**BUFFER ISSUE RESOLUTION DOCUMENT (BIRD)**

**BIRD NUMBER: 199**

**ISSUE TITLE:** Fix Rx\_Receiver\_Sensitivity Inconsistencies

**REQUESTOR:**  Arpad Muranyi, Mentor a Siemens Business

**DATE SUBMITTED:** March 19, 2019

**DATE REVISED:**

**DATE ACCEPTED:** June 7, 2019

**DEFINITION OF THE ISSUE:**

The description of the Rx\_Receiver\_Sensitivity AMI parameter is somewhat vague, and the last example is inconsistent with the intent of this parameter.

**SOLUTION REQUIREMENTS:**

The IBIS specification must meet these requirements:

Table 1: Solution Requirements

|  |  |
| --- | --- |
| Requirement | Notes |
| 1. Make sure that the Rx\_Receiver\_Sensitivity parameter is described unambiguously.
2. Make sure that the examples are correct.
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**SUMMARY OF PROPOSED CHANGES:**

Add text to define the Rx\_Receiver\_Sensitivity parameter unambiguously and correct the last example.

**PROPOSED CHANGES:**

Replace this section (pg. 247-248 in the v7.0 IBIS specification):





with the following text:

*Parameter:* **Rx\_Receiver\_Sensitivity**

*Required:* No

*Direction:* Rx

*Descriptors*:

Usage: Info, Out, Dep

Type: Float

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

Default: <numeric\_literal*>*

Description:<string>

*Description:* Tells the EDA tool the voltage needed at the receiver data decision point above and below the reference voltage to ensure proper sampling of the equalized signal. The reference voltage is 0 V by default, unless defined by the PAM4\_Lower\_Threshold, PAM4\_Center\_Threshold, or PAM4\_Upper\_Threshold parameters.

*Usage Rules:* Entries are assumed to be in units of volts. If not present, the value of this parameter is 0 V.

*Other Notes:* For all formats, the resulting values of this parameter shall be non-negative floating point numbers.

*Examples:*

In the first example below, the waveform must rise at least 100 mV above or at least 100 mV below the reference voltage to ensure that the signal is sampled as logic ‘1’ or logic ‘0’, repectively. The remaining examples illustrate Rx\_Receiver\_Sensitivity with user settable values using various formats.

(Rx\_Receiver\_Sensitivity (Usage Info) (Type Float)

(Value 0.1))

(Rx\_Receiver\_Sensitivity (Usage Info) (Type Float)

 (List 0.1 0.05 0.06 0.07 0.08 0.09 0.11))

(Rx\_Receiver\_Sensitivity (Usage Info) (Type Float)

 (Range 0.2 0.1 0.3))

(Rx\_Receiver\_Sensitivity (Usage Info) (Type Float)

(Corner 0.2 0.1 0.3))

**BACKGROUND INFORMATION/HISTORY:**

This issue was discovered in the Editorial Task Group meeting on January 16, 2019 while preparing the IBIS v7.0 specification. The last example contained a negative number, which is incorrect. This was changed for the v7.0 specification, but in addition to this correction it was noted that the description of this parameter should define clearly the range of the allowable values. This BIRD proposes a better definition for this parameter.