IBIS 5.1: An Overview

Michael Mirmak (Intel Corporation)
Presented by
Lance Wang (IO Methodology)

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http://www.eda.org/ibis/

Agenda

- Why is IBIS 5.1 different?

- Major Changes

- BIRDs in IBIS 5.1

- Technical Changes

- Before and After

- Next Steps for IBIS

- Your Role: Review and Use!

IBIS 5.1 – A Reformatted Document

- IBIS 5.1 was approved Aug. 24, 2012

- IBIS 5.1 doesn't just add new features and clarifications
  - It's entirely different in appearance and format

- Rationale
  - Ease of change submissions (BIRDs)
  - Ease of editing
  - Improved readability
  - Improved usability, with cross-references & hyperlinks

Major Changes

- Clarifications for AMI and new non-AMI features
  - http://www.eda.org/ibis/birds/

- Appearance based on Microsoft Word*
  - ASCII is no longer used for figures and tables
  - Standards document style has been enforced for headers and body text

- Organization has been unified and improved
  - Terminology has been made more consistent
  - AMI flow, AMI Executable files and AMI Parameters are now more clearly explained, in separate sections (6C, 10 and 10A)

BIRDs in IBIS 5.1

151	IBIS-AMI Modified Reserved Parameters for Jitter/Noise	9-Mar-12
149.1	Usage Out Syntax Correction	17-Feb-12
148	Allowable Model_types with IBIS-AMI	6-Jan-12
146	Clarify sample_interval for IBIS-AMI	9-Dec-11
143.1	Correcting the rules for AMI_Close	7-Oct-11
142	Clarification of [Test Data] and [Test Load] scoping	16-Sep-11
141	[Composite Current] Clarifications	16-Sep-11
140.2	Format Corner and Range Clarification for IBIS-AMI	6-Jan-12
139.2	Reserved_Parameters Order	16-Sep-11
138	IBIS-AMI Section 6c Tables Update	16-Sep-11
137.2	AMI_parameters_in, AMI_parameters_out, msg Clarifications	16-Sep-11
136	Defining Relationships between Type and Format	16-Sep-11
135.1	Add Boolean to BNF for IBIS-AMI	16-Sep-11
134	AMI Function Return Value Clarification	24-Jun-11
133.1	Model Corner C_comp	6-Jan-12
132	Clarification of the Table Format for IBIS_AMI	5-Aug-11
130	Crosstalk Clarification With Respect to AMI	24-Jun-11
127.4	IBIS-AMI Typographical Corrections	9-Dec-11
126	IBIS-AMI New Reserved Parameter AMI_Version	18-Feb-11
120.1	IBIS-AMI Flow Correction	22-Apr-11
115	Clarifying Min/Typ/Max in IBIS-AMI	22-Oct-10
114.3	IBIS-AMI Definition Clarifications	10-Dec-10
113.3	Weak tie-up or tie-down resistance and voltage	19-Nov-10
112	IBIS-AMI clock_times Clarification	11-Jun-10
111.3	Extended Usage of External Series Components in EBDs	24-Apr-09

AMI Technical Changes

- Old AMI files generally still work in IBIS 5.1

- Subtle AMI flow changes
  - Previous flow did not support non-LTI models in TX AMI_GetWave
    - For LTI models, the results should not change
  - AMI_Version identifies .ami files as specifically supporting 5.1 rather than 5.0
  - UseInitOutput has been deprecated
    - Avoids "double-counting" equalization in TX models

Before and After
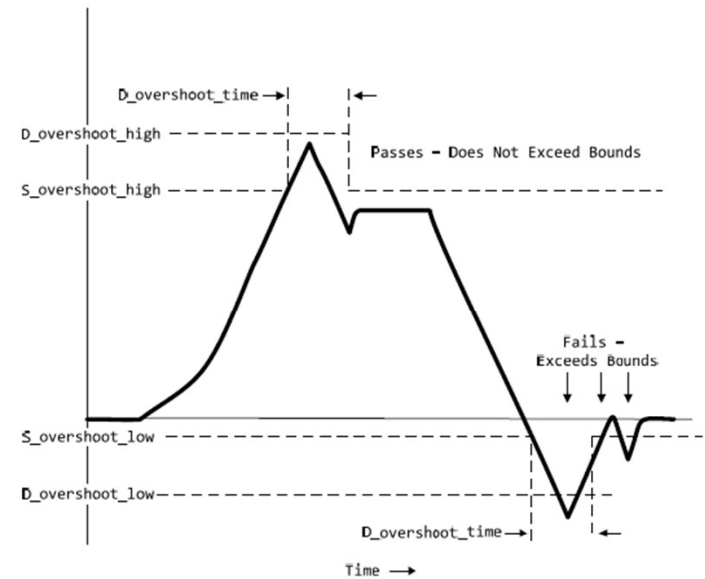
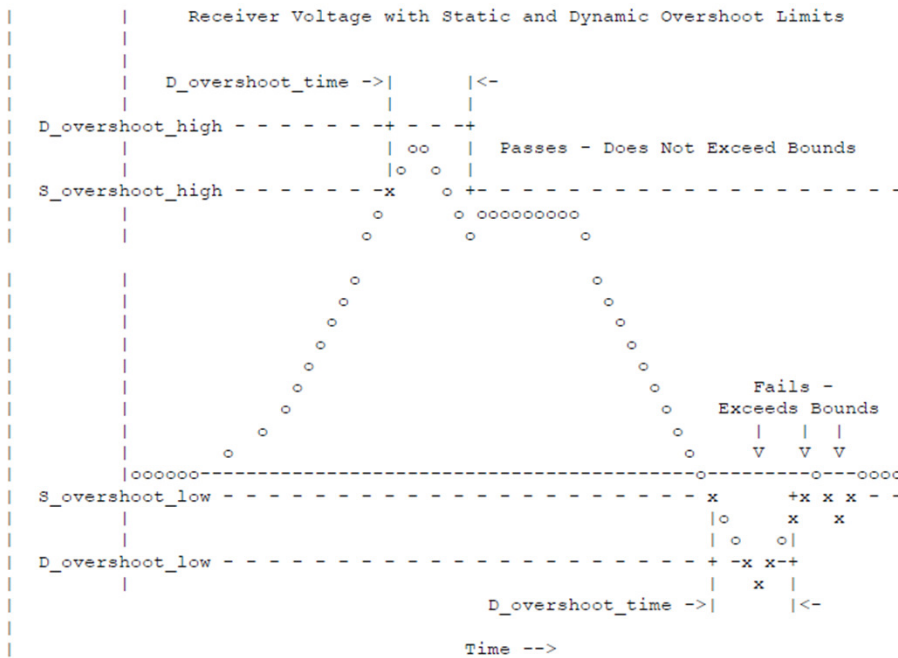- Figures and tables have been transformed

Figure 4 - Receiver Voltage with Static and Dynamic Overshoot Limits

Before…

- The presentation of AMI Parameters…

```
Tx_DCD:

Tx_DCD (Transmit Duty Cycle Distortion) can be of Usage Info
and Out.  It can be of Type Float and UI and can have Data
Format of Value, Range and Corner.  It tells the EDA platform
the maximum percentage deviation of the duration of a
transmitted pulse from the nominal pulse width.  Example of
TX_DCD declaration is:

(Tx_DCD (Usage Info)(Type Float)
        (Format Range <typ> <min> <max>))

Rx-only reserved parameters:

Rx_Clock_PDF and Rx_Receiver_Sensitivity

These reserved parameters only apply to Rx models.  These
parameters are optional; if the parameters are not specified,
the values default to "0".  If specified, they must be in the
following format:

(<parameter_name> (Usage <usage>)(Type <data_type>)
                  (Format <data format>) (Default <values>)
                  (Description <string>))
```

... and After

- The presentation of AMI Parameters...

Parameter: **Tx_DCD**

Required: No

Descriptors:

    Usage: Info, Out

    Type: Float, UI

    Format: Value, Range, Corner, List, Increment, Steps

    Default: <numeric_literal>

    Description: <string_literal>

Definition: Tx_DCD (Transmit Duty Cycle Distortion) tells the EDA tool the maximum deviation of the duration of a transmitted pulse as a fraction of the nominal pulse width. Entries are assumed to be in units of seconds when declared as Type Float.

Usage Rules:

Other Notes:

Examples:

```
(Tx_DCD (Usage Info)(Type Float)
     (Range 2e-12 1e-12 3e-12))
```

5.1 Parser Now Available!

- A 5.1-compatible Golden Parser has been completed!
  - IBISCHK5, Version 5.1.2, released Oct. 6, 2012
- Free executables available
  - http://www.eda.org/ibis/ibischk5/
  - Source code available under license
- 5.1.2 checks many more .ami file features
- Numerous BUG reports addressed:
  - http://www.eda.org/ibis/bugs/ibischk/

Next Steps

- Future versions will renumber the sections to avoid names such as 10A, 6B, etc.

- Current BIRDs are being rewritten according to the new format
  - 16 BIRDs proposed for *the next IBIS version*
  - Package model improvements, repeaters and backchannel adaptive equalization are addressed

- The next major version: IBIS 6.0
  - Any IBIS 5.2 would be for standardization only

Your Role: Study and Use!

- Please create and test 5.1 models using the new specification and parser!

- Suggestions for the parser, including BUG reports, are welcome

- Review the latest BIRDs proposed for the next IBIS version
  - The schedule for IBIS specification development is accelerating

Thank you for your support of IBIS!

Q/A