# **Smartest Characterization**

The smartest way to accurate jitter tolerance test and characterization



Agilent N4903A High-Performance Serial BERT with complete jitter tolerance testing (J-BERT)

 $7\,Gb/s$  and  $12.5\,Gb/s$ 

- Calibrated jitter composition
- Integrated into one box
- Automated jitter characterization
- Compliant to latest serial bus standards





### Get ready for the next generation serial devices

The next generation of gigabit serial bus standards is already in development. Data rates of 5 Gb/s and beyond mean signal integrity and jitter issues are a significant consideration in the design and characterization of chips and systems.

To achieve gigabit speeds, new electrical I/O techniques are gaining ground. Low voltage signaling, idling, clockless data, and spread spectrum clocking (SSC) are among the best known.

At the same time, the pressure on R&D and characterization teams is increasing. More efficient testing is the key to releasing new designs in time without compromising design quality.

#### **Emerging standards:**

- PCI Express<sup>®</sup> 2.0
- SATA II and III
- Fiber Channel 4G and 8G
- CEI 6/11
- 10 GE
- XFP

### N4903A High-Performance Serial BERT (J-BERT) Smartest Characterization

#### **Complete Jitter Tolerance Test**

The new Agilent N4903A High-Performance Serial BERT is the only BERT that provides a complete jitter tolerance test solution for quick and accurate characterization of the next generation of serial devices. It provides built-in and calibrated jitter composition for stressed eye testing of receivers.

Automated and compliant jitter tolerance testing covers all popular serial bus standards, such as PCI Express<sup>®</sup>, SATA, Fibre Channel, FB-DIMM, CEI, Gigabit Ethernet and XFP.



 $\label{eq:stressed} \begin{array}{l} \text{Stressed eye testing needs more than 50\,\% eye} \\ \text{closure and a composition of different jitter types.} \end{array}$ 

### **Best Fit for Serial Bus Interface**

- Undeterministic traffic from the DUT, caused by idles or protocol state machines, can now be analyzed with the Bit Recovery Mode.
- Complex training sequences, needed to bring the device under test into loop-back mode, can be set up easily with the new pattern sequencer.
- A built-in CDR allows testing of clockless interfaces.
- To match LVDS and other low voltage serial standards, all clock and data inputs and outputs are differential.
- Subrate clock outputs allow generation of any ratio of clock and data signals without any extra equipment.
- N4903A data and clock outputs support SSC to simplify the setup of the clock significantly.



Quick jitter tolerance characterization as J-BERT automatically sweeps through jitter parameters such as modulation frequency and UIs with variable step size and margins.

# of Multi-Gigabit Serial Devices

### **Accurate Characterization**

The N4903A allows accurate and quick characterization utilizing its superior performance and built-in measurement suite.

The Agilent N4903A provides the cleanest eyes with fastest transition times and extremely low jitter over the full speed range. With the high sensitivity of the BER analyzer, this makes accurate characterization results possible.

#### **Expandable BERT Platform**



The interference channel can be upgraded later.

The N4903A is an expandable BERT platform to meet today's needs and budget, but allowing the retrofitting of any options at a later time, as test needs change.



Clean output signal of N4903A



Fastest Total Jitter Measurement

#### Fast results

The built-in measurement suite of the N4903A allows quick design analysis with BERT scan, Eye Contour, Spectral Jitter Decomposition, Q-factor and Fast Total Jitter measurements.

Key trend	N4903A provides	Customer values
• Jitter becomes an issue for all emerging 5 Gb/s + standards	<ul> <li>Built-in, complete, calibrated jitter injection</li> <li>Automated jitter tolerance tests</li> </ul>	<ul> <li>Quick and accurate jitter tolerance testing</li> </ul>
New techniques	<ul> <li>Best match for current and emerging serial technologies</li> </ul>	• Less set-up time with an off-the-shelf solution
• R&D and characterization pressure	<ul> <li>Clean eye and precise measurements</li> <li>Expandable BERT platform</li> </ul>	<ul> <li>High-quality characterization</li> <li>Tailors to budget and needs</li> <li>Upgradeable to future needs</li> </ul>

### N4903A High-Performance Serial BERT (J-BERT)

# **Smartest Characterization**

## Agilent offers the broadest portfolio of Physical Layer Test solutions.

Agilent offers all types of physical layer test solutions for design, characterization, compliance and manufacturing of high-speed devices. The portfolio covers serial and parallel BERTs, Oscilloscopes, Pulse Pattern Generators, and ATE test equipment.



For most accurate jitter analysis Agilent provides the wide-bandwidth Infiniium DCA-J.

### www.agilent.com/find/N4903



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Serial BERT N4900 series

#### Agilent's N4900 Serial BERT Series

As well as the N4903A, Agilent also offers the N4906B, an economical BERT for manufacturing test of telecom devices.

#### **Related Literature**

5989-2899EN	N4903A Data Sheet
5989-2406EN	N4906B Data Sheet
5988-9514EN	Physical Layer Test Brochure
5989-3796EN	Bit Recovery Mode Application Note
5989-4087EN	PCI Express 2.0 Testing with N4903A

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