T1E1 Quad and Octal Port Analyzer

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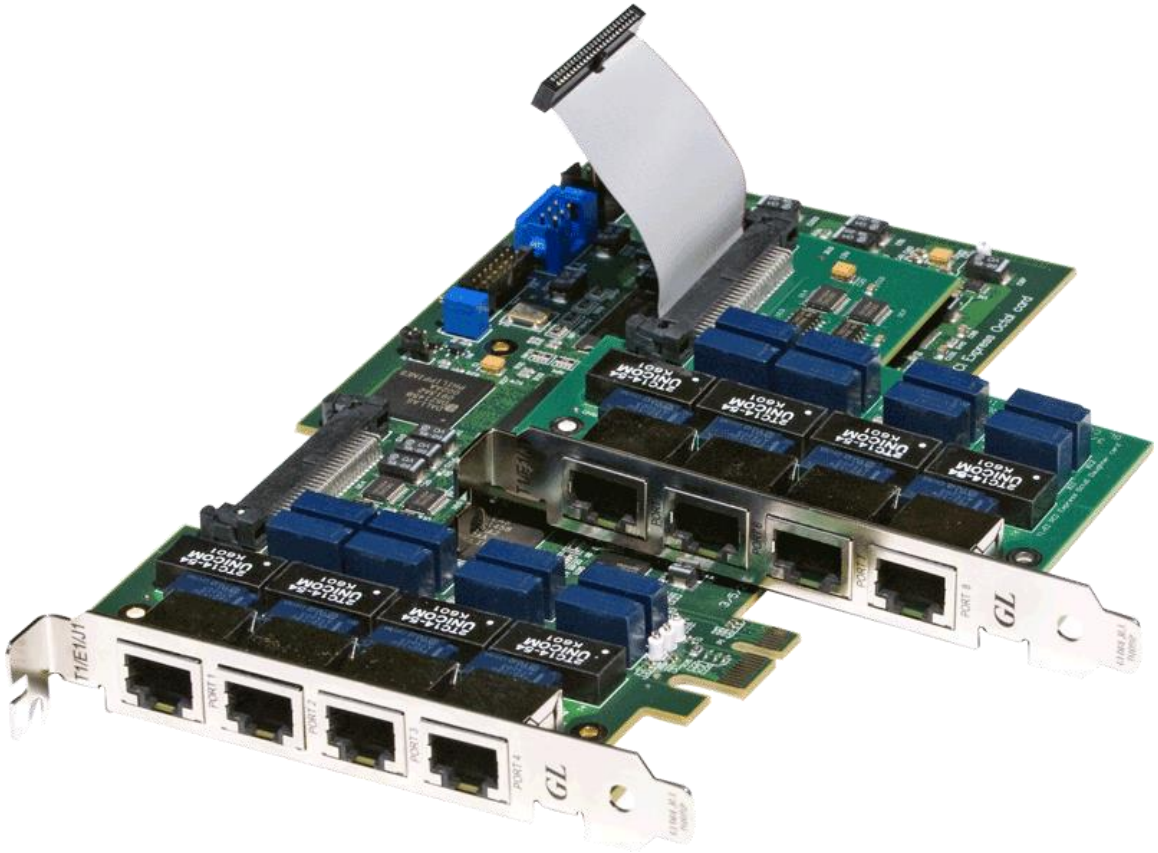
PCIe based Octal and Quad T1 E1 Board



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Octal T1 E1 Board on Rack PC

- High density Performance
- Provides Four (4) or Eight (8) RJ-48 T1 E1 ports and multiples thereof. For example, configurations of 8, 12, 16, 64 T1 E1s in a single rack are possible

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What is this hardware superior?

- High Density and High Speed – The boards (with Direct Memory Access) are significantly faster and significantly more efficient
- Supports high performance voice and data applications
- PCI Express x1 Lane/Board
- Reduces hardware costs and power consumption

Main Features

- T1 or E1 interfacing – Software Selectable
- User friendly GUI for Windows® 10 OS
- Windows and Linux Drivers for Open Source Applications
- TDM, ISDN, SS7 – High Density Voice
- VoIP, Frame Relay, Multi-Link Frame Relay, PPP and Multi Link PPP, HDLC
- Most all basic applications and special applications are available for Quad and Octal T1 E1 cards including Comprehensive Analysis / Emulation of voice, digits, tones, fax, modem, raw data, and Echo Testing
- Call Recording, Generation, and Monitoring for hundreds to thousands of calls in one platform
- Capable of simulating as well as decoding and demodulating fax calls over T1 E1 lines using Fax Simulator and FaxScan™

Main Features (contd.)

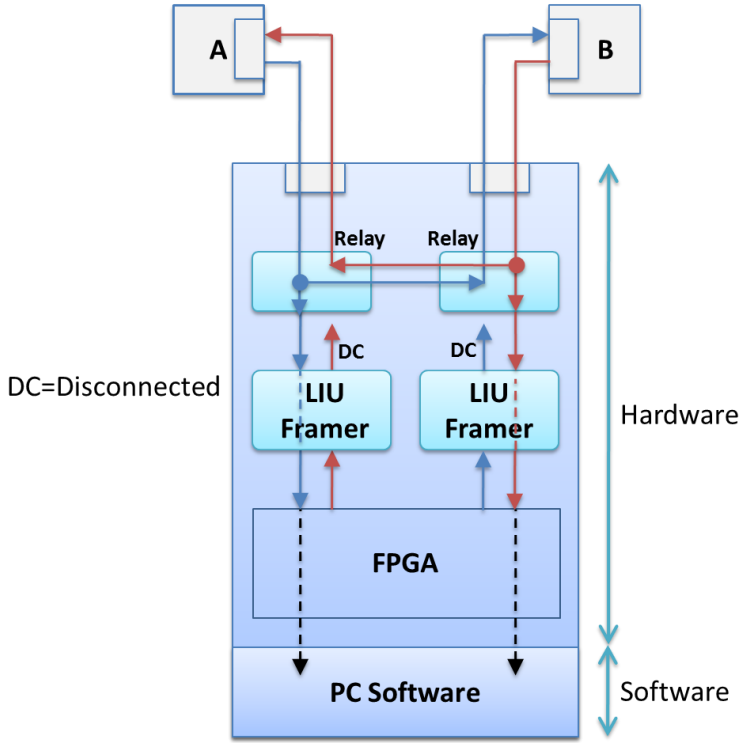
- Router with Multi T1 E1 WAN Interfaces i.e. MLPPP (Multi Link PPP)
- Media (VoIP) Gateway, IP PBX, and IVR Applications i.e. Asterisk (TM)
- “Cross-Port Through” and “Cross-Port Transmit” Modes – these configurations make cabling with Drop/Insert and Fail-Safe Inline Monitoring very easy
- Compatible with dual, quad, and higher core motherboards and software that simulate dual and quad cores (hyper-threading)

Quad and Octal Cards over Dual T1 E1 Express (PCIe) Cards

	Dual T1 E1 Express (PCIe) Boards	Quad, Octal T1 E1 Boards
Number of Ports	2	4, 8
PCI Slot Type	Uses a PCI Express x1 Bus / Connector	Uses a PCI Express x1 Bus / Connector
Pulse Mask Application	Supported	Not Supported
Jitter Generation and Measurement	Supported	Not Supported
External Clock Mode	Supported	No clock port connector
VF Drop and Insert	Supported	No VF connectors; Digital Drop/Insert supported
Speaker (on board)	Supported	No speakers

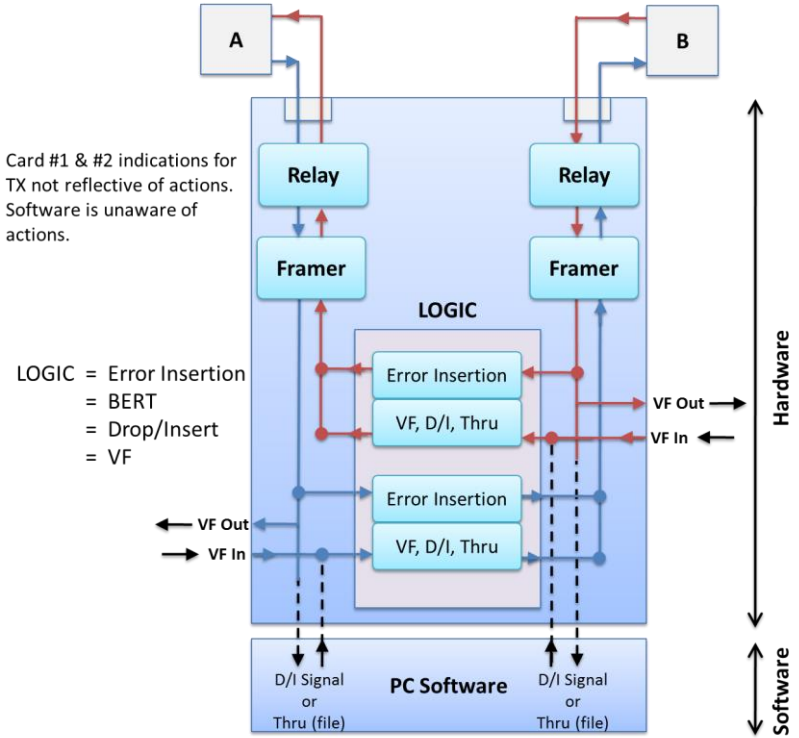
Cross-port Through Loopback

- Allows monitoring T1 E1 lines in-line while still being protected from loss of power to the board
- It is implemented entirely through relays and eliminates complex cabling
- The signal received on Card 2 (Port 2) is transmitted out onto Card 1 (Port 1)



Cross-port Transmit Mode Loopback

- The data that would normally be transmitted on Card 1 (Port 1) is diverted and transmitted on Card 2 (Port 2)
- The data that would normally be transmitted on Card 2 (Port 2) is diverted and transmitted on Card 1 (Port 1)
- It is useful for Drop and Insert and Error Injection applications in which the board analyzes and may insert traffic running between two pieces of T1 E1 equipment



T1 E1 Basic Software

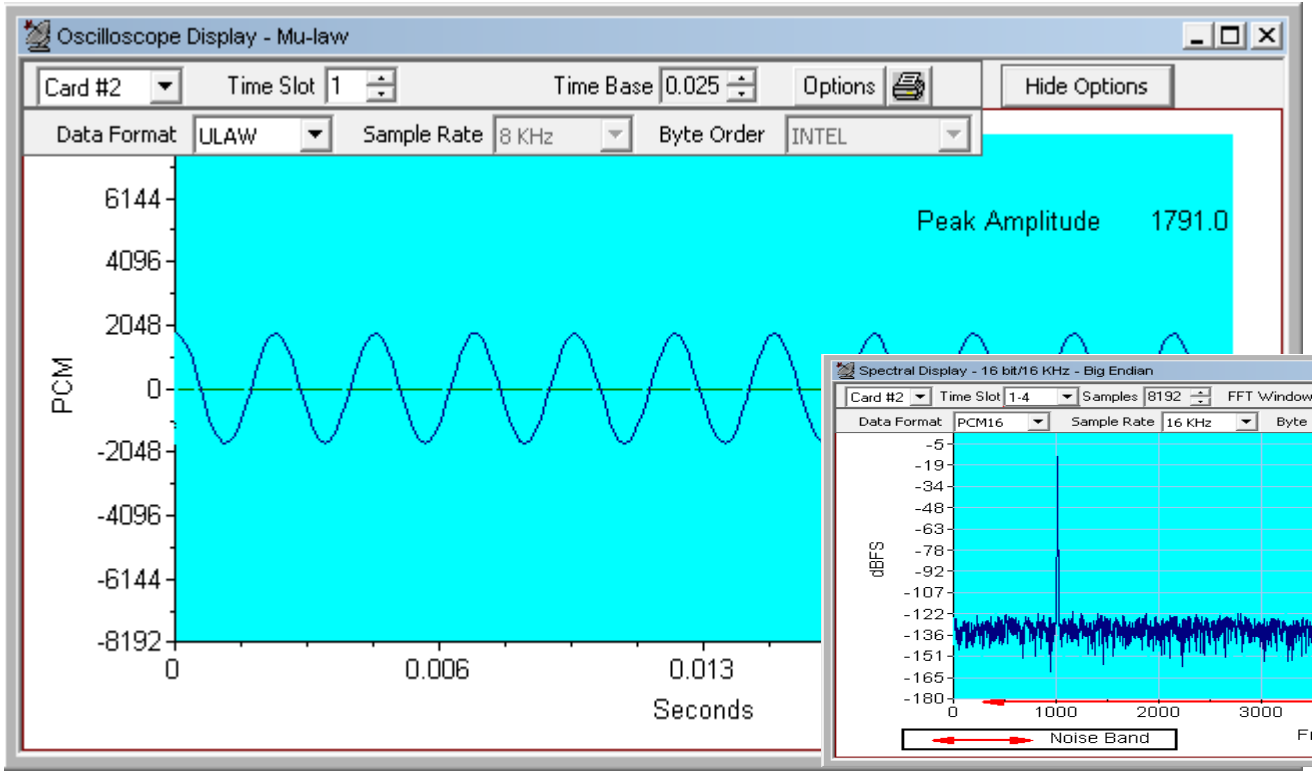
- T1 E1 Basic Software
  - ➢ Monitoring Options
  - ➢ Intrusive Testing
  - ➢ Windows Client / Server
    - Remote access to T1 E1 server
    - Clients - C++, Java, TCL

Monitoring Features

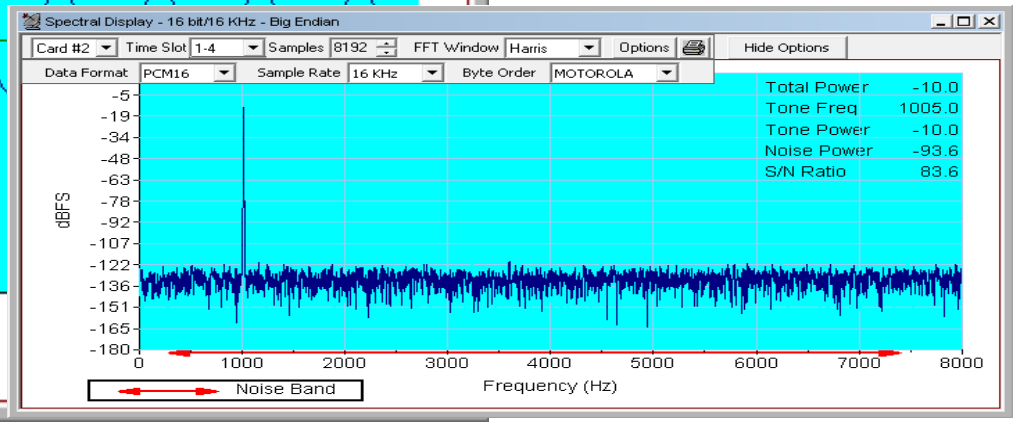
- Monitor T1 E1 Line
- Byte Values and Binary Byte Values
- Signaling bits, Power Level, DC Offset, and Frequency
- Multi-frames, and Real-time Multi-frames
- T1 E1 Data as Real-time Bitmap
- Timeslot Window
- ASCII Timeslot Display
- Oscilloscope and Power Spectral
- Audio Monitoring and Active Voice Level

Monitoring Features

Oscilloscope Display



Spectral Display



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Intrusive Testing

- Drop and Insert
- Bit Error Rate Test
- Enhanced Bit Error Rate
- Transmit Tone
- Transmit Gaussian Noise
- Transmit Multi-frame
- Transmit Signaling Bits
- Precision Delay Measurement
- Rx-to-Tx Loop back
- Error Insertion
- DTMF / MF Capture
- Real-time Multichannel Audio Bridge
- Real-time Strip Chart

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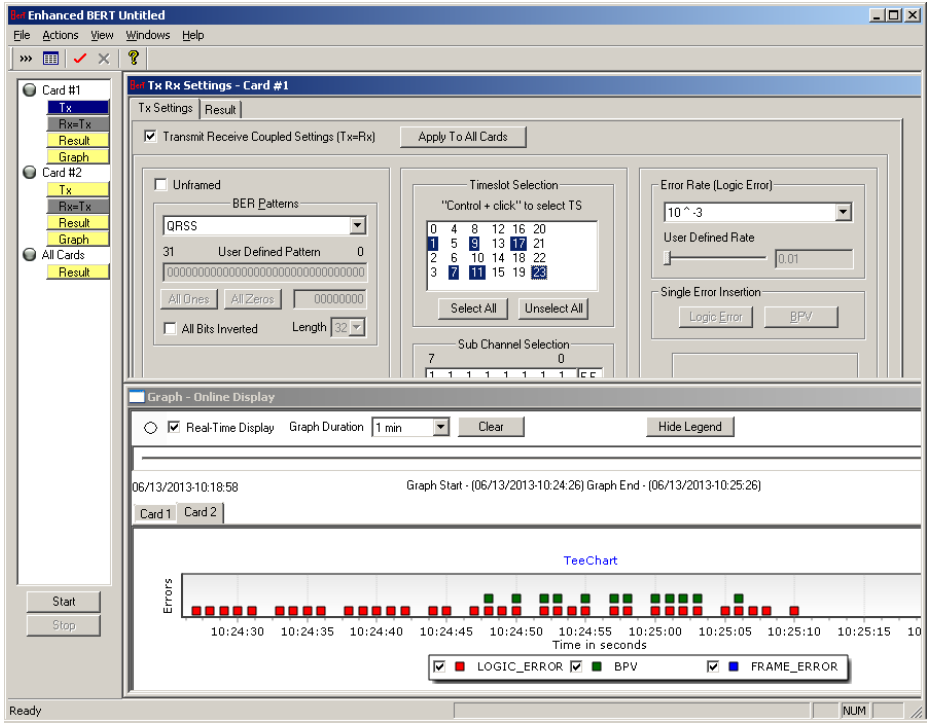
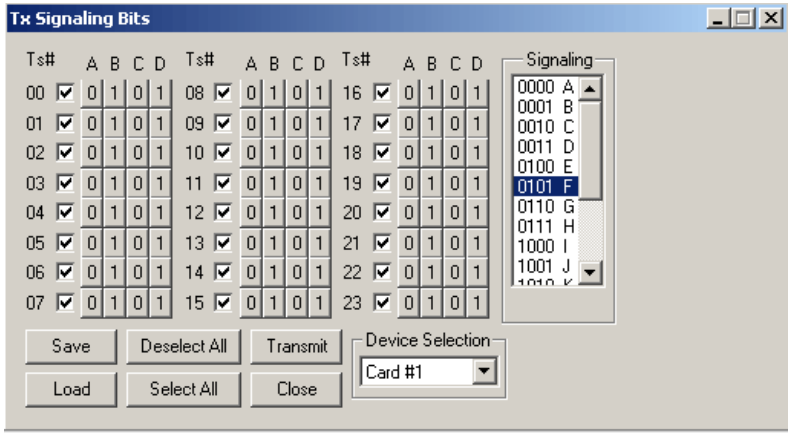
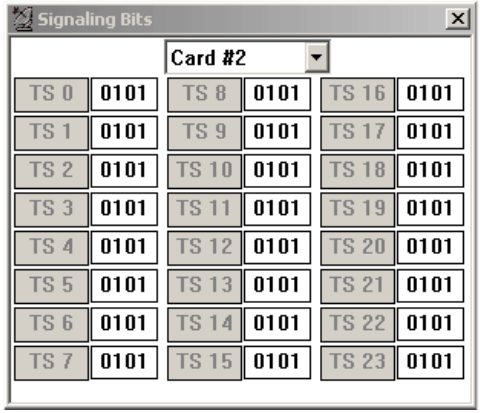
Enhanced BERT and TX Signaling BITS

Enhanced BERT



Transmit Signaling BITS





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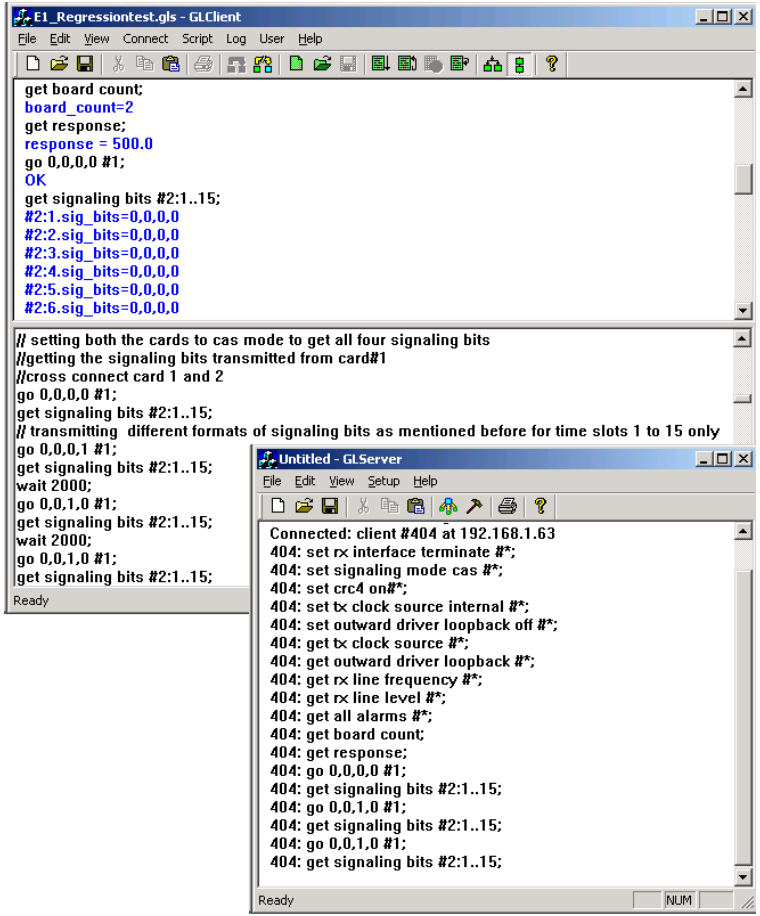
Client Server

- 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 Analyzer



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T1 E1 Special Applications

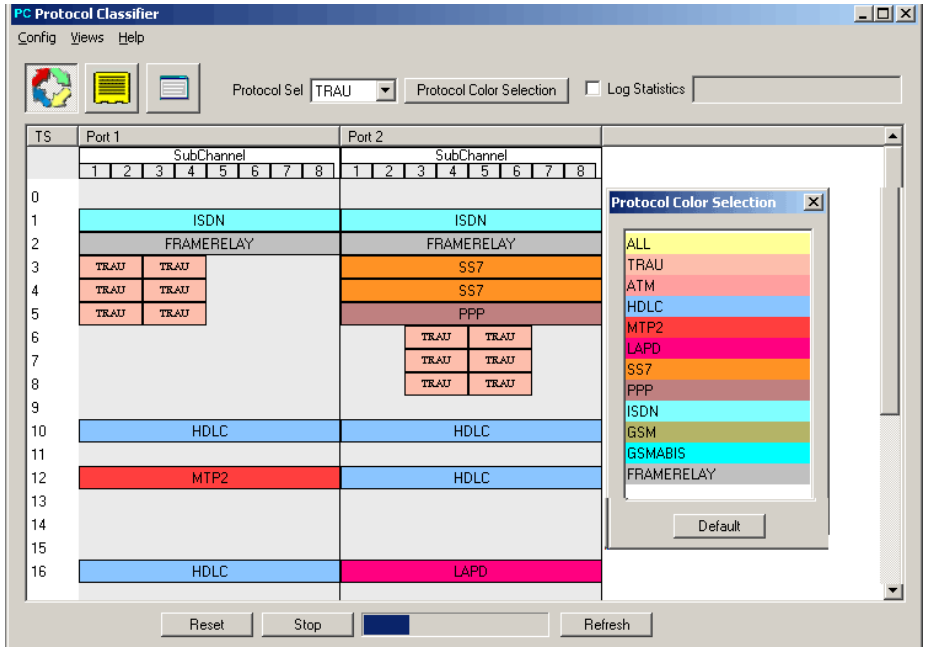
- Protocol Analysis
  - ISDN, HDLC, SS7, Frame Relay, TRAU, CDMA, DCME, T1 Facility Data Link
  - E1 Maintenance Data Link, UMTS, PPP, ATM, GSM, V5.x, GPRS, GR303, SS1
- Protocol Emulation
  - ISDN, HDLC, MLPPP, MLPPP Conformance, CAS, TRAU, SS7, SS7 Conformance
  - GSM A, GSM Abis, MAP, CAMEL, Frame Relay, ATM IMA, 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

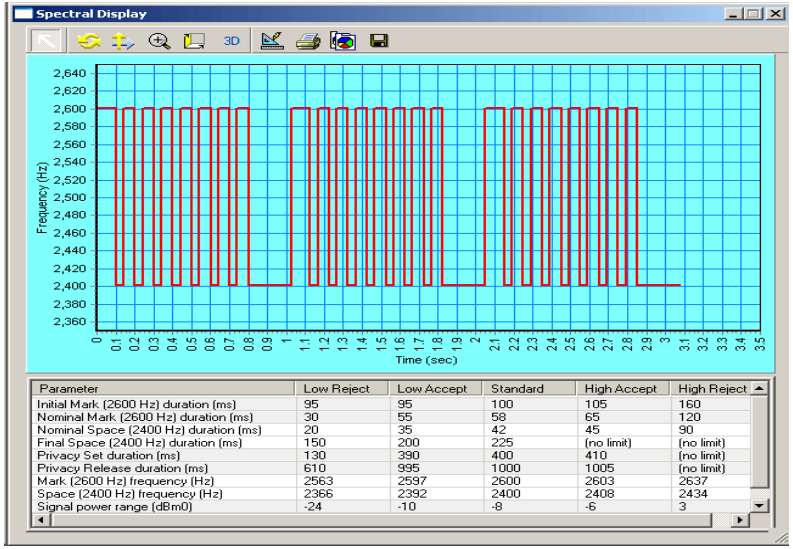
- Voice Band Analysis Software
  - Call Data Records (CDR)
  - Voice Band Analyzer (VBA)
  - Fax Emulation and Analysis
- Fax Simulator
  - Fax Analysis using GLInsight ™ or FaxScan™
- Echo Cancellation Testing / Compliance
  - Manual
  - Semi-automated
  - Automated
- WCS Modules
  - Transmission/reception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

T1 E1 Special Applications

Protocol Identifier

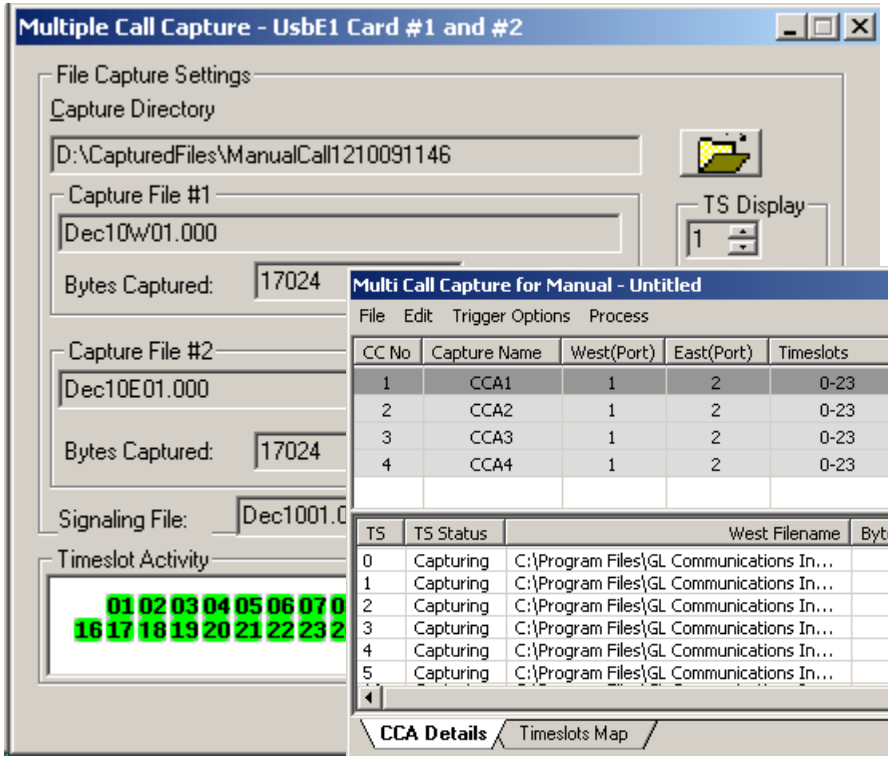


SS1 Analyzer and Emulator

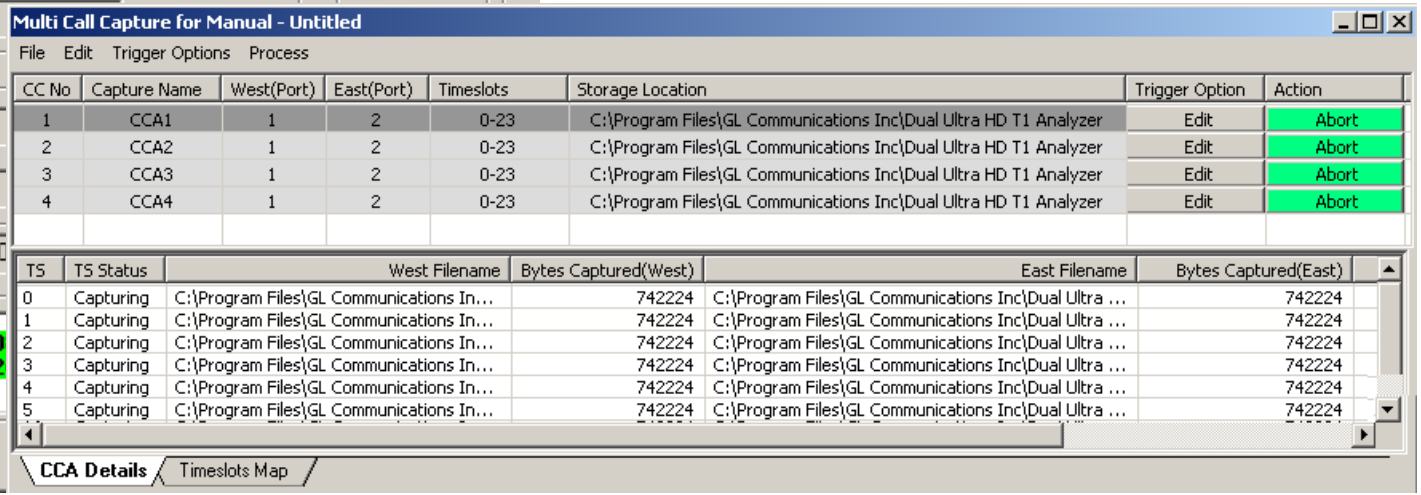


Call Capture and Analysis

Call Capture and Analysis

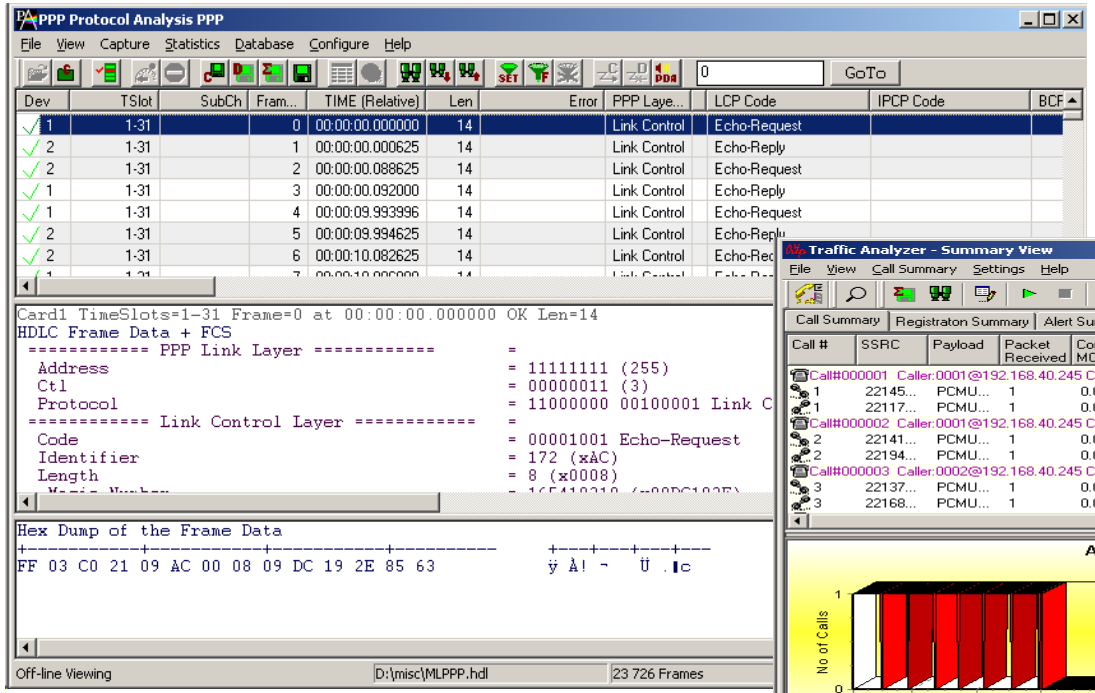


Multiple Call Capture and Analysis

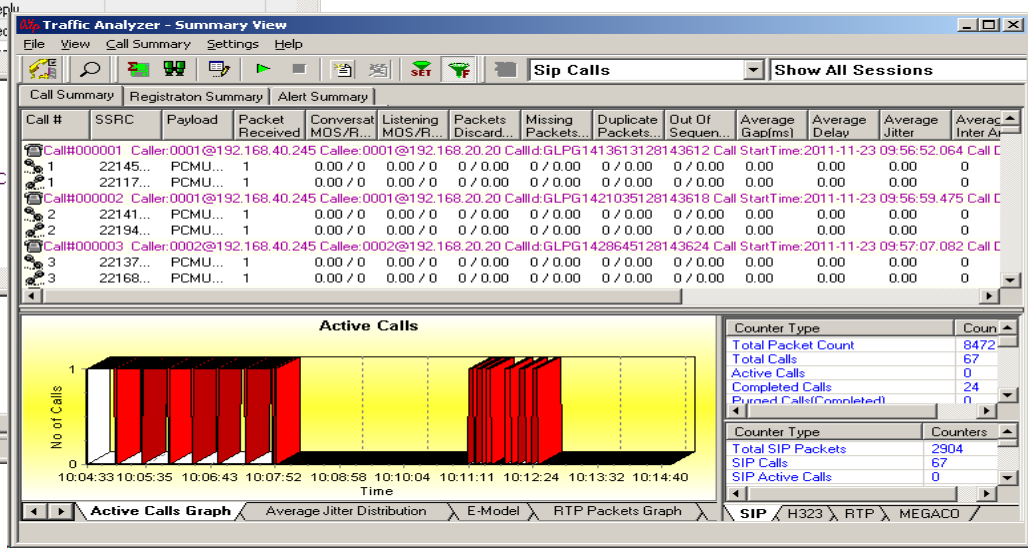


Protocol Analysis

PPP Protocol Analysis

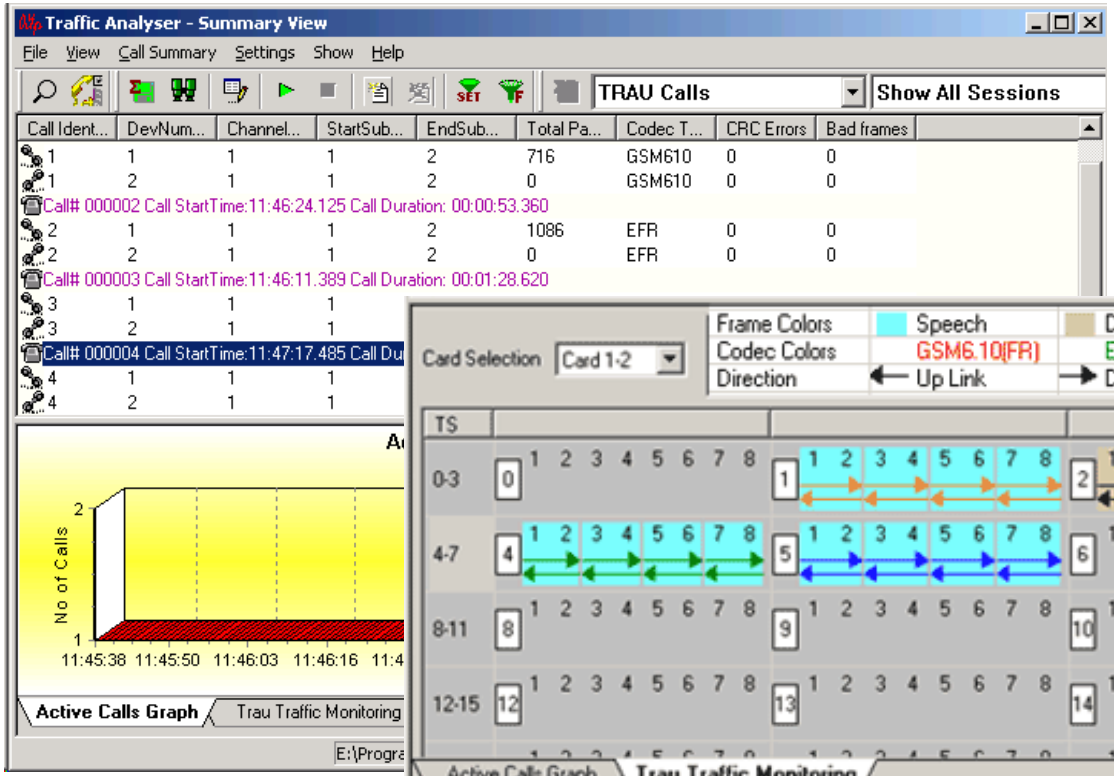


PPP Packet Data Analysis

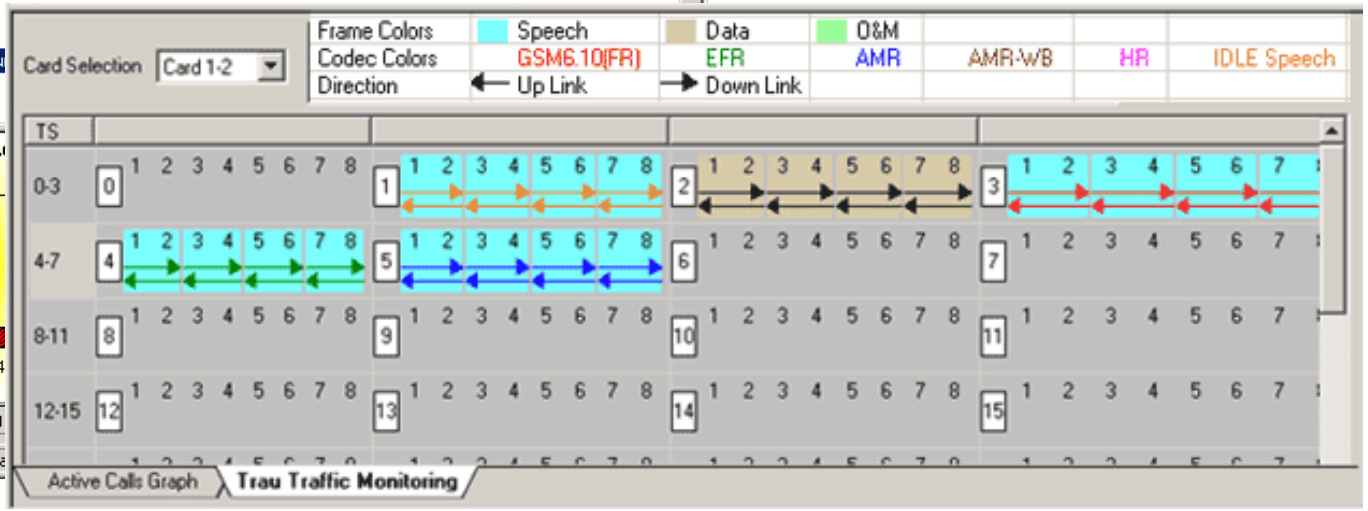


Protocol Analysis

TRAU Packet Data Analysis - Active Calls Graphs

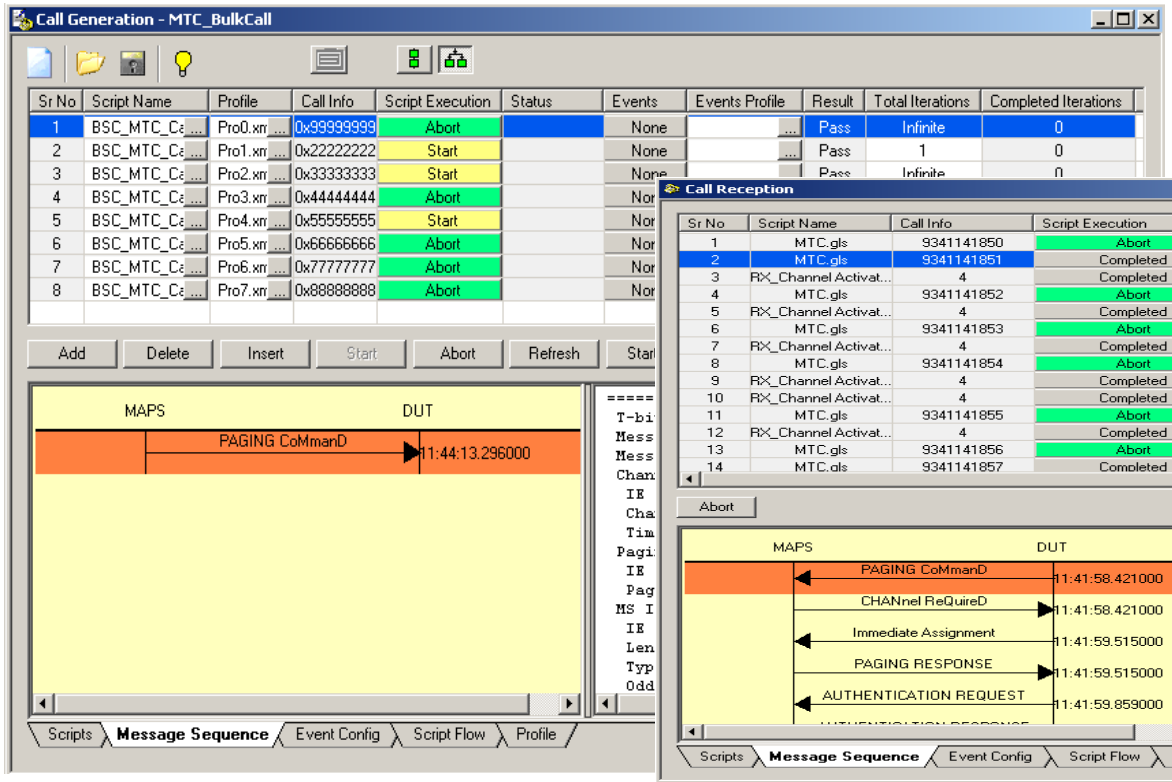


TRAU Traffic Monitoring

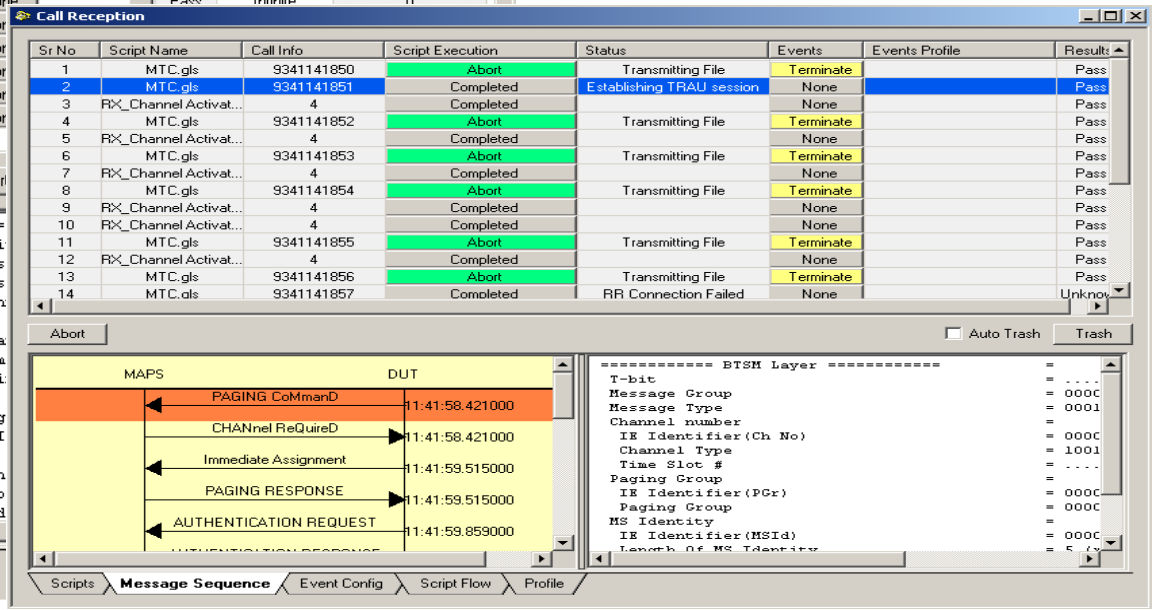


Protocol Emulation

GSM Call Generation



GSM Call Reception



Thank you