DLS 8100

VDSL Wireline Simulator

SPIRENT Communications

SPECIFICATIONS

The DLS 8100 is Spirent Communications DLS Systems latest wireline simulator. Designed specifically for testing VDSL equipment up to 30 MHz, the DLS 8100 is the only product on the market capable of providing the necessary bandwidth, along with full simulation of propagation delay, phase and attenuation effects.

Delivering high-speed data, voice and video to a subscriber over a single pair of wires requires pushing the limits both of circuit design and algorithms for data compression, error correction, and echo cancellation. You can test these features, and more, with the DLS 8100. To ensure that your test data carries the weight it deserves, the DLS 8100, as with all DLS Systems simulators, is compliant to national and international standards.

The DLS 8100 combines simulation of the DC path and the VDSL signal path. The unit is fully bi-directional, with all cable characteristics being accurately simulated. Using a unique circuit design, the DLS 8100 realistically simulates real cable without the inherent limitations of digital signal processing. The DLS 8100 reproduces all balanced impedance, propagation delay, phase, and attenuation effects, giving you precise, accurate testing for all your applications. The unit has been designed to ensure that the effects of bridged taps, mismatches, and reflections are all present.

In designing the architecture of the DLS 8100, DLS Systems has applied the experience acquired from 15 years in the simulation industry. You get a solid test platform from a company you can trust to deliver the very best.

The DLS 8100 control software is PC based and links the PC to the DLS 8100 via an IEEE 488 or RS-232C interface. With easy to read visuals and pull down menus, the DLS 8100 software makes setting up a desired loop quick and easy.

The DLS 8100 simulates the VDSL0 or Null loop, VDSL1 loop, and the VDSL1 loop with bridged tap in conformance to the ANSI Draft Technical Report on System Requirements for VDSL (VDSL SR:98-043R6).

Loop VDSL0, or null loop, uses relays to create a zero length loop allowing the performance of the null test.

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Loop VDSL1 simulates twisted pair wire type TP1 and TP2, as defined by the ANSI committee. TP1 is similar to USA standard 26 AWG cable and European 0.4 mm cable, while TP2 is similar to USA standard 24 AWG cable and European 0.5 mm cable. The loop can be incremented from 700 – 5150 ft in 50 ft steps or extended out to 8150 ft in 50 ft steps.

Loop VDSL1 with Bridged Tap simulates the VDSL1 loop for TP1 and TP2 as defined by the ANSI committee, with the addition of a 50 ft bridged tap at one end. This simulates the cable topology often found on user's premises.

Extended Noise Injection ports are available for the input of Common Mode noise and Differential Mode noise, at either end of the simulated loop.

All That You Need

- Remote operation makes the unit quick and easy to use
- DC path allows testing of remote powered units
- Full parameter simulation gives high fidelity to signal reflections and mismatch effects
- High dynamic range accommodates all types of VDSL modems
- Low noise design means high quality simulation
- Flexible design accommodates external noise injection
- Conformance to ANSI standards
- Test all VDSL access equipment
- Linecode independent simulation
- Architecture allows full bi-directional testing

Technology

Cable simulation using AC coupled active circuitry and a separate DC/POTS path.

Cable length simulated:	700 ft to 5150 ft in 50 ft increments (optional to 8150 ft).
Cable simulated:	Balanced twisted pair.
Cable impedance:	Complex, varies over frequency with length and gauge.
# of conductors:	2.
Types of cables:	26 AWG (TP1) and/or 24 AWG (TP2).
Length of cable	
VDSL 0	0 ft.
VDSL 1	700 ft to 5150 ft (option to 8150 ft).
VDSL 1 with Bridged Tap:	700 ft to 5150 ft (option to 8150 ft) + 50 ft Bridged Tap.
DC rating:	100 V between Tip and Ring Max 100 mA DC current.
Bandwidth:	DC to 4 kHz, 0.1 MHz to 30 MHz.

Accuracy

Attenuation:

100 kHz to 200 kHz	± (1 dB +6% of attenuation in dB) for attenuation up to 60 dB.
200 kHz to 15 MHz:	± (1 dB +4% of attenuation in dB) for attenuation up to 60 dB.
15 MHz to 20 MHz:	± (1 dB + 6% of dB attenuation) for attenuation up to 60 dB.
20 MHz to 30 MHz	± 3 dB for attenuation up to 60 dB.
DC – 4 kHz:	Max attenuation: 30 dB @ 4 kHz.
Delay/Characteristic Impedance:	± 10%.

Mechanical

Connectors:

Front (simulated line):	CF Connectors (Banana Plug).
Back (noise):	BNC Connectors (2 differential mode, 2 common mode).
Dimensions:	20.2" x 17.8" x 8.2" (L x W x H).
Net Weight:	60 lbs.

Environmental

Operating Temperature:	10°C to 40°C. (50°F to 96°F).
Relative Humidity:	10 to 95% RH non-condensing.

Electrical

Power:	90 to 260 V AC, 50 or 60 Hz.
Fuses:	Type “T” 2 A/250 V SLOW BLOW (2 required, 5mm x 20mm).

Noise Injection

Externally generated noise can be injected onto the simulated line at both the ONU side and the NT side independently.

Differential Mode:	Max input level: 0 dBm. 50 Ohm BNC input. 20 dB fixed attenuation.
Common Mode:	Max input level: +10 dBm. 50 Ohm BNC input. 0 dB fixed attenuation.
NB:	Differential mode and common mode are not mutually exclusive.

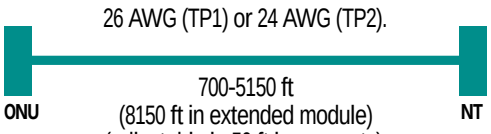
Simulated line impedance over the whole frequency range is unaffected by either differential or common mode noise injection.

Standards

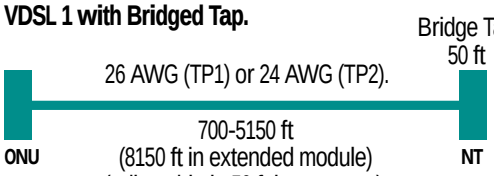
The DLS 8100 simulates the Bypass, VDSL1, and VDSL 1 with Bridged Tap loops in accordance with ANSI Draft Technical Report on System Requirements for VDSL (VDSL SR:98-043R6).

Bypass.

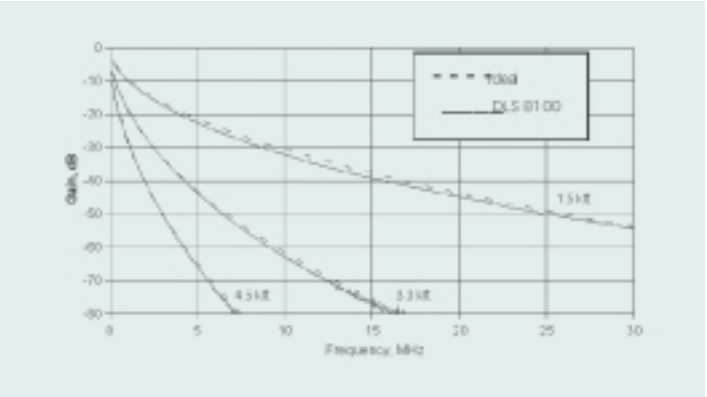
VDSL 1.



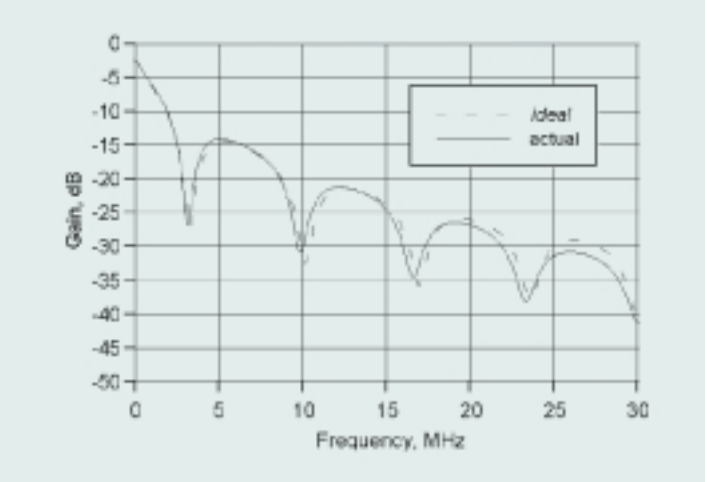
VDSL 1 with Bridged Tap.



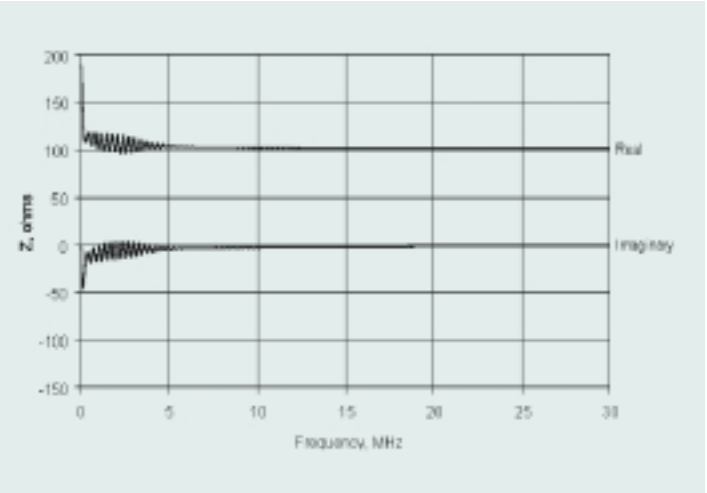
Attenuation of ANSI Loop 1 with 1.5, 3.0 and 4.5 kft of 26 AWG (TP2) cable.



Attenuation of ANSI Loop VDSL with Bridged tap for 700 ft of 26 AWG (TP1) cable.



Input Impedance at ONU end of ANSI Loop VDSL1, 1.0 kft of TP1 Cable with Bridged Tap.



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