Dual T1 E1 Express (PCIe) Analysis and Emulation Boards

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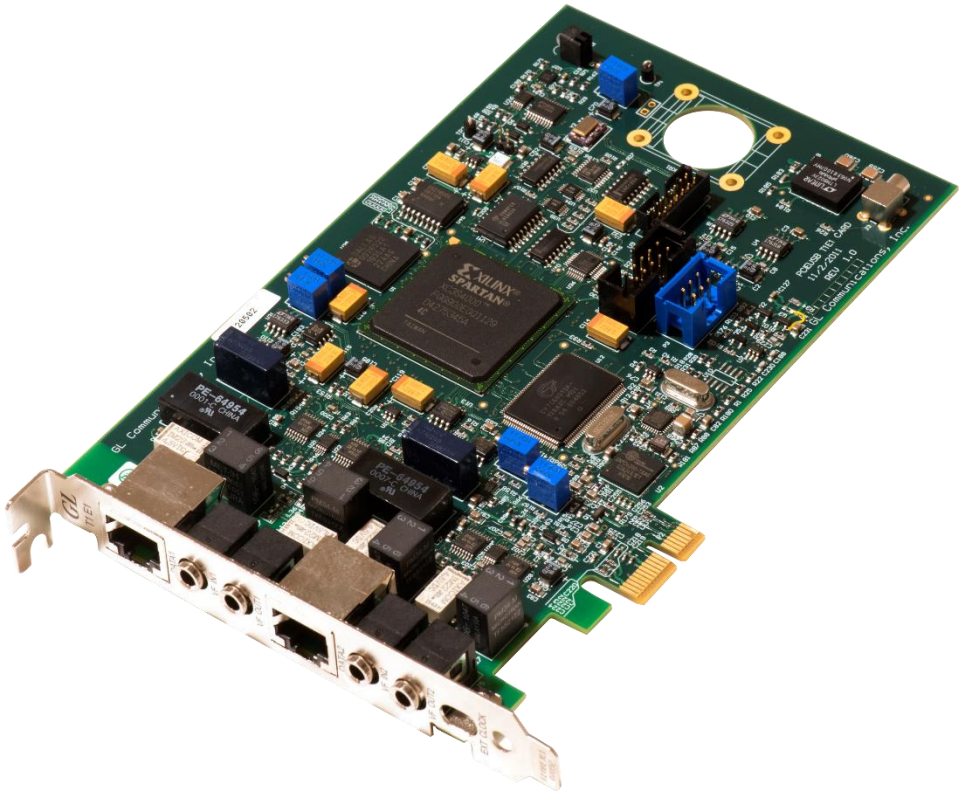
PCIe based Dual Express T1 E1 Board



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

Main Features

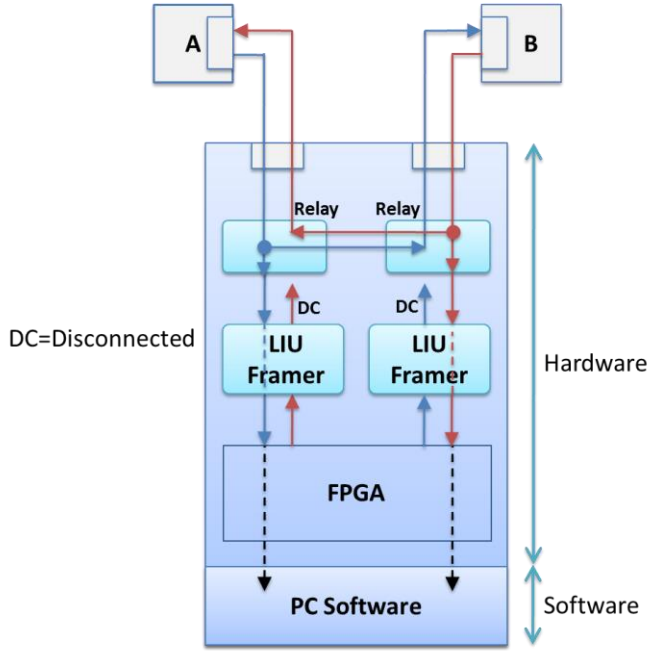
- T1 or E1 interfacing – Software Selectable
- TDM, ISDN, SS7 – High Density Voice. VoIP, Frame Relay, Multi-Link Frame Relay, PPP and Multi Link PPP, HDLC
- Most all “basic applications” and “special applications” are available for Dual T1 E1 Express boards Comprehensive Analysis / Emulation of Voice, Data, Fax, Protocol, Analog, and Digital signals, including Echo and Voice Quality testing
- Supports T1 E1 Pulse Mask and Jitter Generation and Measurement Analysis
- Cross-Port Through” and “Cross-Port Transmit” Modes – these configurations make cabling with Drop/Insert and Fail-Safe Inline Monitoring very easy
- Enhanced VF Drop and VF Insert Capabilities using 3.5mm Balanced (Stereo), or Unbalanced (Mono) physical connections
- The VF Tx and Rx impedance for Dual T1 E1 Express (PCIe) Card analyzer supports software selectable 135, 150, 600, or 900 Ohm terminations
- Supports software selectable VF Tx and Rx impedances - 135, 150, 600, or 900 Ohm terminations. Additionally, the VF Rx impedance supports New High Impedance Monitor Termination (>50K Ohms), and external Microphone and Headset (Mic/HS) impedance

Comparison with other PCI based GL's T1 E1 Cards

Feature	Quad, Octal T1 E1 Boards	Dual T1 E1 Express (PCIe) Boards
Number of Ports	4, 8	2
PCI Slot Type	PCI Express x1 Bus/ Connector	PCI Express x1 Bus / Connector
Speaker (on board)	No speakers	Supported
Cross-port and Through Modes	Supported	Supported
Pulse Mask Application	Not Supported	Supported
Jitter Generation and Measurement	Not Supported	Supported
External Clock Mode	No clock port connector	Supported
Clock Offset Capability	All ports at the same time	1 Port at a time
VF Interface and Impedance	Not Supported	Supported; 135/150/600/900/High
VF Interface for Mic/Headset	Not Supported	Supported
Drop and Insert (VF and T1/E1)	No VF connectors; Digital Drop/Insert supported	Supported
Onboard RAM	Not Supported	Supported

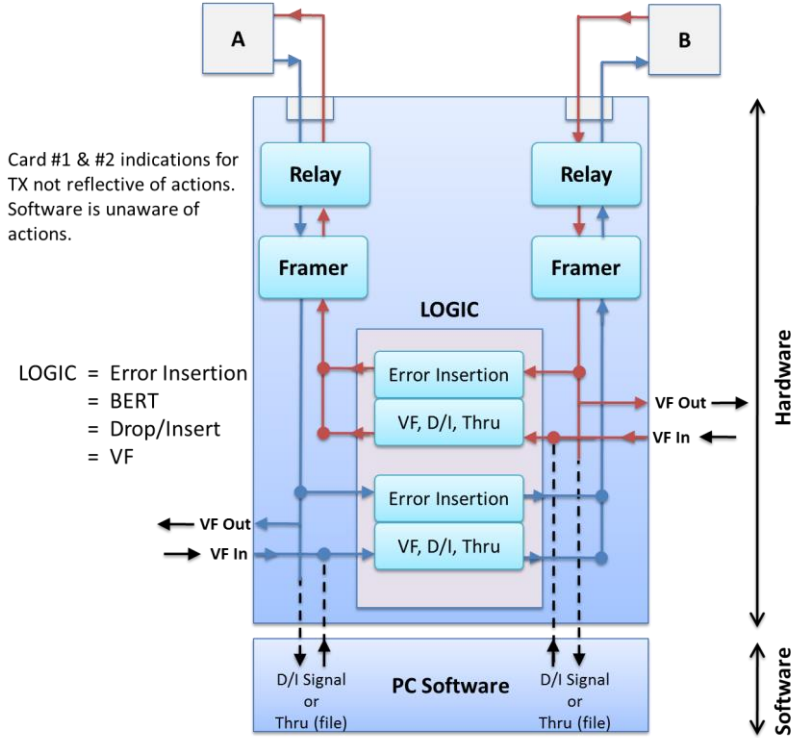
Cross-port Through Loopback

- Allows monitoring T1 or E1 lines in-line while still being protected from loss of power to the board
- It is implemented entirely thru 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 or E1 equipment



T1 / E1 Basic Software

- T1 E1 Basic Software
  - Monitoring Options
  - Intrusive Testing
  - Windows Client / Server
    - Remote access to T1/E1 server
    - Clients - Python

- VF Options
  - Speaker
  - Drop and Insert
  - VF In / Out TS settings
- Monitoring Features
  - Monitor T1or E1 Line
  - Byte Values & Binary Byte Values
  - Signaling bits, Power Level, DC Offset, & Frequency
  - Multiframes, and Real-time Multiframes
  - T1/E1 Data as Real-time Bitmap
  - Time-slot Window

T1 / E1 Basic Software (Contd.)

- Monitoring Features
  - ASCII Timeslot Display
  - Oscilloscope & 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

- 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

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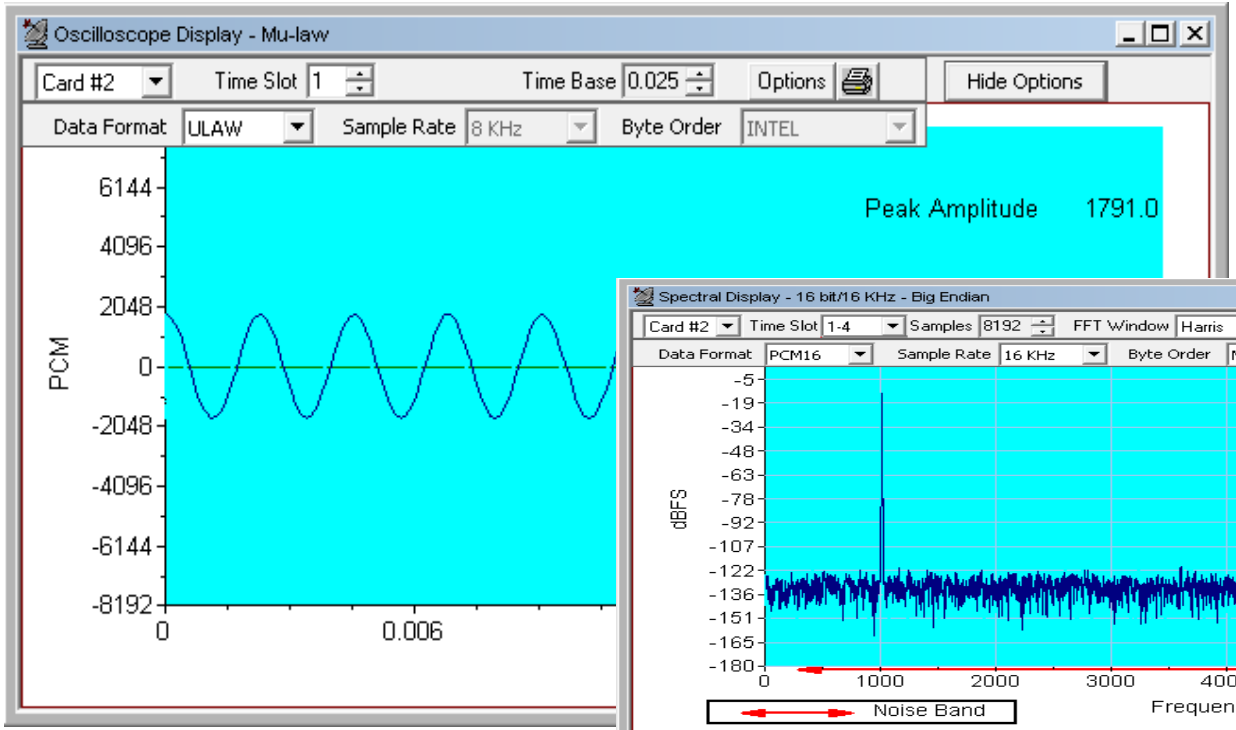
Monitoring Features

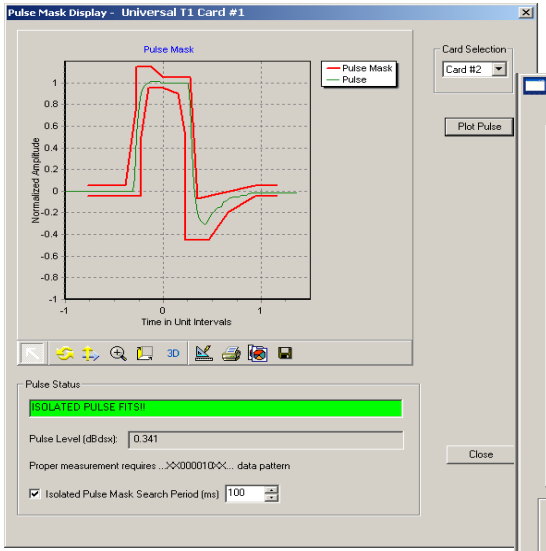
Oscilloscope Display



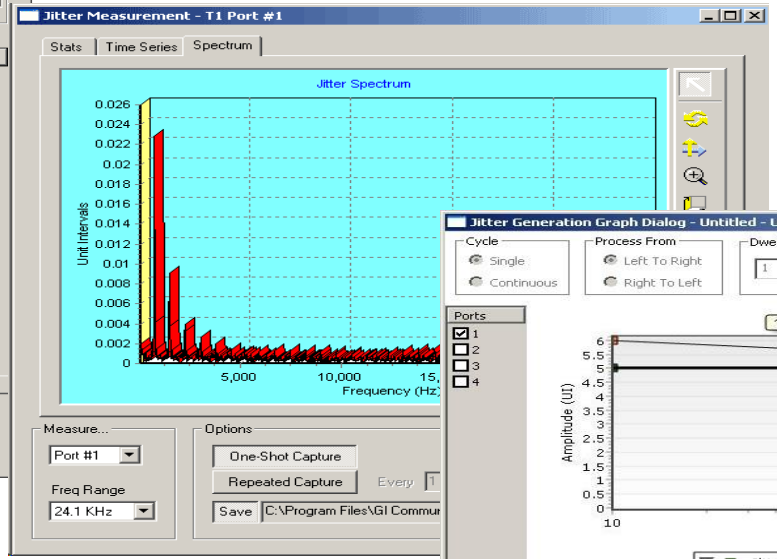
Spectral Display

Jitter Measurement and Pulse Mask

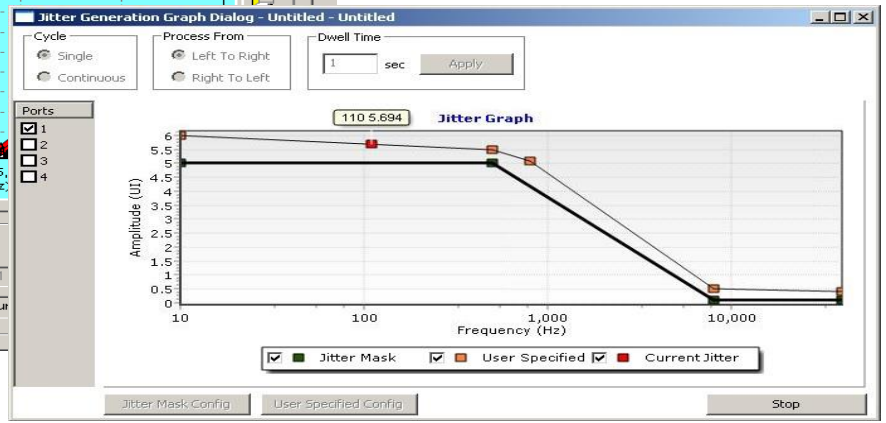
Pulse Shape Display



Jitter Measurement



Jitter Generation



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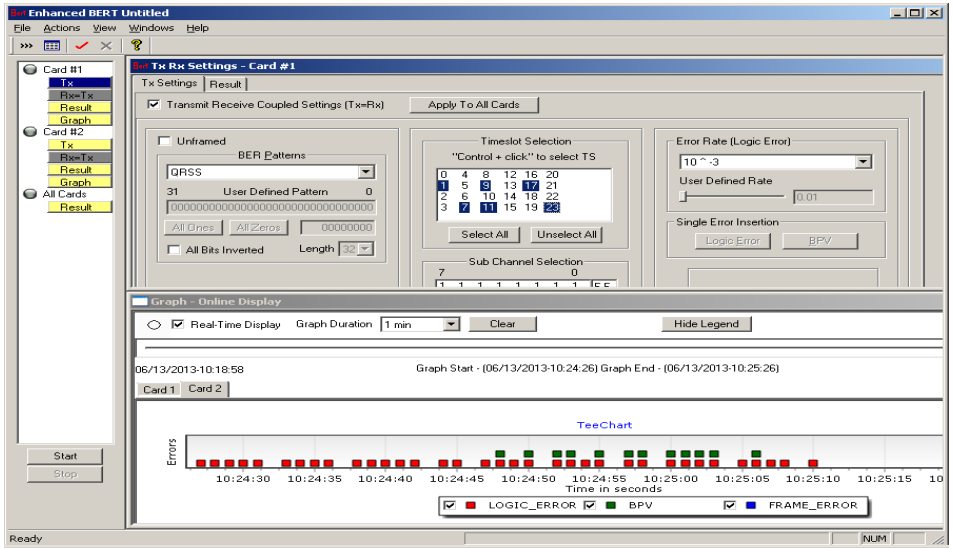
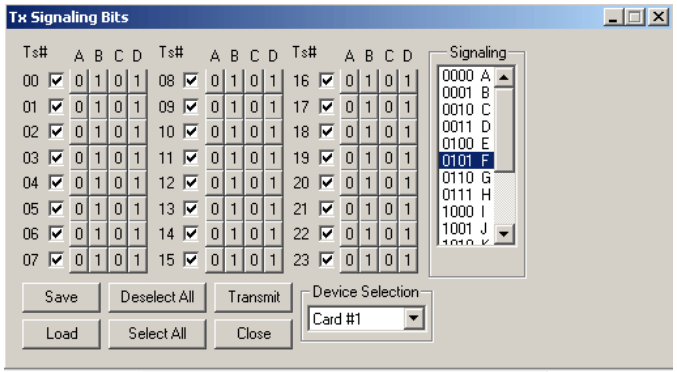
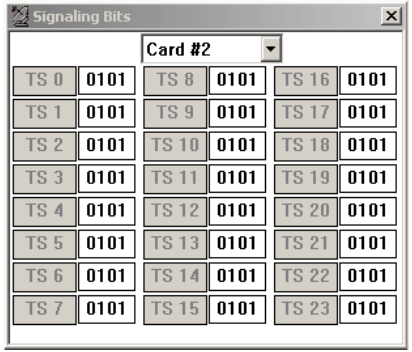
Enhanced BERT and TX Signaling BITS

Enhanced BERT



Transmit Signaling BITS





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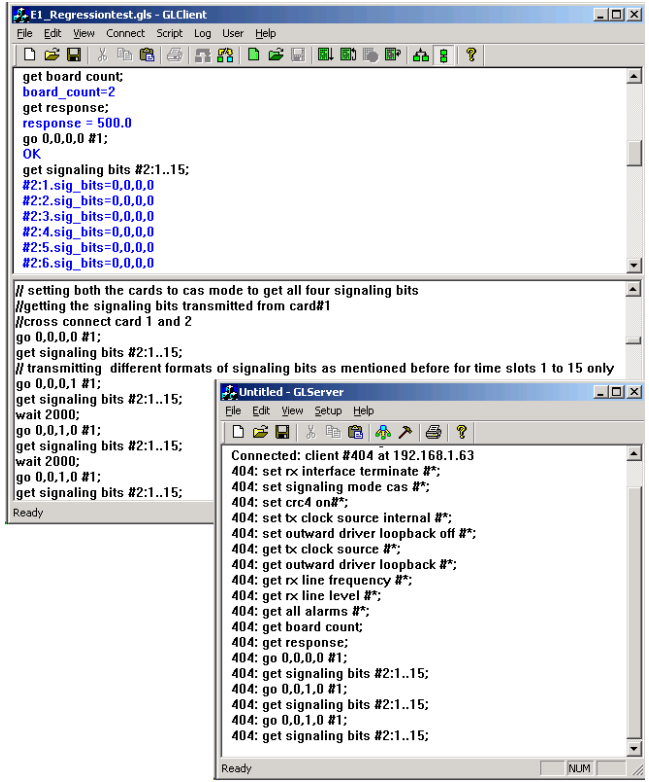
Client Server

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



T1 or E1 Special Applications

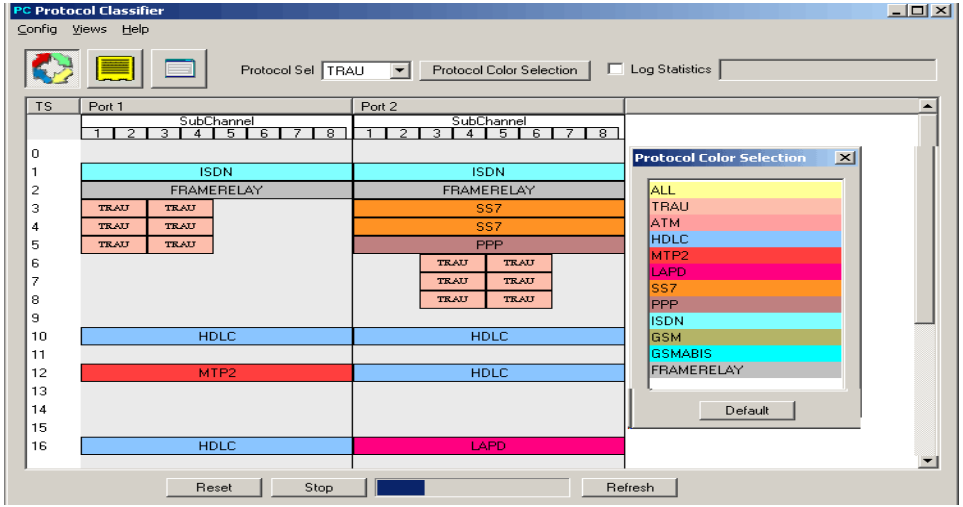
- Protocol Analysis
  - ISDN, HDLC, SS7, Frame Relay, TRAU, CDMA, DCME, T1 Facility Data Link.
  - E1 Maintenance Data Link, UMTS, PPP, ATM, GSM, V5.x, GPRS, GR303, SS1
- Protocol Emulation
  - ISDN, HDLC, MLPPP, MLPPP Conformance, CAS, TRAU, SS7, SS7 conformance
  - GSM A, GSM Abis, MAP, CAMEL, Frame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

T1 or E1 Special Applications (Contd.)

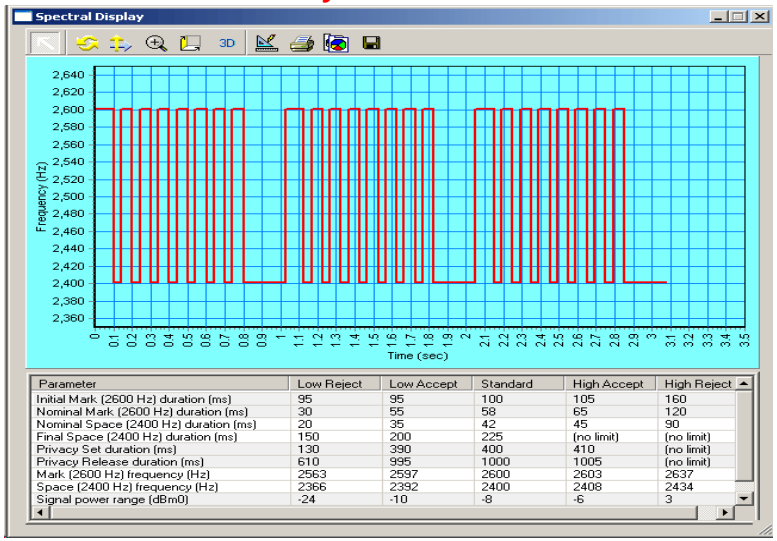
- Voice Band Analysis Software
  - Call Data Records (CDR)
  - Voice Band Analyzer (VBA)
  - Fax Emulation and Analysis
- Fax Simulator
  - Fax Analysis using GLInsight ™ or FaxScan™
- Echo Cancellation Testing / Compliance
  - Manual
  - Semi-automated
  - Automated
- WCS Modules
  - Transmission/reception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

T1 or E1 Special Applications

Protocol Identifier



SS1 Analyzer and Emulator



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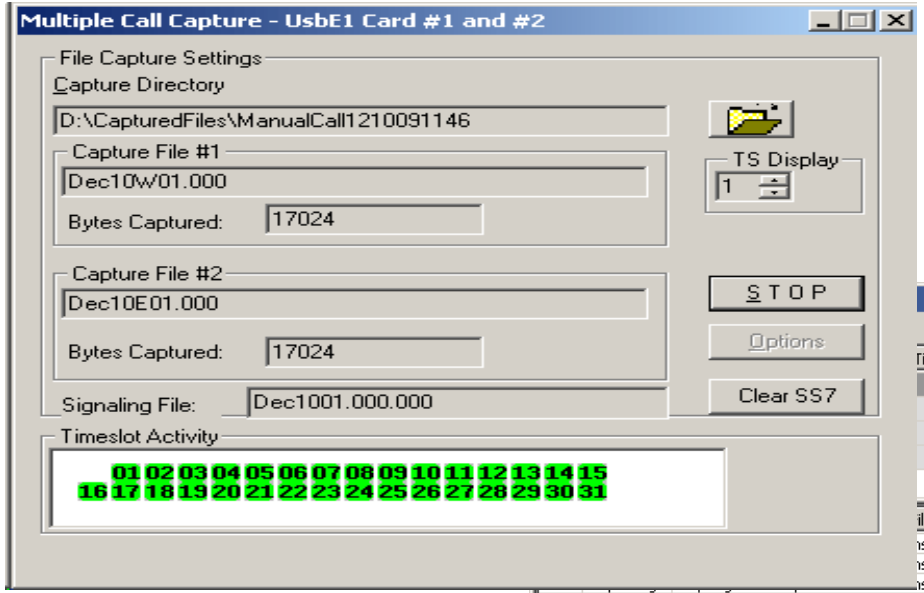
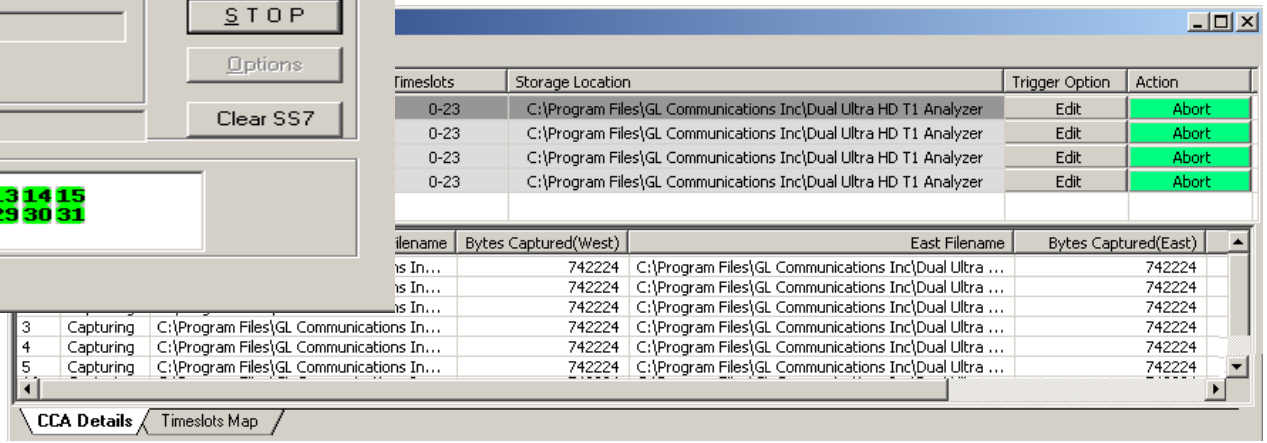
Call Capture and Analysis

Call Capture and Analysis

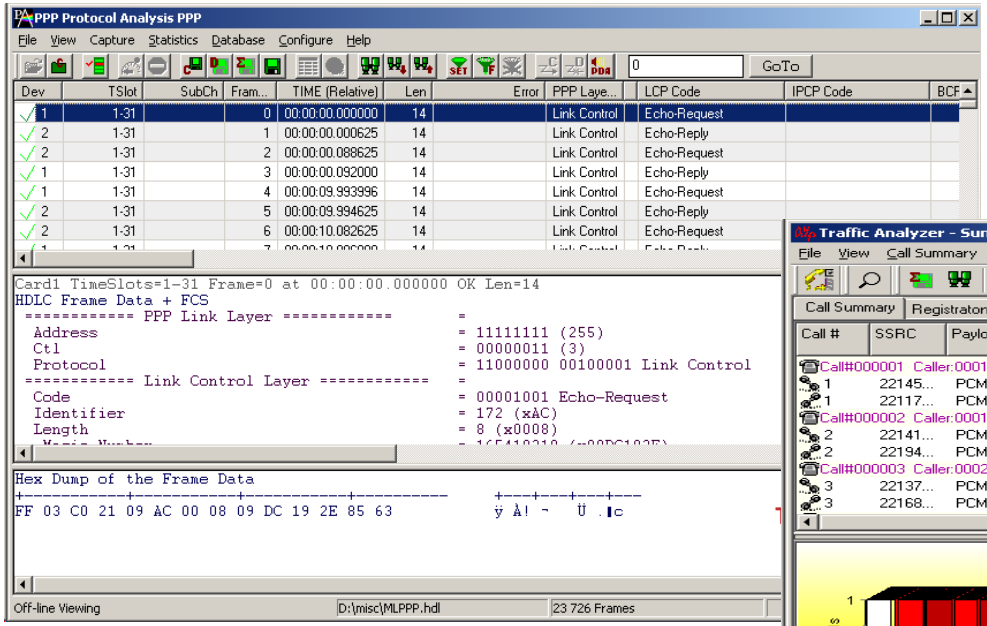


Multiple Call Capture and Analysis

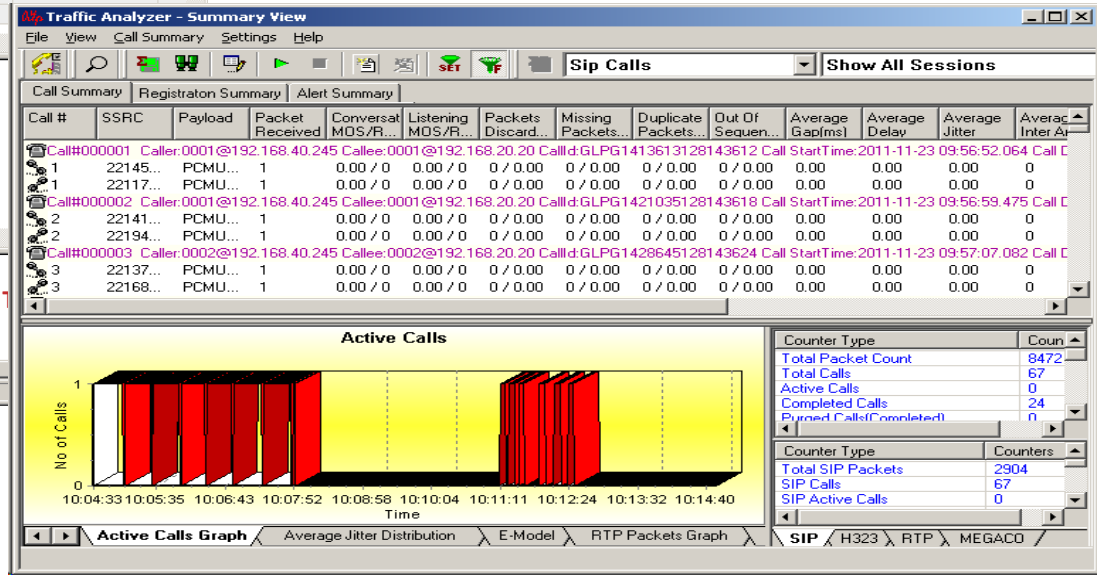


Protocol Analysis

PPP Protocol Analysis

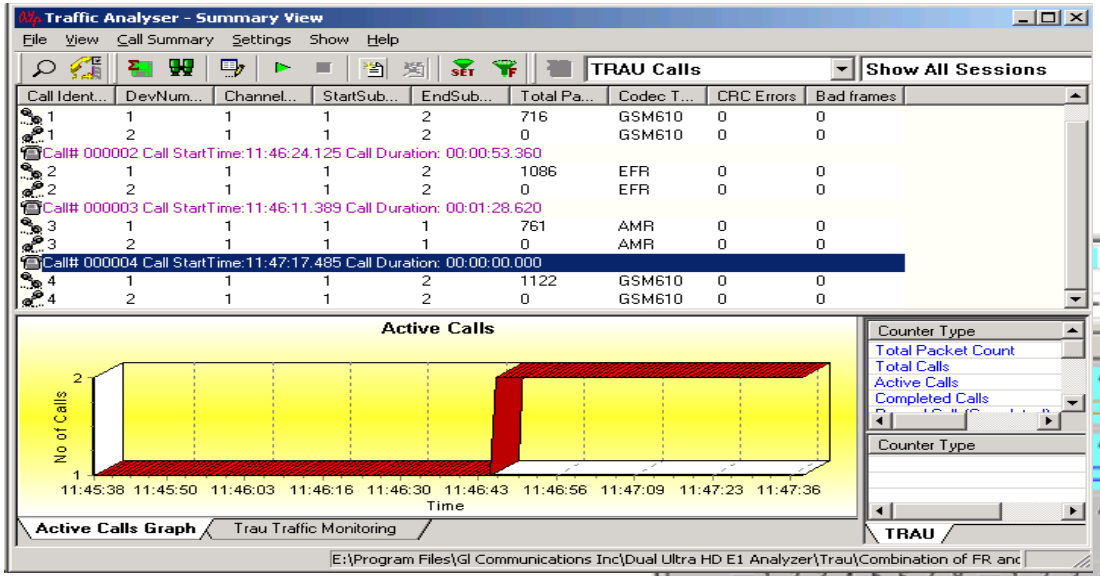


PPP Packet Data Analysis

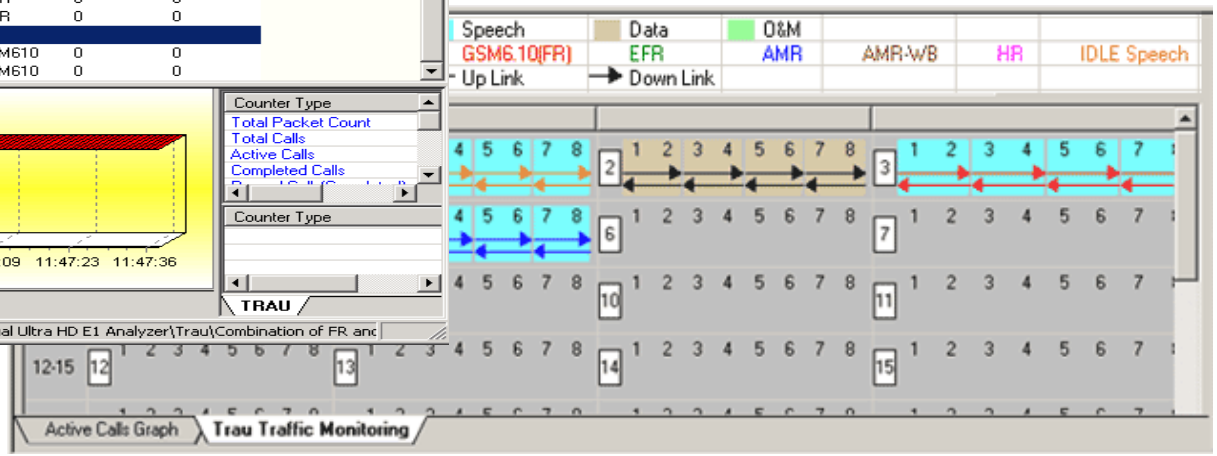


Protocol Analysis

TRAU Packet Data Analysis - Active Calls Graphs

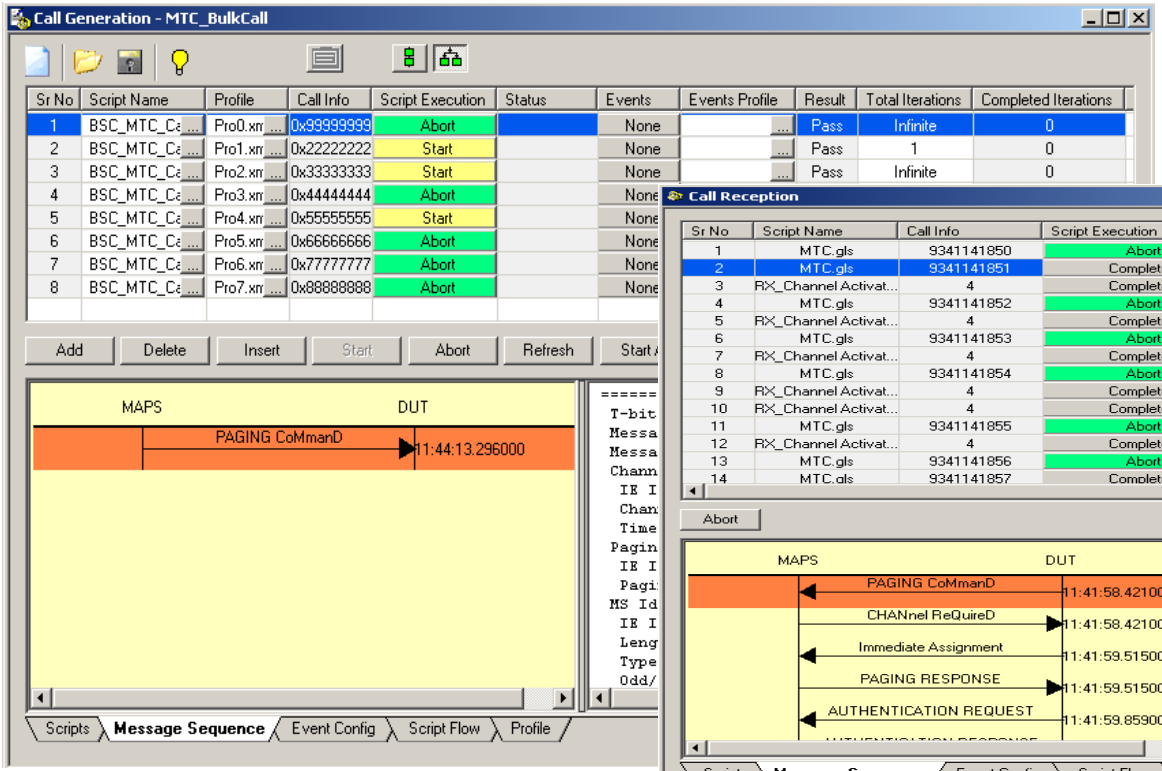


TRAU Traffic Monitoring

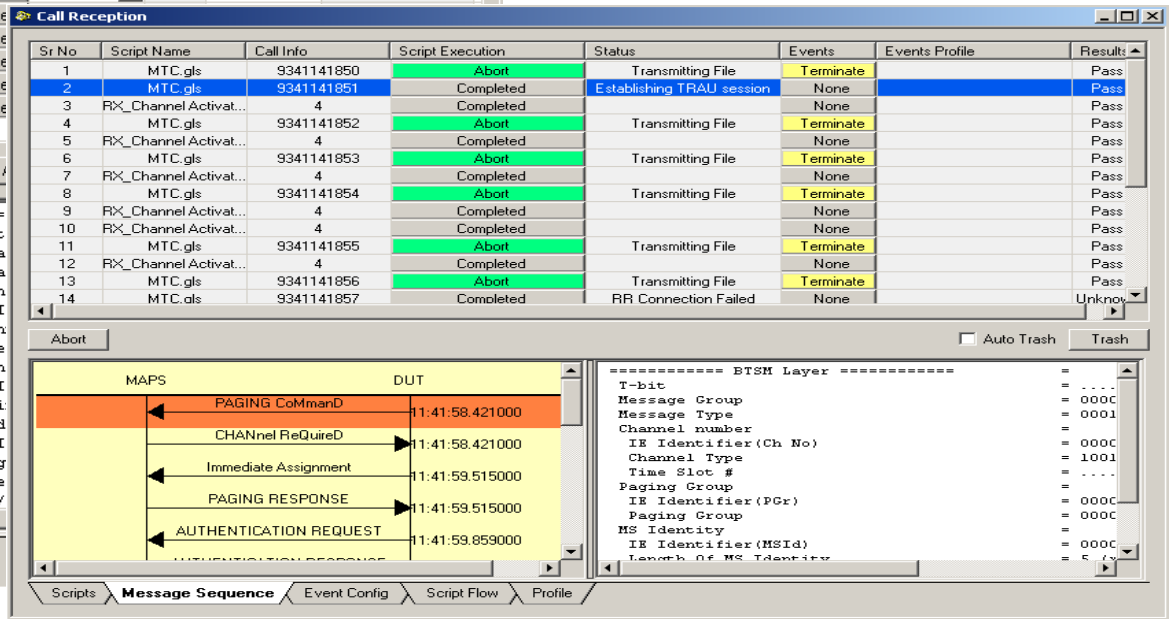


Protocol Emulation

GSM Call Generation



GSM Call Reception



Thank you