JEITA IBIS Quality WG Update

IBIS Summit Tokyo, Japan
November 15, 2010

JEITA EDA-WG
Yoshihiro Hamaji (Toshiba I.S. Corporation)
Atsushi Osaki (Toshiba Corporation)

JEITA ; Japan Electronics and Information Technology Industries Association

© JEITA 2010. All Rights Reserved.
Agenda

1. Motivation
2. IBIS Quality Framework
3. Website of the IBIS Quality Framework
4. Conclusion
1. Motivation - IBIS Quality issues are confusing

Is the simulator implemented correctly?

Is the IBIS generated correctly?

We need the framework with which one can verify IBIS quality.

Is the simulator used correctly?

Is the simulator implemented correctly?

Is the IBIS generated correctly?

EDA vendor

Set maker

Chip vendor
1. Motivation - The Purpose of JEITA IBIS Quality WG

JEITA IBIS Quality WG

Provides the framework with which one can verify IBIS quality.

Set maker

- How to get better IBIS
- How to carry out accurate simulation

EDA vendor

How to qualify the simulator

Chip vendor

How to qualify IBIS
# 1. Motivation - Schedule

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic study of IBIS quality framework</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verification of IBIS quality framework</td>
<td>Single ended IBIS model-low speed (10Mbps class)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Single ended IBIS model-high speed (100Mbps class)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Differential IBIS model</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Promotion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Today’s topic**
  - Prepare WEB contents
  - Enhance web contents (differential)
  - Release a website (for low-speed IBIS)
2. IBIS Quality Framework - Definition of Qualified IBIS

- Simulation results for test circuits with qualified IBIS, qualified transmission line simulator, and qualified user, show good agreements with those of SPICE based simulator.
2. IBIS Quality Framework - Test circuits (1/2)

<table>
<thead>
<tr>
<th>Name</th>
<th>Termination</th>
<th>Transmission line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circuit 1</td>
<td>50ohm</td>
<td>0cm</td>
</tr>
<tr>
<td>Circuit 2</td>
<td>50ohm</td>
<td>5cm</td>
</tr>
<tr>
<td>Circuit 3</td>
<td>50ohm</td>
<td>30cm</td>
</tr>
<tr>
<td>Circuit 4</td>
<td>3pF</td>
<td>0cm</td>
</tr>
<tr>
<td>Circuit 5</td>
<td>3pF</td>
<td>5cm</td>
</tr>
<tr>
<td>Circuit 6</td>
<td>3pF</td>
<td>30cm</td>
</tr>
<tr>
<td>Circuit 7</td>
<td>3pF</td>
<td>30cm + 5cm</td>
</tr>
</tbody>
</table>

Input: PULSE  
Frequency = 10MHz
2. IBIS Quality Framework - Test circuits (2/2)

<table>
<thead>
<tr>
<th>Name</th>
<th>Termination</th>
<th>Transmission line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circuit 8</td>
<td>3pF</td>
<td>30cm + 5cm + 5cm + 5cm</td>
</tr>
<tr>
<td>Circuit 9</td>
<td>12pF</td>
<td>0cm</td>
</tr>
<tr>
<td>Circuit 10</td>
<td>100ohm + 100ohm</td>
<td>0cm</td>
</tr>
<tr>
<td>Circuit 11</td>
<td>10nH + 3pF</td>
<td>0cm</td>
</tr>
<tr>
<td>Circuit 12</td>
<td>3pF</td>
<td>5cm (Lumped circuit)</td>
</tr>
</tbody>
</table>

Input: PULSE
Frequency = 10MHz
2. IBIS Quality Framework - Usage

**JEITA**

**EDA vendor** Qualify the simulator

**Chip vendor**

Set maker

- Get the qualified IBIS
- Acquire the ability to carry out correct simulation

Upload the following data to website
(1) golden IBIS model
(2) test circuit group
(3) golden results (EXCEL data)

Web (open site)

Download

Upload

Compare

*Get the qualified IBIS*

*Acquire the ability to carry out correct simulation*

*Provide the qualified IBIS*

*Reduce possibility to get unreasonable claim for released IBIS*
3. Website of the IBIS Quality Framework - URL

- Website of the IBIS Quality Framework are going to be released before the end of 2010.
- http://ec.jeita.or.jp/jp/
3. Website of the IBIS Quality Framework - Top Page

The website is Japanese version only.
3. Website of the IBIS Quality Framework - Data Download

Agree to general disclaimers.
Enter personal information.

- company
- name
- zip code
- address
- phone number
- e-mail address

next
Confirm entered information.
3. Website of the IBIS Quality Framework - Data Download

Select download data.
3. Website of the IBIS Quality Framework - Golden result

An example of the golden result (excel)

Circuit diagram

Golden result

Your result

Your result vs. Golden result

Your result vs. Golden result (expanded)

Paste your simulation result on the light blue area.
4. Conclusion

• The IBIS Quality Framework is explained.
• Website of the IBIS Quality Framework are going to be released before the end of 2010.
• We hope a lot of companies will take part in this framework.
Thank you