

SmartMetrics™ Fibre Channel Modules

FBC-3601A/FBC-3602A

Product Overview

SmartBits® FBC-3601A and FBC-3602A SmartMetrics modules allow SAN equipment manufacturers, storage system vendors, Storage Service Providers (SSPs), IT managers, and test labs to categorize the true performance, reliability, and quality of Fibre Channel-based SAN equipment and fabrics. These Fibre Channel SmartMetrics modules greatly simplify the testing process by emulating hundreds of attached devices such as servers and storage systems, thereby eliminating the need for large, complex test environments.

The wire-rate packet generation and analysis capabilities of the Fibre Channel modules allow stress testing of devices and fabrics to determine if they operate correctly under heavy load. Repeatable and sophisticated traffic generation capabilities provide a high level of testing accuracy and granularity. The modules test devices and networks by generating hundreds of streams of Fibre Channel traffic from many simulated devices. Quality of Service (QoS) metrics are analyzed on streams to determine the actual performance of Fibre Channel switches, hubs, and fabrics.

The SmartFabric™ Test Suite, available for use with the modules, unleashes the vast capabilities of the test modules and makes it easy to perform throughput, frame loss, stream latency, and sequence tracking tests on systems ranging from a single device under test (DUT) to a large complex SAN fabric. All test functionality is also available via the SmartLib™ API, allowing for test case automation using a variety of popular programming languages, including C, C++, or Tcl.

These new SmartBits modules save time and money for anyone involved in the development, quality assurance, manufacture, or deployment of Fibre Channel devices and SANs, by testing the maximum performance of those systems in controlled configurations.

Primary Applications

- Evaluate key performance characteristics of Fibre Channel-based SAN switches, routers, hubs, and bridges under typical or extreme traffic load conditions.

- Qualify products during development, quality assurance, final regression, and manufacturing.
- Perform comparative analysis of SAN products and re-qualify devices after hardware or firmware upgrades.
- Analyze performance under many traffic conditions, both legal and illegal, with easy-to-customize traffic generation parameters.

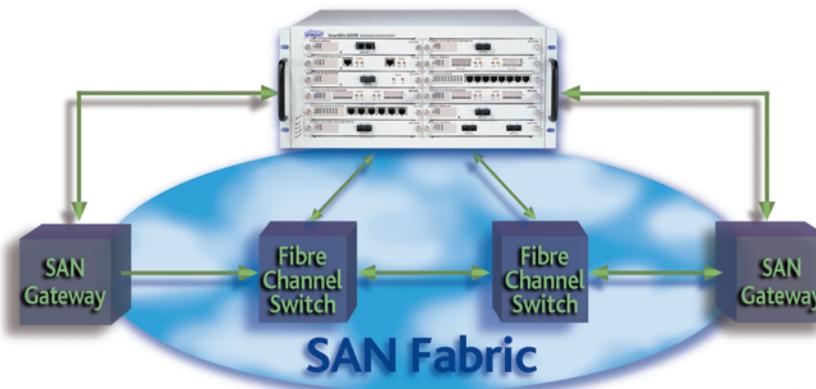
Key Benefits

- Saves money by eliminating the need for expensive servers and storage devices to create a high traffic test environment.
- Increases testing productivity by reducing test setup time, reducing time spent troubleshooting test devices, and providing repeatable tests.
- Increases the quality of testing by generating full wire-rate traffic and hundreds of streams per port.

Key Features

- Full line-rate traffic generation and analysis at 1 Gbps (FBC-3601A) and 1 and 2 Gbps (FBC-3602A).
- Generates up to 512 independent data streams and analyzes up to 64K streams at any given time.
- Supports Point-to-Point and Loop (public and private) modes.
- Performs loop initialization, fabric login, and name server registration for one or many devices.
- Emulates up to 126 source devices on a loop.
- Per-stream payload and frame size (4 to 16 KB) settings and per-port transmission mode control settings (continuous, single-burst, multi-burst, continuous multi-burst, and echo).
- Real-life traffic shaping through random frame length, inter-frame gap, and frame content settings.
- Arbitrary stream sequencing enables the mixing of various frame rates.

SmartBits Division
26750 Agoura Road
Calabasas, CA
91302 USA
Tel: 818-676-2300
Fax: 818-676-2700
Toll Free: 800-927-2660
www.spirentcom.com



Fibre Channel application

- Per-port statistics provide counters for transmitted frames, received frames, received bytes, and received CRC errors.
- 16 MB capture buffer enables the logging and exporting of filtered events to external protocol analysis equipment.
- Full SmartMetrics testing capabilities include sequence tracking per stream, latency over time, latency per stream, and latency variation.
- Verifies payload data integrity.
- Generates impairments including: CRC, undersize, oversize, and link or loop initializations.
- Each FBC-3601A and FBC-3602A module supports two Fibre Channel ports for use in the SMB-600 and SMB-6000B chassis. Ports are completely independent in operation. Up to 12 modules may be installed in the high-density SMB-6000B chassis and two modules may be used in the SMB-600 portable chassis.
- An industry standard GBIC interface allows users to change the physical interface connector.

Supported Applications

SmartFabric

SmartFabric analyzes the QoS and behavior of Fibre Channel devices. SmartFabric provides a powerful and easy-to-use interface for configuring, generating, and analyzing traffic flows. Tests provided in this application include throughput, frame loss, latency, latency distribution, and latency snapshot.

SmartWindow™

SmartWindow is a Windows®-based virtual front panel used to control all SmartCard/module functions. The application provides a convenient method to set up any combination of ports, monitor module status, and view gathered data.

SmartLib Programming Library

SmartLib is a powerful programming tool that developers can use to create custom applications for testing networks and network devices using SmartBits chassis. SmartLib supports programming in Visual Basic, C, C++, or Tcl in Windows 98/2000/NT environments, and C, C++, or Tcl in a UNIX® environment.

ScriptCenter™

ScriptCenter is a platform-independent visual scripting tool designed to reduce overall script development time, by enabling the quick set up of tests or the use of predefined scripts that are provided with the ScriptCenter software. ScriptCenter provides a built-in editor, wizards, and Tcl/Tk GUI utilities that can be used to create scripts and view results.

SmartMetrics Test Functions

The SmartMetrics tests emulate live network traffic. They provide information about the relationships and timing of frames so that you can evaluate the functionality and performance of a device under load. They dynamically track data per stream and any change in latency.

SmartMetrics tests include:

- Sequence Tracking: Sequence tracking provides frame loss testing on a per-stream basis. It also provides precise readings of the number of frames received in sequence and out of sequence.
- Latency over Time: In this test, the user selects a time interval such as every 10 ms. For each port, the test records the number of frames received, minimum latency, and maximum latency. The test also calculates the average latency for each port.
- Latency per Stream: The test records the minimum latency and maximum latency for each traffic stream.
- Latency Distribution: The user can select up to 16 time intervals. The following information is displayed for each time interval and for each stream: transmitting port number, stream number, total number of frames received, and the number of frames received within each interval.
- Raw Tags: In the Raw Tags test, frames are stored and sent to the application without any calculations or filtering performed on the stream tags received. Up to 16 MB of records are stored. SmartMetrics module transmit time, receive time, and delta (in mSec) are recorded per tag.

Interface Specifications

- Two independent ports per FBC-3601A/FBC-3602A SmartMetrics module.
- Line Rate: 1 and 2 Gbps (FBC-3602A), 1 Gbps (FBC-3601A).
- GBIC Interface: GBIC is an industry standard interface that allows users to change the physical interface connector.

System Requirements

- The FBC-3601A and FBC-3602A each require one open slot in an SMB-600 or SMB-6000B.
- An IBM or compatible Pentium™ PC computer running Windows 98/2000/NT, with mouse and color monitor.

Ordering Information

FBC-3601A

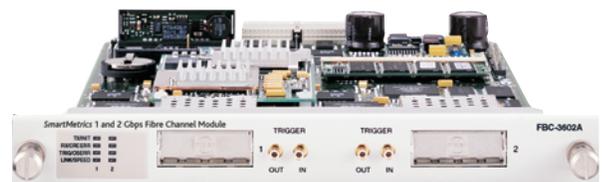
1 Gps Fibre Channel, 2-port, SmartMetrics module

FBC-3602A

1 Gps and 2 Gps Fibre Channel, 2-port, SmartMetrics module

SUS-SMB

12-month Software Update Support Service (includes firmware support)



FBC-3602A

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www.spirentcom.com

