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 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.

**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 or XP PC connected by a USB 2.0 interface
- BERT can be fully programmed

**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.)
System Specifications

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

<table>
<thead>
<tr>
<th>Data rates</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fast Ethernet</td>
<td>125 Mb/s</td>
</tr>
<tr>
<td>OC-3</td>
<td>155.52 Mb/s</td>
</tr>
<tr>
<td>OC-12</td>
<td>622.08 Mb/s</td>
</tr>
<tr>
<td>OC-48</td>
<td>2.48832 Gb/s</td>
</tr>
<tr>
<td>OC-48 with FEC</td>
<td>2.66606 Gb/s</td>
</tr>
<tr>
<td>1 x FC</td>
<td>1.0625 Gb/s</td>
</tr>
<tr>
<td>2 x FC</td>
<td>2.125 Gb/s</td>
</tr>
<tr>
<td>1 x Gigabit Ethernet</td>
<td>1.25 Gb/s</td>
</tr>
<tr>
<td>XAUI</td>
<td>3.125 Gb/s</td>
</tr>
</tbody>
</table>

Accuracy ± 50 ppm

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

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 divided by n, n=2,4,8,10,16,20
data rate
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: $2^7 - 1$, $2^{15} - 1$, $2^{23} - 1$, $2^{31} - 1$.

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

Pattern Generator

Pattern
The following patterns are supported:
PRBS: $2^7 - 1$, $2^{15} - 1$, $2^{23} - 1$, $2^{31} - 1$.

Error injection
Fixed electrical and optical error inject: Fixed error ratios of 1 error in $10^n$ 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.
GUI running on external PC
USB 2.0
Remote or other programm control
SCPI over LAN

Test-board
SFP-module
Rx
Tx

Differential electrical
Trigger

Optical multimeter
sensitivity
Att
PM

10%

DCA
(mask test)

90%

DCA
(mask test)

Figure 2: Typical manufacturing tests of SFP-modules

Figure 3: Typical eye diagram at 2.66 Gb/s

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) 228 x 59 x 246 mm
Rack mount (without bumper) 1/2” 19” width, 1 U 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
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.

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.

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

<table>
<thead>
<tr>
<th>Publication Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>5989-3882EN</td>
<td>J-BERT N4903A High-Performance Serial BERT Brochure</td>
</tr>
<tr>
<td>5989-3888EN</td>
<td>J-BERT N4903A High-Performance Serial BERT Data Sheet</td>
</tr>
<tr>
<td>5989-2406EN</td>
<td>N4906B Serial BERT 12.5 Gb/s Data Sheet</td>
</tr>
<tr>
<td>5988-9514EN</td>
<td>Physical Layer Test Brochure</td>
</tr>
<tr>
<td>5968-9188E</td>
<td>ParBERT 81250 Product Overview</td>
</tr>
<tr>
<td>5989-2078EN</td>
<td>Infiniium DCA-J Wide-Bandwidth Oscilloscope Data Sheet</td>
</tr>
<tr>
<td>5989-1487ENUS</td>
<td>Infiniium 80000 Series Data Sheet</td>
</tr>
<tr>
<td>5989-3151EN</td>
<td>Fast Total Jitter Test Solution Application Note</td>
</tr>
</tbody>
</table>

www.agilent.com/find/contacts
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/contacts

© Agilent Technologies, Inc. 2006
Printed in the USA, May 18th, 2006
5989-4752EN

www.agilent.com/find/emailupdates
Get the latest information on the products and applications you select.

www.agilent.com/find/agilentdirect
Quickly choose and use your test equipment solutions with confidence.

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
(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) 6755 8100
(fax) (65) 6755 0042
Email: tm_ap@agilent.com

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 5989-2078EN
Infiniium 80000 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.

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

Quickly choose and use your test equipment solutions with confidence.