Austrian Aerospace

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SpaceWire Conformance Tester Validation

SpaceWire Working Group Meeting,
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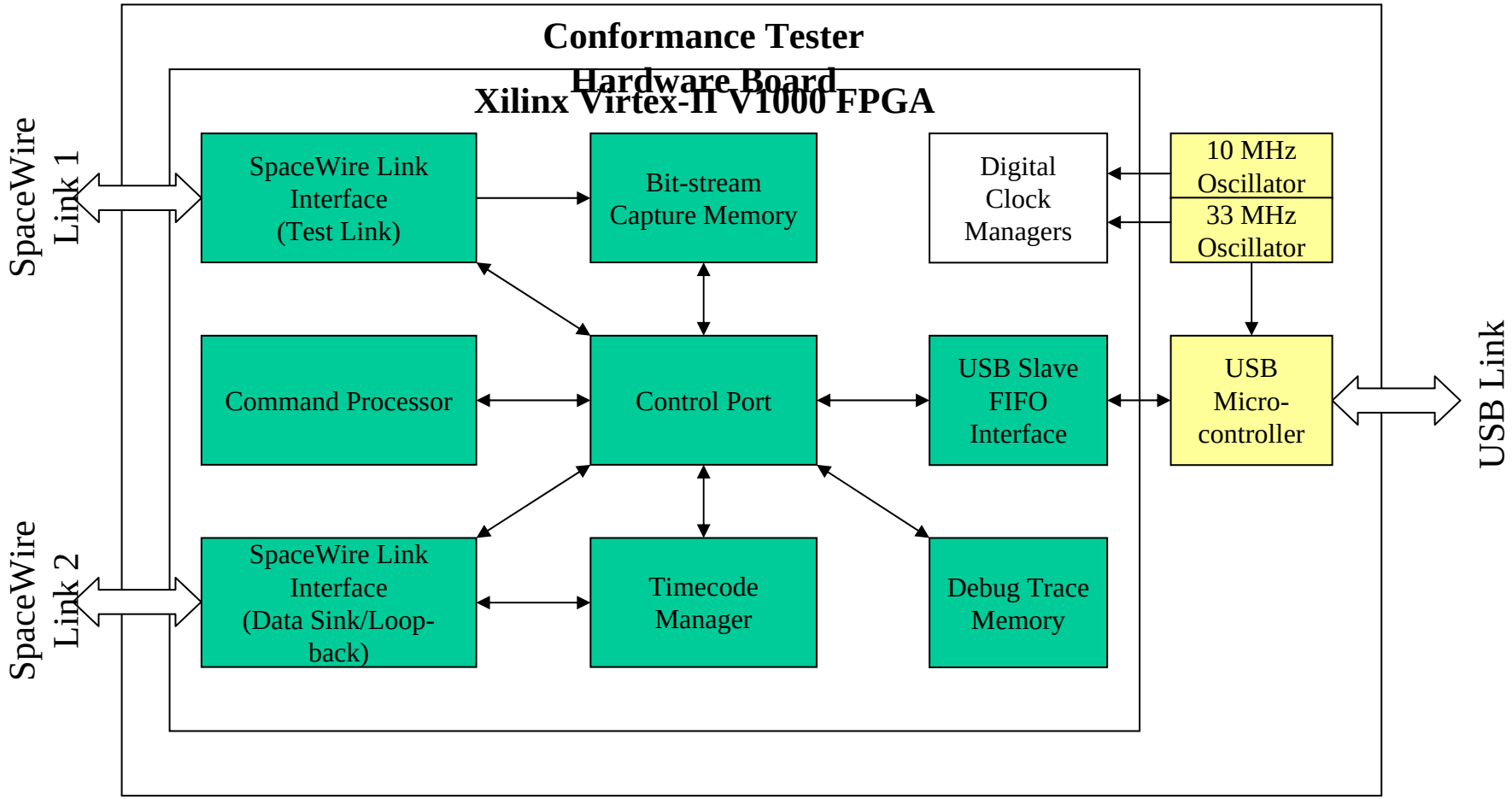
Introduction

- SpaceWire Standard defines conformance criteria
- SpaceWire Conformance Tester (SpW CT) checks these criteria
- Conformance testing is done by external connection to the SpaceWire interface to be tested (UUT); This allows testing of a range of components (simple interface, router, System-on-Chip with SpaceWire interface)
- Degrees of cooperation of the UUT are needed for conformance testing

SpW CT Overview

- PC SW steers the conformance testing
- Java user interface
- USB connection to the control PC
- Simple SpW connection between the SpW CT and the UUT is needed

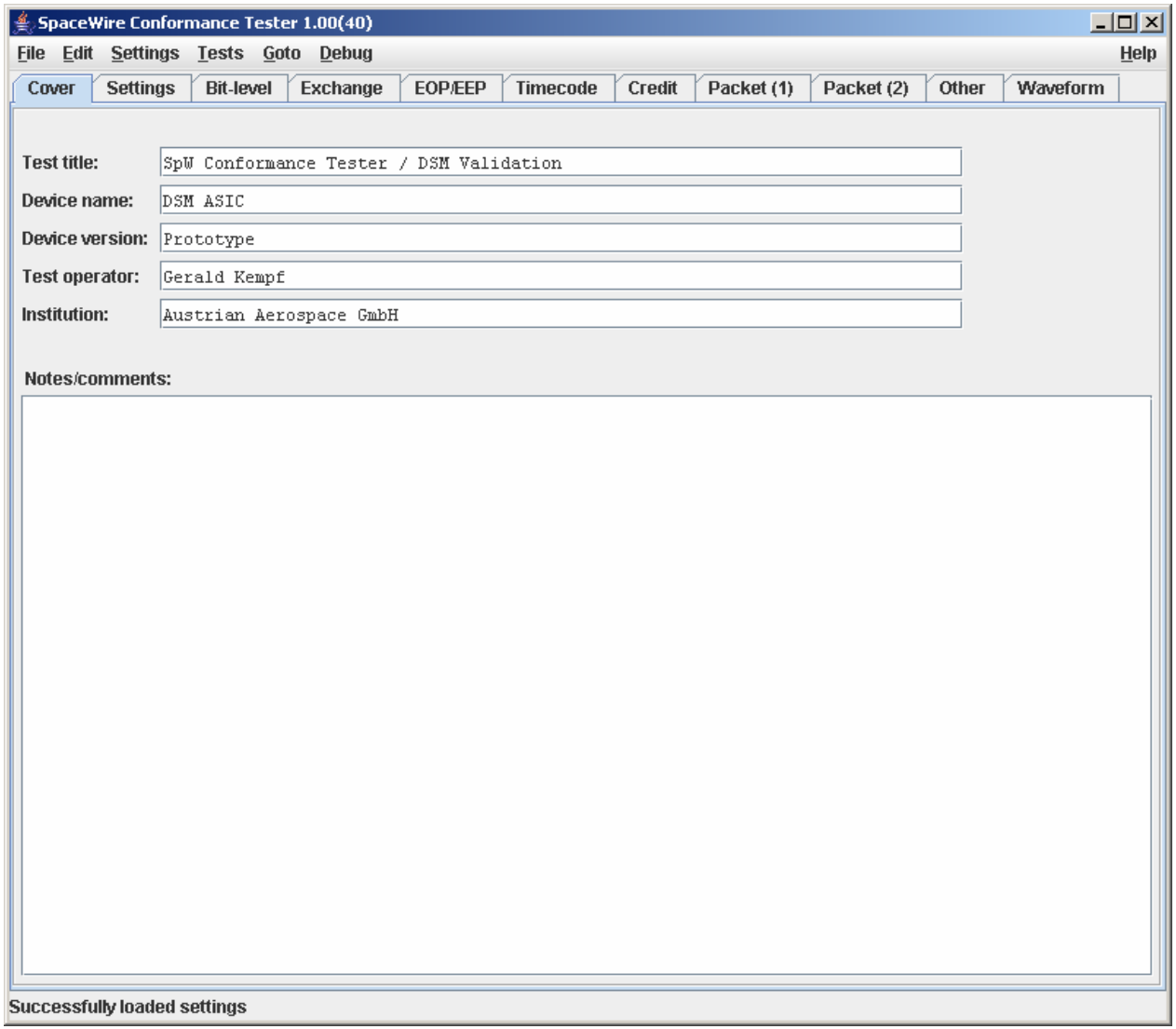
SpW CT Overview



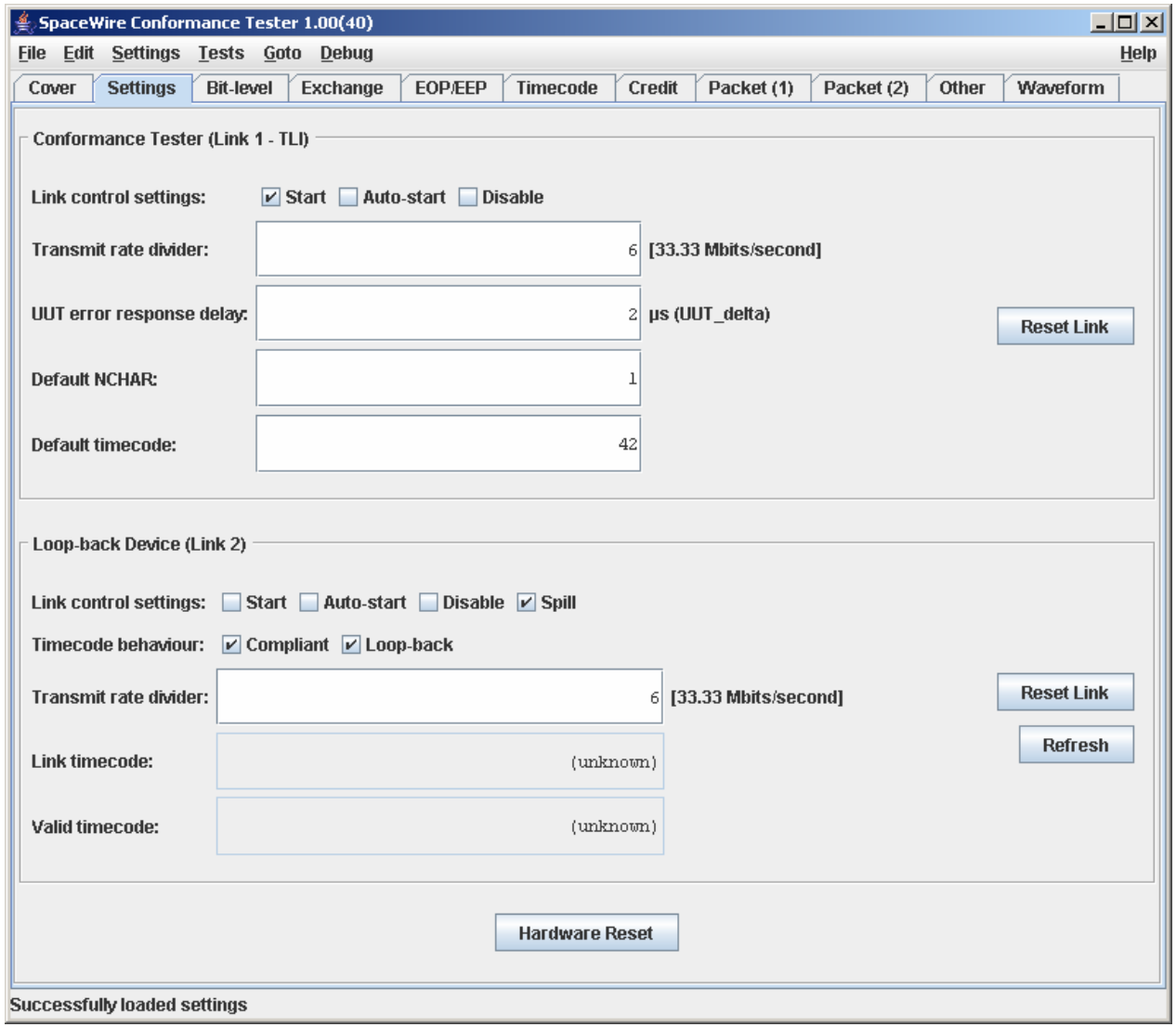
Conformance Test Coverage

Subclause of SpW Standard	Title	Coverage %	UUT cooperation
5.3	Connectors	**25**	**no**
5.5	PCB tracks	**10**	**no**
6	Signal level	**80**	**low**
7	Character level	**70**	**low**
8	Exchange level	**95**	**low**
9	Packet level	**100**	**high**
10.4	SpaceWire nodes	**100**	**high**
10.6	Network level errors	**100**	**high**

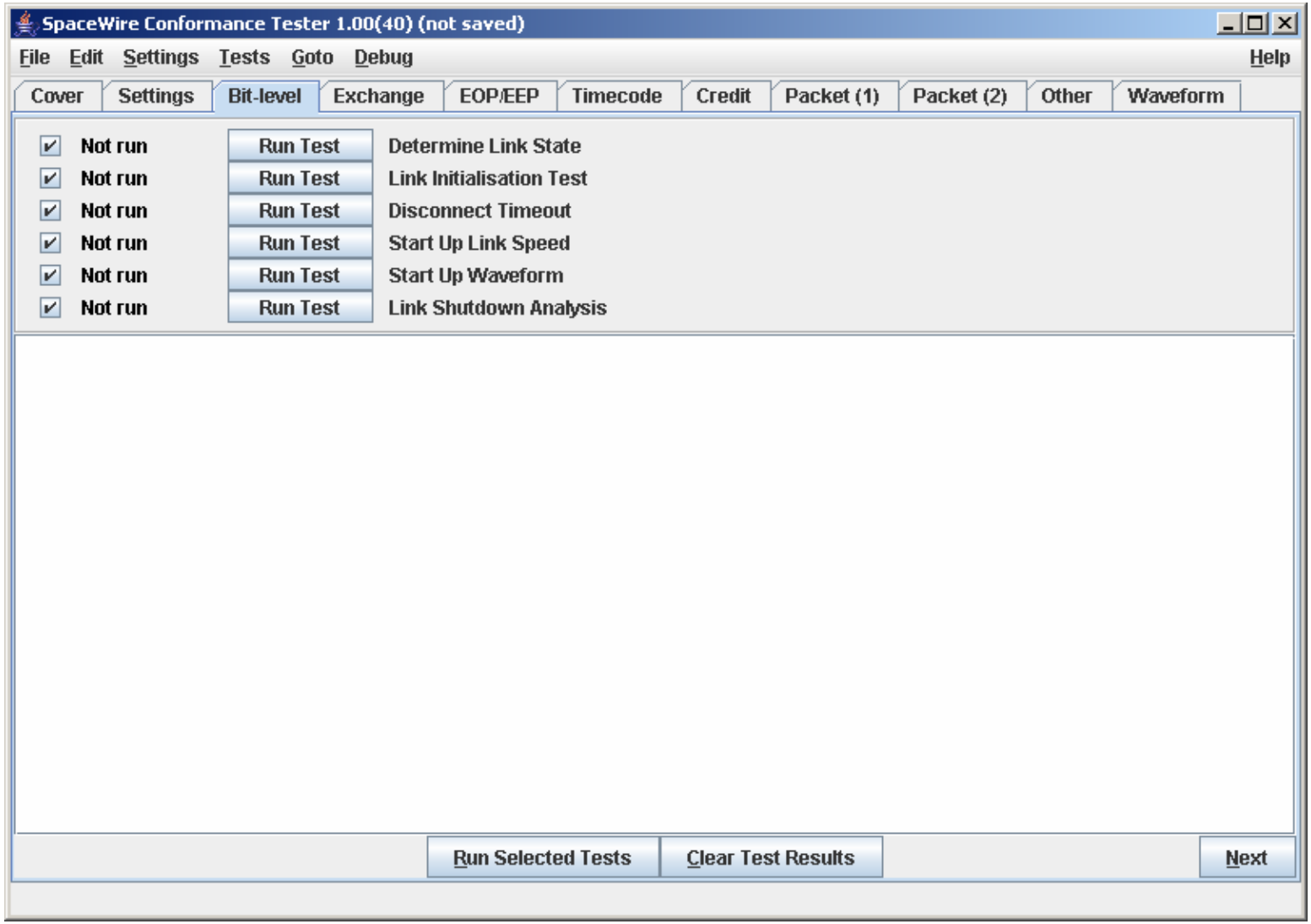
User Interface



User Interface



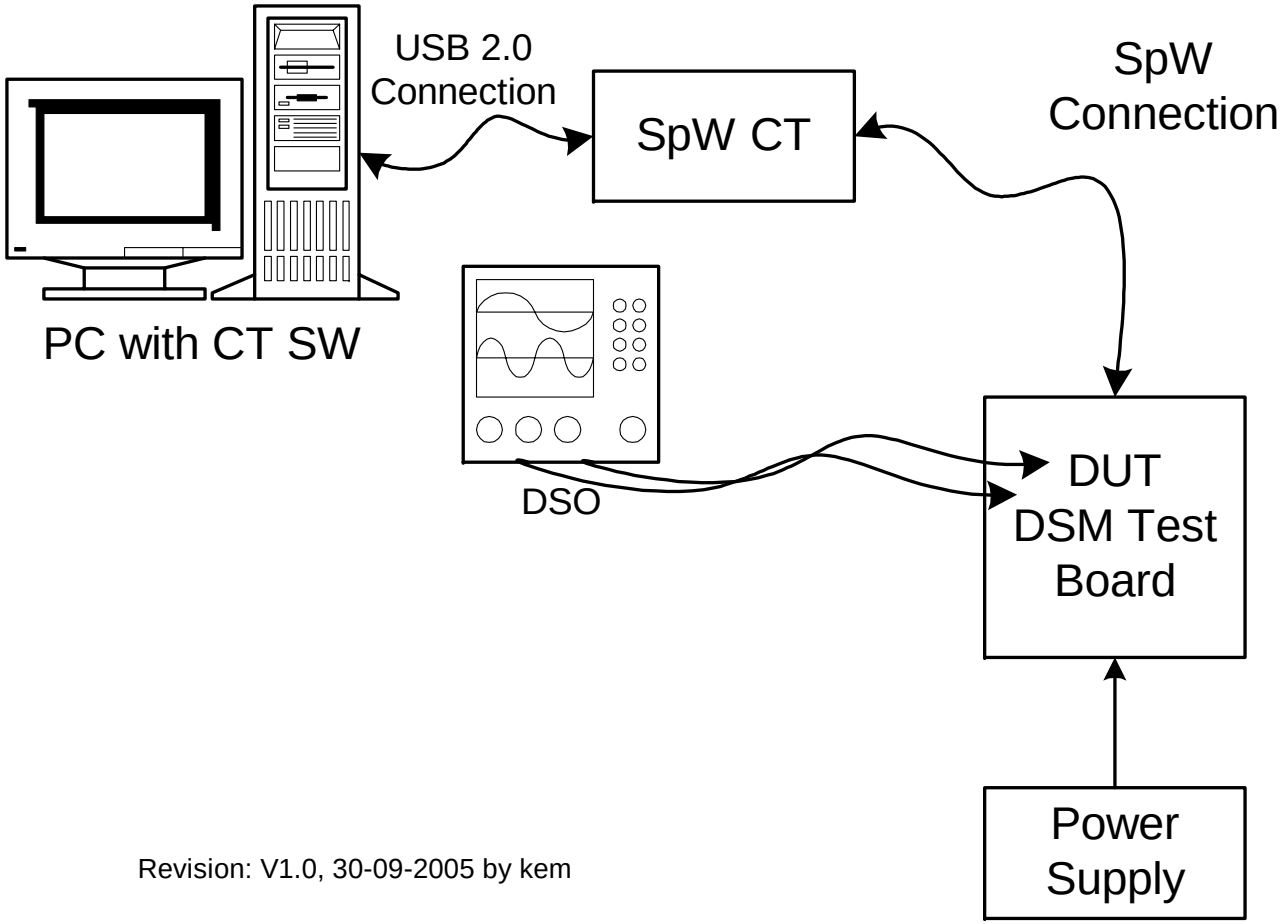
User Interface



Units Under Test

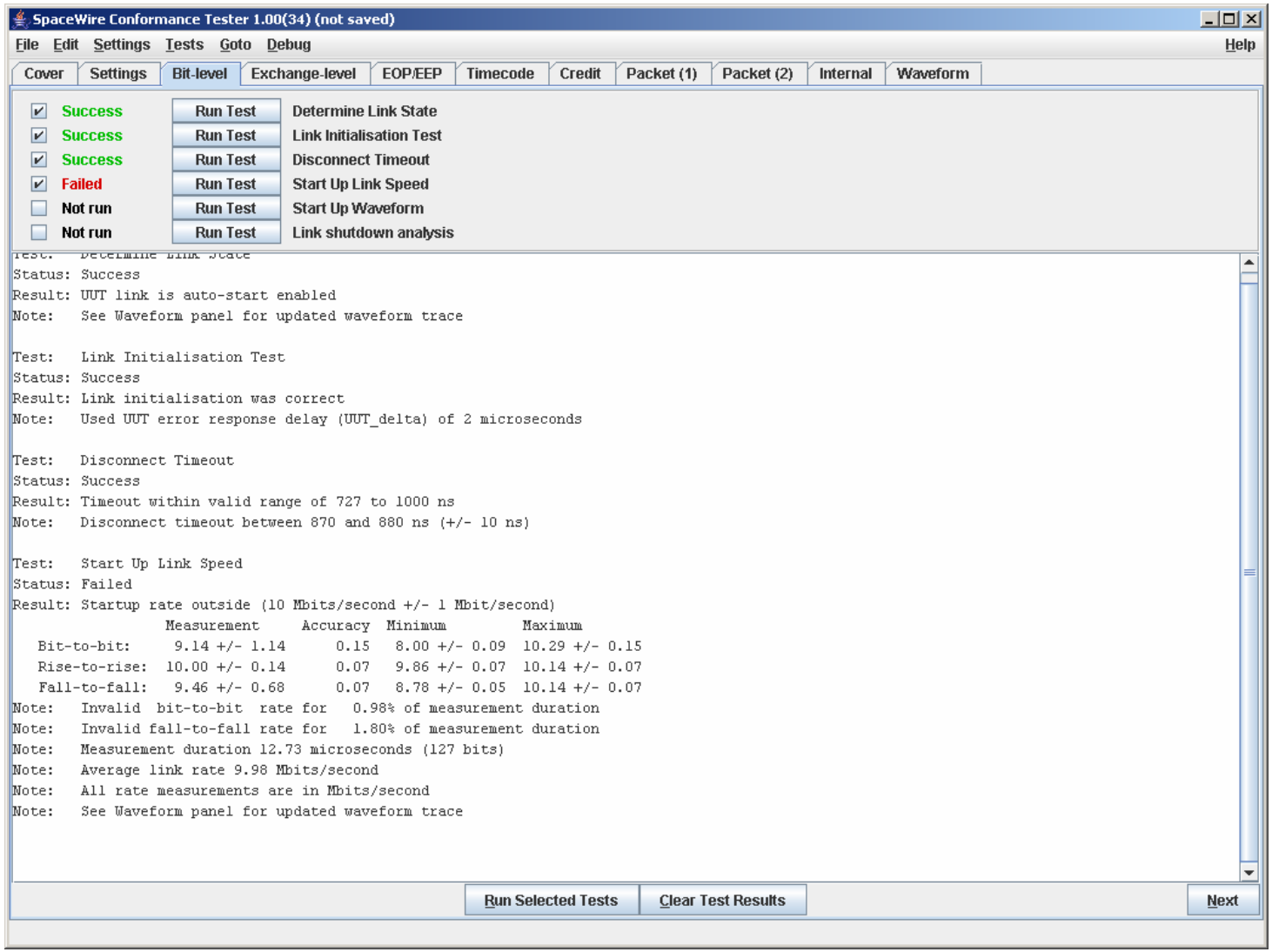
- Dynamic Switch Matrix ASIC
  - SpW router ASIC
  - Supports SpW Standard Draft D (June 2000)
  - Data rate is 40 Mbps for Tx, SpW CT sends with 33 Mbps
- Chirp Signal Generator FPGA
  - Uses A SpW IF for command and control
  - Supports latest SpW Standard
  - Data rate is 10 Mbps for Tx, SpW CT sends with 10 Mbps
  - Time-Code not used (not accessible)
- USB Platform FPGA
  - Bridge PC - USB - SpW
  - Supports latest SpW Standard
  - Data rate is 48 Mbps for Tx, SpW CT sends with 50 Mbps
  - Time-Code accessible

Test Set-up Example DSM



Revision: V1.0, 30-09-2005 by kem

Test Results - Example DSM



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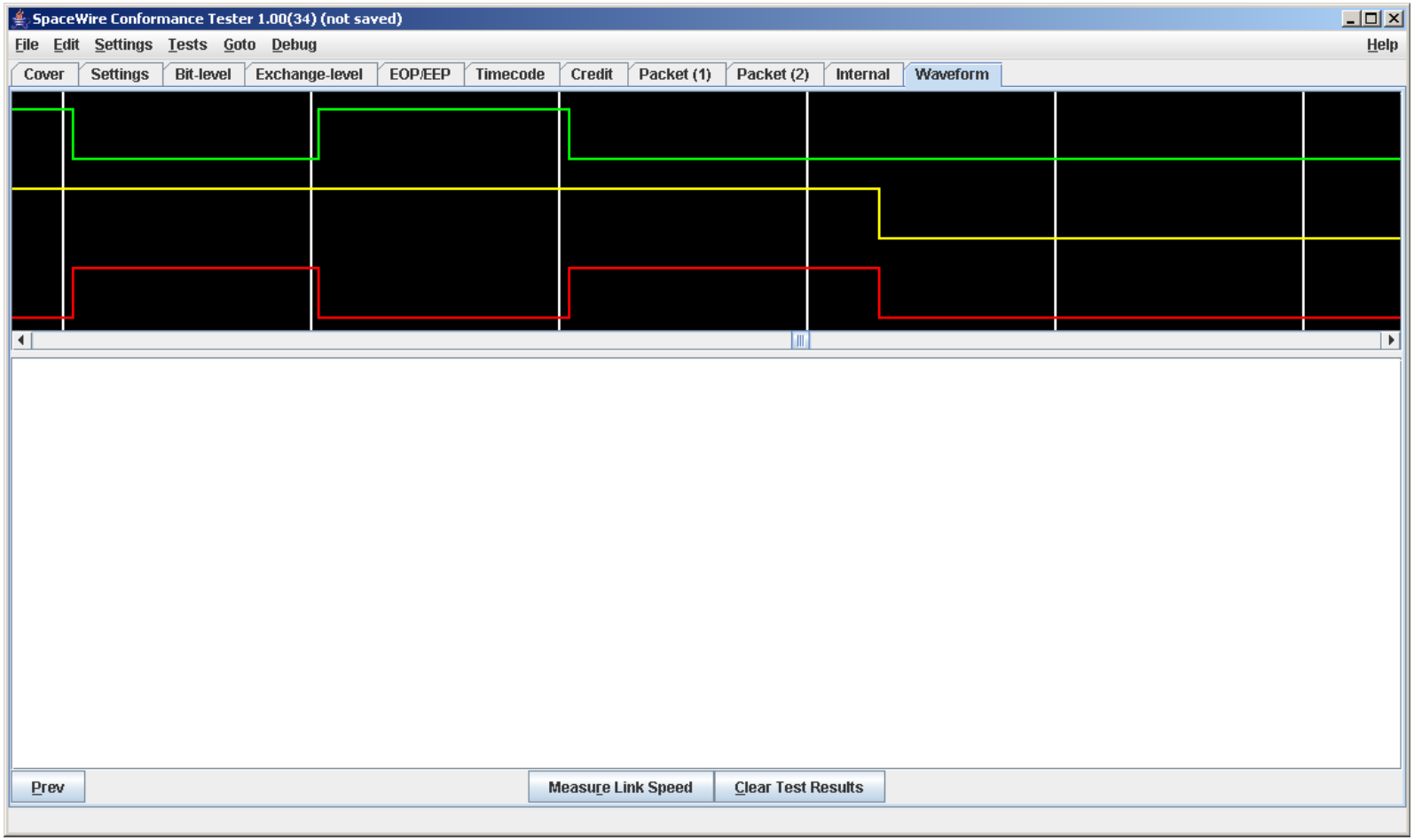

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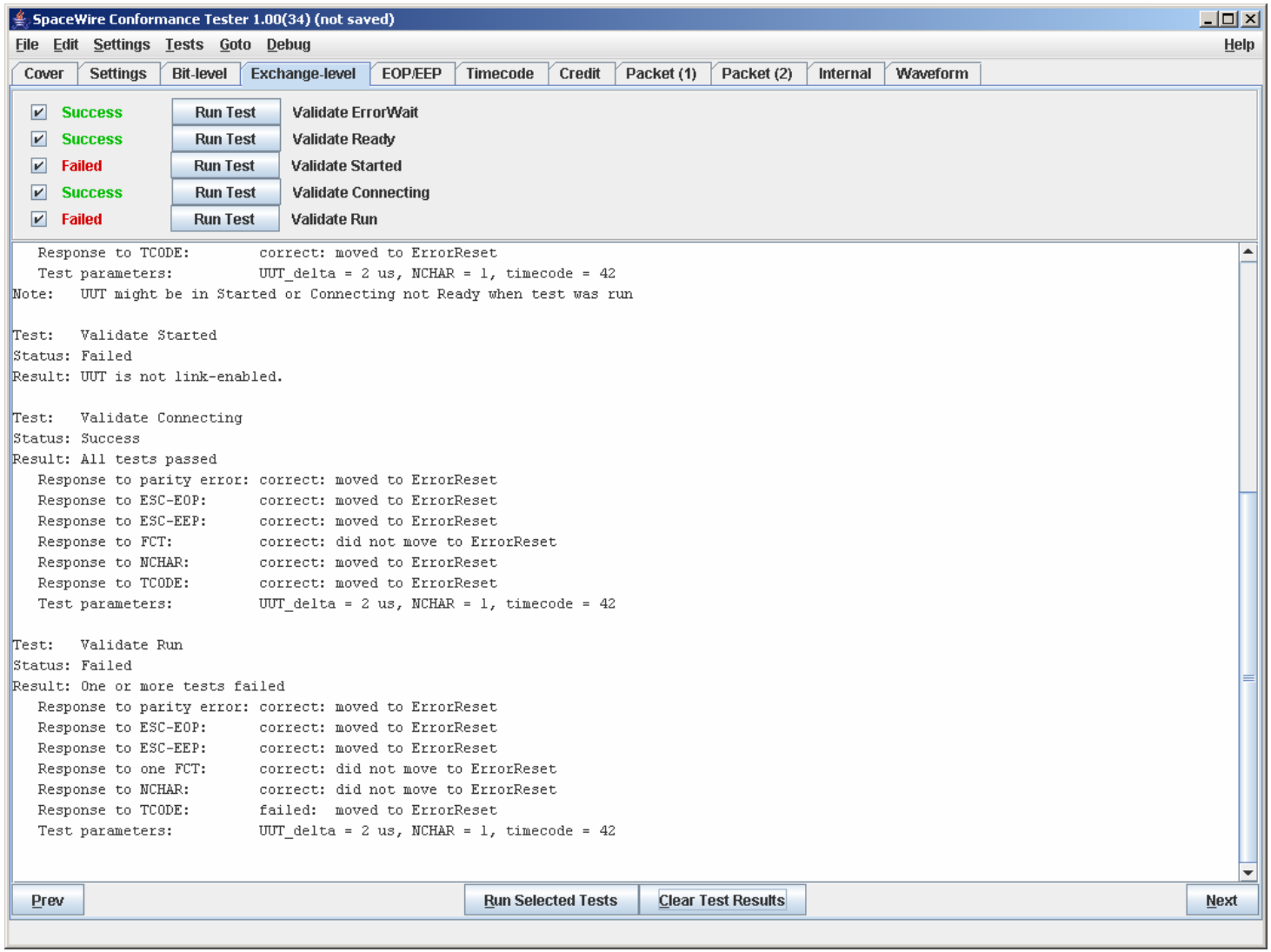

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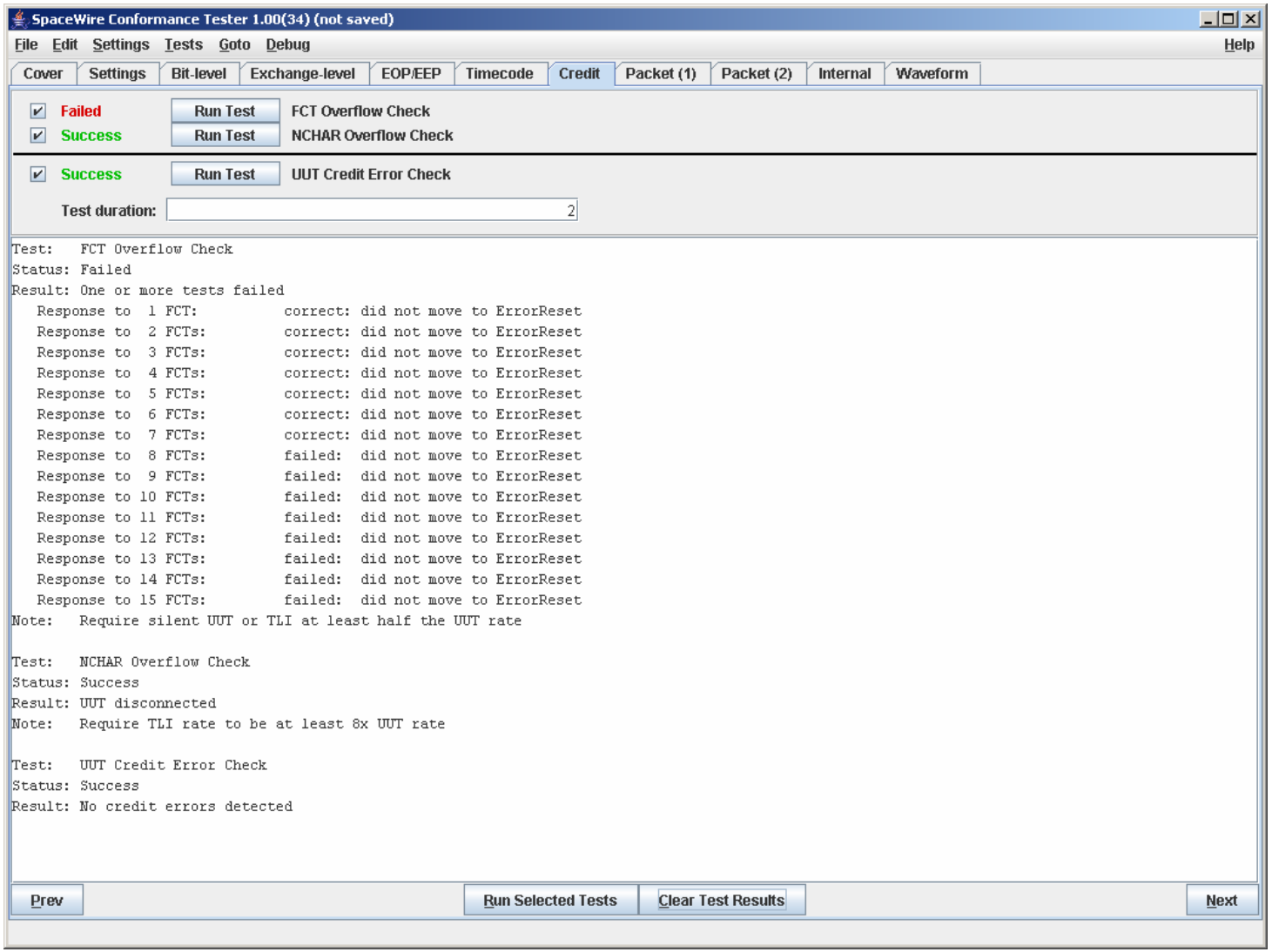
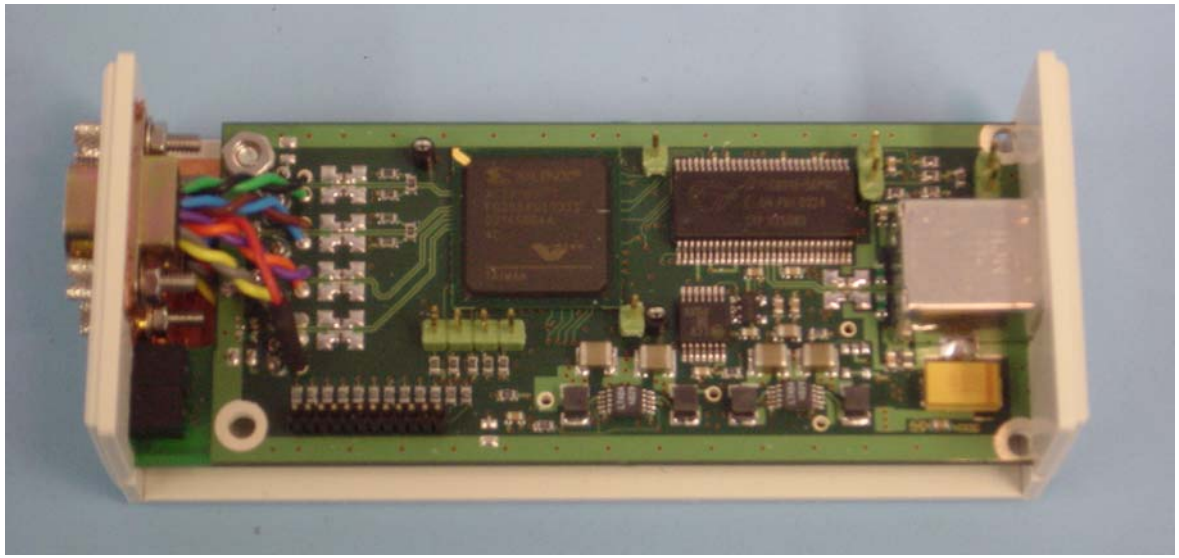


Conclusion

- SpW CT demonstrated with 3 UUT its performance
- Coverage of conformance testing is high if the UUT supports it
- It is easy to use
- The user needs to be able to interpret the results

Commercialisation

- Star Dundee will provide the SpW CT as a commercially available product
- Support and documentation will be provided by Star Dundee as well