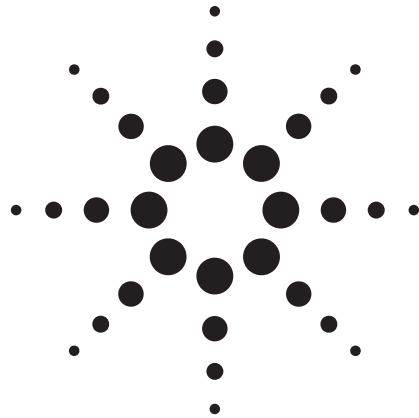


Agilent E4899A 100 Gb/s BERT

PRELIMINARY

Data Sheet
Version 0.9



Key Benefits

- Unique data range from 40 Gb/s to 100 Gb/s
- Flexible patterns for stimulus (PRBS and memory based)
- BER (Bit Error Ratio) measurements on ultra-high speed bit patterns
- Standard and proven, turn-key solution
- Electrical differential interfaces with 1.85 mm connectors
- Controlled from user software running on an external Windows XP PC



Enabling future 100 Gb/s Transmission

The new 100 Gb/s Bit Error Ratio Tester (BERT) enables researchers and technologists in universities and research centers to validate their transceiver designs that operate at speeds between 40 and 100 Gb/s.

Based on Proven ParBERT Technology

The E4899A is based on the proven and established ParBERT 81250 hardware and software technology. The parallel signals are supplied by N4872A generators to the multiplexer part of the front-end E4898A.

On the analysis side the input signal is sampled at 1/8 of the data rate and delivered for BER measurement to a N4873A analyzer. To provide ease of use to the operator, a new user interface has been developed which integrates the control of the ParBERT modules. The software user interface has one standard and one password protected expert screen for maintenance purposes.

PRBS and Memory Pattern Generation

The E4899A can generate and analyze standard PRBS polynomials and different memory patterns. Signals can be delivered through differential outputs with single ended signal amplitude from 200 mVpp to 400 mVpp. The analyzer can deal with differential signals within a voltage window of 0 to -800 mV on each input.

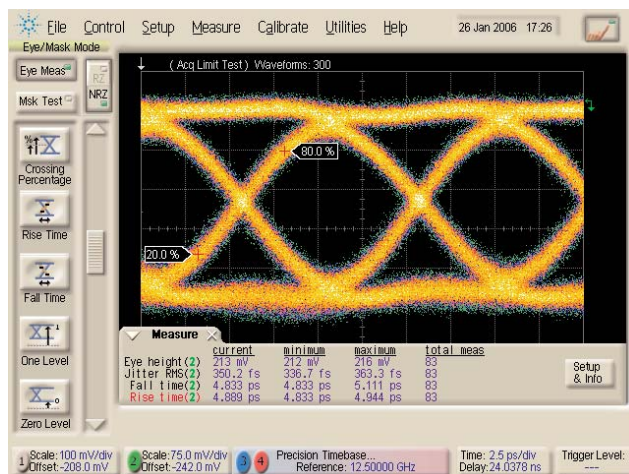


Figure 2: Generator eye diagram at 100 Gb/s

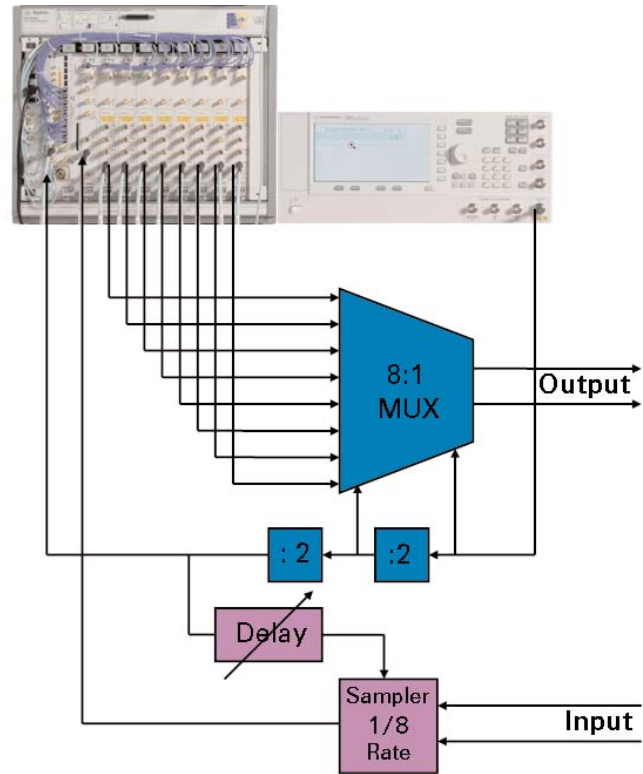


Figure 3: Principle block diagram



Figure 4: 100 Gb/s BERT user interface

System Specifications

Pattern Generator

Electrical specifications

An electrical differential output is provided on the front-panel of the E4898A.

Data Rate	40 Gb/s to 100 Gb/s
Jitter	400 fs rms
Transition time	5.5 ps (20/80%)
Data Output	Differential
Connector Type	50 Ω, 1.85 mm
Single Ended	
Amplitude Range (pp)	200 to 400 mVpp
Coupling	DC coupled
Logical Levels	V_H 0 - 50 mV
depending on amplitude	V_L -200 mV to -450 mV

Patterns

The following patterns are supported:

PRBS: 2^7-1 , 2^9-1 , $2^{10}-1$, $2^{11}-1$, $2^{15}-1$, $2^{23}-1$, $2^{31}-1$

Memory based 64 MB of memory on each of the 8 generator channels

Error Detector

An electrical differential input is provided on the front-panel of the E4898A.

The data rate of the error detector is the same as the generator data rate as they are operated by the same clock.

Data Rate	40 Gb/s to 100 Gb/s
Data Input	Differential
Connector Type	50 Ω, 1.85 mm
Receiver Sensitivity	Tbd
Coupling	DC coupled
Input voltage window	0 to -800 mV on each input

Patterns

The following patterns are supported:

PRBS: 2^7-1 , 2^9-1 , $2^{10}-1$, $2^{11}-1$, $2^{15}-1$, $2^{23}-1$, $2^{31}-1$

Memory based 64 MB of memory on the one analyzer channel

User Interface

The user interface provides access to the following settings:

- Data rate (same for generator and analyzer)
- Generator output levels
- Analyzer sampling delay

The user interface displays the measured Bit Error Ratio (BER). It also provides access to maintenance functions to be used by trained personnel.

Operating System

The software supplied runs on Windows 2000 and Windows XP.

General

Power supply	100 to 240 V, 50-60 Hz
Operating temp.	10°C to 40°C
Recommended	20°C to 25°C
Operating altitude	up to 3000 m
Storage temp.	-20 °C to 60 °C
Interfaces to PC	USB 2.0 (E4898A) IEEE 1394 (ParBERT)
Dimensions (W×H×D)	
E4899A	430 x 700 x 640 mm
E4898A	430 x 145 x 640 mm
Bench top	228 x 59 x 237 mm
Rack mount	19" width

Ordering Information

Agilent E4899A 100 Gb/s BERT consists of the following components:

- 1 x E4898A 100 Gb/s Front-End
- 8 x N4872A 13.5 Gb/s Generator Module
- 1 x N4873A 13.5 Gb/s Analyzer Module
- 1 x E4809A 13.5 Gb/s Central Clock Module
- 1 x E8491B Firewire Module
- 1 x E8403A VXI Mainframe
- 1 x E8257D Analog Signal Generator
- 1 x ParBERT Software
- 1 x Desktop PC
- 1 x Startup Assistance (2 days)

Accessories Included

CDs including ParBERT and 100Gb/s BERT software. RF Cables for interconnecting components and local power cords.

Related Literature

ParBERT 81250
Product Overview 5968-9188E

E8257D PSG Analog
Signal Generator 5989-0698EN
Data Sheet

Physical Layer Test
Brochure 5988-9514EN

Infiniium DCA-J Wide-
Bandwidth Oscilloscope 5989-0278EN
Data Sheet

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Product specifications and descriptions in this document subject to change without notice.

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