AXS-200/630

part of the SharpTESTER Access Line

NETWORK TESTING–ACCESS

VDSL2, ADSL2+ and IP services tester for triple-play deployments

Based on industry-leading Broadcom DSL chipset for proven VDSL2 and ADSL2+ interoperability and support for impulse noise protection (INP) and Broadcom PhyR™ configurations.

Features/Benefits

- Affordable triple-play testing over VDSL2 and ADSL1/2/2+ including Ethernet in/out operation for FTTx deployments

- DSL, IPTV and VoIP service assurance using a comprehensive range of metrics such as DSL link speeds, multilayer fault analysis histogram, MDI as well as IP packet loss and jitter

- VDSL2 and ADSL2+ Annexes A, B, L and M support for ultimate network flexibility

Applications

- Detection of potential bottlenecks on subscriber loops to ensure high-quality, consistent and error-free triple-play services (IPTV, Internet and VoIP)

- IPTV analysis using STB emulation, RFC 4445 (MDI), PCR jitter and PID viewer results

- Triple-play deployment verification inside the subscriber premise using Ethernet in/out testing

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Telecom Test and Measurement

EXFO
EXPERTISE REACHING OUT

VDSL2 and ADSL2+ Triple-Play Services Testing

Get VDSL2 and ADSL1/2/2+ interoperability and backward-compatibility in a single test set thanks to EXFO's AXS-200/630 module for the AXS-200 SharpTESTER. Featuring the industry-leading Broadcom chipset, the AXS-200/630 provides you with a wide range of measurements so that no matter what stage of DSL deployment you are at–prequalification, installation, troubleshooting or repair–you have all the measurement tools you need to get the job done efficiently and properly.

Part of the SharpTESTER Access Line, the AXS-200/630's bright color LCD display provides a sharp graphical user interface for showing clear results (including graphs), making it a straightforward, user-friendly test solution, perfect for triple-play services analysis. Designed for real-life testing conditions, the AXS-200/630's display is ideally suited for use in direct sunlight thanks to its transflective color display.

512 MB internal memory;
USB port for additional results storage

Status LEDs: no need to look at the display for activity and pass/fail assessment

Transflective color display allow users to view straightforward, pass/fail-based results screen in direct sunlight

Help button for immediate contextual help screens

Quick Test start/stop button, reducing menu navigation and saving valuable time

You need VDSL2 and Ethernet to deliver HD IPTV

VDSL2's high-speed capability not only breathes new life into your existing copper plant but it allows you to reduce churn and gain market share in delivering triple-play services to your customers. High-definition (HD) IPTV service is the killer application for VDSL2 deployment as it requires the most bandwidth and the best quality of service (QoS) that your customers have come to expect.

EXFO's AXS-200/630 offers a quick, yet thorough method for testing triple-play services–VDSL2 and Ethernet-based data, VoIP and IPTV testing–using pass/fail-driven automated functionalities.

In addition to validating connectivity to the DSLAM, the AXS-200/630 provides upstream and downstream parameters such as actual data rates, attenuation and noise margin. What's more, it delivers advanced IPTV measurements–packet jitter, packet loss, PCR jitter, MDI, PID viewer and IGMP zap time–both in Terminate (stand-alone) and Through mode operation. The AXS-200/630 also monitors residential VoIP call flow and statistics, facilitating VoIP QoS assurance.

Simultaneous detection of multicast (RTP/UDP), unicast (RTP/UDP) and TCP/RTSP VOD streams.

IPTV Test Results screen showing PID Viewer.

Test Results screen showing stream parameters such as MDI.

Impulse Noise Protection +

You need to provide your customers with comprehensive assurance against poor triple-play services. With this in mind, the telecom industry has adopted the DSL-based impulse noise protection (INP) parameter, which is particularly important when deploying IPTV services based on VDSL2 and ADSL2+. For example, the INP helps reduce the amount of macro-blocking in an IPTV stream caused by short duration and intermittent impulse noise spikes. However, the downside of standard INP implementation is that it can limit the speed of VDSL2 (or ADSL2+) offered to customers as well as the addressable service area (distance).

The AXS-200/630 supports the traditional INP parameter as well as Broadcom's innovative approach to INP called PhyR™. This technology allows for significantly lower BER, higher DSL rate and longer reach compared to standard INP implementations. As a result, the AXS-200/630 can be used to verify and ensure consistent QoS for DSL-based IPTV deployments without impacting speed or performance of the DSL link.

DSL Results screen.

True Backward-Compatible and Interoperable Testing

Since the AXS-200/630 is based on the industry-leading Broadcom chipset, you are assured of excellent interoperability for VDSL2 and ADSL2+ when testing against other Broadcom chipset-based devices as well as other manufacturer chipsets.

Thanks to the AXS-200/630's Broadcom chipset, you can use the Broadcom's Nitro mode when testing ADSL2+ to effectively negotiate with DSLAM (also using a Broadcom chipset) in order to achieve data rates as high as 30 Mbit/s (depending on DSLAM setup, loop length, noise influences and circuit quality).

ADSL2+ Test Results screen.

VDSL2 Test Results screen.

Key Features

INP and PhyR™	Supports Broadcom's PhyR™ functionality and legacy impulse noise protection parameters
User-definable automated test routines	Presents easy-to-interpret pass/fail results
FTTx support	Enables DSL and 10/100 Mbit/s Ethernet assessment of triple-play services in Terminate and Pass Through mode
IPTV analysis	Provides key IPTV qualification parameters with features such as set-top box (STB) emulation, join/leave requests, PCR jitter analysis and PID viewer
MDI reporting	Supports media delivery index (RFC 4445) for evaluating the IPTV quality of experience
VoIP analysis	Ensures VoIP services are not affected by packet loss or jitter
Data analysis	Offers a common set of measures such as ping, traceroute, HTTP speed testing and FTP speed testing to ensure reliable and consistent Internet connectivity
Multilayer fault analysis histogram	Visually indicates when and at what layer errors are occurring, helping to identify the source of the problem as well as facilitating quick and efficient troubleshooting

xDSL/Triple-Play Testing Specifications

VDSL2 VTU-R-MODULE

Chipset	Broadcom
Standard Compliance	
VDSL2	ITU-T G.993.2
ADSL1/2/2+	Annex A option (over POTS): ITU-T G.992.5 (ADSL2+), ITU-T G.992.3 (ADSL2), ITU-T G.992.1 (G.DMT) and ANSI T1.413 Issue 2
	Annex B option (over ISDN): ITU-T G.992.5 (ADSL2+), ITU-T G.992.3 (ADSL2), ITU-T G.992.1 (G.DMT) and UR2 Annex L (RE-ADSL) and Annex M are also supported
DSL measurements (upstream and downstream)	Maximum attainable bit rates
	Actual achieved bit rates
	Latency mode: fast, interleaved
	Capacity
	Signal-to-noise ratio (SNR) margin
	Output power
	Attenuation
	Carrier load (bits/bin)
	Interleave depth
	Interleave delay
	Trellis coding
	Bit swapping
Miscellanous functions/measurements	PhyR™ and INP support
	ATM F4 and F5 OAM loopback (ADSL1/2/2+ modes only)
	Link errors FEC, CRC, HEC
	Loss of sync counter
	VDSL2 per band information

IPTV-OVER-DSL/ETHERNET TESTING

Physical-layer support	VDSL2
	ADSL1/2/2+
	Ethernet 10/100
Supported video compression/standards	MPEG2, MPEG4 part 2 and 10 (H.264/AVC), WM9
Operation	Terminate and Pass Through
IPTV parameters/functionality	Video streaming (channels) detection
	IGMP join/leave requests with STB emulation
	Bandwidth usage per channel
	IGMP packets information
	Set-top box (STB) traffic/setup information
	Key IP video QoS parameters: packet loss, packet jitter, zap time, PCR jitter, PID statistics
	Media delivery index (MDI) showing delay factor, media loss rate and virtual buffer
	QoS pass/fail indicators
	Graphic results: bandwidth usage and multilayer fault analysis histogram
	IP packet and PCR jitter histograms
	Multicast/unicast RTP/UDP IP stream support
	TCP/RTSP VOD support
	Multiple downstream PVC in ATM mode for IPTV
IP connectivity support	DNS, DHCP client/server, NAT, VLAN

VoIP-OVER-DSL/ETHERNET TESTING

Physical-layer support	VDSL2
	ADSL1/2/2+
	Ethernet 10/100
Recognized signalling protocol	Session initiation protocol (SIP) v2 (RFC 3261)
Operation	Pass Through
Recognized codecs	G.711, G.729, G.726, G.723
VoIP parameters/functionality	Call monitoring/analysis/statistics
	Call flow
	Key VoIP QoS parameters: packet loss, packet jitter
	QoS pass/fail indicators
	Graphic results: delay distribution, jitter histogram
IP connectivity support	DNS, DHCP client/server, NAT, VLAN

Specifications (continued)

DATA ANALYSIS MODE

Physical-layer support	VDSL2 ADSL1/2/2+ Ethernet 10/100	
Encapsulation methods	PPPoE (RFC 2516), RFC 2684 supporting bridged Ethernet (IPoE), IPoA (RFC 1577), PPPoA/LLC and PPPoA/VC-MUX (RFC 2364)	
Operation	Terminate and Pass Through	
Login format	Username and password using PAP or CHAP	
IP connectivity support	DNS, DHCP client/server, NAT, VLAN	
Ping	Pings another device on the network	
	Ping device:	Gateway, destination IP address or URL
	Number of pings:	1 to 99
	Packet size:	32 to 1500 bytes (32 is default)
	Results:	Indicate packet size, packets sent/received, minimum/average/maximum round-trip times in milliseconds (ms)
Traceroute	Determines the path used to reach device on the network	
	Timeout:	In seconds
	Time to live (TTL):	Default is 100 ms, maximum is 5 s
	Packet size:	32 bytes
	Number of hops:	1 to 30 (default is 30)
	Results:	Indicate IP address of hop and round-trip time in milliseconds (ms)
HTTP speed test	Downloads a Web page and indicates speed of download	
	Address:	IP or URL
	Protocol:	HTTP
	Results:	Time, speed in kbit/s
FTP speed test	Displays speed to upload and/or download a file	
	Address:	IP or URL
	Protocol:	FTP
	Results:	Time, speed in kbit/s

GENERAL SPECIFICATIONS

Module size (H x W x D)	283 mm x 125 mm x 92 mm	(11 $^1/_8$ in x 4 $^{15}/_{16}$ in x 3 $^5/_8$ in)
Module weight (with battery)	1.1 kg	(2.4 lb)
Temperature		
operating	0 °C to 50 °C	(32 °F to 122 °F)
storage	−20 °C to 60 °C	(−4 °F to 140 °F)
Humidity	5 % to 95 % relative, non-condensing	
Power supply		
input	100-240 VAC at 1.8 A, 50 Hz to 60 Hz	
output	18-24 VDC at 3.33 A to 2.50 A, 60 W	
Battery	Internal rechargeable Li-Ion battery, with battery state indication	
Test connections	RJ-45 for ADSL2+ and Ethernet 10/100 WAN	
	RJ-45 for Ethernet 10/100 LAN	
Differential voltage protection	125 VRMS or 400 VDC max	
Common mode voltage protection	1000 VRMS	
Self-test	Routine on power-up	
Results storage	128 Mbytes	
Languages	English, French, German, Spanish, Chinese (Simplified)	

STANDARD ACCESSORIES

Hand strap, Certificate of Compliance
ACC-RJTC: Test Cable: RJ-45 to telco clip
ACC-RJRJ: RJ-45 Ethernet cable

ORDERING INFORMATION

AXS-630-XX-XX

Model
AXS-630 = VDSL2, ADSL2+ and IP Triple-Play Test Set

DSL module
V2XA = VDSL2 with ADSL2+ Annex A
V2XB = VDSL2 with ADSL2+ Annex B

Example: AXS-630-V2XA-TPP-BUNDLE

DSL Software Options
00 = Without software ugrade
MDI = Media delivery index [a]
ADSL2+M = Annex M support
TPP-BUNDLE = Triple-play bundle (IPTV, VoIP and data analysis support)

Note
a. Available only if TPP-BUNDLE is selected.

Rugged Handheld Solutions

OPTICAL
— OTDRs
— OLTSs
— Power meters
— Light sources
— Talk sets

COPPER ACCESS
— ADSL/ADSL2+, SHDSL, VDSL test sets
— VoIP and IPTV test sets
— Ethernet test sets
— POTS test sets

Platform-Based Solutions

OPTICAL FIBER
— OTDRs
— OLTSs
— ORL meters
— Variable attenuators

DWDM TEST SYSTEMS
— OSAs
— PMD analyzers
— Chromatic dispersion analyzer

TRANSPORT AND DATACOM
— Next-generation SONET/SDH and OTN testers
— SONET/DSn (DS0 to OC-192) testers
— SDH/PDH (64 kbit/s to STM-64) testers
— T1/T3, E1 testers
— 10/100 Mbit/s and Gigabit Ethernet testers
— Fibre Channel testers
— 10 Gigabit Ethernet testers

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