

# IBIS 5.1: An Overview



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Asian IBIS Summit  
Shanghai, P.R. China  
November 9, 2012

Expanded from original presented  
June 5, 2012

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

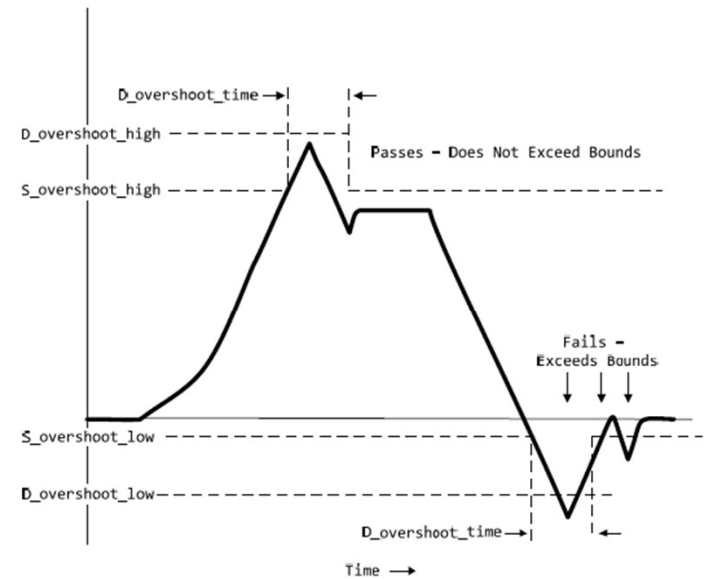
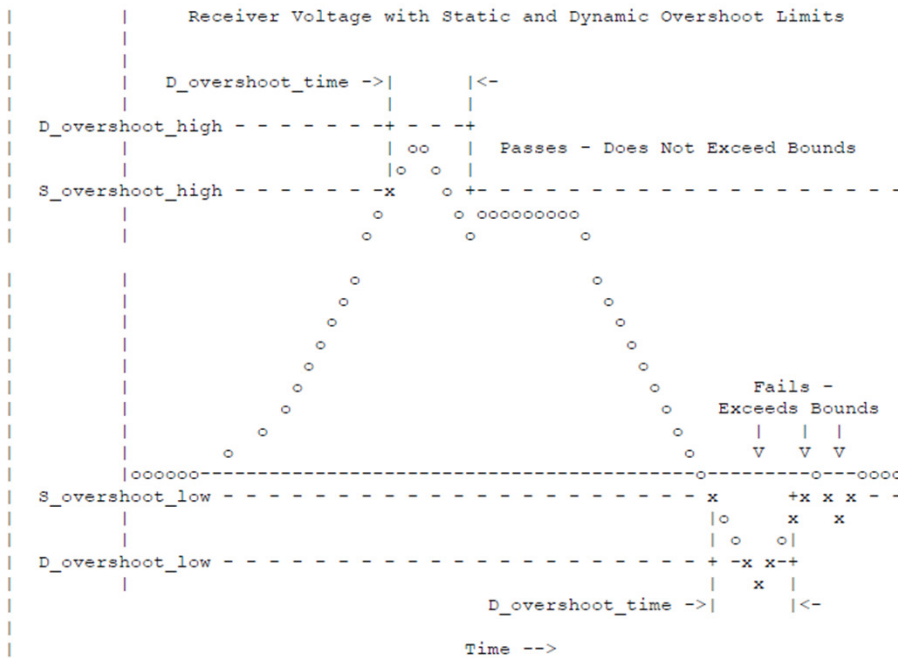


Figure 4 - Receiver Voltage with Static and Dynamic Overshoot Limits

# 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**