DUT vs DIA
Device Under Test
Device In Action

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IBIS Open Forum

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IBIS is a Behavioral Model of a Device Under Test

IBIS is a specification of a data format that contains the following behavior of I/O buffer models:

- IV and VT curves, and measurement/threshold values are of a Device Under Test (DUT)
- The conditions of a DUT are:
  - Rail voltages are kept constant relative to a test fixture reference "Node"
  - These Rail voltages are specified by the IBIS Parameters
    - [Voltage Range]
    - [Pullup Reference]
    - [Power Clamp Reference]
    - [Pulldown Reference]
    - [GND Clamp Reference]
  - IV and VT tables are measures at the I/O buffer, and exclude all package and other parasitics that may be required to perform the test.

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How Are IBIS Models Used?

- IBIS models are used in simulators to determine the time domain waveforms at various locations of a channel.
  - These models are Devices In Action (DIA).
- What rail voltages can be supplied to a DIA?
  - The same DC rail voltages that were used to generate the models data (DUT conditions)
  - Other DC rail voltages that different than the DUT rail voltages.
  - Time varying rail voltages due to
    - External voltage supply variations
    - Composite current demands from the buffer on non-ideal package models and power distributions systems

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Does the IBIS Specification Tell the EDA Tool How To Use IBIS Models When Simulating in Non-DUT Conditions?

- No (Almost always – ISSO is one exception)!
- Should It?
  - How should C_comp be split between the various rails
  - Does IBIS need to spell out the current drawn from an IV table when the voltage supplied to the IV table is not the DUT value?

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Positions Expressed by IBIS Members Involved in These Discussions

- No.
  - The IBIS model describes the behavior of the model under certain test conditions.
  - It is only valid at those test conditions.
  - An EDA tool is free to extrapolate that model to other operating conditions.

- Yes
  - The IBIS specification should document exactly what an EDA tool should do when the device is operating in other operating conditions
  - This way one can compare the results from different EDA tools.

- What is your opinion?

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