

Agilent N5980A 3.125 Gb/s Serial BERT

PRELIMINARY

Data Sheet

Version 0.9



Key Benefits

- **Standard measurement rates between 155 Mb/s and 3.125 Gb/s**
- **Electrical and optical (SFP) interfaces**
- **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 XP PC connected by a USB 2.0 interface**
- **BERT can be fully programmed using remote software**

The Agilent N5980A 3.125 Gb/s Serial BERT is ideal for manual or automated manufacturing test of electrical and optical devices running at speeds between 155 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 all classes of 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 the SCPI-1997 programming language, 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 standard-compliant clock-data-recovery (CDR) built-in and differential inputs (SMA) for signals from 50 mV_{pp} to 2 V_{pp} 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 850 nm, 1310 nm and 1550 nm for the test set-up).

Small size

Its very small size allows the N5980A to fit on any bench and in any automated setup (WxHxD is 231 mm x 41 mm x 211 mm).



Agilent Technologies

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

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 XP with .NET v1.1, over a USB 2.0 interface.

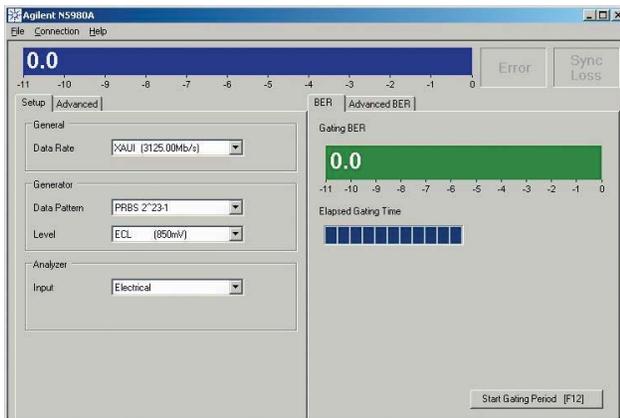


Figure 2: User interface: normal mode

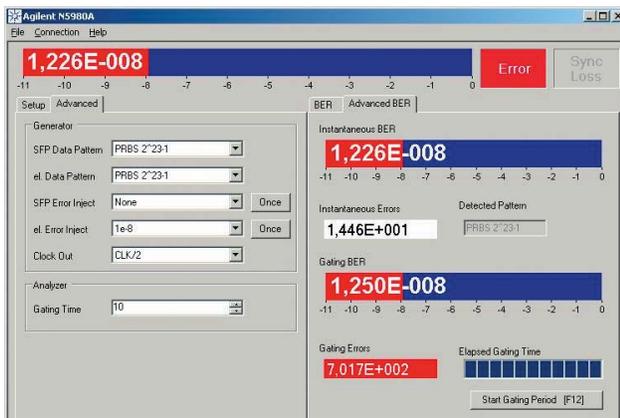


Figure 3: User interface: expert mode

Pattern Generator

Pattern

The following patterns are supported:

PRBS: 2^7-1 , $2^{15}-1$, $2^{23}-1$, $2^{31}-1$.

Data pattern: K28.5.

Clock pattern: data rate: 2:4:8:10:16:20.

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

Error injection

Adjustable error rates:

$10E-3$; $10E-4$; $10E-5$; $10E-6$; $10E-7$; $10E-8$; $10E-9$.

Single error injection. Separate error rates 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 mV _{pp} typ., single-ended 1700 mV _{pp} typ., differential
LVDS:	400 mV _{pp} typ., single-ended 800 mV _{pp} 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	2:4:8:10:16:20
Connector	SMA, front Panel

Error detector

A differential electrical input is provided on the front-panel. Data rate is the same as pattern generator.

Pattern

The following patterns are supported:

PRBS: 2^7-1 , $2^{15}-1$, $2^{23}-1$, $2^{31}-1$.

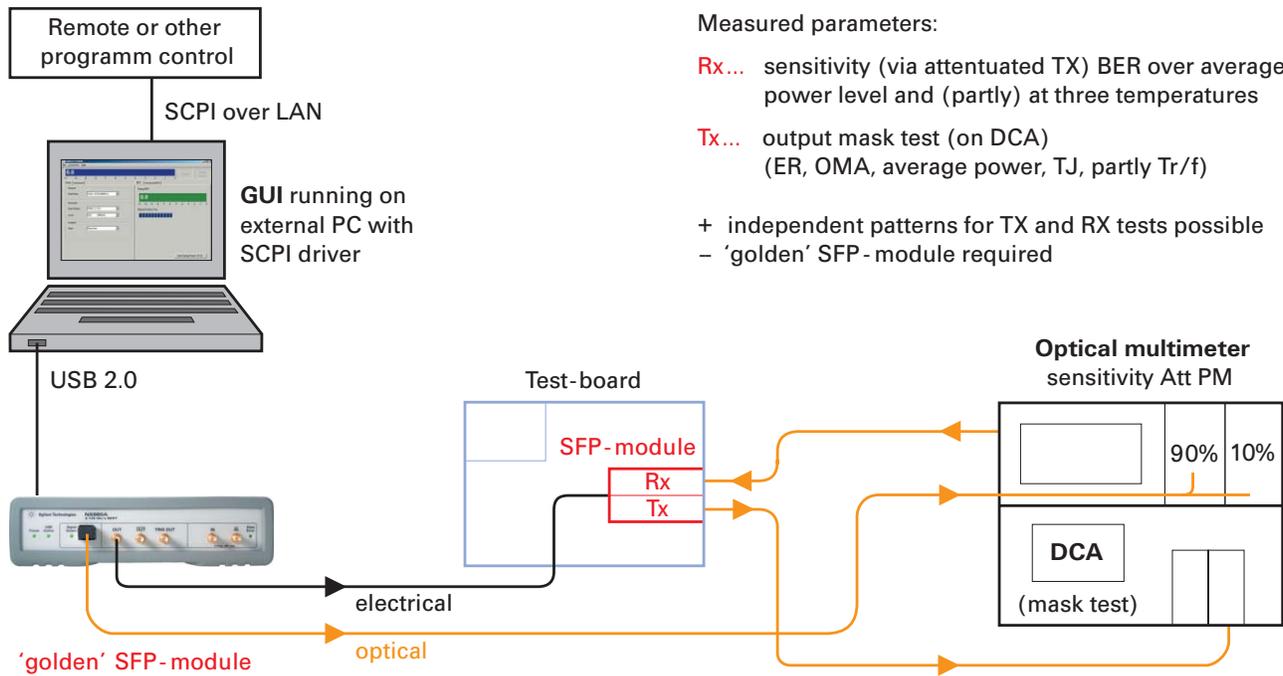


Figure 4: Typical manufacturing tests of SFP-modules

In/In

Input type	differential, AC-coupled
Max. input amplitude	1 V _{pp} , single-ended 2 V _{pp} , differential
Impedance	100Ω nominal
Sensitivity	< 50 mV
Clocking mode	internal CDR
Synchronization	Automatically on level, polarity, phase, bit and pattern
Connector	SMA, front panel

General

General

Power supply	100 to 240 V, 50-60 Hz 100 to 127 V, 50-400 Hz
Power consumption	25 VA peak (7 watts)
Operating temp.	0°C to 55°C
Operating altitude	up to 3000 m
Storage temp.	-30°C to 70°C
Interface	USB 2.0 standard
Language	SCPI-1997
Dimensions (W x H x D)	
Bench top	228 x 59 x 237 mm
Rack mount	1/2" 19" width, 1U height
Weight	1.6 kg
Safety designed to	EN61010-1, CSA1010.1, UL-311-1
EMC tested to	EN55011, IEC-1326-1
Vibration and shock	MIL-T-28800E, Type III, Class 5
Warm-up time	10 min
Warranty	3 years standard

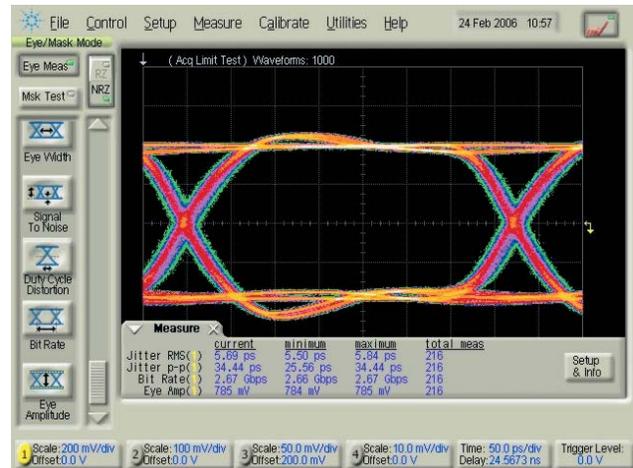


Figure 5: Typical eye diagram at 2.66 Gb/s

Ordering Information

Agilent N5980A

Serial 3.125 Gb/s BERT with standard 3-years return-to-Agilent warranty.

Accessories Included

CD which includes:

- Quick reference guide
 - Programming reference
 - Connectivity software
- Local power cord.

Optional accessories

Opt. XXX Rack mount kit.
Option number available May 2006

Related Literature

Publication Number

www.agilent.com

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 8000 Series Data Sheet	5989-1487ENUS
Fast Total Jitter Test Solution Application Note	5989-3151EN

www.agilent.com/find/manufacturing_BERT

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

For the latest version of this document, please visit our website at www.agilent.com/find/manufacturing_BERT and go to the Key Library Information area or insert the publication number (5989-4752EN) into the search engine.



Agilent Email Updates

www.agilent.com/find/emailupdates

Get the latest information on the products and applications you select.



Agilent Direct

www.agilent.com/find/agilentdirect

Quickly choose and use your test equipment solutions with confidence.

Agilent Technologies' Test and Measurement Support, Services, and Assistance
Agilent Technologies aims to maximize the value you receive, while minimizing your risk and problems. We strive to ensure that you get the test and measurement capabilities you paid for and obtain the support you need. Our extensive support resources and services can help you choose the right Agilent products for your applications and apply them successfully. Every instrument and system we sell has a global warranty. Two concepts underlie Agilent's overall support policy: "Our Promise" and "Your Advantage."

Our Promise

Our Promise means your Agilent test and measurement equipment will meet its advertised performance and functionality. When you are choosing new equipment, we will help you with product information, including realistic performance specifications and practical recommendations from experienced test engineers. When you receive your new Agilent equipment, we can help verify that it works properly and help with initial product operation.

Your Advantage

Your Advantage means that Agilent offers a wide range of additional expert test and measurement services, which you can purchase according to your unique technical and business needs. Solve problems efficiently and gain a competitive edge by contracting with us for calibration, extra-cost upgrades, out-of-warranty repairs, and onsite education and training, as well as design, system integration, project management, and other professional engineering services. Experienced Agilent engineers and technicians worldwide can help you maximize your productivity, optimize the return on investment of your Agilent instruments and systems, and obtain dependable measurement accuracy for the life of those products.



Agilent Open

www.agilent.com/find/open

Agilent Open simplifies the process of connecting and programming test systems to help engineers design, validate and manufacture electronic products. Agilent offers open connectivity for a broad range of system-ready instruments, open industry software, PC-standard I/O and global support, which are combined to more easily integrate test system development.

United States:

(tel) 800 829 4444
(fax) 800 829 4433

Canada:

(tel) 877 894 4414
(fax) 800 746 4866

China:

(tel) 800 810 0189
(fax) 800 820 2816

Europe:

(tel) 31 20 547 2111

Japan:

(tel) (81) 426 56 7832
(fax) (81) 426 56 7840

Korea:

(tel) (080) 769 0800
(fax) (080)769 0900

Latin America:

(tel) (305) 269 7500

Taiwan:

(tel) 0800 047 866
(fax) 0800 286 331

Other Asia Pacific

Countries:

(tel) (65) 6375 8100
(fax) (65) 6755 0042

Email: tm_ap@agilent.com

Contacts revised: 05/27/05

For more information on Agilent Technologies' products, applications or services, please contact your local Agilent office. The complete list is available at:

www.agilent.com/find/contactus

© Agilent Technologies, Inc. 2006
Printed in the USA, March 02, 2006
5989-4752EN



Agilent Technologies