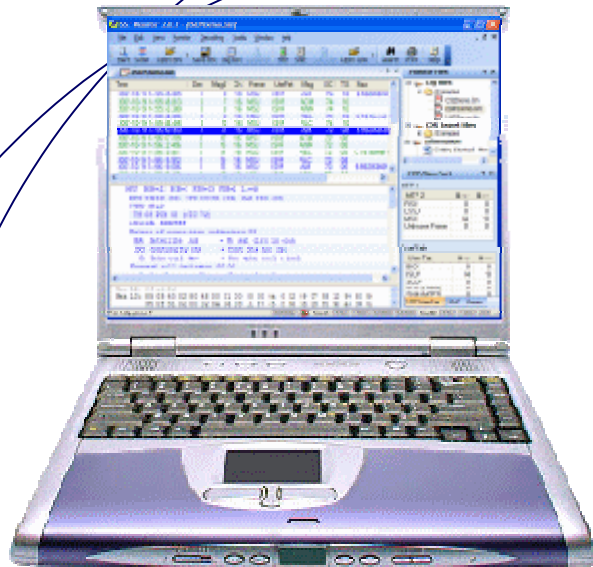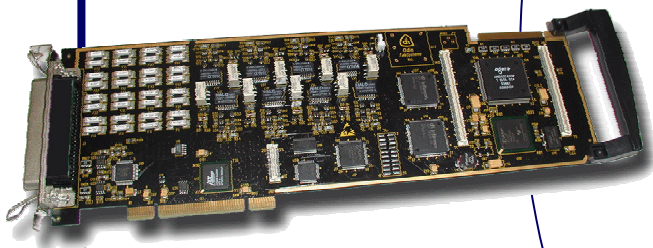# STINGA V5
Monitor & Simulator

Extremely cost-efficient
World class support
Very easy to use
Very Portable

Gain customers and money
by improving your networks and projects

Whether you're into mobile, voip, pstn, or isdn business,
get on top of your problems now!

UTEL SYSTEMS

Your customers will notice

Odin TeleSystems Inc.
Open Telecom for Open Minds

IMPROVED BUSINESS WITH LOW COST SOLUTIONS

♦ Helps you to satisfy your customers by improving Quality of Services in your network

♦ Helps you to get the most out of your existing investments in your network

♦ Get your development and test projects finished on schedule

♦ Helps you to reduce Time To Market (TTM)

♦ Resolve your network problems before your customers even notice

♦ No 1st or 2nd line support anymore, you have 3rd line support directly by world class specialists

♦ Tailor made solutions in just a few days

♦ Training available by highly experienced and skilled protocol and signalling specialists

NETWORK MANAGEMENT

♦ Know the capabilities of your network

♦ Resolve network issues easily

♦ Tune up your network for better performance

DEVELOPMENT & IMPLEMENTATION

♦ Supports prototyping

♦ Reduce the risks in your project by verifying your design on an early stage

♦ Generate traffic and test before your system is developed

♦ Verify your product's capabilities in an early stage

TESTING

♦ Supports both **black box and white box testing**

♦ Use it for component, function, integration, system, acceptance and conformance testing

♦ Free conformance test suits included with the system

♦ Easy to develop new test suits based on existing ones

♦ **Regression Testing**: To build test suites is a breeze and enables the user to perform automated regression testing in a cost-efficient way.

FAULTFINDING & TROUBLESHOOTING

♦ Comprehensive protocol decoding of all protocol layers makes it possible to track and search for protocol irregularities. Recorded irregular messages may be regenerated with the protocol simulator. This is a very convenient way of reproducing errors in the network.

KEY FEATURES

♦ **V5.1/V5.2 protocol simulation**

♦ **V5.1/V5.2 protocol analysis/monitoring**

♦ **PCMCIA and PCI based solutions**

♦ **Monitoring one bi-directional E1/T1/J1 interface**

♦ **One simulator per E1/T1/J1 interface**

♦ **Audio and DTMF support**

♦ **Top-down QoS and Networks Performance analysis**

♦ **Conformance Test Suite framework included**

OVERVIEW

Components

The cost-efficient STINGA V5 test instruments from Utel Systems comprises the following components:

♦ One or more hardware cards (PCMCIA or PCI) with E1/T1/J1 line interfaces

♦ One or more software modules:
- V5 Monitor for protocol analysis
- V5 Simulator for protocol simulation
- A Conformance Test Suite is included with the V5 Simulator product

Highly Portable

"All-in-one" concept: PCMCIA based instrument with many applications in one notebook. With these hardware and software components, highly portable protocol simulators and analysers, desktop protocol simulators and analysers, and rack-based monitoring probes are supported.

Cost-efficient Windows-based Test Instruments

All software and hardware components are running on standard notebook and desktop PCs with Windows, providing cost efficient IT service, fast learning curve, easy and cheap access to replacement units.

Same User Interfaces for all Products Reduce Costs

All test instruments from Utel Systems are based on the same windows user interface framework. The user do not have to focus on how to use different applications, meaning full focus on different protocols and network technologies in use. Same decoding format for monitor and simulator results in time efficient testing.

Simultaneously Protocol Simulation & Analysis

Different protocol simulators and analysers can easily be used together on the same PC simultaneously. It is possible to simulate on one side of a test object (i.e. a switch) and monitor on the "other" side. By installing two PCMCIA cards in one notebook, it is possible to use both cards to monitor two E1/T1/J1 interfaces or to use one card for protocol monitoring and the other for simulation. A combination of SS7, BICC, V5 and ISDN PRA test instruments are supported.
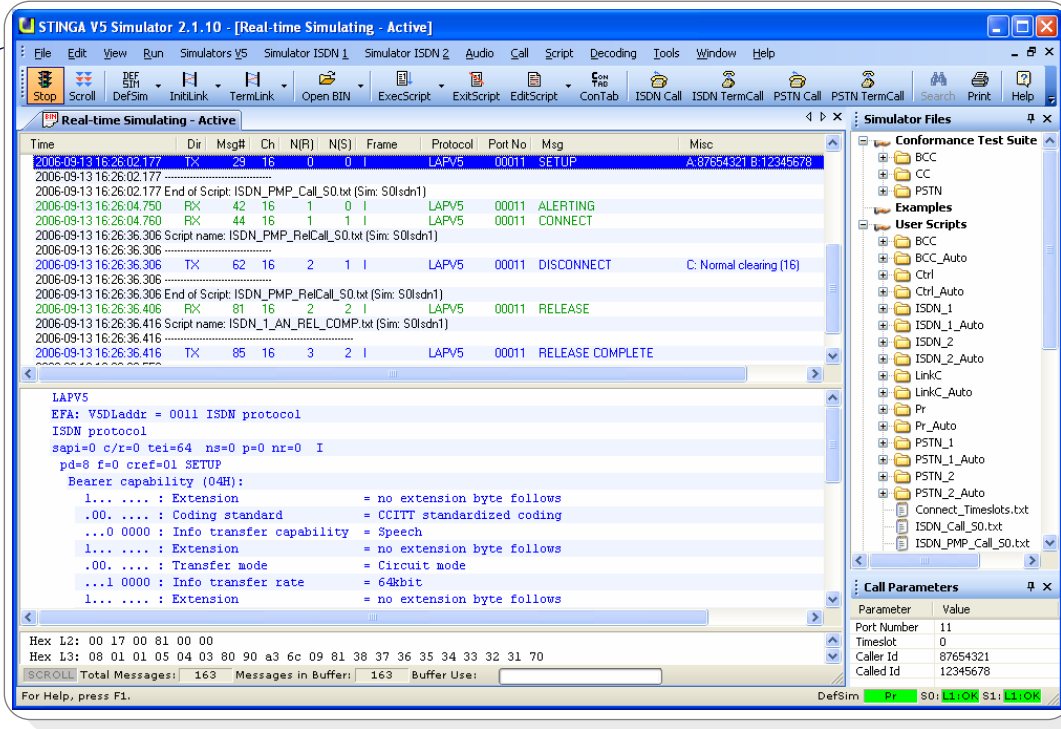
STINGA V5   SIMULATOR - PROTOCOL SIMULATION

Easy to use Windows-based user interfaces.

Integration with Microsoft Word, Microsoft Excel and Adobe Acrobat Reader is supported.

Script files, parameter files, messages files and log files are easily accessed from the Simulator Files pane.

V5 SIMULATOR - PROTOCOL SIMULATION

The V5 protocol simulator is designed to be used by both skilled and unskilled users: From easy and quick testing by point-and-click to more advanced and flexible script-based testing.

Simulator Processes

The V5 Simulator product has 16 layer 3 simulators (0-7 is used with S0 and 8-16 used with S1). The simulators can simulate both Local exchange (LE) and Access Network (AN).

Protocol Description	E1/T1/J1 Link	Simulator Name	Comment
Protection (Pr)	S0	S0Pr	
Link Control (LinkC)	S0	S0Linkc	
Common Control (CC)	S0	S0Ctrl	Handles both User Port Control and Common Control
Bearer Channel Connection (BCC)	S0	S0Bcc	
Public Switched Telephone Network (PSTN)	S0	S0Pstn1	
		S0Pstn2	
ISDN_1 (BA/PRI)	S0	S0Isdn1	Behaves like an ISDN Simulator
ISDN_2	S0	S0Isdn2	Behaves like an ISDN Simulator
Protection (Pr)		S1Pr	
Link Control (LinkC)	S1	S1Linkc	
Control Protocol (CC)	S1	S1Ctrl	
Bearer Channel Connection (BCC)	S1	S1Bcc	Handles both User Port Control and Common Control
Public Switched Telephone Network (PSTN_1)	S1	S1Pstn1	
Public Switched Telephone Network (PSTN_2)	S1	S1Pstn2	
ISDN_1 (BA/PRI)		S1Isdn1	Behaves like an ISDN Simulator
ISDN_2	S1	S1Isdn2	Behaves like an ISDN Simulator

Simulation Concept
Since there are a lot of protocols involved, it is necessary that these protocols can communicate. A script file contains instruction for one protocol, and is located in one specific folder.

A script can be started in three different ways:

1. Manually by the user
2. Automatically triggered by an incoming message
3. Triggered from another simulator

There are no restrictions on neither format nor content of the protocols transmitted/received. Arbitrary manipulation (down to bit level) of messages, parameters and message sequence on the different protocols are allowed. The test scripts may be started manually or they can be automatically triggered by incoming messages.

Remote Control
The simulator application is constructed to be remotely controlled over a IP connection (like a dial-up connection). The graphical user interface is installed on a local PC, while the simulator "agent" is running on a remote PC connected to the test object through the hardware.
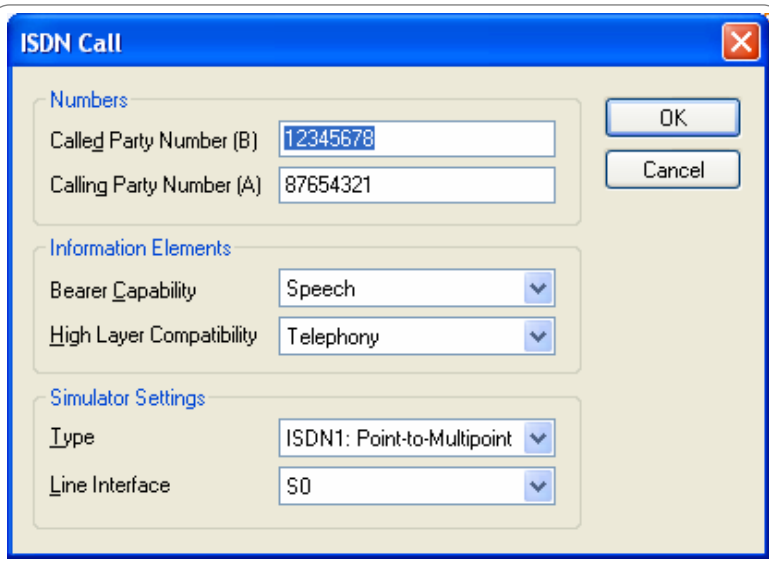
Conformance Test Suite
Repeated use of the simulator to perform similar tests is significantly alleviated if a library structure of test scripts is built. Examples of situations where this is recommended are interconnect testing between network operators as well as functional testing, regression testing and conformance testing of terminal equipment and/or network elements. A library of test scripts is available as a framework for the user for building a dedicated test environment for ISDN BA and PSTN. The library is based on the ITU-T G.964/G.965.

ISDN Call

Numbers
- Called Party Number (B) 12345678
- Calling Party Number (A) 87654321

Information Elements
- Bearer Capability Speech
- High Layer Compatibility Telephony

Simulator Settings
- Type ISDN1: Point-to-Multipoint
- Line Interface S0

OK   Cancel

Call & Release Call guides
Call setup and termination for both PSTN and ISDN are easily done from dialogs which guides the user through the generation of outgoing calls and termination of calls. These guides are combined with a Parameter Builder.
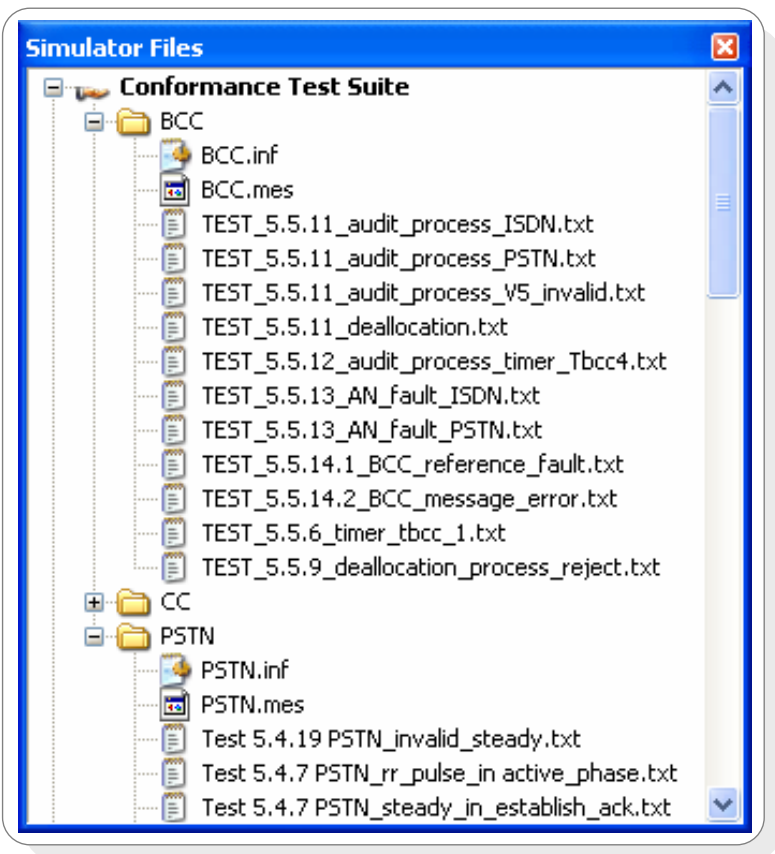
Protocols
Simulation of different protocols like Pr, LinkC, CC, BCC, PSTN, ISDN BA and ISDN PRA simulation are supported.

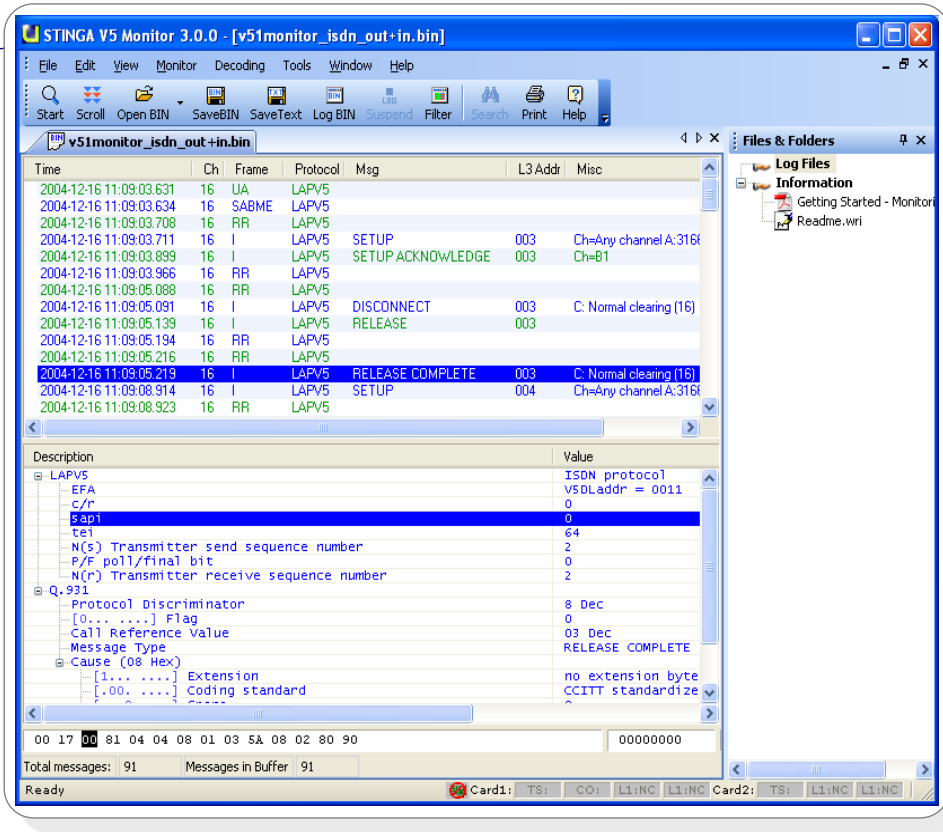## Audio and DTMF Generator/ Detector
The DTMF Generator makes it possible to send single DTMF tones and to specify a series of digits to be sent as DTMF tones. When DTMF tones are sent/received, message are printed in the one-line decoding window. Received DTMF tones and audio is played in the PC-speakers for the PCMCIA solutions, and in the connected handset for the PCI solutions.

Script Language
A powerful and flexible script language makes it possible to set up a required/desired (protocol/terminal) state, both normal and error states.

Simulator Files

- Conformance Test Suite
  - BCC
    - BCC.inf
    - BCC.mes
    - TEST_5.5.11_audit_process_ISDN.txt
    - TEST_5.5.11_audit_process_PSTN.txt
    - TEST_5.5.11_audit_process_V5_invalid.txt
    - TEST_5.5.11_deallocation.txt
    - TEST_5.5.12_audit_process_timer_Tbcc4.txt
    - TEST_5.5.13_AN_fault_ISDN.txt
    - TEST_5.5.13_AN_fault_PSTN.txt
    - TEST_5.5.14.1_BCC_reference_fault.txt
    - TEST_5.5.14.2_BCC_message_error.txt
    - TEST_5.5.6_timer_tbcc_1.txt
    - TEST_5.5.9_deallocation_process_reject.txt
  - CC
  - PSTN
    - PSTN.inf
    - PSTN.mes
    - Test 5.4.19 PSTN_invalid_steady.txt
    - Test 5.4.7 PSTN_rr_pulse_in active_phase.txt
    - Test 5.4.7 PSTN_steady_in_establish_ack.txt

Easy to use Windows-based user interfaces.

Integration with Microsoft Word, Microsoft Excel and Adobe Acrobat Reader is supported.

Log files and CDR Report files are easily accessed from the Monitor Files pane.

Real-time statistics are displayed in the different statistics panes.

V5 MONITOR - PROTOCOL ANALYSIS

Real-Time Monitoring
It is possible to monitor two E1/T1/J1 interfaces with one notebook, and up to eight E1/T1/J1 interfaces with the PCI based desktop/rack solutions. Up to five timeslots can be monitored simultaneously for each line interface. More E1/T1/J1 interfaces can be monitored with the notebook solution by using a 3rd-party E1/T1/J1 concentrator.

Real-Time Decoding
Comprehensive real-time decoding of Pr, LinkC, CC, BCC, PSTN, ISDN BA and ISDN PRA is provided. Customer configured one-line decoding, detailed decoding and hex information are displayed. Physical link status is displayed with indicators in the status bar and layer 1 alarms are printed in the one-line decoding window.

Filter Mechanisms
Different filter mechanisms are supported. Filters covering layer 1 & 2 and the different V5 protocols are available.

Search
It is possible to search for information in all captured messages, and it is also possible to specify which columns in One-Line Decoding to search.

Audio Monitoring
It is possible to listen to a specific user channel. With the PCMCIA solutions, the audio is played through the PC-speakers using the built-in sound card. With the PCI solutions, an on-board codec is used to play the audio in a connected head set.

Decode Single Message
With the Decode Single Message feature, it is possible to import protocol information on hex format to get it detailed decoded. This protocol information could be some messages captured by a 3rd-party analyser that you for example have received by e-mail.

Remote Control
The monitor application is constructed to be remotely controlled over a IP connection (like a dial-up connection). The graphical user interface is installed on a local PC, while the monitor "agent" is running on a remote PC connected to the tapping point through the hardware.
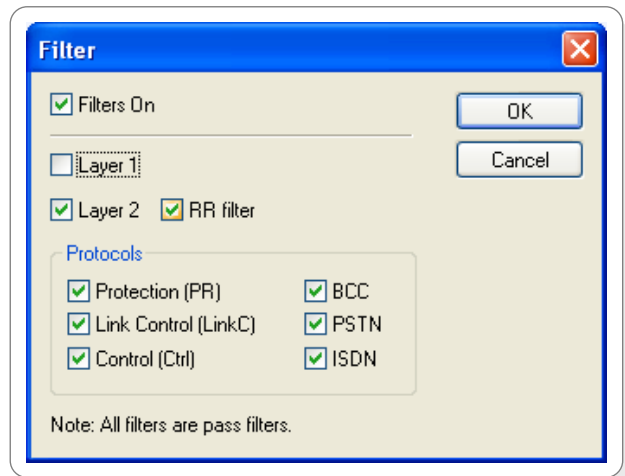
STINGA V5   Protocol analysis & simulation

TECHNICAL SPECIFICATIONS

Hardware & Software Requirements

♦ Software modules running on Windows Vista/ XP/2003 Server/2000.

♦ PCMCIA cards (type II) with two dongles with built-in amplifiers and RJ45 connectors – one dongle for each E1/T1/J1 line interface.

♦ Half or full length PCI cards with up to eight E1/T1/J1 interfaces. A special monitoring card with sixteen receivers (no transmitters) is also available - typically used in monitoring probes for monitoring up to eight bi-directional E1/T1/J1 interfaces.

Protocols Supported

♦ E1/T1/J1 interfaces
   ♦ E1/T1/J1 alarm signals and link status
♦ Protection (Pr)
♦ Link Control (LinkC)
♦ Common Control (CC)
♦ Bearer Channel Connection (BCC)
♦ Public Switched Telephone Network (PSTN)
♦ ISDN BRA
♦ ISDN PRA
♦ Supplementary Services
♦ Other protocols and national protocol variants are implemented on customer requests.

Cables

Cables included with the V5 test instruments:

♦ One 1:1 twisted pair cable with RJ45 connectors for simulation (TE).

♦ One twisted pair crossover cable with RJ45 connectors for simulation (NT).

♦ One Y-cable with RJ45 connectors for monitoring.

Options

Optional products available for the V5 test instruments:

♦ Impedance Converter: A small external adapter for 75 Ohm dual coax (BNC or Type 1.6/5.6) termination to 120 Ohm twisted pair RJ45 termination. No AC power or batteries required.

♦ T-Attenuator: A small external adapter for tapping into a twisted pair signalling link for non-intrusive monitoring. RJ45 connectors. No AC power or batteries required.

♦ Amplifier: A external switchable 0, 20 or 30 dB amplifier with both 75 Ohm coax (Type 1.6/5.6), 120 Ohm twisted pair (RJ45) and terminal block connectors, is available for compensating for possible attenuation on the cross coupling device (tapping point). High impedance mode is also supported. Battery eliminator is included.

Related Products

♦ STINGA BICC Monitor & Simulator
♦ STINGA IRI Analyser
♦ STINGA ISDN PRA Monitor & Simulator
♦ STINGA ISDN BA Monitor & Simulator
♦ STINGA MEGACO Monitor & Simulator
♦ STINGA MOBILE Monitor
♦ STINGA NGN Monitor
♦ STINGA PNNI Monitor & Simulator
♦ STINGA SCTP Simulator
♦ STINGA SIP Simulator
♦ STINGA SS7 Monitor & Simulator
♦ E1/T1/J1 support for Wireshark (Ethereal)

Note: The **BICC** products includes all the functionality of the SS7 products, in addition to support for the BICC protocol. The SS7 test instruments can easily be upgraded to the BICC products.

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