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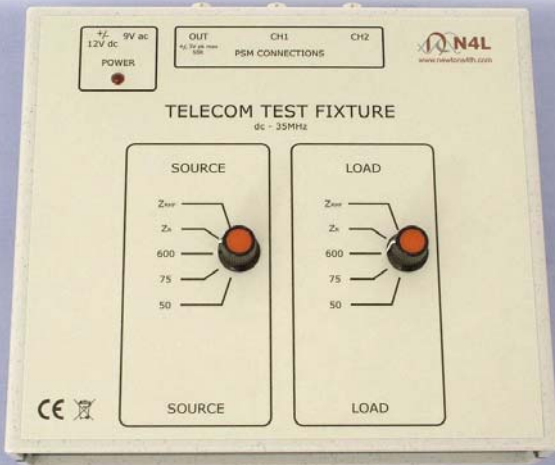www.newtons4th.com

Telecom Test Fixture

TTF35

ADSL and VDSL filter – Attenuation Testing

Used in conjunction with the PSM1735 Phase Sensitive Multimeter, the TTF35 provides a simple, fast and accurate measurement solution to ADSL and VDSL telecom filter attenuation testing.

Combining two wideband differential measurement circuits with selectable source and load impedances, the TTF35 provides accurate attenuation testing from dc to 35MHz.

Connection is direct to the TTF35 via RJ11 sockets with no need for additional impedance matching circuits.

Background

The rapid growth in broadband services has increased the need for higher transmission speed and with this, the demand for ADSL (Asymmetric Digital Subscriber Line) and VDSL (Very high bit rate Digital Subscriber Line) filters.

These filters enable high speed modems to communicate on the same pair of wires as POTS (Plain Old Telephony System) by ensuring separation of the low frequency POTS and high frequency ADSL/VDSL signals.
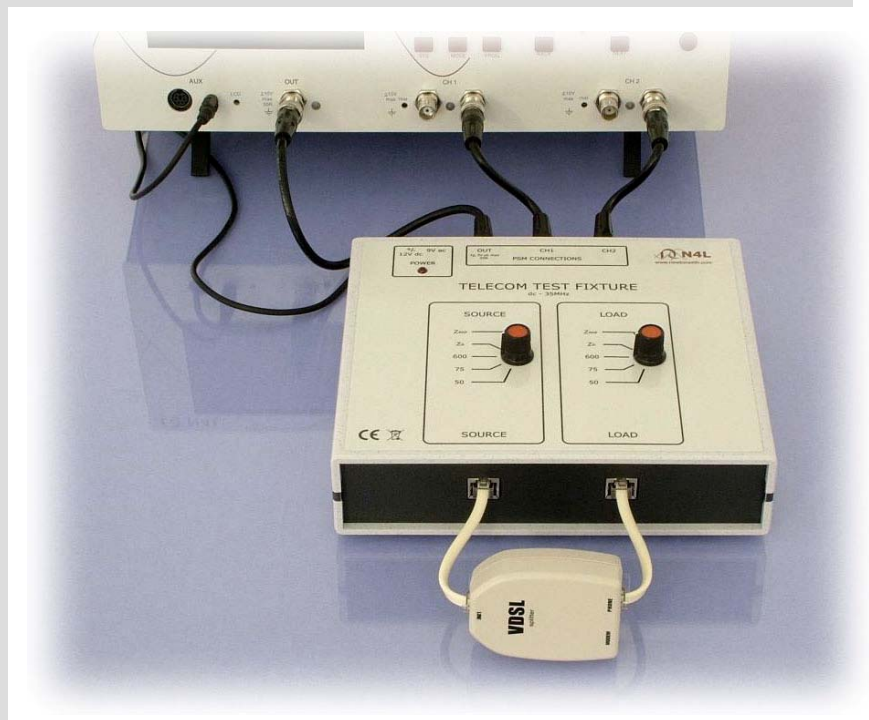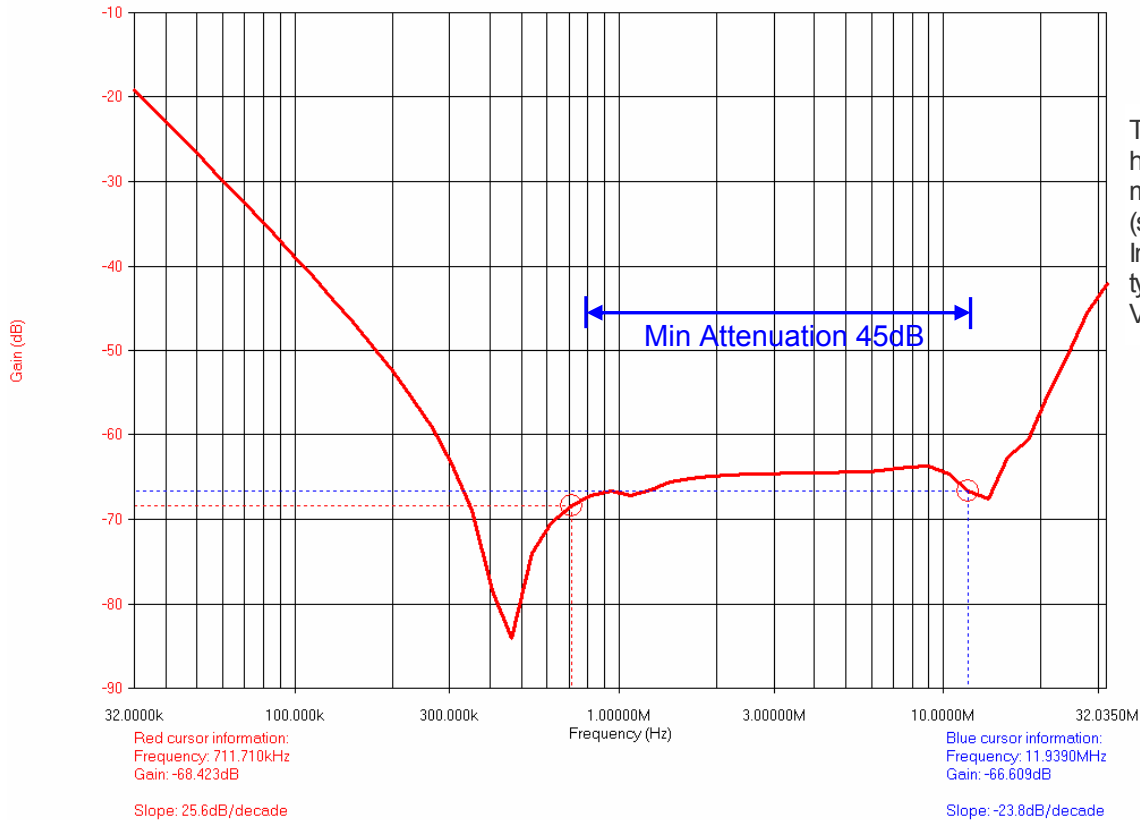
Testing

Here, the TTF35 is used with a PSM1735 to test a VDSL splitter.

Power to the TTF35 is via an auxiliary power terminal on the PSM1735 and the connection lead for this, along with the BNC and RJ11 leads shown in this picture are included with the TTF35 so that any ADSL or VDSL telecom filter with RJ11 termination can be tested with no additional accessories.

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Example attenuation plot taken from a VDSL filter test

Red cursor information:
Frequency: 711.710kHz
Gain: -68.423dB

Slope: 25.6dB/decade

Blue cursor information:
Frequency: 11.9390MHz
Gain: -66.609dB

Slope: -23.8dB/decade

The blue marker shown here illustrates the minimum attenuation level (sometimes referred to as Insertion Loss) that may typically be applied to a VDSL filter.

The example plot above shows the signal attenuation of a sample VDSL filter tested from 32kHz to 32MHz with results presented in Newtons4th PSMcomm software.

Why is the TTF35 specifically designed for Attenuation testing of ADSL and VDSL filters?

ADSL/VDSL Tests may include Return Loss, Longitudinal Balance and Delay Distortion but in most cases, these tests are made at frequencies below 1MHz. Many test instruments will operate up to 1MHz but very few are able to provide the necessary frequency range and gain accuracy that is required for filter attenuation testing.

The TTF35 is therefore specifically designed along with the PSM1735 to meet this requirement and provide high accuracy Attenuation testing over the complete frequency range of ADSL or VDSL filters.

Specification:

Frequency range:	dc to 35MHz
Attenuation accuracy:	± 1dB from dc to 35MHz
Dynamic range:	100dB with 1Vrms nominal input signal
Maximum generator Input:	3Vpk
Source / Load impedance options:	50Ω, 75Ω, 600Ω, Z_R, Z_{RHF} (Z_R, Z_{RHF} are ANSI standard impedances)
Source / Load connections:	RJll sockets. (2 x RJ11 male to male leads supplied as standard)
Connections to PSM1735:	3 x BNC connectors. (3 x BNC – BNC leads supplied as standard)
Power:	± 12Vdc or 9Vac for AC adaptor. (3.5mm lead for PSM1735 auxiliary - power output supplied as standard)
Mechanical:	Size: 70H x 210W x 190D mm Weight: 1kg