Keysight Technologies
N5980A 3.125 Gb/s Serial BERT
Version 1.1

Data Sheet



KEYSIGHT TECHNOLOGIES

The Keysight Technologies, Inc. N5980A 3.125 Gb/s Serial BERT is ideal for manual or automated manufacturing test of electrical and optical devices running at speeds between 125 Mb/s to 3.125 Gb/s. It addresses all common standard speeds via selectable bit rates.

Easy-to-use and cost efficient

The software user interface has one standard or one advanced screen to ensure intuitive use for operators. It makes the instrument easy to use and easy to learn.

Twice the measurement throughput

By using both the electrical and optical (SFP) interfaces concurrently, you can double your measurement throughput (electrical in/optical out and vice versa).

Automation made easy

The remote programmability of the user interface, using SCPI - syntax, makes it simple to integrate the N5980A into other programs.

PRBS, K28.5 pattern or clock generation and integrated clock data recovery

The N5980A can generate standard PRBS polynomials, K28.5 ('Comma') characters and different sub-rate clocks (/2 to /20). It can also inject errors with an adjustable error ratio. The receiver has a clock-data-recovery (CDR) built-in and differential inputs (SMA) for signals from 50 mVpp to 2 Vpp amplitude.

Standard (SFP) optical module plug-in

The instrument has a standard SFP- female connector. This enables all different kind of user-selectable optical modules (e.g for multi-mode/single-mode fiber at 850nm, 1310nm and 1550nm for the test set-up).

Small size

Its very small size allows the N5980A to fit on any bench and in any automated setup. The dimensions are, WxHxD, 228mm x 59mm x 246mm (Bench top dimensions.)

Key Benefits

- Standard measurement rates between 125 Mb/s and 3.125 Gb/s
- Electrical and optical (SFP) interfaces (generator: concurrently)
- PRBS, K28.5 pattern or clock generation and integrated clock data recovery
- Smallest BERT available today
- Easy-to-use and cost efficient
- Controlled from user software running on an external Windows 2000, XP or 7 PC connected by a USB 2.0 interface
- BERT can be fully programmed

System Specifications

Data rate

The same data rate applies for pattern generator electrical out and optical out, and for error detector electrical in and optical in.

Data rates	
Fast Ethernet	125 Mb/s
OC-3	155.52 Mb/s
OC-12	622.08 Mb/s
OC-48	2.48832 Gb/s
OC-48 with FEC	2.66606 Gb/s
1 x FC	1.0625 Gb/s
2 x FC	2.125 Gb/s
1 x Gigabit Ethernet	1.25 Gb/s
XAUI	3.125 Gb/s
Accuracy	± 50 ppm

Operating system

The software supplied runs on Windows 2000, XP or 7 with .NET v2.0, by a USB 2.0 interface.

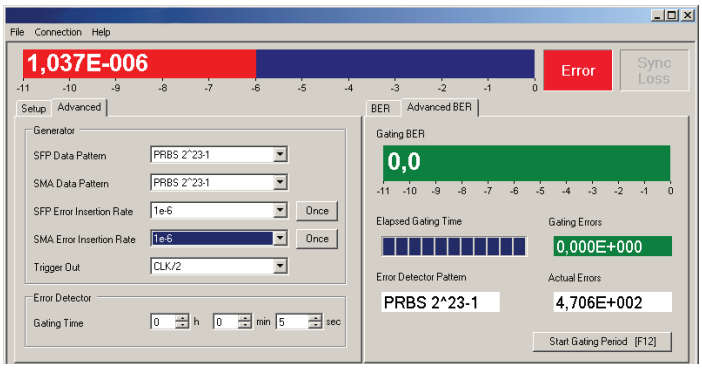


Figure 1: User interface-advanced mode

Pattern Generator

Pattern

The following patterns are supported:
PRBS: 27-1, 215-1, 223-1, 231-1.
Data pattern: K28.5.
Clock pattern: data rate divide by n, n=2,4,8,10,16,20

The pattern can be individually adjusted for pattern generator electrical out and optical out.

Error injection

Fixed electrical and optical error inject: Fixed error ratios of 1 error in 10n bits, n=3,4,5,6,7,8,9. Single error injection. Separate error ratios can be adjusted for pattern generator electrical out and optical out.

Pattern generator electrical out

A differential electrical output is provided on the front-panel.

Out/Out	
Output type	differential, AC-coupled, external 100 Ω differential termination
Amplitude, selectable ECL	850 mVpp typ., single-ended 1700 mVpp typ., differential
LVDS	400 mVpp typ., single-ended 800 mVpp typ., differential
Jitter peak-peak	0.05 UI typ. @ OC-12 0.08 UI typ. @ GbE 0.15 UI typ. @ OC-48
Connector	SMA, front panel

Pattern generator optical out

A standard SFP housing is provided. Minimum number of insertion/deinsertion cycles: 200.

Trigger output

A single-ended, electrical output is provided on the front-panel.

Trigger out	
Output type	single-ended
Impedance	50 Ω nominal, AC-coupled
Amplitude	850 mV typ.
Clock rate, selectable data rate	divided by n, n=2,4,8,10,16,20
Connector	SMA, front Panel

Error Detector

A differential electrical input is provided on the frontpanel. Data rate is the same as pattern generator.

Pattern

The following patterns are supported: PRBS: 27-1, 215-1, 223-1, 231-1.

In/In	
Input type	differential, AC-coupled
Max. input amplitude	1 Vpp, single-ended 2 Vpp, differential
Impedance	100 Ω nominal
Sensitivity	< 50 mV
Clocking mode	internal CDR
Synchronization	automatically on level, polarity, phase, bit and pattern
Connector	SMA, front panel

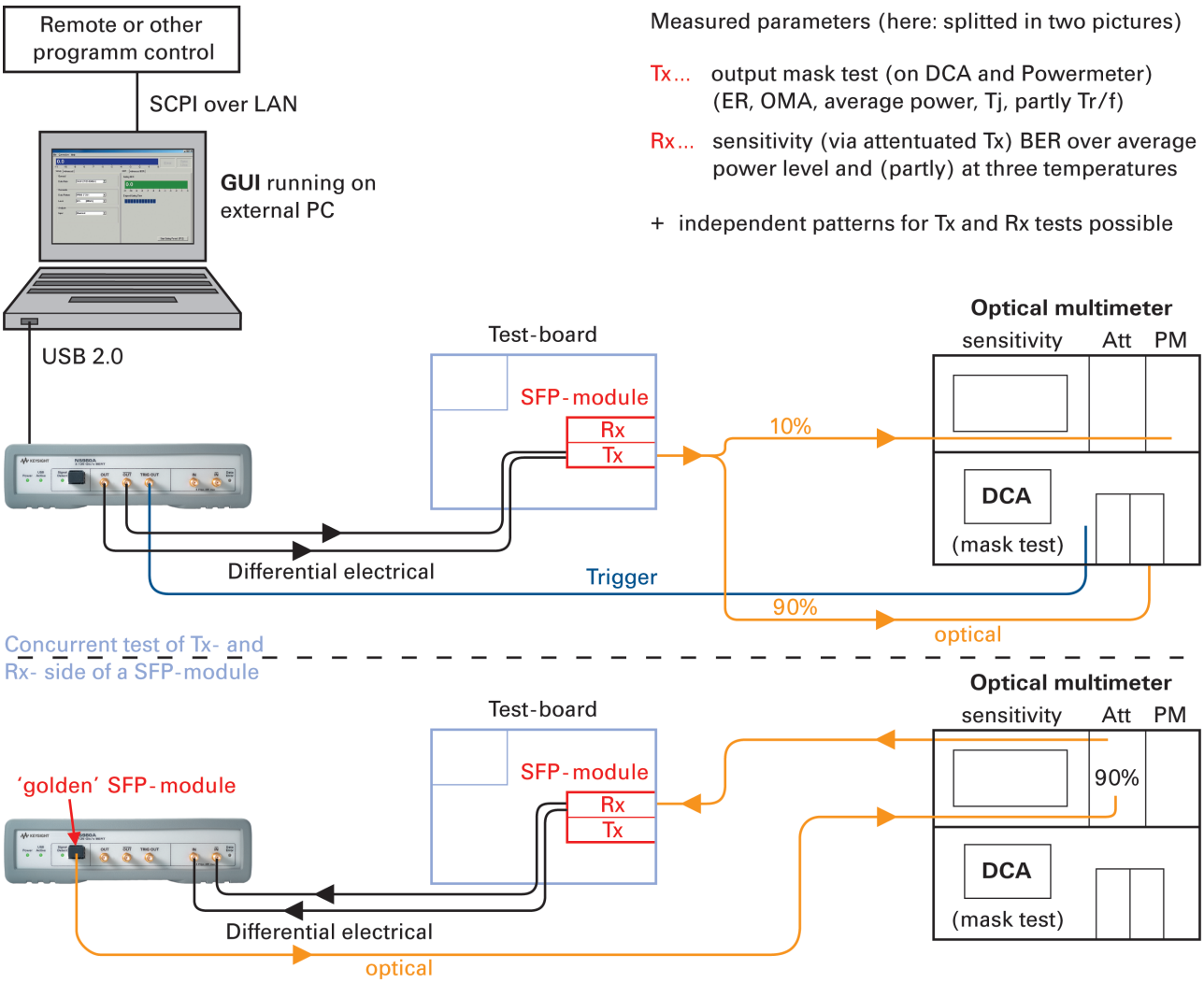


Figure 2: Typical manufacturing tests of SFP-modules

General	
Power supply	100 V to 240 V ~, 50-60 Hz
Power consumption	50 VA max
Operating temperature	0°C to 55°C
Operating altitude	up to 2000 m
Storage temperature	-30°C to 70°C
Interface	USB 2.0 standard
Language	SCPI syntax
Dimensions (W x H x D) Bench top (with bumper) Rack mount (without bumper)	228 x 59 x 246 mm 1/2* 19" width, 1U height (213 x 44.5 x 245 mm)
Weight	1660 g
Safety designed to	IEC61010-1
EMC tested to	IEC61326
Warm-up time	10 min
Warranty	1 year standard

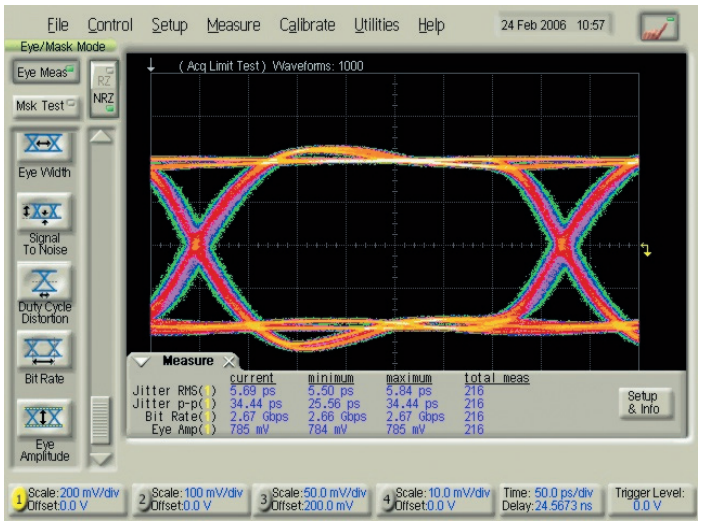


Figure 3: Typical eye diagram at 2.66 Gb/s

Ordering Information

Accessories Included

User Software and Demo CD includes:

- Application Presentation
- Data Sheet
- User documentation (User Guide with programming reference)
- User Software including offline demonstration
- Local power cord, USB cable, SFP loopback connector

Related Literature	Publication Number
J-BERT N4903A High-Performance Serial BERT Brochure	5989-3882EN
J-BERT N4903A High-Performance Serial BERT Data Sheet	5989-2899EN
N4906B Serial BERT 12.5 Gb/s Data Sheet	5989-2406EN
Physical Layer Test Brochure	5988-9514EN
ParBERT 81250 Product Overview	5968-9188E
Infiniium DCA-J Wide-Bandwidth Oscilloscope Data Sheet	5989-0278EN
Infiniium 80000 Series Data Sheet	5989-1487ENUS
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