. IDAS5.V4.6.1.exe)
CCS test S/W		
HPSDB		

6 Verification Requirements and Step by Step Procedure

6.1 Verification Requirements/Tolerances

6.1.1 Bonding Verification

Each bond strap shall have a resistance of R ≤ 2.5 mOhm.

6.1.2 Voltage/Current Verification

Bus-Voltage:	27.5….28.14 V
Inrush Current:	< 1.0 A for < 5 ms
Steady State Current:	< 0.17 A
Pin Allocation:	Conn. J41 -Prim. Power: Pin 4; Return: Pin 5
	Conn. J42 -Prim. Power: Pin 4; Return: Pin 5
	Conn. J41 –HL#5 Cmd: Pin 1; Return: Pin 2
	Conn. J41 –HL#6 Cmd: Pin 7; Return: Pin 8
	Conn. J42 –HL#21 Cmd: Pin 1; Return: Pin 2
	Conn. J42 –HL#22 Cmd: Pin 7; Return: Pin 8

6.2 Procedure Variation Summary

	Test Change	Curr. No.: Date: 18.10.07 Page 1 of 1	
Test designation LPU Input Power Verification	Test Procedure HP-2-ASED-TP-0169	Issue 1	Rev.
Test step changed	Reason for Change		
Step 7.1.1.4	Change of measurement type for wider range		
Step 7.1.1.5	Change of measurement type for wider range		
Step 7.2.1.5	Change of high level TC		
Step 7.2.1.7	Change of high level TC		
Step 7.2.1.9	Change of high level TC		
Step 7.2.1.11	Change of high level TC		
Step 7.2.2.2	Change of measurement type		
Step 7.2.2.3	Change of measurement type		
Step 7.2.2.4	Change of measurement type		
Step 7.2.2.5	Change of measurement type		
Step 7.3.1.6	Change of high level TC		
Step 7.3.1.16	Change of high level TC		
Step 7.3.1.19	Change of high level TC		
Step 7.3.1.21	Change of high level TC		
Step 7.3.2.2	Change of measurement type		
Step 7.3.2.3	Change of measurement type		
Step 7.3.2.4	Change of measurement type		
Step 7.3.2.5	Change of measurement type		
Step 7.3.2.6	Change of high level TC		
Step 7.3.2.7	Change of high level TC		
Prepared by:	Resp. Test Leader	Project Engineer	
PA/QA	Prime	Customer	

Table 6.2-1: Procedure Variation Sheet

6.3 Non Conformance Report (NCR) Summary

NCR - No.	NCR - Title	Date	Open Closed	PA sig.
HP-2-ASED-NC-3703	SPIRE LPU High Level Pulse commands not executed	16.10.07	open	
HP-2-ASED-NC-3728	SPIRE LPU Ground Resistance too high	26.10.07	closed	

Table 6.3-1: Non-Conformance Record Sheet

6.4 Procedure Sign Off Sheet

This test has been successfully performed and all open issues are covered by NCR´s or Procedure Variations.

	Date	Signature
Test Manager	18.10.07	[signature]
Operator	18.10.07	[signature]
PA Responsible	18.10.07	[signature]
ESA Representative		

7 Step by Step Procedure

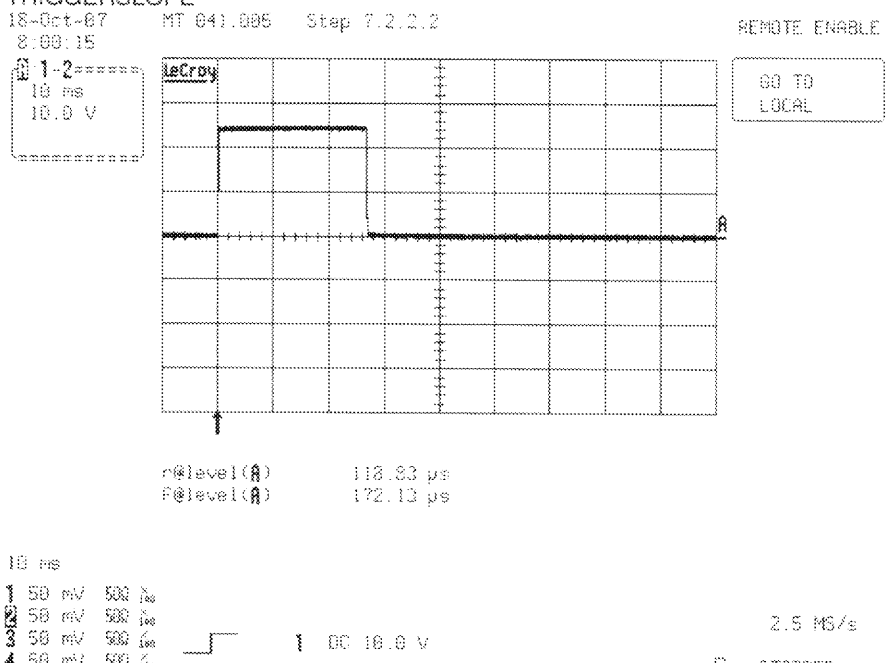
Step by Step Procedure created with IDAS.

St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	PN
1.1		Preconditions:							
1.2		Ensure that the SPIRE WIH is connected to all units							
1.3		Ensure that the SPIRE SIH is connected							
1.4		Measure according to a four-point measurement the resistance between: - HSLPU and HSFCU housing							
	1	RESISTANCE	000.022	0,00	30,00	mOhm	21,10	MA	P
1.5		Measure according to a four-point measurement the resistance between: - HSLPU and SVM panel GND							
	1	RESISTANCE	000.022	0,00	30,00	mOhm	21,90	MA	N
			After integration of additional bond strap			mOhm	3,7	MA	P

St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	P N
1.1		Verification of unloaded Input Power LPU							
1.2		Connect IDAS-5 Testhead-1 via 9-pole adapter No. 9D to the interface connector HSLPU P41							
1.3		Connect IDAS-5 Testhead -2 via 9-pole adapter No. 9D to the interface connector HSLPU P42							
1.4		Switch ON SVM							
1.5		Switch ON LCL #25 for the Nominal LPU Power issue TC: ~~DC25D170~~ ZCI02999 - temporary							
1.6		Measure the voltage between the following pins aConnector: P/J41 4 5							
	1	VOLTAGE-DC	020.018	27,50	28,14	_Volt	28,14	CM	P
1.7		Switch OFF LCL #25 for the Nominal LPU Power issue TC: ~~DC25B170~~ ZCI42999 - temporary							
1.8		Measure the voltage between the following pins aConnector: P/J41 4 5							
	1	VOLTAGE-DC	020.017	-0,50	0,50	_Volt	0,00	CM	P
1.9		Switch ON LCL #26 for the ~~Nominal~~ Redundant LPU Power issue TC: ~~DC26D170~~ ZCA42999 - temporary							
1.10		Measure the voltage between the following pins bConnector: P/J42 4 5							
	1	VOLTAGE-DC	020.018	27,50	28,14	_Volt	28,14	CM	P

St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	PN
1.11		Switch OFF LCL #26 for the ~~Nominal~~ Redundant LPU Power issue TC: ~~DC25B170~~ ZCA42999 - temporary							
1.12		Measure the voltage between the following pins bConnector: P/J42 4 5							
	1	VOLTAGE-DC	020.017	-0,50	0,50	_Volt	0,00	CM	P
2.1		Unloaded HL Command Input Verification							

St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	P N
2.2		Measure and record the oscilloscope trace when activating the HL#5 "DCT01170 (HLC5)" command on P41 between pin 1 and 2 aConnector: P/J41 1 2							
	1	PULSDURATION	041.005	24,00	28,00	msec	26,67	PM	P
	2	UPPER-LEVEL	041.005	22,00	29,00	_Volt	25,31	PM	P
	3	LOWER-LEVEL	041.005	-0,10	2,00	_Volt	0,00	PM	P
	4	RISE-TIME	041.005	50,00	500,00	µsec	111,68	PM	P
	5	FALL-TIME	041.005	50,00	500,00	µsec	160,35	PM	P
	6	TRIGGERLEVEL	041.005	10,00	10,00	_Volt	10,00	PM	P
	7	TRIGGERSLOPE	041.005	1,00	1,00	_Pos	1,00	PM	P



Test-Location:	PA_Resp.:	Test-Eng.:	Test_Manager:	Date:
ASED-FN	Th. Schmidt	A. Koppe OCOE-Operator: S. Hamer	A. Koppe	16.10.2007

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		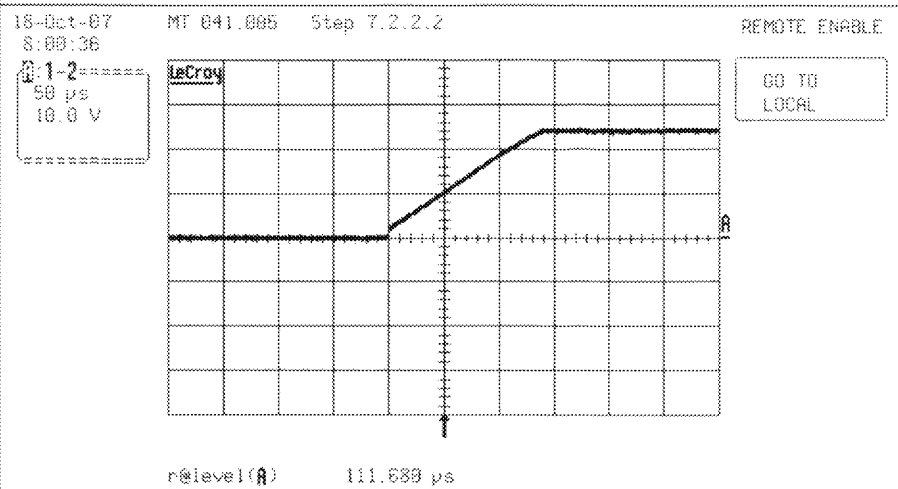							

Test-Location:	PA_Resp.:	Test-Eng.:	Test_Manager:	Date:
ASED-FN	Th. Schmidt	A. Koppe OCOE-Operator: S. Hamer	A. Koppe	16.10.2007

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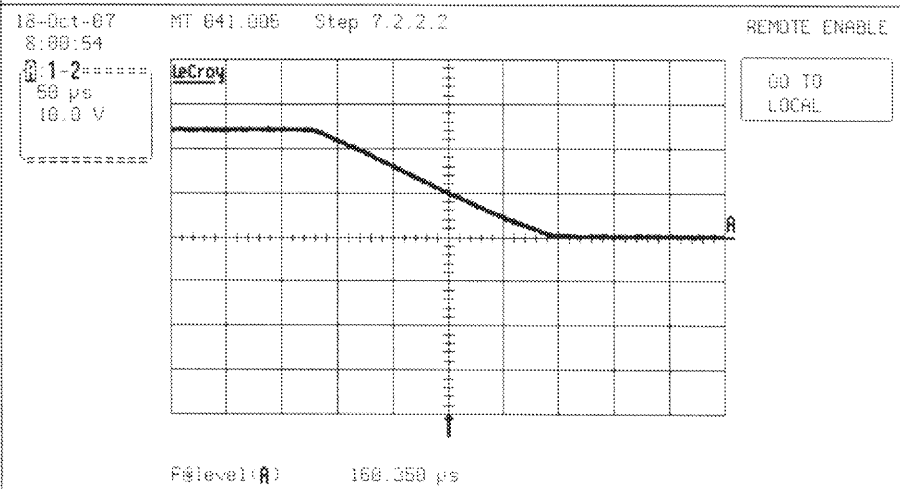
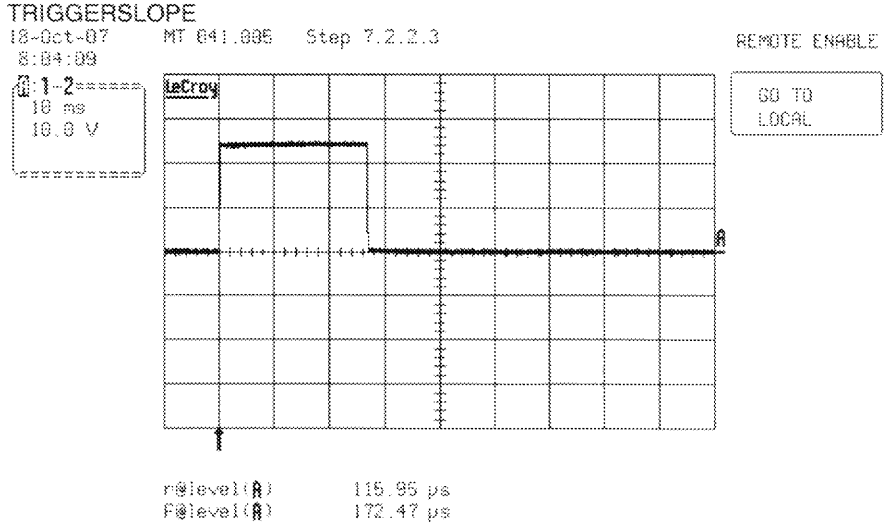
									

St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	P N
2.3		Measure and record the oscilloscope trace when activating the HL#6 "DCT01170 (HLC6)" command on P41 between pin 7 and 8 aConnector: P/J41 7 8							
	1	PULSDURATION	041.005	24,00	28,00	msec	26,67	PM	P
	2	UPPER-LEVEL	041.005	22,00	29,00	_Volt	25,31	PM	P
	3	LOWER-LEVEL	041.005	-0,10	2,00	_Volt	-0,10	PM	P
	4	RISE-TIME	041.005	50,00	500,00	µsec	109,81	PM	P
	5	FALL-TIME	041.005	50,00	500,00	µsec	161,53	PM	P
	6	TRIGGERLEVEL	041.005	10,00	10,00	_Volt	10,00	PM	P
	7	TRIGGERSLOPE	041.005	1,00	1,00	_Pos	1,00	PM	P



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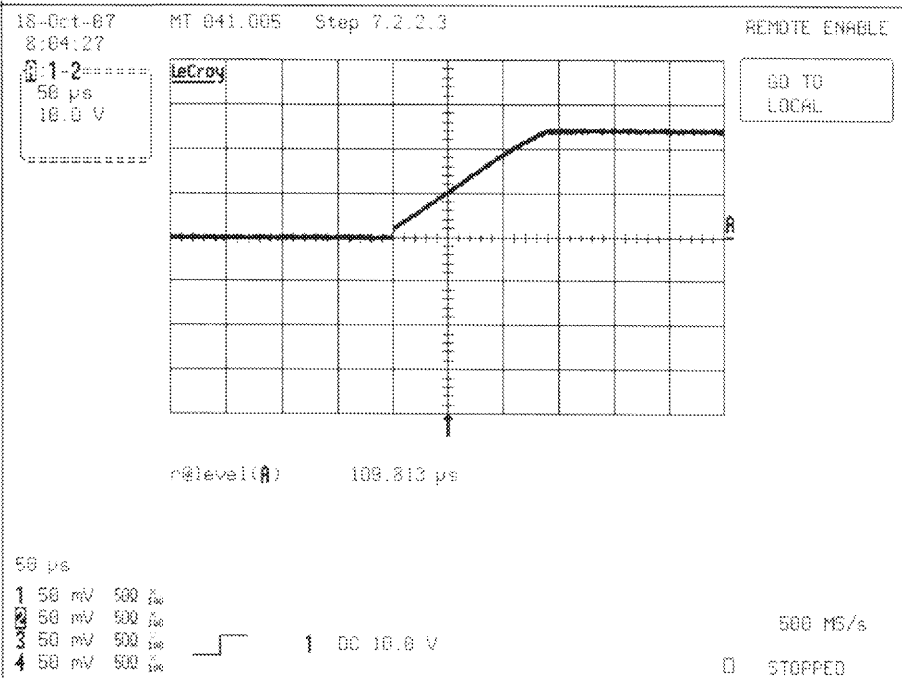

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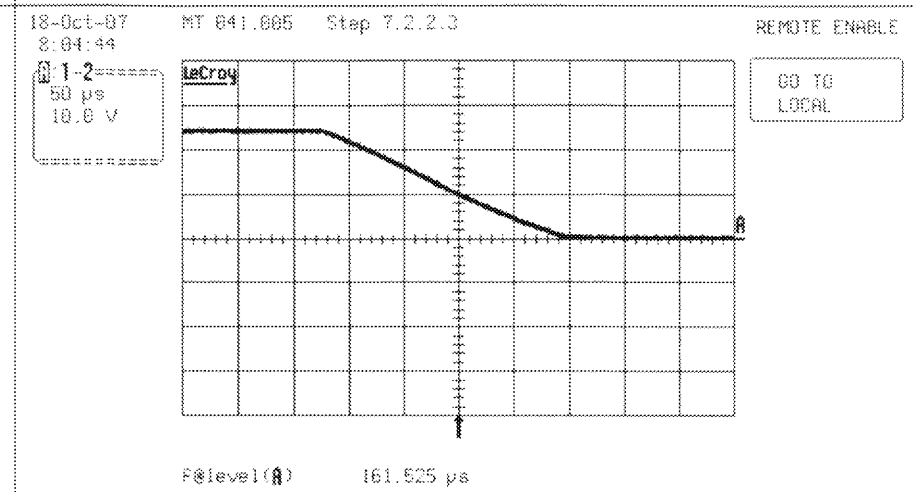
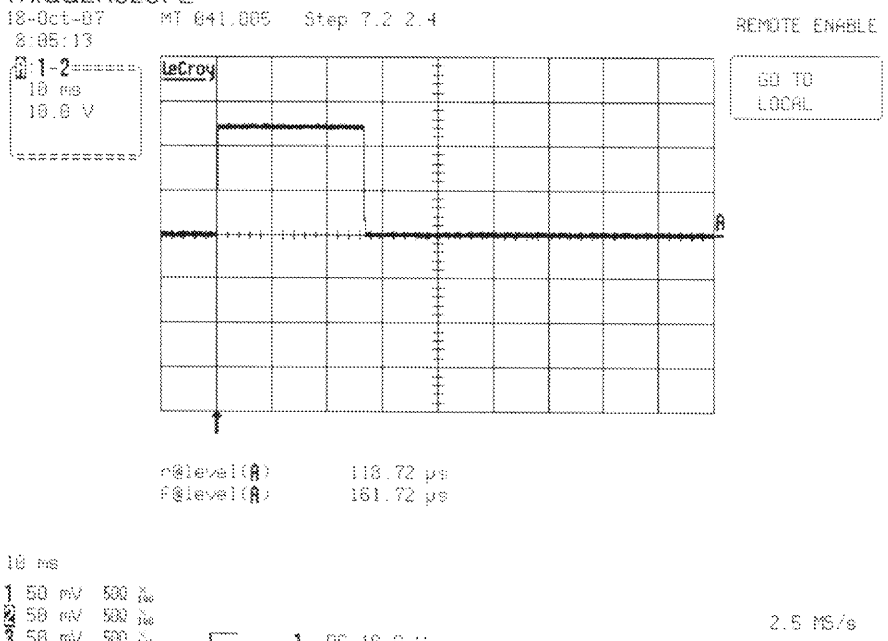


St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	P N
2.4		Measure and record the oscilloscope trace when activating the HL#21 "DCT01170 (HLC21)" command on P42 between pin 1 and 2 bConnector: P/J42 1 2							
	1	PULSDURATION	041.005	24.00	28,00	msec	26,66	PM	P
	2	UPPER-LEVEL	041.005	22.00	29,00	_Volt	25,36	PM	P
	3	LOWER-LEVEL	041.005	-0,10	2.00	_Volt	-0,10	PM	P
	4	RISE-TIME	041.005	50,00	500,00	µsec	112,48	PM	P
	5	FALL-TIME	041.005	50,00	500,00	µsec	159,17	PM	P
	6	TRIGGERLEVEL	041.005	10,00	10,00	_Volt	10,00	PM	P
	7	TRIGGERSLOPE	041.005	1,00	1,00	_Pos	1,00	PM	P



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		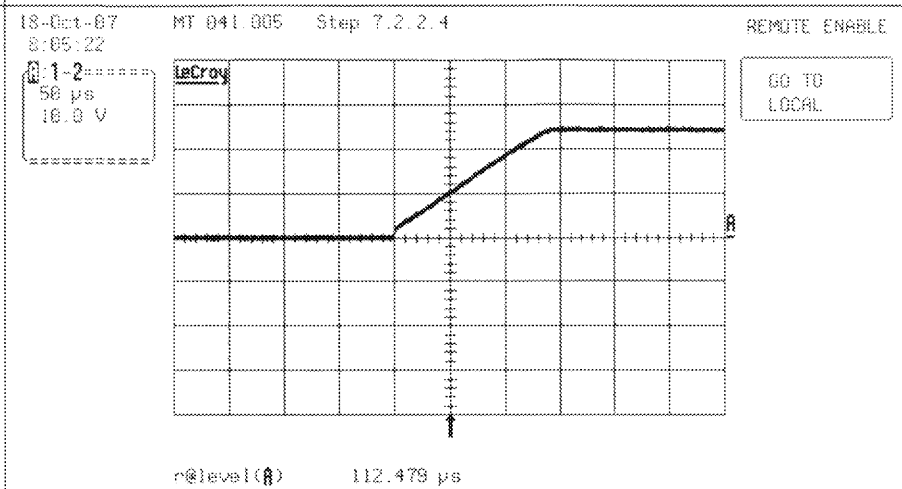							

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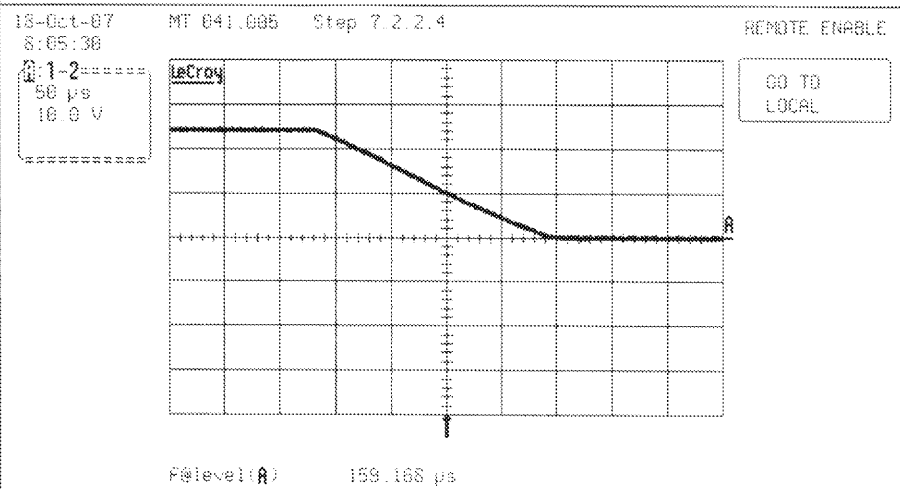
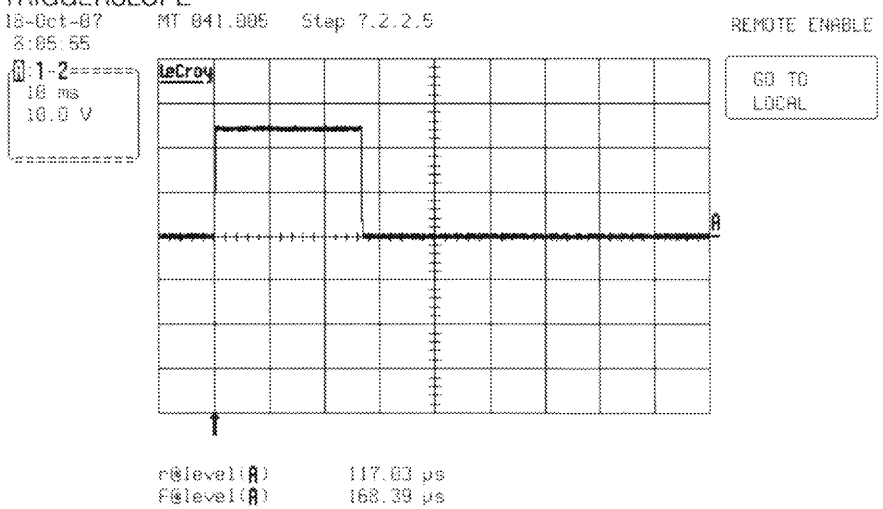
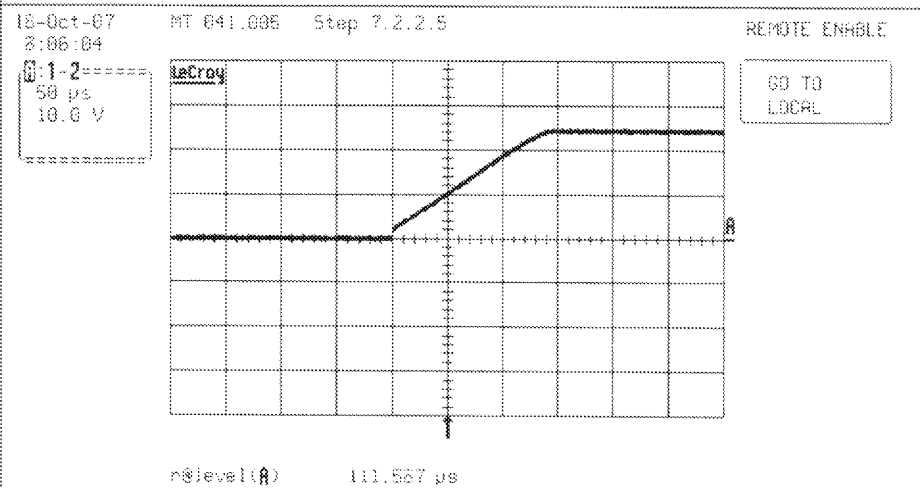


St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	P N
2.5		Measure and record the oscilloscope trace when activating the HL#22 "DCT01170 (HLC22)" command on P42 between pin 7 and 8 bConnector: P/J42 7 8							
	1	PULSDURATION	041.005	24,00	28,00	msec	26,66	PM	P
	2	UPPER-LEVEL	041.005	22,00	29,00	_Volt	25,36	PM	P
	3	LOWER-LEVEL	041.005	-0,10	2,00	_Volt	-0,10	PM	P
	4	RISE-TIME	041.005	50,00	500,00	µsec	111,59	PM	P
	5	FALL-TIME	041.005	50,00	500,00	µsec	159,25	PM	P
	6	TRIGGERLEVEL	041.005	10,00	10,00	_Volt	10,00	PM	P
	7	TRIGGERSLOPE	041.005	1,00	1,00	_Pos	1,00	PM	P



Test-Location:		Test-Eng.:	Test_Manager:	Date:
ASED-FN	PA_Resp.: Th. Schmidt	OCOE-Operator: S. Hamer	A. Koppe	16.10.2007

St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	P N
									

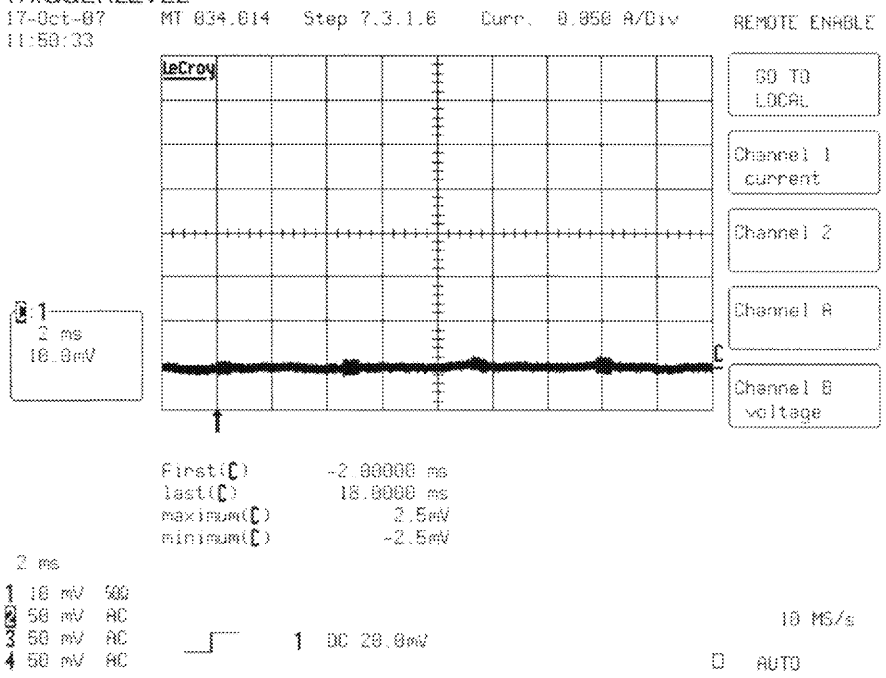
Test-Location: ASED-FN	PA_Resp.: Th. Schmidt	Test-Eng.: A. Koppe OCOE-Operator: S. Hamer	Test_Manager: A. Koppe	Date: 16.10.2007

St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	PN
		18-Oct-07 MT 041.006 Step 7.2.2.5 8:06:13 C1 1-2 50 µs 10.0 V LeCroy REMOTE ENABLE GO TO LOCAL F@level(A) 159.245 µs 50 µs 1 50 mV 500 µs 2 50 mV 500 µs 3 50 mV 500 µs 4 50 mV 500 µs 1 DC 10.0 V 500 MS/s STOPPED								

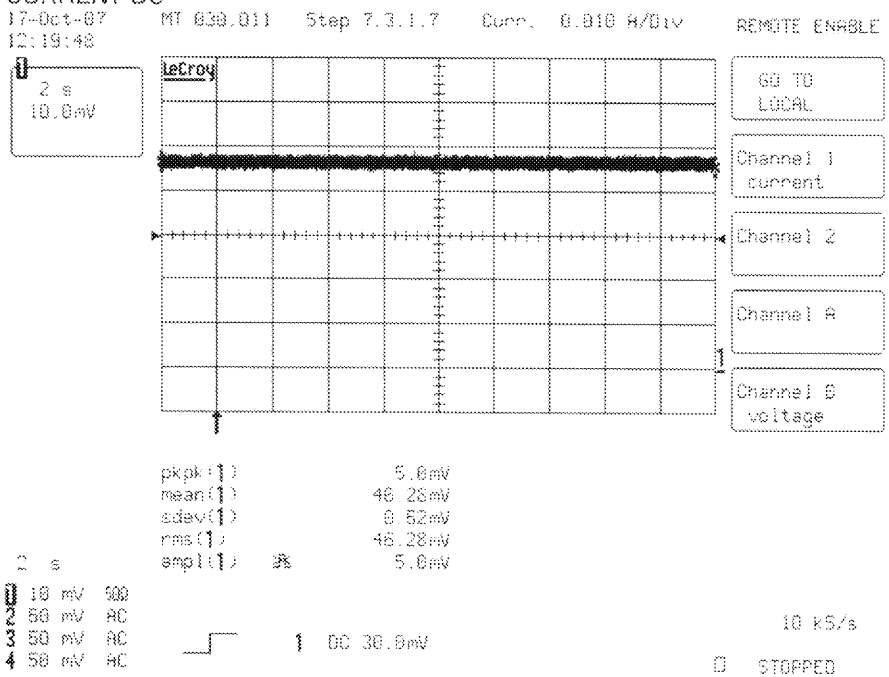
Test-Location: ASED-FN	PA_Resp.: Th. Schmidt	Test-Eng.: A. Koppe OCOE-Operator: S. Hamer	Test_Manager: A. Koppe	Date: 16.10.2007

St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	PN
1.1		Loaded Power Input Verification							
1.2		Connect IDAS-5 Testhead-1 via 9-pole adapter No. 9D between the interface connectors HSLPU P/J41							
1.3		Connect IDAS-5 Testhead-2 via 9-pole adapter No. 9D between the interface connectors HSLPU P/J42							
1.4		Clip current probe to pin 04 of the adapter between P/J41, direction: into box							
1.5		Record inrush and steady state current on TC request							

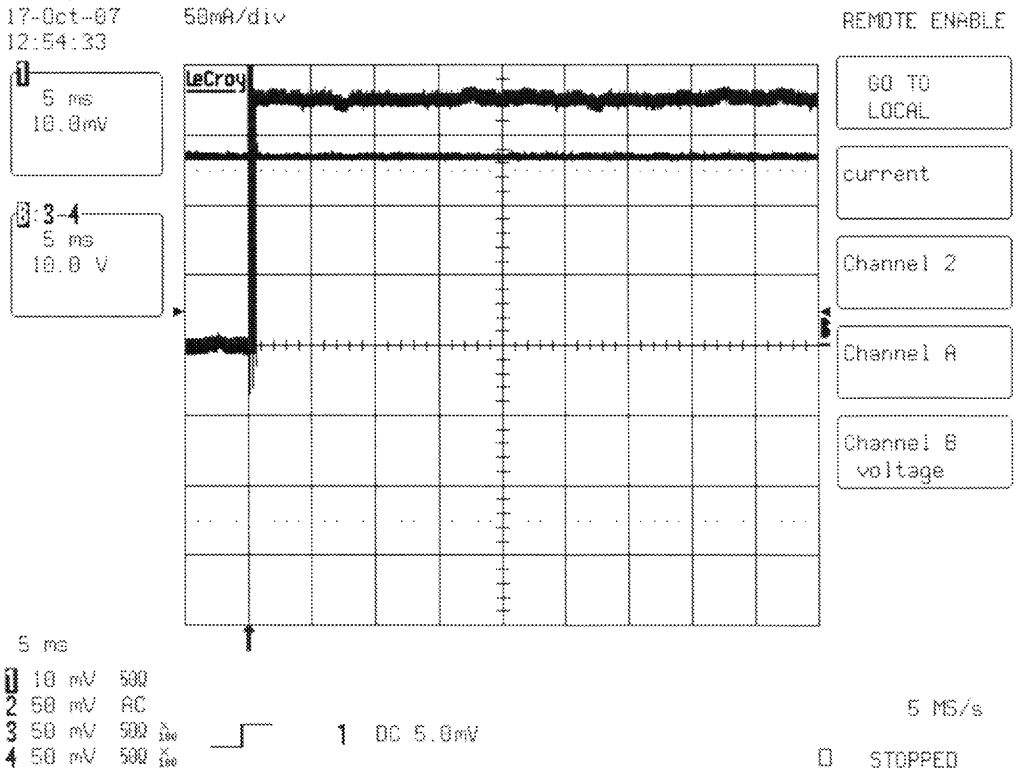
St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	PN
1.6		Inrush current measurement after request of IDAS Switch ON LCL #25 for the Nominal FCU Power issue TC: ~~DC25D170~~ ZCI02999 - temporary expected values: 0 A (0 A before HL cmd activation, max. inrush < 1.0 A and < 5msec, steady state < 0.17 A) aConnector: P/J41 004 ...							
	1	CURR-dI/dt	034.014	0,00	0,50	_A/µs	0,00	PM	P
	2	CURRENT-PEAK	034.014	0,00	1,00	_Amp	0,01	PM	P
	3	CURRENT-DC	034.014	0,00	0,20	_Amp	0,00	PM	P
	4	TRIGGERLEVEL	034.014	0,10	0,10	_Amp	0,10	PM	P



Test-Location:	PA_Resp.:	Test-Eng.:	Test_Manager:	Date:
ASED-FN	Th. Schmidt	A. Koppe OCOE-Operator: S. Hamer	A. Koppe	17.10.2007

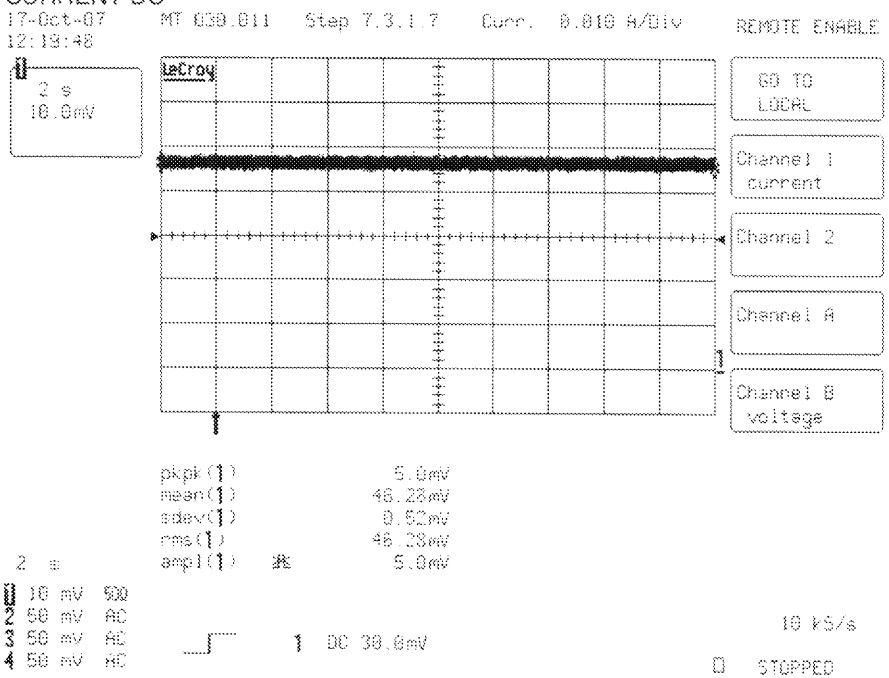
St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	P N
1.7		Steady State Current Measurement aConnector: P/J41 004 ---							
	1	CURRENT-DC 	030.011	0,00	170,00	mAmp	46,28	PM	P
1.8		Measure the voltage between the following pins aConnector: P/J41 4 5							
	1	VOLTAGE-DC	020.018	27,50	28,14	_Volt	28,10	CM	P

St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	PN
1.9		Inrush current measurement after request of IDAS Activation of HL#5 cmd Issue TC: DCT01170 (HL5) aConnector: P/J41 004 ---							
	1	CURR-dI/dt	034.014	0,00	0,50	_A/µs	0,00	PM	P
	2	CURRENT-PEAK	034.014	0,00	1,00	_Amp	0,01	PM	P
	3	CURRENT-DC	034.014	0,00	0,20	_Amp	0,00	PM	P
	4	TRIGGERLEVEL	034.014	0,10	0,10	_Amp	0,10	PM	P



Test-Location:		Test-Eng.:	Test_Manager:	Date:
ASED-FN	PA_Resp.: Th. Schmidt	OCOE-Operator: S. Hamer	A. Koppe	17.10.2007

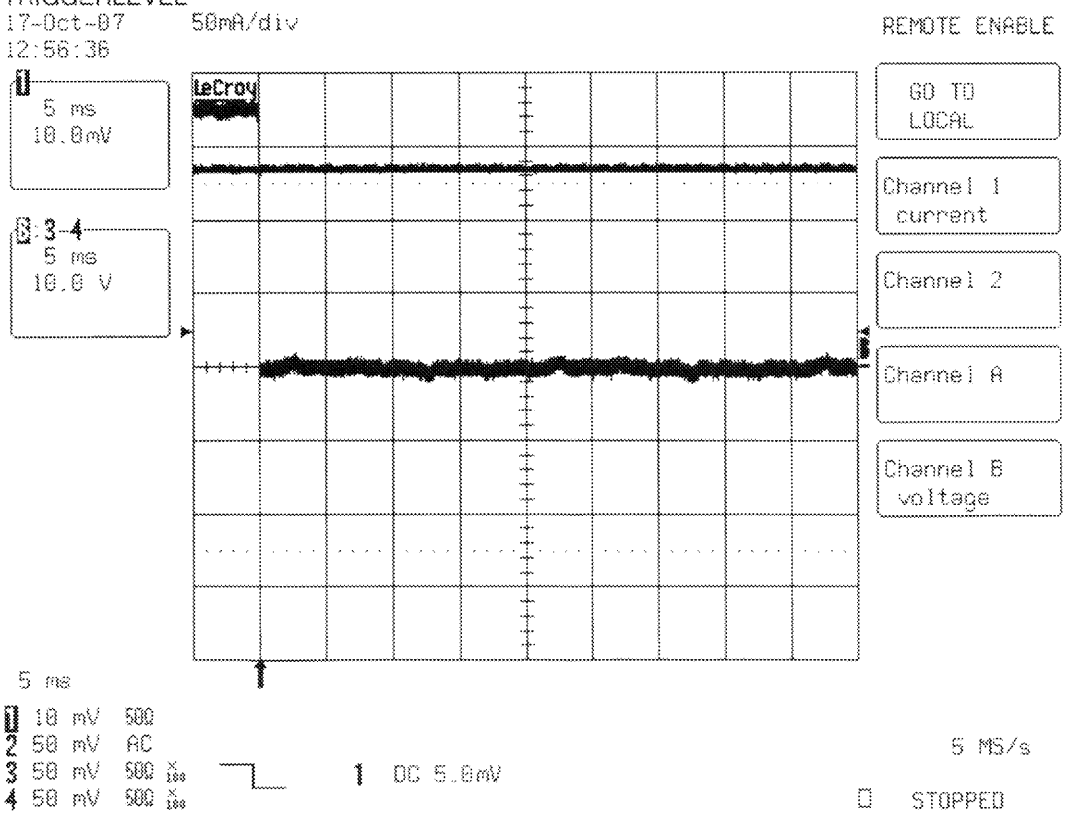
St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	PN
1.10		Steady State Current Measurement aConnector: P/J41 004 ~~~							
	1	CURRENT-DC	030.011	0,00	170,00	mAmp	46,28	PM	P



Test-Location: ASED-FN	PA_Resp.: Th. Schmidt	Test-Eng.: A. Koppe OCOE-Operator: S. Hamer	Test_Manager: A. Koppe

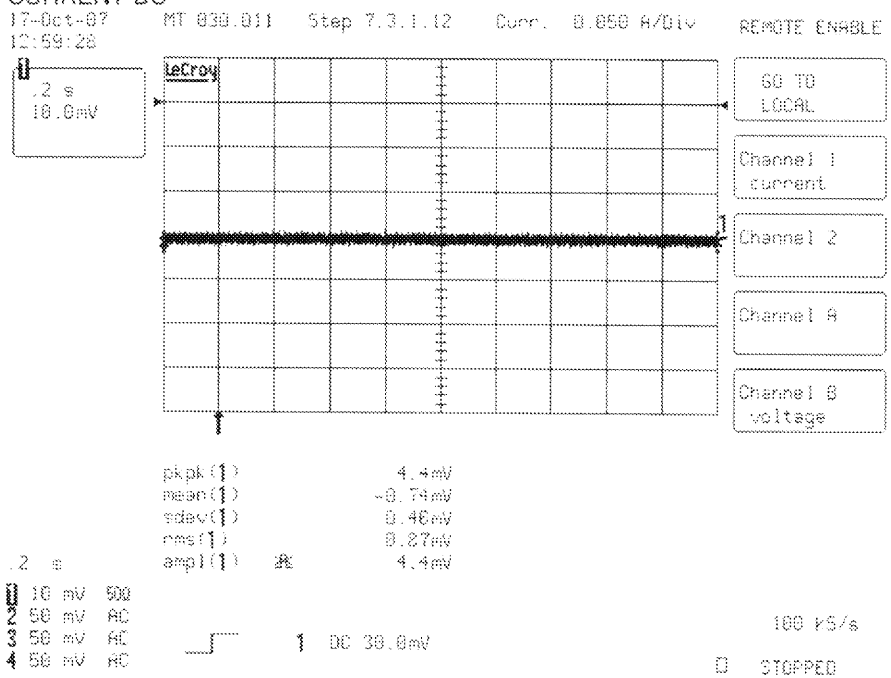
Date: 17.10.2007

St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	P N
1.11		Inrush current measurement after request of IDAS Activation of HL#6 cmd Issue TC: DCT01170 (HL6) aConnector: P/J41 004 ---							
	1	CURR-dI/dt	034.014	0,00	0,50	_A/µs	0,00	PM	P
	2	CURRENT-PEAK	034.014	0,00	1,00	_Amp	0,01	PM	P
	3	CURRENT-DC	034.014	0,00	0,20	_Amp	0,00	PM	P
	4	TRIGGERLEVEL	034.014	0,10	0,10	_Amp	0,10	PM	P



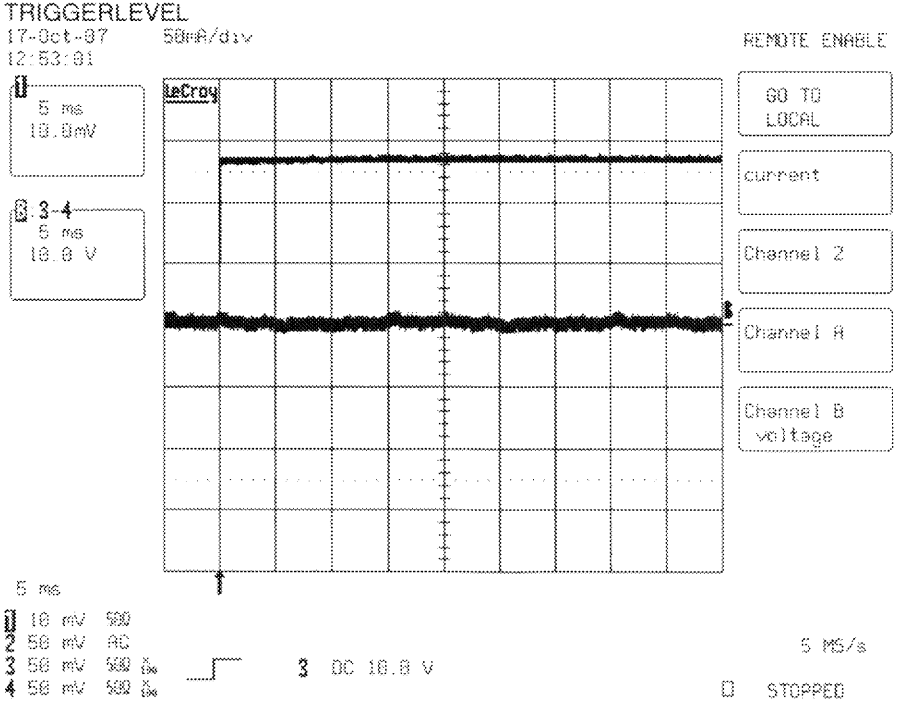
Test-Location:		Test-Eng.:	Test_Manager:	Date:
ASED-FN	PA_Resp.: Th. Schmidt	OCOE-Operator: S. Hamer	A. Koppe	17.10.2007

St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	P N
1.12		Steady State Current Measurement aConnector: P/J41 004 ---							
	1	CURRENT-DC	030.011	0,00	170,00	mAmp	-0,74	PM	N



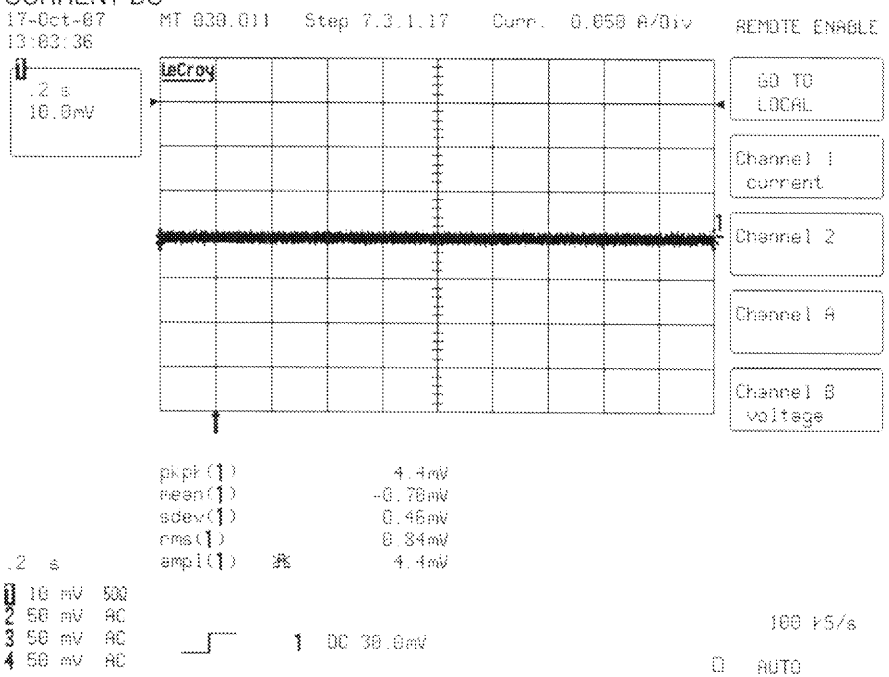
1.13		Remove current probe							
1.14		Clip current probe to pin 04 of the adapter between P/J42, direction: into box							
1.15		Record inrush and steady state current on TC request							

St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	P N
1.16		Inrush current measurement after request of IDAS Switch ON LCL #26 for the Nominal ~~FC~~LPU Power issue TC: ~~DC26D170~~ ZCA02999 - temporary expected values: 0 A (0 A before HL cmd activation, max. inrush < 1.0 A and < 5msec, steady state < 0.17 A) bConnector: P/J42 004 ---							
	1	CURR-dI/dt	034.014	0,00	0,50	_A/µs	0,00	PM	P
	2	CURRENT-PEAK	034.014	0,00	1,00	_Amp	0,01	PM	P
	3	CURRENT-DC	034.014	0,00	0,20	_Amp	0,00	PM	P
	4	TRIGGERLEVEL	034.014	0,10	0,10	_Amp	0,10	PM	P

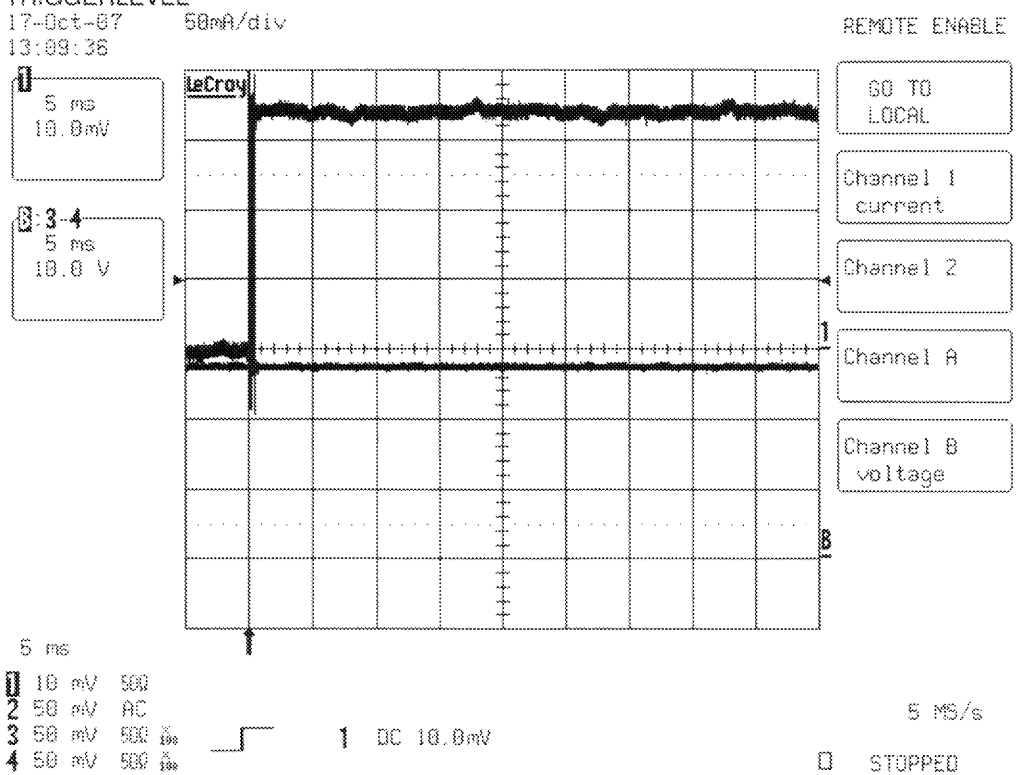


Test-Location:	PA_Resp.:	Test-Eng.:	Test_Manager:	Date:
ASED-FN	Th. Schmidt	A. Koppe OCOE-Operator: S. Hamer	A. Koppe	17.10.2007

St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	P N
1.17		Steady State Current Measurement bConnector: P/J42 004 ---							
	1	CURRENT-DC	030.011	0,00	170,00	mAmp	-0,70	PM	N
1.18		Measure the voltage between the following pins bConnector: P/J42 004 005							
	1	VOLTAGE-DC	020.018	27,50	28,14	_Volt	28,14	CM	P



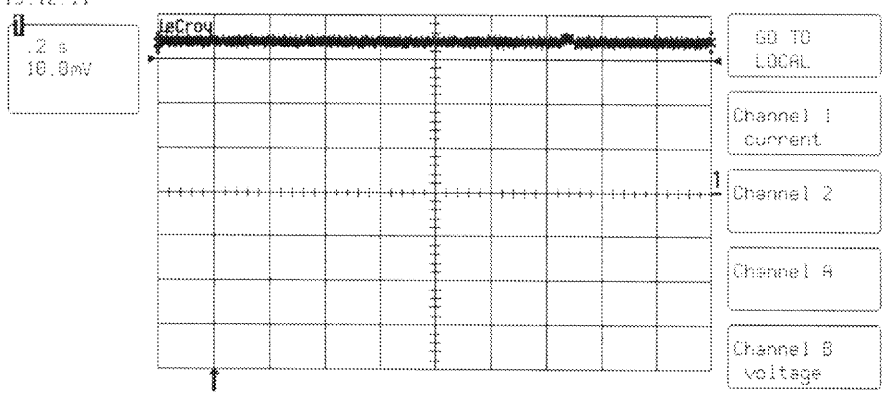
St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	P N
1.19		Inrush current measurement after request of IDAS Activation of HL#21 cmd Issue TC: DCT01170 (HL21) aConnector: P/J42 004 ---							
	1	CURR-dI/dt	034.014	0,00	0,50	_A/µs	0,00	PM	P
	2	CURRENT-PEAK	034.014	0,00	1,00	_Amp	0,01	PM	P
	3	CURRENT-DC	034.014	0,00	0,20	_Amp	0,00	PM	P
	4	TRIGGERLEVEL	034.014	0,10	0,10	_Amp	0,10	PM	P



Test-Location:	PA_Resp.:	Test-Eng.:	Test_Manager:	Date:
ASED-FN	Th. Schmidt	A. Koppe OCOE-Operator: S. Hamer	A. Koppe	17.10.2007

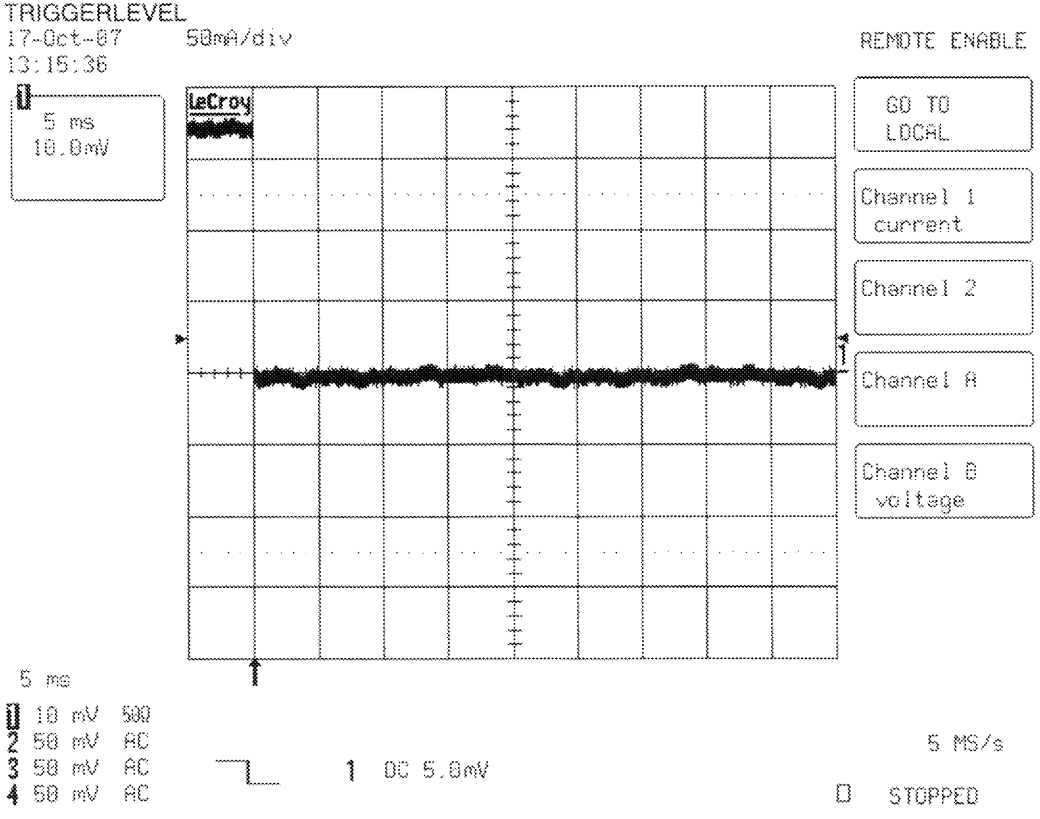
St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	P N
1.20		Steady State Current Measurement bConnector: P/J42 004 ---							
	1	CURRENT-DC	030.011	0.00	170.00	mAmp	33.87 *)	PM	P
		*) needs to be multiplied by a factor of 3 due to probe amplifier setting							

17-Oct-07 13:12:11 MT 030.011 Step 7.3 1.20 Curr. 0.050 A/Div REMOTE ENABLE

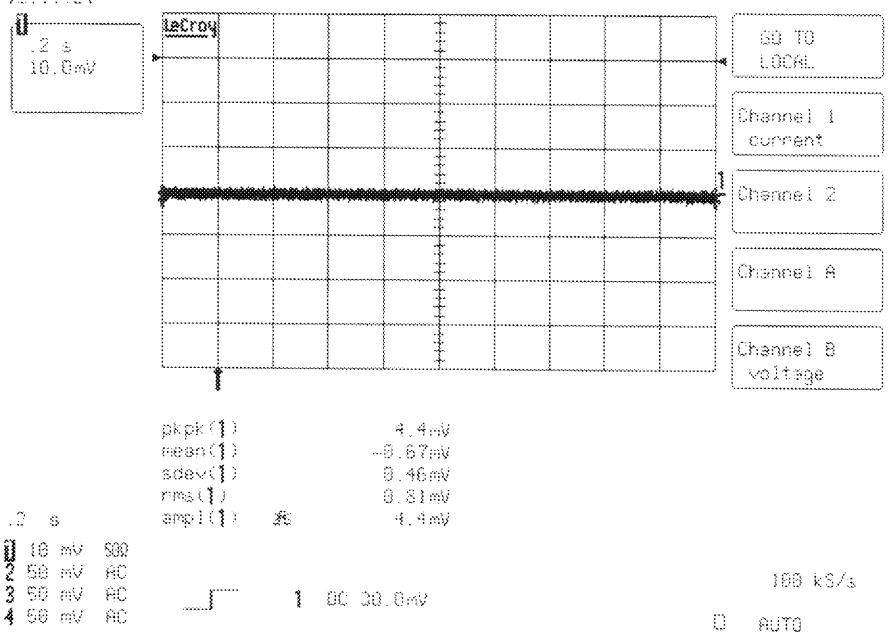


Test-Location:	PA_Resp.:	Test-Eng.:	Test_Manager:	Date:
ASED-FN	Th. Schmidt	A. Koppe OCOE-Operator: S. Hamer	A. Koppe	17.10.2007

St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	P N
1.21		Inrush current measurement after request of IDAS Activation of HL#22 cmd Issue TC: DCT01170 (HL22) aConnector: P/J42 004 ---							
	1	CURR-dI/dt	034.014	0,00	0,50	_A/µs	0,00	PM	P
	2	CURRENT-PEAK	034.014	0,00	1,00	_Amp	0,01	PM	P
	3	CURRENT-DC	034.014	0,00	0,20	_Amp	0,00	PM	P
	4	TRIGGERLEVEL	034.014	0,10	0,10	_Amp	0,10	PM	P

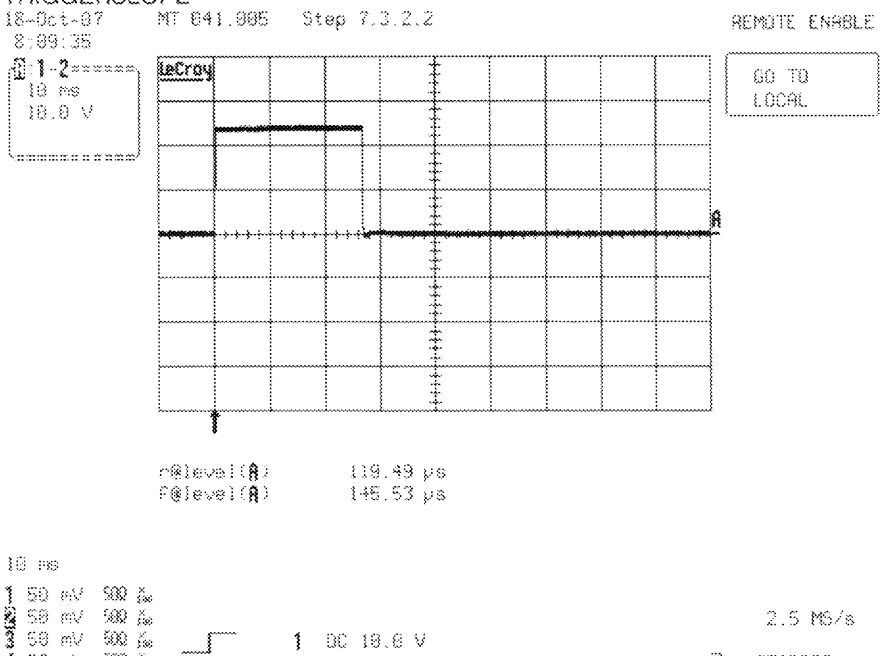


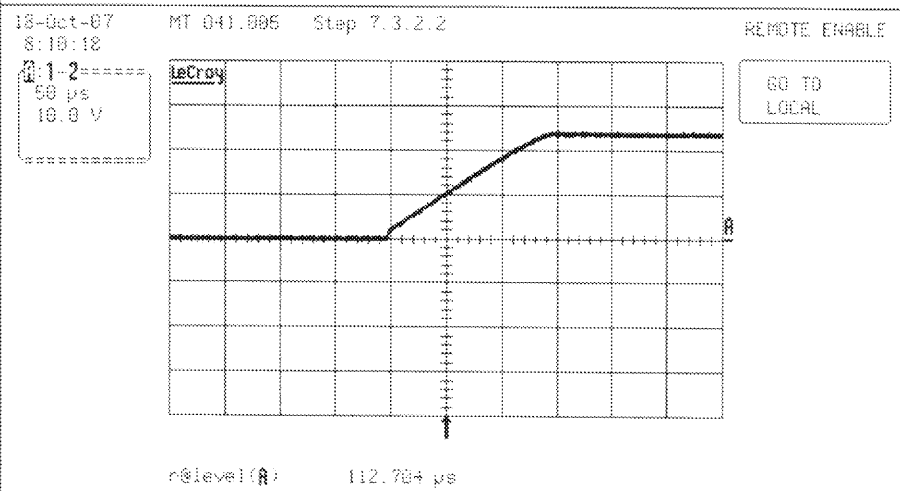
Test-Location:		Test-Eng.:		Test_Manager:	Date:
ASED-FN	PA_Resp.: Th. Schmidt	OCOE-Operator:	S. Hamer	A. Koppe	17.10.2007

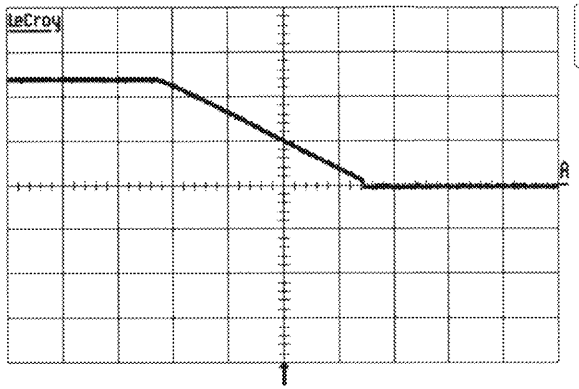
St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	P N
1.22		Steady State Current Measurement bConnector: P/J42 004 ---							
	1	CURRENT-DC 17-Oct-07 13:17:27 MT 030.011 Step 7.3 1.22 Curr. 0.650 A/Div REMOTE ENABLE  	030.011	0,00	170,00	mAmp	-0,67	PM	N
1.23		Remove current probe							

Test-Location:	PA_Resp.:	Test-Eng.:	Test_Manager:	Date:
ASED-FN	Th. Schmidt	A. Koppe OCOE-Operator: S. Hamer	A. Koppe	17.10.2007

St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	P N
2.1		Loaded HL Command Input Verification							
2.2		Measure and record the oscilloscope trace when activating the HL#5 "DCT01170 (HL5)" command on P41 between pin 1 and 2 aConnector: P/J41 1 2							
	1	PULSDURATION	041.005	24,00	28,00	msec	26,66	PM	P
	2	UPPER-LEVEL	041.005	22,00	29,00	_Volt	24,69	PM	P
	3	LOWER-LEVEL	041.005	-0,10	2,00	_Volt	-0,10	PM	P
	4	RISE-TIME	041.005	50,00	500,00	µsec	112,70	PM	P
	5	FALL-TIME	041.005	50,00	500,00	µsec	143,69	PM	P
	6	TRIGGERLEVEL	041.005	10,00	10,00	_Volt	10,00	PM	P
	7	TRIGGERSLOPE	041.005	1,00	1,00	_Pos	1,00	PM	P

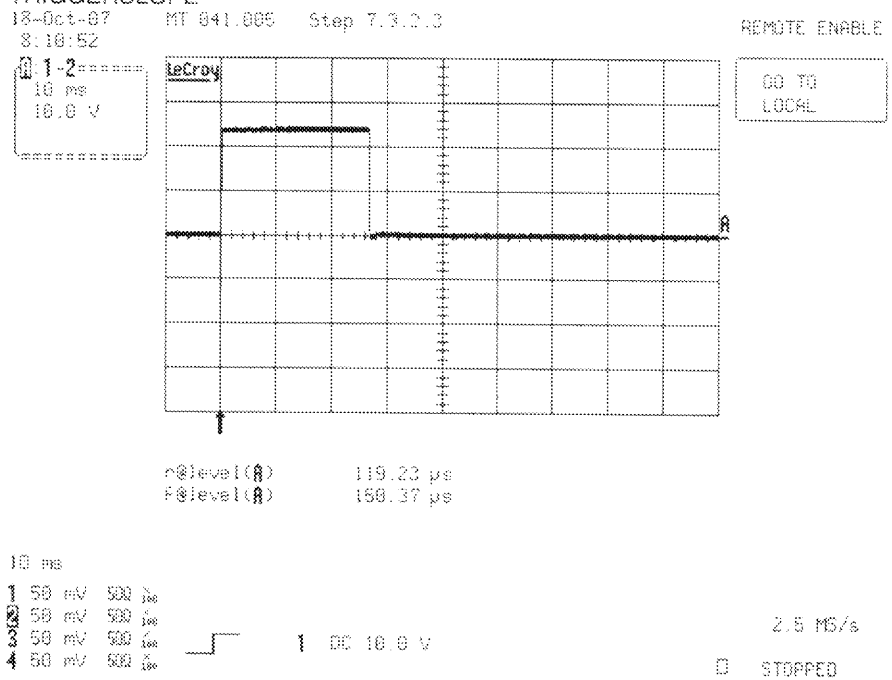


St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	P N
									

St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	PN
		18-Oct-07 MT 041.005 Step 7.3.2.2 REMOTE ENABLE 8:10:27 1-2 50 µs 10.0 V GO TO LOCAL  F@level(A) 143.652 µs 50 µs 1 50 mV 500 µs 2 50 mV 500 µs 3 50 mV 500 µs 4 50 mV 500 µs 1 DC 10.0 V 500 MS/s STOPPED							

Test-Location: ASED-FN	PA_Resp.: Th. Schmidt	Test-Eng.: A. Koppe OCOE-Operator: S. Hamer	Test_Manager: A. Koppe	Date: 17.10.2007

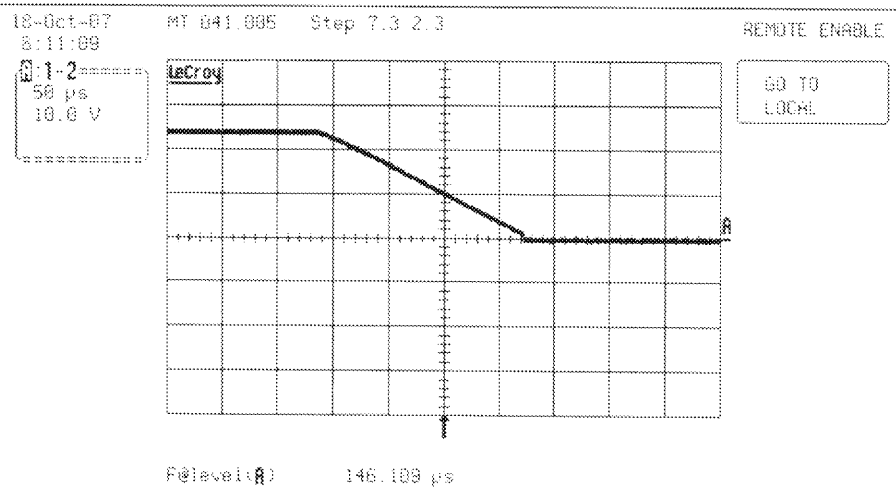
St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	P N
2.3		Measure and record the oscilloscope trace when activating the HL#6 "DCT01170 (HL6)" command on P41 between pin 7 and 8 aConnector: P/J41 7 8							
	1	PULSDURATION	041.005	24,00	28,00	msec	26,65	PM	P
	2	UPPER-LEVEL	041.005	22,00	29,00	_Volt	24,69	PM	P
	3	LOWER-LEVEL	041.005	-0,10	2,00	_Volt	0,00	PM	P
	4	RISE-TIME	041.005	50,00	500,00	µsec	112,57	PM	P
	5	FALL-TIME	041.005	50,00	500,00	µsec	146,11	PM	P
	6	TRIGGERLEVEL	041.005	10,00	10,00	_Volt	10,00	PM	P
	7	TRIGGERSLOPE	041.005	1,00	1,00	_Pos	1,00	PM	P



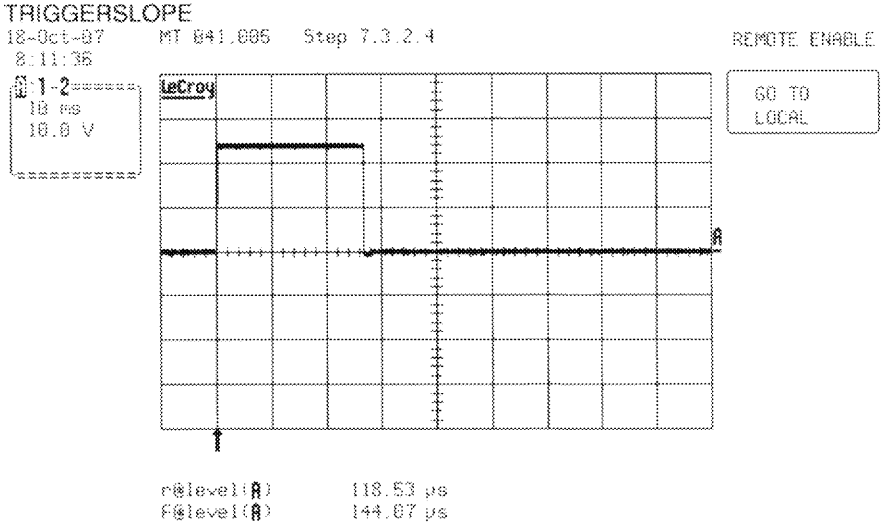
St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	PN
		18-Oct-07 MT 841.005 Step 7.3.2.3 8:11:00 REMOTE ENABLE 1-2 50 µs 10.0 V LeCroy GO TO LOCAL trigger level(A) 112.573 µs 50 µs 1 50 mV 500 µs 2 50 mV 500 µs 3 50 mV 500 µs 4 50 mV 500 µs 1 DC 10.0 V 500 MS/s STOPPED								

Test-Location: ASED-FN	PA_Resp.: Th. Schmidt	Test-Eng.: A. Koppe OCOE-Operator: S. Hamer	Test_Manager: A. Koppe	Date: 17.10.2007

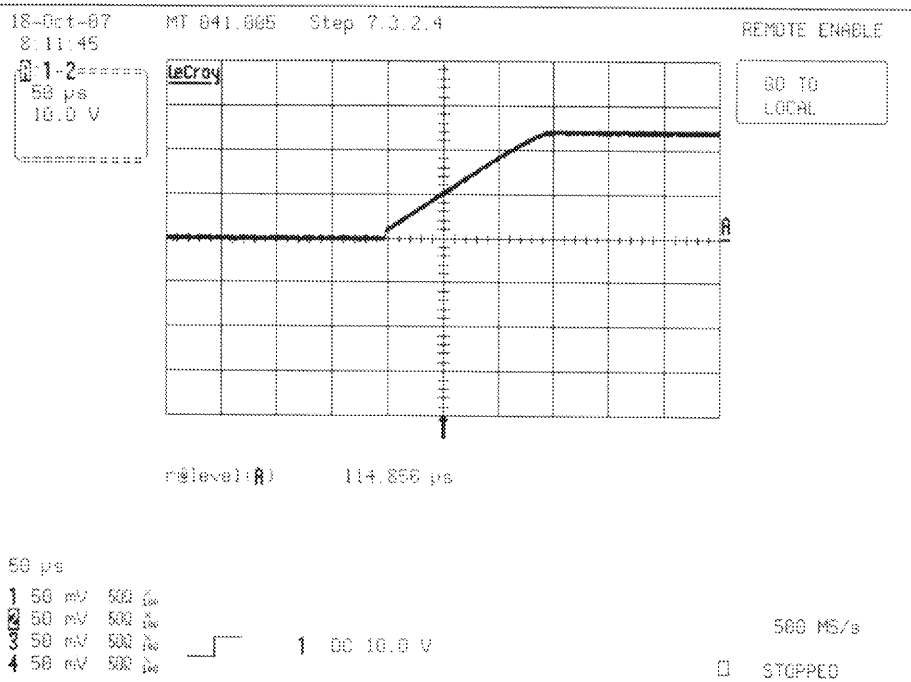
St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	PN

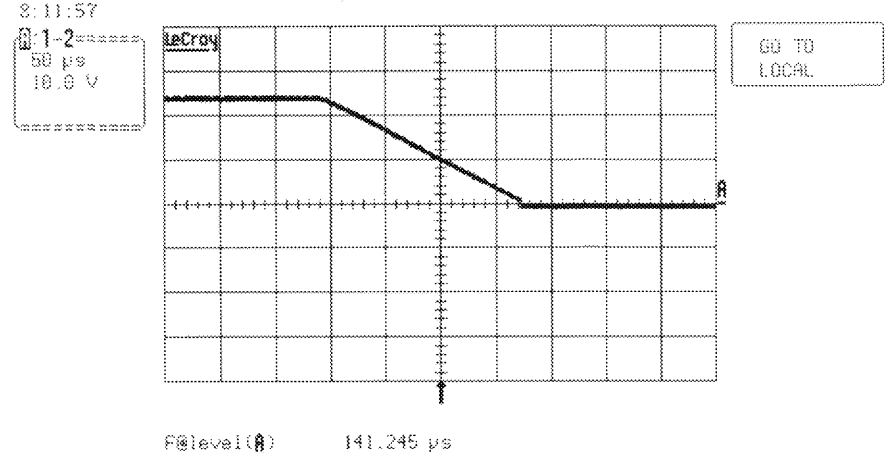


St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	P N
2.4		Measure and record the oscilloscope trace when activating the HL#21 "DCT01170 (HL21)" command on P42 between pin 1 and 2 bConnector: P/J42 1 2							
	1	PULSDURATION	041.005	24,00	28,00	msec	26,65	PM	P
	2	UPPER-LEVEL	041.005	22,00	29,00	_Volt	24,94	PM	P
	3	LOWER-LEVEL	041.005	-0,10	2,00	_Volt	-0,10	PM	P
	4	RISE-TIME	041.005	50,00	500,00	µsec	114,86	PM	P
	5	FALL-TIME	041.005	50,00	500,00	µsec	141,24	PM	P
	6	TRIGGERLEVEL	041.005	10,00	10,00	_Volt	10,00	PM	P
	7	TRIGGERSLOPE	041.005	1,00	1,00	_Pos	1,00	PM	P



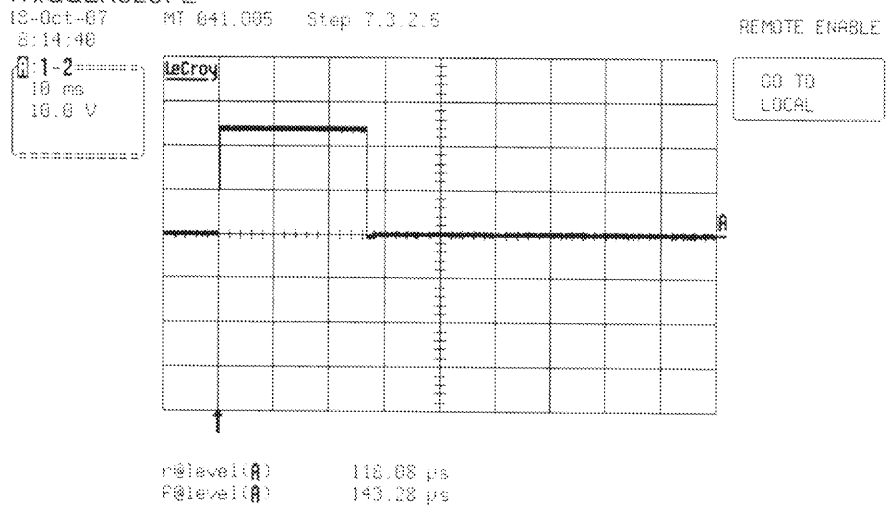
St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	P N



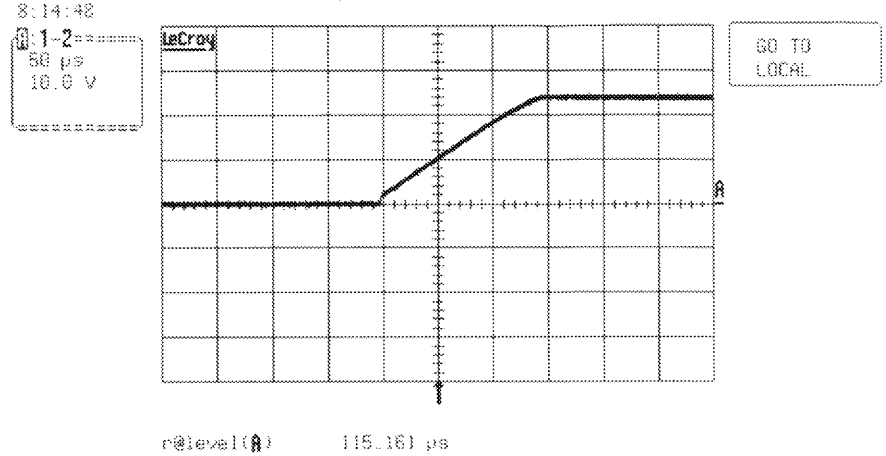
St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	PN
		18-Oct-07 8:11:57 MT 041.005 Step 7.3.2.4 REMOTE ENABLE  							

Test-Location: ASED-FN	PA_Resp.: Th. Schmidt	Test-Eng.: A. Koppe OCOE-Operator: S. Hamer	Test_Manager: A. Koppe	Date: 17.10.2007

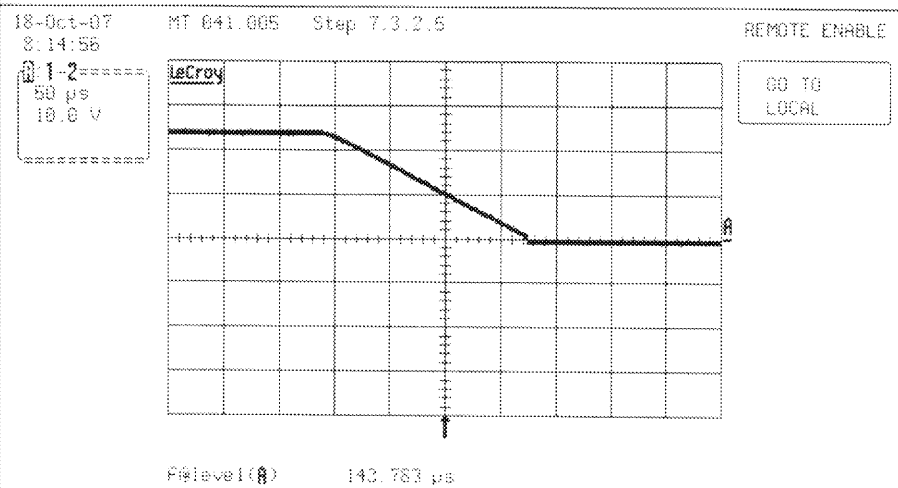
St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	P N
2.5		Measure and record the oscilloscope trace when activating the HL#22 "DCT01170 (HL22)" command on P42 between pin 7 and 8 bConnector: P/J42 7 8							
	1	PULSDURATION	041.005	24,00	28,00	msec	26,65	PM	P
	2	UPPER-LEVEL	041.005	22,00	29,00	_Volt	24,94	PM	P
	3	LOWER-LEVEL	041.005	-0,10	2,00	_Volt	-0,10	PM	P
	4	RISE-TIME	041.005	50,00	500,00	µsec	115,16	PM	P
	5	FALL-TIME	041.005	50,00	500,00	µsec	143,78	PM	P
	6	TRIGGERLEVEL	041.005	10,00	10,00	_Volt	10,00	PM	P
	7	TRIGGERSLOPE	041.005	1,00	1,00	_Pos	1,00	PM	P



Test-Location: ASED-FN	PA_Resp.: Th. Schmidt	Test-Eng.: A. Koppe OCOE-Operator: S. Hamer	Test_Manager: A. Koppe	Date: 17.10.2007

St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	PN
		18-Oct-07 8:14:42 MT 041.005 Step 7.3.2.5 REMOTE ENABLE  							

Test-Location:	PA_Resp.:	Test-Eng.:	Test_Manager:	Date:
ASED-FN	Th. Schmidt	A. Koppe OCOE-Operator: S. Hamer	A. Koppe	17.10.2007

St-No	Sub-St	Test – Step - Description	Meas. Type	Min.Nom. Value	Max.Nom. Value	Phys. Unit	Actual Value	C-St	P N
									
2.6		Switch OFF LCL #25 for the Nominal LPU Power issue TC: DC25B170							
2.7		Switch OFF LCL #26 for the Nominal LPU Power issue TC: DC26B170							
2.8		Disconnect iDAS-5 Testhead-1 and 9-pole adapter No. 9D between connectors HSLPU P/J41 and connect directly							
2.9		Disconnect iDAS-5 Testhead-2 and 9-pole adapter No. 9D between connectors HSLPU P/J42 and connect directly							

Test-Location: ASED-FN	PA_Resp.: Th. Schmidt	Test-Eng.: A. Koppe OCOE-Operator: S. Hamer	Test_Manager: A. Koppe	Date: 17.10.2007

END OF DOCUMENT

	Name	Dep./Comp.
	Alberti von Mathias Dr.	ASG23
	Baldock Richard	FAE12
	Barlage Bernhard	AED13
	Bayer Thomas	ASA42
	Brune Holger	ASA45
	Edelhoff Dirk	AED2
	Fehringer Alexander	ASG13
	Fricke Wolfgang Dr.	AED 65
	Geiger Hermann	ASA42
	Grasl Andreas	OTN/ASA44
	Grasshoff Brigitte	AET12
	Hamer Simon	Terma
	Hanka, Erhard	FI552
	Hendrikse Jeffrey	HE Space
	Hendry David	Terma
	Hengstler Reinhold	ASA42
	Hinger Jürgen	ASG23
	Hohn Rüdiger	AED65
	Hölzle Edgar Dr.	AED32
	Hopfgarten Michael	AED32
	Huber Johann	ASA42
	Hund Walter	ASE252
	Idler Siegmund	AED312
	Iványi von András	FAE12
	Jahn Gerd Dr.	ASG23
	Kalde Clemens	ASM2
	Kettner Bernhard	AET42
	Kienke Uwe	ASG72
	Knoblauch August	AET32
	Koelle Markus	ASA43
	Koppe Axel	AED312
	Kroeker Jürgen	AED65
	La Gioia Valentina	Terma
	Lang Jürgen	ASE252
	Langenstein Rolf	AED15
	Langfermann Michael	ASA41
	Martin Olivier	ASA43
	Maukisch Jan	ASA43
	Much Christoph	ASA43
	Müller Jörg	ASA42
	Müller Martin	ASA43
	Pietroboni Karin	AED65
	Platzer Wilhelm	AED2
	Reichle Konrad	ASA42
	Runge Axel	OTN/ASA44
	Sauer Maximilian Dr.	AED65
	Schink Dietmar	AED32

	Name	Dep./Comp.
	Schmidt Thomas	AED15
	Schweickert Gunn	ASG23
	Sonn Nico	ASG51
	Steininger Eric	AED32
	Stritter Rene	AED11
	Suess Rudi	OTN/ASA44
	Theunissen Martijn	DSSA
	Vascotto Riccardo	HE Space
	Wagner Klaus	ASG23
	Wiedbrock Walter	AET12
	Wöhler Hans	ASG23
	Wossner Ulrich	ASE252
	Zumstein Armin	ASQ42
	ESA/ESTEC	ESA
	Thales Alenia Space Cannes	TAS-F
	Thales Alenia Space Torino	TAS-I
	Instruments:	
	MPE (PACS)	MPE
	RAL (SPIRE)	RAL
	SRON (HIFI)	SRON
	Subcontractors:	
	Austrian Aerospace	AAE
	Austrian Aerospace	AAEM
	BOC Edwards	BOCE
	Dutch Space Solar Arrays	DSSA
	EADS Astrium Sub-Subsyst. & Equipment	ASSE
	EADS CASA Espacio	CASA
	EADS CASA Espacio	ECAS
	European Test Services	ETS
	Patria New Technologies Oy	PANT
	SENER Ingeniería SA	SEN
	Thales Alenia Space, Antwerp	TAS-ETCA