

DS80PCIxxx IBIS-AMI Model User Guide

Version : 1.0

Date : 06-22-2012

1. DS80PCIxxx model parameters :

a) Rx Parameters:

1. EQ_Level : To set 16 Linear Equalizer Settings. The mapping is same as given in the Table 2 of the datasheet, and is also shown in the below table.

EQ_Level	EQ	Boost at 4.0GHz (dB)
1	0x00	4.9
2	0x01	7.9
3	0x02	9.9
4	0x03	11.0
5	0x07	14.3
6	0x15	14.6
7	0x0B	17.0
8	0x0F	18.5
9	0x55	18.0
10	0x1F	22.0
11	0x2F	24.4
12	0x3F	25.8
13	0xAA	27.4
14	0x7F	29.0
15	0xBF	31.4
16	0xFF	32.7

b) Tx Parameters

1. DE_Level : De-emphasis level setting. The model supports 8 DE levels and the mapping is shown in the below table.

DE_Level	De-emphasis value (dB)
1	0.0
2	-1.5
3	-3.5
4	-5.0
5	-6.0
6	-8.0
7	-9.0
8	-12.0

2. VOD_Level: Output voltage peak – peak level setting. The model supports 8 VOD level settings and the mapping is shown in the below table.

VOD_Level	Differential output voltage (Vp-p)
1	0.7
2	0.8
3	0.9
4	1.0
5	1.1
6	1.2
7	1.3
8	1.4

3. LimitMode : This parameter takes two values 0 , 1
 - i. 0 : In this mode the model operates in non-limiting mode. The output voltage p-p depends on the input voltage p-p. ***This mode is for normal PCIe Gen3 operation.***
 - ii. 1 : In this mode the model operates in limiting model. An additional gain of 40dB is included and thus the output voltage p-p will only depend on the limiting amplitude and not the input voltage p-p.
4. Rate_Sel : This parameter takes two values 0, 1 . This defines high / low frequency limiting behavior.
 - i. 0 : In this mode the low frequency limiting behavior is modeled. ***This mode is for normal PCIe Gen3 operation.***
 - ii. 1: In this mode high-frequency limiting behavior is modeled. ***This mode is for normal PCIe Gen1/2 operation.***

2. Note on how to choose Samples per UI simulation parameter :

Samples per UI should be chosen such that, the sample time (UI / Samples per UI) should be less than 10e-12 for accurate results. Typical recommended values for different Bit Rates :

1 Gbps – 128 Samples per UI or higher

4 Gbps – 64 Samples per UI or higher

8 Gbps – 32 Samples per UI or higher

3. Note on [Repeater Pin]

[Repeater Pin] key word is used to define the Rx input pin and Tx output pin pairs which form repeaters. This is not yet part of the official IBIS standard and hence the IBIS parser throws ‘Invalid Keyword’ error. Please ignore this error as the model runs fine in QCD and the [Repeater Pin] definition is necessary to simulate ‘Repeater’ models in QCD.