

# IEEE 1149.4 Mixed-Signal Test Bus Working Group Meeting Minutes

for  
September 6<sup>th</sup>, 2007

8 AM – 10:15 AM PDT

## Meeting Agenda:

Time	Topic	Responsibility
8 – 10:15 AM	1. Discuss issue related to MST_PORT_GROUPING attribute.	Adam Ley
	2. Review rules 10.4.4.5.2.	Adam Ley
	3. Review Note 3 - statement on Errata Bulletin.	Adam Ley
	4. Other updates on draft version 2.4	All
	5. Other issues.	All
10:15 AM	Meeting adjourned	Bambang

## Meeting Attendees:

Name	Company
Adam Ley	Asset-Intertech
Adam Cron	Synopsys
Ken Parker	Agilent Technologies
Zafar Quadri	Solectron Corp.
Heiko Ehrenberg	Goepel Electronics LLC
Bambang Suparjo	Mentor Graphics

### 1. Discuss issue related to MST\_PORT\_GROUPING attribute:

Adam Ley proposes the MST\_PORT\_GROUPING attribute to be defined earlier than the other MST attributes, to follow the order in 1149.1 BSDL entity description.

Since the order to define MST\_PORT\_GROUPING does not affect the description of other MST attributes, and it may require further editing effort, Adam Cron, Ken, Heiko and Bambang prefer to maintain the existing order.

## 2. Review rules 10.4.4.5.2.

Rules c, d (including the note), e and f have been updated:

### a. Rule 10.4.4.5.2c.

Each member of **all** <MST differential capture cell list> elements shall appear as the value of a <cell number> in a <cell entry> **element** in the <boundary register stmt>.

### b. Rule 10.4.4.5.2d.

If an <MST twin group type> equals **DIFFERENTIAL\_DIGITAL**, each <cell entry> that satisfies 0 shall have <function> **OBSERVE\_ONLY, CLOCK**, or, where **INTEST** does not occur as the value of an <instruction name> element in an <opcode description> element of the <instruction opcode stmt>, **INPUT**.

### c. Note

**All DBM cells referenced in all <MST differential capture cell list> elements shall behave in an observe-only manner.**

### d. Rule 10.4.4.5.2e.

If an <MST twin group type> equals **DIFFERENTIAL\_DIGITAL**, the value of each member of all <MST differential capture cell list> elements within all corresponding <MST twin group entry> **elements** shall not also be a value contained in the <MST ABM statement>.

### e. Rule 10.4.4.5.2f.

If an <MST twin group type> equals **DIFFERENTIAL\_ANALOG**, the value of each member of all <MST differential capture cell list> elements within all corresponding <MST twin group entry> **elements** shall be a value that is also contained in the <MST ABM statement>.

## 3. Review Note 3 - Statement on Errata Bulletin

The original Note 3 has been updated and split into 2 notes – Note 3 and Note 4:

### a. Note 3.

**When coding the Boundary-Scan Register description of differential inputs, use “observe\_only” rather than “input” to describe the cell function for the associated leg. (See examples in **Error! Reference source not found.**)**

b. Note 4.

For digital differential inputs that would be identified in a Port\_Grouping attribute, IEEE Std 1149.1-2001, Annex B “Boundary-Scan Description Language”, rule B.8.8.3 d) effectively disallows a boundary-scan register cell to be described as being attached to the <associated port> of a <twin group>. That is, by this rule a cell cannot be described as attached to the negative leg of a differential input pair. It has been considered that this rule stands in conflict with permissions 11.5.1 r) and 11.6.1 s) of IEEE Std 1149.1-2001, which are interpreted to allow observe-only cells to be attached to any signal pin. As regards this inherent conflict, this standard gives greater weight to the rules of IEEE Std 1149.1 Clause 11 that specify the provision of cells versus those of IEEE Std 1149.1 Annex B that specify the description of such cells. While, at this writing, as concerns IEEE Std 1149.1, no such corrigendum exists or is known to be planned, nevertheless this standard does require that such exception be taken to B.8.8.3 d).

**4. Other updates on draft version 2.4**

- a. Remove “test bus” from “MST test bus TBIC”. This is applied to the whole draft document.
- b. Xs and Zs are BSDL reserve words. The affected pin names in Figure 54 and Figure 58 need to be corrected. Further correction needs to be made on their associated BSDL examples.
- c. Figure 55 has been split into two diagrams; one diagram showing arrangement of supporting INTEST and the other one without INTEST. Their associated BSDL examples have been updated as well. A note that explains the use of BC\_4A has been added, as shown below:

In order to support the example, above, a BC\_4 cell type would be applicable, but the BC\_4 cell does not support <capture instruction> INTEST for <cell context> observe\_only. Therefore, a cell type, BC\_4A in this example, would have to be created that has such support.

- d. Adam Cron will edit Figure 27 in the original document to replace label TBIC(N) with TBICN.

**5. Other issues**

- a. Adam Cron will provide the list of changes made to the draft from the 1999 release.
- b. Meeting at ITC will be on October 25<sup>th</sup>, 1-5 PM.

**6. The meeting adjourned at 10:15 AM PDT.**