



# 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.

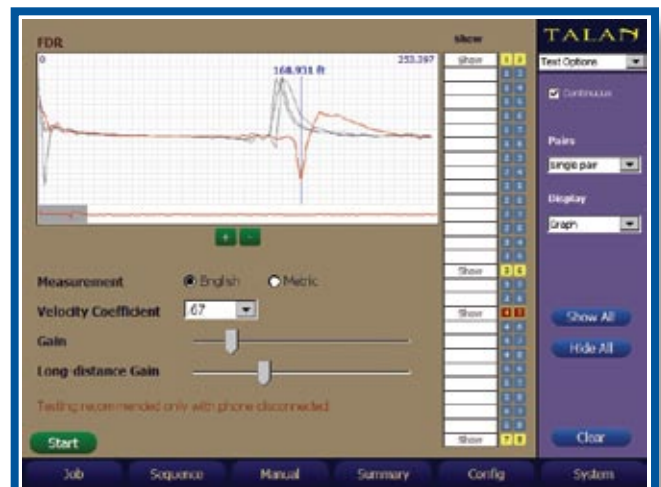
Digital Demodulation confirms that a line on a digital phone system is not passing audio when it should not.



## 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.

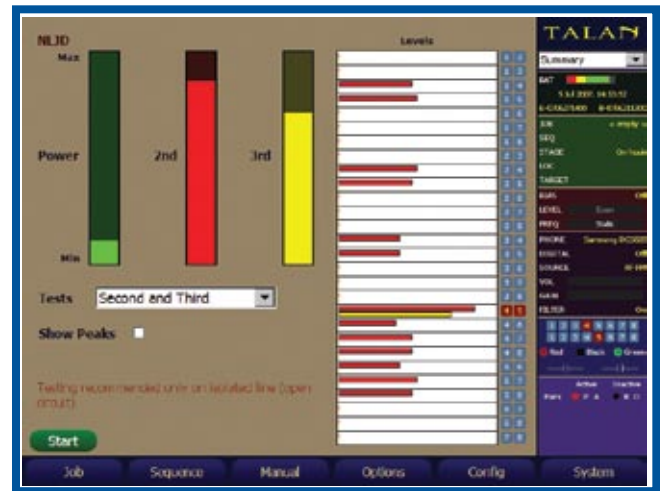


## Non-Linear Junction Detection (NLJD) on a Line

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.

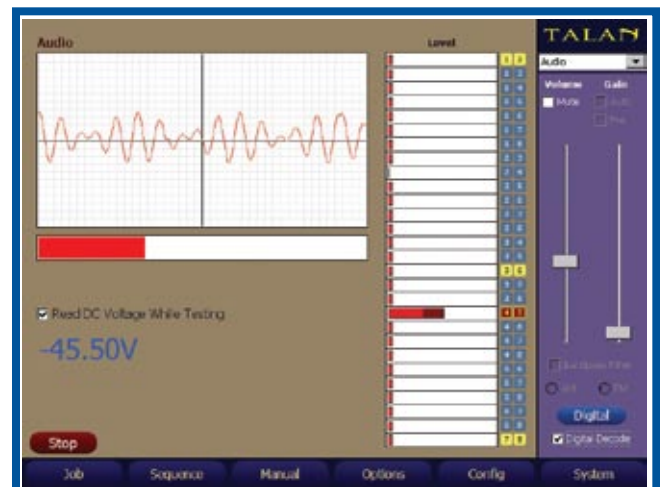
The automatic switching matrix allows the user to quickly measure and display results for all pair combinations, easily identifying any anomalies.



## 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.



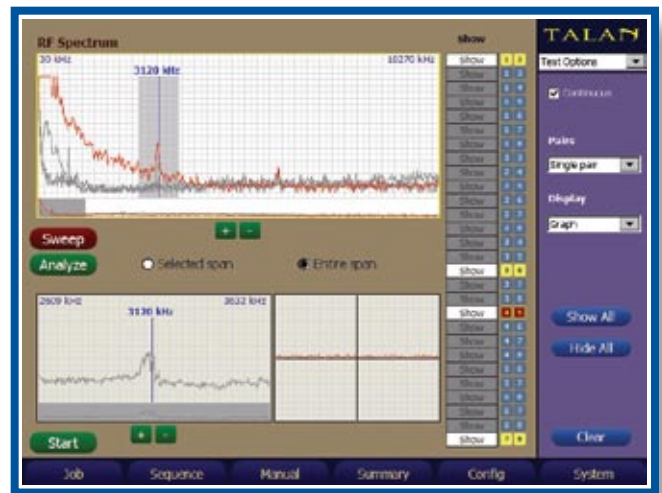


## RF Analysis and Detection

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



RESEARCH ELECTRONICS INTL.  
455 SECURITY PLACE  
ALGODD TN 38506 USA  
TEL +1 931.537.6032  
800.824.3190 (US ONLY)  
FAX +1 931.537.6089  
www.reiusa.net

#### 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 for future use  
**USB:** USB Device (A Type) supports external keyboard, mouse, and USB mass storage device; USB Host (B type) for future 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

**Quick Response Auto-Ranging:** 500msec Sample Rate  
**AC/DC Volts:** 0 to 250V Maximum  
**Resistance:** 0 to 40 MegOhm  
**Capacitance:** 4nF to 4.2µF

#### BIAS GENERATOR

**Optically Isolated, Direct Digital Control:** High voltage DAC  
**Output Ceiling:** ±80V  
**Modulation:** Fixed voltage, or variable rate Sinewave (10Hz - 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:** 160hm, 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:** 11lbs (.5kg)

