Acterna FST-2802 TestPad
Gigabit Ethernet Services Module

The Acterna FST-2802 TestPad is a handheld Gigabit Ethernet test instrument designed to meet the needs of service providers offering various Ethernet services. Part of the Acterna TestPad solution, this rugged, battery-operated test instrument enables mobile technicians to verify the performance of Ethernet links before they are handed off to customers.

The testing capability of the FST-2802 ranges from end-to-end connectivity and throughput verification to detailed link statistics and latency measurements. The easy-to-use graphical interface of the instrument facilitates novice technicians with limited Ethernet testing experience to verify performance parameters and ensure that the service conforms to agreed specifications.

Highlights

– **Full line rate traffic generation to stress-test 10/100/1000-Mbps Ethernet interfaces**
– **Variable traffic load characteristics to measure the true performance of the link**
– **Loopback frame generation to loop the far-end test instrument automatically for end-to-end link verification**
– **Analysis of link performance based on selected filter characteristics in Terminate, Monitor, or Through mode**
– **Field-swappable 1000-Mbps interface adapts flexibly to varying needs**
– **Easy-to-use graphical interface minimizes training requirements**

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Ethernet services have evolved to meet the increasing demands of data centric networks. Metropolitan area networks are currently the focus of intense development to deliver optical Ethernet services. Services are being deployed to provide reliable and cost-effective Gigabit-level connections for point-to-point services, Internet access, and virtual local area networks.

The FST-2802 provides the functions necessary to enable service providers to turn up and verify Ethernet services successfully and cost-effectively using their existing personnel with minimal training.

Traffic generation
The robust traffic generation capabilities of the FST-2802 enable generation of Ethernet frames with various configurable parameters such as bandwidth utilization, frame rate, frame payload and frame length. Traffic load settings can be configured for constant and bursty traffic to simulate different network traffic conditions and analyze the performance of the link.

Loopback frame generation
The loopback buttons on the main application window of the FST-2802 enable generation of loopback frames to loop-up and loop-down the far end test instrument. This capability enables a technician to leave one test instrument at the far end and perform loopback tests for measuring bidirectional throughput and round-trip delay on the link.

Traffic analysis and filtering
Easy-to-interpret LEDs on the FST-2802 provide a summary of the link being analyzed. Performance results of the overall Ethernet link or a specific traffic stream can be collected to verify link integrity and to quickly identify any sources of problems on the link. This analysis and filtering functionality is supported in Terminate, Monitor or Through modes of operation.

VLAN protocol support
VLAN tag manipulation supported on the FST-2802 enables generation of traffic stream with specific VLAN ID and traffic priority. This enables a technician to verify performance of a traffic stream as it flows through the network. The VLAN filtering enables isolation of a stream and performs a comparison to the total link performance.

### Results storage and timed prints
The removable storage media that can be connected through a PC card interface on the FST-2802 facilitates storage of test results for external reporting and analysis. Results can be configured to print at the end of a test, periodically during the test, or at any occurrence of an error.

Easy-to-use graphical interface
The application-driven icons of the user-interface combined with easy setup buttons allow technicians to navigate and use the FST-2802 with minimal training. This enables the service provider to equip the workgroup and start turning up circuits with low costs of ownership.

10/100/1000-Mbps interfaces
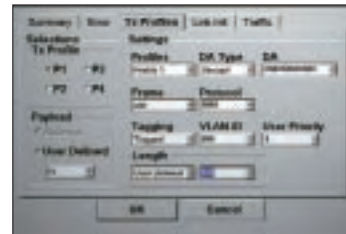
Setup page to configure Ethernet frame header

Results window and loopback application buttons

The easy-to-use traffic generation and analysis capabilities of the FST-2802 allow technicians to efficiently install and turn-up 10/100/1000 Mbps-based Ethernet links by verifying physical layer connectivity, traffic throughput and latency measurements.

Applications

End-to-end connectivity

The FST-2802 enables users to ensure physical layer integrity and verify end-to-end connectivity of the circuit by establishing an end-to-end link. The user-configurable auto-negotiation capability on the FST-2802 makes this instrument compatible with any installed Ethernet interface for a fast plug-and-test operation.

Link utilization and throughput verification

The FST-2802 can verify error-free throughput of the Ethernet link by generating traffic at a specified bandwidth. With the functionality to loop back frames at the far end, the instrument enables the qualification of the link in both directions.

Latency and frame loss verification

End-to-end latency is a critical parameter for realtime applications such as video-on-demand and voice-over-IP. Using the FST-2802, it is possible to verify that the Ethernet link supports low end-to-end latency by measuring the round-trip delay and to ensure that frame loss and frame error statistics are as specified and are in accordance with customer's service-level agreements.

### VLAN protocol performance verification

VLAN tagging of Ethernet frames supports traffic prioritization as specified by IEEE 802.1Q/P. The FST-2802 verifies that the performance of traffic prioritization is as expected by generating and analyzing VLAN tagged frames.

Identify problems with faulty Ethernet interfaces

The FST-2802 can be used for troubleshooting of Ethernet links and to verify the capability of network elements to support reliable communications by analyzing the link for frames for conformance to IEEE 802.3 frame format and frame size requirements.
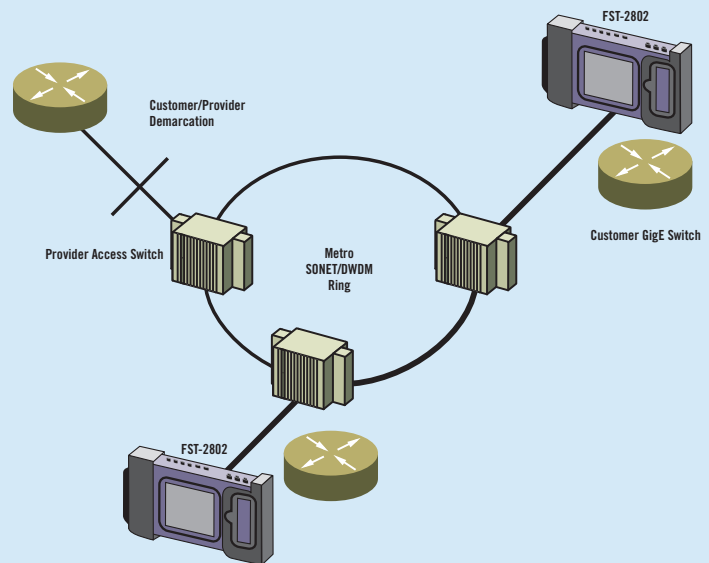
End-to-end Ethernet circuit verification on an Ethernet over SONET/DWDM network
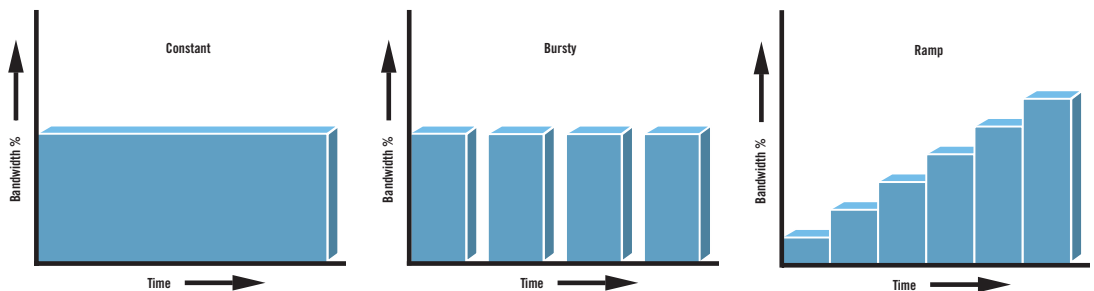
Various traffic load characteristics supported by the module

Specifications

General specifications

Dimensions	7.5 x 13.5 x 2.2 in
Weight	5 lb (with battery)
AC adapter	19 VDC, 2.6 amps/90-240 VAC, 45-65 hz

Interfaces

10/100-Mbps Interface	RJ-45 connector
1000-Mbps Interface	GBIC Interface (SX, LX)
Duplex Modes	Full/Half
Modes of operation	Terminate, Monitor, Through
Traffic generation	Configurable Destination Address, Frame Format, Type Field (for DIX), Frame Length, VLAN Tag, Frame Payload, Utilization %
Traffic filter	MAC source and destination address, Type/Length, VLAN tag and associated bit fields

Key results

Link status	Loss of Signal, Link Active, Frame Detected, VLAN Tagged Frame Detected
Auto-negotiation status	Link Config ACK, Link Advertisement Status, Remote Fault
Link/Frame statistics	Bandwidth Utilization, Frame Rate, Frame Length, Unicast Frames, Multicast Frames, Broadcast Frames, Total Received Frames, Total Transmitted Frames, PAUSE Frames, FCS Errored Frames, Frame Loss Ratio, Round Trip Delay, Runts, Undersize Frames, Oversize Frames,
Packet testing in Conformance with	IETF RFC 1242, RFC 2544

Ordering information

User interface module

Acterna TestPad 2000 (UIM)	2000-SV3

(Included color display, kickstand, soft carrying case, AC adapter/charger, hanging strap and printer cable)

Application module

Gigabit Ethernet Module	2802-GIGE
10/100 Testing option	2802-FE
GBIC 1000Base-SX	AC-GBIC-SX
GBIC 1000Base-LX	AC-GBIC-LX

Additional application modules available

FST-2510 High Speed Optical Analyzer
FST-2310 SONET Services Module
FST-2416 SDH Services Module
FST-2207 T1/T3 Wireless Module
FST-2209 T1/T3 Services Module
FST-2109 Copper Analyzer Module
FST-2230 E1 Data Communications Module
FST-2357 DSL Broadband Services Module
BAT-2700 Base Station and Air Interface Test Module

Related Gigabit Ethernet testing products

DA-360 Domino Internetwork Analyzer
DA-3400 with Ethernet analysis Software
DA-380 Domino Gigabit Analyzer

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Acterna is the world's largest provider of test and management solutions for optical transport, access and cable networks, and the second largest communications test company overall. Focused entirely on providing equipment, software, systems and services, Acterna helps customers develop, install, manufacture and maintain optical transport, access, cable, data/IP and wireless networks.

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