

## IEEE-SA Standards Board Project Authorization Request (PAR) Form (2001-Rev 1)

After completing and saving this form, please send the form as an e-mail attachment to the **NesCom Secretary**. Please click on a year to view the submittal deadlines for the year **2001** and the year **2002**. Please don't forget to fax the **signature page**.

If the Working Group is new to the process or if you are a new Working Group Chair/Sponsor Chair/Society Liaison and you feel it would be beneficial for staff to give a brief presentation on the process of developing a standard, please check here [ ]

### Instructions for Downloading the PAR Form

**1. Sponsor Date  
of Request  
[2001 Nov 6]**

**2. Assigned Project  
Number  
[P1149.6]**

**3. PAR Approval  
Date (to be completed by staff)**  
\_\_\_\_\_

Copyright release must be submitted with **appropriate signatures** by FAX (1-732-562-1571)}

### **4. Project Title, Recorder and Working Group/Sponsor for this Project**

Document type and title: {Place an X in only one option below}

- [X] **Standard for**{document stressing the verb "shall"}
- [...] **Recommended Practice for**{document stressing the verb "should"}
- [...] **Guide for** {document in which good practices are suggested, stressing the verb "may"}

**Title: [Standard for Boundary Scan Testing of Advanced Digital Networks]**

Name of Working Group (WG): [AC EXTEST Working Group]

**Name of Official Reporter (usually the WG Chair) who must be an SA member as well as an IEEE and/or Affiliate Member:**

[William Eklow]

IEEE Standards Staff has verified that the Official Reporter (or Working Group Chair) is an IEEE and an IEEE-SA member:

[...] (Staff to check box)

**Contact Information:**

Telephone

[408-527-0512]

FAX:

[408-527-1298]

E-mail:

[beklow@Cisco.com]

**Name of Working Group Chair (if different than Reporter):** [...]  
 IEEE Standards Staff has verified that the Working Group Chair is an IEEE and an IEEE-SA member: [...] (Staff to check box)  
**Contact Information:**  
 Telephone [...] FAX: [...]  
 E-mail: [...]

**Name of Sponsoring Society and Committee:** [Computer Society/Test Technology ; Committee]  
 Name of Committee Sponsor Chair: [Adam Cron]  
 IEEE Standards Staff has verified that the Sponsor Chair is an IEEE and an IEEE-SA member: [...] (Staff to check box)  
**Contact Information:**  
 Telephone [610-712-3805] FAX: [610-712-2583]  
 E-mail: [a.cron@ieee.org]

## 5. Type of Project

### a. Is this an update to an existing PAR? [NO ]

If YES, indicate PAR Number/Approval Date [P####-YEAR]

If YES, is this project in ballot now? [yes/no]

[Indicate changes/rationale for revised PAR in Item #16. This should be no more than 5 lines.]

### b. Choose one from the following:

New standard

Revision of existing standard {number and year} [...]

Amendment to an existing standard {number and year} [...]

Corrigendum to an existing standard {number and year} [...]

## 6. Life Cycle

Full Use (5-year life cycle)

Trial Use (2-year life cycle)

## 7. Balloting Information

**Choose one from the following:** Individual Sponsor Balloting Entity Sponsor Balloting Mixed Balloting (combination of Individual and Entity Sponsor Balloting)**Expected Date of Submission for Initial Sponsor Ballot: [6/2002]**

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**8. Fill in Projected Completion Date for Submittal to RevCom [12/2002]**

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**9. Scope of Proposed Project:**

[This project will define an extension to IEEE Std. 1149.1-2001 to standardize the boundary scan structures and methods required to ensure simple, robust, and minimally intrusive boundary scan testing of advanced digital networks not adequately addressed by existing standards, especially those networks that are AC-coupled, differential, or both, in parallel with IEEE Std. 1149.1 testing of conventional digital networks and in conjunction with IEEE Std. 1149.4 testing of conventional analog networks. This project will be complementary to IEEE 1149.4, specifically targeting parallel testing of advanced digital networks while IEEE 1149.4 focuses on serial testing of more traditional analog networks. This project will also specify any software or BSDL extensions to IEEE Std. 1149.1-2001 which are required to support this new I/O test structure.]

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**10. Purpose of Proposed Project:**

[Existing boundary scan test standards (IEEE Std. 1149.1-2001, IEEE Std. 1149.4-1999) do not fully address some of the increasingly common, newer digital network topologies, such as AC-coupled differential interconnections on very high speed (1+ GBps) digital data paths. IEEE Std. 1149.1 structures and methods are intended to test static (that is, DC-coupled), single ended networks. It is unable to test dynamic (that is, AC-coupled) digital networks, since AC-coupling blocks static signals. Differential networks are also inadequately tested by the current IEEE Std. 1149.1-2001, which requires either the insertion of boundary cells between the differential driver or receiver and the chip pads (this often creates an unacceptable performance degradation), or insertion of single boundary cells before the differential driver and after the differential receiver (this reduces controllability and observability to the point that many board assembly defects cannot be detected). IEEE Std. 1149.4-1999 structures and methods are intended for testing analog networks, and in most cases are not able to test these newer digital networks as well. Specifically, IEEE Std. 1149.4-1999 provides the opportunity to inject dynamic (time varying) or analog signals for test, but these structures intended for analog testing are often too intrusive (too high an impact on performance and pin count) for high speed chip designs, and require additional resources and test application time not otherwise required for testing digital circuits. Finally, very high-speed logic imposes new restrictions on test structures that were not considered in IEEE Std. 1149.1. This project will define standard, robust, and minimally intrusive test structures and methods that provide greater detection and diagnostic capability than existing structures and methods for these classes of digital networks. The project will address the physical interface between components, the protocol for sending test data between components and the boundary scan interface. The project will also address any software and BSDL changes

that are required to support this proposed standard.]

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## 11. Intellectual Property {Answer each of the questions below}

Has the sponsor reviewed the IEEE patent policy with the group??

[Yes]{Yes/No}

Are you aware of the possibility of any copyrights relevant to this project?

[Yes]{Yes/No}

Are you aware of the possibility of any trademarks relevant to this project?

[No]{Yes/No}

Are you aware of possible registration of objects or numbers due to this project?

[No]{Yes/No}

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## 12. Are you aware of any other standards or projects with a similar scope?

[Yes] {Yes, with detailed explanation below / No}

[IEEE Std 1149.1 and 1149.4 have similar scope in a broad sense, however, high speed differential interconnects are beyond the scope of both standards. Both standards, therefore, fail to fully address the issues of testing the specific digital network topologies described above (see Section 10). While IEEE Std 1149.1 and 1149.4 may be capable of addressing some cases, they are not a comprehensive solution. This project is intended to be complimentary to both of these standards, by covering logic that is not within the scope of either standard. The test method described in this project will be used in conjunction with IEEE Std. 1149.1 and 1149.4 to provide greater board level fault coverage and diagnostic capability.]

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## 13. International Submissions

Will this standard (in part or in whole) be submitted to an international organization for consideration/adoption?

[No] {Yes/No/?? if you don't know at this time}

**If Yes, please answer the following questions:**

Which International Organization/Committee [...]

International Contact Information:

Name: [...]

Address: [...]

Phone: [...]

FAX: [...]

Email: [...]

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**14. Is this project intended to focus on health, safety or environmental issues?**

[No] { Yes/No/?? if you don't know at this time }

If Yes: Explanation [...]

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**15. Mandatory Coordination**

SCC 10 (IEEE Dictionary)	by <b>DR</b> {Circulation of <b>DR</b> afts }
IEEE Staff Editorial Review by	by <b>DR</b>
SCC 14 (Quantities, Units and Letter symbols)	by <b>DR</b>

**Additional communication and input from other organizations or other IEEE Standards Sponsors should be encouraged through participation in the working group or the balloting pool.**

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**16. Additional Explanatory Notes: {Item Number and Explanation}**

[...]{If necessary, these can be continued on additional pages }

The PAR Copyright Release and Signature Page must be submitted by FAX to 732-562-1571 before this PAR will be sent on for NesCom and Standards Board approval.