

JDSU Acterna SmartClass Home Specs Provided by www.AAATesters.com

SmartClass™ Home v3

Inside Wiring and Networks Service Meter



The SmartClass Home v3 handheld service meter enables verification of high-speed digital subscriber line (ADSL-VDSL2) and Home Phoneline Networking Alliance (HPNA) networks as well as the internal wiring at the customer premises for proper operation of voice, video, and data services. Use the SmartClass Home to test xDSL to the side of the premises, HPNA inside the premises, as well as the coax and twisted pair wiring inside of the subscriber's location. The SmartClass Home provides an easy-to-use, accurate, and economical measurement tool for service technicians who install or troubleshoot triple-play services over existing or

The SmartClass Home includes a unique set of features to completely qualify the subscriber's premises for triple-play services that use xDSL and HPNA technologies as well as the physical media to deliver communication signals throughout the site. Technicians can use the Coax Map feature and the Noise Immunity Test to assess quality and to troubleshoot issues in a coax network. The Active ID can delineate multiple runs of coax in the building even through coaxial splitters. They can use the integrated wiring tools to qualify twisted pairs, including Cat3, Cat5, Cat5e, and Cat6 cables. The SmartClass Home saves time and effort in verifying and troubleshooting inside wiring problems before subscribers notice them.

The SmartClass Home also includes a unique feature set for testing Ethernet data networks in residential and small-to-medium-sized business (SMB) locations. The built-in 802.11b/g wireless feature ensures correct WiFi functionality in and around subscriber locations. Additional features include a fully functional built-in butt-set that can test POTS voice delivery along with wiring identification and toning to locate and identify cables. Combined with an easy-to-use menu structure, the features of the SmartClass Home represent the best all-in-one service and wiring tester available.

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VDSL (Single Pair) Pass 87%

Pair1: **Showtime** Sync: 23 UpTime: 6

| Results | Up | Down |
|----------------------|------|-------|
| Actual Line Rate (K) | 7767 | 82374 |
| Max Line Rate (K) | 7767 | 85437 |
| Capacity (%) | 100 | 96 |
| Noise Margin (dB) | 6.0 | 9.9 |
| Attenuation (dB) | 0.9 | 0.0 |
| Est. Length (Kft) | -- | 0.0 |

SAVE **ERRORS** **ABORT**

VDSL synch rates help the user determine if service can be maintained properly at the subscriber's location

xDSL testing

The SmartClass Home has a built-in ADSL through VDSL2 mode single or bonded pairs, similar to the one built into the gateway or xDSL modem, allowing it to synch up with Line Access Multiplexer (DSLAM) and establish the best connection rates. Determining what the subscriber's drop can occur because various disturbers can be present on it. With the SmartClass Home v3 can perform measurements of connection and display rates. Also, while maintaining an xDSL synch Home will show whether xDSL errors have occurred on the Home. These results let technicians best determine if the subs carry bandwidth-intensive services such as video, voice, and connection or if they must perform additional troubleshooting.

VDSL (Pairs) Pass 84%

Pair1: **Showtime** Sync: 36 UpTime: 41
Pair2: **Showtime** Sync: 48 UpTime: 26

| Results | Up | Down |
|----------------------|-------|--------|
| Actual Line Rate (K) | 15089 | 100000 |
| Max Line Rate (K) | 15197 | 158920 |
| Capacity (%) | 99 | 62 |
| Lapse Time (sec) | 15 | |

SAVE **ERRORS** **Pair1&2** **ABORT**

Bonded test results can be viewed as an aggregate or individually

HPna network testing

HPNA, a technology standard developed by Alliance, the built on Ethernet and allows all the components of a home to pass information around a home to other HPNA-capable devices, or nodes, operating in spectral mode B.

Establishing itself as a network node on a live HPN Class Home to test each of the various nodes on the allows users to segment problem node paths, node-to-node issues, or to verify correct functionality of the whole network. Home lets users verify that HPNA networks are operating quality metrics and set up Pass/Fail limits to help simp

HPNA Pass 84%

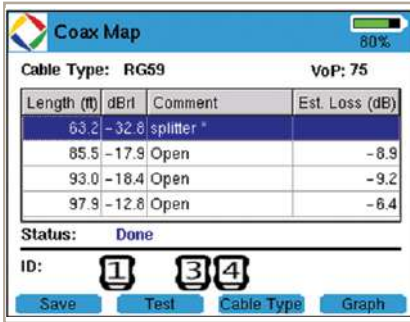
Network Test

| Segment ID -> ID | Rate, Mod Mbps | PER | SNR (dB) | Rx pwr (dBm) |
|------------------|----------------|----------|----------|--------------|
| 3 -> 2 | 128, 16/8 | 0.00e+00 | 44.02 | -18.96 |
| 3 -> 1 | 96, 16/6 | 0.00e+00 | 36.76 | -33.18 |
| 2 -> 3 | 128, 16/8 | 0.00e+00 | 42.38 | -4.81 |
| 2 -> 1 | 112, 16/7 | 0.00e+00 | 41.21 | -3.40 |
| 1 -> 3 | 112, 16/7 | 0.00e+00 | 38.34 | -21.42 |
| 1 -> 2 | 112, 16/7 | 0.00e+00 | 44.26 | -4.37 |

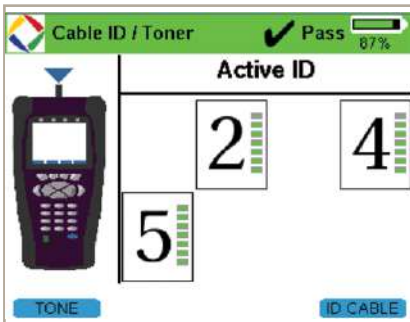
SAVE **REFRESH** **STATS**

HPNA testing lets users test network metrics between HPNA nodes to verify or troubleshoot HPNA networks

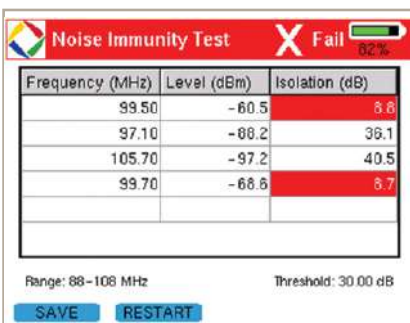
3



The Coax Map test lets technicians locate and trouble-shoot problematic segments of coaxial cable



Cable ID mode with Active IDs enables technicians to identify connections for each segment of coaxial cable



The NIT helps users locate isolation issues in coax cable to identify which legs contain faults that could allow ingress into the coax network

Coaxial Cable testing

Coax is gaining popularity as the medium of choice for applications in and around customer premises. Whether the service is for video, data over coax technologies, or whole-home digital services, the SmartClass Home can ensure proper connection to the plant. The SmartClass Home also helps technicians detect and locate coaxial elements such as hidden splitters, bad barrels, and

Coax map

The Coax Map feature of the SmartClass Home is a layer test based on frequency domain reflectometry (FDR), a technique used in analyzing RF transmission lines. The Coax Map test measures the quality as it passes through the transmission line by identifying reflections that cause standing waves.

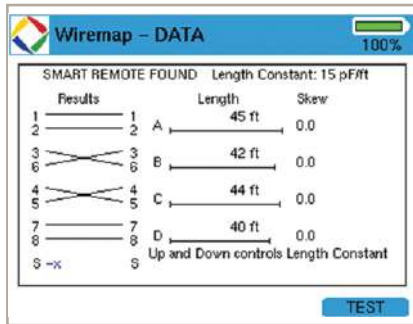
Coax active identification

The SmartClass Home helps technicians quickly identify which room in a house. Using the Cable ID mode, technicians can wire endings for each room with a coax run. A common issue is an unexpected splitter exists in the middle of the coax run. The SmartClass Home work through splitters to help technicians locate the wall outlet or outlets that are connected to the coax.

noise immunity test

The Noise Immunity Test (NIT) provides good indication of shielding issues. Problems arise when the inside coax has a hole, an exposed stinger, or an unterminated end providing a technician's chance of catching impairments before subscriber service degradation. The NIT measures the signal strength and compares it to the same measurement on the coax to off-air ingress.

4



Twisted Pair Wire Map helps technicians find impairments and incorrect wiring in phone and Ethernet cables

twisted Pair testing

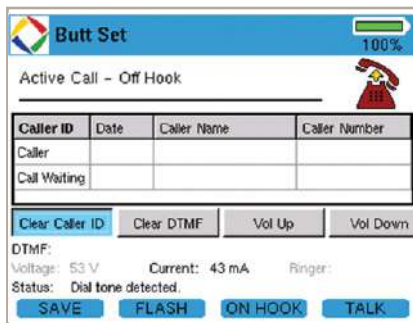
The SmartClass Home provides a suite of twisted pair and wiring of POTS and Ethernet

twisted Pair Wire mapping

The Twisted Pair Wire Map provides details about the cable opens and shorts, skew, and the connection mapping of the SmartRemote. This information lets technicians quickly locate connections and the presence of physical layer issues. It maps different types of twisted pair cables such as Cat5/5e/6 or Cat3 phone wiring.

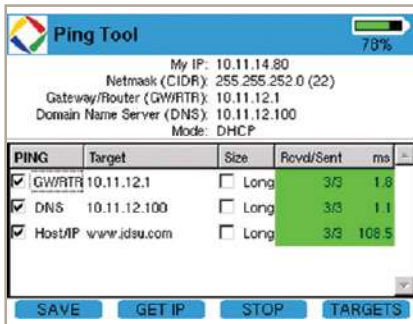
Butt-Set

The SmartClass Home has a built-in butt-set with speakerphone. Technicians quickly verify voice communications and troubleshoot POTS issues. Results indicate voltage and current on the line as well as the status of the POTS line. Technicians can store a call log for easy dialing. The butt-set provides call waiting and for incoming calls. The speakerphone lets technicians listen and talk during calls without a separate headset.

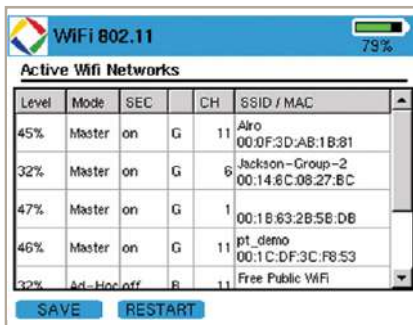


The built-in butt-set lets technicians verify and troubleshoot POTS voice issues

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Ping mode lets technicians verify connectivity around and outside the customer premises



Wireless 802.11b/g test lets users verify that the subscriber's wireless network will work at a particular location or troubleshoot wireless 802.11b/g connectivity issues

ethernet

The SmartClass Home includes a suite of Ethernet tests that quickly identify connectivity issues on customer premises connected to the network.

Port Discovery

The Port Discovery test displays the established connection between the SmartClass Home and a router. It also shows the signal-to-noise ratios (SNRs) of each active twisted pair and helps technicians pinpoint connection issues between the customer premises and router.

Ping

Ping tests let technicians verify network connectivity to a particular location can reach either the Internet or a specific IP (IP) or Universal Resource Locator (URL) address. This test helps technicians avoid using customer equipment for connectivity tests.

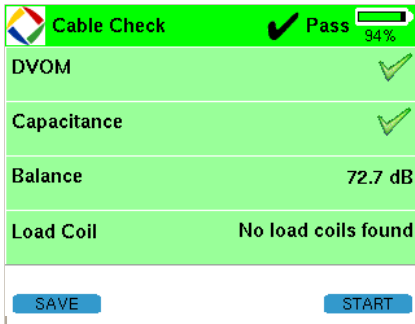
Hub Flash

Hub Flash test is an additional Ethernet test available for locations with multiple Ethernet ports on a single device. The Hub Flash will cause the port light to flash, indicating that the SmartClass is connected. This test lets technicians quickly determine which port is connected.

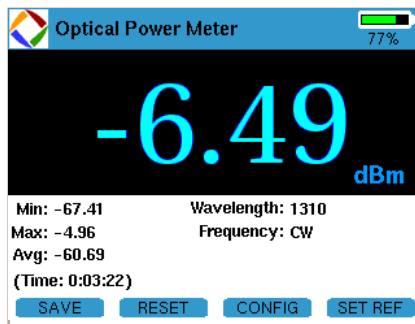
Wireless 802.11b/g

The SmartClass Home provides optional WiFi wireless capabilities to show the secure set identification (SSID), configured modulation, mode, and signal strength at the test location. The 802.11b/g network in the area. It also indicates whether the network is vulnerable to security threats. This capability lets technicians troubleshoot wireless connectivity and websurfing speed.

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Cable check test results



The OPM ensures that fiber cable attenuation falls within pass/fail limits



File Manager is used to rename, delete, or export result files from the SmartClass unit

Copper

The SmartClass Home provides an automatic one-button with Pass/Fail results for important copper test parameters, that produce a high level of noise and interference. quence, SmartClass Triple-Play Service (TPS) users can secure accurate with minimal training and identify obvious copper faults, such as a or copper loops that are too long. Basic tests include digital balance, and load coil, which eliminate technicians having

Fiber

Field technicians can use the SmartClass Home together USB Optical Power Meter (OPM) for various fiber (FTTx) installations that fiber cable attenuation falls within Pass/Fail limits before optical network transport (ONT).

File manager/Job manager

Users can save the results for almost all tests for arch unit save the results in the common.csv format which can be opened using various spreadsheet and other applications. Files can be exported storage bus (USB) flash storage device. The SmartClass Home can of result files that can be removed, renamed, and exported from the unit easily using the built-in File Manager application.

Specifications and Features

available Configurations

xDSL synch, HPNA testing, Physical layer testing (coax and twisted pair), Ethernet, Butt-Set, Wireless 802.11b/g WiFi

Physical test interfaces

Coax F-connector for coax mapping, NIT, and HPNA
 RJ11 for POTS and HPNA testing
 RJ11 for phone wiring and dry pair testing
 RJ45 for Cat5/6 wiring and Ethernet testing
 RJ45 for VDSL line testing
 RJ45 for through mode VDSL testing
 Connector LEDs for easy connector identification

xDSI

test interface

ADSL/VDSL2

Single/Bonded

modem Chipset

Broadcom 96368

vDSI Standard Compliance

ITU-T G.993.2VDSL2 Annex A, B

Profiles; 8a/8b/8c/8d, 12a/12b,17a

Band Plan 997 and 998, u0 Band

aDSI Standard Compliance

ITU-T G.992.1 A, B (G.DMT)

ITU-T G.992.3 A, B, L (ADSL2)

ITU-T G.992.5 Annex A, B, M (ADSL2+)

ANSI T1.413-1998, Issue 2

ITU-T G.992.5 INP Amendment 3

Physical Layer Features

Link state

Actual line rate

Maximum line rate

Capacity

Noise margin

Est. length

Bonded Pair Features

Actual line rate

Maximum line rate

Capacity

Lapse time

xDSL Errors (displays the number of occurrences)

Forward error correction (FEC)

Cyclic redundancy check (CRC)

Severely errored frame (SEF)

Loss of sight (LOS)

Line errors

HPna

Coppergate CG3110 Chipset

Supports only Spectral Mode B: 12-28 MHz;
 2, 4, 8, 16 MBauds

Standard Compliance

ITU-T G.995.4

Settings

Configurable Host of Client mode

Configurable Band plan

Configurable IP settings

General Connection Status

Link status

Operating mode

HPNA version

Device list including indication of test set and host

Device MAC identification

HPNA Network Results

Segment specific rate, constellation, and baud

Segment specific packet error rate (PER)

Segment specific SNR

Segment specific receive power

Cable ID and toning

Cable ID Features

Supports coax, Cat3/Cat5/Cat6 cable

Test via F-connector, RJ11, or RJ45

Supports 8 ID devices on each interface

toning Features

Sends four types of tones on all leads

Constant High pitch (976 Hz)

Constant Low pitch (651 Hz)

High pitch then a low pitch

Low pitch with a short high pitch

Coax mapping

Settings

Support any cable coax type with configurable velocity of propagation (VOP) and cable compensation

Features

Measures cable length in feet (up to 500 ft at ± 5 ft)

Measures return loss in dBrl (up to 20 dBrl at ± 2 dB)

Cable events identified

Open, splitter, low-quality splitter, barrel/splice

noise immunity test

Features

Measures cable shield isolation vs. settable threshold (def 30 dB)

Specifications

Test frequency of 88 to 108 MHz

active identification

Features

Identifies coax cables through most coax network elements

Identifies multiple IDs attached to the branch of coax being tested

Specifications

IDs with up to 15 dB of signal loss between unit and ID

Wiring tool

General Features

Supports Cat3, Cat5/6, coax cable

Detects power present on cables being tested

Measures cable length based on capacitance setting

Detects opens, shorts, and crossed pairs and display wires mapping

Dry Pair

General Features

Identifies resistive opens and shorts on dry twisted pair

Reports AC voltage presence or DC voltage presence on dry twisted pair (up to 120 VDC, 120 Vrms AC)

Copper test

Test Range Resolution Accuracy

AC Volts 0 – 300 Peak 1 V 2% ± 1 V

DC Volts 0 – 300 1 V 2% ± 1 V

(VDC + Peak AC)

r resistance

0 – 999 W 1 2% ± 2.5 W

1 – 9.99 kW 10 2% ± 2.5 W

10 – 99.9 kW 100 2% ± 2.5 W

100 – 999 kW 1 k 2% ± 2.5 W

1 – 9.9 MW 10 k 6.5% ± 2.5 W

10 – 100 MW 100 k 6.5% ± 2.5 W

leakage

0 – 999 W 1 2% ± 2.5 W

1 – 9.99 kW 10 2% ± 2.5 W

10 – 99.9 kW 100 2% ± 2.5 W

100 – 999 kW 1 k 2% ± 2.5 W

1 – 9.9 MW 10 k 6.5% ± 2.5 W

10 – 100 MW 100 k 6.5% ± 2.5 W

Distance to Short

0 – 30 k ft/10 km 1 ft/1 m

Capacitance/opens

0 – 2,999 ft/999 m 1 ft/0.1 m 2.5% ± 45 pF

0 – 44.9 nF

3 k ft/1 km – 66 k ft/20 km 1 ft/0.1 m 2.5% ± 45 pF

45 nF – 1.04 m

DC Current

1 – 110 mA 1 mA $\pm 2\% \pm 1$ mA

Longitudinal Balance

35 – 70 dB 1 dB 2 dB

Good Ground Check to verify Longitudinal Balance results

load Coil Counter

0 – 27 k ft/8230 m up to 5 ± 1

WiFi

Features

Detects all available WiFi (802.11b/g) networks

Reports power level, operating mode, security setting, 802.11 version, channel, SSID, and MAC

ethernet testing

Features

Supports 10/100 Mbps testing over RJ45 interface

Port Discovery

Identifies Ethernet setting on port

Displays link rate

Reports pair skew

Reports frequency offset in ppm

Ping test

Supports manual or DHCP IP configuration

Reports packets sent and received

Reports average test packet delay

Specifications and Features (Continued)
Butt-Set
North American POTS Butt-Set Only
Features

Supports loop start dial tone POTS testing on twisted pair
 Supports receiving a call
 Supports line monitor mode with DTMF decode
 Supports caller ID, call waiting, with caller ID errors
 Microphone and speakerphone support
 Measures voltage from 0 to 105 V, $\pm 4\%$
 Measures loop current from 14 to 108 mA $\pm 4\%$

General
Power Supply

Field replaceable, rechargeable lithium ion battery
 Operating time approximately 4.5 hrs continuous (typical)
 Charging time, internal 4-5 hrs from empty to full charge
 DC input 12 V, 1.25 A
 100/240 V, 50/60 Hz auto-sensing AC adapter for line operation and charging

Permissible ambient temperature

Nominal range of use -5 to $+50^{\circ}\text{C}$ (23 to $+120^{\circ}\text{F}$)
 Storage and transport -30 to $+60^{\circ}\text{C}$ (-22 to $\pm 140^{\circ}\text{F}$)

Humidity

Operating humidity 10 to 80% RHNC

Physical Specifications

4 in 320x240 high visibility color display
 USB 2.0 interface for upgrades and data transfer
 Full telephone keypad for fast access and dialing

ordering information

| model | Part number | Description |
|----------------------|--------------|---|
| SmartClass Home V3 | SC-Home-V3 | xDSL, HPNA, and inside wiring test tool for coax and twisted pair with included butt-set, WiFi, and Ethernet verification tools |
| SmartClass Home HPNA | SC-Home-HPNA | HPNA, and inside wiring test tool for coax and twisted pair with included butt-set, WiFi, and Ethernet verification tools |

accessories

| | | |
|-----------------|----------------------------------|--|
| Active IDs 1-8 | SC-HOME-IDSET-V3 CB-5CLIP-BON | Active IDs 1-8 for identifying single or multiple coax run locations. Works through splitters. RJ-45 to telco clips (5) bonded DSL cable CB Bonded RJ to RJ bonded DSL cable |
| 6-pin Banjo | SCHM6PINADAPTER | 6-pin adapter—6-pin banjo—Breaks out POTS connection for use with alligator clips |
| Toning Wand | SCHMTONERTRACER | Toner Tracer wand TT100 |
| Vehicle Charger | SCHMCARCHGR 12 | VDC vehicle charger adapter |

replacement accessories

| | | |
|------------------------|------------------|--|
| | SCDVOMTELCOCLIPS | DVOM Mini Banana to telco clips |
| Coax Resistive IDs | SCHMCOAXRESID | Replacement coax resistive IDs 1-8 for locating single coax runs |
| Active IDs 1-8 | SC-HOME-IDSET-V3 | Active IDs 1-8 for identifying single or multiple coax run locations. Works through splitters. |
| Ethernet Resistive IDs | SCHMRJ45RESID | Replacement RJ45 resistive IDs 1-8 for locating single Ethernet runs |
| Phone Resistive IDs | SCHMRJ11RESID | Replacement RJ11 resistive IDs 1-8 for locating single POTS runs |
| Phone Patch Cable | SCHMRJ11 PATCH | Replacement RJ11 8-in patch cable |
| Ethernet Patch Cable | SCHMRJ45PATCH | Replacement RJ45 12-in patch cable |
| Phone to Coax Adapter | SCHMRJ11TOCOAX | Replacement RJ11-to-coax adapter cable for toning |
| Strand Hook | SCHMSTRANDHOOK | Replacement Stand Hook—clip to hold or hang unit |
| Smart Remote | SCHMSMARTREMOTE | Replacement SmartRemote—yellow RJ11 and RJ45 used to map out twisted pair connections |
| NIT Antenna | SCHMANTENNA | Replacement antenna for NIT calibrating off-air FM frequencies |
| Large Carrying Case | SC-HOME-BAG-V3 | Replacement large carrying case for unit and accessories |
| Replacement Battery | SCHMLIONBATT4 | Standard lithium ion battery for replacement or spare |
| Replacement Charger | SCHMCHARGER | Replacement AC charger—power supply and cable |
| Replacement Sleeve | SCHMSLEEVE | Replacement protective canvas sleeve to cover the unit |

Test & Measurement Regional Sales

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|---|--|---|---|--|
| north america tel : 1 866 228 3762 fax : +1 301 353 9216 | latin america tel : +1 954 688 5660 fax : +1 954 345 4668 | asia pacific tel : +852 2892 0990 fax : +852 2892 0770 | emea tel : +49 7121 86 2222 fax : +49 7121 86 1222 | www.jdsu.com/test |
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