**BUFFER ISSUE RESOLUTION DOCUMENT (BIRD)**

**BIRD NUMBER: 197.draft\_3**

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

**REQUESTOR:**  Walter Katz, SiSoft

Ambrish Varma, Cadence

Randy Wolff, Micron

Justin Butterfield, Micron

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**DATE REVISED:**

**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 sumer). 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

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| --- | --- |
| 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.”
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**SUMMARY OF PROPOSED CHANGES:**

Add new AMI Reserved Parameter DC\_Offset

**PROPOSED CHANGES:**

*Parameter:*    **DC\_Offset**

*Required:* No, and illegal before AMI\_Version 7.x

*Direction:*Rx, Tx

*Descriptors*:

Usage:                   In

Type:                     Float

Format:                  Value

 Default:                 numeric\_literal

Description:The average value of the beginning and end voltages of the channel step response.

*Definition:* If Usage is In or InOut, the EDA tool is responsible for recognizing this parameter name and replacing the value declared in the .ami file with the average of the steady state high and low voltage of the channel at the Rx pad. If the impulse response was generated by differentiating the step response, then this should be the same as the average of the step response beginning and end voltage.

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 AMI\_GetWave function can choose to construct the singled ended waveform by adding DC\_Offset to the input waveform. The waveform output of the AMI\_GetWave shall nominally remain centered around zero.

*Usage Rules:*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 .5)

(Description "The EDA tool is responsible for determining the DC\_Offset value to input to the DLL”)

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**BACKGROUND INFORMATION/HISTORY:**