Performance Analysis for Broadband xDSL Networks

SmartxDSL™

Product Overview

SmartxDSL test suites provide the most comprehensive traffic performance analysis available for testing and evaluating xDSL products and services.

If you are an xDSL solutions manufacturer and are about to complete development of an xDSL modem, a DSLAM, Access Concentrator, or even a complete xDSL network, how will you tell if the performance of your xDSL equipment is as expected?

If you are a carrier, CLEC, or ILEC and are about to deploy an xDSL network, how will you tell if the equipment offered to you actually maintains the Quality of Service promised? The solution is the SmartBits® SmartxDSL application. SmartxDSL, combined with a wide range of SmartCards/modules supporting various network interfaces, allows you to stress an xDSL network to its full capacity. SmartxDSL minimizes the time required to configure the test and analyze the results, allowing you more time to actually verify the performance of your equipment.

Using the unique capabilities of the 10/100 Ethernet SmartCards/modules (ML-5710A, ML-7710, and LAN-3101A) and the ATM SmartCards (AT-9025, AT-9034B, AT-9045B, and AT-9155), SmartxDSL provides unparalleled end-to-end stability, frame loss, and latency measurements at the maximum subscriber rate.

Ideal SmartxDSL Applications

SmartxDSL is designed for use by DSLAM and solutions manufacturers, carriers, and system integrators. It is used with xDSL modems and is ideally suited for:

- Evaluating performance of end-to-end IP traffic through an xDSL network.
- Measuring the performance characteristics of xDSL access concentrators.
- Characterizing the effects of transmission errors to data throughput and latency.
- Performing high-capacity testing and verifying the DSLAM's ability to support the maximum port configuration.
- Performing stress testing and proving the robustness of the DSLAM under maximum traffic load.
- Performing proof of concepts. SmartxDSL is especially useful for verifying and selecting the right vendor solution.

Product Highlights

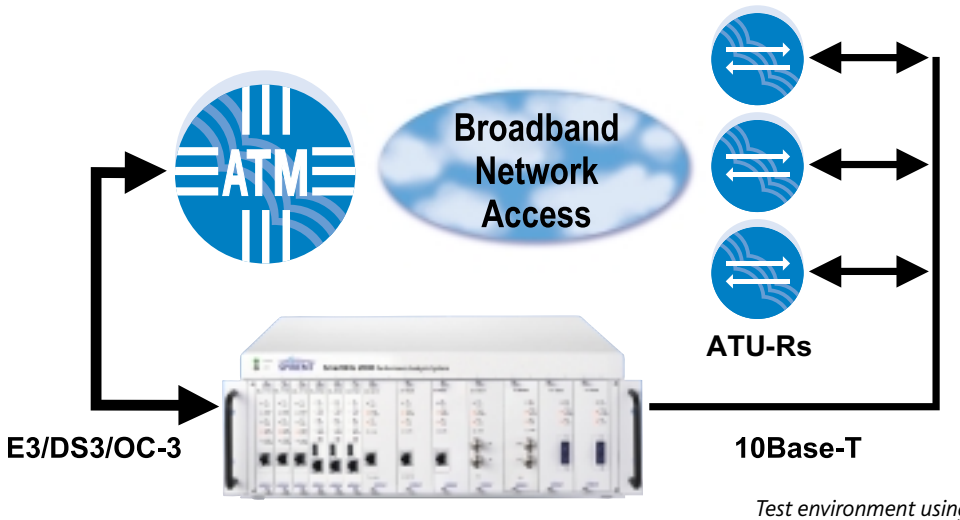
- Provides full end-to-end cell and frame Quality of Service (QoS) traffic performance analysis for xDSL network systems.
- Supports PPP-over-ATM (PPPoA) and PPP-over-Ethernet-over-ATM (PPPoEoA) for measuring the performance characteristics of xDSL access concentrators.
- Provides QoS metrics through latency, cell and frame loss, stability, and integrity measurements.
- Scalable from low to high port density DSLAM testing. Supports up to 640 test ports, with up to 1,000 IP streams per port and up to 2,048 ATM virtual circuits.
- Supports any DSL modem with standard Ethernet 10Base-T or ATM-25 access interfaces and DSLAMs with ATM OC-3/STM-1 or DS3/E3 trunk interfaces.
- Protocol support for LLC/SNAP per RFC 1483; Classical IP per RFC 1577; and PPP per RFCs 1661 and 2364.
- Rapid test setup and real-time results display through an easy-to-use Graphical User Interface, with test results displayed in spreadsheet, chart, or graph format.
- ARP protocol support for gateway MAC address resolution.
- DHCP support for dynamic assignment of CPE IP address.
- Any combination of upstream, downstream, and bi-directional traffic may be generated.
- Precision clock synchronization through Global Positioning Satellite (GPS) for remote end-to-end testing.
- Supports SmartBits multi-user operation.

SmartBits Division
26750 Agoura Road
Calabasas, CA
91302 USA
Tel: 818-676-2300
Fax: 818-676-2700

Sales
USA: 800-927-2660
EMEA: +33 1 6137 2250
Asia: +852 2166 8382

www.spirentcom.com

SPIRENT Communications



Test environment using SmartxDSL

Test Suites

Frame Tests

(ML-5710A/ML-7710/AT-9025 SmartCards for access ports; AT-9155C for trunk ports.) The frame tests are:

- Frame Loss. Indicates the performance of the DUT under a given load by measuring the percentage of frames that are not forwarded due to lack of resources (per RFC 1242).
- Frame Latency. Measures the latency of each test frame per VPI/VCI per port.
- Throughput. Measures network throughput based on RFC 1242 and RFC 2544.

End-to-End IP Tests

(ML-5710A/ML-7710/LAN-3101A SmartCards/modules for access ports; ML-7710 for trunk ports.) These tests measure end-to-end throughput and latency from the access network to the service provider network. The tests available are Sequence Tracking, Latency per Stream, Latency Distribution, Latency over Time, Sequence plus Latency, and Raw Tags.

Cell Tests

(AT-9025 SmartCards for access ports; AT-9155C for trunk ports.) Tests include:

- Cell Loss. Measures loss of ATM cells. In this test, each frame equals one cell in size. The test measures the difference between frames transmitted and frames received. This test applies only to ATM end-to-end operation.
- Cell Latency. Measures between various endpoints using the ATM cell characteristics.

PPP Capacity Tests

These tests measure the performance characteristics of xDSL access concentrators using standard PPPoA and PPPoEoA protocol encapsulations.

- Measures how long it takes to establish *n* number of PPP sessions.
- Measures the minimum, maximum, and mean latency in establishing individual PPP sessions.
- Sends IP frames over PPP to test for throughput and packet loss.

ATM Integrity

Performs Cell Error Ratio (CER) measurements to determine the accuracy of ATM cell transfer through the ADSL-ATM network. Reports the number of AAL5 CRC errored frames received. In this test, each frame equals one cell in size.

SmartxDSL Requirements

- An SMB-200/2000 or SMB-600/6000B with the appropriate SmartCards/modules for the test.
- The proper cabling for the test (for example, category 5, straight-through or crossover, depending on the DUT).
- An IBM or compatible Pentium™ PC running Windows® 98/2000/NT, with mouse and color monitor.

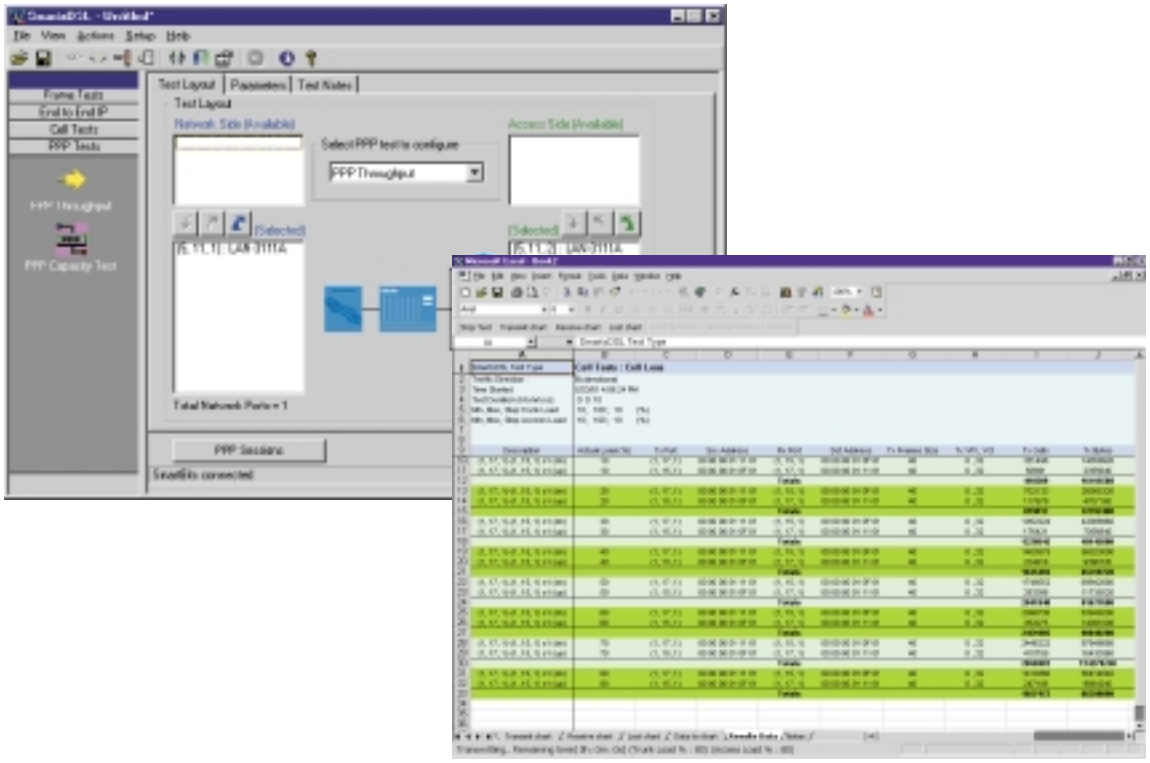
Ordering Information

SWF-1212A

SmartxDSL

SMB-SUS

12-month Software Update Support Service



SmartxDSL setup and results screens

SmartBits Division
26750 Agoura Road
Calabasas, CA
91302 USA
Tel: 818-676-2300
Fax: 818-676-2700

Sales
USA: 800-927-2660
EMEA: +33 1 6137 2250
Asia: +852 2166 8382

www.spirentcom.com

SPIRENT Communications

P/N 360-0035-001 Rev F, 2/02