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IBIS Summit in Japan

Guidance of Passive EDA models

JEITA EDA-WG
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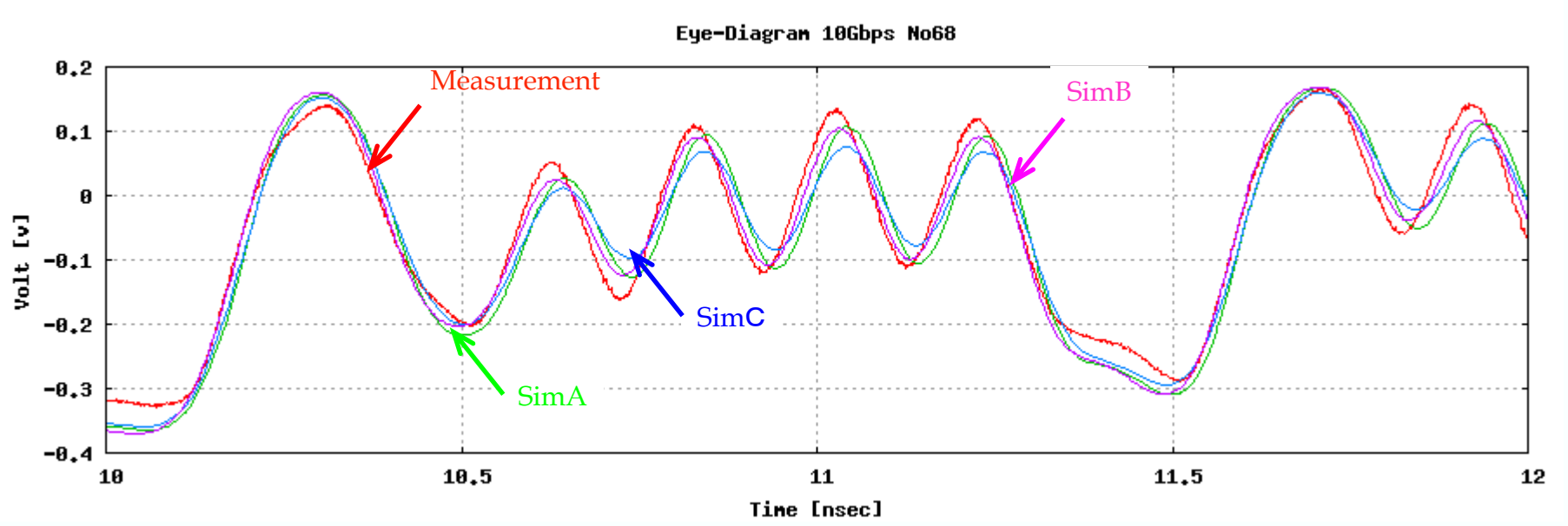
Contents

Previous report of Interconnect model

We had studied interconnect model in JEITA EDA-WG last year and reported that simulation and measurements results were nearly good match. (The EDA models were provided by component manufacturer, but not specially prepared models.)



Problem of Passive EDA models

The EDA models were described by S-parameters and equivalent circuit. It had no problem with the equivalent circuit models but the S-parameters had some problem as below.

1. No DC point of S-parameters.
2. Bandwidth limitation. (300KHz-8.5GHz)
3. Each bandwidth of the EDA models might not be the same.
4. Each number of points of S-parameters might not be the same.
5. It is uncertain how S-parameters are measured.

Discussion of the EDA Models

In the EDA –WG, We discussed various problems,
and concluded it as follows.

1. Must include DC point of S-parameters .
2. Consider upper limitation of S-parameters for rise time.
3. Not able to standardize bandwidth of S-parameters of each EDA models in all manufacturer.
4. Not able to standardize number of points of S-parameters each EDA models as well.
5. Some manufacturers have disclosed measuring method to the public on Web.

Guidance of Passive EDA models

1. The method of measuring of DC point of S-parameters is disclosed to the public.

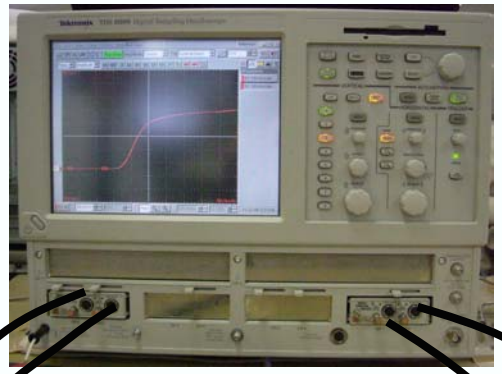
2. To do transient analysis, it is necessary to consider minimum bandwidth and number of points of S-parameters.

3. The method of measuring the EDA models is disclosed to the public.

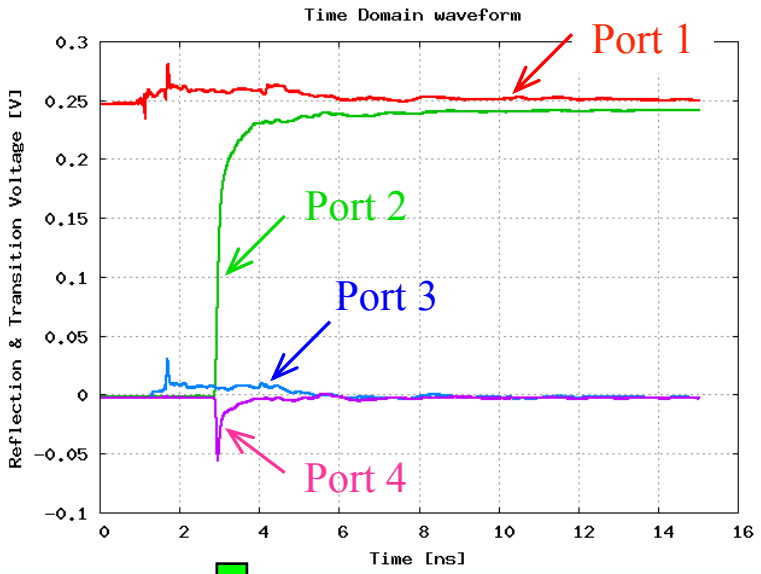
4. The usage of the EDA models is disclosed to the public.

Measuring method of DC point of S-parameters

TDR Oscilloscope



Measurement

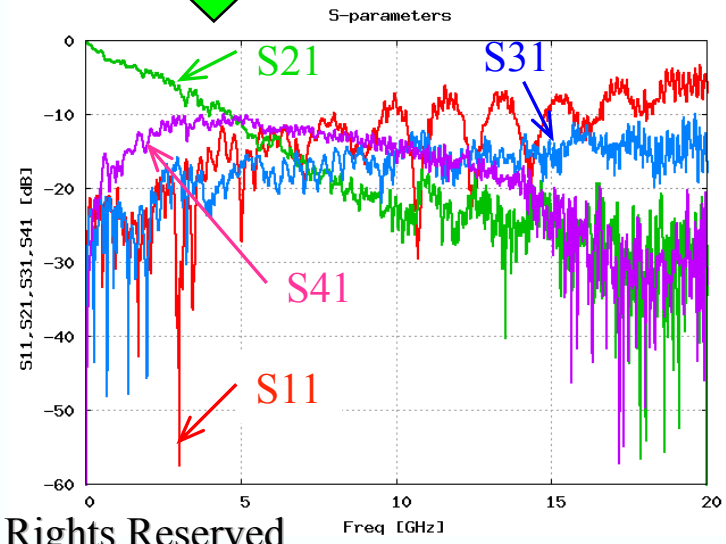


Port 3 Port 4

DUT

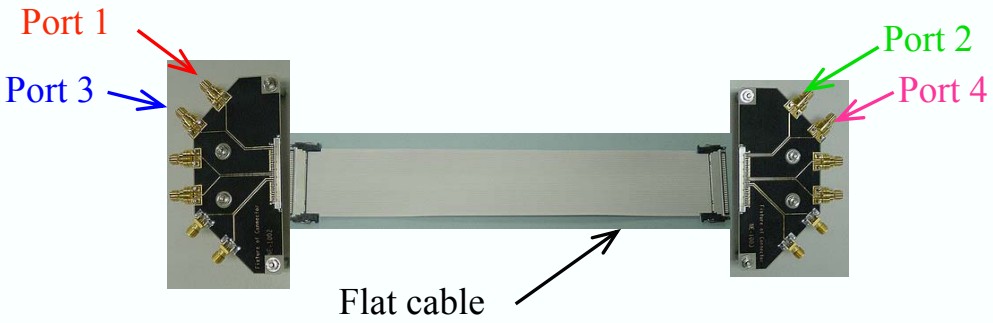
Port 1 Port 2

I-CONNECT
(FFT)

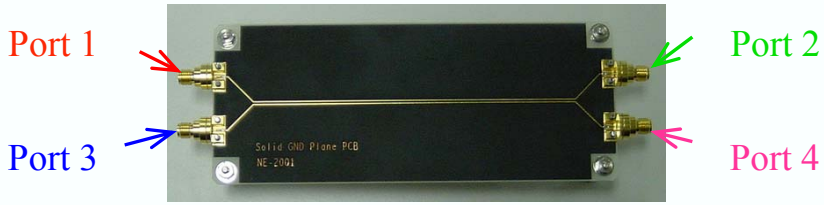


Device Under Test

Flat cable connector and fixture PCB

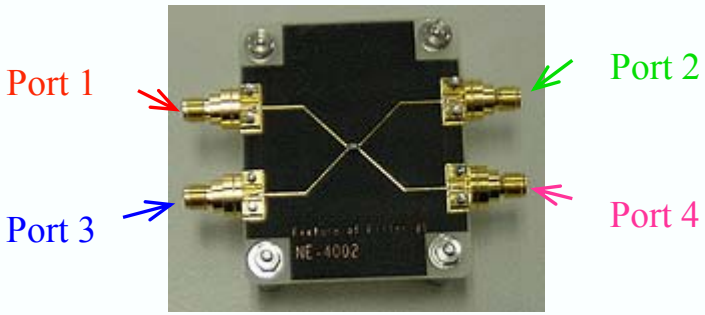


Differential pair line with solid ground plane



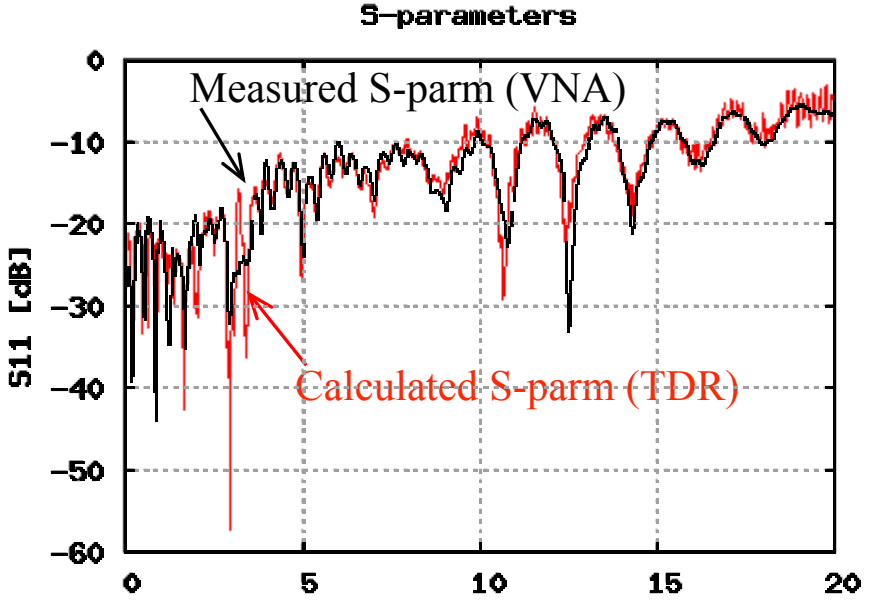
Differential pair line with meshed ground plane

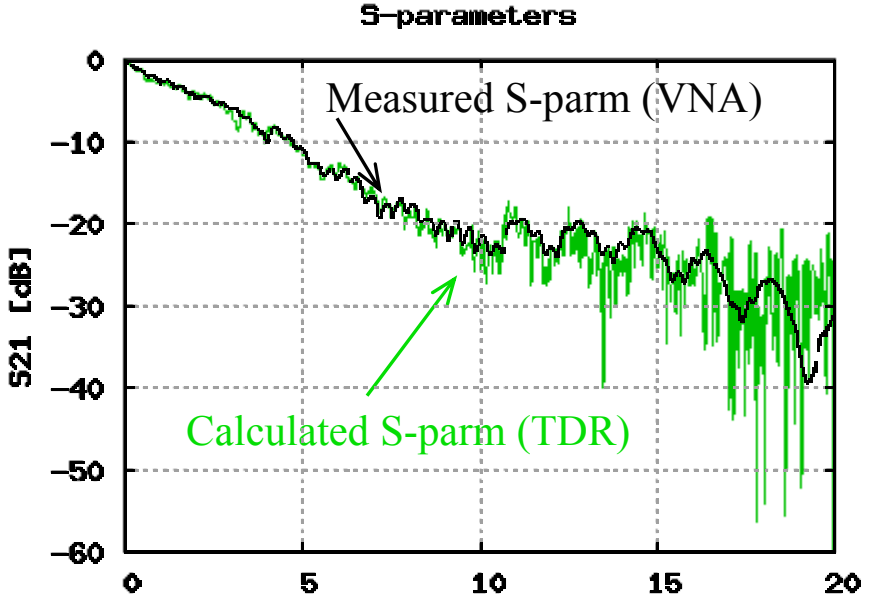
Filter and Fixture PCB

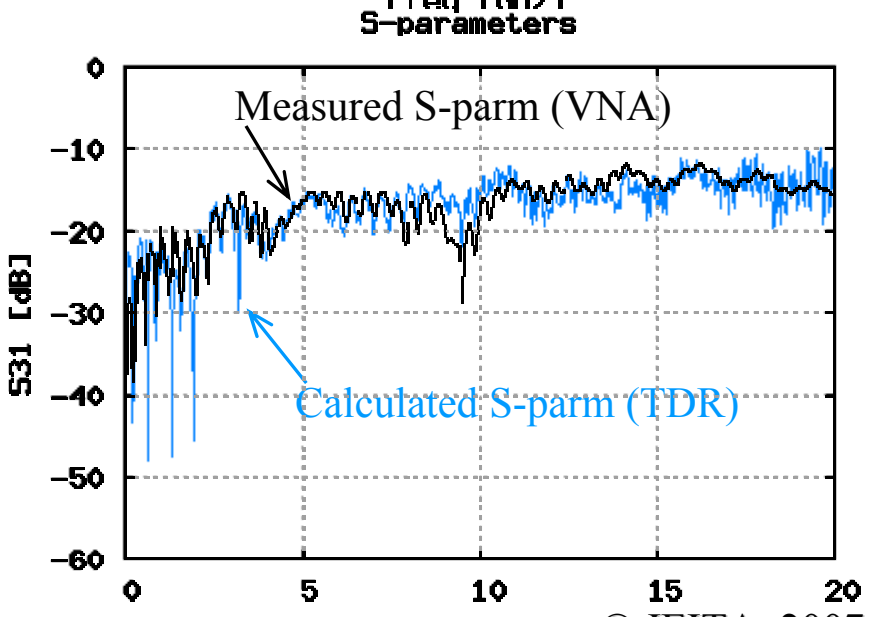


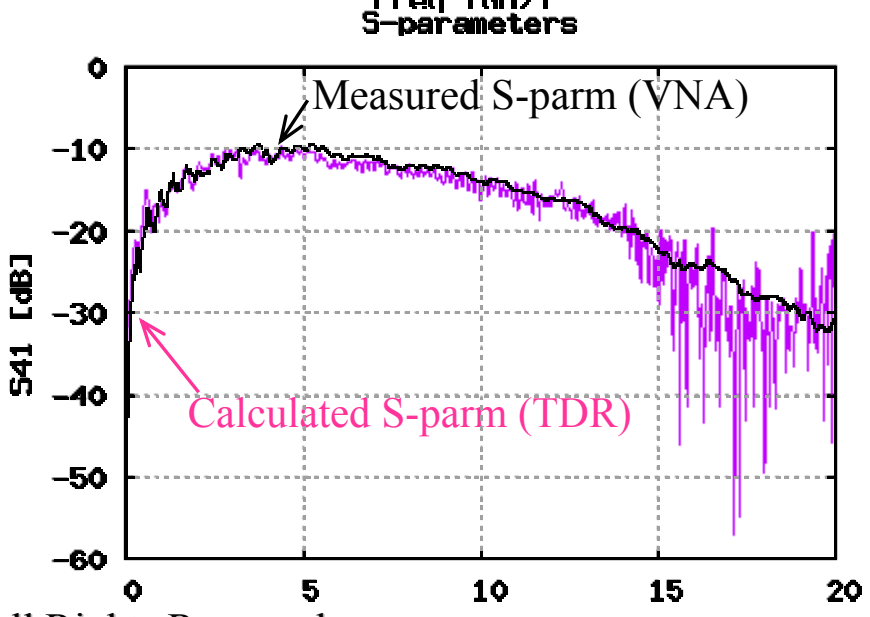
S-parameters of TDR vs. VNA (DC-20GHz)

Flat cable connector and fixture PCB



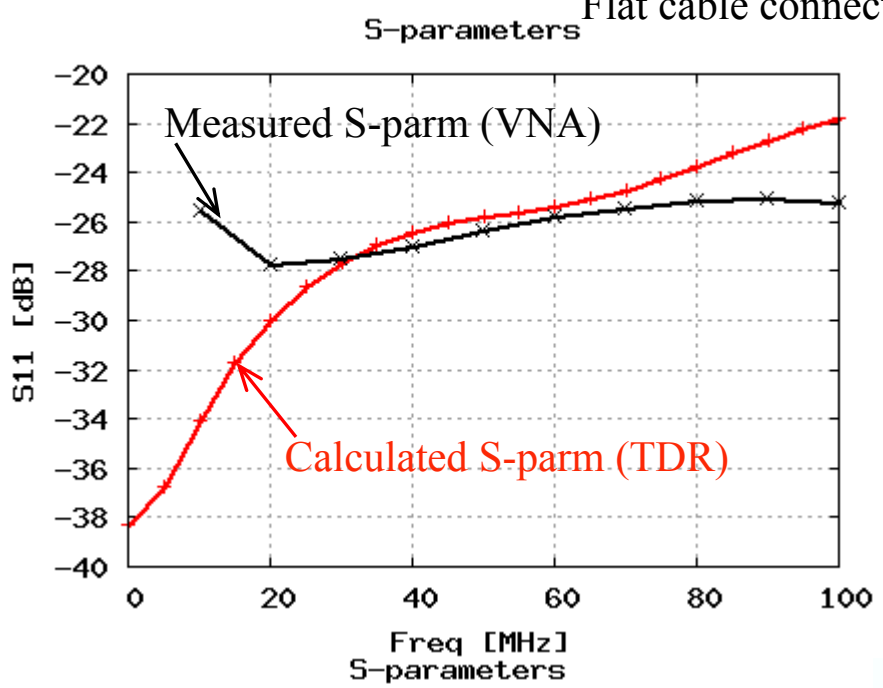


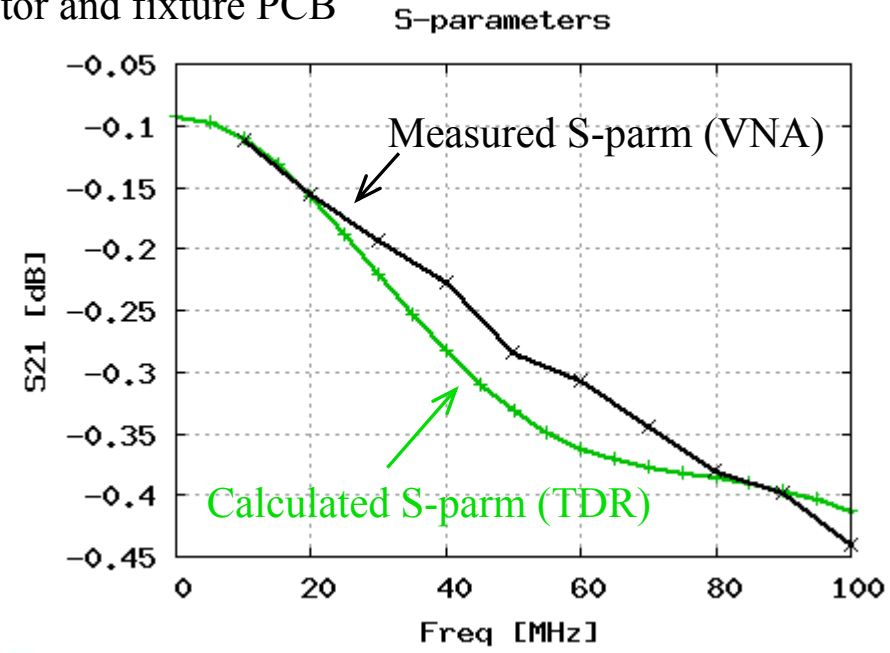


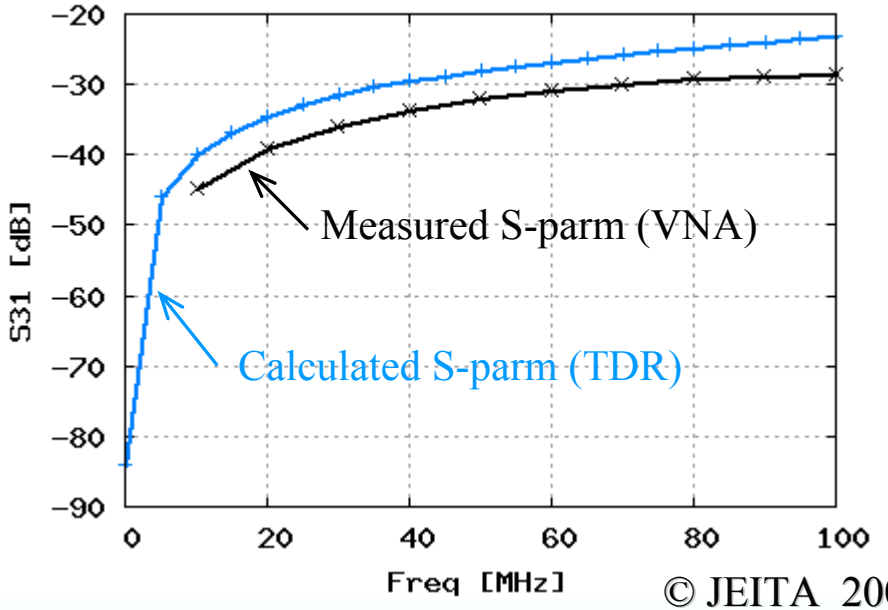


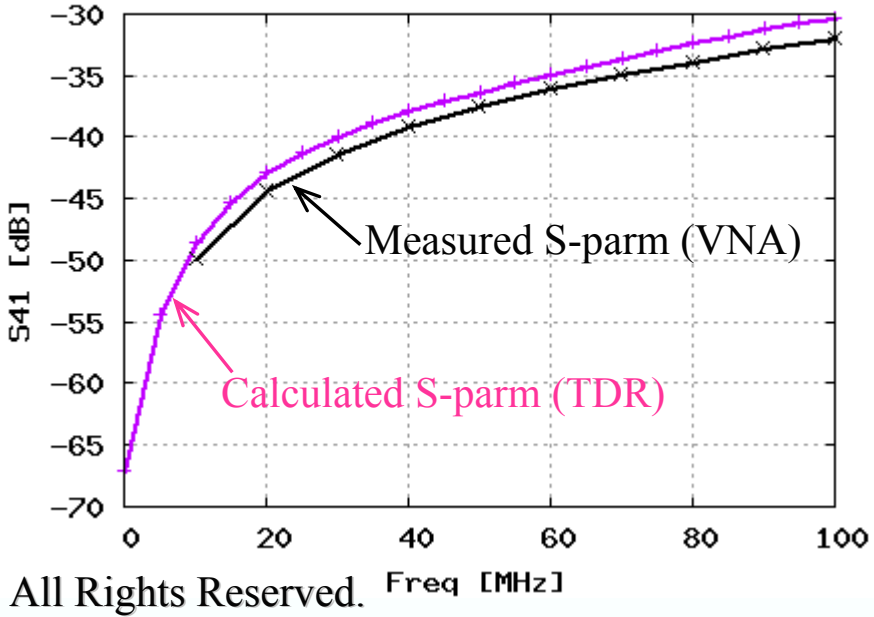
S-parameters of TDR vs. VNA(DC-100MHz)

Flat cable connector and fixture PCB



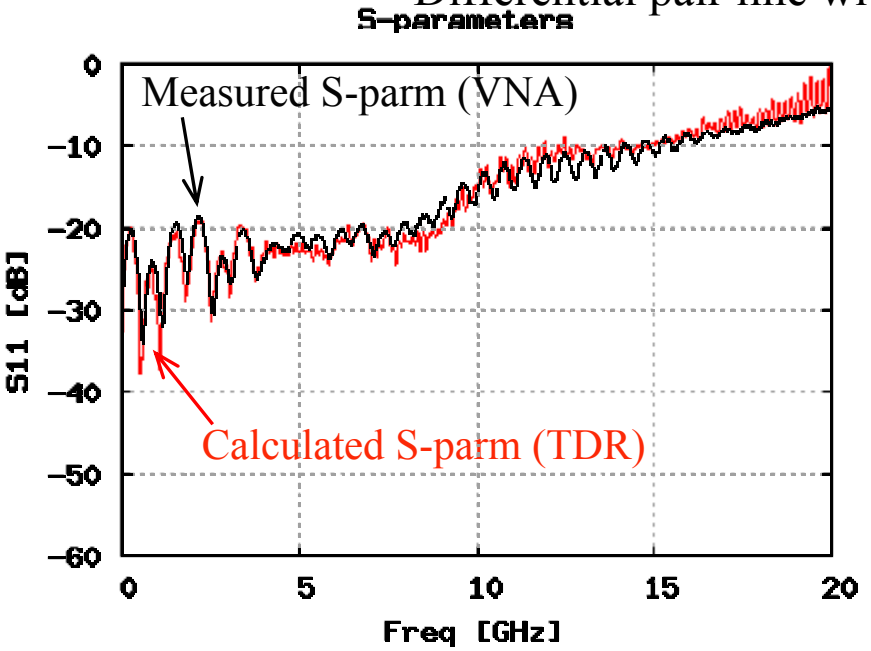


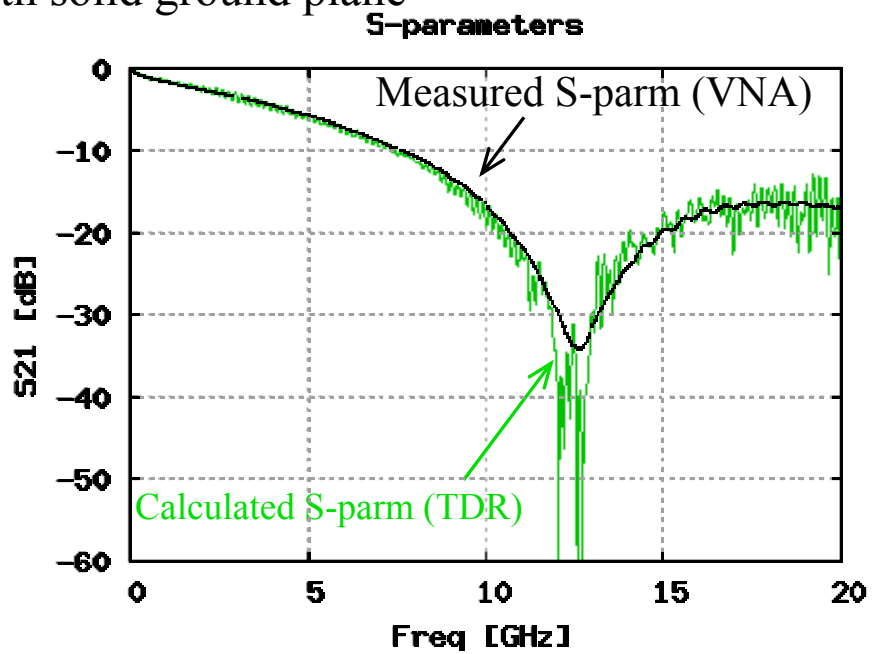


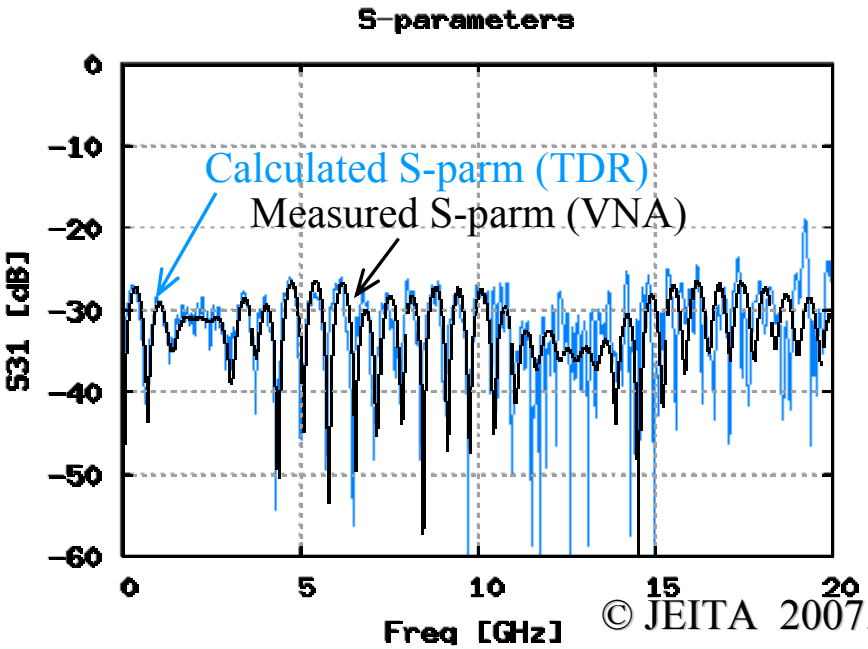


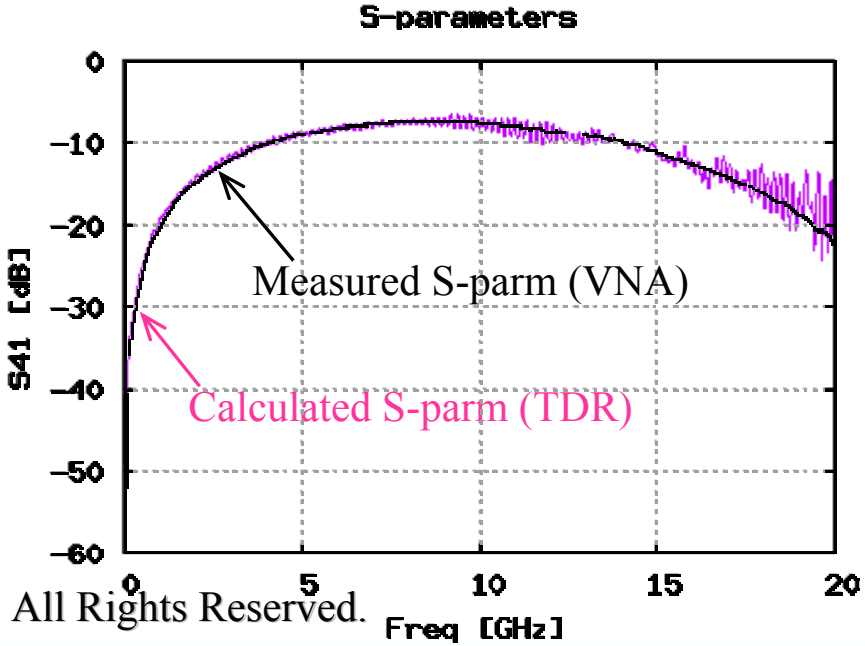
S-parameters of VAN vs. TDR (DC-20GHz)

Differential pair line with solid ground plane



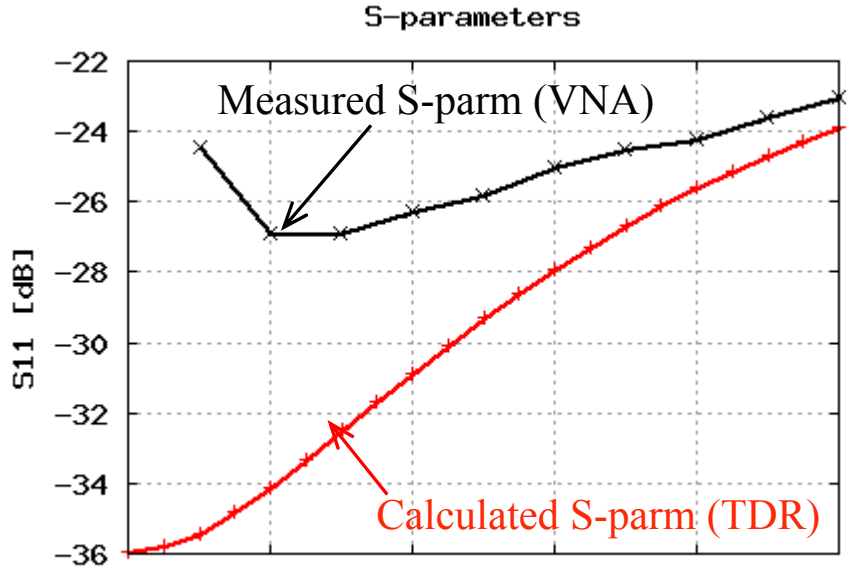


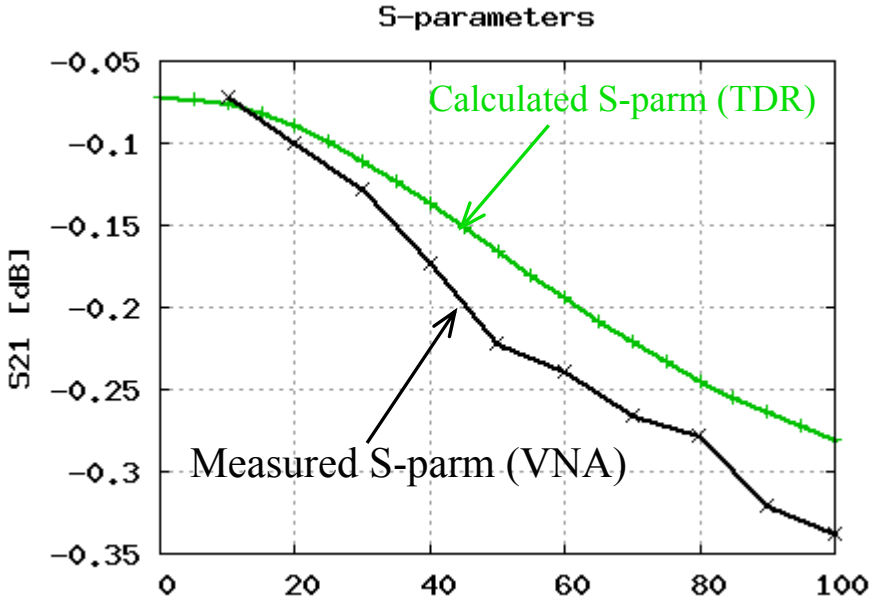


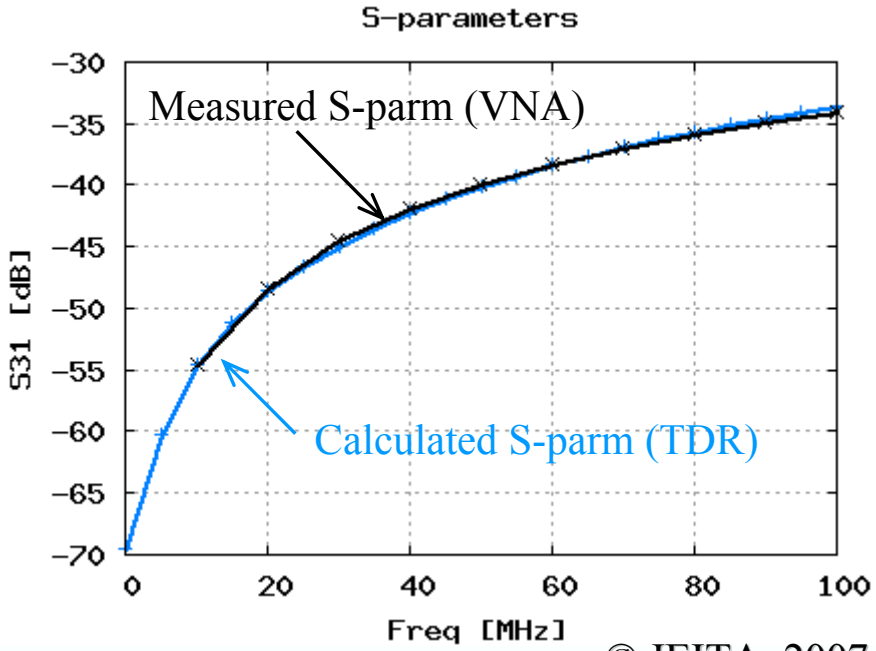


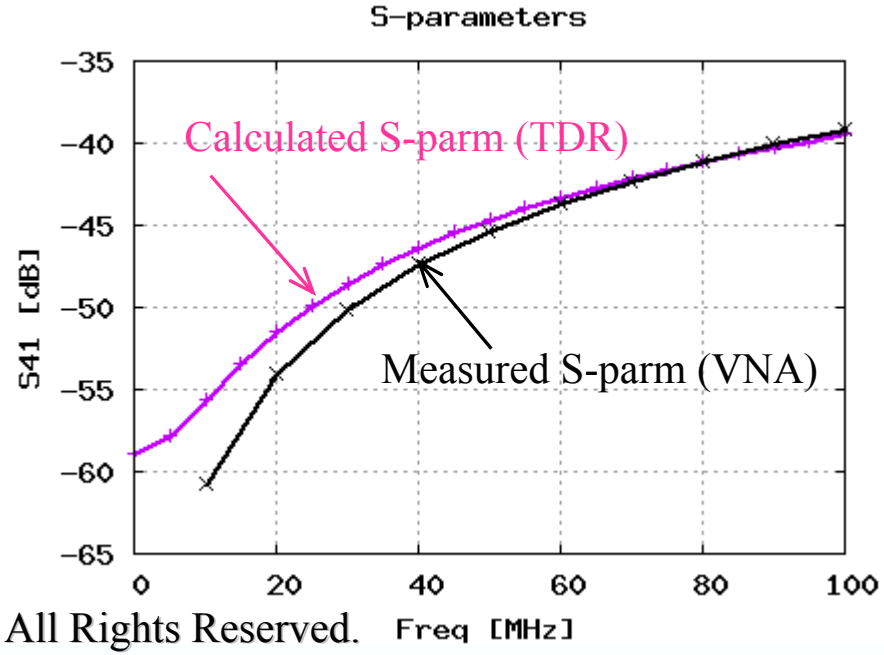
S-parameters of VAN vs. TDR (DC-100MHz)

Differential pair line with solid ground plane



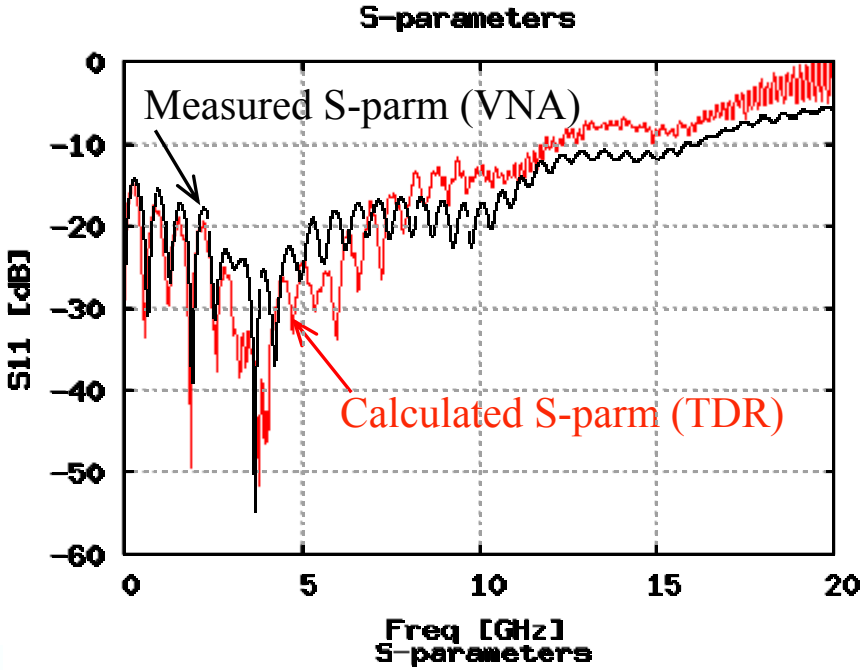


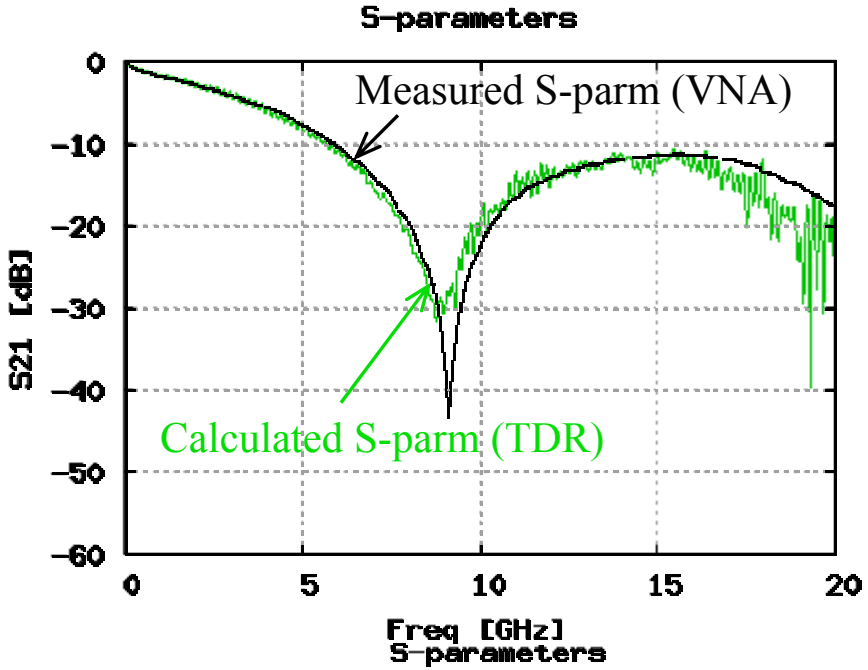


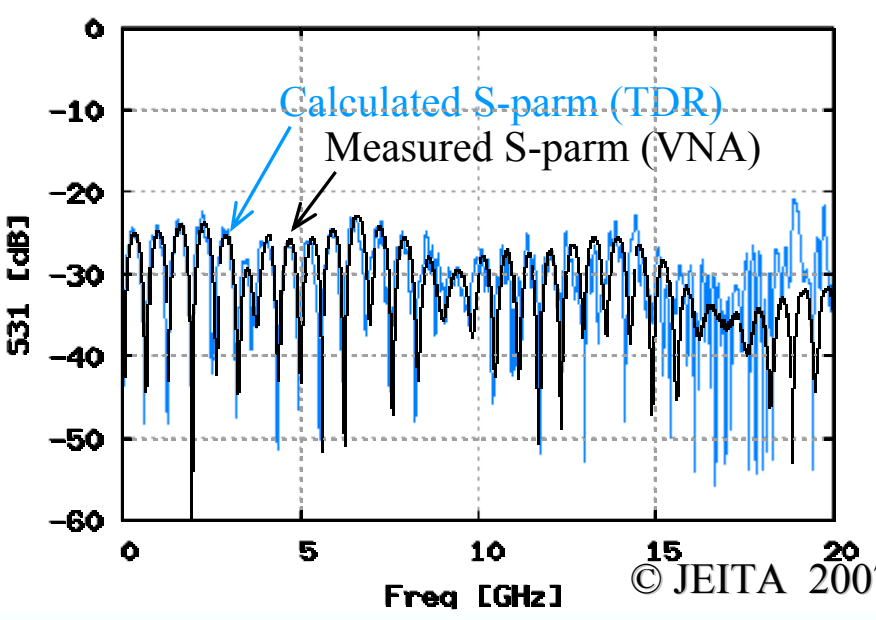


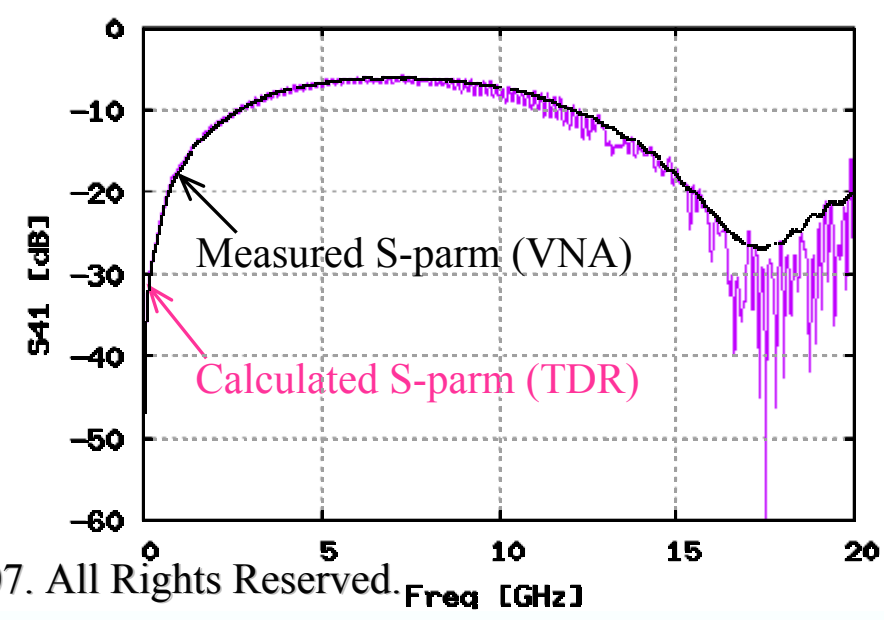
S-parameters of VAN vs. TDR (DC-20GHz)

Differential pair line with meshed ground plane



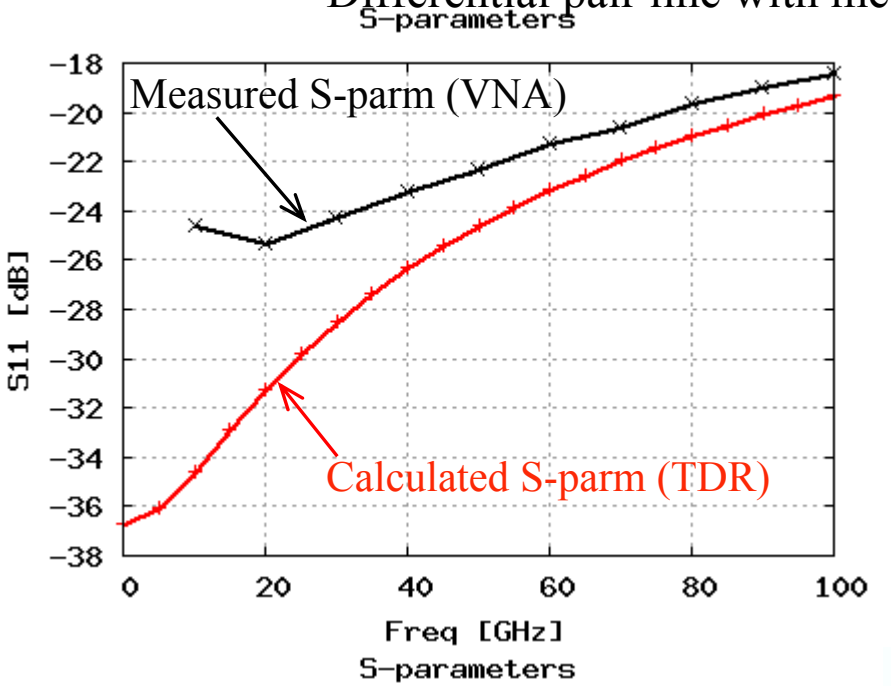


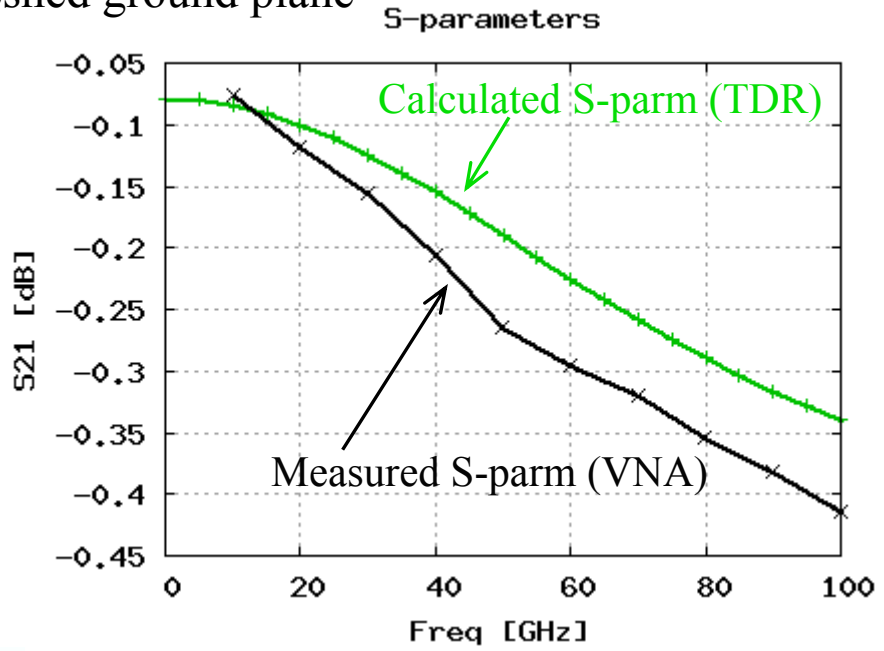


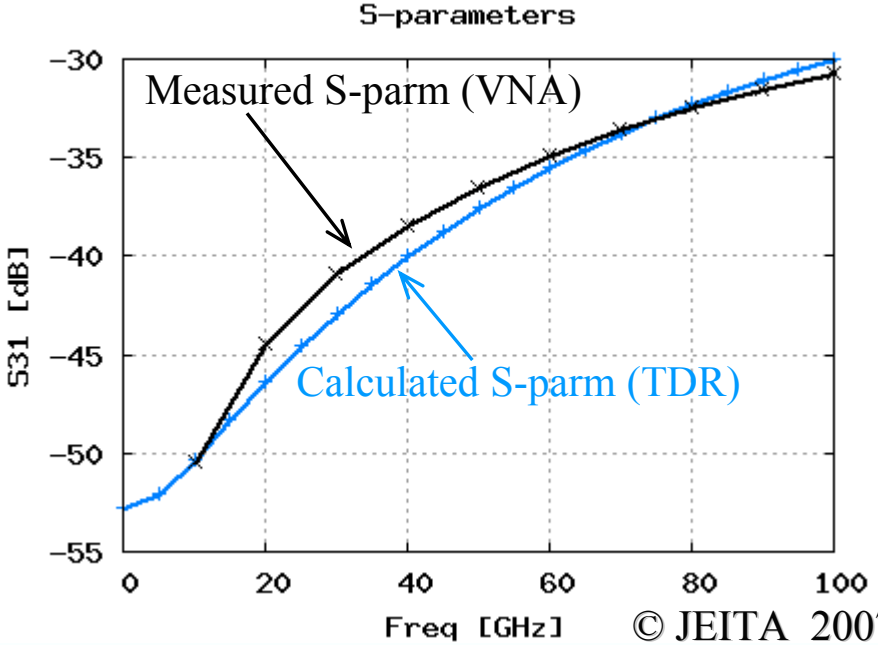


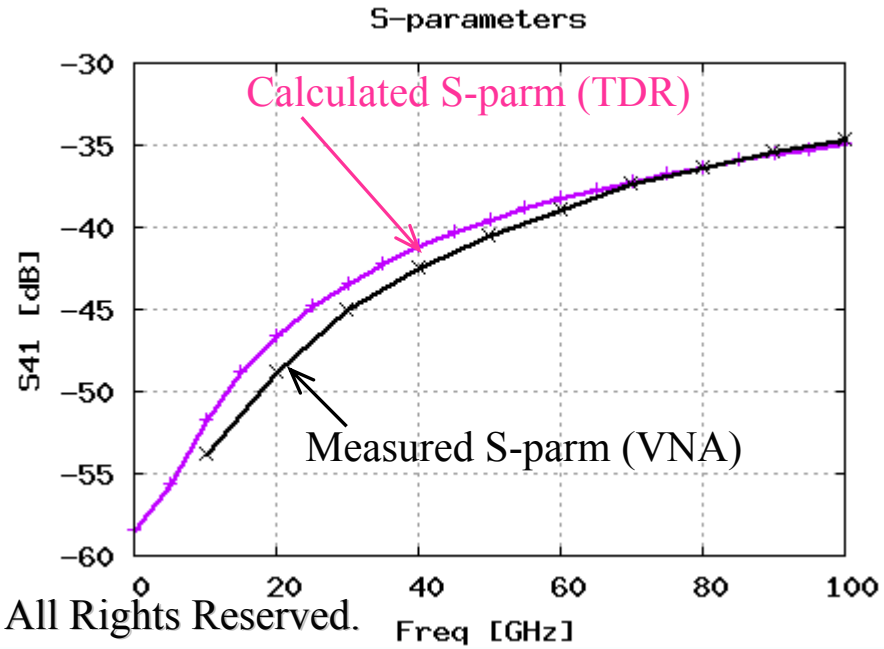
S-parameters of VAN vs. TDR (DC-100MHz)

Differential pair line with meshed ground plane



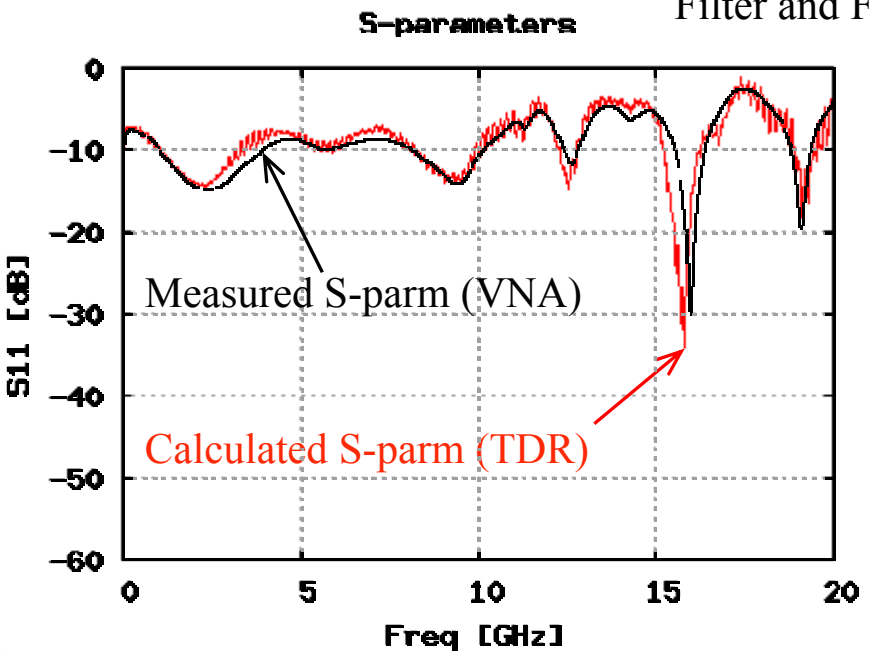


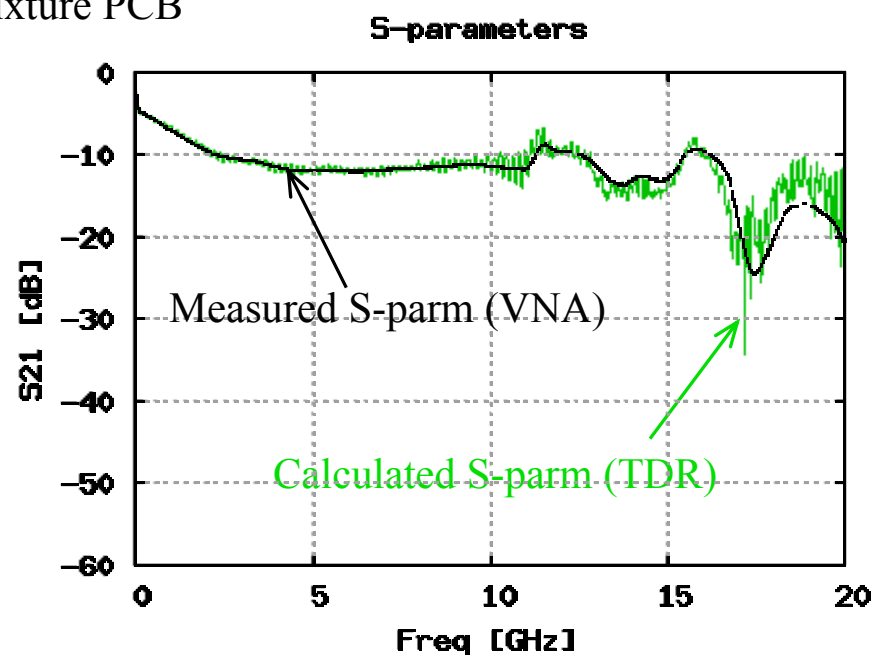


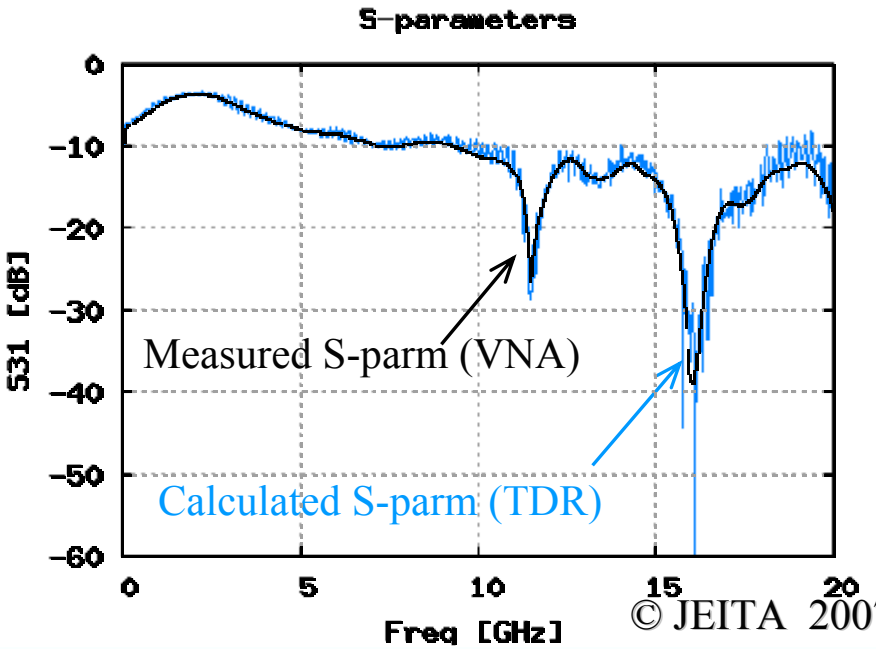


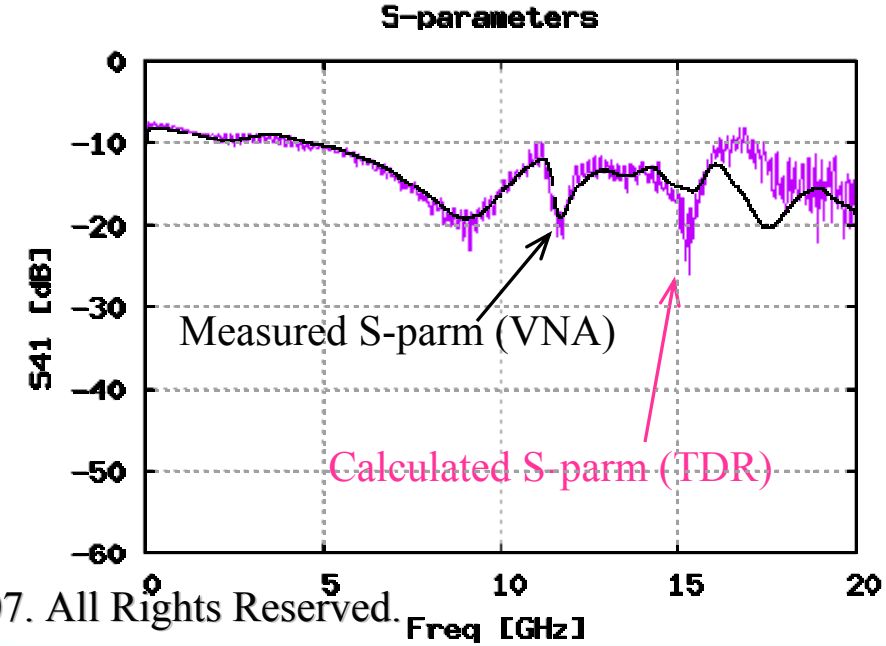
S-parameters of VAN vs. TDR (DC-20GHz)

Filter and Fixture PCB



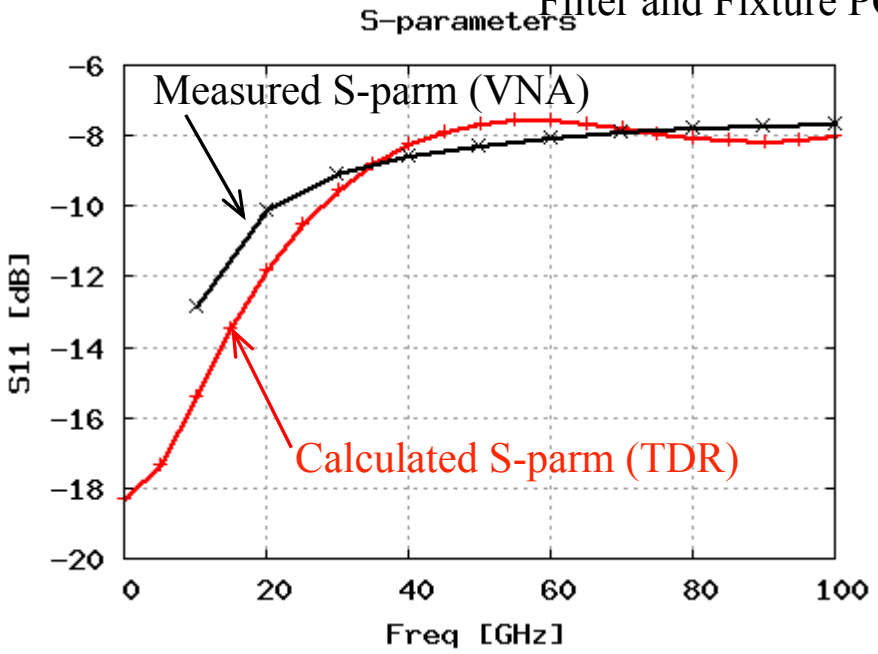


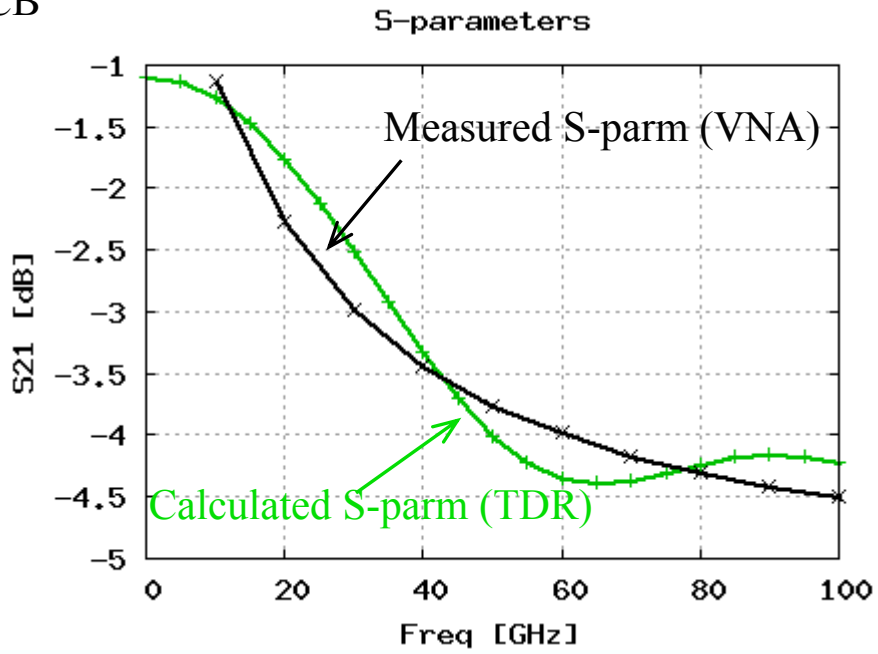


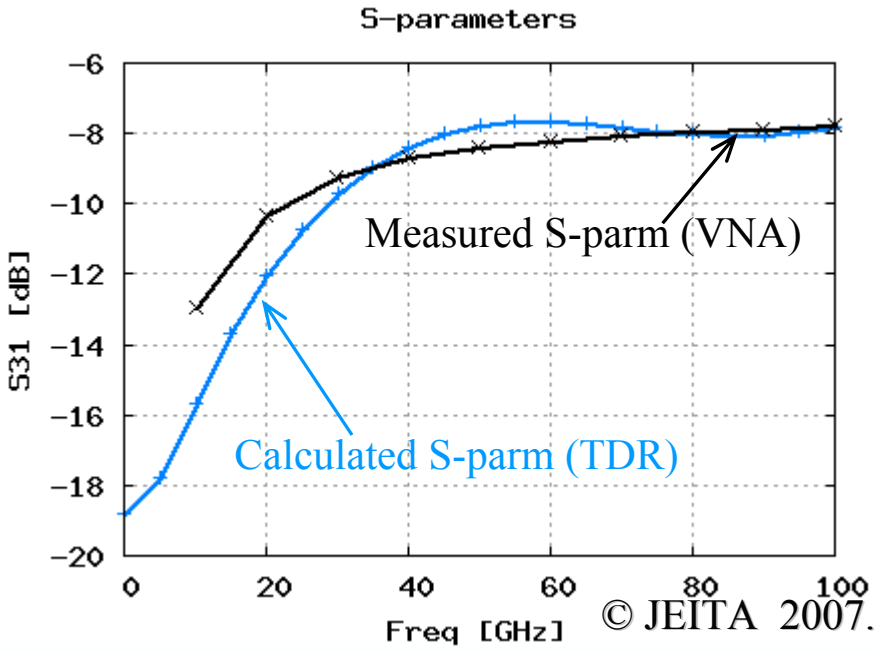


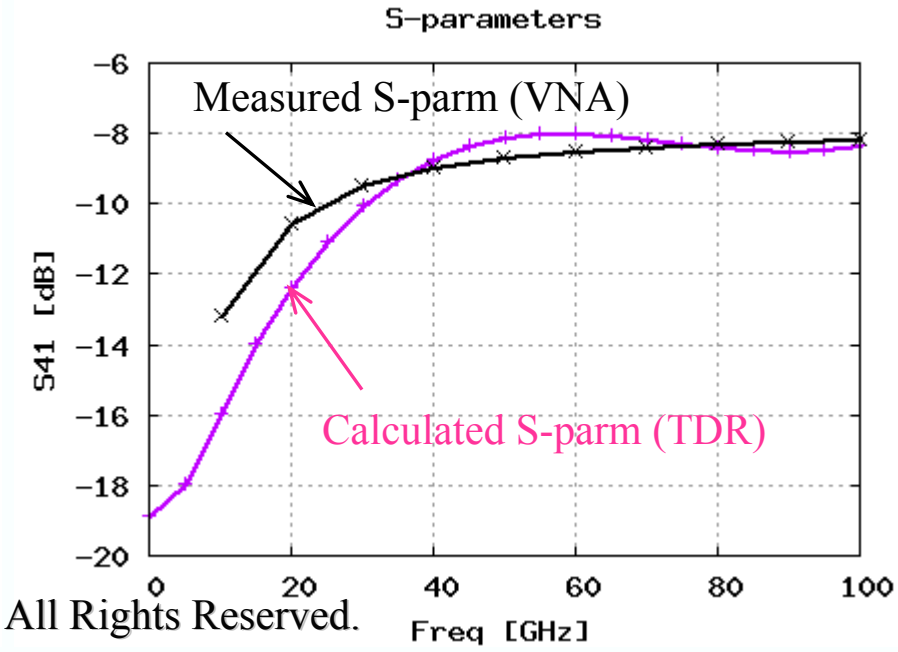
S-parameters of VAN vs. TDR (DC-100MHz)

Filter and Fixture PCB









Summary

1. The problem of the EDA model was shown.

2. The problem of the EDA model was discussed.

3. The method of measuring of DC point of S-parameters was shown.

Gratitude to cooperation in measurement

ATE Service	Mr. Sinobu Seki Mr.Yutaka Honda
JAE	Mr. Yuichi Saito Mr. Tatsuya Syukuzawa