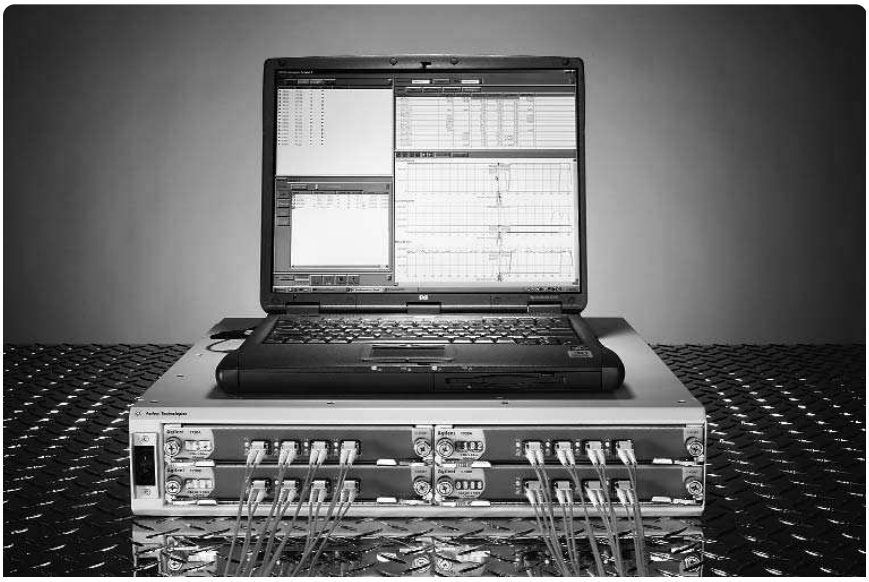
Agilent Technologies
Storage Area Network (SAN) Test System

1730 Series

1, 2 and 4Gb/s Fibre Channel

Traffic Generators and Analyzers

Data Sheet



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Applications

- Data performance test of Fibre Channel Networking equipment and Components
- SAN Fabric Services Test
- SAN Fabric Scalability Test
- SAN Fabric Stress Test
- Robustness test with error & event injection and exception generation
- Switch Prototype turn-on and firmware debug

Key Features

- Configurable test port behavior to emulate various HBAs
- Minimizes the number of real devices needed to create a large-scale SAN test environment
- Mixed 1Gbs, 2Gbs and 4Gbs traffic generation and analysis
- Generates any combination of traffic for multiple ports and correlates the test results across time for comprehensive system testing
- Simulates a wide range of specific real-world traffic profiles, including wire speed traffic
- Guarantees real-time measurements regardless of test system size

Product Overview

The Agilent 1730 Series SAN test system allows network equipment manufacturers, storage solution integrators and semiconductor manufacturers to realistically characterize the performance of Fibre Channel SAN components and Fabrics.

The 1730 Series is a comprehensive solution that provides the controlled environment necessary for testing complex SANs before deployment.

Due to the increasing scale of SAN infrastructures, creating a test environment using a traditional server/storage device test method is becoming increasingly difficult.

Unlike the traditional test methods, the 1730 Series test system reduces the number of real devices needed to validate the performance of SAN solutions, provides greater user control over traffic generation and testing, and reduces the need to build and maintain test suites.

Features of the 1730 Series Test System that will help users introduce high quality solutions to the market include realistic, full-line, 1,2 and 4Gb/s traffic generation with extensive parametric controls, powerful real-time measurements, and comprehensive fabric controller and server tests.

The modular system architecture supports from four to hundreds of time synchronized test ports in a single test session. This scalable system protects your financial investment for years to come.

In this document:

This document includes technical specifications, configuration and ordering information on the Agilent SAN Test Platform.
For more information on the test system features, please refer to our website www.agilent.com/find/santester or refer to "Related Literature" at the end of this document.

Feature	Benefits
Expandable, modular system architecture	· Supports both small and large-scale SAN environments. · Protects your financial investment for future needs · Minimizes the number of real devices needed to create a large-scale SAN test environment.
User-controlled, multi-port Fibre Channel traffic generation at full wire speed with extensive parametric controls	· Increase test coverage with a wide range of specific real-world traffic conditions. · Validates the boundary conditions of SAN fabrics and components.
Time-correlated traffic generation and measurement	· Generates any combination of traffic for multiple ports and correlates the test results across time for comprehensive system testing.
Real-time Statistics	· Acquires continuous real-time statistics for a detailed view of system performance. · Provides immediate insight into changes in system performance during testing · Guarantees real-time measurements regardless of test system size.
Embedded Protocol Analyser	· Real time capture buffer per port for protocol analysis and system debug
Test customization and automation with TCL	· Automates tedious testing. · Repeats tests for subsequent product builds. · Creates and automates your specific test procedure. · Performs regression tests.
Device emulation with complete parametric control	· Simulate various test scenarios by setting each device the way you want. · Minimize the number of real devices needed to create a large-scale test environment

Figure 3. The 1730 Series SAN test system is highly scalable, with four to hundreds of ports available in a single test system.

Figure 2. Real-time Fibre Channel statistics are available in a multi-window, industry-leading graphical user interface.

Technical Specifications

Physical Interface	
Number of Ports	Four independent Fibre Channel ports per test card, up to four test cards per chassis.
Line Rate	1730B : 1.0625 or 2.125 Gigabits/second (Gb/s), Full Duplex with configurable interframe gap; 1733A : 2.125 or 4.25 Gigabits/second (Gb/s), Full Duplex with configurable interframe gap; Industry Standard SFP Interface.
Traffic Generation	
Rate	Full line speed rate.
Port Type	N_port , Arbitrated Loop Port (including up to 126 loop devices)
Port Behavior	Control of port initialization either as FCP or FICON port FCP includes control of Flogi, NS registration, RSCN, Discovery, NS Query. FICON includes control of Flogi, QSA, RNID, RSCN, LIRR
Classes of Service	Class2 (FICON initialization) and Class 3 traffic.
Traffic Profiles	15
Traffic Streams per Port	256
Oversized Frame	Oversized frames traffic generation and capture. Frames will be captured in the trace buffer, but they will cut off at 2136 bytes and flagged as oversized and invalid.
Interframe Gap	Adjustable 3 to 1000.
Minimum Frame Length	Transmitted: 24 bytes, Received: 24 bytes.
Programming Languages	
Programming Languages	Tcl/Tk with graphical interface
Mechanical Specifications	
Physical (per card)	Width: 8.11 inches /206mm Depth: 12.32 inches / 313 mm Height: 1.18 inches / 30mm Weight: 875 g
Electrical (per card)	Power consumption: 32 W typical; 110 W maximum. (8 W per port)
Environmental	Operating temperature:0°C to 40°C. Storage temperature: -40°C to 70°C. Humidity: 50% to 95% relative humidity at 5°C to 40°C.

Measurement System	
Measurements	24 real-time measurements including Throughput, Latency, Dropped frames, Disparity, BB Credit, Failover Recovery Time.
Result Types	Cumulative: measurements are reported from the start of the measurement interval. Sampled: measurements are reported from the most recently completed sampling interval.
Measurement ClockResolution	10 ns resolution; ± 0.5 ppm/year clock drift; 3 ppm maximum difference between cards.
Measurement Interval	Range: 1 second to 7 days.
Display Sampling Interval	Range: 1 second to 1 hour.
Test Card Synchronization	All measurements are synchronized across all test cards within the SAN Test System.
System Capability	16 test ports per 2U test chassis; 20 test chassis in up to 3 racks maximum.
Capture Memory	
Capture Memory	32 MB real time memory per port.
Capture Triggers	8 patterns per port, plus triggering capabilities on statistics (throughput, latency, sequence error).
Buffer to Buffer Credit	Adjustable from 1 to 256.
Error Generation	Aborted Frame, CRC error, Oversized Frame, Wrong SOF, Wrong EOF.
Capture Display	Frame decode Level, Hex, Binary
Fabric Service Test	
Fabric Service Test	· Zone test · Name server performance. · Name server command coverage. · State change notification latency
Instrument Test Card Front Panel LED Indicators	
Status	Four-digit display to indicate card status and numeric identification.
LASR	Red when output laser is on.
SGNL	Green when a port state machine has gone to active state (link up).
System Controller	
Host Controller Minimum System Requirement	· 1GHz Pentium® III or faster. · At least 512 MB memory · At least 400 MB free hard-drive space. · 10BaseT/100BaseT LAN connection (100BaseT recommended for large port count).

System Configuration

The Agilent SAN test system consists of a Windows®-based system controller and one or more chassis containing SAN test cards. The system controller provides a graphical interface to drive protocols and applications running on the test cards.

This flexible test system will be compatible with new Agilent SAN test cards in the future, thereby securing your initial investment.

System Controller

Several system controllers are available, depending on performance requirements.

The controller provides an easy-to-use Windows environment for running the test system software.

Fibre Channel Test Card

High-density, scalable Fibre Channel SAN test cards are equipped with powerful traffic-generation and measurement capabilities. Each test card houses four ports of Fibre Channel at 1 and 2 Gb/s (model 1730B) or 2 and 4 Gb/s (model 1733A).

These and future SAN test cards will fit within the chassis. Each test card features its own CPU and distributed processing power that allow synchronized performance measurements across multiple chassis.

SAN Tester Chassis

The compact 4-slot, 2U-high chassis houses up to 16 ports of Fibre Channel SAN.

A ultra-compact 2 slot chassis houses up to 8 ports of Fibre Channel.

Easily daisy-chain multiple chassis to support hundreds of test ports in a single test system. Hot-swappable test cards can be moved between chassis without affecting other test sessions.

System Configuration

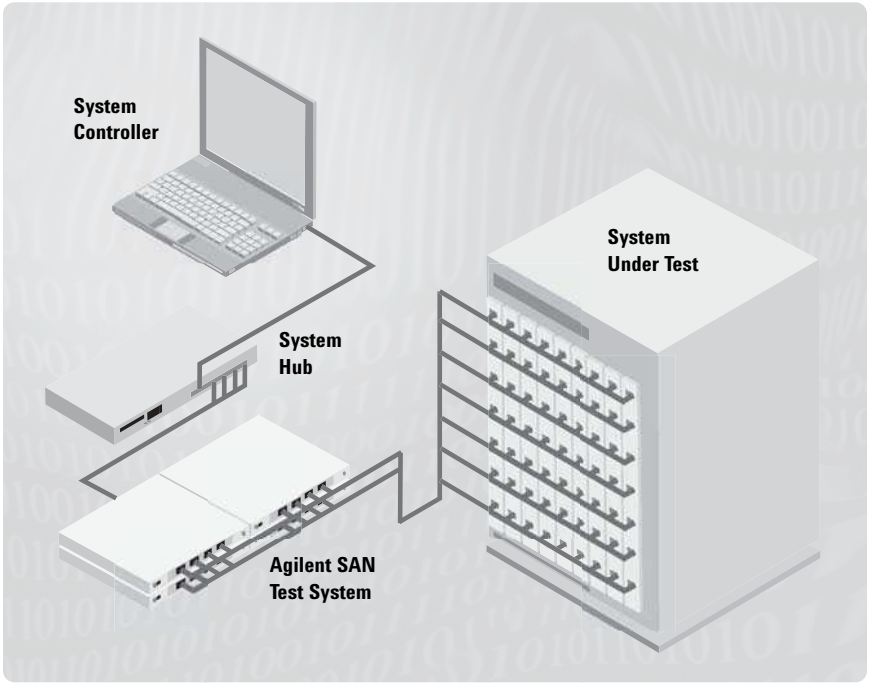

Figure 4. System controller and SAN test chassis filled with four Fibre Channel test cards.

Ordering Information

Agilent Product Number	Description
Test Cards	
1730B	Agilent SAN test card (traffic generation and analysis) 4 ports, 1 and 2 Gb/s Fibre Channel. Includes 850 nM SFP.
1733A	Agilent SAN test card (traffic generation and analysis) 4 ports, 2 and 4 Gb/s Fibre Channel.
Frame	
E7900A	4-slot, 2U-high chassis
E7912A	2 slot, 2U high chassis
System Controller	
E7891D Option 120	Portable laptop system controller.
E7893D Option 120	Standard 1U rackmount server controller. Pentium2.4GHz, 512MB RAM, 2 LAN cards, includes switch, SW instant ignition for 1730x
E7892D Option 120	High performance 1U rackmount server controller. Pentium IV 2.4GHz twin processor, 2GB RAM, 2 LAN cards, includes switch. SW instant ignition for 1730x
Option AQ2	15 inch flat panel display, 1024 x 768.
Software License	
1731A	PC controller software and license
1734A	Capture Software license. This license enables the real-time protocol capture capabilities embedded in each SAN Tester port.
1732A	Software Enhancement Service (one year of software upgrades).
Accessories	
E7900-64207	Chassis-to-chassis cable. (Required for multi-chassis configuration)
E7900-64208	Rack-to-rack cable. (Required for multi-rack configuration)

Typical Configuration	
E7900A	4- slot chassis
1733A	2 and 4 Gbs SAN Test Card
E7891C Option 120,	Laptop with Preloaded software
1731A	SAN Tester Software license
1734A	Capture Software License

Related Literature	Pub.No.
Agilent Technologies 1730 Series Storage Area Network (SAN) Test Solutions, Color Brochure	5988-6806EN
RouterTester 900 4-Slot Chassis, Technical Datasheeet	5988-5000EN
Rev B Fibre Channel SFP Optical Transceiver, Technical Datasheet	5988-6974EN

http://www.agilent.com/find/santester

To order and configure the test system, consult your local Agilent sales engineer.

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Phone or Fax
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Canada:
(tel) 877 894 4414
(fax) 905 282 6495
China:
(tel) 800 810 0189
(fax) 800 820 2816

Europe:
(tel) (31 20) 547 2323
(fax) (31 20) 547 2390

Japan:
(tel) (81) 426 56 7832
(fax) (81) 426 56 7840

Korea:
(tel) (82 2) 2004 5004
(fax) (82 2) 2004 5115

Latin America:
(tel) (650) 752 5000

Taiwan:
(tel) 0800 047 866
(fax) 0800 286 331

Other Asia Pacific Countries:
(tel) (65) 6375 8100
(fax) (65) 6836 0252
Email: tm_asia@agilent.com

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