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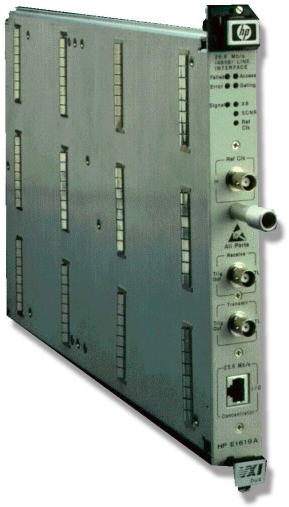
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Find the *Keysight / Agilent E1619B* at our website: ***Click HERE***

25.6 Mb/s (4B/5B) Line Interface

Agilent Technologies Broadband Series Test System

E1619B



Product Features

- Cell based implementation
- Operates in Terminal, Repeater, and Local Loopback modes
- Provides physical layer measurements as well as error generation
- Internal traffic generator has 1 foreground channel and up to 100 background channels
- Works with Cell Protocol Processor

The Agilent Technologies E1619B 25.6 Mb/s Line Interface generates and analyses ATM cell streams contained within a 25.6 Mb/s (4B/5B) framing format as per the standard defined by the Desktop ATM25 Alliance. It is a single-slot module that provides test capability at the physical and ATM cell layers for the Agilent E4200/E4210 Broadband Series Test System.

Line interface modules not only connect the device or system under test to your Broadband Series Test System, but also provide physical, convergence, and ATM cell testing capabilities.

Transmission test functionality includes:

- Traffic generation
- Cell error, loss & delay measurements
- Traffic capture & playback

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Key Features

Generate Normal or Abnormal Test Traffic

Create and detect erroneous test traffic on demand to test the robustness of a protocol implementation. Sophisticated protocol data unit builder, sequencing, and library functions let you easily create complex and realistic traffic. You can generate test traffic in the foreground channel, and use up to 100 background channels to simulate loading effects.

Cell Error, Loss & Delay Measurements

Bit rate error testing is done by placing PRBS patterns in cells, and looping these cells back through a system under test. The received cells are analyzed to detect PRBS errors. These errors can then be used as a trigger to capture data.

Cell delay, interarrival time, and loss measurements are easily accomplished with the BSTS. Timestamps are inserted in cells transmitted by the line interface. These cells can then be captured, and graphs for both cell delay and cell interarrival time displayed.

Sequence numbers are transmitted in ATM cells and looped back through a system under test. The lost cells can then be detected and counted with statistics or used as a trigger to capture data.

Real-time statistics can be gathered for the physical, convergence and cell layers. Statistics can be reported as errored seconds, event counts, or as error ratios.

Traffic Capture & Playback

Traffic can be captured with a large 8 MB capture memory. Complete control is available – continuously capture with memory buffer lapping, or trigger on user-defined events. Captured traffic can be played back with automatic decoding into an English-language display. Terminology from standards documents is used wherever possible.

Since high-speed networks carry considerable volumes of traffic, you can increase your test productivity by using filters and triggers to display or capture only traffic of interest. Filters let you select virtual channels or paths of interest.

Triggers can be used to capture data matching a specific pattern. For example, triggers can be used to capture cells with header or sequence number errors, or upon changes in convergence layer frame bytes.

Typical Applications

The Broadband Series Test System (BSTS) is a modular test platform for high-speed ATM transmission and protocol testing. The BSTS can perform comprehensive testing of all layers, from physical through higher services. Due to its modular nature, you can create a customized configuration that suits you specific test needs. The fully-programmable BSTS is ideal for R&D engineering, product development, quality assurance, performance, type approval, and conformance testing.

The E1619B 25.6 Mb/s (4B/5B) Line Interface can be used in conjunction with other BSTS line interfaces, dedicated test modules, and test software to perform these tests.

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Product Numbers

- **E1619B** 25.6 Mb/s (4B/5B) Line Interface
- **E4200A/B** BSTS Form-7 Transportable Chassis
- **E4210A/B** BSTS Form-13 Mainframe Chassis
- **E4209A/B** Cell Protocol Processor
- **E4219A** ATM Network Impairment Emulator

Configuration & Use With Other BSTS Line Interfaces, Hardware Modules & Test Software

Line interface modules can perform physical layer testing with a minimal BSTS configuration consisting of a line interface module and chassis. A complete range of test software applications and dedicated test modules is available to perform upper layer testing.

The E4209 Cell Protocol Processor provides monitoring and simulation test functions at the ATM and adaptation layers by executing optional protocol testing software applications. The CPP performs many functions in hardware that are usually done in software -- such as an automatic segmentation and reassembly engine for sophisticated real-time ATM, AAL and other higher layer protocol testing.

The E4219 ATM Network Impairment Emulator module lets you find the limits of performance by inserting impairments into an ATM cell stream. Route in your test cells, set cell delay and loss values to emulate a real-world network, connect the impaired cell stream output to your system under test, and see what happens.

Warranty & Support Options

Hardware

All BSTS hardware components are warranted for a period of 3 years. Products must be returned to an authorized Agilent service center for service. At the time of purchase, you may select warranty option W01, a no-charge option which converts the standard 3-year return to Agilent warranty to a 1-year on-site warranty.

Support option UK6, available at time of purchase, is a standards-compliant calibration which ensures that your BSTS test system operates within specified tolerances. A certificate of calibration is issued for compliance with ISO 9000 standards which require that records documenting the calibration of measuring and test equipment are maintained. Certificates of calibration are not available for products which donot contain components requiring calibration (such as software).

Two other types of calibration, commercial and standards-complaint, are available at any time from your local Agilent service center. Both provide test data and a certificate for your records. With a commercial calibration, any problems are resolved as they are detected, and test data reflecting performance of your calibrated test system is provided. The standards-compliant calibration provides comprehensive before and after test data to document problem resolution.

If you should have an out-of-warranty test system, you can arrange for service simply by contacting your local Agilent sales office.

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Technical Specifications

Modes

Three Tx/Rx modes are available. In Terminal mode, full signal generation and analysis functions are available. In Repeater mode, the received signal is re-transmitted (physical layer loopback). In Local Loopback mode, the transmit signal is electrically looped to the receiver.

ATM Cell Generation

For ATM, the transmitted cell stream can contain ATM cells generated internally by the E1619B, and ATM cells generated by an optional E4209 Cell Protocol Processor module. ATM cells generated on-board can consist of one foreground channel to stimulate the channel under test, and up to one hundred background channels for loading purposes. Fill cells are used to occupy unused bandwidth.

Total Bandwidth	• 25.126 Mb/s
Modes	• User-Network Interface (UNI) or Network-Node Interface (NNI)
HEC	• Automatic generation
Fill Cells	• Idle or unassigned
Channel Priority Order	• Foreground, background, CPP (highest to lowest)
Channel Control	• VCI • VPI • GFC • Payload Type • Cell Loss Priority
SAR-PDU Support	• AAL-0 • AAL-1

Foreground Channel

Bandwidth	• 100 b/s to 25.126 Mb/s
Accuracy	• +/- 0.02 ppm
Distribution	• Off • Single burst • Periodic (according to the specified bandwidth)
Channel Depth	• 1500 cells (variable)
Cell Payload	• Timestamp • Single cell PRBS • Cross cell PRBS • Data pattern • Byte access

Background Channels

Number of Channels	• Up to 100
Bandwidth	• 3 kb/s to 25.126 Mb/s
Accuracy	• +/- 10 ppm
Distribution	• Off • Periodic
Channel Density	• Bandwidth and cell distribution of each background channel is individually assignable up to maximum bandwidth
Channel Depth	• 16 cells
Cell Payload	• Single Cell PRBS • Data Pattern • Byte Access

Cell Payloads

Payloads	• Timestamp (32-bit departure timestamp value with 100 ns resolution) Cross Cell PRBS-9 PRBS-15 (inverted and not inverted)PRBS-23 Single Cell PRBS-9 Data Pattern or Byte Access
Data Patterns	• User byte AA55h or FF00h Incrementing (value of each successive byte is incremented by 1)
Byte Access	• Payload of all cells in the selected channel can be edited by the user in an active channel environment or off-line as a sequence of PDUs • AAL-1 automatically inserts first payload byte containing SN/SNP values and CSI bit

Erroring Control

Error conditions can be introduced to simulate alarm signals and signal stressing. Error stressing is used to generate incorrect bytes in a test signal.

Error Stressing Control	• Off • 0 • Pulse on (error condition is normally off; pulses on • Pulse off (normally on; pulses off) Sequence on (normally off; alternates on/off/on) • Sequence off (normally on; alternates off/on/off)
ATM Error Injection	• Cell header or payload bytes with bit error masking
Cell Loss	• Sequence number in the SAR-PDU is skipped and a fill cell is inserted
PRBS Error Add	• Single bit error add to the PRBS pattern in the cell payload

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Cell Error, Loss & Delay Measurements

Measurements are sampled every 100 ms and accumulated over the specified measurement period. Results from the most recent complete measurement period are retained.

Measurement Period	• Range 1 second to 3 days in resolutions of 1 second
Result Types	• Cumulative or latched (based on most recent measurement period)
Result Formats	• Count • Ratio • Seconds
ATM Cell Measurements	• HEC errors • Cell count • Cell bandwidth • Select Cell Not Received (SCNR) alarm seconds
Cell Delay Measurements	• Cell delay • Inter-arrival time • Cell delay variation
Virtual Channel Errors	• AAL-1 SN/SNP errors • Cell loss • PRBS errors • PRBS sync loss alarm seconds
Alarm Detection	• LOS (Loss Of Signal) • LOPS (Loss Of PRBS Sync) • SCNR (Selected Cell Not Received) • X8 (Timing marker code detect)

Traffic Capture & Playback

Provides capture of 1500 cells from the selected ATM cell stream.Capture is manual or event triggered. Manual triggering captures 1500 cells after the trigger. Event triggering captures 750 cells pre-trigger, and 750 cells post-trigger.

Manual Trigger	• Triggered on user request
ATM Cell Triggers	• Cell Loss • Header Error • PRBS Error • SN/SNP Byte Error

Front Panel Connectors & Indicators

25.6 Mb/s Input	• RJ-45 connector • UTP-3, 4, 5, & STP cables • 100 ohm impedance (UTP), 150 ohm impedance (STP) • 32 Mb/s baud rate, 25.6 Mb/s data rate • 4B/5B encoding as per ATM 25.6 Mbit/s PHY Compatibility Specification
25.6 Mb/s Output	• RJ-45 connector • UTP-3, 4, 5, & STP cables • 100 ohm impedance (UTP), 150 ohm impedance (STP) • 32 Mb/s baud rate, 25.6 Mb/s data rate • 4B/5B encoding as per ATM 25.6 Mbit/s PHY Compatibility Specification • Internal (stratum 3), External, and Recovered clock modes
External Clock Input	• BNC connector • TTL input • Nominal 50 ohm impedance
Trigger Output	• BNC connector • TTL output • Nominal 50 ohm impedance
LED Indicators	• Failed • Error • Access • Gating • Signal • X8 • SCNR • Reference clock

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Size, Weight & Power Dissipation

Size	• 1 slot C-size VXI card
Weight	• 1.3 kg (2.9 lb) nominal
Power Dissipation	• 25 Watts (max)

Applicable Standards

ATM Cells	• Generates and analyses ATM cell streams according to ITU-T Rec. I.361 and Bellcore TA-NWT-001113
Input & Output Signal	• ATM cells mapped into a 25.6 Mb/s PHY (v6.2) Compatibility Specification provided by the Desktop ATM25 Alliance
PRBS Patterns	• PRBS-9 as per ITU-T O.153; PRBS-23 as per ITU-T O.151
EMC	• Meets FTZ 1046/1984 (CISPR11, EN 55011)

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Agilent Technologies Broadband Series Test System

The Agilent Technologies BSTS is the industry-standard ATM/BISDN test system for R&D engineering, product development, field trials and QA testing. The latest leading edge, innovative solutions help you lead the fast-packet revolution and reshape tomorrow's networks. It offers a wide range of applications:

- ATM traffic management and signalling
- Packet over SONET/SDH (POS)
- switch/router interworking and performance
- third generation wireless tesing
- complete, automated conformance testing

The BSTS is modular to grow with your testing needs. Because we build all BSTS products without shortcuts according to full specifications, you'll catch problems other test equipment may not detect.

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