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N2648A Alien Crosstalk Test Kits – Validation of Structured Cabling for 10GBASE-T Transmission



SwiftAXT – A Scalable Measurement Approach

Agilent's new Sweep Interleaved Frequency-domain Technique for Alien Crosstalk Testing (SwiftAXT) is a revolutionary concept inspired by the need to test Alien Crosstalk in 10GBASE-T ready network cabling. It radically simplifies the field verification of structured cabling for the deployment of 10GBASE-T. It is as straightforward as simple, modeled after the real network – where cable bundles join and split, come from, and end in different places, and have a wide range of lengths.

Unique Alien Crosstalk Testing Methodology

To measure Alien Crosstalk, WireScope Pro and DualRemote Pro are attached to the disturbed ("victim") cable. A pair of Alien Crosstalk stimulators is connected to both ends of each disturber cable. Crosstalk from one to 32 disturber cables can be captured simultaneously, at no expense in measurement time. Every stimulator pair stimulates each frequency of interest. The coupled Alien Crosstalk signal is received by WireScope Pro and DualRemote Pro at the local and at the far end of the victim cable. Precision timing control is the key to accurately measuring the Alien Crosstalk in one measurement sweep – from any number of disturber cables, in less than 5 minutes.

A Small Tool, Yet Highly Capable

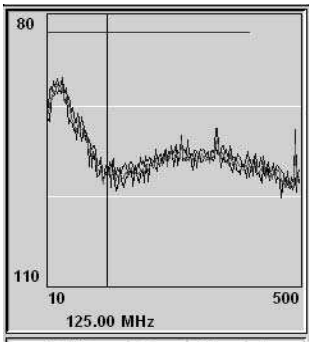
The Alien Crosstalk Stimulator is a palm-sized signal generator. It operates in two modes: a transmitter producing test signals, and a termination. At all times, the device can be commanded from its counterpart at the other end of the disturber cable. Both devices of a connected pair indicate their operating mode, and fault conditions like weak or missing power supply, or a broken connection.

Features and Benefits

- Implements ISO/ IEC 61935-1 Ed. 3 and IEEE 802.3an recommendations for Alien Crosstalk testing
- Test results on the instrument, without post-processing
- Unparalleled speed, highly efficient through parallel stimulation of disturbers
- Simple, straightforward procedure avoids operator failures
- Works with cable bundles from 2 to 12 and beyond
- Works with complex layouts such as split and joint bundles
- Tracking mode to identify the worst disturber cable
- Test results integrate with ScopeData Pro II software

Real-time Spectral Analysis of External Noise

In addition to Alien Crosstalk, external noise caused by high-frequency signal sources, has the potential to disturb transmission networks. The WireScope Pro's external noise analysis tool measures the received noise on a wire pair across the frequency range of interest, and compares its spectrum against the receiver noise limit of –141.9 dBm/ Hz (IEEE 802.3an clause 55.5.4.4). It offers an effective way to characterize cables in a live network environment, by capturing the footprint of network traffic in adjacent cables and of other disturbing signals. Providing objective information on the nature and severity of noise being picked up, it uncovers the hidden sources of marginal network performance.



1(4,5)	Curr	Max	Avg
Data@Cursor (dBm/MHz)	-96.6	-95.6	-96.3
Worst Data (dBm/MHz)	-86.4	-85.4	-86.8
Freq@Worst (MHz)	28	137	31

Features and Benefits

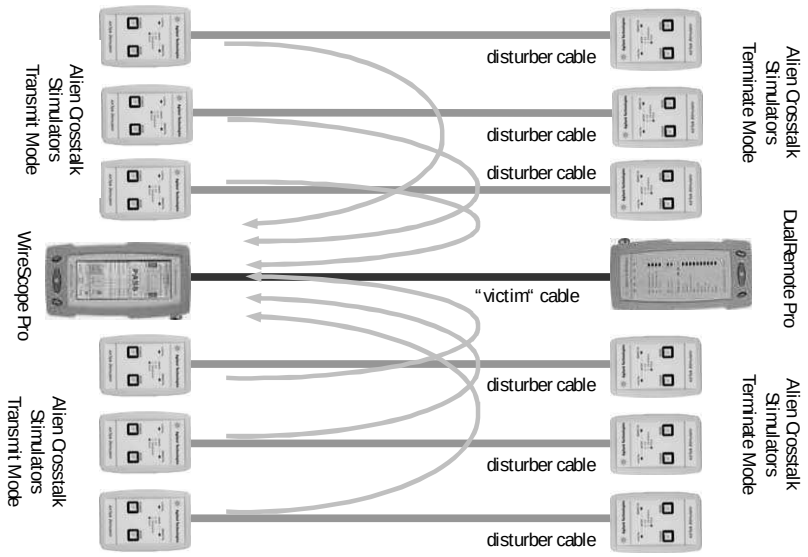
- Displays spectral profile of current and maximum external noise over 10 to 500 MHz
- Compares external noise to the –141.9 dBm/ Hz receiver noise limit (IEEE 802.3an clause 55.5.4.4)
- Characterize structured cabling in a live environment
- Uncover the hidden sources of temporary network degradations

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Alien Crosstalk Field Testing with SwiftAXT

The WireScope Pro and DualRemote Pro are connected to the ends of the "victim" cable. All disturber cable ends are connected to Alien Crosstalk stimulators. All user interactions happen at the near end!

- Simply click Alien Crosstalk Test on the WireScope Pro and follow the on-screen instructions:
- Turn on all stimulators and set the near end units to Transmit mode – the far end units automatically enter the Terminate mode.
- Start triggers the PSANEXT and PSAACRF measurement.
- When instructed, set the near end stimulators to Terminate mode.
- Continue completes the near end PSAACRF and far end PSANEXT measurement.



SwiftAXT Alien Crosstalk Test Concept (6 around 1), near end transmitting)

General Specifications

Test port: RJ-45

Battery: 9 V block cell, not included. High-performance Alkaline type needed for 60 minutes of operation.

AC Power Adapter, included:
100~240 V AC, 12 V/ 3.3 A DC.

Operating power: 1.3 W

Size: 140 mm x 91.4 mm x 27.9 mm
(5.5" x 3.6" x 1.1")

Weight: approx. 160 g
(approx. 5.64 oz.)

Operating Temperature
+10°C to +40°C

Storage Temperature
–40°C to +70°C

Relative Humidity
95% at up to 31°C temperature

N2648A Alien Crosstalk Stimulator	
RF Frequency Range	1 MHz to 500 MHz
RF Output Power	1.5 dBm ± 2 dB
WireScope Pro and DualRemote Pro Receiver	
Dynamic Range	–100 dBm to –50 dBm at 1 to 500 MHz
Alien Crosstalk Measurement Uncertainty	±2 dB
Alien Crosstalk Measurement Floor	< –95 dB
External Noise Measurement Range	–100 dBm/ MHz to –50 dBm/ MHz at 10 to 500 MHz or –160 dBm/ Hz to –110 dBm/ Hz at 10 to 500 MHz
External Noise Display Refresh Rate	3 sec
Applicable Test Standards	IEEE 802.3an 10GBASE-T (Clauses 55.7.3.1, 55.7.3.2) TIA TSB 155 TIA 568-B.2-10 IEC 61935-1 Ed. 3
Supported Tests	Power Sum Alien Near End Crosstalk (PSANEXT)
All parameters measured from near end and far end	Average Power Sum Alien Near End Crosstalk (Avg PSANEXT) Power Sum Attenuation to Alien Crosstalk Ratio Far End (PSAACRF) Average Power Sum Attenuation to Alien Crosstalk Ratio Far End (Avg PSAACRF)

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