



TALAN™

TELEPHONE AND LINE ANALYZER
PATENTS PENDING





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Analyze Digital and Analog Phone Systems and wires for eavesdropping threats.

Combines New Technology into a Suite of Telephone Tests including an Automatic Switching Matrix

The TALAN provides the capability to perform multiple tests to analyze communication lines for eavesdropping devices.

The TALAN includes a built-in automatic switching matrix for testing all pair combinations. For example, if a cable has 8 conductors, there are 28 combinations of pairs to test; the TALAN can automatically test all combinations, storing data for comparison and analysis.

Digital Demodulation

Includes digital decoding capabilities for approximately 80% of the world's digital phone systems. Demodulation codecs are upgradable as new phone systems become available.

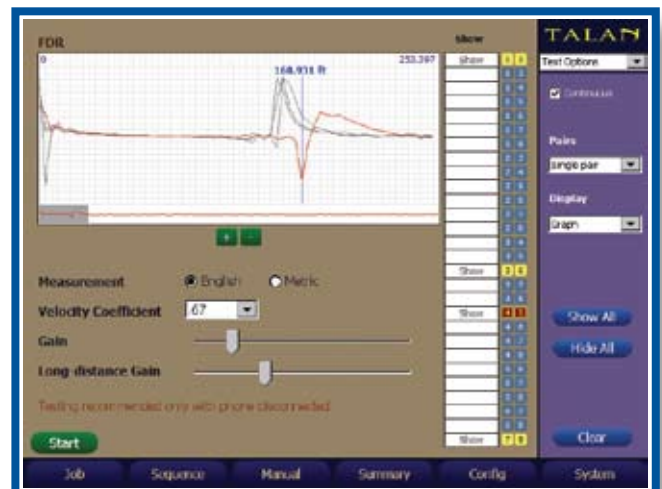
Digital Demodulation confirms that a line on a digital phone system is not passing audio when it should not.



Frequency Domain Reflectometer (FDR)

Similar to a TDR (Time Domain Reflectometer) but based on a different technical approach, the TALAN's FDR can "shoot" a line for impedance anomalies indicating a tap on the wire.

The FDR also has the ability to plot multiple FDR traces on the same display for comparison of multiple pairs or historical comparison.

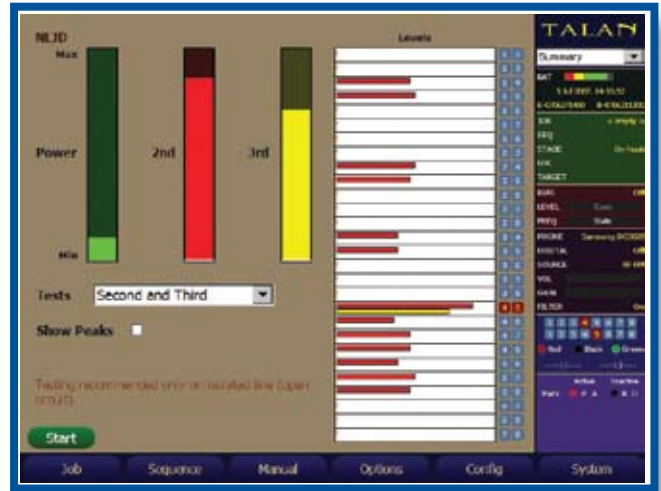


Non-Linear Junction Detection (NLJD) on a Line

The TALAN includes a NLJD test to detect electronics connected to an isolated line.

This is one of the most powerful tests for quickly determining whether or not there are additional electronics attached to a wire.

The example to the right indicates a parallel tap on pair 4:5. Because of the coupling in balanced pairs, any combination with either a 4 or 5 indicates some electronic content, but the electronics are clearly detected on pair 4:5.



Digital Multimeter Tests

The TALAN includes basic multimeter tests such as Voltage, Current, Capacitance, & Resistance.

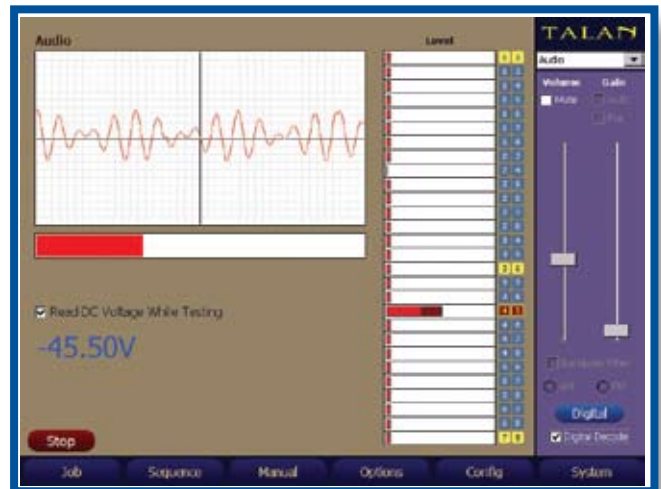
The automatic switching matrix allows the user to quickly measure and display results for all pair combinations, easily identifying any anomalies.



High Gain Audio Amplifier and Built-in Audio Oscilloscope

The TALAN includes a High Gain Audio Amplifier (20Hz to 20KHz) with up to 80dB of total system gain (voice band).

A DC Bias Voltage Generator ($\pm 80\text{VDC}$) is also provided to power attached electronics.

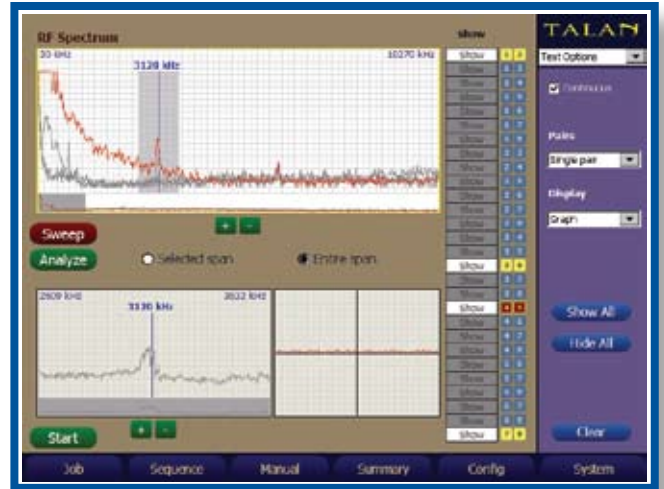


RF Analysis and Detection

The TALAN includes a Spectrum Analyzer that provides a detailed frequency spectrum display up to 85 MHz. This function also includes a time domain display to show the modulation for AM and FM signals.

The TALAN also includes a Broadband RF Probe to check free space RF energy up to 8GHz, graphing the RF level over time to identify the location of a transmitter.

(Broadband RF levels not shown)



Multi-Test Database System

The TALAN provides the ability to store test data for all testing functions in a database structure. This database provides the ability to organize and store results for future review or comparison.

The display at the right shows the basic database structure keeping track of test data from multiple targets and locations.



Harmonic Locator Probe (HLP)

The TALAN includes a Harmonic Locator Probe (HLP) used for tracing wires.

The Harmonic Locator Probe also acts as a Harmonic Receiver, alerting the user as the tracer approaches electronics connected to a wire. This allows the user to not only trace a wire, but also determine the location of any electronics connected to the wire such as an eavesdropping device.



Close-up of HLP display showing wire-trace level (green) and 2nd harmonic response level (red) indicating electronics.

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The TALAN introduces a new state-of-the-art capability to rapidly and reliably detect and locate illicit wire taps on both digital and analog telephone systems.



The TALAN provides a suite of tools in a single piece of equipment to accurately analyze phone lines for taps and other eavesdropping threats.



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TECHNICAL SPECS

TALAN ADVANTAGES

COMPLETE SUITE OF TESTS

COMBINES EXISTING TESTING TECHNOLOGY AND NEW TECHNOLOGY INTO SINGLE PIECE OF EQUIPMENT

SWITCHING MATRIX

AUTOMATICALLY TESTS ALL PAIR COMBINATIONS

MULTI-TEST DATABASE SYSTEM

MANAGES DATA FOR MULTIPLE TARGETS AND LOCATIONS

DIGITAL MULTIMETER TESTS

QUICKLY CAPTURES VOLTAGE, CURRENT, CAPACITANCE, AND RESISTANCE DATA

FDR FREQUENCY DOMAIN REFLECTOMETER

DETECTS IMPEDANCE ANOMALIES SUCH AS AN EAVESDROPPING TAP ON A WIRE

LINE NLJD

(NON-LINEAR JUNCTION DETECTOR)

DETECTS ELECTRONICS ATTACHED TO A WIRE

DIGITAL DEMODULATION

CONFIRMS WHETHER A LINE (DIGITAL OR ANALOG) IS PASSING AUDIO

HARMONIC LOCATOR PROBE

TRACES WIRES AND INDICATES LOCATION OF ELECTRONICS ON THE WIRE



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CONTROL SYSTEM

Primary Computer: 32bit RISC processor, 520MHz

Internal Memory: 64MB SDRAM (OS), 64MB Flash

External Memory: Compact Flash Type III,

USB mass storage

DIGITAL I/O

Network: 10/100 Ethernet Controller

USB: USB Host (B type) for connection to PC;

USB Device (A type) supports external keyboard, mouse, and USB mass storage drive use

ANALOG I/O

Headphone Output: 3.5mm connector

Microphone Input: 3.5mm input

USER INTERFACE

Hard Keys: 6 Soft Menu Keys, 5 Button Quadrant Navigation & other dedicated keys

Encoder: High-Resolution Optical Encoder

Integrated Touch Screen with Stylus

Test Inputs:

Dual MOD8: Supports 2, 4, 6, & 8 wire Modular Phone Jacks

Banana Type: Standard sleeved sockets: Ring, Tip, and Earth

SMB RF Input: RF/Antenna Connection to 8 GHz Broadband Detector

Expansion Port: Supports communication and measurement for use with future accessories

All Inputs Electrically Isolated

RF SYSTEM

Spectrum Analyzer:

Dual Conversion, Super-Heterodyne Receiver

Frequency Range: 10kHz to 85MHz

Sweep Time: 2 Seconds

Step Size: 1kHz

Bandwidth: 18kHz

Sensitivity: -100dBm

Broadband Detector:

RF SMB Input: 100kHz to 8GHz

Balanced Line Test: 100kHz to 600MHz

Sensitivity: -65dBm

DIGITAL MULTIMETER

Range: Quick Response Auto-Ranging,

AC/DC Volts: 0 to 400VDC, 0 to 250VAC

Resistance: 0 to 40 MegOhm

Capacitance: 4nF to 400µF

BIAS GENERATOR

Optically Isolated, Direct Digital Control

Output Ceiling: ±80 VDC

Modulation: Sine Wave up to 300Hz.

AUDIO

Audio Bandwidth: 20Hz - 20KHz

Gain: Up to 80dB total system gain

AGC: Digitally Controlled Automatic Gain

Filter: Analog Voice band filter (300Hz to 3kHz)

POWER SYSTEM

External Input: 15VDC @3A

Universal Power Supply: 100-240VAC, 50-60Hz

Removable Battery: Rechargeable Lithium ion, 4-6 hours of run time

MECHANICAL

Dimensions: 10.0in x 12.9in x 2.7in
(25.4cm x 32.8cm x 6.9cm)

Weight with Battery: 6 lbs (2.7 kg)

Case Dimensions: 5.4in x 14.9in x 19.5in
(13.7cm x 37.8cm x 49.5cm)

Loaded Case Weight: 19.0 lbs (7.1kg)

Operating Temperature: 0°C to +50°C

HARMONIC LOCATOR PROBE

Operational Frequency: 225kHz & 450kHz

Antenna Type: Balanced Loopstick

Headphone Audio Output: 16ohm, 105dB SPL limited

Battery: 9V Alkaline

Run-Time: 10 hours average, 22 hours (headphones)

Size: 17.5in x 1.5in (44.45cm x 3.8cm) stored

63.75in x 1.5in (162cm x 3.8cm) fully extended

Weight: 11 lbs (.5kg)

