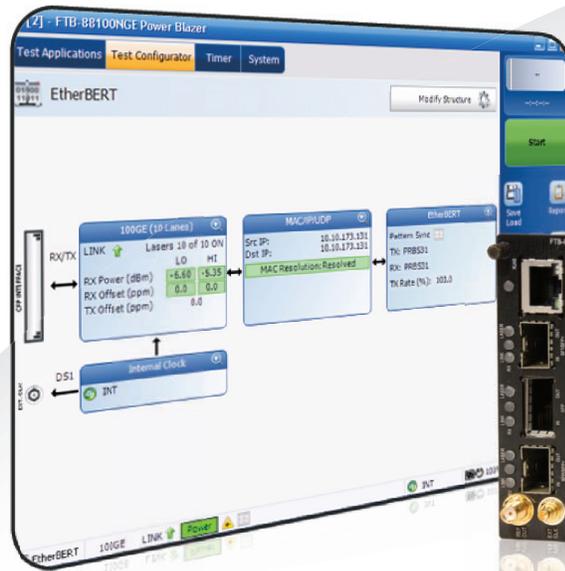


FTB-88100NGE/88100G

Power Blazer Series

HIGH-SPEED MULTISERVICE TEST MODULE



 **EXFO Connect**
Compatible



Turnkey field-test solution for deploying, validating and troubleshooting networks up to 100G.

KEY FEATURES AND BENEFITS

10M-to-100G compact multiservice field-test solution addressing testing, troubleshooting and performance assessment requirements of next-generation networks

Comprehensive and fully integrated test solution covering OTN, Ethernet and SONET/SDH technologies

Cost-effective, scalable and future-proof solution with FLEX offering: simply point and click to enable any software option, anywhere, anytime—no hardware upgrade, no return to factory required

Unprecedented testing simplicity requiring minimum training for new users and maintaining a consistent experience from the lab to the field

FTB Ecosystem and EXFO Connect-compatible with software upgrade manager, as well as automated cloud-based asset and test data management capabilities

OTN, SONET/SDH and Ethernet bit-error-rate testing (BERT) with real-time pass/fail status, quick action buttons, clear results and assorted notifications

100% line-rate testing of IP traffic at up to 100G; RFC 2544 (up to 100G) and Y.1564 Ethernet service activation (up to 10G) with full statistics, packet capture, traffic filtering, ping and traceroute

Housed either in the four-slot or eight-slot FTB-500 platform and complemented with integrated optical tools, battery operation, power-up and restore, remote access, GPS capabilities and test reports

COMPATIBLE PLATFORM



Platform
FTB-500

EXFO

HIGH-SPEED NETWORK ROLLOUT CHALLENGES

SLA CONFORMANCE	REDUCING CAPEX AND OPEX	ACCELERATING SERVICE TURN-UP
Carriers and service providers must support both legacy and packet-based services up to 100G on the same network. Since these services differ and have their own key parameters, the challenge lies in ensuring their service level agreements.	For service providers, bandwidth demands are increasing dramatically, while revenues are not. This means cutting equipment costs, reducing truck-rolls and dispatching technicians only when it is critical to do so.	100G/40G technology is complex and brings with it a number of new concepts, specifically parallel transmission and new pluggable optics or CFPs, which are in their early stages, in short supply and relatively high priced. To overcome these challenges, carriers must reduce their time-to-service without compromising network performance and quality.

Steel-Toed and Field-Ready

Rising to the multiservice field-testing challenges of today and offering the scalability to cover the unforeseeable future, EXFO's FTB-88100NGE (10M to 100G) and FTB-88100G (40G/100G) Power Blazer test modules have been designed to specifically address high-speed field deployments. The FTB-88100NGE Power Blazer supports all possible rates up to 100G, as well as a wide range of technologies, including legacy TDM and new packet-based services. This EXFO innovation sets a new benchmark: 10M-to-100G Ethernet, OTU1 to OTU4 (including standard and overclocked rates), OC-3/STM-1 to OC-768/STM-256—all in one small, powerful module. The FTB-88100G is designed to address 40G/100G field commissioning and turnups, including OC-768/STM-256, 40G/100G Ethernet, and OTU3-/OTU4-based networks. Housed in EXFO's FTB-500 platform, which offers integrated optical testing tools, the FTB-88100NGE eliminates the need for multiple test boxes, delivering multiservice testing up to 100G in a single, rugged solution built and ready for the field. On the other side, the FTB-88100G module can be combined with EXFO's 10G multiservice module for simultaneous multiport testing, when needed. Furthermore, both the FTB-88100NGE and the FTB-88100G are EXFO Connect-ready, which means that both technicians and managers can reap the benefits of EXFO's FTB cloud-based services.

A GAME CHANGER FOR HIGH-SPEED SERVICE DEPLOYMENT

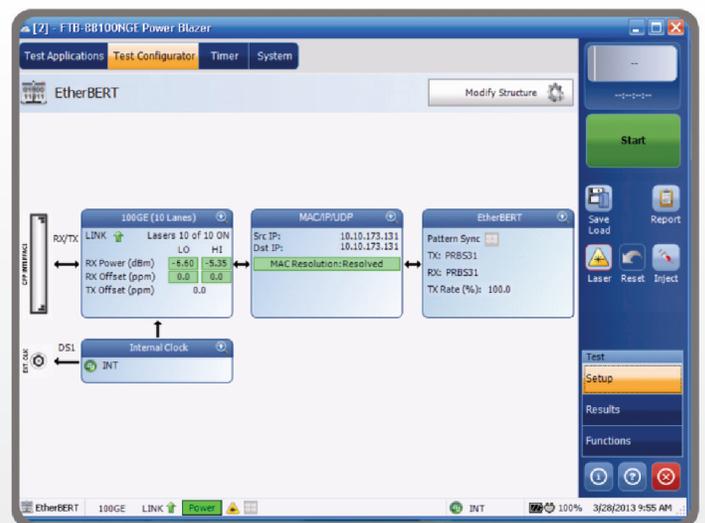
The FTB-88100NGE Power Blazer introduces new OPEX and CAPEX saving factors, as its FLEX configuration capitalizes on EXFO's flexible platform architecture to enable any testing capability from 10M to 100G, anywhere, anytime, with simple point-and-click to enable software options. This flexibility guarantees a cost-effective, future-proof offering and ensures immediate access to testing capabilities and faster service provisioning, while avoiding unnecessary costs for shipping back the test equipment.

In addition, since the FTB-88100NGE and the FTB-88100G are housed in the FTB-500 platform, they provide you with the added benefits of EXFO's FTB Ecosystem—including EXFO Connect automated, cloud-based asset and test data management, in addition to EXFO's Update Manager software utility—allowing you to streamline test operations from build-out to maintenance.

POWERFUL, YET SIMPLE

Regardless of the fact that high-speed technologies and next-generation networks are becoming more and more complex, the FTB-88100NGE and FTB-88100G Power Blazer modules address all field-testing needs up to 100 Gbit/s without sacrificing simplicity. Thanks to EXFO's highly intuitive graphical user interface (GUI), streamlined procedures and predefined configurations, it requires minimal to no training for new users. Furthermore, with unmatched connectivity via Wi-Fi, Bluetooth, Gigabit Ethernet or USB ports, the FTB-500 Windows-based platform is accessible in any environment and at any time, reducing unnecessary tier-2 technician dispatching and truck rolls to remote sites.

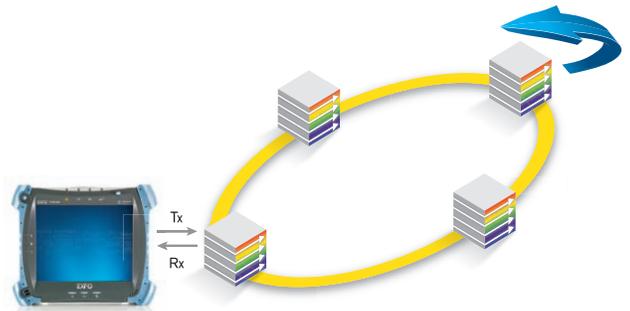
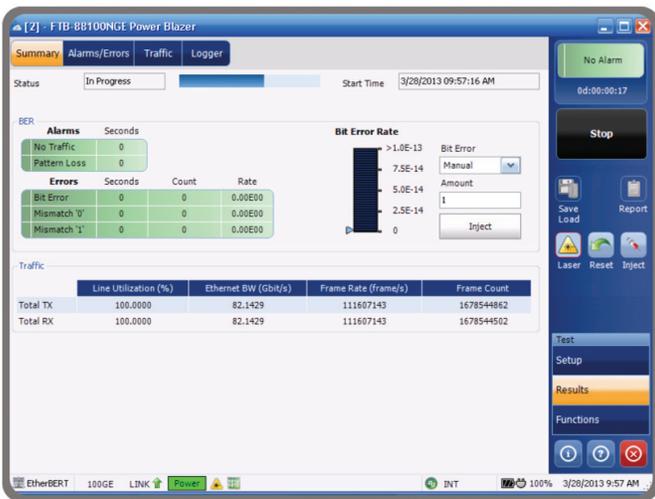
In addition, the FTB-500 platform allows you to customize your testing solution. Combine the FTB-88100NGE and the FTB-88100G Power Blazer modules with any EXFO optical module for fiber characterization and OSNR qualification, and run them simultaneously to speed up testing and accelerate time to service.



SIMPLIFIED BER TESTING

With the FTB-88100NGE Power Blazer, you can preconfigure OTN (from OTU1 to OTU4, including standard and overclocked rates), Ethernet (from 10M to 100G), and SONET/SDH (from OC-3/STM-1 to OC-768/STM-256) bit-error-rate (BER) test parameters prior to arrival at the test site, and then load them from the Favorites menu with one click. The same flexibility is available on the FTB-88100G for supported 40G/100G rates, allowing for simple BER testing with no risk of misconfiguration between two remote sites.

Furthermore, the preconfigured "Favorites" can be copied from one platform to another or even sent to technicians out in the field via e-mail, where they can load them using the USB port on their platform. Once the BER test has started, the FTB-88100NGE and FTB-88100G provide clear results, assorted notifications and real-time pass/fail status via text or icons. Clicking on the pass/fail indicator maximizes this important status to full screen, providing instant, easily understood notification, whether a given unit is in your hand or across the room.



ETHERNET PERFORMANCE ASSESSMENT

The FTB-88100NGE and FTB-88100G offer an automated RFC 2544 test suite for all supported Ethernet interfaces on both modules at all frame sizes and at full line rate, delivering repeatable test results and error-free circuit certification at 100% utilization.

RFC 2544 is complemented by five Smart Loopback modes. So, whether you are looking to pinpoint loopback traffic from a UDP or TCP layer, or all the way down to a completely promiscuous mode (Transparent Loopback), the FTB-88100NGE and FTB-88100G can adjust to all loopback situations where the remote unit will return traffic to the local unit by swapping packet overhead up to layer 4 of the OSI stack. The Ethernet performance assessment capabilities of the FTB-88100NGE and FTB-88100G also include test reports with detailed throughput, frame loss, back-to-back and latency measurements, and clear histograms for future reference regarding specific SLAs.



ETHERSAM: ITU-T Y.1564 ETHERNET SERVICE ACTIVATION

As 10G and lower-rate Ethernet are the services most activated today, the new ITU-T Y.1564 standard addresses the growing demand for turning up and troubleshooting Carrier Ethernet services. Supported on the FTB-88100NGE Power Blazer module for 10M-to-10G Ethernet client services, this new methodology brings numerous advantages, including validation of critical SLA criteria such as packet jitter and QoS measurements, as well as faster time to service. EXFO's EtherSAM test suite—based on the ITU-T Y.1564 Ethernet service activation methodology—provides comprehensive field testing for mobile backhaul and commercial services. It can simulate all types of services that will run on the network and simultaneously qualify all key SLA parameters for each of these services.

Moreover, it validates the QoS mechanisms provisioned in the network to prioritize the different service types, resulting in better troubleshooting, more accurate validation and much faster deployment. EtherSAM is comprised of two phases: the service configuration test and the service performance test.

> Service Configuration Test

The service configuration test consists of sequentially testing each service. It validates that the service is properly provisioned and that all specific KPIs or SLA parameters are met.

> Service Performance Test

Once the configuration of each individual service is validated, the service performance test simultaneously validates the quality of all the services over time.

In addition, EXFO's EtherSAM approach proves even more powerful as it executes the complete ITU-T Y.1564 test bidirectionally. Key SLA parameters are measured independently in each test direction, thus providing 100% first-time-right service activation—the highest level of confidence in service testing.



ETHERNET TRAFFIC GENERATION AND MONITORING

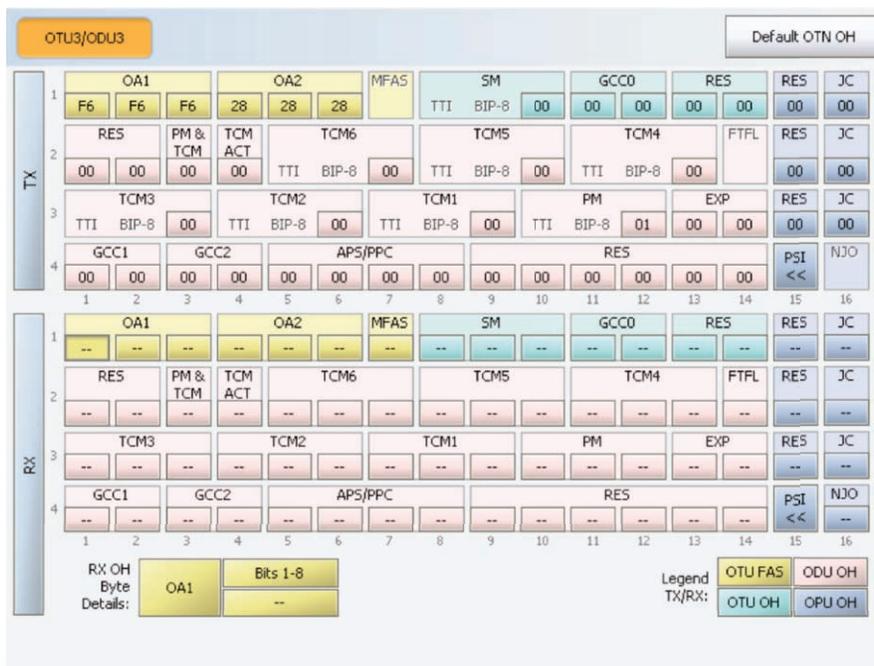
Data services carried over 100G/40G networks are making a significant shift toward supporting a variety of applications. Multiservice offerings such as triple-play services have fuelled the need for QoS testing to ensure the condition and reliability of each service as well as qualify SLA parameters. The FTB-88100NGE and FTB-88100G Power Blazer, with their supported traffic generation and monitoring application, allow service providers to simultaneously simulate and qualify different applications. Up to 16 streams can be configured with different Ethernet and IP QoS parameters, such as VLAN ID (802.1Q), VLAN priority (802.1p), VLAN stacking (802.1ad Q-in-Q), ToS and DSCP. Traffic simulation also includes traffic shaping with burst and ramp capabilities. The FTB-88100NGE and FTB-88100G also offer the flexibility to define one configuration profile and apply it to as many streams as required. From there, it is just a matter of tweaking them to each stream. The FTB-88100NGE and FTB-88100G also simultaneously measure throughput, latency, packet jitter (RFC 3393), frame loss and out-of-sequence errors in all streams, yielding fast and in-depth qualification of all SLA criteria. Results are displayed in tabular format and on analog visual gauges to ensure that test outcomes are quickly and easily interpreted.

SIMPLIFIED ERROR INJECTION

The FTB-88100NGE and FTB-88100G Power Blazer modules enable error and alarm injection with a single click from any screen, allowing you to ensure circuit continuity prior to starting a test. This capability applies to single optical channels when addressing testing interfaces from 10M to 100G on the FTB-88100NGE and 40G/100G on the FTB-88100G, and extends to four or ten optical channels for 40G and 100G when using parallel CFPs. Furthermore, this functionality can be preprogrammed for any type of error, not just bit errors. In addition, alarm injection can be selected per lane, and not necessarily on all lanes simultaneously.

COMPLETE OVERHEAD MANIPULATION AND MONITORING

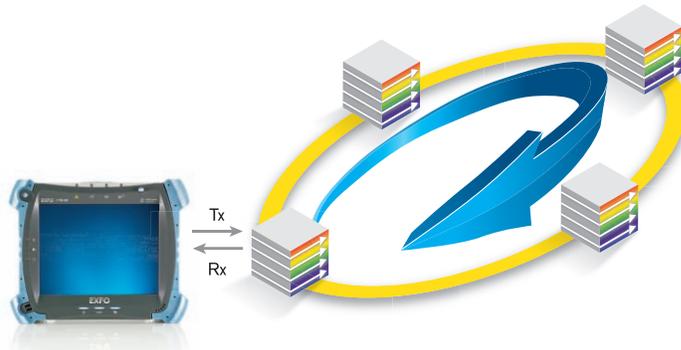
EXFO's FTB-88100NGE and FTB-88100G modules allow for complete OTN and SONET/SDH overhead manipulation and monitoring for advanced testing and troubleshooting. Furthermore and consistent with this module's simplified testing approach, the overhead manipulation and monitoring capability is categorized under "Functions" in the GUI and apart from the default setup and results pages. The Functions category offers various 40G/100G testing capabilities required by tier-2 engineers for advanced field troubleshooting, eliminating the need for a second test instrument for those rare situations.



DELAY MEASUREMENT

Today, carriers have an opportunity to turn optical networks into a competitive advantage by guaranteeing low-latency traffic transmission for delay-sensitive applications including video, cloud computing and financial trading applications. With this in mind, the FTB-88100NGE and FTB-88100G Power Blazer modules enable OTN, SONET/SDH and Ethernet delay measurements across all supported testing interfaces, enabling carriers to solidify their competitive advantage when building low-latency optical transport networks, and guarantee the speed of service to their end customers.

This functionality measures the time required for a bit to travel from the transmitter of the FTB-88100NGE or the FTB-88100G and back to the receiver after crossing a far-end loopback, thereby providing complete delay results including delay measurement and min./max./average delay statistics.



RAPID DIAGNOSTIC TEST TOOLS

Per-Wavelength Laser Control and Power Measurements

Verifying the power level may seem obvious, but it is a vital step often omitted due to lack of convenience or test equipment. The built-in power-measurement capability of the FTB-88100NGE and FTB-88100G enables you to accurately test per-channel ingress and egress levels without risking damage to expensive 40G/100G circuit packs caused by high power, or signal degradation resulting from low power on any of the transmitted optical channels.



Per-Lane Frequency and Offset Measurements

Along with optical power measurements, frequency accuracy verification is a good sanity check to determine network health prior to BER testing during 40G/100G network commissioning. The FTB-88100NGE and FTB-88100G Power Blazer modules offer per-lane frequency and frequency offset testing capabilities to verify that the NE's clock recovery circuitry is operating accurately.

IP Connectivity Tools

As part of the IP connectivity tools, the ping tool is used to verify that the user can reach a specific address within or outside of a subnetwork. The traceroute tool is a modified version of the ping tool and is used to determine the route or the number of hops that are required to reach a destination host. These basic tools, which are supported on the FTB-88100NGE and FTB-88100G Power Blazer modules, are essential when testing through 40G/100G routed networks. The results of these tests can pinpoint critical configuration issues within the network.

ADVANCED TROUBLESHOOTING TOOLS

Capturing

The capturing power of EXFO's FTB-88100NGE and FTB-88100G extends far beyond basic capabilities. The module adds extra features and functionalities to boost test cycle efficiency and provide more value. Its packet capture tool offers comprehensive filtering, triggering and truncation methods to target specific traffic and quickly pinpoint issues in the lab and in the field.

Advanced Traffic Filtering

In some cases, troubleshooting only concerns a particular traffic flow. The advanced traffic-filtering capability of the FTB-88100NGE and FTB-88100G allows you to restrict traffic by using up to four trigger fields and operands (and, or, not). A complete set of triggers is available, such as MAC, IP and TCP/UDP fields, as well as VLAN, MPLS fields.

Filter	Value	Mask	Oper.
Ip Protocol	0x11	0xFF	AND
Vlan 2 Id	0	4095	AND
None			

CFP Health Check

The FTB-88100NGE and FTB-88100G also offer 40G/100G CFP health check testing capabilities. Unlike the single wavelength transceiver used in legacy 2.5G and 10G networks, each CFP parallel optical channel must be monitored for transmitted and received power levels to avoid damaging expensive 100G circuits and equipment. Moreover, each parallel lane must be monitored for frequency and frequency offset to ensure proper clock and timing recovery.



CFP Health Check

The CFP information page now provides detailed information on the module, no longer requiring the removal of the CFP to read the CFP module details. Complete management data input/output (MDIO) read/write access has also been given, allowing advanced network engineers to verify the management interface in the CFP through a registered access, as per the CFP Multi-Source Agreement (MSA). For example, access to the MDIO allows the user to read the CFP operational temperature when needed for troubleshooting purposes.

The FTB-88100NGE and FTB-88100G also include a 100G automated stress-test application that covers transmission tolerance tests like static skew measurement, crosstalk, electrical amplitude and pattern dependency. Essentially, all manual interventions have been removed, thus simplifying the CFP qualification process. In short, this tool will allow carriers to ensure the optimal performance of 100G networks during evaluation and deployments.

10M-TO-100G KEY FEATURES^a**Ethernet**

Rates	10/100/1000M Base-T, 100M (optical) GigE, 10 GigE LAN/WAN, 40 GigE and 100 GigE
Power measurement	Optical channel power measurement with color indicators
Frequency measurement	Clock frequency measurements displayed in Hz
EtherSAM (Y.1564)	Service configuration tests, including the ramp and burst tests, as well as the service performance test as per ITU-T Y.1564 up to 10G; tests can be performed in loopback or dual test set mode for bidirectional results
RFC 2544	Throughput, back-to-back, frame loss and latency measurements according to RFC 2544; frame size: RFC-defined or user-configurable
Smart loopback	Traffic return to the local unit by swapping packet overhead up to layer 4 of the OSI stack
Dual test set mode	End-to-end, bidirectional performance testing as required by leading standards bodies; remote IQS-88100NGE/88100G controlled via the LAN connection under test
One-way delay	Measurement of one-way frame delay at up to 10G as part of EtherSAM (Y.1564) and RFC 2544
BERT	Unframed and framed layer 2, with or without VLAN Q-in-Q
Traffic generation and monitoring	Traffic generation and shaping of up to 16 streams of Ethernet and IP traffic, and monitoring of throughput, latency, packet jitter, frame loss and out-of-sequence
VLAN stacking	Capability to generate one stream with up to three layers of VLAN (including IEEE 802.1ad Q-in-Q tagged VLAN)
Ethernet statistics	Multicast, broadcast, unicast, N-unicast, pause frame, frame size distribution, bandwidth, utilization, frame rate, frame loss, out-of-sequence frames and in-sequence frames
Packet jitter statistics	Delay variation statistics (ms): min., max., last, average and jitter measurement estimate (RFC 3393)
Flow control statistics	Pause time, last pause time, max. pause time, min. pause time, paused frames, abort frames, frames Tx, frames Rx
Service disruption time (SDT)	No Traffic mode up to 10G; disruption time statistics include shortest, longest, last, average, total and count
Auto-negotiation	Capability to auto-negotiate the rate, duplex and flow control capabilities with another Ethernet port
Traffic filtering	Incoming traffic analysis and statistics according to a set of up to 10 configurable filters; filters can be configured for MAC source/destination address, VLAN ID, VLAN priority, IP source/destination address, ToS field, DSCP field, TCP source/destination port and UDP source/destination port; VLAN filtering can be applied to any of the stacked VLAN layers
Advanced filtering	Capability to enhance the filters with up to four fields each, which can be combined with AND/OR/NOT operations; a mask is also provided for each field value to allow for wildcards; complete statistics are gathered for each defined filter
Data capture	Full-line-rate data capture and decoding at up to 100G; configuration of detailed capture filters and triggers as well as capture slicing parameters
MPLS	Stream generation and analysis at up to 10G with up to two layers of MPLS labels and filtering of received traffic by MPLS label or CoS
IPv6	Capability to perform BERT, RFC 2544, traffic generation and analysis, as well as smart loopback tests at up to 10G over IPv6; ping, traceroute, neighbor discovery and stateless auto-configuration
IP tools	Ping and traceroute functions
Signal label control and monitoring	Configuration and monitoring of J0 trace, J1 trace and payload signal label C2 (WAN) for 10G Ethernet
DHCP client	Connection to a DHCP server to obtain its IP address and subnet mask to connect to the network
TCP throughput	True wire-speed, TCP throughput test for undisputable SLA reinforcement for Ethernet services up to GigE
Cable testing	Category 5 cable (or better), 100 UTP/STP cable, ≤120 meters.
CPRI and OBSAI	FTTA validation (CPRI and OBSAI) at up to 3.1 Gbit/s via BER testing
Through-mode	Capability to pass traffic up to 10GigE through either the module's two electrical or optical ports for in-service troubleshooting
1588 PTP	Validates 1588 PTP packet network synchronization services, emulates PTP clients, generates and analyzes messages between master/clients, clock quality level and IPDV
SyncE	Validates SyncE frequency, ESMC messages and clock quality levels
Pass/Fail verdicts	Provides a pass/fail outcome with user-adjustable thresholds, based on bit error rate and/or service disruption time

Note

a. 10M-to-10G test capabilities are only supported on the IQS-88100NGE Power Blazer module.

10M-TO-100G KEY FEATURES (CONT'D) ^a**OTN**

Rates	OTU1 (2.7 Gbit/s), OTU2 (10.7 Gbit/s), OTU1e (11.0491 Gbit/s), OTU2e (11.0957 Gbit/s), OTU1f (11.2701 Gbit/s), OTU2f (11.3176 Gbit/s), OTU3 (43 Gbit/s), OTU3e1 (44.57 Gbit/s), OTU3e2 (44.58 Gbit/s) and OTU4 (111.82 Gbit/s)
Power measurement	Optical channel power measurement with color indicators
Frequency measurement	Clock frequency measurements displayed in Hz
Frequency offset	Offsetting of the transmitted signal's clock on a selected interface, and monitoring to exercise clock recovery circuitry on network elements
Alarms and errors	Generation and analysis of OTL, OTU, ODU and OPU alarms and errors
Forward error correction (FEC)	Generation and analysis of FEC correctable and uncorrectable errors
Service disruption time (SDT)	Measures the time during which there is a disruption of service due to the network switching from the active channels to the backup channels
Round-trip delay (RTD)	Measures the time required for a bit to travel from the IQS-88100NGE/88100G transmitter back to its receiver after crossing a far-end loopback
ODU0	ODU0 (1.25 Gbit/s) container with Gigabit Ethernet, SONET/SDH client signal mapping and PRBS pattern
ODUflex	ODUflex with Ethernet client signal mapping and PRBS pattern
ODU multiplexing	ODU1, ODU2 and ODU3 single and multistage multiplexing down to ODU0
Client mappings	SONET/SDH and Ethernet client mappings into OPU payloads
Through mode	Ability to perform intrusive and transparent Through mode analysis of any OTN signal

SONET/SDH

Rates	OC3/STM-1, OC-12/STM-4, OC-48/STM-16, OC-192/STM-64, OC-768/STM-256
High-order mappings	STS-1/3c/12c/48c/192c/768c and AU-3/AU-4/AU-4-4c/16c/64c/256c
Low-order mappings	VT1.5, TU-11/12/2/3
Power measurement	Optical channel power measurement with color indicators
Frequency measurement	Clock frequency measurements displayed in Hz
Frequency offset	Offsetting of the transmitted signal's clock on a selected interface, and monitoring to exercise clock recovery circuitry on network elements
Performance monitoring	G.821, G.826,G.828, G.829, M.2100, M.2101
Pointers	Generation and analysis of STS/AU and VT/TU pointer adjustments as per GR-253, and ITU-T G.707
Service disruption time (SDT)	The SDT test tool measures the time during which there is a disruption of service due to the network switching from the active channels to the backup channels
Round-trip delay (RTD)	The RTD test tool measures the time required for a bit to travel from the IQS-88100NGE/88100G transmitter back to its receiver after crossing a far-end loopback
Automatic protection switching (APS)	Ability to monitor and set up automatic protection switching messages (K1/K2 byte of SONET/SDH overhead)
Programmable errors/alarms	Ability to inject errors/alarms in the following modes: Manual, Constant Rate, Burst (Periodic and Continuous)
Through mode	Ability to perform intrusive and transparent Through mode analysis of any SONET/SDH signal
Payload block and replace	Ability to terminate and analyze a specific high-order path element and replace it with a PRBS pattern on the Tx side

Note

a. 10M-to-10G test capabilities are only supported on the IQS-88100NGE Power Blazer module.

ORDERING INFORMATION

FTB-88100XX-XX-XX-XX-XX-XX-XX

Model

FTB-88100NGE = 10M-to-100G high-speed multiservice test module
 FTB-88100G = 40G/100G high-speed multiservice test module

Ethernet Rate Options

40GE = Ethernet optical rate of 41.25 Gbit/s
 100GE = Ethernet optical rate of 103.125 Gbit/s

SONET/SDH Rate Options

40G = SONET/SDH optical rate of 39.81 Gbit/s (OC-768/STM-256)^a

OTN Rate Options

OTU3 = OTN optical rate of 43.018 Gbit/s
 OTU3-e1-e2 = OTN optical rates of 44.57 Gbit/s and 44.58 Gbit/s
 OTU4 = OTN optical rate of 111.81 Gbit/s

Ethernet Options

00 = No Ethernet option
 ADV-FILTERS = Advanced filtering^b
 ETH-CAPTURE = Full-line-rate packet capture^b

OTN Options

00 = No OTN option
 EoOTN = Ethernet mapping over OTN^c
 ODUMUX = Single and multistage ODU multiplexing^c
 ODU0 = ODU0 (1.25 Gbit/s) mapping^d
 ODUflex = ODUflex functionality^d
 OTN-INTR-THRU = OTN intrusive Through mode^c

SONET/SDH Options and Mappings

SONET = SONET-BASE and mapping^e
 SDH = SDH-BASE and mapping^e
 SONET-SDH = SONET and SDH combo software^e
 SONETSDH-INTR-THRU = SONET/SDH intrusive Through mode^a

Example: FTB-88100G-100GE-40GE-OTU3-SONET-SDH-EoOTN-ETH-CAPTURE

Notes

- Requires SONET, SDH or SONET-SDH option.
- Requires enabling any Ethernet rate.
- Requires enabling OTU3 rate.
- Requires enabling ODUMUX OTN option.
- Requires enabling OTU3 and/or 40G SONET/SDH rates.

TRANSCEIVERS AND ACCESSORIES

FTB-85951 = 100G Base-LR10 dual-rate (100GE, OTU4) CFP (10 x 10G WDM, 10 km)
 FTB-85953 = 100G Base-LR10 dual-rate (100GE, OTU4) CFP (10 x 10G WDM, 2 km)
 FTB-85956 = 40G Base-LR4 multirate (40GE, OTU3, OTU3-e1-e2) CFP (4 x 10G WDM, 10 km)
 FTB-85957 = 100G Base-LR4 single-rate (100GE) CFP (4 x 25G WDM, 10 km)
 FTB-85958 = 100G Base-LR4 dual-rate (100GE, OTU4) CFP (4 x 28G WDM, 10 km)
 FTB-85960 = 40G Base-FR multirate (OC-768/STM-256, OTU3, OTU3-e1-e2) serial CFP (1550 nm, 2 km)

LASER SAFETY FOR FTB-85956, FTB-85957 AND FTB-85958

Class 1 21 CFR 1040.10
 LN #50 6/2007

LASER SAFETY FOR FTB-85951 AND FTB-85953

WARNING: Viewing the laser output with certain optical instruments (for example, eye loupes, magnifiers and microscopes) within a distance of 100 mm may pose an eye hazard.

CAUTION: Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.



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EXFO serves over 2000 customers in more than 100 countries. To find your local office contact details, please go to www.EXFO.com/contact.

EXFO is certified ISO 9001 and attests to the quality of these products. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. EXFO has made every effort to ensure that the information contained in this specification sheet is accurate. However, we accept no responsibility for any errors or omissions, and we reserve the right to modify design, characteristics and products at any time without obligation. Units of measurement in this document conform to SI standards and practices. In addition, all of EXFO's manufactured products are compliant with the European Union's WEEE directive. For more information, please visit www.EXFO.com/recycle. Contact EXFO for prices and availability or to obtain the phone number of your local EXFO distributor.

For the most recent version of this spec sheet, please go to the EXFO website at www.EXFO.com/specs.

In case of discrepancy, the Web version takes precedence over any printed literature.