

Keysight Technologies

N5980A 3.125 Gb/s Serial BERT

Version 1.1

Data Sheet



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.

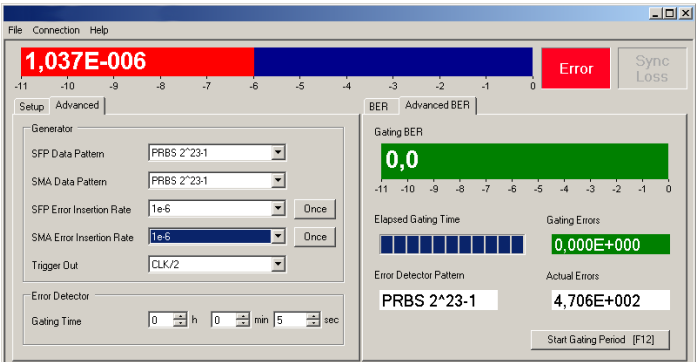


Figure 1: User interface-advanced mode

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

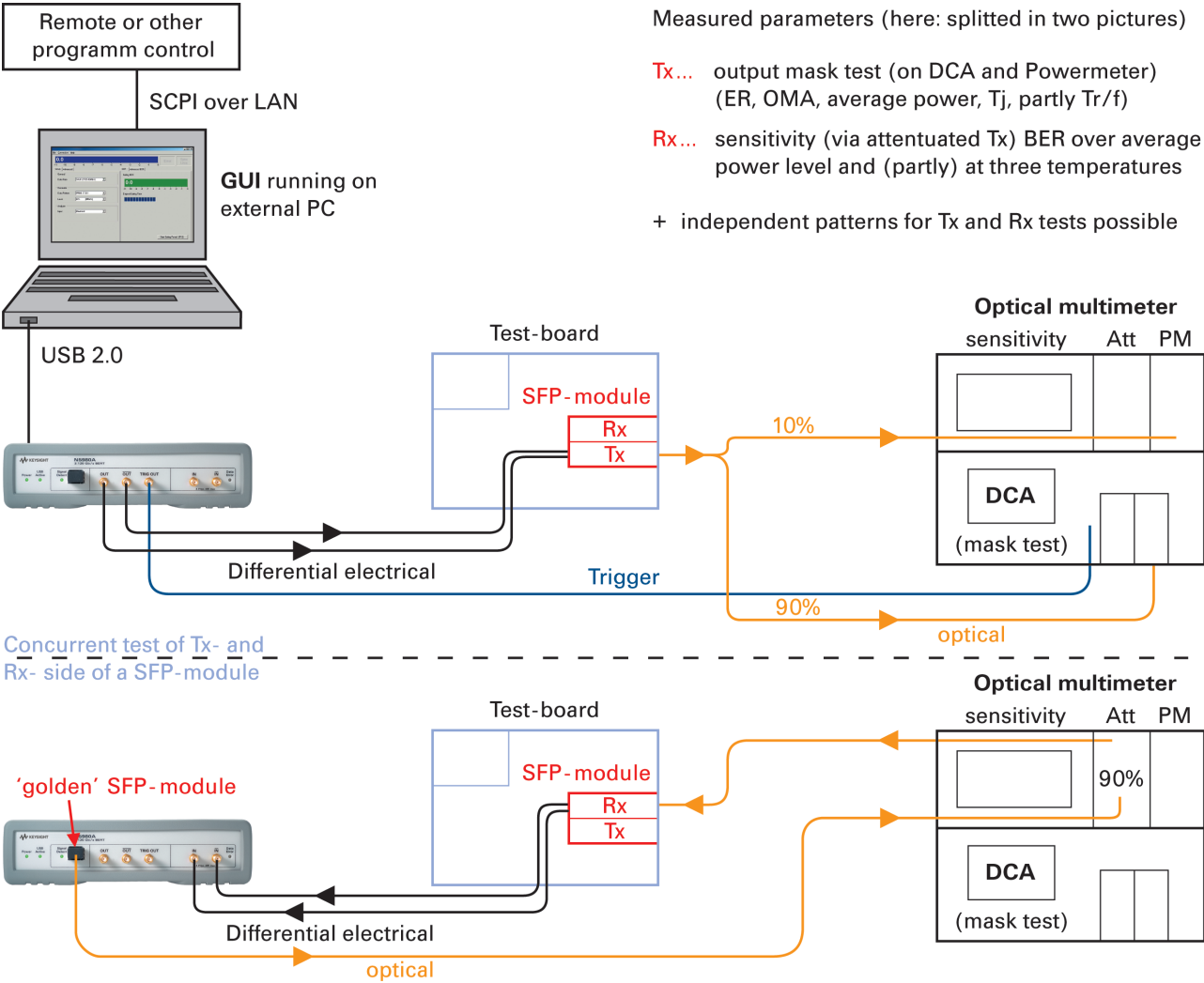


Figure 2: Typical manufacturing tests of SFP-modules

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)	228 x 59 x 246 mm
Bench top (with bumper)	1/2* 19" width, 1U height
Rack mount (without bumper)	(213 x 44.5 x 245 mm)
Weight	1660 g
Safety designed to	IEC61010-1
EMC tested to	IEC61326
Warm-up time	10 min

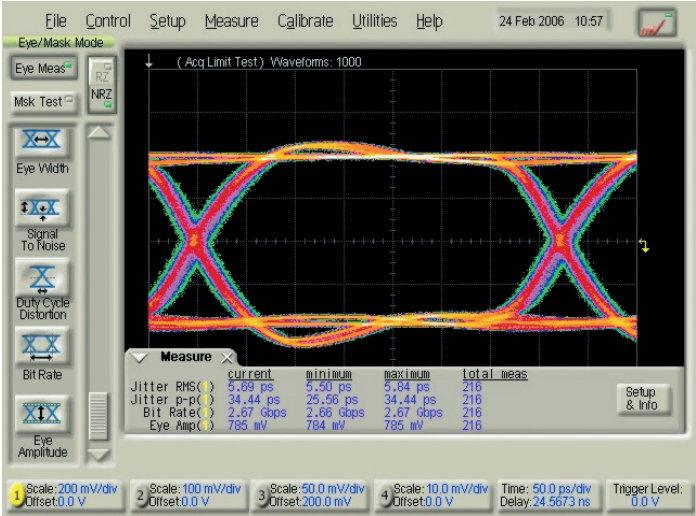


Figure 3: Typical eye diagram at 2.66 Gb/s

Ordering Information

Accessories Included

User Software and Demo CD includes:

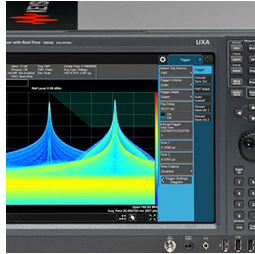
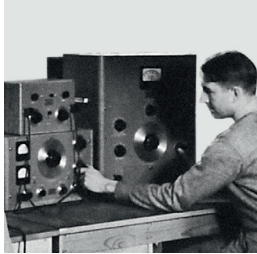
- Application Presentation
- Data Sheet
- User documentation (User Guide with programming reference)
- User Software including offline demonstration
- Local power cord, USB cable, SFP loopback connector

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
Fast Total Jitter Test Solution Application Note	5989-3151EN

Evolving Since 1939

Our unique combination of hardware, software, services, and people can help you reach your next breakthrough. We are unlocking the future of technology.

From Hewlett-Packard to Agilent to Keysight.



myKeysight

myKeysight

www.keysight.com/find/mykeysight

A personalized view into the information most relevant to you.

www.keysight.com/find/emt_product_registration

Register your products to get up-to-date product information and find warranty information.

KEYSIGHT SERVICES
Accelerate Technology Adoption.
Lower costs.

Keysight Services

www.keysight.com/find/service

Keysight Services can help from acquisition to renewal across your instrument's lifecycle. Our comprehensive service offerings—one-stop calibration, repair, asset management, technology refresh, consulting, training and more—helps you improve product quality and lower costs.



Keysight Assurance Plans

www.keysight.com/find/AssurancePlans

Up to ten years of protection and no budgetary surprises to ensure your instruments are operating to specification, so you can rely on accurate measurements.

Keysight Channel Partners

www.keysight.com/find/channelpartners

Get the best of both worlds: Keysight's measurement expertise and product breadth, combined with channel partner convenience.

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

www.keysight.com/find/contactus

Americas

Canada	(877) 894 4414
Brazil	55 11 3351 7010
Mexico	001 800 254 2440
United States	(800) 829 4444

Asia Pacific

Australia	1 800 629 485
China	800 810 0189
Hong Kong	800 938 693
India	1 800 11 2626
Japan	0120 (421) 345
Korea	080 769 0800
Malaysia	1 800 888 848
Singapore	1 800 375 8100
Taiwan	0800 047 866
Other AP Countries	(65) 6375 8100

Europe & Middle East

Austria	0800 001122
Belgium	0800 58580
Finland	0800 523252
France	0805 980333
Germany	0800 6270999
Ireland	1800 832700
Israel	1 809 343051
Italy	800 599100
Luxembourg	+32 800 58580
Netherlands	0800 0233200
Russia	8800 5009286
Spain	800 000154
Sweden	0200 882255
Switzerland	0800 805353
	Opt. 1 (DE)
	Opt. 2 (FR)
	Opt. 3 (IT)
United Kingdom	0800 0260637

For other unlisted countries:

www.keysight.com/find/contactus
(BP-9-7-17)

DEKRA Certified
ISO 9001 Quality Management System

www.keysight.com/go/quality

Keysight Technologies, Inc.
DEKRA Certified ISO 9001:2015
Quality Management System



This information is subject to change without notice.
© Keysight Technologies, 2017
Published in USA, December 1, 2017
5989-4752EN
www.keysight.com