T1 E1 VF FXO/FXS and tProbe™ DataCom Analyzer

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tProbe™ Units

- tProbe™ T1 E1 is an enhanced USB Based T1 and E1 solution that is capable of both T1 and E1 interfacing
- Available with Dual T1 or E1, FXO, FXS, DTE, and DCE interfaces
- Forward thinking hardware design for future daughter board expansion applications
- Connects to a PC via a USB 2.0 port
- Access it remotely

Why the product is superior?

- Portable with advance test features such as Pulse Shape Analysis, Jitter Measurement and Analysis
- “Cross-port Through” Mode and “Cross-port Transmit” Mode – these settings make cabling with Drop/Insert and Fail-Safe Inline Monitoring very easy
- Enhanced VF Drop and VF Insert Capabilities (including 3.5mm or Bantam physical connection options)
- Improved circuitry for very accurate Digital Line Level measurements
- Forward thinking hardware design for future daughter board expansion applications
- Available with Dual T1 or E1, FXO, FXS, DTE, and DCE interfaces

What the unit does ?

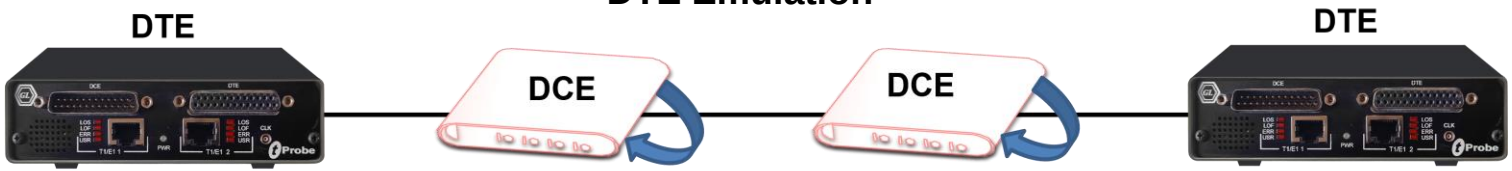
- Used for installation, test, and troubleshooting of T1 E1 lines - routine testing of errors, such as pulse testing, bit errors, frame errors, and bipolar violation
- Capability of T1 E1 PCM signal visualization, capture, storage, analysis, and emulation
- Includes BERT, voice band analysis, data, signaling, and protocol analyzer all in one
- Most all “basic applications” and “special applications” are available for tProbe™ T1 E1 analyzer including Comprehensive Analysis / Emulation of voice, digits, tones, fax, modem, raw data, and Echo Testing
- Capable of simulating as well as decoding and demodulating fax calls over T1 E1 lines using Fax Simulator and FaxScan™
- Compares incoming T1 (E1) pulses against the pulse shape mask specified by the ITU G.703 standard
- Emulates and decodes all 24 for T1 (32 for E1) channels simultaneously for signaling bits, power level, frequency, and multi-frame data

tProbe™ Datacom Analyzer

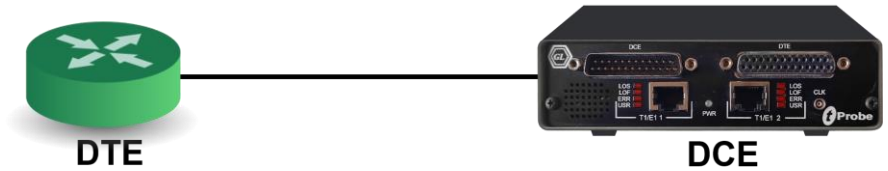
- Designed for the service installation, verification, and maintenance of data communications and telecommunication equipment
- Provides a software selectable interface to emulate DTE, DCE and monitor the Datacom lines for both synchronous (sync), and asynchronous (async) modes of operation
- Supported Line interfaces - V.35, RS-232, RS-449, RS-485, EIA-530 and EIA-530A
- Sync BER from 300 b/s to 16.384Mbps
- Async BER from 300 b/s to 115.2Kbps
- DTE or DCE emulation mode
- SYNC clock source and sense selection
- Frequency measurement

Datacom Analyzer

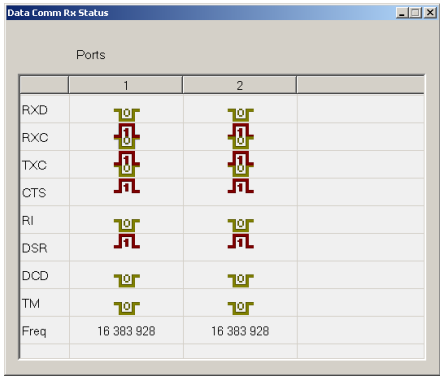
DTE Emulation



DCE Emulation



Monitoring Datacom Lines



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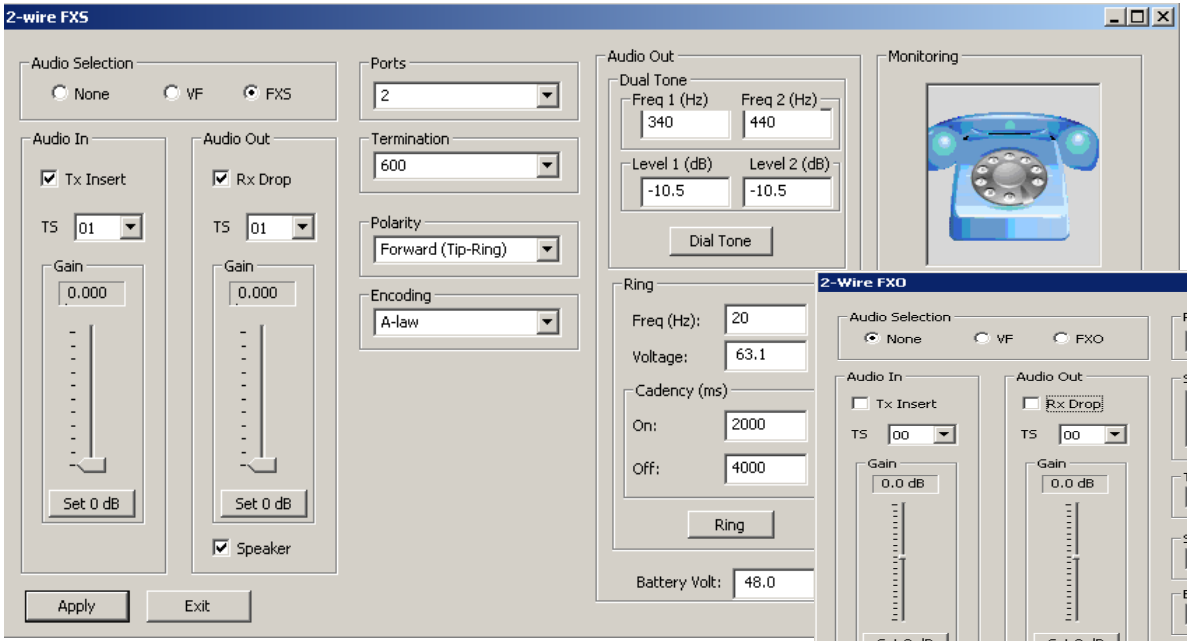
2-Wire FXO/FXS

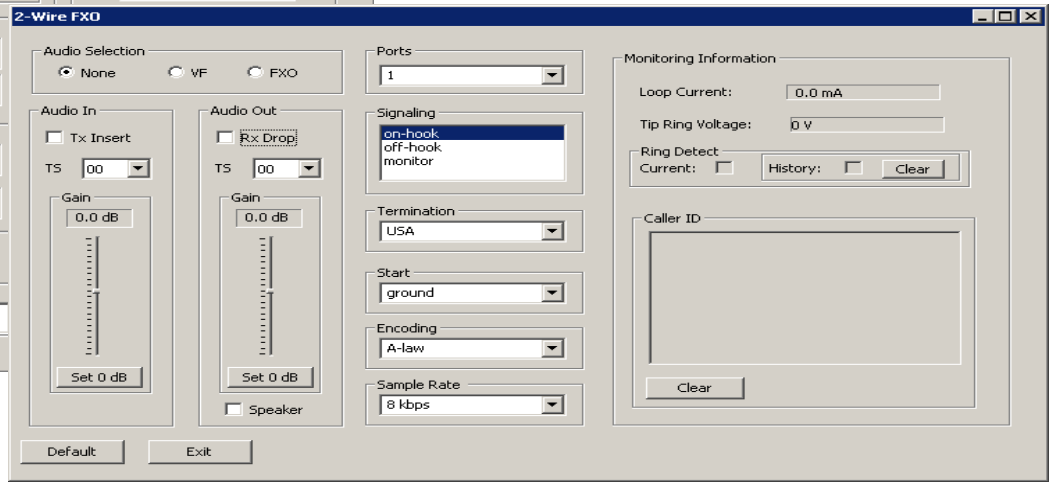
- FXO port on tProbe™ allows to simulate a two-wire FXO device such as a telephone or a fax machine
- FXO port allows you to capture and analyze data from a two-wire telephone line, as well as to generate and transmit analog data onto that two-wire line
- The FXS port on tProbe™ emulates a two-wire FXS service such as a telephone wall jack
- This feature allows you to interface with an FXO device such as a telephone

2-Wire FXO/FXS (Contd.)

2-Wire FXS



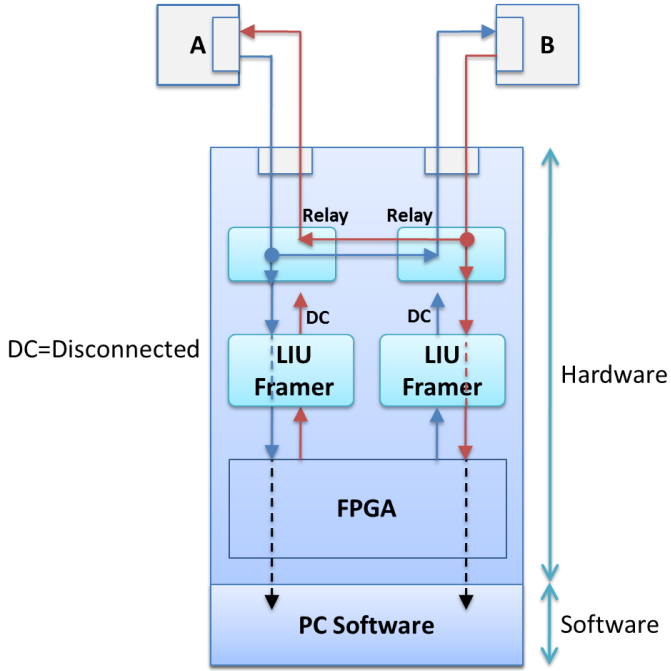
2-Wire FXO



Benefits

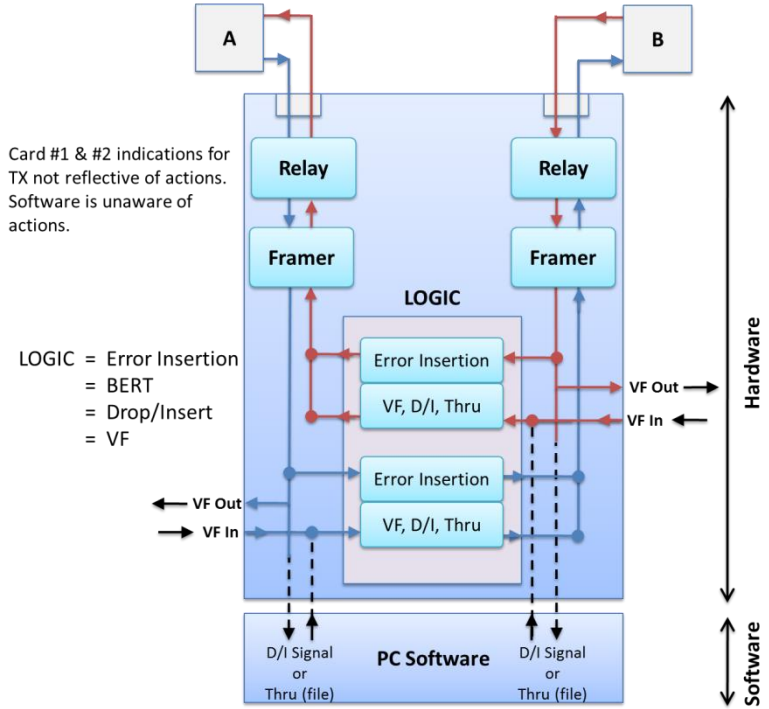
- Compatibility with Windows® operating systems and user-friendly real-time software
- Boards are significantly faster, and significantly more efficient
- CPU utilization with the newer boards is negligible
- Adjustable transmit clock frequency (+ / - 300ppm) for testing frequency lock sensitivity of T1 or E1 equipment
- Supports individual speakers per card
- VF Tx Gains for tProbe™ analyzer ranges from -12 dB to +59.5 dB in 0.5 dB steps
- VF Rx Gains for tProbe™ analyzer ranges from -63.5 dB to +9 dB in 0.5 dB steps
- VF Tx and Rx impedance is 135-, 150-, 600-, and 900-Ohm terminations, New High Impedance Monitor Termination (>25K Ohms), and Mic/HS impedance (Microphone Headset impedance is1K Ohms)

Cross-port Through Mode



- This mode is similar to the standard “Outward Loopback” which allows monitoring T1 E1 lines “in-line” while still being protected from loss of power to the board

Cross-port Transmit Mode



- Used for Drop and Insert applications in which the board analyzes the traffic running between two pieces of T1 E1 equipment. This feature also eliminates complex cabling

T1 E1 Basic Software

- Board Configuration
- VF Options
- Monitoring Options
- Intrusive Testing
- Dual VF Tx Rx
- Windows Client / Server
  - Remote access to T1 E1 server
  - Clients - Python

- Configuration Options for T1, E1, Datacom, FXO, FXS
  - T1 E1 Configuration
  - Encoding Options – A-law, u-law, and Bit Inversion
  - URB Settings
  - WCS Configuration
  - 2-Wire FXO
  - 2-Wire FXS

T1 E1 Basic Software (Contd.)

- VF Options
  - Speaker
  - Drop and Insert
  - VF In/Out TS settings
- Monitoring Features
  - Monitor T1 E1 Line
  - Byte Values and Binary Byte Values
  - Signaling bits, Power Level, DC Offset, and Frequency
  - Multiframes, and Real-time Multiframes
  - T1 E1 Data as Real-time Bitmap
  - Time-slot Window

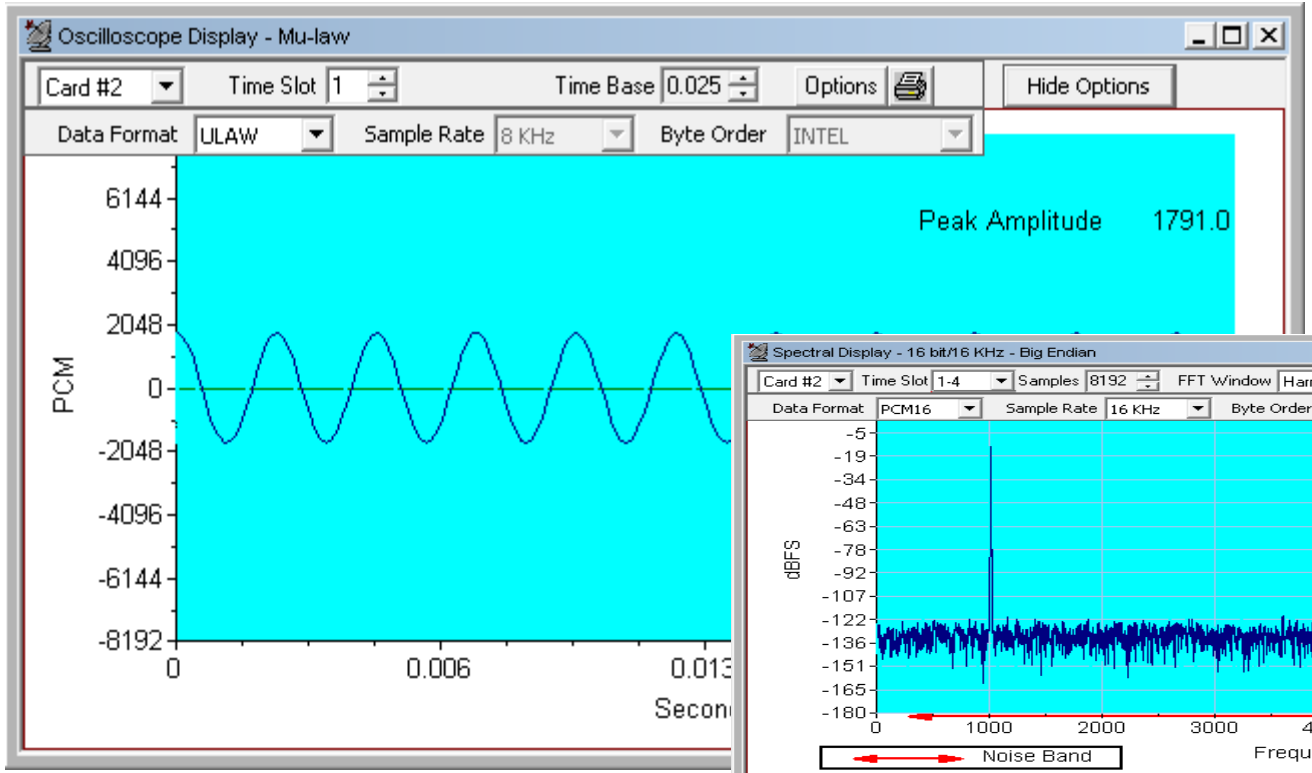
- Monitoring Features
  - ASCII Timeslot Display
  - Oscilloscope and Power Spectral
  - Audio Monitoring
  - Active Voice Level
  - Jitter Measurement
  - Pulse Mask Display
  - Capture Dialed Digits
  - Realtime Strip Chart
  - Realtime Multichannel Audio Bridge
  - Signaling Bit Transitions

T1 E1 Basic Software (Contd.)

- Intrusive Tests
  - Bit Error Rate Test
  - Enhanced Bit Error Rate
  - ATM BERT
  - Transmit Tone
  - Transmit Gaussian Noise
  - Transmit Multiframe
  - Transmit Signaling Bits
  - Precision Delay Measurement
  - Rx-to-Tx Loop back
  - Error Insertion
  - Jitter Generation

Monitoring Features

Oscilloscope Display



Spectral Display

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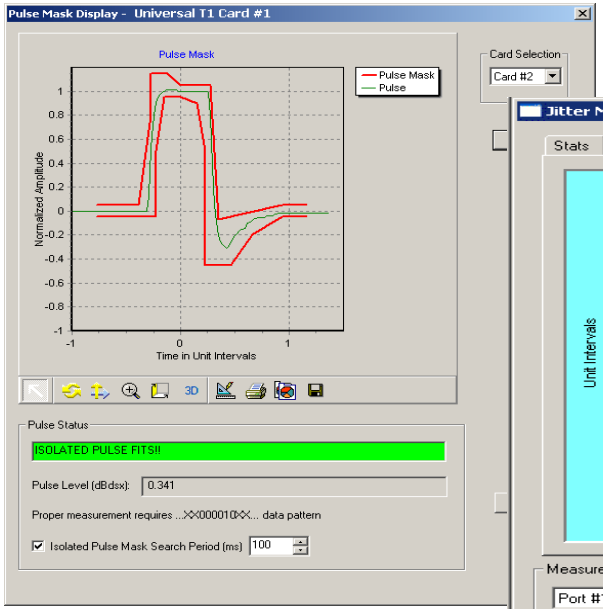
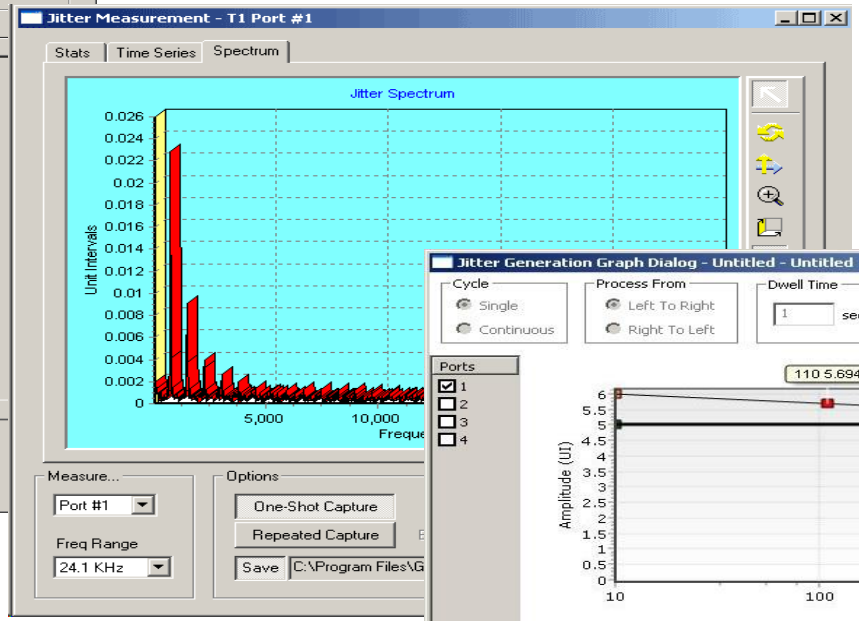
Jitter Measurement and Pulse Mask

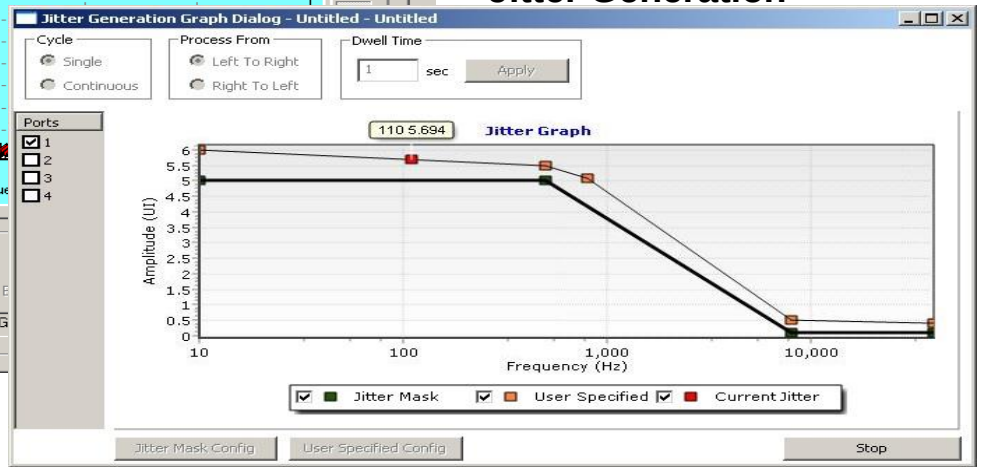
Pulse Shape Display



Jitter Measurement

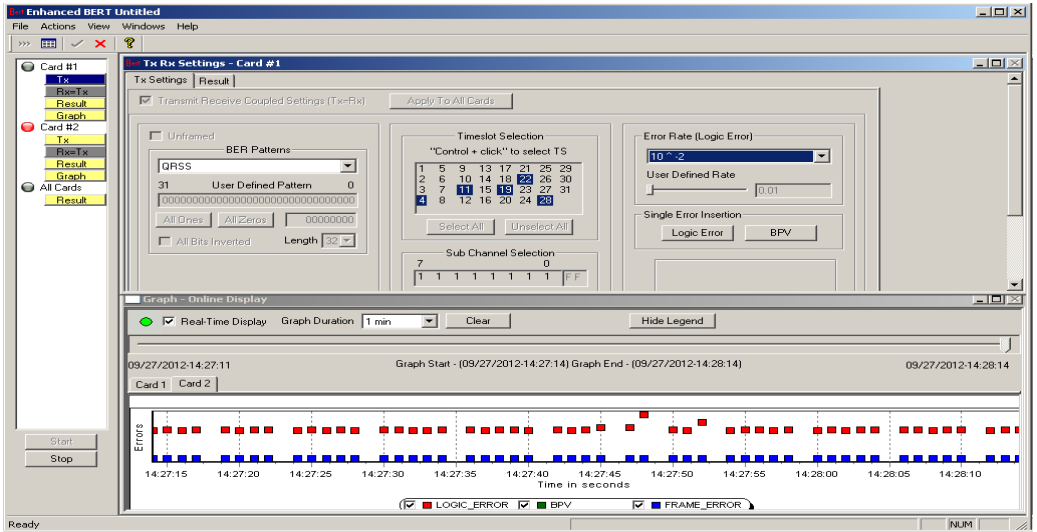


Jitter Generation

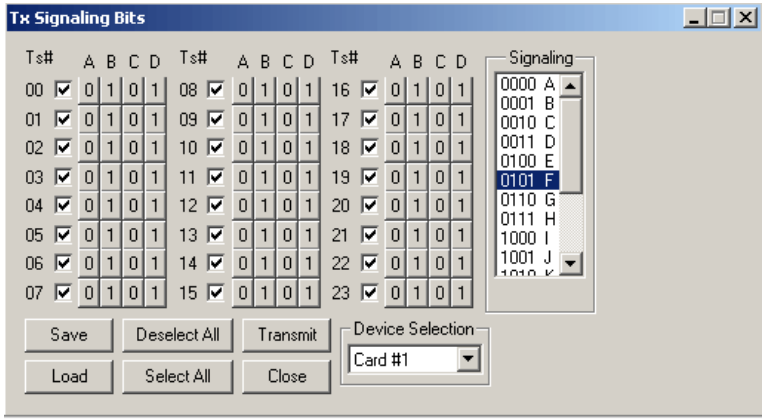


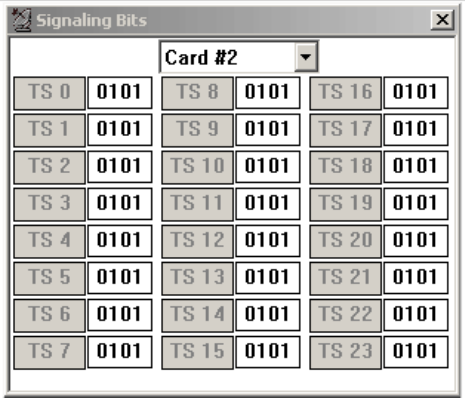
Enhanced BERT and Tx Signaling BITS

Enhanced BERT



T1 E1 Basic Software





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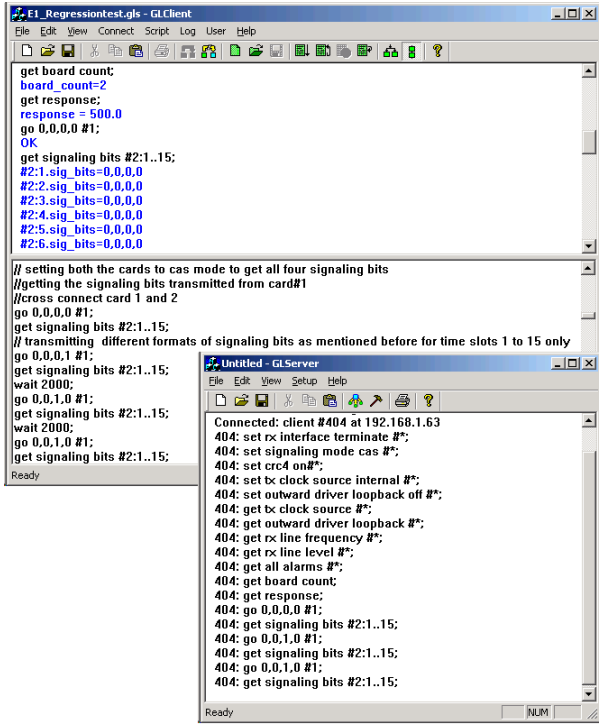
Client Server



- Allow the user (with an appropriate client) to operate analyzers remotely, write scripts for automation, or provide multi client connectivity to a single T1 E1 VF Data analyzer

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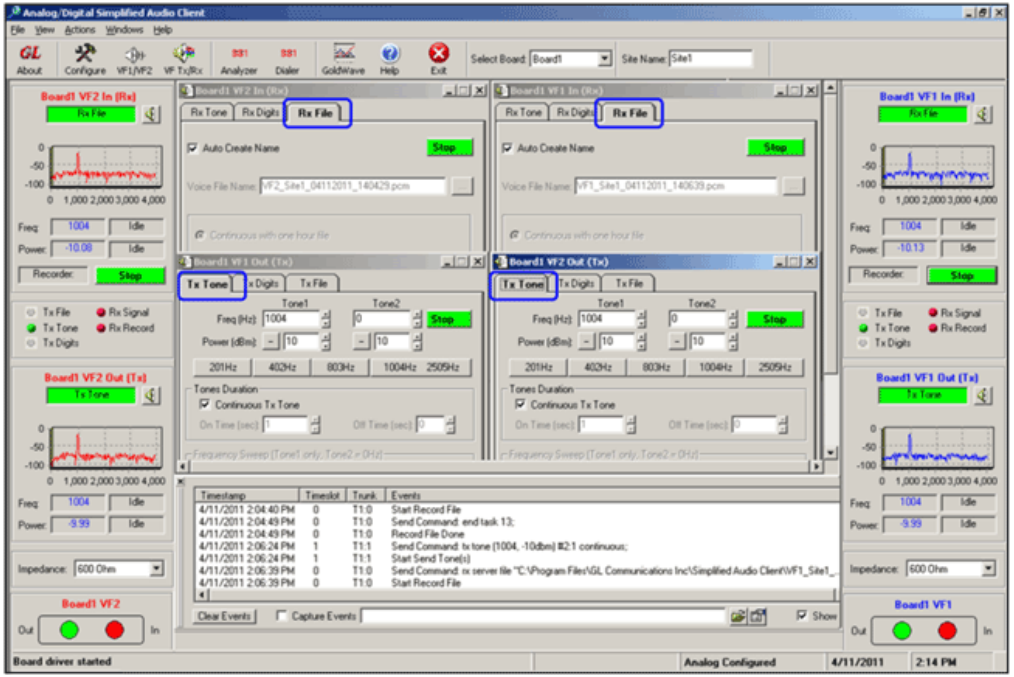
Dual VF Tx/Rx



- Performs non-intrusive and intrusive VF audio monitoring, VF audio recording, and testing easily
- Provides an alternate and simple GUI as against the T1 E1 Analyzer applications in basic software to perform analog Tx/Rx functions

T1 E1 Special Applications

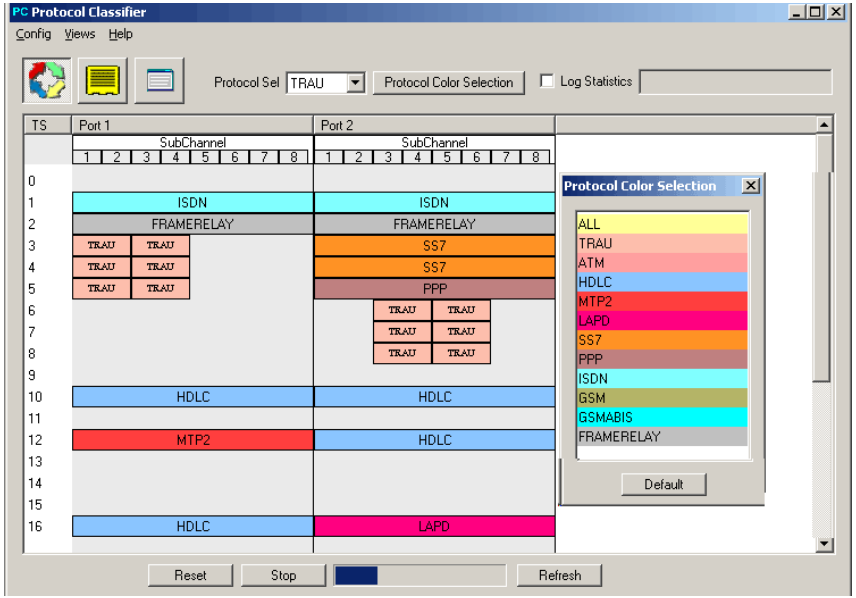
- Protocol Analysis
  - ISDN, HDLC, SS7, Frame Relay, TRAU, CDMA, DCME, T1 Facility Data Link,
  - E1 Maintenance Data Link, UMTS, PPP, ATM, GSM, V5.x, CAS, GPRS, GR303, SS1
- Protocol Emulation
  - ISDN, HDLC, MLPPP, MLPPP Conformance, CAS, TRAU, SS7
  - SS7 conformance suite, GSM A, GSM Abis, MAP, CAMEL, Frame Relay, ATM IMA, and SS1
- Capture, Analysis, and Emulation
  - BER, Playback
  - Manual and Automated Record/Playback files
  - Call Capture and Analysis (CCA)
  - Multiple Call Capture and Analysis

T1 E1 Special Applications (Contd.)

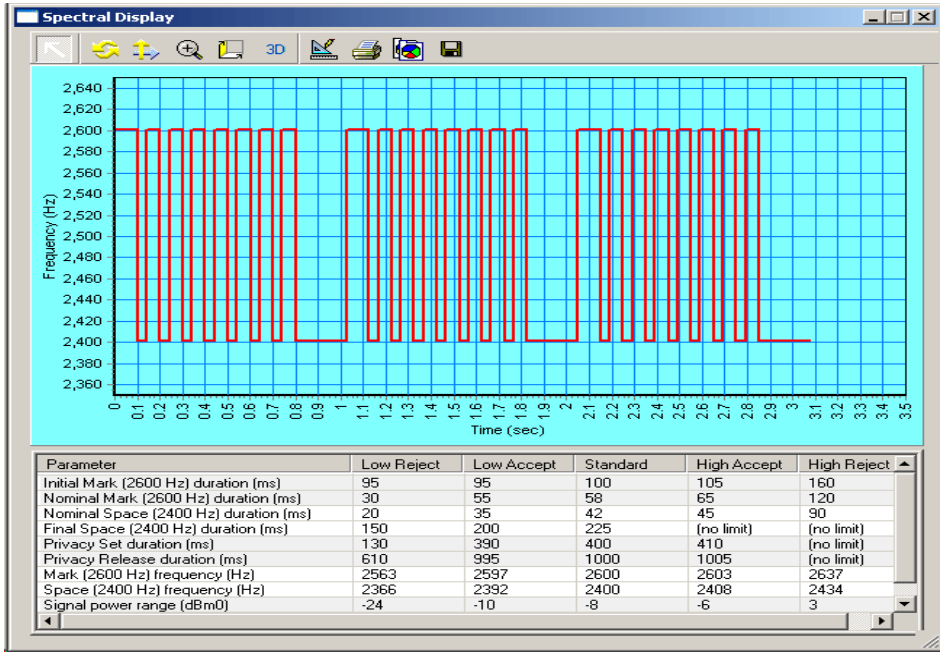
- Voice Band Analysis Software
  - Call Data Records (CDR)
  - Voice Band Analyzer (VBA)
- Fax Emulation and Analysis
  - Fax Simulator
  - Fax Analysis using GLInsight ™ or FaxScan™
- Echo Cancellation Testing / Compliance
  - Manual
  - Semi-automated
  - Automated
- WCS Modules
  - Transmission/reception of files/digits
  - Multi-channel BERT
  - CAS Emulation
  - DSP operations, Dynamic DSP capability
  - SA Bits/ FDL/ HDLC/ TRAU/ MC-MLPPP/ SS7/ ISDN / ML Frame Relay
- Protocol Identifier
- Multi-Channel BERT
- Multiplex/Demultiplex Software
- Network Surveillance

Special Application

Protocol Identifier



SS1 Analyzer and Emulator



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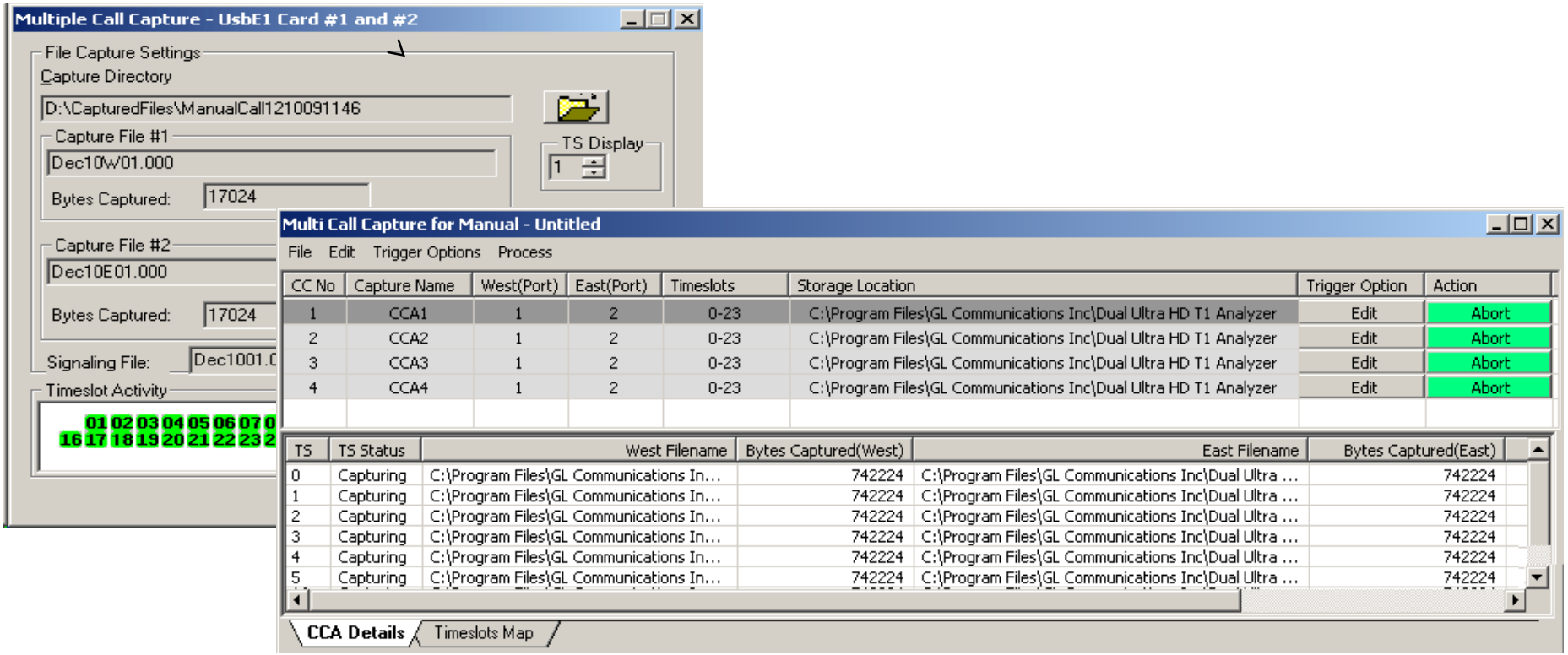
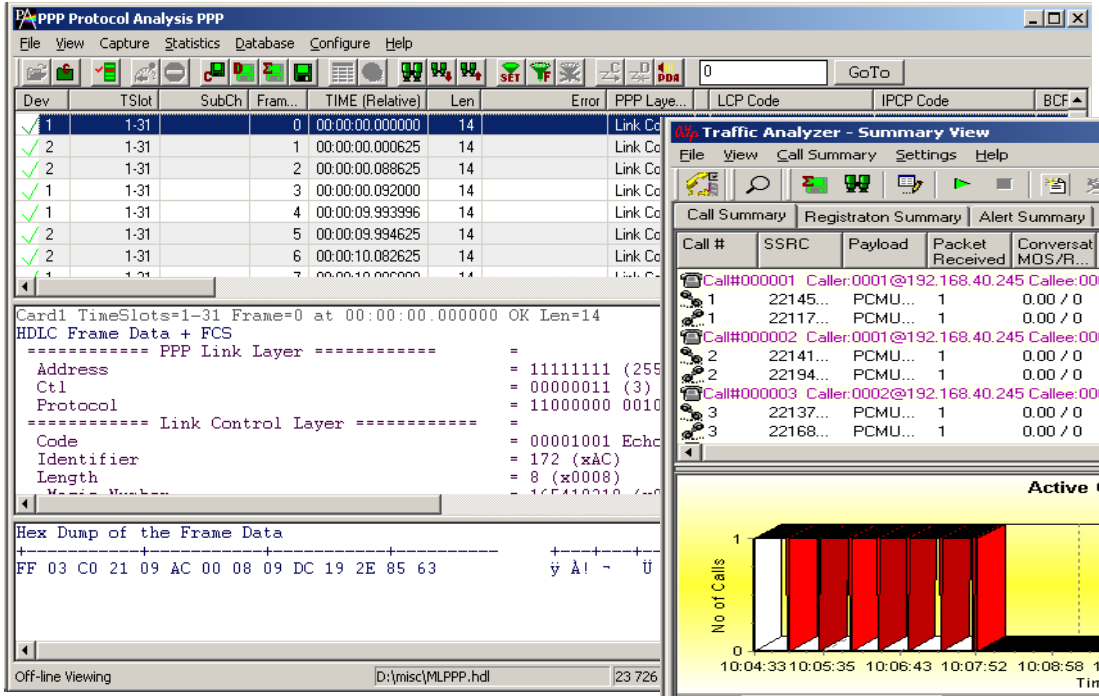
Call Capture and Analysis

Multiple Call Capture and Analysis

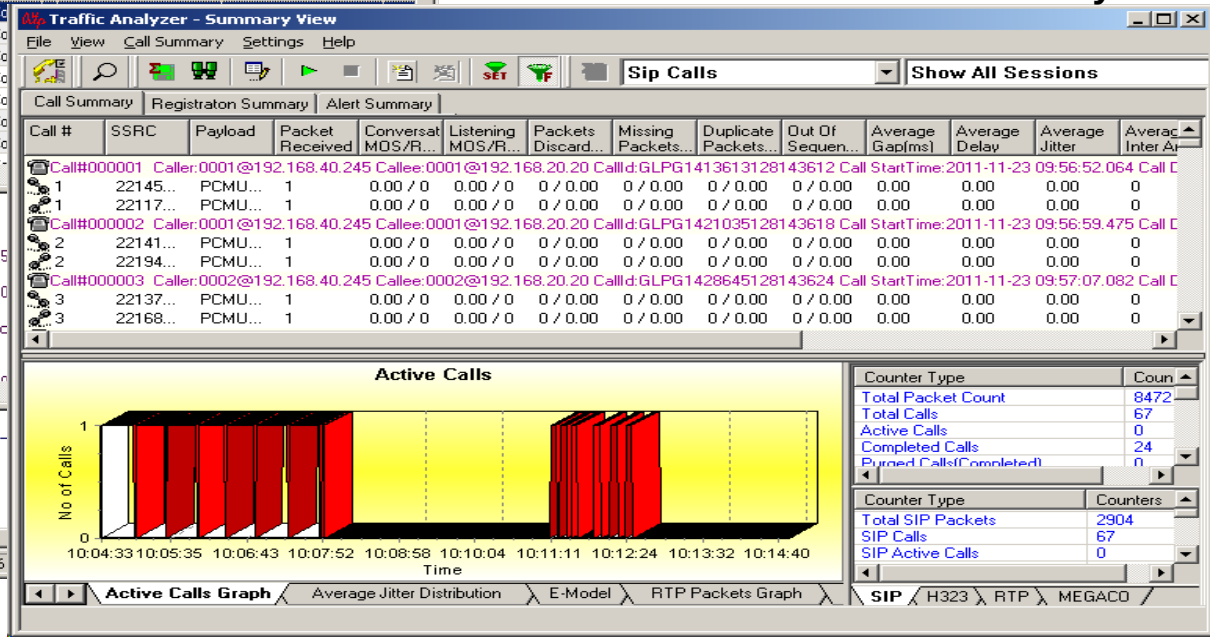


Protocol Analysis

PPP Protocol Analysis

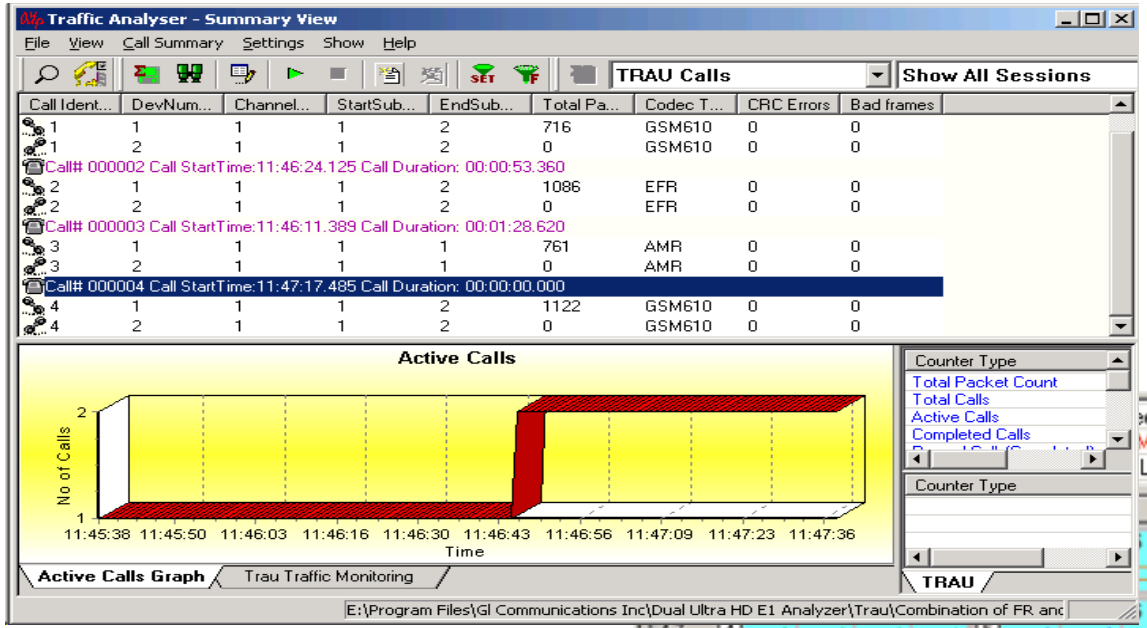


PPP Packet Data Analysis

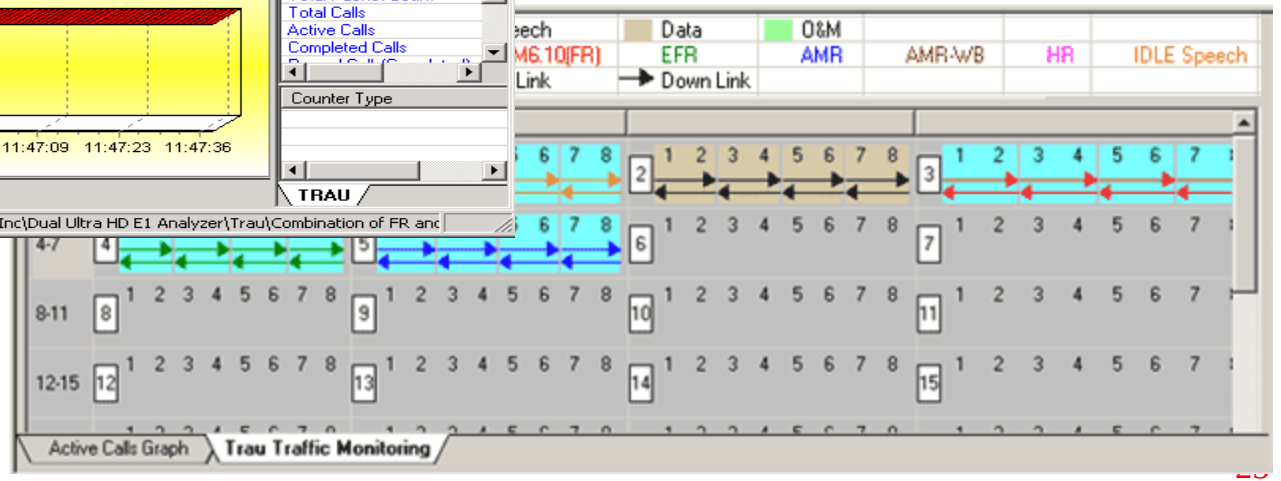


Protocol Analysis (Contd.)

TRAU Packet Data Analysis - Active Calls Graphs



TRAU Traffic Monitoring



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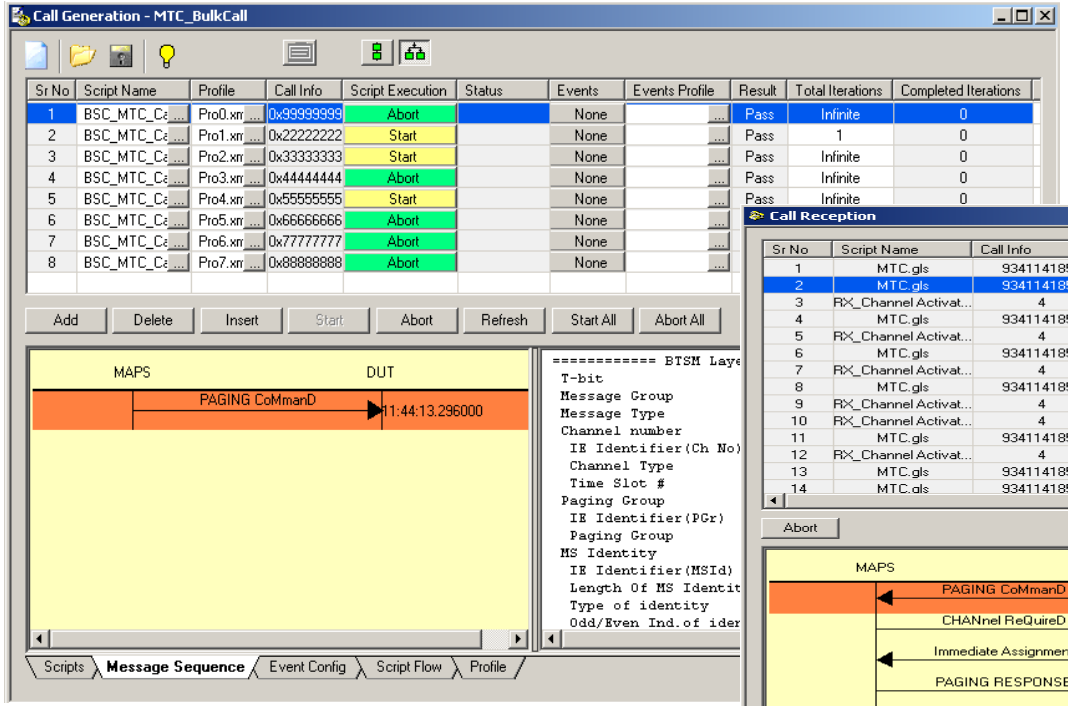
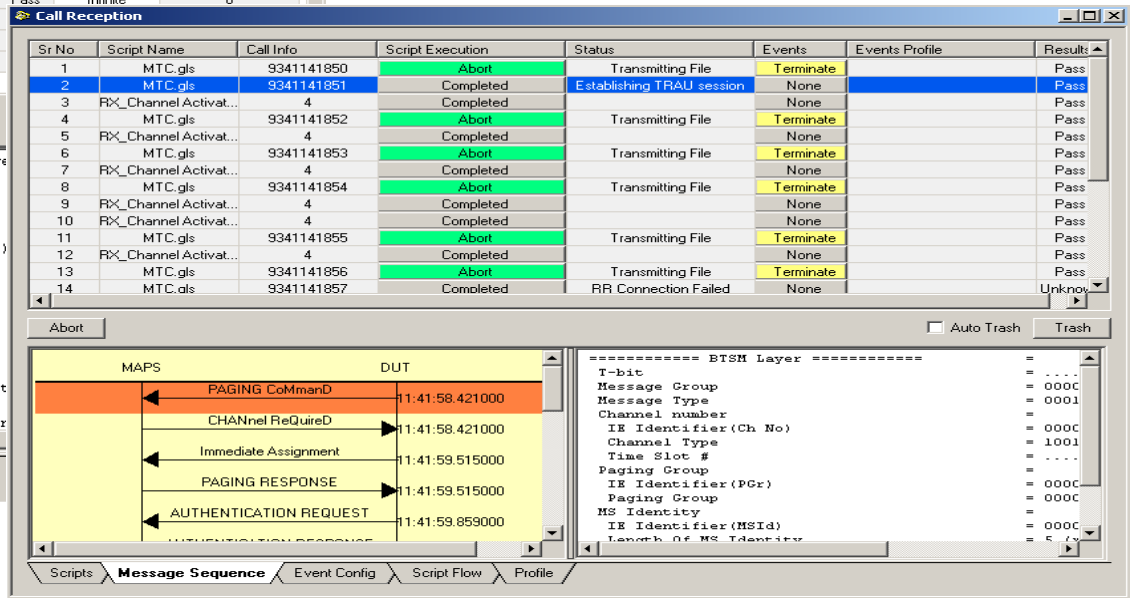
Protocol Emulation

GSM Call Generation



GSM Call Reception



Thank you