PI3PCIE3442 12port S-Parameter Model Verification

1. **Introduction:**

In order to verify our S parameter model, we need to do some simulations with the measured or simulated model. First is the Frequency characteristic simulation which we can get the insertion loss, return loss, the second is the TDR simulation and lastly we can get the eye-diagram of the transient simulation with the correlated data rate.

1. **Verification:**
2. Frequency Characteristic:

12Port S Parameter

port1

port2

port3

port4

port5

port6

Differential port2

Differential port1

Differential Insertion loss = SDD21, SDD34, SDD56

Differential return loss = SDD11, SDD33, SDD55

port7

port8

port9

port10

port11

port12

Differential port4

Differential port6

Differential port3

Differential port5

**Simulation waveform:**

|  |  |
| --- | --- |
| INSERTION LOSS | RETURN LOSS |
|  |  |
| Differential crosstalk | |
|  | |

1. TDR simulation:

Z=50ohm, Tdelay=1n

12-Port S Parameter

50ohm

50ohm

0.2pF

0.2pF

0

1

Trise=50ps

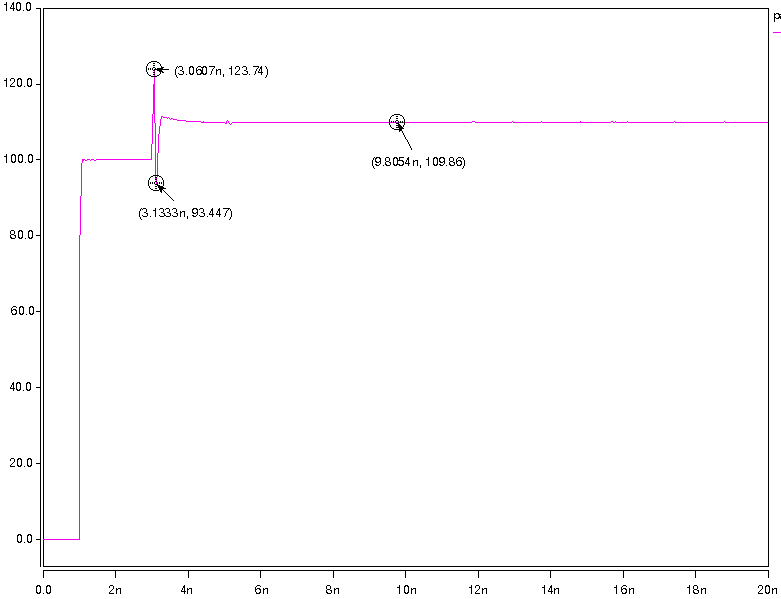
50ohm

50ohm

50ohm

50ohm

**Simulation waveform:**

****

1. Transient simulation:

50ohm

50ohm

12-Port S Parameter

50ohm

50ohm

50ohm

50ohm

PRBS7

trace\_in

3inch trace

switch\_in

output

50ohm

50ohm

**Simulation waveform:**

Data Rate = 8Gbps

