

# **DS25CP104A IBIS-AMI Model User Guide**

**Version: 1.1**

**Date: 21-01-2013**

# DS25cp104A AMI Model Parameters

## 1. RX Parameters

- There is only one parameter named **EQ** which is used to specify the level of equalization.
- The parameter takes the values 0, 1, 2 and 3 in the increasing order of Equalization.

## 2. Tx Parameters

There are two parameters:

### 1) PE

- It specifies the Pre-emphasis level setting.
- It takes the values 0, 1, 2 and 3 in the increasing order of Pre-emphasis.

### 2) Gain\_adjust

- This parameter is used for Debug purposes and is fixed to the value of 2.4138.
- It **should not** be changed by the user.

## Note on how to choose Samples per UI simulation parameter:

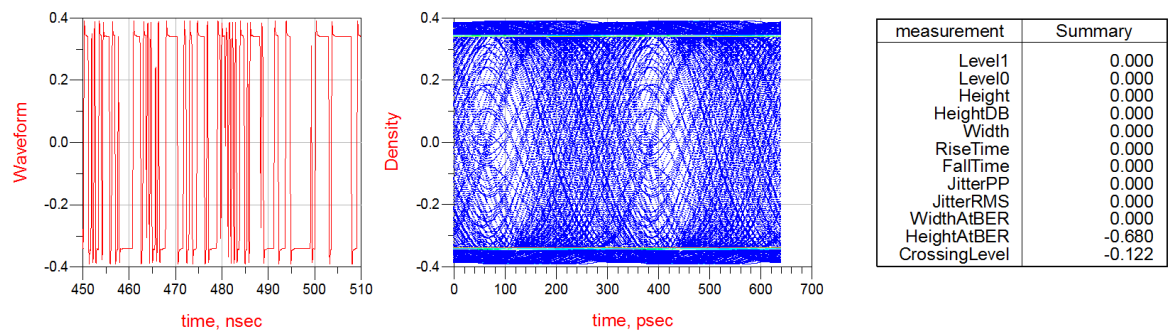
Samples per UI should be chosen such that, the sample time (UI / Samples per UI) should be less than 10e-12 for accurate results. Typical recommended values for different Bit Rates :

- 1) 1 Gbps – 128 Samples per UI or higher
- 2) 2.5 Gbps- 64 Samples per UI or higher
- 3) 3.125 Gbps- 64 Samples per UI or higher
- 4) 4 Gbps – 64 Samples per UI or higher
- 5) 8 Gbps – 32 Samples per UI or higher

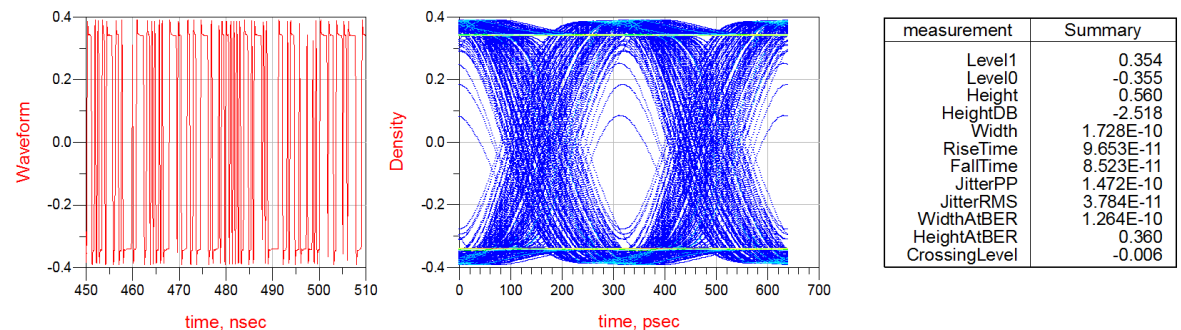
## ADS Simulation results

### A. EQ Performance setup

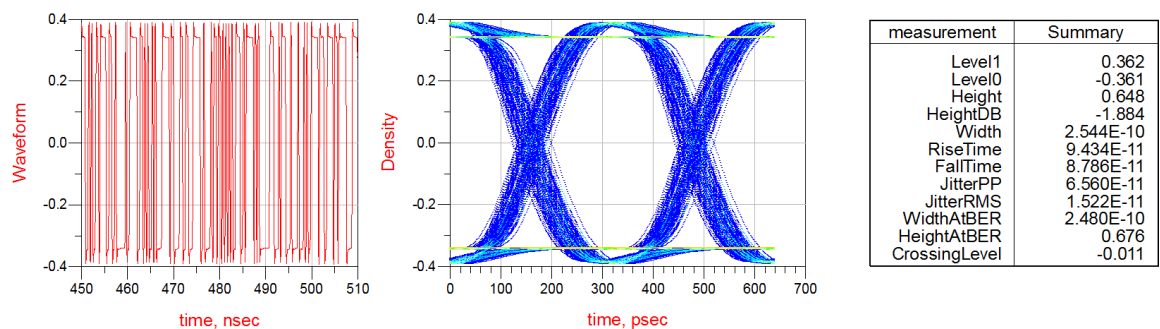
- 1) Channels : Rx channel = 60'' 5mil stripline, Tx channel = 0'' stripline  
 Parameters: EQ=0, PE=0  
 Input Source: BitRate=3.125 Gbps PRBS-23, Vp-p = 1V, DE = 0dB



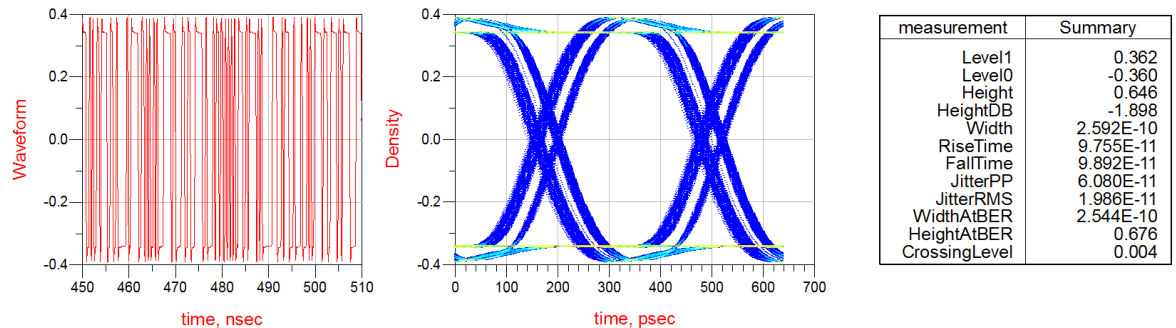
- 2) Channels : Rx channel = 60'' 5mil stripline, Tx channel = 0'' stripline  
 Parameters: EQ=1, PE=0  
 Input Source: BitRate=3.125 Gbps PRBS-23, Vp-p = 1V, DE = 0dB



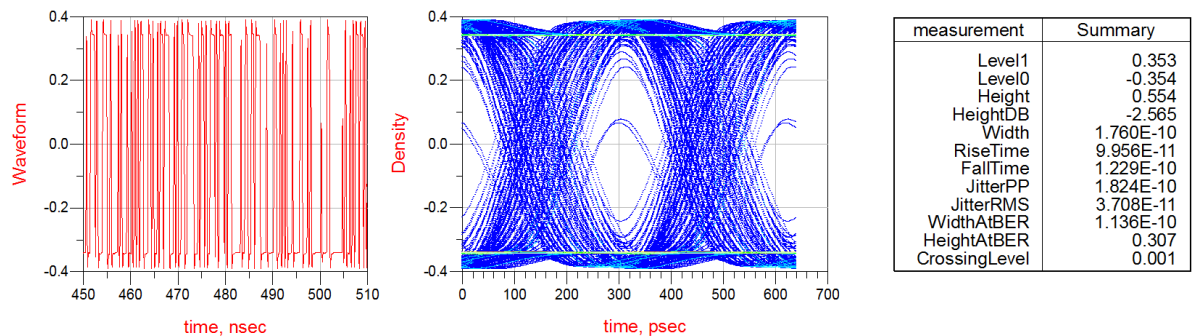
- 3) Channels : Rx channel = 60'' 5mil stripline, Tx channel = 0'' stripline  
 Parameters: EQ=2, PE=0  
 Input Source: BitRate=3.125 Gbps PRBS-23, Vp-p = 1V, DE = 0dB



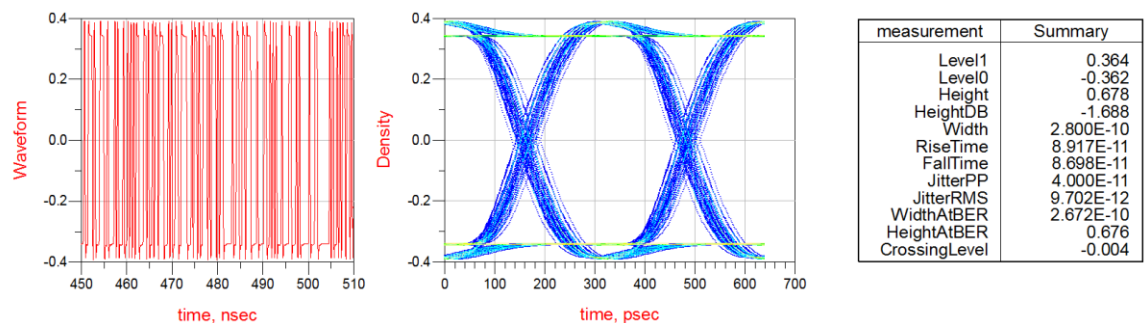
- 4) Channels : Rx channel = 60'' 5mil stripline, Tx channel = 0'' stripline  
Parameters: EQ=3, PE=0  
Input Source: BitRate=3.125 Gbps PRBS-23, Vp-p = 1V, DE = 0dB



- 5) Channels : Rx channel = 40'' 5mil stripline, Tx channel = 0'' stripline  
Parameters: EQ=0, PE=0  
Input Source: BitRate=3.125 Gbps PRBS-23, Vp-p = 1V, DE = 0dB



- 6) Channels : Rx channel = 40'' 5mil stripline, Tx channel = 0'' stripline  
Parameters: EQ=1, PE=0  
Input Source: BitRate=3.125 Gbps PRBS-23, Vp-p = 1V, DE = 0dB

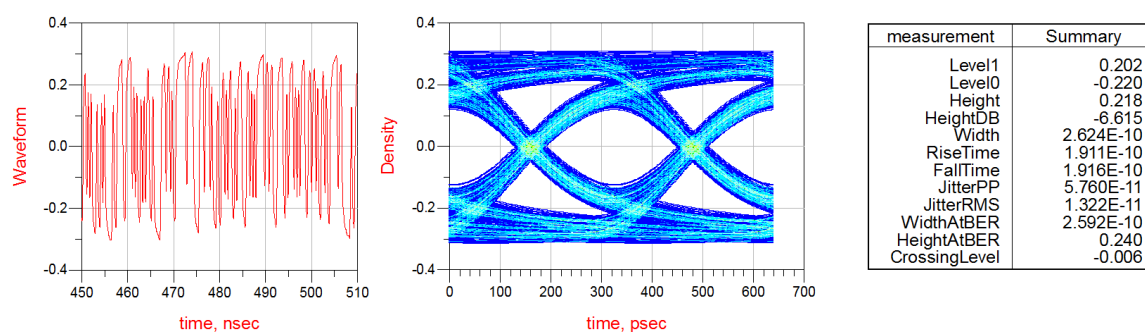


## B. PE Performance setup

1) Channels : Rx channel = 0'' stripline, Tx channel = 30'' 5mil stripline

Parameters: EQ=0, PE=0

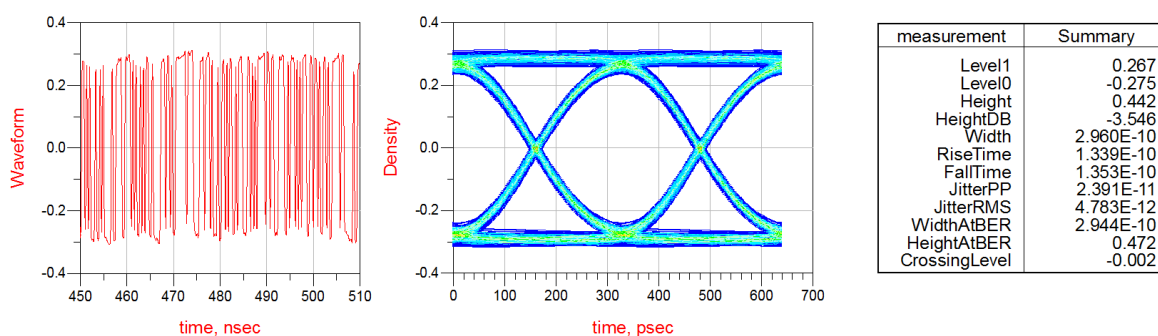
Input Source: BitRate=3.125 Gbps PRBS-23, Vp-p = 1V, DE = 0dB



2) Channels : Rx channel = 0'' stripline, Tx channel = 30'' 5mil stripline

Parameters: EQ=0, PE=1

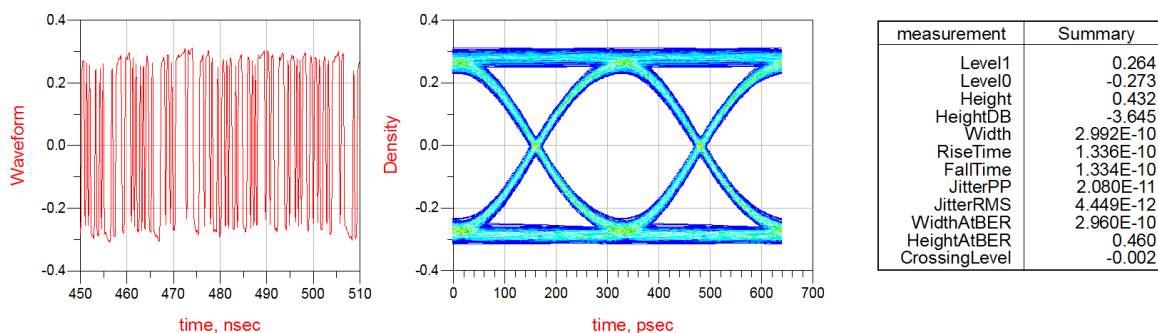
Input Source: BitRate=3.125 Gbps PRBS-23, Vp-p = 1V, DE = 0dB



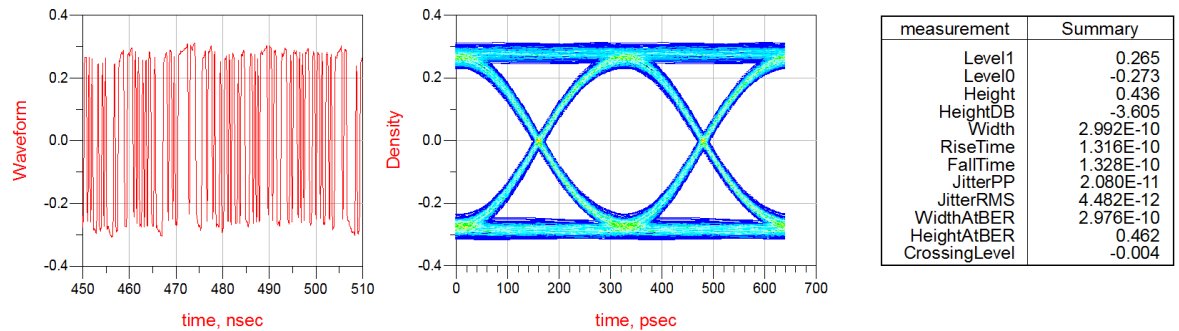
3) Channels : Rx channel = 0'' stripline, Tx channel = 30'' 5mil stripline

Parameters: EQ=0, PE=2

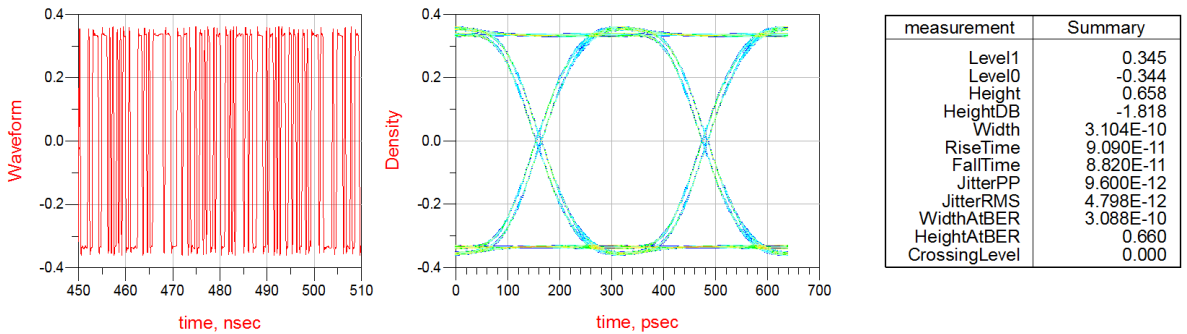
Input Source: BitRate=3.125 Gbps PRBS-23, Vp-p = 1V, DE = 0dB



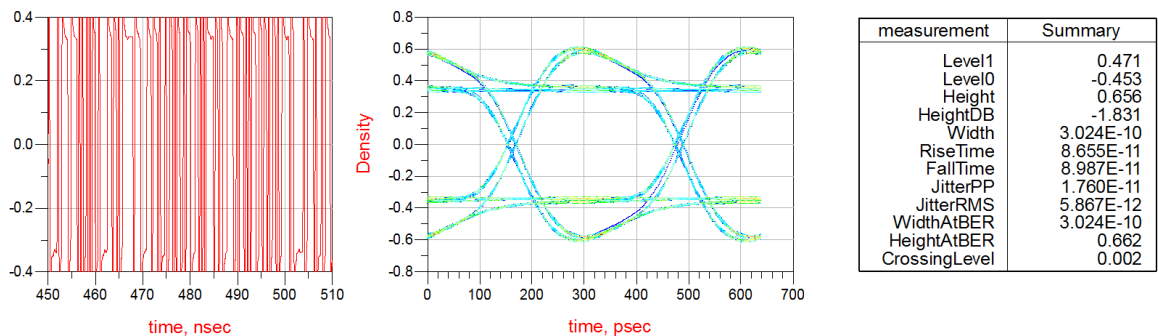
- 4) Channels : Rx channel = 0'' stripline, Tx channel = 30'' 5mil stripline  
Parameters: EQ=0, PE=3  
Input Source: BitRate=3.125 Gbps PRBS-23, Vp-p = 1V, DE = 0dB



- 5) Channels : Rx channel = 0'' stripline, Tx channel = 3'' 5mil stripline  
Parameters: EQ=0, PE=0  
Input Source: BitRate=3.125 Gbps PRBS-23, Vp-p = 1V, DE = 0dB



- 6) Channels : Rx channel = 0'' stripline, Tx channel = 3'' 5mil stripline  
Parameters: EQ=0, PE=1  
Input Source: BitRate=3.125 Gbps PRBS-23, Vp-p = 1V, DE = 0dB

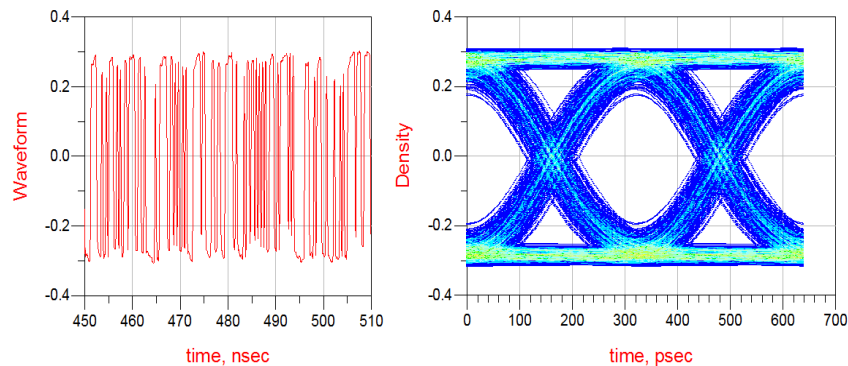


## C. Setup with lossy channels on Both sides

1) Channels : Rx channel = 60'' 5mil stripline, Tx channel = 30'' 5mil stripline

Parameters: EQ=2, PE=2

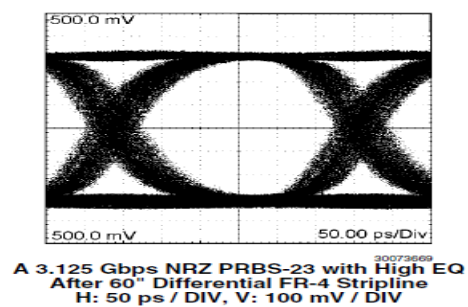
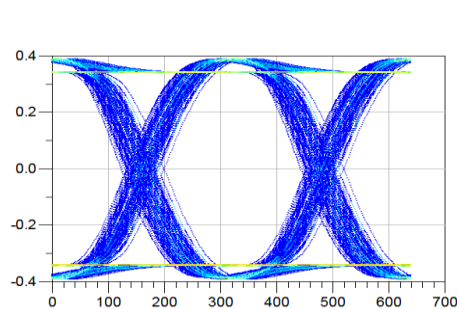
Input Source: BitRate=3.125 Gbps PRBS-23, Vp-p = 1V, DE = 0dB



measurement	Summary
Level1	0.264
Level0	-0.272
Height	0.385
HeightDB	-4.145
Width	2.384E-10
RiseTime	1.354E-10
FallTime	1.314E-10
JitterRMS	9.120E-11
JitterPP	1.924E-11
WidthAtBER	2.224E-10
HeightAtBER	0.366
CrossingLevel	-0.011

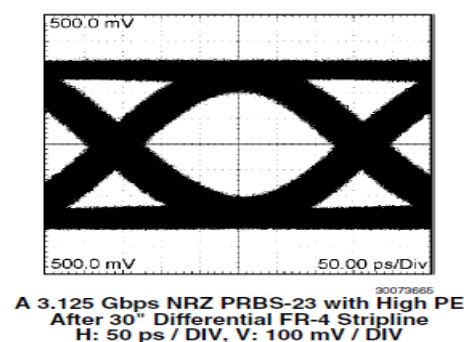
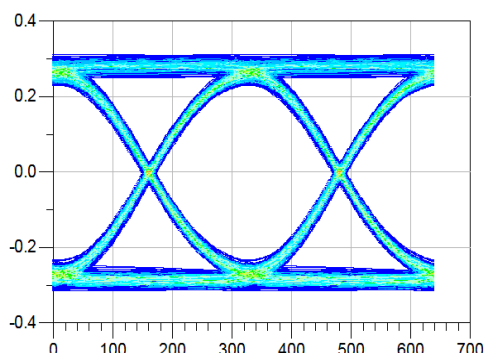
## Comparisons with actual Measurements

1)



A 3.125 Gbps PRBS-23 source with EQ=2  
After 60''' Differential Strip line

2)



A 3.125 Gbps PRBS-23 source with PE=2  
After 30''' Differential Strip line