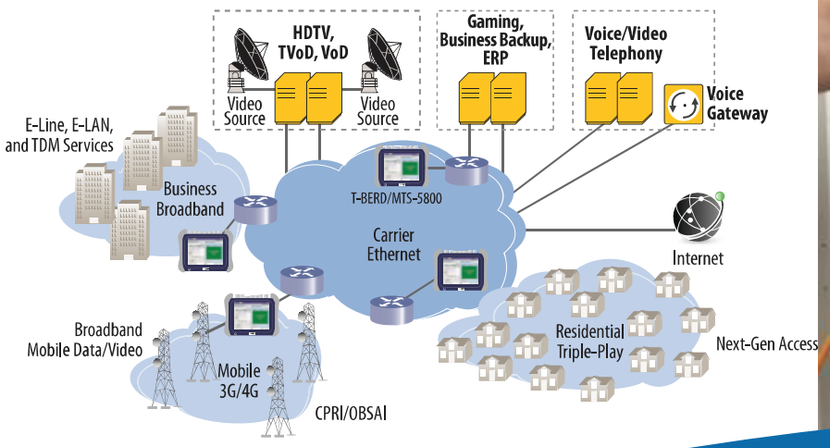


Test & Measurement Solutions for Communications

OTDR Tester
Power Meter & Light Source
Signal Analyzer

JDSU

T-BERD®/MTS-5800

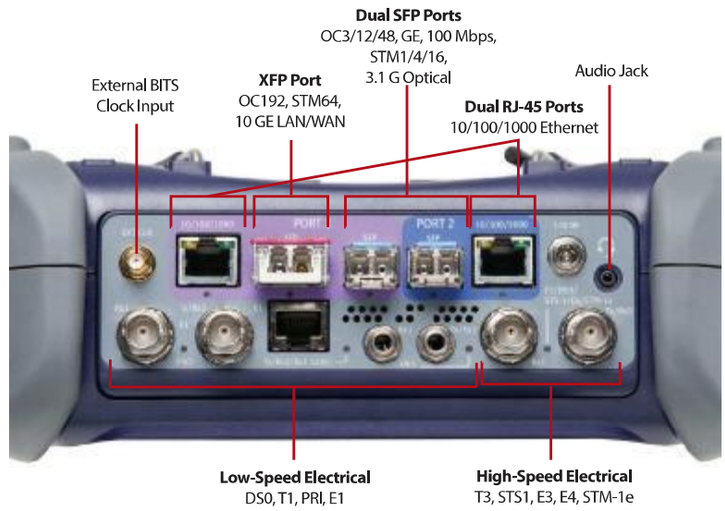
Handheld Network Test Family of Products

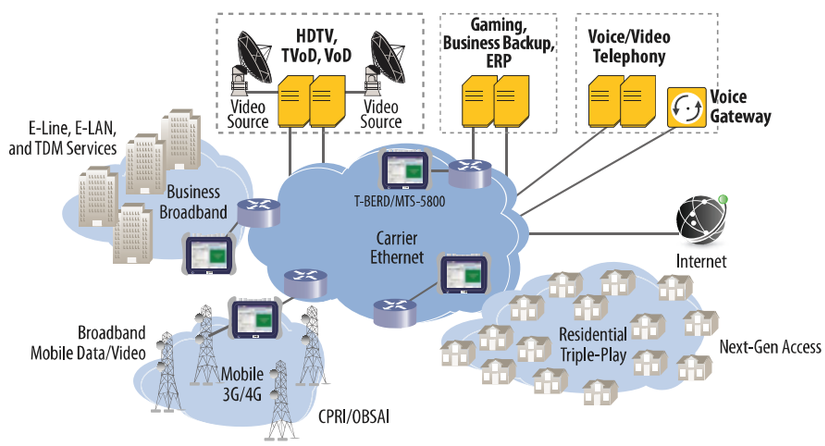
Benefits

- All-in-one handheld tool reduces complexity of multitechnology testing
- Optimized for easy field use and addresses emerging network technologies
- Guarantees maximum efficiency and success in evolving Carrier Ethernet and Mobile Backhaul networks
- Ensures service life-cycle management with service activation and troubleshooting capabilities integrated into one instrument
- Speeds service activation and troubleshooting with TrueSAM™, the ultimate installation tool, and J-Complete test tools that both follow best practices and provide repeatable methods and procedures with easy-to-understand results

Applications

- Tests and troubleshoots converged Ethernet/IP networks at 10 Mbps to 10 G interfaces
  - Tests Layer 1-3 Ethernet/IP SLAs with an automated, enhanced RFC 2544/SAMComplete per ITU-T Y.1564
  - Integrated approach to burst testing including CBS verifies buffer settings and TrueSpeed per RFC 6349 for performance testing so you can experience your network the way your customers do
  - Robust troubleshooting capabilities including network discovery, top talker analysis, deep packet capture, packet analysis, and expert guidance
- Tests TDM/PDH to SONET/SDH at OC-3/STM-1 to OC-192/STM-64, including service disruption measurements and path overhead (POH) capture with triggers
- Tests dual FC (1, 2, 4 G) for service activation and maintenance of SANs and low-latency circuits
- Verifies network synchronization
  - Emulates a 1588v2 master clock/slave recovery for proper point-to-point (PTP) message propagation and verification of packet-delay variation (PDV)
  - Verifies SyncE frequency synchronization accuracy and Ethernet synchronization message channel (ESMC) message propagation
- Supports SFP and XFP pluggable optics, including 50 GHz C-band tunable XFPs
- Six T-BERD/MTS-5800 configurations:
  - Single- and dual-port Ethernet versions
  - With or without TDM/PDH interfaces
  - Fully loaded TDM/PDH to 10 G Ethernet, SONET, and SDH





T-BERD®/MTS-6000 Platform

Compact Optical Test

Key Features

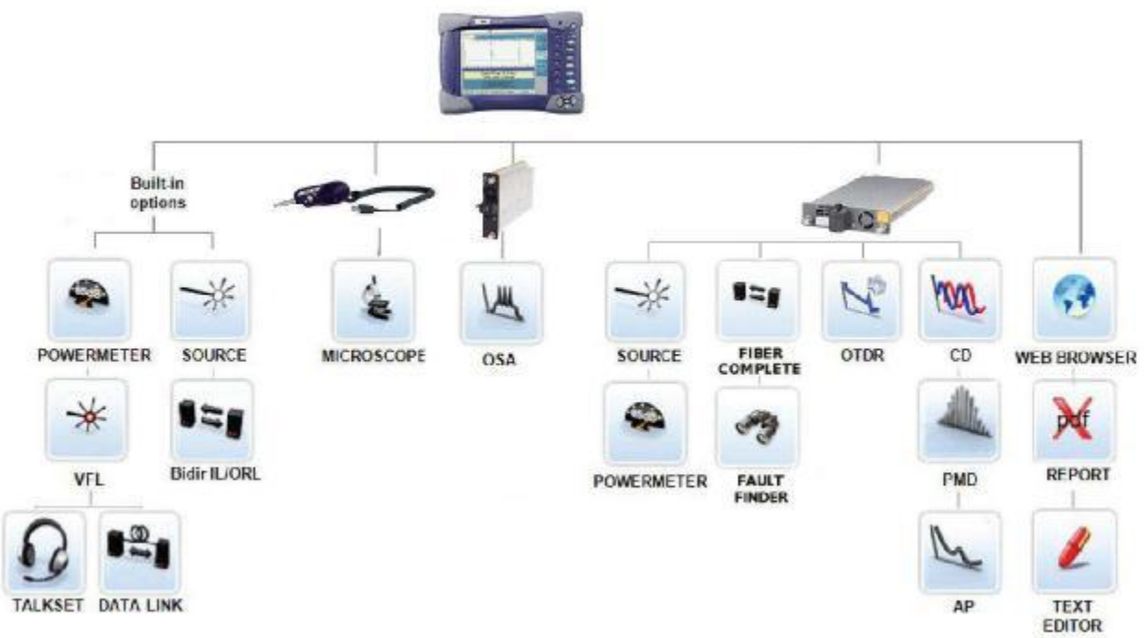
- Compact, lightweight highly integrated platform
- More than 40 application modules already supported for multimode and single-mode
- Built-in VFL, power meter, LTS, ORL, talk set, and video inspection scope options
- Choose from IL/ORL, OTDR, PMD, CD, AP, and/or OSA plug-ins
- Exceeds Telcordia specifications for ruggedness, drop testing, and extended battery life

Key Benefits

- **Perform full fiber characterization measurements**
- **Easy to use for novices yet fully featured for experts**
- **Generate proof-of-performance reports**
- **Decrease OpEx and increase field productivity when combined with StrataSync™ cloud-enabled software that displays assets, modules, versions, and locations; maintains accurate instrument configuration and setup; and provides visibility into instrument utilization and test-data management**
- **Future-proof and highly modular for greater productivity**

Applications

- Perform multimode and single-mode OTDR and optical loss tests (bidirectional)
- Find faults and identify traffic
- Test FTTx/PON and CWDM networks
- Perform OSA and fiber dispersion testing (PMD/CD/AP) for 10G, 10GE, and 40G



HST-3000 Handheld Services Tester

Key Benefits

- Best-in-class for test accuracy -- it really does matter
- Multiple chipsets supported for xDSL -- widest interoperability on the market
- Find real problems up to 30% faster -- correlates copper and xDSL measurements
- Protects your investment -- modular approach to add GigE, Ethernet, E1, etc.
- Helps you define an accurate, repeatable test strategy -- with automated tests, expert modes -- reduces errors and minimizes repeats.

The HST-3000 provides the best any access network tester has to offer. Built on a strong and proven reputation for test accuracy, the HST-3000 can help you find real problems up to 30 percent faster. The HST-3000 starts with unsurpassed copper qualification and fault-finding tools and adds fiber inspection, single and bonded pair ADSL2+/VDSL2, Gigabit Ethernet, IPTV, Microsoft TV and VoIP testing to help round out full triple play testing strategy. It also supports legacy T1, DS3, ISDN PRI/BRI, and other interfaces via field-swappable modules and optional software.

Applications

- Full copper analysis suite - qualify, provision, and troubleshoot copper pairs - includes DVOM, Opens, TDR, wideband TIMS, spectral noise, and resistive fault locator (RFL).
- Bonded ADSL2+/VDSL test accuracy brings up both pairs of a bonded group simultaneously
- Gigabit Ethernet module features SAMComplete/ ITU-T Y.1564 service activation- automated SLA verification and troubleshooting for circuits that carry multiple services and bandwidth profiles.
- Unique USB-mounted JDSU P500i provides unique pass/fail fiber inspection
- Standard automation and TechComplete - Improve testing processes through automation and centralized, web-based management tools.

HST-3000 Service Interface Modules (SIMs)

Ethernet
T1, ISDN PRI, Frame Relay
E1
E1 and Datacom combo
DS3 and T1 combo
ISDN BRI
ISDN BRA

ADSL
ADSL/2/2+
VDSL2
WBII Copper
G.SHDSL
DDS 4W-LL
FTTx Optical Power Meter

FI-60

Live Fiber Identifier with Integrated Optical Power Meter

Live Fiber Identifier Optical Power Meter

Benefits

- **Avoid network downtime and damage with repeatable SafeChek™ easy-pull trigger system.**
- **Get the job done faster with a single LFI head that is compatible with multiple cable diameters (250µm to 3mm jacketed fibers).**
- **Increase reliability and avoid false readings with integrated ambient light shield.**
- **Access cable in multiple environments with the compact, ergonomic design.**
- **Easily convert to a full function OPM that stores, recalls, and exports results to a PC via USB**

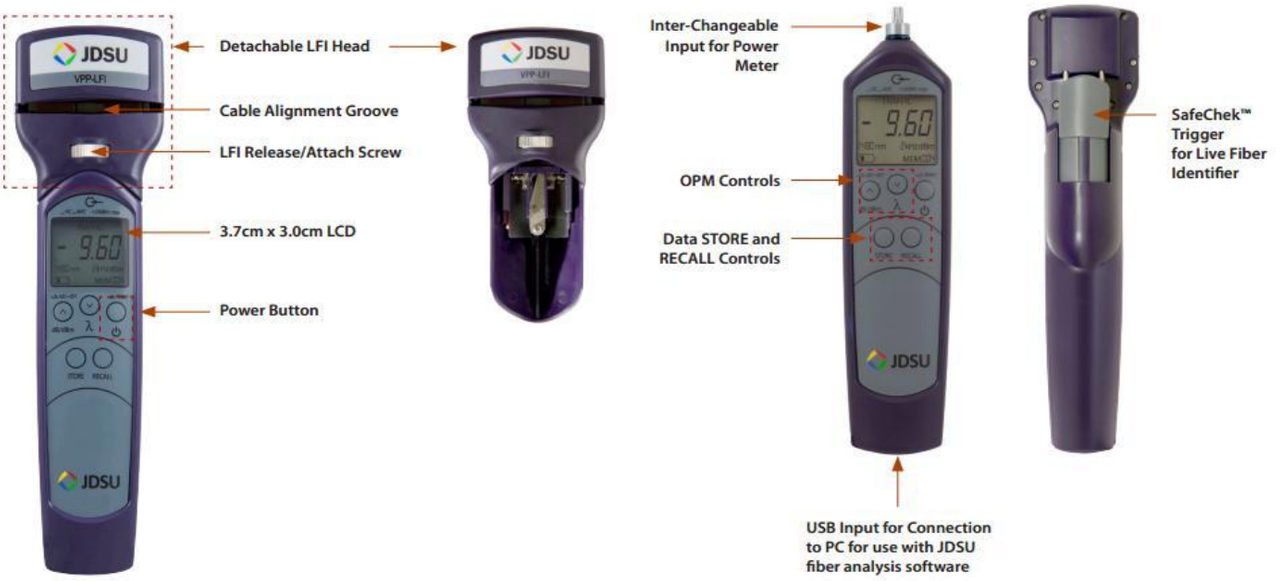
Key Features

- SafeChek easy-pull trigger system ensures repeatable engagement with fiber cable
- LFI head accepts multiple cable diameters (250µm to 3mm jacketed fibers
- Durable metal input adapters (2.5 and 1.25mm) for OPM
- Measure both absolute (dBm) and relative (dB) power
- Store and recall up to 100 OPM readings

Applications

- Quickly identify live optical signals on fiber cables without disrupting network traffic
- Take optical power measurements for all single-mode and multimode connectors
- Integrates with FiberChek2™ inspection and test software

Features and Components



SmartClass E1

Service Installation and Maintenance Tester

Key Features

- **Performs E1 service installation and maintenance in easy-to-use, lightweight, and rugged form-factor**
- **Significantly reduces field technician training with Smart AutoConfiguration (AutoConfig) feature**
- **Works with PC software—download results for report preparation**
- **Provides additional E1 testing with available software options**
- **Includes Event Log and Histogram for troubleshooting**
- **Capable of bidirectional monitoring and troubleshooting via dual E1 ports**
- **Offers color graphical user interface (GUI) available in multiple languages**

Applications

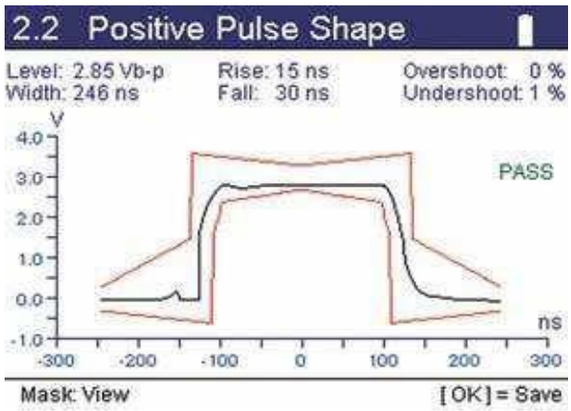
E1

- Provides terminate, monitor, bridge, and local loopback modes
- Provides G.703—2 Mb/s testing
- Conducts 2 M (Bulk), n x 64 kb/s BERT
- Measures performance G.821, G.826, and M.2100
- Provides audio monitor (VF drop)
- Provides transmit frequency offset
- Performs VF level and frequency measurements, VF tone insert
- Measures E1 signal level measurement
- Provides ABCD/Sa monitoring
- Provides round-trip delay
- Offers alarms (defects) and errors (anomalies) insertion
- Pulse shape (optional)
- Jitter (optional)

Others

- Offers remote control (optional)

The JDSU SmartClass E1 is a handheld field tester for the installation and commissioning of E1 service that offers multiple test modes for E1 signal analysis. An economical and easy-to-use point solution, the SmartClass E1 has a Smart AutoConfiguration (AutoConfig) feature and large, easy-to-read color display that make the lightweight, rugged, battery-operated tester ideal for both service provider and contractor field technicians. It also meets the needs of mobile operators in the construction of E1 backhaul infrastructure.



Pulse shape for extra E1 testing capability

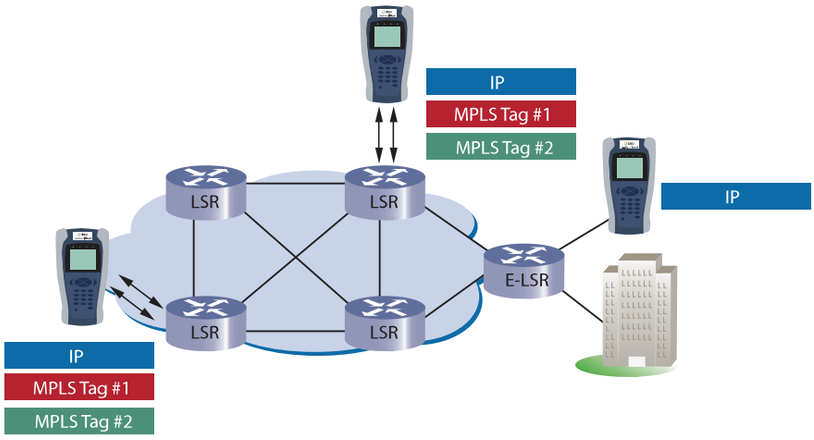
SmartClass™ Ethernet
10M-1G Ethernet Tester

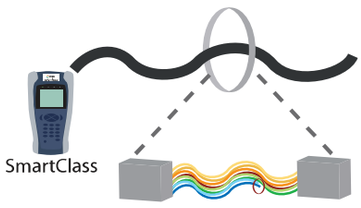
Key Features

- **Generates and measures L2/L3 traffic on up to 1G electrical or optical Ethernet interfaces with VLAN, Q-in-Q tags, or MPLS labels**
- **RFC2544 proves acceptance for Ethernet service level agreements**
- **MPLS Test checks for correct policing and prioritization in MPLS domains using the MPLS option**
- **Physical Layer tests verify integrity of the physical layer to pass traffic before testing throughput**
- **Ethernet Loopback completes the JDSU Ethernet field test portfolio**

Applications

- Optional Asymmetric RFC2544 mode enables verification of circuits with different up and downstream rates
- Verifies QoS for triple-play networks by simultaneously measuring throughput, latency, jitter, and errors on up to 8 specific VLAN or Q-in-Q tagged traffic flows with the Multiple Streams option
- Available in a loop-only version to save on CAPEX and allows for upgrades in the field to full functionality if needed





Detects problem as open 50 m away on pair 4

T-BERD®/MTS-4000 Platform

Multiple Services Test Platform

Key Features

- Cost-effective, dual-modular and handheld platform
- Large 7-inch display (touchscreen option)
- Comprehensive connection checker functionality with built-in VFL, power meter, and scope
- Flexible connectivity including USB, high-speed 1G Ethernet, WiFi, and Bluetooth interfaces
- Automated test and data reporting capability
- Integrated web browser

Applications

- Qualify Access/FTTx networks
- Troubleshoot fiber- and copper-based networks
- Test and turn up of passive optical (PON) or point-to-point optical networks
- Test and turn up triple-play services, including IPTV and VoIP measurements from DSL access interfaces or standard Ethernet port

Specifications

T-BERD/MTS-4000 Technical Specifications (Typical 25°C)	
Display	
TFT color, 7-in, LCD 800 x 480, high visibility for outdoors	
Touchscreen, TFT color, 7-in, LCD 800 x 480, high visibility for outdoors	
Storage and I/O Interfaces	
Internal memory	32MB (1000 test results)
Extended memory (optional)	Minimum 1 GB (optional)
	2x USB2.0, 1x RJ45 Ethernet (up to 1 Gb/s)
WiFi	Standard IEEE 802.11 b/g
Bluetooth	Class 2, up to 10 m range
Audio interface	2.5 mm jack connector
Ethernet	10/100/1000 MHz full-half duplex
Power Supply	
Battery type	Standard removable Li-Ion batteries
AC/DC adapter	Input 100-250 V, 50-60 Hz
	Output 12-15V DC/3.7 A
Electrical safety	EN 60950 Compliant
Operation time	Up to 11 hours with standard display
	Telcordia GR-196-CORE
Size and Weight	
Mainframe with two modules and battery (W x H x D)	260 x 135 x 90 mm (10.2 x 5.3 x 3.5 in)
Mainframe only (with battery)	1.4 kg (3 lb)
Mainframe with one module (with battery)	<2 kg (<4.35 lb)

Environmental Specifications	
Operating temperature range (no option)	–20 to +50°C (–4 to 122°F)
Operating temperature range (all options)	0 to +40°C (32 to 104°F)
Storage temperature range	–20 to +60°C (–4 to 140°F)
Humidity, non-condensing	95%

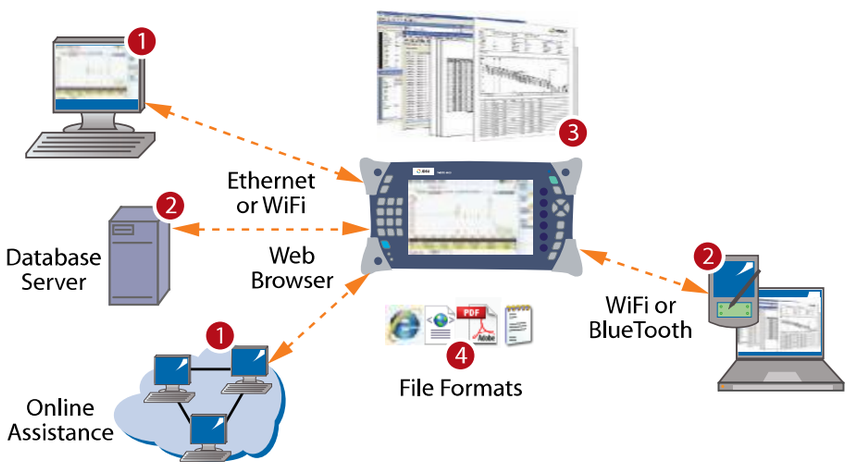
Base Unit Optical Interfaces (optional)	
Power Meter	
Power level	+10 to –60 dBm
Calibrated wavelengths	850, 1310, and 1550 nm
Connector type	Universal push/pull (UPP)
Visual Fault Locator (VFL)	
Wavelength	635 nm ±15 nm
Output power level	<1 mW
Laser safety	Class 2 laser
Connector type	Universal push/pull (UPP)

Quick Capture Probe Kit (via USB)	
Magnification	200X and 400X
Interface	through the USB port
Tips	FC, SC, SC-APC, LC, U25, U25MA, U12

For more information on module specifications, refer to each module data sheet.

More than a Test Unit

The T-BERD/MTS-4000 comes with unprecedented connectivity features such as high-speed Ethernet (1 GigE), WiFi, Bluetooth, and on-board Web browser. Combining these features with an ergonomic and intuitive GUI, the T-BERD/MTS-4000 offers user-friendly functions such as intranet/Internet access, wireless data transfer, automated testing, and remote operations.



Validator™ and Validator-NT™

Ethernet Network Management Tools

Key Features

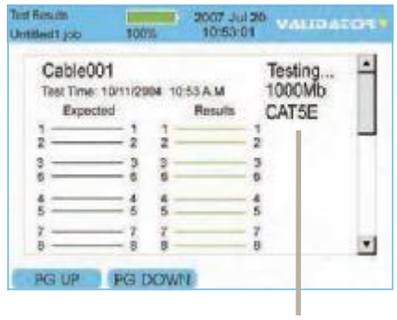
- Conducts Bit Error Rate (BER) testing to speed certify Ethernet data transmission speed up to 1000BASE-T (1 Gb/s)
- Measures Signal-to-Noise Ratio and Skew to uncover impairments to Ethernet data transmission
- Tests for opens, shorts, split pairs, miswires, and reversals and measures distance to opens and shorts—supports all network, telco, and coax cables
- Identifies cable termination on active Ethernet ports with hub flash
- Performs port discovery to detect advertised Ethernet speed and displays capabilities of network devices (Validator-NT)
- Pings network devices to verify connectivity to active equipment (Validator-NT)
- Includes Plan-Um® software to create network layout, document cable tests, show network topology, and record moves, adds, and changes

Applications

- Verify proper operation of Ethernet cable runs
- Certify speed capability of cable runs to support 10/100/1000 Mb/s Ethernet applications
- Ensure configuration of and connectivity with active network devices
- Document network topology including moves, adds, and changes

Wiremaps individual runs to locate and identify cable routes

Tests telephone, network, coax, and security/alarm cables for continuity, proper temination, and polarity

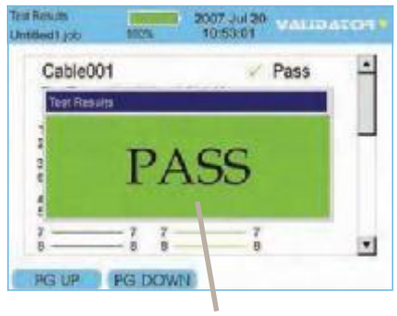


Testing underway

Skew and SNR results shown on faulty cables

Measures cable length and distances to opens and shorts using advanced TDR technology

Shows the actual error rate in the BER test



Displays test results

OLP-5, OLP-6 and OLP-8 Optical Power Meters

Pocket-sized optical power meters

Key features

- Pocket class: Rugged, compact and lightweight
- Easy-to-use, straight forward operation
- Reliable basic functionality for most economical testing
- Three year calibration period
- Dedicated for all single mode and multi-mode applications like LAN, Telecom, CATV, and DWDM testing
- Universal push pull interface (2.5 or 1.25 mm)
- Twintest and Auto-λ
- Compact design, versatile use
- Standard AA batteries or NiMH/NiCd cells

Optical interface

Standard:	Universal Push-Pull (UPP) 2.5 mm adapter Matches DIN, ST, FC, SC, E2000 flat or angled face plugs
Optional:	UPP 1.25 mm (F3000, LC)
Photo diode type	Germanium
Display	LCD, 4-digit
Result display in	dBm, dB
Resolution	0.01 dB,
below –60 dBm	0.1 dB
Modulation detection	270 Hz, 330 Hz, 1 kHz, 2 kHz
Wavelength detection "on" (Auto-λ)	"AU"
Permanent mode	"PERM"
Battery charge state in % when switching on/off	

Reference level

Reference level stored for each wavelength	
Operating time from dry batteries	typical 130 h

Power supply

Dry batteries	2 × Mignon (AA) 1.5 V
or NiCd/NiMH cells	2 × Mignon (AA) 1.2 V
Discharge protection for batteries/NiCd cells	Automatic power down after approx. 20 minutes to conserve battery power (function can be disabled)

Electromagnetic compatibility

Corresponds to EN 50081-1 and EN 500082-1 (CE conformance)	
Recommended calibration interval	3 years
Ambient temperature	
Nominal range use	–10 °C to +50 °C
Storage and transport	–40 °C to +70 °C

SmartPocket™ Optical Light Source

OLS-34/35/36

Key features

- Cost-effective, rugged and compact solution
- Interchangeable connectors for maximum flexibility available
- Auto λ and TwinTest transmission modes
- 3 year calibration
- Combines up to 4 wavelengths in one instrument (SM+MM)

Applications

- Link insertion loss measurements and continuity check
- Enterprise / LAN networks with 850/1300 nm multimode wavelengths capability
- Access and metro (LAN/WAN) networks with multimode and singlemode testing combination.
- Standard singlemode wavelengths for any telecom, CATV and military applications.

housing fits in your pocket

Clear big and sharp screen for displaying of:

- Battery status with low level indicator
- Power mode (PERM, ECON)
- Output wavelength setting
- Output power in dBm
- Auto wavelength coding
- Tone generation

4 buttons straight forward operations

Rugged, shock resistant and splash proof design

3-way powering

- AA dry
- AA rechargeable
- AC operation via micro USB

Two connector solutions for more flexibility:

- Fixed adapters: FC, SC, ST, LC
- Interchangeable adapters: FC, SC, ST, LC, DIN

T-BERD®/MTS-2000 Handheld Modular Test Set

Key features

- Large 5-inch touch-screen display
- Field-installable modules
- Wide range of OTDR modules including Quad and PON
- FiberComplete automated IL/ORL, PON power meter, and CWDM analyzer
- Automated fiber inspection and IEC pass/fail analysis
- Optional built-in optical power meter, visual fault locator (VFL), and optical talk set
- New-generation lithium polymer (LiPo) battery for 8-hour operation
- Flexible connectivity with Ethernet, USB, Bluetooth, and WiFi capabilities
- Special hands-free bag standard
- Cross-compatible with T-BERD/ MTS-4000

Key Benefits

- Certify the fiber physical layer on FTTx/PON, access, metro and enterprise networks
- Ensure the highest-quality connectorizing, splicing, and turn-up of new fiber links
- Improve workflow with hands-free solution, driving best practices to IEC standards
- Smarter and faster field testing with simple setup and instantaneous pass/fail results
- Boost productivity with improved report generation and flexible connectivity
- Decrease OpEx and increase field productivity when combined with StrataSync™, cloud-enabled software that displays assets, modules, versions, and locations; maintains accurate instrument configuration and setup; and, provides visibility into instrument utilization and test-data management

Specifications

General (typical at 25°C)

Display	5-inch TFT color touch screen (12.5 cm) Resolution 800 x 480 WVGA
Interfaces	Two USB 2.0 ports One mini-USB 2.0 port RJ-45 LAN 10/100/1000 Mbps Built-in Bluetooth (optional) Built-in WiFi 802.11 b/g/n (optional)
Internal memory	1 GB (128 MB for storage)
Battery	Rechargeable lithium-polymer battery 8-hour operation as per Telcordia GR-196-CORE
Power supply	AC/DC adapter, input 100-250 VAC, 50-60 Hz; 2.5A max, output 12 VDC, 25W Electrical safety: EN60950-compliant
Size with module (H x W x D)	175 x 138 x 80mm (6.9 x 5.4 x 3.2 in)
Weight	
with battery	0.864 kg (1.89 lbs)
with battery and LM OTDR	1.21 kg (2.67 lbs)
Temperature	Operating: -20 to +50°C (-4 to 122°F) Storage: -20 to +60°C (-4 to 140°F)
Relative humidity	0% to 95% non-condensing

Built-In Power Meter Specifications(1)

Calibrated wavelengths	850/1310/1490/1550/ 1625/1650
Wavelength range	800 to 1650 nm in 1 nm steps
Accuracy(2)	±0.2 dB
Measurement range(3)	+5 to –50 dBm
Maximum resolution	0.01 dB/0.01nW
Connector type	Universal push pull (UPP)

(1) At 25°C, after 20 minutes stabilization time and after zero setting.
(2) At calibrated wavelength (except 1650 nm)
(3) -45dBm from 800 to 1250 nm

Built-In Visual Fault Locator (VFL)

Wavelength	650 nm
Emission mode	CW, 1 Hz
Laser class	Class 2 per standards EN60825-1 and FDA21 CFR Part 1040.10

Built-In Talk Set

Dynamic range	32 dB (typical)
Connector types	SC, FC, and UPP (three adapters included)

SmartClass™ TPS

Includes OneCheck, a fully automated, single-button application that tests DSL, data throughput, VoIP, and video with clear Pass/Fail results

Key Benefits

- Reduce repeat faults, save money with comprehensive testing in an all-in-one tool
- Cut test times in half for xDSL and triple-play services with OneCheck™
- Avoid the complexity of copper testing with one-button CableCheck™
- Save time using SmartIDs™ to troubleshoot an entire multipoint coax network in one test
- Improve overall technician efficiency with mobile apps and simplified, one-button testing

Key Features

- Supports WiFi
- Tests ADSL2+/VDSL2 including bonded and vectored pairs, broadband services (data, VoIP, and IP video), copper, POTS, fiber, WiFi, and coax/HPNA
- Web browser
- OneCheck automates all ADSL2+/VDSL2, data, VoIP, and IP video tests and reports all key quality metrics
- CableCheck verifies copper-pair health with balance testing and ground checks
- SC TPS mobile device application for iPhone/iPad (iOS App) provides remote control, job management, and technical support content including tutorials

Applications

- DSL networks and triple-play services
- WiFi and in-home coax networks
- Broadcast and VoD streams including VMOS
- VoIP packet streams
- IP data connectivity

The JDSU SmartClass TPS handheld helps field technicians rollout broadband access networks and services, delivering a pristine copper access infrastructure that can support triple-play services and meet critical quality-of-service (QoS) and quality-of-experience (QoE) requirements. This all-in-one tool can test copper, fiber, asymmetrical, and very-high-speed digital subscriber lines (ADSL2+/VDSL2, bonding, vectoring), WiFi, coax and HPNA networks, Internet protocol (IP) data, voice over IP (VoIP), and IP video with straightforward Pass/Fail results and detailed analyses of physical- and application-layer-related problems.

To ensure that field technicians have successfully completed installation and repair jobs, the SmartClass TPS verifies the physical health of the access copper loop, digital subscriber line (DSL) performance, QoS/QoE of triple-play services, and home distribution networks. In addition, the CableCheck and OneCheck automated test suites improve technician efficiency by avoiding test configuration and result complexity, cutting test times by more than half. The iOS app expands this efficiency, enabling mobile integration.

Overall, with SmartClass TPS, operators and service providers locate and repair faults more quickly and confidently guarantee service quality.

JD725A

Cable and Antenna Analyzer - Dual Port

Key Measurements

- VSWR
- Return Loss
- DTF (Distance to Fault)
- Cable Loss
- Insertion Loss
- Insertion Gain
- Power Meter
- RF Source

Advanced Functions

- Trace overlay allows comparative analysis of up to 4 traces in a single measurement screen.
- In addition to its 6 markers it also provides up to 3 Marker Bands.
- Reflection measurements are presented in VSWR, Return Loss or Smith Charts.

Key Features

- **Portable and lightweight handheld instrument**
- **Built-in wireless frequency bands as well as the most commonly used RF cable types**
- **Touch-screen 7" TFT color display**
- **Superior immunity to RF interferences**
- **Up to 1001 data points for high resolutions and long distance problem location**
- **USB port, allowing external USB memory device**
- **Saves up to 400 measurement traces**
- **Saves up to 100 measurement screens**
- **Saves up to 20 user definable setups**
- **Interface with application software, JDViewer, for data management and report creation**
- **On-screen keyboard permitting saving files quickly and easily**
- **Rechargeable and field replaceable lithium-ion battery**

Specifications

General

Max input power	+25 dBm, ± 50 VDC
Frequency range	25 MHz ~ 4000 MHz
Frequency accuracy	<± 75 ppm
Frequency resolution	100 kHz
Test port impedance	50 Ω
Test ports	Type N Females
Trace storage	Up to 400
Screen storage	Up to 100
Setup storage	Up to 20
Data points	126, 251, 501, 1001
Measurement speed	1, 1.3, 2.5, 5 s for each data point[1)]
One port power	6 dBm (typical)
Two port power	6 dBm (typical) -30 dBm (typical)
Corrected directivity	40 dB typical
One port accuracy	≤ ±(0.8 +|20 log (1+$10^{-EP/20}$)|) dB (typical) EP = Directivity-measured return loss
Immunity to interference	On frequency: +5 dBm On channel: +17 dBm

VSWR

Range	1 dB ~ 65 dB
Resolution	0.01

Return loss

Range	0 dB ~ 60 dB
Resolution	0.01

DTF

Vertical range	VSWR:1 ~ 65 Return Loss 0 dB ~ 60 dB
Vertical resolution	0.01
Distance	0 ~ 1250 m (4125 ft)
Horizontal range	0 to (# of data points-1) x horizontal resolution
Horizontal resolution	$(1.5x10^8)(Vp)/(Delta)$* 0.95 Vp: cable's relative propagation velocity Delta[Hz] = Stop Freq – Start Freq

Cable Loss (one port)

Range	0 dB ~ 30 dB
Resolution	0.01 dB

Insertion Gain/Loss

Range	25 MHz ~ 2500 MHz: -90 ~ 50 dB 2500 MHz ~ 4000 MHz: -80 ~ 50 dB
Resolution	0.01 dB

RF Source

Power output (nominal)	Selectable -30 dBm or +6 dBm
Resolution	100 kHz

Bias Tee (optional)

Voltage	+12 V ~ +24 V (3 V step)
Current	500 mA steady state (850 mA in rush)

Power Meter (requires optional directional/terminating power sensor)

Display range	-80 dBm ~ +120 dBm
Offset range	0 ~ 60 dB
Resolution	0.01 dB or 0.1 xW

RF Analyzer **JD746A**

Spectrum Analyzer

The JD746A has a general purpose spectrum analyzer which is the most flexible test tool for RF analysis including spectrum monitoring and analysis. The spectrum analysis function provides the capability of one-button standards based power measurements for wireless signals.

- Channel Power
- Occupied Bandwidth
- Spectrum Emission Mask
- Adjacent Channel Power
- Spurious Emissions
- Field Strength

Introduction

The RF Analyzer JD746A is an ideal tool for installation and maintenance of cellular base stations.

The JD746A combines the functionality of spectrum analysis, cable and antenna analysis, and power measurements, covering all the measurements required for test, acceptance and troubleshooting the physical layer of cellular networks.

The JD746A is equipped with one-button standards based measurements for wireless signals and offers the full scope of common performance measurements of BTS antenna systems.

Integrated Functionality

Spectrum Analyzer	
100 kHz to 4 GHz	Locates and identifies various signals over a frequency range up to 4 GHz.
Built in Pre-amplifier	Detects signal as low as –155 dBm with phase noise –90 dBc/Hz at 30 kHz offset and measurement accuracy better than 1 dB.
Zero Span with Gate Sweep	Triggers pulse or burst signal such as WiMAX, GSM, and TD-SCDMA.
Cable and Antenna Analyzer	
5 MHz to 4 GHz	Provides cable and antenna characterization for proper power transfer from the radio to the antenna.
Reflection-VSWR/ Return Loss DTF – VSRW/Return Loss Cable Loss Smith Chart 1 Port Phase	Locates failure points for an effective troubleshooting. Verifies cable conformance specifications.
Power Meter	Integrated power meter eliminates the need of a separate instrument and provides power measurement with or without power sensors.
2 Port Transmission Measurements (Option 001) Insertion Gain/Loss 2 Port Phase	Performance verification of passive and active devices such as filters and amplifiers.
Bias Tee (option 002)	Supplies up to 32 VDC built-in bias to active devices, such as amplifiers.
CW Signal Generator (option 003)	Provides a sine wave or continuous wave (CW) source allowing measurements such as repeater's isolation.
GPS Receiver and Antenna (option 010)	Provides geographical location and highly accurate frequency and time base enabling precise frequency and phase measure- ments.
Interference Analyzer (option 011)	Provides the parameters of spectrogram and a multi-signal RSSI required to properly monitor, identify and located interference signals. In addition to its capability of generating variable audible tones accordingly to the signal strength.
Channel Scanner (option 012)	Intuitive graphical representation of the signal's power for each of the 20 user-definable carriers (frequency or channels) allowing a fast identification of improper power levels.

Specifications

The JD746A has one of the best sensitivity and selectivity specifications. With its built-in preamplifier, measurements can be done as low as –155 dBm with a 1 Hz RBW.

Its low SSB phase noise allows detecting very low level spurs or noise signals which are close to the carrier. Its narrow (1 Hz) bandwidth ensures the identification of signals that are very close in frequency.

In addition, the narrow RBW means that the displayed noise level can be reduced, improving sensitivity. Its Auto Sweep time and Auto RBW/VBW allows an easy set up for a fast sweep time while ensuring accurate measurements.

- Frequency Range: 100 kHz to 4 GHz
- DANL (RBW 1 Hz, 1 GHz < fc < 2 GHz)
  –140 dBm
  –155 dBm with preamp
- Sweep Time
  10 ms to 1000 s
  6 µs to 200 s in zero span
- RBW: 1 Hz to 3 MHz
- VBW: 1 Hz to 3 MHz
- SSB Phase Noise
  –90 dBc/Hz @ 30 kHz
  –95 dBc/Hz @ 100 kHz
  –102 dBc/Hz @ 1 MHz

JD7105B

Base Station Analyzer

Specifications

The JD7105B specifications apply under the following conditions:

- After a warm up time of 30 minutes and two hours of operation temperature.
- The instrument is operating within a valid calibration period.
- The data with no tolerance is considered as typical values.
- The 'typical' or 'nominal' values are defined as follows:
  – Typical: Expected performance of the instrument operating under 20 °C to 30 °C after being at this temperature for two hours.
  – Nominal: A general, descriptive term or parameter.

Measurements

- Cable and Antenna Analyzer (Standard)
- Power Meter (Standard)
- GPS Receiver (Option 010)
- Interference Analyzer (Option 011)
- Channel Scanner (Option 012)
- Bias Tee (Option 013)

Applications

- GSM/GPRS/EDGE Signal Analyzer (Option 022)
- WCDMA/HSDPA Signal Analyzer (Option 023 for WCDMA, Option 024 for HSDPA)
- CDMA/CDMA2000 Signal Analyzer (Option 020)
- EV-DO Signal Analyzer (Option 021)
- Mobile WiMAX Signal Analyzer (Option 026)
- TD-SCDMA Signal Analyzer (Option 025)
- LTE Signal Analyzer (Option 028)
- E1 Analyzer (Option 002)

Spectrum Analyzer (Standard)

Frequency

Frequency range	100 kHz to 7.2 GHz

Internal 100 MHz Frequency Reference

Accuracy	±0.1 ppm (25°C ±5°C) + aging
Aging	±2.5 ppm/10years

Frequency Span

Range	0 Hz (Zero Span) 10 Hz to 7.2 GHz
Resolution	1 Hz

Resolution Bandwidth (RBW)

-3 dB bandwidth	1 Hz to 3 MHz 1-3-10 sequence
Accuracy	±10% (nominal)

Video Bandwidth (VBW)

-3 dB bandwidth	1 Hz to 3 MHz 1-3-10 sequence
Accuracy	±10% (nominal)

Single sideband (SSB) Phase Noise

Fc = 1 GHz, RBW 10 kHz, VBW 1 kHz, RMS detector

Carrier offset: 30 kHz	< -100 dBc/Hz
100 kHz	<-102 dBc/Hz
1 MHz	<-115 dBc/Hz

JD7108B

Signal Analyzer

Specifications

The JD7108B specifications apply under the following conditions.

- After 30 minute warm-up and then two hours of operation temperature.
- The instrument is operating within a valid calibration period.
- Data with no tolerance is considered as typical values.
- The 'typical' or 'nominal' values are defined as follows:
  Typical: Expected performance of the instrument operating under 20 °C to 30 °C after being at this temperature for two hours.
  Nominal: A general, descriptive term or parameter.

Measurements

Power Meter (Standard)
GPS Receiver (Option 010)
Interference Analyzer (Option 011)
Channel Scanner (Option 012)

Spectrum Analyzer (Standard)

Applications

GSM/GPRS/EDGE Signal Analyzer (Option 022)
WCDMA/HSDPA Signal Analyzer (Option 023 for WCDMA, Option 024 for HSDPA)
cdmaOne/CDMA2000 Signal Analyzer (Option 020)
EV-DO Signal Analyzer (Option 021)
TD-SCDMA Signal Analyzer (Option 025)
Mobile WiMAX Signal Analyzer (Option 026)
LTE Signal Analyzer (Option 028)

Frequency

	Supplemental Information
Frequency range	100 kHz to 7.2 GHz

Internal 100 MHz Frequency Reference

Accuracy	±0.1 ppm (25°C ±5°C) + aging
Aging	±2.5 ppm/10years

Frequency Span

Range	0 Hz (Zero Span) 10 Hz to 7.2 GHz
Resolution	1 Hz

Resolution Bandwidth (RBW)

–3 dB bandwidth	1 Hz to 3 MHz	1-3-10 sequence
Accuracy		±10% (nominal)

Video Bandwidth (VBW)

–3 dB bandwidth	1 Hz to 3 MHz	1-3-10 sequence
Accuracy		±10% (nominal)

Single sideband (SSB) Phase Noise

Fc = 1 GHz, RBW 10 kHz, VBW 1 kHz, RMS detector

Carrier offset: 30 kHz	< –100 dBc/Hz
100 kHz	<–102 dBc/Hz
1 MHz	<–115 dBc/Hz

Measurement Range

	DANL to +30 dBm
Input attenuator range	0 to 55 dB, 5 dB steps

Maximum Safe Input Level

Average continuous power	+ 36 dBm; 3 minutes maximum	Nominal
DC voltage	±50 VDC	