**BUFFER ISSUE RESOLUTION DOCUMENT (BIRD)**

**BIRD NUMBER: 197.2**

**ISSUE TITLE:** New AMI Reserved Parameter DC\_Offset

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**DATE REVISED:** December 4, 2018, January 15, 2019

**DATE ACCEPTED:**

**DEFINITION OF THE ISSUE:**

AMI modeling is now being applied to singled ended channels (e.g. DDR5). The current input to AMI\_Init is an Impulse Response. The forces all AMI simulations to be centered around the mid-level of the single ended signal. A DLL may need to know the singled ended voltage levels (e.g. to handle saturation in a DFE summer). This BIRD proposes a new AMI Reserved Parameter DC\_Offset, which is the singled ended voltage that is the mid value of the beginning and end of the step response of the channel.

**SOLUTION REQUIREMENTS:**

The IBIS specification must meet these requirements:

Table 1: Solution Requirements

|  |  |
| --- | --- |
| Requirement | Notes |
| 1. Allow the EDA tool to convey to the model the mid-point of the steady state high and low voltages found during analog model characterization of single-ended signals. |  |

**SUMMARY OF PROPOSED CHANGES:**

Add new AMI Reserved Parameter DC\_Offset.

**PROPOSED CHANGES:**

*Parameter:* **DC\_Offset**

*Required:* No, and illegal before AMI\_Version 7.0

*Direction:* Rx

*Descriptors:*

Usage:                   In

Type:                     Float

Format:                  Value

Default:                 <numeric\_literal>

Description:<string>

*Definition:* The mean value of the steady state high and low voltage of the channel at the Rx pad.

*Usage Rules:* If the impulse response was generated by differentiating the step response, then the value of DC\_Offset should be the same as the average of the step response initial and final voltages.

The AMI\_Init function can use this value to determine the single ended voltages inside of the model.

It is also assumed that the waveform input to the Rx AMI\_GetWave function is the single ended waveform minus this DC\_Offset. The Rx AMI\_GetWave function can choose to construct the singled ended waveform by adding DC\_Offset to the input waveform. The waveform output of the Rx AMI\_GetWave shall be adjusted so that the EDA tool can add DC\_Offset to get the single ended voltage of the waveform at the slicer (aka latch, decision point).

*Other Notes:* It is the responsibility of the EDA tool to determine the DC\_Offset. The EDA tool may use any method to do this.

*Example:*

DC\_Offset (Usage In) (Type Float) (Value 0.5)

(Description “The EDA tool is responsible for determining the DC\_Offset value to input to the executable model.”)

**BACKGROUND INFORMATION/HISTORY:**

Typographical updates made in BIRD197.1, based on feedback from Open Forum and ATM review.

BIRD197.2 contains additional editorial changes.