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Buffer Issue Resolution Document  (BIRD)
BIRD ID#:      {TBD}
ISSUE TITLE:   Clarification of the Table Format for IBIS AMI.
REQUESTOR:     Walter Katz, Signal Integrity Software, Inc.
DATE SUBMITTED:
DATE REVISED:  March 24.1, 2011
DATE ACCEPTED BY IBIS OPEN FORUM:

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STATEMENT OF THE ISSUE:

The definition of Format Table is unclear when there is only 1 row in the
Table in the 5.0 version of the IBIS spec, and what the EDA tool needs to do
if the parameter is Reserved or Model_Specific, and Usage is Info, In, Out,
or InOut.

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STATEMENT OF THE RESOLVED SPECIFICATIONS:

On pg. 140 replace the following lines:

```
|     Table     The parameter name "Table" names a branch of the parameter
|              tree rather than a single leaf.  One of the leaves of this
|              branch can be named "Labels" and, if provided, is to be
|              assigned a string value containing a list of column names.
```

with these lines:

Table:

The Format "Table" states that this parameter contains of one or more than
one row delimited by (). A Table Parameter may be in the Reserved_Parameters
or Model_Specific sections of a .ami file. A Table parameter may be of Type
Float, UI, Integer, String or Boolean. The first token in each row will be an
integer row number, followed by "N" values. All rows must have the same
number of values. The first row number can be positive, negative or zero. All
subsequent row numbers shall be consecutive integers.

If a Table is a Reserved_Parameters, the Usage may be Info, In, Out, InOut.
the description of that Reserved_Parameters in the IBIS specification shall
determine the Type and Usage rules for each of the columns in the table. For
example, a Tx_Jitter table will be 3 columns wide; the first column is an
Integer, the second column is seconds if (Type Float), and in UI if (Type
UI), the third column is Float.

If a Table is a Model_Specific Parameter, the Usage may be Info, In, Out,
InOut. If In or InOut the simulator shall pass the contents of the Table to
the AMI_Init function in AMI_parameters_in string. If Out or InOut, the
AMI_Init and/or AMI_GetWave functions may return the table data in
AMI_parameters_out. If Out or InOut the simulator may make the tables

available to the user. If Info, the simulator has no knowledge of the content of the table, and at best it can only display the content of the table to the user. All N values, after the row number must be of the Type specified.

An example of Table used in the Reserved_Parameters Tx_Jitter:

```
(Tx_Jitter (Usage Info)(Type Float)
    (Table
        (Labels "Row_No" "Time" "Probability")
        (-5  -5e-12  1e-10)
        (-4  -4e-12  3e-7)
        (-3  -3e-12  1e-4)
        (-2  -2e-12  1e-2)
        (-1  -1e-12  0.29)
        (0    0       0.4)
        (1    1e-12  0.29)
        (2    2e-12  1e-2)
        (3    3e-12  1e-4)
        (4    4e-12  3e-7)
        (5    5e-12  1e-10)
    )
)
```

Since this is an Info Reserved_Parameters, the second column is seconds if (Type Float) or UI if (Type UI). The Third column is always a positive float, with a value of <=1, and the sum of all values in this column = 1. If this parameter was an In, Out, or InOut parameter then the following string would be passed into and/or out of the model:

```
(my_root ... (Tx_Jitter (-5  -5e-12  1e-10) (-4  -4e-12  3e-7)
(-3  -3e-12  1e-4) (-2  -2e-12  1e-2) (-1  -1e-12  0.29)
(0    0       0.4) (1    1e-12  0.29) (2    2e-12  1e-2)
(3    3e-12  1e-4) (4    4e-12  3e-7) (5    5e-12  1e-10) ))
```

Note: CR and line feeds are inserted but not required.

An example of a Model_Specific In Table:

```
(fwd (Usage In) (Type Float)
    (Table
        ( 1   -0.169324  1.40308   0.33024 )
        ( 2   -0.738358 -0.293473 -0.06912 )
    )
)
```

The simulator shall include fwd in the AMI_parameters_in strings as:

```
(my_root ...   (fwd ( 1 -0.169324  1.40308   0.33024 )
                    ( 2 -0.738358 -0.293473 -0.06912 )
              )
)
```

Another example:

```
(fwd (Usage In) (Type Float)
     (Table
         (1 -0.169324  1.40308   0.33024 )
       )
)
```

The simulator shall include fwd in the AMI_parameters_in strings as:

```
(my_root ... (fwd (1 -0.169324  1.40308   0.33024 ))
```

Another example:

```
(fwd (Usage In) (Type Float)
     (Table
         (0 -0.169324  1.40308   0.33024 )
         (1 -0.738358 -0.293473 -0.06912 )
       )
)
```

The simulator shall include fwd in the AMI_parameters_in strings as:

```
(my_root ...  (fwd (0 -0.169324  1.40308   0.33024 )
                   (1 -0.738358 -0.293473 -0.06912 )
              )
)
```


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ANALYSIS PATH/DATA THAT LED TO SPECIFICATION:

The existing IBIS specification lacks clear definition the Format 'Table'
and how it should be treated when used as a format for a Usage 'In'
parameter.

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ANY OTHER BACKGROUND INFORMATION:

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