

**Date – 10/11/2011**

**Attendees:** CJ Clark, Bill Tuthill, Brian Turmelle, Adam Cron, Carl Barnhart, Carol Pyron, Ken Parker, Dave Dubberke, John Seibold, Josh Ferry, Wim Driessen, John Braden, Francisco Russi, Roland Latvala, Dharma Konda, Jeff Halnon, Sankaran Menon, Craig Stephan, Adam Ley, Heiko Ehrenberg, Bill Eklow,

**Missing with pre-excuse** Roger Sowada,

**Missing:** Lee Whetsel, Neil Jacobson, Mike Richetti, Ted Cleggett, Matthias Kamm , Ted Eaton, Peter Elias, Bill Bruce,

**Agenda:**

*From 11-11:30 we will motion and vote on how to proceed with SAMPLE. Keep that in mind when you open discussion. No need to repeat discussions. Be curt and concise, let's not re-hash the same arguments. If you don't understand what is being asked, haven't read the emails then just abstain. The WG meeting is not the time for education on fundamentals.*

- 1) **11:00** Patent Slides and Rules of Etiquette
- 2) Motion to modify SAMPLE rules to allow per cell/pin exceptions to the requirement for SAMPLE. A vote of Yes would mean that Carl would modify the rules for SAMPLE and allow pins which do not SAMPLE to be compliant.
  - This is essentially the same as the Friday straw poll. To be fair, we should vote up or down.
    - i. 3 min discussion – we have discussed and discussed already
  - Limited Discussion
- 3) Motion to not describe cells/pin which are non-compliant and do not SAMPLE. A yes vote here means that we do nothing more and no allowance. This is essentially the Friday straw poll that something should be done.
  2. These motions still mean that a write-up has to be done and voted on to acceptance by the WG. We're not going to work out the specifics in the meeting.
- 4) Motion to accept Method 3 as the method to describe cells/pins which do not SAMPLE.
  - Method 3.  
A new attribute to list the ports that are non-compliant:  
PRO: Minimal effect on existing standard.  
CON: Not coded in the boundary register; does not give actual value captured, loss of 0,1,X distinction

## IEEE 1149.1- 2011 Boundary Scan Working Group Minutes

- attribute SAMPLE\_NONCOMPLIANCE of mychip : entity IS  
"Serdes\_A, Serdes\_B";

### 5) Motion to accept Method 2 as the method to describe cells/pins which do not SAMPLE.

#### - Method 2.

An additional (optional?) keyword be added to the boundary register cell description to document whether the SAMPLE instruction captured data is valid.

PRO: easy to use. Required coding of compliant or not-compliant could force use.

CON: Does not say whether actual value captured is '0', '1', or 'X'. variable length b-s register fields

- Example:

```
"10 (BC_1, OUTPUT_1, output3, 0, 11, 0, Z), "&
"11 (BC_1, *, control, 0, NOSAMPLE), "&
```

### 6) Motion to accept Method 1 as the method to describe cells/pins which do not SAMPLE.

#### - Method 1.

The tables for inputs (B-8), outputs (B-9), and control (B-10) in sub-clause B.10.1 would be modified by adding "NC" entry under "1", "0", and 'X' columns and in the SAMPLE row. Text would be added saying that no standard BC\_nn cell uses this allowance, but a customer may define their own cell that does capture '1', '0' or 'X' for SAMPLE. and then use that cell as needed in the boundary-scan register description.

PRO: makes actual value captured explicit, requires some effort to discourage use.

CON: Requires a lot of effort to use and an additional Package file to be provided.

- Example table for CONTROL, CONTROLR:

<capture instruction>	PI	PO	UPD	CAP	X	ZERO	ONE
EXTEST	L	L	L	L	L	L	L
SAMPLE	L	—	—	—	NC	NC	NC
INTEST	L	—	M	—	—	—	—

- Note-- NC means that this value is non-compliant, but BSDL compilers will accept the coding and tools can then take the non-compliance into account.

- Example custom cell:

```
constant MY_NC : CELL_INFO :=
  ((CONTROL, EXTEST, ZERO), (CONTROLR, EXTEST, ZERO),
   (CONTROL, SAMPLE, ZERO), (CONTROLR, SAMPLE, ZERO),
   (CONTROL, INTEST, PI), (CONTROLR, INTEST, PI) );
```

### 7) Power Segmentation Presentation – Sankaran Menon Intel

### 8) Review of SelfMon and Pulsemon cells

#### 1. Looking for BSDL token

2. <type assignment> ::= **NOPI | NOPO | NOUPD | SELFMON | PULSEMON** | <user type keyword>

- i. Little change for the tool reader of BSDL. A method for IP providers, PDL writers to communicate the capability of the cell. Both cells add testability and PULSEMON reduces scans and enables an edge after UPDATEDR

9) PowerMux & Boundary\_Scan\_Segment

- 3. Enables INIT\_DATA to traverse multiple power domains
  - 1) Controls and senses power before mux is on
  - 2) Mux enable allows scanning through power domain
- ii. Can this be used with boundary register?

10) PDL Level 1

11) mixed R\_F/R\_A

12) Homework assignments

**Meeting Called to order at 11:10 am EST**

**Minutes:**

Review Patent Slide – Reminder sent out over email.

Solicited input from anybody who is aware of patents that might read on our standard.

No responses.

Review of Working Group Meeting Guidelines

Introduction of New Members to the working group. These 2 members did attend last week's meeting but did not have an opportunity to introduce themselves.

Jeff Halnon – Microsoft . Introduced

Sankaran Menon – Intel . Introduced

modify SAMPLE rules to allow per cell/pin exceptions to the requirement for SAMPLE.

Item #2) Motion to modify SAMPLE rules to allow cells/pin exceptions to the requirement for SAMPLE.

Motion made and seconded

AC	NO	FR		ABS
AL	NO	HE	NO	
BTu	YES	JB	YES	
BTr	NO	JF	YES	
CB	NO	JS	YES	
CP	YES	KP		ABS
CS	NO	RL	YES	
DD	NO	WD	YES	
DK	NO			

8 NO

7Yes

2ABS

Motion does not pass

Item #3) Motion to change bsdl to allow the documentation of non compliance with sample on a pin by pin basis. A no vote means we do nothing.

Motion made and Seconded

AC	YES		DK	YES
AL	NO		FR	YES
BE	YES		HE	YES
BTu		ABS	JB	YES
BTr	NO		JF	YES
CB	YES		JS	YES
CP	YES		KP	YES
CS	NO		RL	YES
DD	YES		WD	ABS

13 yes

3 no

2 abs

Motion passes

Item #4) Motion to accept Method 3 as the method to describe cells/pins which do not SAMPLE.

No one made a motion for this Item. The Item is not voted on.

Item #5) Motion to accept method 2 as the method to describe cells/pins which do not sample.

Carol has a modification

Add to boundary register a field to describe the sample behavior and wants details to be worked out later.

Motion seconded - Heiko

AC		ABS	DK	NO	
AL	NO		FR		YES
BE		ABS	HE		YES
BTu		ABS	JB		ABS
BTr	NO		JF	NO	
CB	NO		JS		YES
CP		YES	KP		ABS
CS	NO		RL		YES
DD	NO		WD		ABS

7 no

5 yes

6 abs

Motion does not pass

13) Motion to accept Method 1 as the method to describe cells/pins which do not SAMPLE.

Carl makes motion

Carol seconds

AC		ABS	DK		ABS
AL	NO		FR		ABS
BE		ABS	HE		ABS
BTu		ABS	JB		ABS
BTr	YES		JF	YES	
CB	YES		JS	YES	
CP	YES		KP	NO	
CS	YES		RL	NO	
DD	NO		WD		ABS

6 yes

4 no

8 abs

Motion passes

Carl will make changes in draft

Sankaran gives presentation on:

IOs powered off and options to enable boundary scan testing

Problem: Standard stations that Boundary Scan must be operational without bringing up the core

Need ability to add commands to registers to control power domains

Standard needs to be modified to allow additional TDR bits which can be set before running boundary scan

Init Data is not sufficient

Power-Mux is useful

Allows observation of the power status prior to expanding the tdr across a unpowered domain

Allows override of mission mode control of the power domain

Its consistent there teachable reliable and reusable

Carol: Power on means what in this case?

Sankaran: turning on the power to the die.

Carol: Power switches are on die

Sankaran: they can be but also can be external

Carl: which TDRs are you referring to?

Sankaran: not the boundary scan register itself

CJ: There is a need for power mux to be in boundary register. Not understanding how we deal with power domains in boundary register other than everything has to be in

EXTEST. But how do we do PRELOAD. Need to have bits in the init data register to turn power on. Nothing in BSDL to say which power you are turning on.

Carl: if you have them in the boundary register what command do you use to read the boundary register to see what the power status is before you can know what to turn on. SAMPLE?

CJ: what is wrong with SAMPLE/PRELOAD

Carl: would have to first SAMPLE, then PRELOAD to turn domains on as needed.

Maybe another SAMPLE to verify that they are on. Then INIT-SETUP and then INIT-RUN

What instruction do you use to scan the boundary scan register to do the power manipulation?

CJ: understood to be PRELOAD

Carl: PRELOAD doesn't read. Does not capture

CJ: ok.. Than sample to observe the TDR. SAMPLE/PRELOAD will capture

Carl: right, if it is a merged instruction

CJ: power mux will allow you to turn on a segment on at a time to find why the scan chain isn't working.

Help you to manage the debugging of scan chain problems by looking at smaller pieces.

KPP: Should be IP with wire coming out to control the power

CJ: power comes from something on the board. Segmented power on the board.

Ken: could have independently powered boundary scan cells while the rest of the board or chip can be powered separately.

Sankaran will send the slides to the working group

Carl moves to adjourn

- **Meeting adjourned: 12:06 EST.**  
**Next Meeting: 10/18/2011 11:00 AM EST**

4 Motions Made

1) Motion to modify SAMPLE rules to allow cells/pin exceptions to the requirement for SAMPLE

Motion did not pass. 8NO 7YES 2ABS

2) Change bsdL to allow the documentation of non compliance with sample on a pin by pin basis.

Motion Passed 13YES 3NO 2ABS

3) To accept Method 2 as the method to describe cells/pins which do not sample.

Motion did not pass 7NO 5YES 6ABS

4) To Accept Method 1 as the method to describe cells/pins which do not SAMPLE.

Motion Passed 6YES 4NO 8ABS

HomeWork Status

John has passed his examples in to the working group. CJ is running them through the parser.

Carol – is still working on examples  
Heiko is still working on examples.  
CJ is still working on port assignments

Homework assignments.

Heiko and Carol's assignments are outstanding and will be done for next week's meeting

CJ will have examples of port assignments  
Bill E – work on more concrete example and definition of the ESSID register

NOTES:

1149.1 working group website - <http://grouper.ieee.org/groups/1149/1/>

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**[JOIN the meeting as GUEST](#) – will have to ask to present**

Meeting time: Tuesdays 11:00 AM (EST) (Recurring)

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