ParBERT 81250 Software Revision 5.0 SP1

Enhancements to Agilent´s powerful ParBERT 81250 Software

Jitter Analysis, 10GbE, Recirculating Loop and Frequency Subranges!

S/W Rev. 5.0 - Dec. 2002

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Agilent Technologies

What´s new?
Software Revision 5.0

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ParBERT 81250 Software Revision 5.0 SP1

The latest release of the ParBERT 81250 Software includes the following valuable enhancements to the existing measurement suite:

- **Jitter analysis:** the powerful Output Timing Measurement now provides additional capabilities like RJ/DJ Separation!
- **10GbE Tool:** the integration of the 10GbE Tool increases the ParBERT fit for this hot application!
- **Re-circulating Loop:** the new „Fast Bit Sync“ mode meets the demand of Universities and R&D!
- **ParBERT 45Gb frequency subranges:** the 38-45Gb/s data rate range is extended to subranges at 5Gb/s, 10Gb/s and 20Gb/s, while the fast 40G transition times are maintained!

What´s new?
RJ/DJ Separation

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How is the RJ/DJ separation achieved?

- The RJ/DJ separation is based on the **Output Timing Measurement** and works with **bathtub** data (equivalent to IEEE802.3ea BERT Scan Method)
- By selecting **two user-defined BER values**, the algorithm provides an **extrapolation** of the **bathtub** according to the user selected **„Residual BER for Total Jitter“** value (selectable up to 10^ -15)
- The **ParBERT 81250 Software** offers values for **Random Jitter, Deterministic Jitter** and **Total Jitter.** In order to ensure confidence in the measurement, a stochastic „**Quality of Fit**“ value is provided
- **Jitter Modulation capabilities,** which are provided by the ParBERT 3.35Gb data generators are **fully supported**

RJ/DJ Separation - Bathtub

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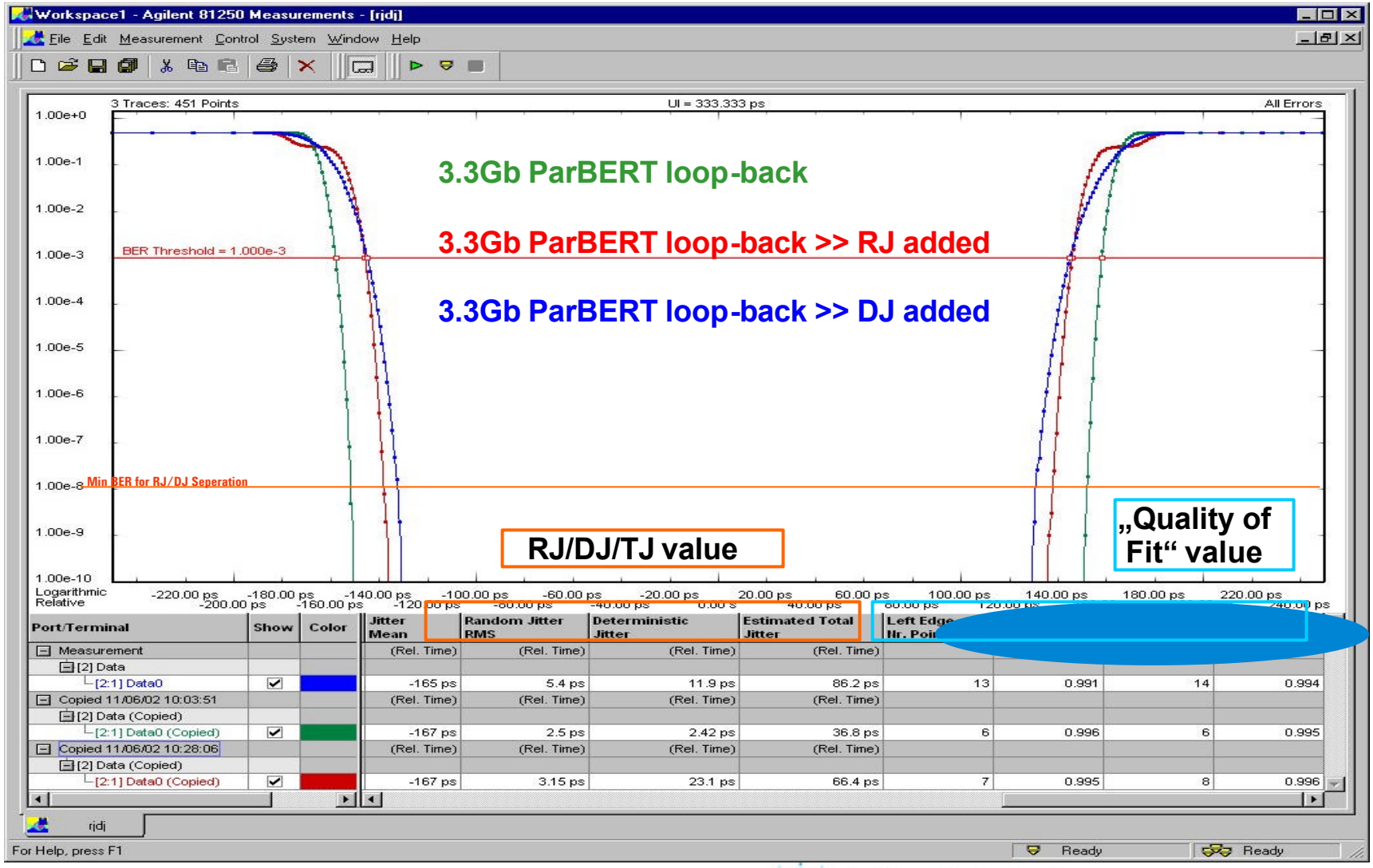
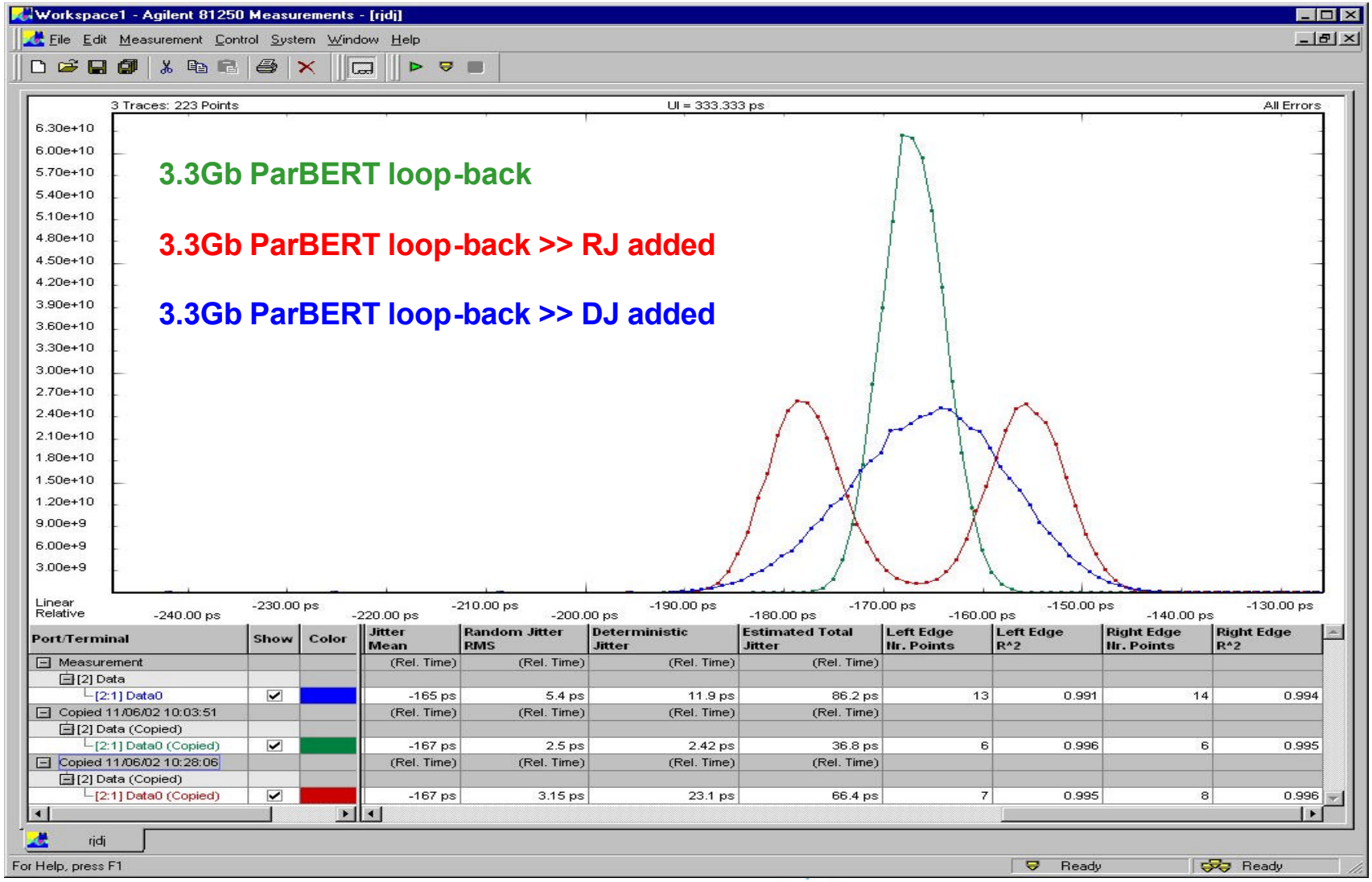
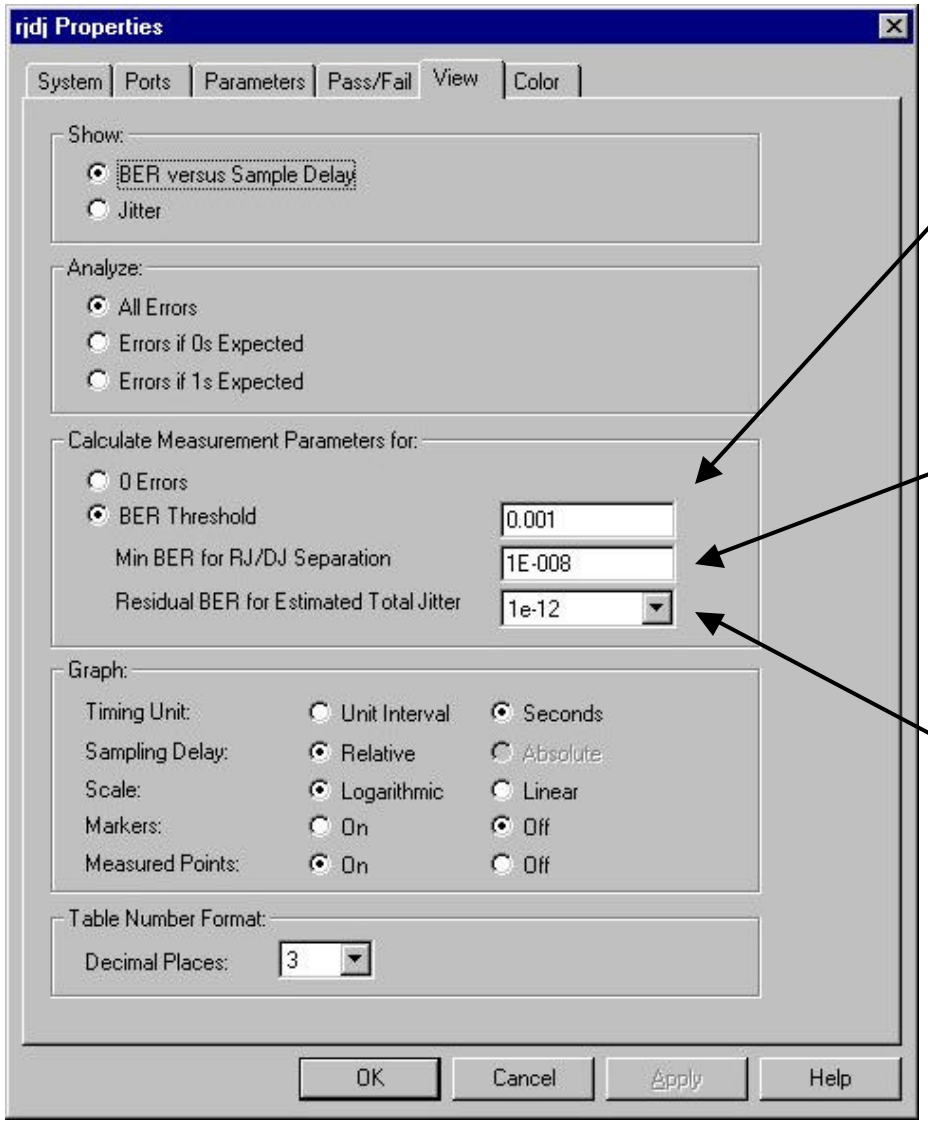


RJ/DJ separation – Jitter Histogram



RJ/DJ separation – Settings



Parameter 1 - BER threshold:
User selectable upper limit

Parameter 2 – Min BER for RJ/DJ Separation:
User selectable lower limit

Parameter 3 – Residual BER for est. Total Jitter:
User selectable point, which provides values for RJ/DJ/TJ

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What´s new?
10GbE Tool

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How does the 10GbE tool work?

- DUT stimulus is possible under **real world conditions** including **scrambling and de-scrambling**
- While **stimulating** the **XAUI** and/or **serial side**, the measurement will be made by running through the DUT at the opposite end (see slide No. 11)
- **Stimulus and analysis is possible** while **XAUI** and **serial side** run on **different clock speed**, DUT does clock compensation
- **The analysis of frame structures, FCS, BER, and BER in Idle** is made by a **post-processing technique**, which is not as fast as a real-time measurement
- The **ParBERT 81250 Software** provides **pre-defined settings**, which are helpful in saving time and money during the setup procedure

10GbE ParBERT Test Setup

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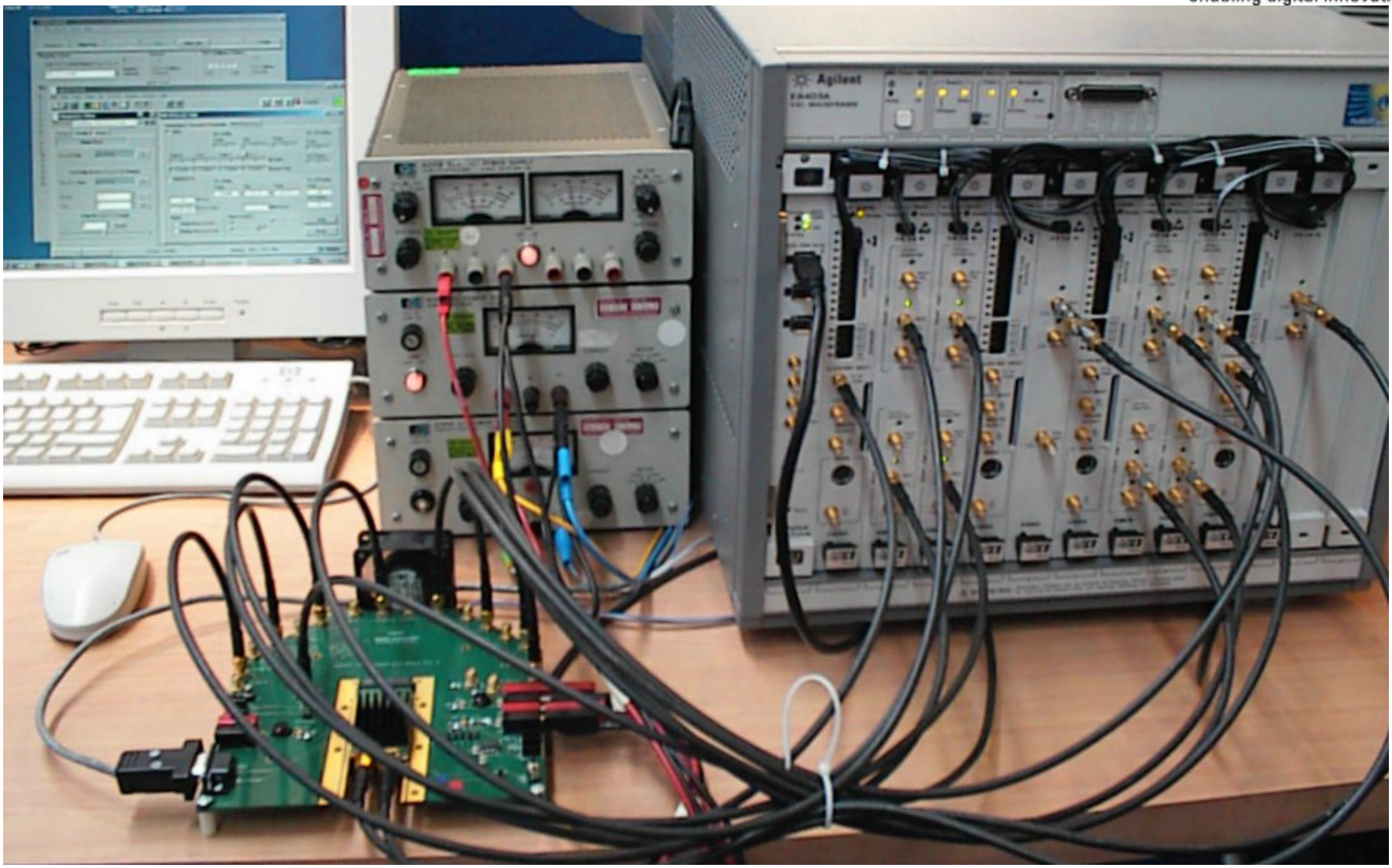
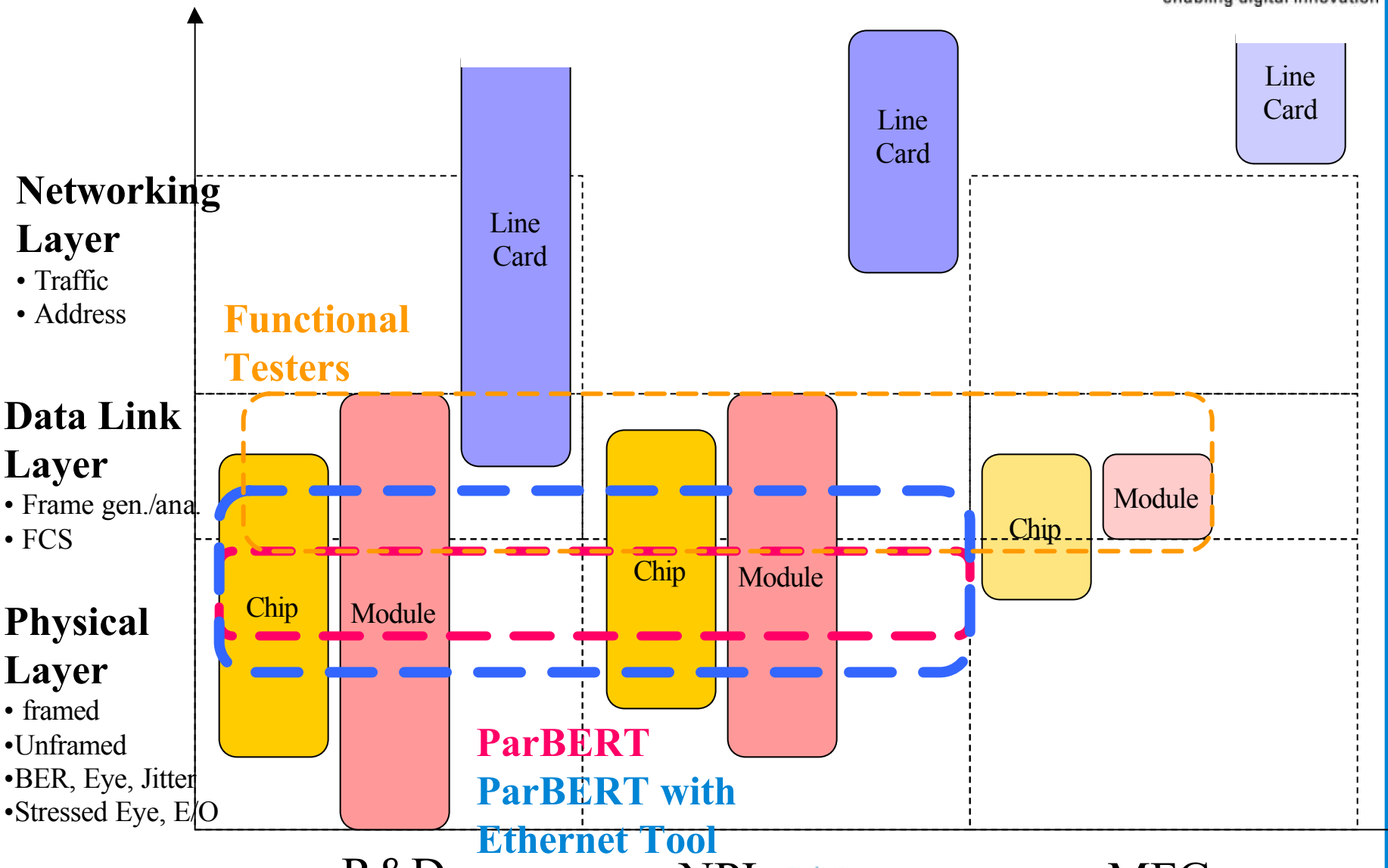


10GbE Tool – ParBERT Fit



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10GbE Tool – Testing a device

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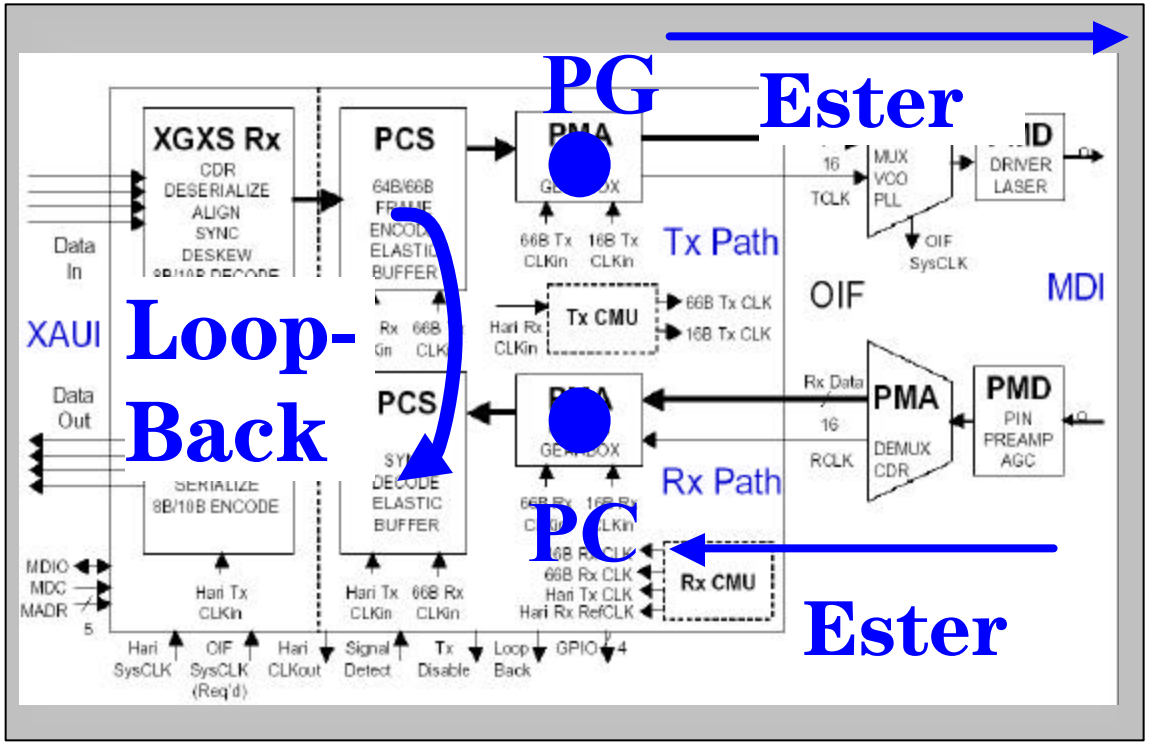
Processing Tool is for DITO



DITO (Direct In To Out)

	Functional	Parametric
Ester	x	x
DITO	x	
Loop-back	x	xx

xx = clock sync

What´s new?
Re-circulation Loop

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Testing Re-circulating Loop with ParBERT 45Gb

- The **Re-circulating Loop** feature supports the **emulation** of very long fibre systems with only **few fibre spans in the lab** by using a **45Gb ParBERT**
- This allows you to **study the behavior of fibers and amps** by **simulating long distances** in a lab environment with PRBS data up to 2^31-1
- The ParBERT 81250 Software provides a „**Fast Bit Sync Mode**“, which is a key enhancement to address the Re-circulation loop application much more efficient
- As a loop-run through a fiber happens within a very short time interval, the „**Fast Bit Sync Mode**“ is a critical technique which ensures real **fast synchronization on receive data** at the beginning of each measurement. This is key to ensure accurate BER measurements

Re-circulation Loop – Test setup

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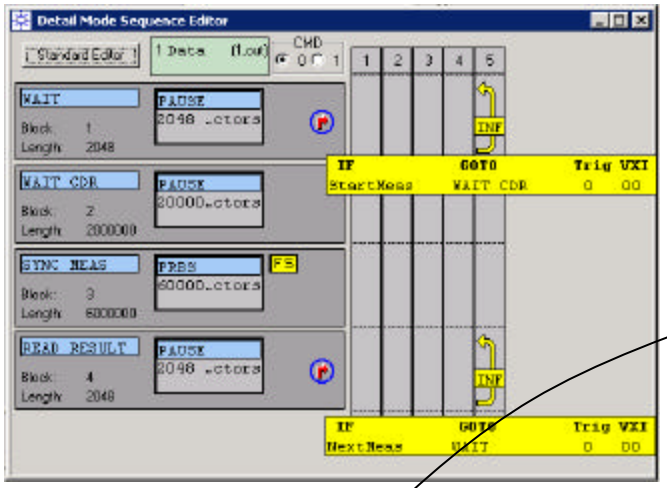
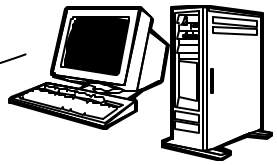


Analyzer Sequence



Remote Programable

Data + Clock

Control signals

Data + Clock

45Gb ParBERT

TX

RX

AOMs

Loop switch

EDFA

SMF

DCF

What´s new?
45Gb ParBERT Frequency Subranges

- **ParBERT 45Gb/s** is able to provide **additional frequency subranges** at **5Gb/s, 10Gb/s** and **20Gb/s**. The hardware allows you to work at following frequency ranges:
  - 45Gb/s – 38Gb/s
  - 22.5Gb/s – 19Gb/s
  - 11.25Gb/s – 9.5Gb/s
  - 5.625Gb/s – 4.74Gb/s
- This new feature provides **best key specifications for ParBERT 45Gb** as well as for **all subranges** especially in terms of **Jitter and Transition Time**:
  - Transition Time: 9ps typ.
  - Jitter: 1ps rms typ.
- The new feature allows you to use **all PRBS polynoms up to 2^31-1** in all supported **frequency ranges**
- **All existing ParBERT 40G MUX/DEMUX modules** are able to work with the additional frequency subranges

45Gb ParBERT Frequency Subrate @ 10Gb/s

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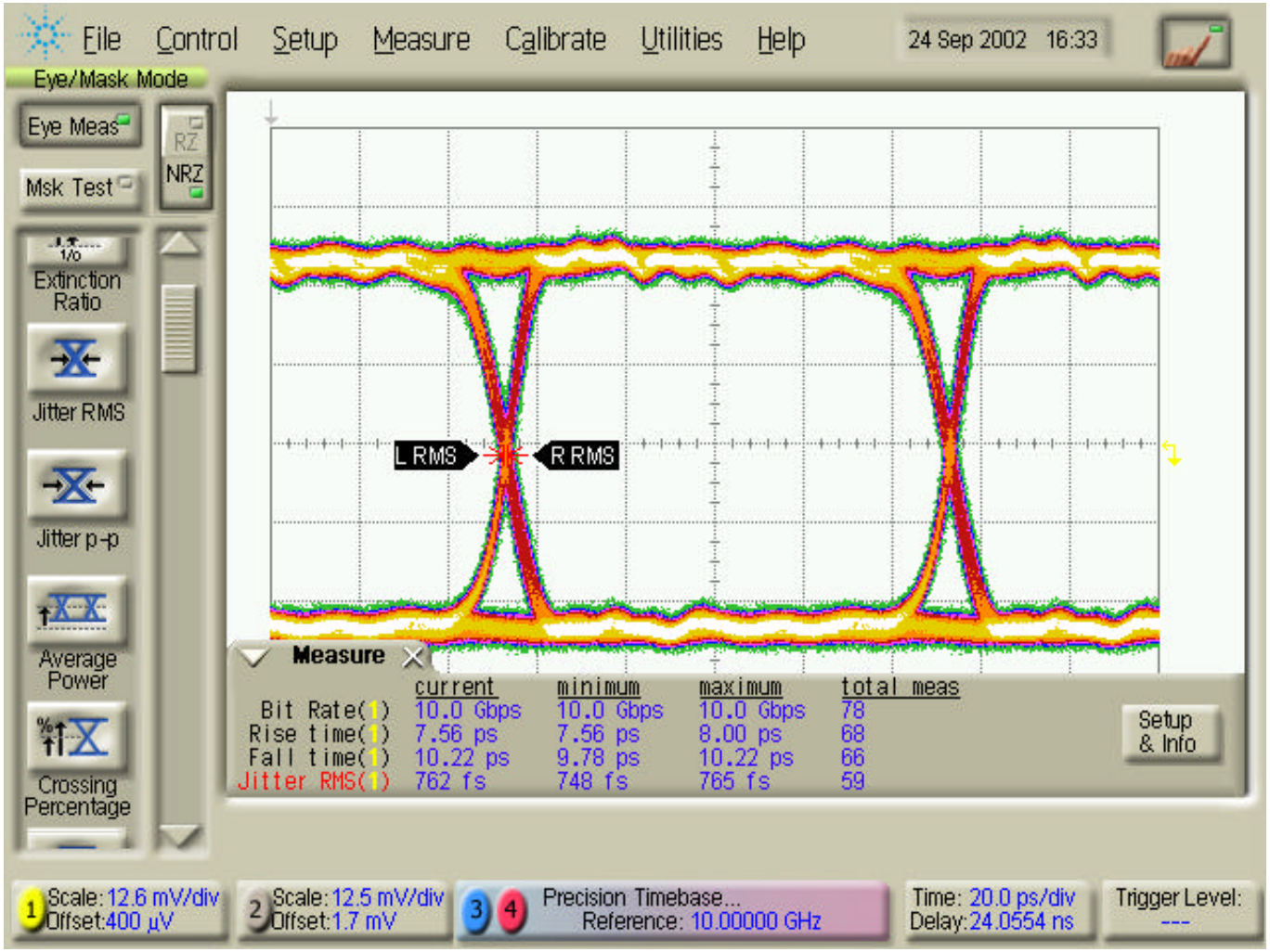

Settings:

- PRBS 31-1
- 0.5V Amplitude

Results:

Risetime:7.56ps

Falltime:10.22ps

Jitter RMS:762fs

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45Gb ParBERT Frequency Subrate @ 5Gb/s

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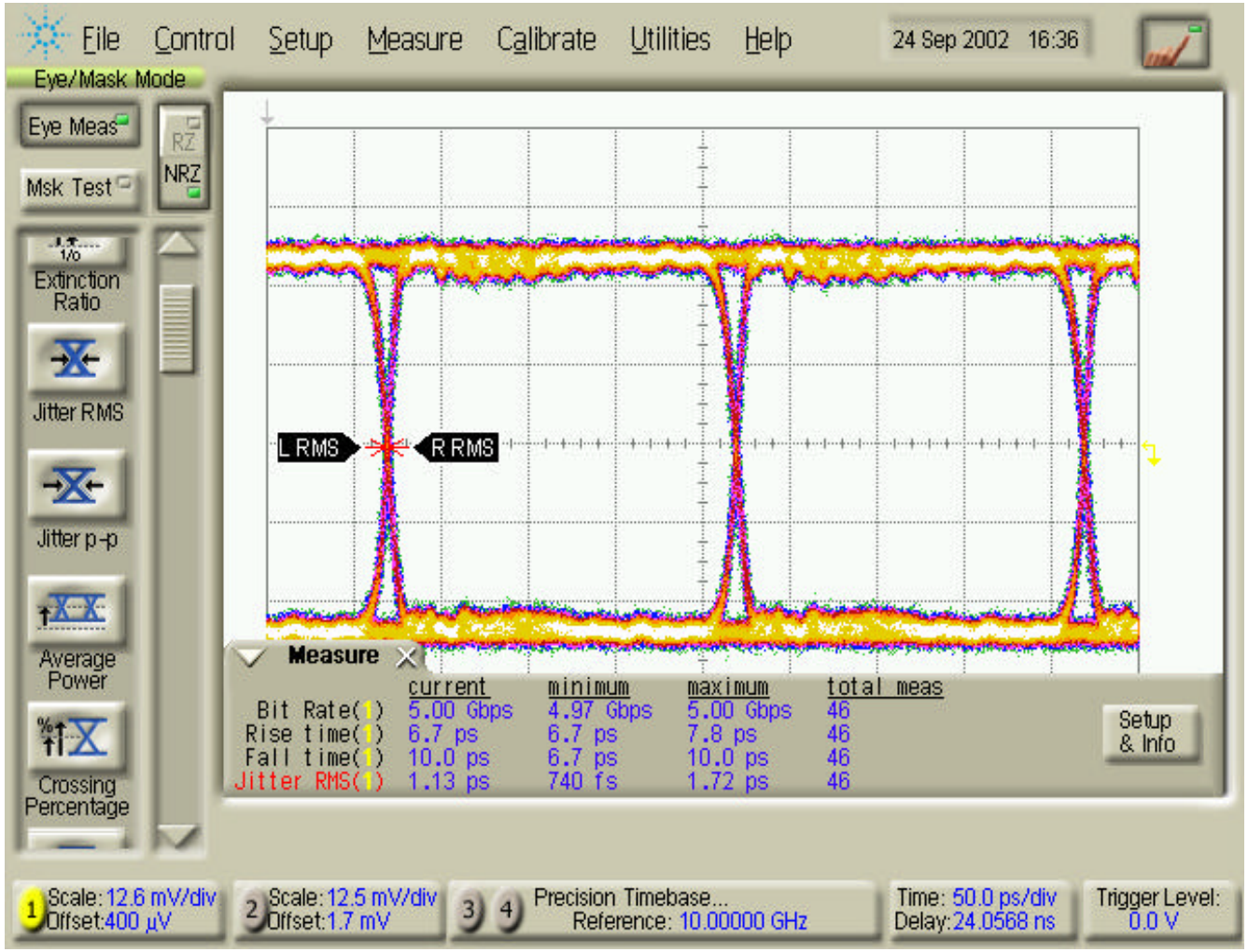

Settings:

- PRBS 31-1
- 0.5V Amplitude

Results:

Risetime: 6.7ps

Falltime:10ps

Jitter RMS: 1.13ps

Measurement Software 5.0
How to get these enhancements?

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ParBERT 81250 Software Revision 5.0 SP1

To get the latest version of the powerful ParBERT 81250 Measurement Software, please go to

www.agilent.com/find/parbert

The software upgrade is **FREE OF CHARGE** for all existing ParBERT 81250 Measurement Software licenses and will be **available to download today.**

ParBERT 81250 Platform

Product offering

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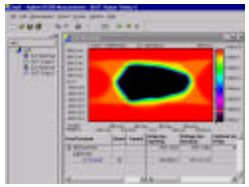
Software

E4875A SW (includes Measurement Software, SFI-5 and 10GbE Post-Processing Tools)



Bundles

E4894B/5B 43.2G
E4896A/7A 45G
Pattern Generator
Error Detector

NEW!!

ParBERT 3.35G optical modules

Modules

07/00, 11/01

E4805B/08A Standard/ High Performance Clock Module

08/00

E4832A
$ 13k

02/02

E4861A
$ 17k

07/00

E4861A
$ 26k

01/02

E4861B
$ 30k

11/02
02703

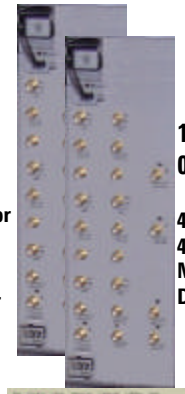
E4810A
$ 18k$

E4811A
$ 22k$

11/01

E4866A generator
$ 45k

E4867A analyzer
$ 55k



11/01, 05/02

43.2G/ 45G Mux/ Demux

11/02

45G Optical

Front ends

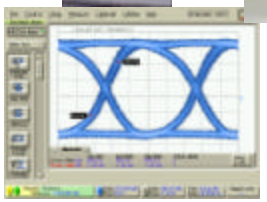
E4838A Generator

E4835A Analyzer

E4864A/65A Generator/ Analyzer

E4862A/63A Generator/ Analyzer

E4862B/63B Generator/ Analyzer



Clock	675MBit	1.65GBit	2.7GBit	3.35GBit	10.8GBit	43.2GBit, 45GBit	Optical Interface

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ParBERT 81250 Platform

Building Blocks to configure a ParBERT system

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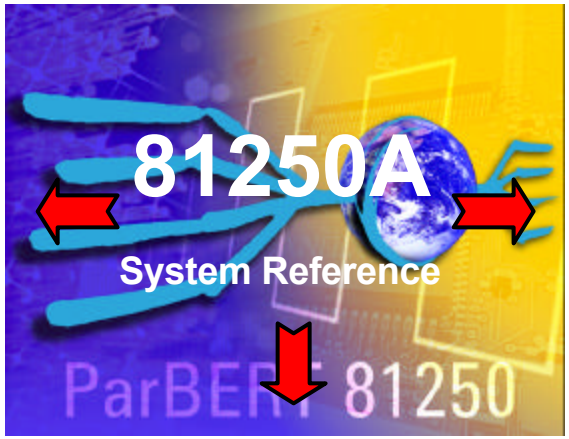
* Mandatory selection



Controller*

81250A-013	IEEE1394 PCI Link to VXI
E4803A	2-slot VXI PC Controller

Mainframe*

81250A-149	Mainframe
81250A-152	IEEE 1394 Exp. Frame

Accessories

Software*

E4875A	ParBERT 81250 Software

Clock Modules*

E4808A	High Performance Central Clock Module
E4805B	675 MHz Central Clock Module (works with modules up to 2.7Gb/s)

Data Modules and Front Ends*

675MHz:

E4832A	675MHz Gen/An Module
E4835A	Two Diff. Analyzer Front Ends
E4838A	Diff. Generator Front End

2.7Gb/1.6Gb:

E4861A	2.7Gb Gen/An Module
E4862A	2.7Gb Generator Front End
E4863A	2.7Gb Analyzer Front End
E4864A	1.6Gb Generator Front End
E4865A	1.6Gb Analyzer Front End

3.3Gb:

E4861B	3.35Gb Gen/An Module
E4862B	3.35Gb Generator Front End
E4863B	3.35Gb Analyzer Front End

3.3Gb optcal:

E4810A	3.35Gb optical Generator Module
E4811A	3.35Gb optical Analyzer Module

10.8Gb:

E4866A	10.8Gb Generator Module
N4868A	10.8Gb Booster Module
E4867A	10.8Gb Analyzer Module

43.2Gb:

E4868A	43.2Gb Multiplexer Module
E4869A	43.2Gb Demultiplexer Module

45Gb:

E4868B	45Gb Multiplexer Module
E4869B	45Gb Demultiplexer Module

45Gb optical:

E4882A	Receiver Module
E4883A	Transmitter Module
E4884A	High Performance Option